UNITED STATES PATENT AND TRADEMARK OFFICE

CERTIFICATE OF CORRECTION

PATENT NO. : 8,440,221 B2
APPLICATION NO. : 10/711389
DATED : May 14, 2013
INVENTOR(S) : Zumbrunn et al.

It is certified that error appears in the above-identified patent and that said Letters Patent is hereby corrected as shown below:

On the Title Page:

The first or sole Notice should read --

Subject to any disclaimer, the term of this patent is extended or adjusted under 35 U.S.C. 154(b) by 1312 days.

Signed and Sealed this
Twenty-third Day of May, 2017

Michelle K. Lee
Director of the United States Patent and Trademark Office

UPDATED DRAFT COPY

UNITED STATES PATENT AND TRADEMARK OFFICE

CERTIFICATE OF CORRECTION

PATENT NO.	:	8,440,221
APPLICATION NO.	:	10/711,389
DATED	:	May 14, 2013
INVENTOR(S) :	:	Zumbrunn et al.

It is certified that error appears in the above-identified patent and that said Letters Patent is hereby
corrected as shown below:

On the cover page,

(*) Notice: Subject to any disclaimer, the term of this patent is extended or adjusted under 35 USC 154(b) by 1075 days.

Delete the phrase "by 1075 days" and insert – by 1312 days.

UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/711,389	09/15/2004	Werner Zumbrunn		5388

66854 7590 06/29/2016

SHAY GLENN LLP
2755 CAMPUS DRIVE
SUITE 210
SAN MATEO, CA 94403

EXAMINER
MERCIER, MELISSA S

ART UNIT	PAPER NUMBER
1615	

NOTIFICATION DATE	DELIVERY MODE
06/29/2016	ELECTRONIC

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Notice of the Office communication was sent electronically on above-indicated "Notification Date" to the following e-mail address(es):

info@shayglenn.com

UNITED STATES PATENT AND TRADEMARK OFFICE

Commissioner for Patents
United States Patent and Trademark Office
P.O. Box 1450
Alexandria, VA 22313-1450
www.uspto.gov

In re Patent No. 8,440,221	:	
Zumbrunn et al.	:	REDETERMINATION OF
Issue Date: May 4, 2013	:	PATENT TERM ADJUSTMENT
Application No. 10/711,389	:	
Filing or 371(c) Date: September 15, 2004	:	
Title: TRANSDERMAL DRUG DELIVERY METHOD AND SYSTEM	:	

This is in response to patentee's "REQUEST FOR RECONSIDERATION OF PATENT TERM ADJUSTMENT FOR PATENTS UNDER 37 C.F.R. §1.705(d)" filed Monday, November 10, 2014, which is being treated under 37 CFR 1.705(b) as a request that the Office adjust the patent term adjustment determination (PTA) from 1309 days to 1313 days.

The Office has re-determined the PTA to be **1312** days.

This redetermination of patent term adjustment is NOT the Director's decision on the patentee's request for reconsideration for purposes of seeking judicial review under 35 U.S.C. § 154(b)(4).

Relevant Procedural History

On May 4, 2013, this patent issued with a PTA in the amount of 1075 days. On June 20, 2013, patentee timely filed a request for redetermination of patent term adjustment. On September 8, 2014, the Office mailed a redetermination of patent term adjustment adjusting the PTA to 1309 days. The Office set an extendable period of two months from the date of the redetermination to request reconsideration of the patent term adjustment. The decision indicated that the Office would *sua sponte* issue a certificate of correction adjusting the PTA to 1309 days after the period for response had expired. On Monday, November 10, 2014, patentee timely filed a request reconsideration of the patent term adjustment.

Patentee requests PTA in the amount of 1313 days. Specifically, patentee asserts that the Office incorrectly calculated the period of "B" delay as 1178 days. Patentee argues the correct amount of "B" delay is 1179 days. Patentee's calculation appears to exclude the mail date of the Notice of Allowance from the time consumed by continued examination, thereby increasing the amount of "B" delay by one day. Additionally, patentee contends the correct amount of applicant delay is 535 days and that the Office incorrectly calculated the following periods of applicant delay:

> [] October 27, 2009 - Information Disclosure Statement (IDS) was filed. The USPTO incorrectly applied a 19 day Applicant Delay reduction. The correct Applicant Delay reduction should be a 20 day Applicant Delay reduction. Applicants note the USPTO incorrectly logged the IDS as being filed on October 26, 2009.
>
> ...
>
> [] July 1, 2010 - Request for Continued Examination was filed. The USPTO incorrectly applied a 61 day Applicant Delay reduction. The correct Applicant Delay reduction should be 59 days under ArQule v. Kappos.
>
> ...
>
> [] September 27, 2012 - Response to Non-Final Office Action was filed. The USPTO incorrectly applied a 12 day Applicant Delay reduction. The correct Applicant Delay reduction should be 10 days under ArQule v. Kappos.

Request, 11/10/14, pp. 3-4.

Decision

Upon review, the Office and patentee are in agreement regarding the calculation of 1036 days of "A" delay, 0 days of "C" delay, 367 days of overlap, and 535 days of applicant delay. The Office has updated its records and the "PTA Calculations". Specifically, the Office has corrected the periods of reduction for applicant delay as stated by patentee. However, the Office and patentee are in disagreement regarding the amount of "B" delay. Therefore, the Office will revisit the amount of "B" delay in view of the Federal Circuit's decision in *Novartis AG v. Lee*, 740 F.3d 593 (Fed. Cir. 2014), which is the sole issue in dispute.

As to the amount of "B" delay, the Federal Circuit agreed with the Office that "no ["B" delay] adjustment time is available for any time in continued examination, even if the continued examination was initiated more than three calendar years after the application's filing." *Novartis*, 740 F.3d at 601. However, the *Novartis* court found that if the Office issues a notice of allowance after an RCE is filed, the period after the notice of allowance should not be excluded from the "B" delay period but should be counted as "B" delay. *Id.* at 602. The Federal Circuit issued its mandate in the *Novartis* appeal on March 10, 2014.

Pursuant to the *Novartis* decision, the USPTO has determined that patentee is entitled to 1178 days of "B" delay. In this case, the application was filed on September 15, 2004, and the patent issued on May 14, 2013. Thus, the application was pending for 3164 days. During this time, applicant filed a RCE on July 1, 2010. The Office mailed a Notice of Allowance on December

6, 2012. Under 35 U.S.C. § 154(b)(1)(B)(i), the time period consumed by continued examination ("RCE period") began on July 1, 2010, and ended on December 6, 2012 – *i.e.*, 890 days. Subtracting the RCE period from the total number of days the application was pending results in 3164 – 890 = 2274 days. Thus, for purposes of "B" delay, the application was pending for 2274 – 1096 [i.e., 3 years from the actual filing date] = 1178 days beyond the three-year anniversary of the filing date.

Patentee's implication that the mail date of the Notice of Allowance is excluded from the time consumed by continued examination is without merit. The mail date of the Notice of Allowance is considered as part of the time consumed by continued examination. *See Revisions To Implement the Patent Term Adjustment Provisions of the Leahy-Smith America Invents Act Technical Corrections Act,* 79 Fed. Reg. 27755 (May 15, 2014), viewable here: http://www.gpo.gov/fdsys/pkg/FR-2014-05-15/pdf/2014-11131.pdf. Accordingly, the USPTO properly calculated the time consumed by continued examination as 890 days and the amount of "B" delay as 1178 days.

Overall PTA Calculation

Formula:

"A" delay + "B" delay + "C" delay - Overlap - applicant delay = X

USPTO's Calculation:

1036 + 1178 + 0 – 367 – 535 = 1312

Patentee's Calculation

1036 + 1179 + 0 – 367 – 535 = 1313

Conclusion

Patentee is entitled to PTA of one thousand three hundred twelve (1312) days. Using the formula "A" delay + "B" delay + "C" delay - overlap - applicant delay = X, the amount of PTA is calculated as following: 1036 + 1178 + 0 – 367 – 535 = 1312 days.

If patentee continues to disagree with the Office's redetermination of patent term adjustment, patentee has two (2) months from the date of this redetermination to request reconsideration of the patent term adjustment without paying any additional petition fee. This two-month period is extendable under 37 CFR 1.136(a). However, if patentee responds more than two months after the mail date of the redetermination, patentee is required to pay the extension of time fee. After

the period to respond has expired, the Office will *sua sponte* issue a certificate of correction adjusting the PTA to one thousand three hundred twelve (1312) days.

Telephone inquiries specific to this matter should be directed to the undersigned at (571) 272-3211.

/Christina Tartera Donnell/

Christina Tartera Donnell
Attorney Advisor
Office of Petitions

Enclosures: Adjusted PTA calculation
Draft Certificate of Correction

Office of Petitions: Decision Count Sheet

Mailing Month: 6

Application No.: 10711389

10711389

For US serial numbers: enter number only, no slashes or commas. Ex: 10123456
For PCT: enter "51+single digit of year of filing+last 5 numbers", Ex. for PCT/US05/12345, enter 51512345

Deciding Official: Christina Tartera Donnell

Count (1) - Palm Credit

Decision: DISMISSED

DISMISSED

Decision Type: 551 - 37 CFR 1.705(d) - PATENT TERM ADJUSTMENT AF

551

Notes:

Count (2)

Decision: n/a

Decision Type: NONE

Notes:

Count (3)

Decision: n/a

Decision Type: NONE

Notes:

Initials of Approving Official (if required)

If more than 3 decisions, attach 2nd count sheet & mark this box ☐

Printed on: *6/24/2016*

Patent Term Adjustments

Patent Term Adjustment (PTA) for Application Number: 10/711,389

Filing or 371(c) Date:	09-15-2004	Overlapping Days Between { A and B} or { A and C} :	367
Issue Date of Patent:	05-14-2013	Non-Overlapping USPTO Delays:	1688
A Delays:	1036	PTO Manual Adjustments:	237
B Delays:	1019	Applicant Delays:	613
C Delays:	0	Total PTA Adjustments:	1312

Patent Term Adjustment History — Explanation of Calculations

Number	Date	Contents Description	PTO(Days)	APPL(Days)	Start
184	06-24-2016	Adjustment of PTA Calculation by PTO	12		0
183	06-24-2016	Adjustment of PTA Calculation by PTO		10	0
182	06-24-2016	Adjustment of PTA Calculation by PTO	61		0
181	06-24-2016	Adjustment of PTA Calculation by PTO		59	0
180	06-24-2016	Adjustment of PTA Calculation by PTO	19		0
179	06-24-2016	Adjustment of PTA Calculation by PTO		20	0
169	09-05-2014	Adjustment of PTA Calculation by PTO	75		0
168	09-05-2014	Adjustment of PTA Calculation by PTO	1178		0
167	09-05-2014	Adjustment of PTA Calculation by PTO		1019	0
162.5	06-30-2010	PTA 36 Months	1019		0.5
162	05-14-2013	Patent Issue Date Used in PTA Calculation			0
161	04-19-2013	Dispatch to FDC			0
160	04-19-2013	Mail Miscellaneous Communication to Applicant			0
159	04-18-2013	Office Action Review			0
158	03-11-2013	Office Action Review			0
157	03-07-2013	Application Is Considered Ready for Issue			0
156	03-07-2013	Miscellaneous Communication to Applicant - No Action Count			0
155	03-03-2013	Information Disclosure Statement considered			0
154	03-05-2013	Pubs Case Remand to TC			0
153	03-04-2013	Issue Fee Payment Verified			0
152	03-04-2013	Issue Fee Payment Received			0

151	03-03-2013	Information Disclosure Statement (IDS) Filed	48	160
149	03-03-2013	Information Disclosure Statement (IDS) Filed		0
148	02-20-2013	Mail Acknowledgement of Priority Papers-Pub		0
147	02-20-2013	Acknowledgement of Priority Papers-Pub		0
146	02-11-2013	Request for Foreign Priority (Priority Papers May Be Included)	10	148
145	01-29-2013	Finished Initial Data Capture		0
144	01-04-2013	Mailing Corrected Notice of Allowability		0
143	01-02-2013	Office Action Review		0
142	01-02-2013	Corrected Notice of Allowability		0
141	12-20-2012	Printer Rush- No mailing		0
140	12-20-2012	Printer Rush- No mailing		0
139	12-18-2012	Information Disclosure Statement considered		0
138	12-19-2012	Pubs Case Remand to TC		0
137	12-19-2012	Reference capture on IDS		0
136	12-18-2012	Information Disclosure Statement (IDS) Filed	75	160
135	12-18-2012	Information Disclosure Statement (IDS) Filed		0
134	12-11-2012	Export to Initial Data Capture		0
133	12-06-2012	Mail Notice of Allowance		0
132	12-06-2012	Office Action Review		0
131	12-06-2012	Office Action Review		0
130	12-06-2012	Issue Revision Completed		0
127	12-03-2012	Office Action Review		0
126	12-03-2012	Office Action Review		0
125	12-03-2012	Allowed Case Returned to the Examiner for Clerical Processing		0
124	12-03-2012	Notice of Allowance Data Verification Completed		0
123	12-03-2012	Document Verification		0
122	12-03-2012	Examiner's Amendment Communication		0
121	12-03-2012	Allowability Notice		0

119	09-27-2012	Information Disclosure Statement considered		0
118	09-27-2012	Information Disclosure Statement (IDS) Filed	0	116
117	09-28-2012	Date Forwarded to Examiner		0
116	09-27-2012	Response after Non-Final Action	12	113
115	09-27-2012	Request for Extension of Time - Granted		0
114	09-27-2012	Information Disclosure Statement (IDS) Filed		0
113	06-15-2012	Mail Non-Final Rejection		0
112	06-14-2012	Office Action Review		0
111	06-10-2012	Non-Final Rejection		0
110	03-08-2012	Information Disclosure Statement considered		0
109	03-08-2012	Reference capture on IDS		0
108	03-08-2012	Information Disclosure Statement (IDS) Filed	0	105
107	03-12-2012	Date Forwarded to Examiner		0
106	03-08-2012	Amendment Submitted/Entered with Filing of CPA/RCE		0
105	03-08-2012	Request for Continued Examination (RCE)		96
104	03-12-2012	Disposal for a RCE / CPA / R129		0
103	03-08-2012	Information Disclosure Statement (IDS) Filed		0
102	03-08-2012	Workflow - Request for RCE - Begin		0
101	01-03-2012	Mail Advisory Action (PTOL - 303)		0
100	12-30-2011	Office Action Review		0
99	12-30-2011	Advisory Action (PTOL-303)		0
98	12-21-2011	Date Forwarded to Examiner		0
97	11-09-2011	Amendment/Argument after Notice of Appeal		0
96	11-09-2011	Notice of Appeal Filed	91	86
95	11-09-2011	Request for Extension of Time - Granted		0
94	11-17-2011	Mail-Petition Decision - Dismissed		0
93	11-16-2011	Petition Decision - Dismissed		0
92	11-09-	Petition Entered		0

	2011			
91	11-08-2011	Mail Examiner Interview Summary (PTOL - 413)		0
90	11-07-2011	Office Action Review		0
89	11-07-2011	Office Action Review		0
88	11-01-2011	Interview Summary- Applicant Initiated		0
87	11-01-2011	Examiner Interview Summary Record (PTOL - 413)		0
86	05-10-2011	Mail Final Rejection (PTOL - 326)		0
85	05-09-2011	Office Action Review		0
84	05-07-2011	Final Rejection		0
83	03-07-2011	Date Forwarded to Examiner		0
82	03-04-2011	Response after Non-Final Action	85	80
81	03-04-2011	Request for Extension of Time - Granted		0
80	09-09-2010	Mail Non-Final Rejection		0
79	09-09-2010	Non-Final Rejection		0
78	07-01-2010	Information Disclosure Statement considered		0
77	07-01-2010	Reference capture on IDS		0
76	07-01-2010	Information Disclosure Statement (IDS) Filed	0	73
75	07-14-2010	Date Forwarded to Examiner		0
74	07-01-2010	RCE- AF Processed		0
73	07-01-2010	Request for Continued Examination (RCE)	61	63
72	07-14-2010	Disposal for a RCE / CPA / R129		0
71	07-01-2010	Request for Extension of Time - Granted		0
70	07-01-2010	Information Disclosure Statement (IDS) Filed		0
69	07-01-2010	Workflow - Request for RCE - Begin		0
68	05-27-2010	Mail Advisory Action (PTOL - 303)		0
67	05-26-2010	Advisory Action (PTOL-303)		0
66	05-21-2010	Date Forwarded to Examiner		0
65	05-20-2010	Response after Final Action		0

64	05-20-2010	Request for Extension of Time - Granted			0
63	02-01-2010	Mail Final Rejection (PTOL - 326)			0
62	01-29-2010	Final Rejection			0
61	10-26-2009	Reference capture on IDS			0
60	10-26-2009	Information Disclosure Statement (IDS) Filed		19	56
59	10-27-2009	Information Disclosure Statement considered			0
58	12-01-2009	Change in Power of Attorney (May Include Associate POA)			0
57	11-19-2009	Date Forwarded to Examiner			0
56	10-07-2009	Response after Non-Final Action		6	50
55	10-07-2009	Request for Extension of Time - Granted			0
54	11-19-2009	Correspondence Address Change			0
53	10-27-2009	Information Disclosure Statement (IDS) Filed			0
52	07-01-2009	Electronic Review			0
51	07-01-2009	Email Notification			0
50	07-01-2009	Mail Non-Final Rejection	97		43
49	06-29-2009	Non-Final Rejection			0
48	08-17-2007	Information Disclosure Statement considered			0
47	01-23-2007	Information Disclosure Statement considered			0
44	12-01-2008	Date Forwarded to Examiner			0
43	11-26-2008	Response to Election / Restriction Filed		117	40
42	10-30-2008	Mail Notice of Informal or Non-Responsive Amendment			0
41	08-28-2008	Date Forwarded to Examiner			0
40.1	08-01-2008	Informal or Non-Responsive Amendment after Examiner Action			0
40	08-01-2008	Response to Election / Restriction Filed			0
39	08-01-2008	Request for Extension of Time - Granted			0
38	06-11-2008	Mail Restriction Requirement	939		0.5
37	06-09-2008	Restriction/Election Requirement			0
34	11-08-2007	Mail Non-Compliant Preliminary Amendment			0

33	11-08-2007	Non-Compliant Preliminary Amendment		0
32	10-24-2007	Oath or Declaration Filed (Including Supplemental)		0
31	10-24-2007	Affidavit(s) (Rule 131 or 132) or Exhibit(s) Received		0
30	10-24-2007	New or Additional Drawing Filed		0
29	10-24-2007	Preliminary Amendment		0
28	10-24-2007	Preliminary Amendment		0
27	08-17-2007	Electronic Information Disclosure Statement		0
26	08-17-2007	Information Disclosure Statement (IDS) Filed		0
25	01-23-2007	Reference capture on IDS		0
24.7	01-23-2007	Information Disclosure Statement (IDS) Filed		0
24	01-23-2007	Information Disclosure Statement (IDS) Filed		0
23	02-23-2007	Case Docketed to Examiner in GAU		0
22	05-02-2006	Case Docketed to Examiner in GAU		0
21	11-02-2005	IFW TSS Processing by Tech Center Complete		0
20	04-21-2005	Miscellaneous Incoming Letter		0
19	04-07-2005	Miscellaneous Incoming Letter		0
18	11-02-2005	Case Docketed to Examiner in GAU		0
17	07-19-2005	Application Return from OIPE		0
16	07-19-2005	Application Is Now Complete		0
15	07-19-2005	Application Return TO OIPE		0
14	07-19-2005	Application Return from OIPE		0
13	07-19-2005	Application Is Now Complete		0
12	07-19-2005	Application Return TO OIPE		0
11	07-19-2005	Application Dispatched from OIPE		0
10	07-19-2005	Application Is Now Complete		0
9	05-09-2005	Additional Application Filing Fees	89	7
8	05-09-2005	A statement by one or more inventors satisfying the requirement under 35 USC 115, Oath of the Applic		0
7	11-09-	Notice Mailed--Application Incomplete--Filing Date Assigned		0

	2004		
5	10-27-2004	Cleared by L&R (LARS)	0
4	10-12-2004	Referred to Level 2 (LARS) by OIPE CSR	0
3	10-12-2004	CASE CLASSIFIED BY OIPE	0
2	09-16-2004	IFW Scan & PACR Auto Security Review	0
1	09-15-2004	Initial Exam Team nn	0
0.5	09-15-2004	Filing date	0

Close Window

Office of Petitions: Routing Sheet

Application No. 10/711,389

This application is being forwarded to your office for further processing. A decision has been rendered on a petition filed in this application, as indicated below. For details of this decision, please see the document PET.OP.DEC filed on the same date as this document.

☐ GRANTED

☒ DISMISSED

☐ DENIED

DRAFT COPY

UNITED STATES PATENT AND TRADEMARK OFFICE

CERTIFICATE OF CORRECTION

PATENT NO. : 8,440,221
APPLICATION NO. : 10/711,389
DATED : May 4, 2013
INVENTOR(S) : : Zumbrunn et al.

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UNITED STATES DEPARTMENT OF COMMERCE
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APPLICATION NUMBER	FILING OR 371(C) DATE	FIRST NAMED APPLICANT	ATTY. DOCKET NO./TITLE
10/711,389	09/15/2004	Werner Zumbrunn	

CONFIRMATION NO. 5388

POWER OF ATTORNEY NOTICE

22428
Foley & Lardner LLP
3000 K STREET N.W.
SUITE 600
WASHINGTON, DC 20007-5109

OC00000082647368

Date Mailed: 05/04/2016

NOTICE REGARDING CHANGE OF POWER OF ATTORNEY

This is in response to the Power of Attorney filed 04/28/2016.

- The Power of Attorney to you in this application has been revoked by the assignee who has intervened as provided by 37 CFR 3.71. Future correspondence will be mailed to the new address of record(37 CFR 1.33).

Questions about the contents of this notice and the requirements it sets forth should be directed to the Office of Data Management, Application Assistance Unit, at **(571) 272-4000** or **(571) 272-4200** or **1-888-786-0101**.

/rmturner myles/

UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NUMBER	FILING OR 371(C) DATE	FIRST NAMED APPLICANT	ATTY. DOCKET NO./TITLE
10/711,389	09/15/2004	Werner Zumbrunn	

CONFIRMATION NO. 5388

POA ACCEPTANCE LETTER

66854
SHAY GLENN LLP
2755 CAMPUS DRIVE
SUITE 210
SAN MATEO, CA 94403

OC000000082647398

Date Mailed: 05/04/2016

NOTICE OF ACCEPTANCE OF POWER OF ATTORNEY

This is in response to the Power of Attorney filed 04/28/2016.

The Power of Attorney in this application is accepted. Correspondence in this application will be mailed to the above address as provided by 37 CFR 1.33.

Questions about the contents of this notice and the requirements it sets forth should be directed to the Office of Data Management, Application Assistance Unit, at **(571) 272-4000** or **(571) 272-4200** or **1-888-786-0101**.

/rmturner myles/

Doc Code: PA..
Document Description: Power of Attorney

Attorney No.: 13164-700.US0

PTO/AIA/82B (07-13)
Approved for use through 11/30/2014. OMB 0651-0051
U.S. Patent and Trademark Office; U.S. DEPARTMENT OF COMMERCE
Under the Paperwork Reduction Act of 1995, no persons are required to respond to a collection of information unless it displays a valid OMB control number

POWER OF ATTORNEY BY APPLICANT

I hereby revoke all previous powers of attorney given in the application identified in either the attached transmittal letter or the boxes below.

Application Number	Filing Date
10/711,389	09/15/2004

(Note: The boxes above may be left blank if information is provided on form PTO/AIA/82A.)

☑ I hereby appoint the Patent Practitioner(s) associated with the following Customer Number as my/our attorney(s) or agent(s), and to transact all business in the United States Patent and Trademark Office connected therewith for the application referenced in the attached transmittal letter (form PTO/AIA/82A) or identified above: 66854

OR

☐ I hereby appoint Practitioner(s) named in the attached list (form PTO/AIA/82C) as my/our attorney(s) or agent(s), and to transact all business in the United States Patent and Trademark Office connected therewith for the patent application referenced in the attached transmittal letter (form PTO/AIA/82A) or identified above. (Note: Complete form PTO/AIA/82C.)

Please recognize or change the correspondence address for the application identified in the attached transmittal letter or the boxes above to:

☑ The address associated with the above-mentioned Customer Number

OR

☐ The address associated with Customer Number:

OR

Firm or Individual Name					
Address					
City		State		Zip	
Country					
Telephone		Email			

I am the Applicant (if the Applicant is a juristic entity, list the Applicant name in the box):

Chrono Therapeutics Inc.

☐ Inventor or Joint Inventor (title not required below)

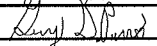
☐ Legal Representative of a Deceased or Legally Incapacitated Inventor (title not required below)

☑ Assignee or Person to Whom the Inventor is Under an Obligation to Assign (provide signer's title if applicant is a juristic entity)

☐ Person Who Otherwise Shows Sufficient Proprietary Interest (e.g., a petition under 37 CFR 1.46(b)(2) was granted in the application or is concurrently being filed with this document) (provide signer's title if applicant is a juristic entity)

SIGNATURE of Applicant for Patent

The undersigned (whose title is supplied below) is authorized to act on behalf of the applicant (e.g., where the applicant is a juristic entity).

Signature		Date (Optional)	April 6, 2016
Name	Guy DiPierro		
Title	Chief Strategy Officer		

NOTE: Signature - This form must be signed by the applicant in accordance with 37 CFR 1.33. See 37 CFR 1.4 for signature requirements and certifications. If more than one applicant, use multiple forms.

☐ Total of forms are submitted.

This collection of information is required by 37 CFR 1.131, 1.32, and 1.33. The information is required to obtain or retain a benefit by the public which is to file (and by the USPTO to process) an application. Confidentiality is governed by 35 U.S.C. 122 and 37 CFR 1.11 and 1.14. This collection is estimated to take 3 minutes to complete, including gathering, preparing, and submitting the completed application form to the USPTO. Time will vary depending upon the individual case. Any comments on the amount of time you require to complete this form and/or suggestions for reducing this burden, should be sent to the Chief Information Officer, U.S. Patent and Trademark Office, U.S. Department of Commerce, P.O. Box 1450, Alexandria, VA 22313-1450. DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS. **SEND TO: Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450.**

If you need assistance in completing the form, call 1-800-PTO-9199 and select option 2.

PTO/AIA/96 (08-12)
Approved for use through 01/31/2013. OMB 0651-0031
U.S. Patent and Trademark Office; U.S. DEPARTMENT OF COMMERCE

STATEMENT UNDER 37 CFR 3.73(c)

Applicant/Patent Owner: Chrono Therapeutics Inc.

Application No./Patent No.: 10/711,389 / 8,440,221 Filed/Issue Date: 09/15/2004 / 05/14/2013

Titled: TRANSDERMAL DRUG DELIVERY METHOD AND SYSTEM

Chrono Therapeutics Inc., a corporation

(Name of Assignee) (Type of Assignee, e.g., corporation, partnership, university, government agency, etc.)

states that, for the patent application/patent identified above, it is (choose **one** of options 1, 2, 3 or 4 below):

1. ☑ The assignee of the entire right, title, and interest.

2. ☐ An assignee of less than the entire right, title, and interest (check applicable box):

   ☐ The extent (by percentage) of its ownership interest is _____%. Additional Statement(s) by the owners holding the balance of the interest must be submitted to account for 100% of the ownership interest.

   ☐ There are unspecified percentages of ownership. The other parties, including inventors, who together own the entire right, title and interest are:

   Additional Statement(s) by the owner(s) holding the balance of the interest must be submitted to account for the entire right, title, and interest.

3. ☐ The assignee of an undivided interest in the entirety (a complete assignment from one of the joint inventors was made). The other parties, including inventors, who together own the entire right, title, and interest are:

   Additional Statement(s) by the owner(s) holding the balance of the interest must be submitted to account for the entire right, title, and interest.

4. ☐ The recipient, via a court proceeding or the like (*e.g.*, bankruptcy, probate), of an undivided interest in the entirety (a complete transfer of ownership interest was made). The certified document(s) showing the transfer is attached.

The interest identified in option 1, 2 or 3 above (not option 4) is evidenced by either (choose **one** of options A or B below):

A. ☐ An assignment from the inventor(s) of the patent application/patent identified above. The assignment was recorded in the United States Patent and Trademark Office at Reel _____, Frame _____, or for which a copy thereof is attached.

B. ☑ A chain of title from the inventor(s), of the patent application/patent identified above, to the current assignee as follows:

1. From: Hans Werner Van De Venn To: Fachhochschule Solothurn

   The document was recorded in the United States Patent and Trademark Office at
   Reel 019604, Frame 0184, or for which a copy thereof is attached.

2. From: Werner Zumbrunn To: Fachhochschule Solothurn

   The document was recorded in the United States Patent and Trademark Office at
   Reel 019604, Frame 0688, or for which a copy thereof is attached.

PTO/AIA/96 (08-12)
Approved for use through 01/31/2013. OMB 0651-0031
U.S. Patent and Trademark Office; U.S. DEPARTMENT OF COMMERCE

STATEMENT UNDER 37 CFR 3.73(c)

3. From: George Imanidis and Guy DiPierro To: Chrono Therapeutics Inc.

The document was recorded in the United States Patent and Trademark Office at
Reel 017178, Frame 0266, or for which a copy thereof is attached.

4. From: University of Basel and the University of Applied Science Northwestern Switzerland AKA FHSO and Fachhochschule Solothurn To: Chrono Therapeutics Inc.

The document was recorded in the United States Patent and Trademark Office at
Reel 029719, Frame 0761, or for which a copy thereof is attached.

5. From: _____ To: _____

The document was recorded in the United States Patent and Trademark Office at
Reel _____, Frame _____, or for which a copy thereof is attached.

6. From: _____ To: _____

The document was recorded in the United States Patent and Trademark Office at
Reel _____, Frame _____, or for which a copy thereof is attached.

☐ Additional documents in the chain of title are listed on a supplemental sheet(s).

☑ As required by 37 CFR 3.73(c)(1)(i), the documentary evidence of the chain of title from the original owner to the assignee was, or concurrently is being, submitted for recordation pursuant to 37 CFR 3.11.

[NOTE: A separate copy (i.e., a true copy of the original assignment document(s)) must be submitted to Assignment Division in accordance with 37 CFR Part 3, to record the assignment in the records of the USPTO. See MPEP 302.08]

The undersigned (whose title is supplied below) is authorized to act on behalf of the assignee.

Guy DiPierro — Signature

APRIL 6, 2016 — Date

Guy DiPierro — Printed or Typed Name

Chief Strategy Officer — Title or Registration Number

Electronic Acknowledgement Receipt

EFS ID:	25631197
Application Number:	10711389
International Application Number:	
Confirmation Number:	5388
Title of Invention:	TRANSDERMAL DRUG DELIVERY METHOD AND SYSTEM
First Named Inventor/Applicant Name:	Werner Zumbrunn
Customer Number:	22428
Filer:	David K. Buckingham/Mary Buggie
Filer Authorized By:	David K. Buckingham
Attorney Docket Number:	095473-0106
Receipt Date:	28-APR-2016
Filing Date:	15-SEP-2004
Time Stamp:	21:14:34
Application Type:	Utility under 35 USC 111(a)

Payment information:

Submitted with Payment	no

File Listing:

Document Number	Document Description	File Name	File Size(Bytes)/ Message Digest	Multi Part /.zip	Pages (if appl.)
1		13164-700-US0_PoA_373c.pdf	239311 ca6ad9a2cfdcc00745d67bfae9f99bf6b73911f5	yes	4

	Multipart Description/PDF files in .zip description		
	Document Description	**Start**	**End**
	Miscellaneous Incoming Letter	1	1
	Power of Attorney	2	2
	Assignee showing of ownership per 37 CFR 3.73	3	4
Warnings:			
Information:			
	Total Files Size (in bytes):	239311	

This Acknowledgement Receipt evidences receipt on the noted date by the USPTO of the indicated documents, characterized by the applicant, and including page counts, where applicable. It serves as evidence of receipt similar to a Post Card, as described in MPEP 503.

New Applications Under 35 U.S.C. 111

If a new application is being filed and the application includes the necessary components for a filing date (see 37 CFR 1.53(b)-(d) and MPEP 506), a Filing Receipt (37 CFR 1.54) will be issued in due course and the date shown on this Acknowledgement Receipt will establish the filing date of the application.

National Stage of an International Application under 35 U.S.C. 371

If a timely submission to enter the national stage of an international application is compliant with the conditions of 35 U.S.C. 371 and other applicable requirements a Form PCT/DO/EO/903 indicating acceptance of the application as a national stage submission under 35 U.S.C. 371 will be issued in addition to the Filing Receipt, in due course.

New International Application Filed with the USPTO as a Receiving Office

If a new international application is being filed and the international application includes the necessary components for an international filing date (see PCT Article 11 and MPEP 1810), a Notification of the International Application Number and of the International Filing Date (Form PCT/RO/105) will be issued in due course, subject to prescriptions concerning national security, and the date shown on this Acknowledgement Receipt will establish the international filing date of the application.

CERTIFICATE OF TRANSMISSION UNDER 37 CFR 1.8
I hereby certify that this correspondence is being transmitted to the USPTO via EFS-Web on April 28, 2016.
/Mary Buggie/ 4/28/2016
Mary Buggie Date

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Patent No.	:	8,440,221	Issue Date	:	May 14, 2013
Appl. No.	:	10/711,389	Confirmation No.	:	5388
First Named Inventor	:	Werner Zumbrunn			
Filing Date	:	September 15, 2004			
Art Unit	:	1615			
Examiner	:	Mercier, Melissa S.			
Title	:	TRANSDERMAL DRUG DELIVERY METHOD AND SYSTEM			
Customer No.	:	66854			

TRANSMITTAL

Transmitted herewith are the following documents in the above-identified application:

(1) Power of Attorney; and
(2) Statement Under 37 C.F.R. §3.73(c).

☒ Please deduct from or credit to said Deposit Account any fees attendant with this matter.

Respectfully submitted,

Date: April 28, 2016

David K. Buckingham
Reg. No. 60,695

SHAY GLENN LLP
2755 CAMPUS DRIVE, SUITE 210
SAN MATEO, CA 94403
TELEPHONE: 650.212.1700
FACSIMILE: 650.212.7562

SG Docket No.: 13164-700.US0

CERTIFICATE OF TRANSMISSION UNDER 37 CFR 1.8
I hereby certify that this correspondence is being transmitted to the USPTO via EFS-Web on November 10, 2014.

/Jennifer Capizzi/ November 10, 2014
Jennifer Capizzi Date

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Patent No.:	: 8,440,221 B2	Issue Date	: May 14, 2013
Appl. No.	: 10/711,389	Filing Date	: September 15, 2004
Conf. No.	: 5388		
First Named Inventor	: Werner ZUMBRUNN		
Art Unit	: 1615		
Examiner	: Mercier, Melissa S.		
Title:	: TRANSDERMAL DRUG DELIVERY METHOD AND SYSTEM		
Customer No.	: 66854		

REQUEST FOR RECONSIDERATION OF PATENT TERM ADJUSTMENT UNDER 37 C.F.R. §1.705(d)

This is a Request for Reconsideration of Patent Term Adjustment (PTA) under 37 C.F.R. §1.705(d), including the requirements of 1.705(b)(1) and (b)(2). This communication is in response to the Redetermination of Patent Term Adjustment and Notice of Intent to Issue Certificate of Correction dated September 8, 2014. The due date to file this Request is November 10, 2014 as the two month due date, November 8, 2014, fell on a Saturday. Therefore, this Request is timely filed.

The Statement of Facts is set forth below.

Fee §1.705(b)(1)

The fee for filing an application for patent term adjustment under 37 C.F.R. §1.18(e) of $200 was paid via EFS on June 20, 2013. Per the Notice mailed on September 8, 2014, a "new/renewed request for reconsideration may be filed without any additional fee" if filed by November 8, 2014. This request is timely filed, thus, no fees are required. Please deduct any

required fees for this filing from Deposit Account No. 50-4050 and credit any overpayments to Deposit Account 50-4050.

STATEMENT OF FACTS §1.705(b)(1)

Correct Patent Term Adjustment §1.705(b)(2)(i)

The Redetermination of Patent Term Adjustment mailed on September 8, 2014 listed the PTA as 1309 days. Applicants believe the correct total PTA is 1313 days. It is respectfully requested that the PTA of this patent be recalculated for the reasons set forth below.

Adjustment under §1.705(b)(2)(i) under the grounds of 37 C.F.R. §1.702

The USPTO failed to take action under §1.702(b) by failing to:

1. Mail a first Office Action within 14 months of the filing date;
2. Respond to a reply not later than 4 months after the date on which the reply was filed; and
3. Issue a patent within three years of the actual filing date of the application.

Relevant Dates Under 37 C.F.R. §1.705(b)(2)(ii)

1. The application was filed on September 15, 2004. The first Office Action (Restriction Requirement) was mailed on June 11, 2008, more than 14 months from the filing date. The USPTO correctly adjusted the patent term by 939 days.

2. A response to the Restriction Requirement was filed on November 26, 2008. The next action was mailed on July 1, 2009, more than 4 months from the prior response. The USPTO correctly adjusted the patent term by 97 days.

3. The application was filed September 15, 2004. The three year pendency date was September 15, 2007. The USPTO incorrectly adjusted the patent term by 1178 days in the Decision dated September 8, 2014. The correct PTA should be 1179.

Terminal Disclaimer §1.705(b)(2)(iii)

No terminal disclaimers have been filed.

Circumstances Under 37 C.F.R. §1.704 - §1.705(b)(2)(iv)

Below is a listing of circumstances during the prosecution of the application that resulted in the patent that constituted a failure to engage in reasonable efforts to conclude processing or examination of such application:

1. September 15, 2004 - Application was filed.
2. November 9, 2004 - Notice to File Missing Parts was mailed.
3. May 9, 2005 - Response to Notice to File Missing Parts was filed. The USPTO correctly applied an 89 day Applicant Delay reduction.
4. June 11, 2008 - Restriction Requirement was mailed.
5. November 26, 2008 - Response to Restriction Requirement was filed. The USPTO correctly applied a 117 day Applicant Delay reduction.
6. July 1, 2009 - Non-Final Office Action was mailed.
7. October 7, 2009 - Response to Non-Final Office Action was filed. The USPTO correctly applied a 6 day Applicant Delay reduction.
8. October 27, 2009 - Information Disclosure Statement (IDS) was filed. The USPTO incorrectly applied a 19 day Applicant Delay reduction. The correct Applicant Delay reduction should be a 20 day Applicant Delay reduction. Applicants note the USPTO incorrectly logged the IDS as being filed on October 26, 2009.
9. February 1, 2010 - Final Office Action was mailed.
10. July 1, 2010 - Request for Continued Examination was filed. The USPTO incorrectly applied a 61 day Applicant Delay reduction. The correct Applicant Delay reduction should be 59 days under ArQule v. Kappos
11. September 9, 2010 - Non-Final Office Action was mailed.
12. March 4, 2011 - Response to Non-Final Office Action was filed. The USPTO correctly applied an 85 day Applicant Delay reduction.
13. May 10, 2011 - Final Office Action was mailed.
14. November 9, 2011 - Notice of Appeal was filed. The USPTO correctly applied a 91 day Applicant Delay reduction.
15. June 15, 2012 - Non-Final Office Action was mailed.

16. September 27, 2012 - Response to Non-Final Office Action was filed. The USPTO incorrectly applied a 12 day Applicant Delay reduction. The correct Applicant Delay reduction should be 10 days under ArQule v. Kappos.
17. December 6, 2012 - Notice of Allowance was mailed.
17. February 11, 2013 - Claim for Convention Priority was filed for which the USPTO responded to on February 20, 2013. The USPTO correctly applied a 10 day Applicant Delay reduction.
18. March 3, 2013 - Information Disclosure Statement was filed for which the USPTO acknowledged on April 19, 2013. The USPTO correctly adjusted the Applicant Delay reduction by 48 days.

Applicants believe that the USPTO has erred in the amount of Applicant Delays for the following reasons:

1. After the Redetermination of Patent Term Adjustment and Notice of Intent to Issue Certificate of Correction dated September 8, 2014, the USPTO adjusted the B Delay by 1178 days. This should be 1179 as the calculation should start on the day of the Notice of Allowance. The USPTO prematurely adjusted its algorithm. The final rules on *Novartis AG v. Lee* have not yet been issued by the USPTO. Result: +1 day of PTA.
2. October 27, 2009: This should be a 20 day Applicant Delay reduction, not a 19 day Applicant Delay reduction. The USPTO incorrectly logged the IDS as being filed on October 26, 2009. Result: -1 day of PTA.
3. July 1, 2010: Under ArQule, the 61 day delay should be 59 day delay. The original due date was on a Saturday, so it can be filed on the following Monday. PTA should be calculated from the Monday, not the Saturday. Result: + 2 days of PTA.
4. July 27, 2012: Under ArQule, the 12 day delay should be a 10 day delay for the same reason as above. Result: + 2 days of PTA.

Therefore, Applicants believe to be entitled to + 1313 days of PTA and not + 1309 days as indicated on the Decision mailed September 8, 2014.

In light of the remarks set forth above, Applicants respectfully request a recalculation of the Patent Term Adjustment.

Respectfully submitted,

Dated: November 10, 2014

Linda K. Gont

Linda K. Gont, Reg. No. 67,715

SHAY GLENN LLP
2755 CAMPUS DRIVE, SUITE 210
SAN MATEO, CA 94403
TELEPHONE: 650.212.1700
FACSIMILE: 650.212.7562

Electronic Acknowledgement Receipt

EFS ID:	20658028
Application Number:	10711389
International Application Number:	
Confirmation Number:	5388
Title of Invention:	TRANSDERMAL DRUG DELIVERY METHOD AND SYSTEM
First Named Inventor/Applicant Name:	Werner Zumbrunn
Customer Number:	22428
Filer:	Linda Gont/Jennifer Capizzi
Filer Authorized By:	Linda Gont
Attorney Docket Number:	095473-0106
Receipt Date:	10-NOV-2014
Filing Date:	15-SEP-2004
Time Stamp:	19:47:20
Application Type:	Utility under 35 USC 111(a)

Payment information:

Submitted with Payment	no

File Listing:

Document Number	Document Description	File Name	File Size(Bytes)/ Message Digest	Multi Part /.zip	Pages (if appl.)
1	Patent Term Adjustment Petition	13164-700-US0_RqstReconPTA_11-10-14.pdf	197542 398a4bf4dbb6f947d81edc3fe2c8125c81a19be5	no	5
Warnings:					
Information:					

Total Files Size (in bytes):	197542

This Acknowledgement Receipt evidences receipt on the noted date by the USPTO of the indicated documents, characterized by the applicant, and including page counts, where applicable. It serves as evidence of receipt similar to a Post Card, as described in MPEP 503.

New Applications Under 35 U.S.C. 111

If a new application is being filed and the application includes the necessary components for a filing date (see 37 CFR 1.53(b)-(d) and MPEP 506), a Filing Receipt (37 CFR 1.54) will be issued in due course and the date shown on this Acknowledgement Receipt will establish the filing date of the application.

National Stage of an International Application under 35 U.S.C. 371

If a timely submission to enter the national stage of an international application is compliant with the conditions of 35 U.S.C. 371 and other applicable requirements a Form PCT/DO/EO/903 indicating acceptance of the application as a national stage submission under 35 U.S.C. 371 will be issued in addition to the Filing Receipt, in due course.

New International Application Filed with the USPTO as a Receiving Office

If a new international application is being filed and the international application includes the necessary components for an international filing date (see PCT Article 11 and MPEP 1810), a Notification of the International Application Number and of the International Filing Date (Form PCT/RO/105) will be issued in due course, subject to prescriptions concerning national security, and the date shown on this Acknowledgement Receipt will establish the international filing date of the application.

UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/711,389	09/15/2004	Werner Zumbrunn	095473-0106	5388

22428 7590 09/08/2014

FOLEY AND LARDNER LLP
SUITE 500
3000 K STREET NW
WASHINGTON, DC 20007

EXAMINER	
MERCIER, MELISSA S	
ART UNIT	PAPER NUMBER
1615	

MAIL DATE	DELIVERY MODE
09/08/2014	PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

UNITED STATES PATENT AND TRADEMARK OFFICE

Commissioner for Patents
United States Patent and Trademark Office
P.O. Box 1450
Alexandria, VA 22313-1450
www.uspto.gov

In re Patent No. 8,440,221
Issue Date: May 14, 2013
Application No. 10/711,389
Filed: September 15, 2004
Attorney Docket No. 095473-0106

REDETERMINATION
OF PATENT TERM ADJUSTMENT
AND
NOTICE OF INTENT TO ISSUE
CERTIFICATE OF CORRECTION

This is a response to applicants "REQUEST FOR RECONSIDERATION OF PATENT TERM ADJUSTMENT FOR ISSUED PATENT UNDER EXELIXIS" filed June 20, 2013 requesting that the Office adjust the PTA from 1075 days to 2171 days. The Office has re-determined the PTA to be 1309 days.

This redetermination of patent term adjustment is not the Director's decision on the applicant's request for reconsideration within the meaning of 35 U.S.C. 154(b)(4) that triggers a 180-day period for applicant disagreeing with the Office redetermination to commence a civil action in the District Court for the Eastern District of Virginia.

The Office acknowledges submission of the $200.00 fee set forth in 37 CFR 1.18(e). No additional fees are required. The fee set forth in 37 CFR 1.18(e) is a requirement and will not be refunded.

Relevant Procedural History

On May 14, 2013, this patent issued with a patent term adjustment determination of 1075 days. On June 20, 2013, patentee timely filed an "REQUEST FOR RECONSIDERATION OF PATENT TERM ADJUSTMENT FOR ISSUED PATENT UNDER EXELIXIS" seeking an adjustment of the determination patent term adjustment. Patentee requests reconsideration of the patent term adjustment in light of the decision in *Exelixis v. Kappos,* Case No. 1:12-CV-00096 (Eastern Dist. Of Virginia, Nov. 1, 2012). Applicant's calculation also includes 28 days of applicant delay and disputes 75 days of applicant delay pursuant to 37 CFR 1.704(c)(10).

Patentee argues "In the present case, the first RCE was filed more than three years after the application's filing date. Thus, the Patent Office's PTA determination that did not award PTA for the time period after the first RCE was filed is contrary to law under the court's Exelixis decision. Applicants also point out that an Information Disclosure Statement filed on December 18, 2012, under 37 C.F.R. § 1.704(d) should not have received a deduction of 75 days of PTA. This IDS was filed in compliance of 37 C.F.R. § 1.704(d) and the statement is listed in the IDS. Patentee has recalculated PTA for the captioned patent under the court's interpretation of the PTA statute, and has determined

that the patent is entitled to 2171 days PTA. The attached sheet details the relevant dates and time periods for PTA under 37 CFR § 1.702 and § 1.703 and the relevant dates and time periods for deductions under 37 CFR § 1.704. The correct PTA is determined as follows: Total of non-overlapping PTO delay under § 154(b)(1)(A), (B) & (C): 2737 days Total Applicant delay under § 154(b)(2)(C): 566 days Final PTA Determination: 2171 days."

Upon review, the USPTO finds that patentee is entitled to 1309 days of PTA. The Office has revisited the amount of "B" delay under 35 U.S.C. § 154(b)(1)(B) and the amount of overlapping days under 35 U.S.C. § 154(b)(2)(A) pursuant to the Federal Circuit's decision in *Novartis AG v. Lee*, 740 F.3d 593 (Fed. Cir. 2014).

The Office notes that the interpretation of the "B" delay was based upon rule 37 CFR 1.703(b)(1) which excluded from the amount of "B" delay the period beginning on the date of filing of the continued examination and ending on the date of the issuance of the patent. However, subsequent to the filing of this lawsuit and remand to the Office, the Federal Circuit reviewed the statutory interpretation of 35 U.S.C. § 154(b)(1)(B)(i) and issued a decision regarding the effects of a Request for Continued Examination ("RCE") on "B" delay in the *Novartis* appeal. In *Novartis*, the Federal Circuit agreed with the Office that "no ["B" delay] adjustment time is available for any time in continued examination, even if the continued examination was initiated more than three calendar years after the application's filing." *Novartis*, 740 F.3d at 601. However, the *Novartis* court found that if the Office issues a notice of allowance after an RCE is filed, the period after the notice of allowance should not be excluded from the "B" delay period but should be counted as "B" delay. *Id.* at 602. The Federal Circuit issued its mandate in the *Novartis* appeal on March 10, 2014.

Pursuant to the *Novartis* decision, the USPTO has determined that the patentee is entitled to 1178 days of "B" delay. In this case, the application was filed September 15, 2004, and the patent issued on May 14, 2013; thus, the application was pending for 3164 days. During this time, the applicant filed a first RCE on July 1, 2010. Under 35 U.S.C. § 154(b)(1)(B)(i), the time period consumed by continued examination ("RCE period") was from July 1, 2010 until the notice of allowance was issued on December 6, 2012 – i.e., 890 days. Subtracting the sum of the RCE period from the total number of days the application was pending results in 3164 – 890 = 2274 days. Thus, for purposes of "B" delay, the application was pending for 2274 – 1096 [i.e., 3 years from the actual filing date] = 1178 days beyond the 3-year anniversary of the filing date.

There is no additional overlap between A and B delay given the additional B delay accorded by this redetermination. The overlap remains 367 days (i.e., March 26, 2009 – July 1, 2009 and from September 15, 2007 – June 11, 2008).

APPLICANT DELAY

Applicant disputes the reduction of seventy-five (75) days attributed to patentee for the submission of an IDS filed December 18, 2012 after the Notice of Allowance was mailed on December 6, 2012.

The reduction of seventy-five (75) days pursuant to 37 C.F.R. § 1.704(c)(10) is at issue.

The reduction of 75 days has been found to be incorrect. A review of the application file supports a conclusion that there should not be a reduction for the filing of the Information Disclosure Statement (IDS) on December 18, 2012 as the IDS was filed with a 37 § CFR 1.704(d) certification. Given the filing of the IDS on December 18, 2012, after the mailing of the Notice of Allowance, although with a proper 37 § CFR 1.704(d) certification, the reduction in the amount of 75 days for applicant delay is being removed.

Applicant's calculation also includes a 28 day delay but applicant has not provided a basis or an argument for why they believe that there was a failure to engage in reasonable efforts to conclude processing or examination of such application as set forth in 37 C.F.R. § 1.704.

In view thereof, the total Applicant Delay for this patent should be calculated as 538 days (89+117+6+19+61+85+91+12+10+48 days).

Overall PTA Calculation

Formula:

"A" delay + "B" delay + "C" delay - Overlap - applicant delay = X

USPTO's Calculation:

1036 + 1178 + 0 – 367 – 538 = 1309

Patentee's Calculation

1036 + 2068 + 0 – 367 – 566 = 2171

Conclusion

Patentee is entitled to PTA of one thousand three hundred nine days (1309) days. Using the formula "A" delay + "B" delay + "C" delay - overlap - applicant delay = X, the amount of PTA is calculated as *1036 + 1178 + 0 – 367 – 538 = 1309* days.

Patentee has **two (2) months** from the date of the Office's redetermination of patent term adjustment to request reconsideration of the patent term adjustment if patentee continues to disagree with this determination (no petition fee). This two month period is extendible under 37 CFR 1.136(a). The new/renewed request for reconsideration may be filed without any additional fee. However, patentee who responds more than two months after the mail date of the redetermination is required to pay the extension of time fee. After the period of time to respond has expired, the Office will *sua sponte* issue a certificate of correction adjusting the PTA to one thousand three hundred nine days (1309) days.

Telephone inquiries specific to this decision should be directed to the undersigned Attorney at (571) 272-3212.

/Patricia Faison-Ball/

Patricia Faison-Ball
ATTORNEY ADVISOR
Office of Petitions

Enclosures: Copy of DRAFT Certificate of Correction
Adjusted PTA calculation

Office of Petitions: Routing Sheet

Application No. 10/711,389

This application is being forwarded to your office for further processing. A decision has been rendered on a petition filed in this application.

- [ ] **GRANTED**
- [X] **DISMISSED**
- [ ] **DENIED**

DRAFT COPY

UNITED STATES PATENT AND TRADEMARK OFFICE

CERTIFICATE OF CORRECTION

PATENT : 8,440,221 B2

DATED : May 14, 2013

INVENTOR(S) : Werner Zumbrunn

It is certified that error appears in the above-identified patent and that said Letters Patent is hereby corrected as shown below:

On the cover page,

[*] Notice: Subject to any disclaimer, the term of this patent is extended or adjusted under 35 USC 154(b) by (1075) days

Delete the phrase "by 1075 days" and insert – by 1309 days--

Office of Petitions: Decision Count Sheet

Mailing Month

Application No. 10711389

10711389

For US serial numbers: enter number only, no slashes or commas. Ex: 10123456
For PCT: enter "51+single digit of year of filing+last 5 numbers", Ex. for PCT/US05/12345, enter 51512345

Deciding Official: FAISON-BALL, PATRICIA

Count (1) - Palm Credit 10/711,389

Decision: DISMISSED

FINANCE WORK NEEDED
☐ Select Check Box for YES

DISMISSED

Decision Type: 551 - 37 CFR 1.705(d) - PATENT TERM ADJUSTMENT AF

551

Notes:

Count (2)

Decision: n/a

FINANCE WORK NEEDED
☐ Select Check Box for YES

Decision Type: NONE

Notes:

Count (3)

Decision: n/a

FINANCE WORK NEEDED
☐ Select Check Box for YES

Decision Type: NONE

Notes:

Initials of Approving Official (if required)

If more than 3 decisions, attach 2nd count sheet & mark this box

Printed on: *9/5/2014*

Patent Term Adjustments

Patent Term Adjustment (PTA) for Application Number: 10/711,389

Filing or 371(c) Date:	09-15-2004	Overlapping Days Between { A and B} or { A and C} :	367
Issue Date of Patent:	05-14-2013	Non-Overlapping USPTO Delays:	1688
A Delays:	1036	PTO Manual Adjustments:	234
B Delays:	1019	Applicant Delays:	613
C Delays:	0	Total PTA Adjustments:	1309

Patent Term Adjustment History Explanation Of Calculations

Number	Date	Contents Description	PTO(Days)	APPL(Days)	Start
169	09-05-2014	Adjustment of PTA Calculation by PTO	75		0
169	09-05-2014	Adjustment of PTA Calculation by PTO	75		0
168	09-05-2014	Adjustment of PTA Calculation by PTO	1178		0
168	09-05-2014	Adjustment of PTA Calculation by PTO	1178		0
167	09-05-2014	Adjustment of PTA Calculation by PTO		1019	0
167	09-05-2014	Adjustment of PTA Calculation by PTO		1019	0
162.5	06-30-2010	PTA 36 Months	1019		0.5
162	05-14-2013	Patent Issue Date Used in PTA Calculation			0
161	04-19-2013	Dispatch to FDC			0
160	04-19-2013	Mail Miscellaneous Communication to Applicant			0
159	04-18-2013	Office Action Review			0
158	03-11-2013	Office Action Review			0
157	03-07-2013	Application Is Considered Ready for Issue			0
156	03-07-2013	Miscellaneous Communication to Applicant - No Action Count			0
155	03-03-2013	Information Disclosure Statement considered			0
154	03-05-2013	Pubs Case Remand to TC			0
153	03-04-2013	Issue Fee Payment Verified			0
152	03-04-2013	Issue Fee Payment Received			0
151	03-03-2013	Information Disclosure Statement (IDS) Filed		48	160
149	03-03-2013	Information Disclosure Statement (IDS) Filed			0
148	02-20-2013	Mail Acknowledgement of Priority Papers-Pub			0
	02-20-				

147	2013	Acknowledgement of Priority Papers-Pub		0
146	02-11-2013	Request for Foreign Priority (Priority Papers May Be Included)	10	148
145	01-29-2013	Finished Initial Data Capture		0
144	01-04-2013	Mailing Corrected Notice of Allowability		0
143	01-02-2013	Office Action Review		0
142	01-02-2013	Corrected Notice of Allowability		0
141	12-20-2012	Printer Rush- No mailing		0
140	12-20-2012	Printer Rush- No mailing		0
139	12-18-2012	Information Disclosure Statement considered		0
138	12-19-2012	Pubs Case Remand to TC		0
137	12-19-2012	Reference capture on IDS		0
136	12-18-2012	Information Disclosure Statement (IDS) Filed	75	160
135	12-18-2012	Information Disclosure Statement (IDS) Filed		0
134	12-11-2012	Export to Initial Data Capture		0
133	12-06-2012	Mail Notice of Allowance		0
132	12-06-2012	Office Action Review		0
131	12-06-2012	Office Action Review		0
130	12-06-2012	Issue Revision Completed		0
127	12-03-2012	Office Action Review		0
126	12-03-2012	Office Action Review		0
125	12-03-2012	Allowed Case Returned to the Examiner for Clerical Processing		0
124	12-03-2012	Notice of Allowance Data Verification Completed		0
123	12-03-2012	Document Verification		0
122	12-03-2012	Examiner's Amendment Communication		0
121	12-03-2012	Allowability Notice		0
119	09-27-2012	Information Disclosure Statement considered		0
118	09-27-2012	Information Disclosure Statement (IDS) Filed	0	116
117	09-28-2012	Date Forwarded to Examiner		0

116	09-27-2012	Response after Non-Final Action	12	113
115	09-27-2012	Request for Extension of Time - Granted		0
114	09-27-2012	Information Disclosure Statement (IDS) Filed		0
113	06-15-2012	Mail Non-Final Rejection		0
112	06-14-2012	Office Action Review		0
111	06-10-2012	Non-Final Rejection		0
110	03-08-2012	Information Disclosure Statement considered		0
109	03-08-2012	Reference capture on IDS		0
108	03-08-2012	Information Disclosure Statement (IDS) Filed	0	105
107	03-12-2012	Date Forwarded to Examiner		0
106	03-08-2012	Amendment Submitted/Entered with Filing of CPA/RCE		0
105	03-08-2012	Request for Continued Examination (RCE)		96
104	03-12-2012	Disposal for a RCE / CPA / R129		0
103	03-08-2012	Information Disclosure Statement (IDS) Filed		0
102	03-08-2012	Workflow - Request for RCE - Begin		0
101	01-03-2012	Mail Advisory Action (PTOL - 303)		0
100	12-30-2011	Office Action Review		0
99	12-30-2011	Advisory Action (PTOL-303)		0
98	12-21-2011	Date Forwarded to Examiner		0
97	11-09-2011	Amendment/Argument after Notice of Appeal		0
96	11-09-2011	Notice of Appeal Filed	91	86
95	11-09-2011	Request for Extension of Time - Granted		0
94	11-17-2011	Mail-Petition Decision - Dismissed		0
93	11-16-2011	Petition Decision - Dismissed		0
92	11-09-2011	Petition Entered		0
91	11-08-2011	Mail Examiner Interview Summary (PTOL - 413)		0
90	11-07-2011	Office Action Review		0
89	11-07-2011	Office Action Review		0

88	11-01-2011	Interview Summary- Applicant Initiated		0
87	11-01-2011	Examiner Interview Summary Record (PTOL - 413)		0
86	05-10-2011	Mail Final Rejection (PTOL - 326)		0
85	05-09-2011	Office Action Review		0
84	05-07-2011	Final Rejection		0
83	03-07-2011	Date Forwarded to Examiner		0
82	03-04-2011	Response after Non-Final Action	85	80
81	03-04-2011	Request for Extension of Time - Granted		0
80	09-09-2010	Mail Non-Final Rejection		0
79	09-09-2010	Non-Final Rejection		0
78	07-01-2010	Information Disclosure Statement considered		0
77	07-01-2010	Reference capture on IDS		0
76	07-01-2010	Information Disclosure Statement (IDS) Filed	0	73
75	07-14-2010	Date Forwarded to Examiner		0
74	07-01-2010	RCE- AF Processed		0
73	07-01-2010	Request for Continued Examination (RCE)	61	63
72	07-14-2010	Disposal for a RCE / CPA / R129		0
71	07-01-2010	Request for Extension of Time - Granted		0
70	07-01-2010	Information Disclosure Statement (IDS) Filed		0
69	07-01-2010	Workflow - Request for RCE - Begin		0
68	05-27-2010	Mail Advisory Action (PTOL - 303)		0
67	05-26-2010	Advisory Action (PTOL-303)		0
66	05-21-2010	Date Forwarded to Examiner		0
65	05-20-2010	Response after Final Action		0
64	05-20-2010	Request for Extension of Time - Granted		0
63	02-01-2010	Mail Final Rejection (PTOL - 326)		0
62	01-29-2010	Final Rejection		0
61	10-26-	Reference capture on IDS		0

	2009				
60	10-26-2009	Information Disclosure Statement (IDS) Filed		19	56
59	10-27-2009	Information Disclosure Statement considered			0
58	12-01-2009	Change in Power of Attorney (May Include Associate POA)			0
57	11-19-2009	Date Forwarded to Examiner			0
56	10-07-2009	Response after Non-Final Action		6	50
55	10-07-2009	Request for Extension of Time - Granted			0
54	11-19-2009	Correspondence Address Change			0
53	10-27-2009	Information Disclosure Statement (IDS) Filed			0
52	07-01-2009	Electronic Review			0
51	07-01-2009	Email Notification			0
50	07-01-2009	Mail Non-Final Rejection	97		43
49	06-29-2009	Non-Final Rejection			0
48	08-17-2007	Information Disclosure Statement considered			0
47	01-23-2007	Information Disclosure Statement considered			0
44	12-01-2008	Date Forwarded to Examiner			0
43	11-26-2008	Response to Election / Restriction Filed		117	40
42	10-30-2008	Mail Notice of Informal or Non-Responsive Amendment			0
41	08-28-2008	Date Forwarded to Examiner			0
40.1	08-01-2008	Informal or Non-Responsive Amendment after Examiner Action			0
40	08-01-2008	Response to Election / Restriction Filed			0
39	08-01-2008	Request for Extension of Time - Granted			0
38	06-11-2008	Mail Restriction Requirement	939		0.5
37	06-09-2008	Restriction/Election Requirement			0
34	11-08-2007	Mail Non-Compliant Preliminary Amendment			0
33	11-08-2007	Non-Compliant Preliminary Amendment			0
32	10-24-2007	Oath or Declaration Filed (Including Supplemental)			0
31	10-24-2007	Affidavit(s) (Rule 131 or 132) or Exhibit(s) Received			0

30	10-24-2007	New or Additional Drawing Filed		0
29	10-24-2007	Preliminary Amendment		0
28	10-24-2007	Preliminary Amendment		0
27	08-17-2007	Electronic Information Disclosure Statement		0
26	08-17-2007	Information Disclosure Statement (IDS) Filed		0
25	01-23-2007	Reference capture on IDS		0
24.7	01-23-2007	Information Disclosure Statement (IDS) Filed		0
24	01-23-2007	Information Disclosure Statement (IDS) Filed		0
23	02-23-2007	Case Docketed to Examiner in GAU		0
22	05-02-2006	Case Docketed to Examiner in GAU		0
21	11-02-2005	IFW TSS Processing by Tech Center Complete		0
20	04-21-2005	Miscellaneous Incoming Letter		0
19	04-07-2005	Miscellaneous Incoming Letter		0
18	11-02-2005	Case Docketed to Examiner in GAU		0
17	07-19-2005	Application Return from OIPE		0
16	07-19-2005	Application Is Now Complete		0
15	07-19-2005	Application Return TO OIPE		0
14	07-19-2005	Application Return from OIPE		0
13	07-19-2005	Application Is Now Complete		0
12	07-19-2005	Application Return TO OIPE		0
11	07-19-2005	Application Dispatched from OIPE		0
10	07-19-2005	Application Is Now Complete		0
9	05-09-2005	Additional Application Filing Fees	89	7
8	05-09-2005	A statement by one or more inventors satisfying the requirement under 35 USC 115, Oath of the Applic		0
7	11-09-2004	Notice Mailed--Application Incomplete--Filing Date Assigned		0
5	10-27-2004	Cleared by L&R (LARS)		0
4	10-12-2004	Referred to Level 2 (LARS) by OIPE CSR		0
3	10-12-2004	CASE CLASSIFIED BY OIPE		0

2	09-16-2004	IFW Scan & PACR Auto Security Review	0
1	09-15-2004	Initial Exam Team nn	0
0.5	09-15-2004	Filing date	0

Close Window

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Applicant:	Zumbrunn et al.
Title:	TRANSDERMAL DRUG DELIVERY METHOD AND SYSTEM
Appl. No.:	10/711,389
International Filing Date:	9/13/2004
371(c) Date:	5/9/2005
Patent No.:	8,440,221
Grant Date:	5/14/2013
Examiner:	Mercier, Melissa S.
Art Unit:	1615
Confirmation Number:	5388

REQUEST FOR RECONSIDERATION OF PATENT TERM ADJUSTMENT FOR ISSUED PATENT UNDER *EXELIXIS*

Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

Commissioner:

The Patent Office determined that the patent was entitled to1075 days of PTA. Patentee believes that this PTA determination was made in accordance with 37 CFR § 1.703(b)(1). Under that interpretation of the PTA statute, PTA does not accrue under § 154(b)(1)(B) for the time period "beginning on the date on which a request for continued examination ... was filed and ending on the date the patent was issued." Thus, for the captioned patent, PTA was not awarded under § 154(b)(1)(B) for the time period beginning on July 1, 2010 and ending on May 14, 2013.

On November 1, 2012, the United States District Court for the Eastern District of Virginia issued a decision finding that the Patent Office's interpretation of the PTA statute is incorrect. Exelixis v. Kappos, No. 1:12cv96 (E. D. Va. Nov. 1, 2012). The court determined

that, under the correct interpretation of the PTA statute, "RCE's have no impact on PTA if filed after the three year deadline has passed, such that, [t]he proper measure of B delay ... is from ... three years after the application filing date ... to ... the date the patent issued." 2012 U.S. Dist. LEXIS 157762 at *26 (emphasis added).

In the present case, the first RCE was filed more than three years after the application's filing date. Thus, the Patent Office's PTA determination that did not award PTA for the time period after the first RCE was filed is contrary to law under the court's *Exelixis* decision.

Applicants also point out that an Information Disclosure Statement filed on December 18, 2012, under 37 C.F.R. § 1.704(d) should not have received a deduction of 75 days of PTA. This IDS was filed in compliance of 37 C.F.R. § 1.704(d) and the statement is listed in the IDS.

Patentee has recalculated PTA for the captioned patent under the court's interpretation of the PTA statute, and has determined that the patent is entitled to 2171 days PTA.

The attached sheet details the relevant dates and time periods for PTA under 37 CFR § 1.702 and § 1.703 and the relevant dates and time periods for deductions under 37 CFR § 1.704. The correct PTA is determined as follows:

Total of non-overlapping PTO delay under §154(b)(1)(A), (B) & (C):	2737 days
Total Applicant delay under §154(b)(2)(C):	566 days
Final PTA Determination:	2171 days

The patent is not subject to a terminal disclaimer.

Patentee therefore requests that the patent be accorded 2171 days PTA.

The requisite fee is submitted herewith.

Fees in the amount of $200.00 set forth in 37 C.F.R. § 1.18(e) to cover the fee for this request are being paid by credit card via EFS-Web.

The Commissioner is hereby authorized to charge any additional fees which may be required regarding this application under 37 C.F.R. § 1.705, or credit any overpayment, to Deposit Account No. 19-0741. Should no proper payment be enclosed herewith, as by the credit card payment instructions in EFS-Web being incorrect or absent, resulting in a rejected or incorrect credit card transaction, the Commissioner is authorized to charge the unpaid amount to Deposit Account No. 19-0741.

However, because this PTA error is due to a Patent Office error in interpreting and applying the PTA statute, a refund of the fee is respectfully requested.

Respectfully submitted,

Date: June 17, 2013

By _____

FOLEY & LARDNER LLP
Customer Number: 26371
Telephone: (202) 672-5538
Facsimile: (202) 672-5399

Michele M. Simkin
Attorney for Applicant
Registration No. 34,717

CLOSE WINDOW ALL CASES SELECT CASE

Patent Term Adjustment Calculation System

Add a new event to this case

Docket Number: 095473-0106
Application Number: 10/711389
Patent Number: N/A

	Event Description	Event Date	Days from Filing	PTO Days	Applicant Days
Edit Delete	Priority Date	10/27/2003	-324		
Edit Delete	Application Filing Date	09/15/2004	0		
Edit Delete	Notice to File Missing Parts	11/09/2004	55		
	Notice to File Missing Parts + 3 months	02/09/2005	147		
Edit Delete	Response to Notice to File Missing Parts	05/09/2005	236		89
	14 month From Application date	11/15/2005	426		
	Three Years From Filing	09/15/2007	1,095		
	3 Year Period Starts	09/15/2007	1,095		
Edit Delete	Restriction Requirement	06/11/2008	1,365	(939)	
Edit Delete	Restriction Requirement Response Received at PTO	08/01/2008	1,416		
	Restriction Requirement + 3 months	09/11/2008	1,457		
Edit Delete	Notice of Non-Compliance	10/30/2008	1,506		
Edit Delete	Restriction Requirement Response Received at PTO	11/26/2008	1,533		(117), (76) 117
	Restriction Requirement Response Filed + 4 months	03/26/2009	1,653		
Edit Delete	Non-Final Office Action	07/01/2009	1,750	(97)	
	Non-Final Office Action + 3 months	10/01/2009	1,842		
Edit Delete	Non-Final Office Action Rsp. Rcv'd at PTO	10/07/2009	1,848		6
Edit Delete	IDS Rcv'd at PTO - No Statement under 1.704(d)	10/26/2009	1,867		19
Edit Delete	Final Office Action	02/01/2010	1,965		
	Final Office Action + 3 months	05/01/2010	2,054		
Edit Delete	Final Office Action Response Received at PTO	05/20/2010	2,073		
Edit Delete	Advisory Action	05/27/2010	2,080		
Edit Delete	Request For Continued Examination (including amendment)	07/01/2010	2,115		61
Edit Delete	Non-Final Office Action	09/09/2010	2,185		
	Non-Final Office Action + 3 months	12/09/2010	2,276		
Edit Delete	Non-Final Office Action Rsp. Rcv'd at PTO	03/04/2011	2,361		85

Edit Delete	Final Office Action	05/10/2011	2,428		
	Final Office Action + 3 months	08/10/2011	2,520		
Edit Delete	Examiner Interview	11/08/2011	2,610		
Edit Delete	Notice of Appeal Received at PTO	11/09/2011	2,611		91
Edit Delete	Final Office Action Response Received at PTO	11/09/2011	2,611		0
Edit Delete	Advisory Action	01/03/2012	2,666		
	Notice of Appeal + 3 months	02/09/2012	2,703		
Edit Delete	Request For Continued Examination (including amendment)	03/08/2012	2,731		28
Edit Delete	Non-Final Office Action	06/15/2012	2,830		
	Non-Final Office Action + 3 months	09/15/2012	2,922		
Edit Delete	Non-Final Office Action Rsp. Rcv'd at PTO	09/27/2012	2,934		12
Edit Delete	Notice of Allowance	12/06/2012	3,004		
Edit Delete	Post-Allowance Document Received at PTO	02/11/2013	3,071		
Edit Delete	Post-Allowance Document Acknowledged by PTO	02/20/2013	3,080		10
Edit Delete	Post-Allowance Document Received at PTO	03/03/2013	3,091		
Edit Delete	Issue Fee Paid	03/04/2013	3,092		
Edit Delete	Post-Allowance Document Acknowledged by PTO	04/19/2013	3,138		48
Edit Delete	Patent Grant Date	05/14/2013	3,163	(2068) 2737	
			Totals:	2,737	566
			PTA:	2,171	

Created and maintained by

FOLEY

FOLEY & LARDNER LLP

Version: 3.02.13 LOGIN: Stella Walker IP: 10.99.206.36 Foley & Lardner LLP

Electronic Patent Application Fee Transmittal

Application Number:	10711389
Filing Date:	15-Sep-2004
Title of Invention:	TRANSDERMAL DRUG DELIVERY METHOD AND SYSTEM
First Named Inventor/Applicant Name:	Werner Zumbrunn
Filer:	Michelle M. Simkin
Attorney Docket Number:	095473-0106

Filed as Large Entity

Utility under 35 USC 111(a) Filing Fees

Description	Fee Code	Quantity	Amount	Sub-Total in USD($)
Basic Filing:				
Pages:				
Claims:				
Miscellaneous-Filing:				
Petition:				
Application for patent term adjustment	1455	1	200	200
Patent-Appeals-and-Interference:				
Post-Allowance-and-Post-Issuance:				
Extension-of-Time:				

Description	Fee Code	Quantity	Amount	Sub-Total in USD($)
Miscellaneous:				
			Total in USD ($)	**200**

Electronic Acknowledgement Receipt

EFS ID:	16102977
Application Number:	10711389
International Application Number:	
Confirmation Number:	5388
Title of Invention:	TRANSDERMAL DRUG DELIVERY METHOD AND SYSTEM
First Named Inventor/Applicant Name:	Werner Zumbrunn
Customer Number:	22428
Filer:	Michelle M. Simkin
Filer Authorized By:	
Attorney Docket Number:	095473-0106
Receipt Date:	20-JUN-2013
Filing Date:	15-SEP-2004
Time Stamp:	15:40:08
Application Type:	Utility under 35 USC 111(a)

Payment information:

Submitted with Payment	yes
Payment Type	Credit Card
Payment was successfully received in RAM	$200
RAM confirmation Number	2326
Deposit Account	
Authorized User	

File Listing:

Document Number	Document Description	File Name	File Size(Bytes)/ Message Digest	Multi Part /.zip	Pages (if appl.)

1	Patent Term Adjustment Petition	REQUEST_RECON_PTA.pdf	173688 69499c952d6f6b0ae1edfe381fed682c4cb848f7	no	5
Warnings:					
Information:					
2	Fee Worksheet (SB06)	fee-info.pdf	30502 283edda126a0fec60d27f708b08f3078d0ac8cb6	no	2
Warnings:					
Information:					
			Total Files Size (in bytes):	204190	

This Acknowledgement Receipt evidences receipt on the noted date by the USPTO of the indicated documents, characterized by the applicant, and including page counts, where applicable. It serves as evidence of receipt similar to a Post Card, as described in MPEP 503.

New Applications Under 35 U.S.C. 111
If a new application is being filed and the application includes the necessary components for a filing date (see 37 CFR 1.53(b)-(d) and MPEP 506), a Filing Receipt (37 CFR 1.54) will be issued in due course and the date shown on this Acknowledgement Receipt will establish the filing date of the application.

National Stage of an International Application under 35 U.S.C. 371
If a timely submission to enter the national stage of an international application is compliant with the conditions of 35 U.S.C. 371 and other applicable requirements a Form PCT/DO/EO/903 indicating acceptance of the application as a national stage submission under 35 U.S.C. 371 will be issued in addition to the Filing Receipt, in due course.

New International Application Filed with the USPTO as a Receiving Office
If a new international application is being filed and the international application includes the necessary components for an international filing date (see PCT Article 11 and MPEP 1810), a Notification of the International Application Number and of the International Filing Date (Form PCT/RO/105) will be issued in due course, subject to prescriptions concerning national security, and the date shown on this Acknowledgement Receipt will establish the international filing date of the application.

UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	ISSUE DATE	PATENT NO.	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/711,389	05/14/2013	8440221	095473-0106	5388

22428 7590 04/24/2013

FOLEY AND LARDNER LLP
SUITE 500
3000 K STREET NW
WASHINGTON, DC 20007

ISSUE NOTIFICATION

The projected patent number and issue date are specified above.

Determination of Patent Term Adjustment under 35 U.S.C. 154 (b)
(application filed on or after May 29, 2000)

The Patent Term Adjustment is 1075 day(s). Any patent to issue from the above-identified application will include an indication of the adjustment on the front page.

If a Continued Prosecution Application (CPA) was filed in the above-identified application, the filing date that determines Patent Term Adjustment is the filing date of the most recent CPA.

Applicant will be able to obtain more detailed information by accessing the Patent Application Information Retrieval (PAIR) WEB site (http://pair.uspto.gov).

Any questions regarding the Patent Term Extension or Adjustment determination should be directed to the Office of Patent Legal Administration at (571)-272-7702. Questions relating to issue and publication fee payments should be directed to the Application Assistance Unit (AAU) of the Office of Data Management (ODM) at (571)-272-4200.

APPLICANT(s) (Please see PAIR WEB site http://pair.uspto.gov for additional applicants):

Werner Zumbrunn, Muttenz, SWITZERLAND;
George Imanidis, Binningen, SWITZERLAND;
Hans Werner Van de Venn, Oenangen, SWITZERLAND;
Guy DiPierro, New York, NY;

UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/711,389	09/15/2004	Werner Zumbrunn	095473-0106	5388

22428 7590 04/19/2013

FOLEY AND LARDNER LLP
SUITE 500
3000 K STREET NW
WASHINGTON, DC 20007

EXAMINER	
MERCIER, MELISSA S	
ART UNIT	PAPER NUMBER
1615	

MAIL DATE	DELIVERY MODE
04/19/2013	PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

UNITED STATES DEPARTMENT OF COMMERCE
U.S. Patent and Trademark Office
Address : COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450

APPLICATION NO./ CONTROL NO.	FILING DATE	FIRST NAMED INVENTOR / PATENT IN REEXAMINATION	ATTORNEY DOCKET NO.
10/711,389	15 September, 2004	ZUMBRUNN ET AL.	095473-0106

FOLEY AND LARDNER LLP
SUITE 500
3000 K STREET NW
WASHINGTON, DC 20007

EXAMINER	
MELISSA MERCIER	
ART UNIT	PAPER
1615	20130307

DATE MAILED:

Please find below and/or attached an Office communication concerning this application or proceeding.

Commissioner for Patents

The information disclosure statement (IDS) submitted on March 4, 2013 was filed after the mailing date of the Notice of Allowance on January 4, 2013. The submission is in compliance with the provisions of 37 CFR 1.97. Accordingly, the information disclosure statement is being considered by the examiner.

/Melissa S Mercier/ Examiner, Art Unit 1615	/ANAND U DESAI/ Primary Examiner, Art Unit 1656

PTO/SB/08 (09-06)
Approved for use through 03/31/2007. OMB 0651-0031
U.S. Patent and Trademark Office: U.S. DEPARTMENT OF COMMERCE

Substitute for form 1449/PTO

INFORMATION DISCLOSURE STATEMENT BY APPLICANT

Date Submitted: March 1, 2013

(use as many sheets as necessary)

Sheet 1 of 1

Complete if Known	
Application Number	10/711,389
Filing Date	09/15/2004
First Named Inventor	Werner Zumbrunn
Art Unit	1615
Examiner Name	Melissa S. Mercier
Attorney Docket Number	095473-0106

U.S. PATENT DOCUMENTS

Examiner Initials*	Cite No.[1]	Document Number Number-Kind Code[2] (*if known*)	Publication Date MM-DD-YYYY	Name of Patentee or Applicant of Cited Document	Pages, Columns, Lines, Where Relevant Passages or Relevant Figures Appear

FOREIGN PATENT DOCUMENTS

Examiner Initials*	Cite No.[1]	Foreign Patent Document Country Code[3]-Number[4]-Kind Code[5] (*if known*)	Publication Date MM-DD-YYYY	Name of Patentee or Applicant of Cited Documents	Pages, Columns, Lines, Where Relevant Passages or Relevant Figures Appear	T[6]

NON PATENT LITERATURE DOCUMENTS

Examiner Initials*	Cite No.[1]	Include name of the author (in CAPITAL LETTERS), title of the article (when appropriate), title of the item (book, magazine, journal, serial, symposium, catalog, etc.) date, page(s), volume-issue number(s), publisher, city and/or country where published.	T[6]
	A1	Office Action cited in related U.S. Patent Application No. 12/835693, dated December 20, 2012.	

Examiner Signature	/Melissa Mercier/ (03/07/2013)	Date Considered	

*EXAMINER: Initial if reference considered, whether or not citation is in conformance with MPEP 609. Draw line through citation if not in conformance and not considered. Include copy of this form with next communication to applicant. 1 Applicant's unique citation designation number (optional). 2 See Kinds Codes of USPTO Patent Documents at www.uspto.gov or MPEP 901.04. 3 Enter Office that issued the document, by the two-letter code (WIPO Standard ST.3). 4 For Japanese patent documents, the indication of the year of the reign of the Emperor must precede the serial number of the patent document. 5 Kind of document by the appropriate symbols as indicated on the document under WIPO Standard ST.16 if possible. 6 Applicant is to place a check mark here if English language Translation is attached.

ALL REFERENCES CONSIDERED EXCEPT WHERE LINED THROUGH. /MM/

PART B - FEE(S) TRANSMITTAL

Complete and send this form, together with applicable fee(s), to: Mail **Mail Stop ISSUE FEE**
Commissioner for Patents
P.O. Box 1450
Alexandria, Virginia 22313-1450
or Fax (571)-273-2885

INSTRUCTIONS: This form should be used for transmitting the ISSUE FEE and PUBLICATION FEE (if required). Blocks 1 through 5 should be completed where appropriate. All further correspondence including the Patent, advance orders and notification of maintenance fees will be mailed to the current correspondence address as indicated unless corrected below or directed otherwise in Block 1, by (a) specifying a new correspondence address; and/or (b) indicating a separate "FEE ADDRESS" for maintenance fee notifications.

CURRENT CORRESPONDENCE ADDRESS (Note: Use Block 1 for any change of address)

22428 7590 12/06/2012
FOLEY AND LARDNER LLP
SUITE 500
3000 K STREET NW
WASHINGTON, DC 20007

Note: A certificate of mailing can only be used for domestic mailings of the Fee(s) Transmittal. This certificate cannot be used for any other accompanying papers. Each additional paper, such as an assignment or formal drawing, must have its own certificate of mailing or transmission.

Certificate of Mailing or Transmission
I hereby certify that this Fee(s) Transmittal is being deposited with the United States Postal Service with sufficient postage for first class mail in an envelope addressed to the Mail Stop ISSUE FEE address above, or being facsimile transmitted to the USPTO (571) 273-2885, on the date indicated below.

(Depositor's name)
(Signature)
(Date)

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/711,389	09/15/2004	Werner Zumbrunn	095473-0106	5388

TITLE OF INVENTION: TRANSDERMAL DRUG DELIVERY METHOD AND SYSTEM

APPLN. TYPE	SMALL ENTITY	ISSUE FEE DUE	PUBLICATION FEE DUE	PREV. PAID ISSUE FEE	TOTAL FEE(S) DUE	DATE DUE
nonprovisional	YES	$885	$300	$0	$1185	03/06/2013

EXAMINER	ART UNIT	CLASS-SUBCLASS
MERCIER, MELISSA S	1615	424-449000

1. Change of correspondence address or indication of "Fee Address" (37 CFR 1.363).
☐ Change of correspondence address (or Change of Correspondence Address form PTO/SB/122) attached.
☐ "Fee Address" indication (or "Fee Address" Indication form PTO/SB/47; Rev 03-02 or more recent) attached. **Use of a Customer Number is required.**

2. For printing on the patent front page, list
(1) the names of up to 3 registered patent attorneys or agents OR, alternatively,
(2) the name of a single firm (having as a member a registered attorney or agent) and the names of up to 2 registered patent attorneys or agents. If no name is listed, no name will be printed.
1 Foley & Lardner LLP
2
3

3. ASSIGNEE NAME AND RESIDENCE DATA TO BE PRINTED ON THE PATENT (print or type)

PLEASE NOTE: Unless an assignee is identified below, no assignee data will appear on the patent. If an assignee is identified below, the document has been filed for recordation as set forth in 37 CFR 3.11. Completion of this form is NOT a substitute for filing an assignment.

(A) NAME OF ASSIGNEE: Chrono Therapeutics, Inc.
(B) RESIDENCE: (CITY and STATE OR COUNTRY): Cambridge, MA

Please check the appropriate assignee category or categories (will not be printed on the patent) : ☐ Individual ☒ Corporation or other private group entity ☐ Government

4a. The following fee(s) are submitted:
☒ Issue Fee
☒ Publication Fee (No small entity discount permitted)
☐ Advance Order - # of Copies _____

4b. Payment of Fee(s): **(Please first reapply any previously paid issue fee shown above)**
☐ A check is enclosed.
☒ Payment by credit card. Form PTO-2038 is attached.
☒ The Director is hereby authorized to charge the required fee(s), any deficiency, or credit any overpayment, to Deposit Account Number 19-0741 (enclose an extra copy of this form).

5. **Change in Entity Status** (from status indicated above)
☐ a. Applicant claims SMALL ENTITY status. See 37 CFR 1.27.
☐ b. Applicant is no longer claiming SMALL ENTITY status. See 37 CFR 1.27(g)(2).

NOTE: The Issue Fee and Publication Fee (if required) will not be accepted from anyone other than the applicant; a registered attorney or agent; or the assignee or other party in interest as shown by the records of the United States Patent and Trademark Office.

Authorized Signature _____ Date March 4, 2013

Typed or printed name Michele M. Simkin Registration No. 34,717

This collection of information is required by 37 CFR 1.311. The information is required to obtain or retain a benefit by the public which is to file (and by the USPTO to process) an application. Confidentiality is governed by 35 U.S.C. 122 and 37 CFR 1.14. This collection is estimated to take 12 minutes to complete, including gathering, preparing, and submitting the completed application form to the USPTO. Time will vary depending upon the individual case. Any comments on the amount of time you require to complete this form and/or suggestions for reducing this burden, should be sent to the Chief Information Officer, U.S. Patent and Trademark Office, U.S. Department of Commerce, P.O. Box 1450, Alexandria, Virginia 22313-1450. DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS. SEND TO: Commissioner for Patents, P.O. Box 1450, Alexandria, Virginia 22313-1450.

Under the Paperwork Reduction Act of 1995, no persons are required to respond to a collection of information unless it displays a valid OMB control number.

Electronic Patent Application Fee Transmittal

Application Number:	10711389
Filing Date:	15-Sep-2004
Title of Invention:	TRANSDERMAL DRUG DELIVERY METHOD AND SYSTEM
First Named Inventor/Applicant Name:	Werner Zumbrunn
Filer:	Michelle M. Simkin
Attorney Docket Number:	095473-0106

Filed as Small Entity

Utility under 35 USC 111(a) Filing Fees

Description	Fee Code	Quantity	Amount	Sub-Total in USD($)
Basic Filing:				
Pages:				
Claims:				
Miscellaneous-Filing:				
Petition:				
Patent-Appeals-and-Interference:				
Post-Allowance-and-Post-Issuance:				
Utility Appl Issue Fee	2501	1	885	885
Publ. Fee- Early, Voluntary, or Normal	1504	1	300	300

Description	Fee Code	Quantity	Amount	Sub-Total in USD($)
Extension-of-Time:				
Miscellaneous:				
			Total in USD ($)	**1185**

Electronic Acknowledgement Receipt

EFS ID:	15111162
Application Number:	10711389
International Application Number:	
Confirmation Number:	5388
Title of Invention:	TRANSDERMAL DRUG DELIVERY METHOD AND SYSTEM
First Named Inventor/Applicant Name:	Werner Zumbrunn
Customer Number:	22428
Filer:	Michelle M. Simkin
Filer Authorized By:	
Attorney Docket Number:	095473-0106
Receipt Date:	04-MAR-2013
Filing Date:	15-SEP-2004
Time Stamp:	17:32:00
Application Type:	Utility under 35 USC 111(a)

Payment information:

Submitted with Payment	yes
Payment Type	Credit Card
Payment was successfully received in RAM	$1185
RAM confirmation Number	5801
Deposit Account	
Authorized User	

File Listing:

Document Number	Document Description	File Name	File Size(Bytes)/ Message Digest	Multi Part /.zip	Pages (if appl.)

1	Issue Fee Payment (PTO-85B)	ISSUE_FEE_TRANSMITTAL.pdf	135077 bad4291e5f2f7043421f033b9aec73d129b542a4	no	1
Warnings:					
Information:					
2	Fee Worksheet (SB06)	fee-info.pdf	31789 c7a5f5b5ef733b86cab213074037bc23b16a5aa7	no	2
Warnings:					
Information:					
			Total Files Size (in bytes):	166866	

This Acknowledgement Receipt evidences receipt on the noted date by the USPTO of the indicated documents, characterized by the applicant, and including page counts, where applicable. It serves as evidence of receipt similar to a Post Card, as described in MPEP 503.

New Applications Under 35 U.S.C. 111

If a new application is being filed and the application includes the necessary components for a filing date (see 37 CFR 1.53(b)-(d) and MPEP 506), a Filing Receipt (37 CFR 1.54) will be issued in due course and the date shown on this Acknowledgement Receipt will establish the filing date of the application.

National Stage of an International Application under 35 U.S.C. 371

If a timely submission to enter the national stage of an international application is compliant with the conditions of 35 U.S.C. 371 and other applicable requirements a Form PCT/DO/EO/903 indicating acceptance of the application as a national stage submission under 35 U.S.C. 371 will be issued in addition to the Filing Receipt, in due course.

New International Application Filed with the USPTO as a Receiving Office

If a new international application is being filed and the international application includes the necessary components for an international filing date (see PCT Article 11 and MPEP 1810), a Notification of the International Application Number and of the International Filing Date (Form PCT/RO/105) will be issued in due course, subject to prescriptions concerning national security, and the date shown on this Acknowledgement Receipt will establish the international filing date of the application.

PTO/SB/08 (09-06)
Approved for use through 03/31/2007. OMB 0651-0031
U.S. Patent and Trademark Office: U.S. DEPARTMENT OF COMMERCE

Under the Paperwork Reduction Act of 1995, no persons are required to respond to a collection of information unless it contains a valid OMB control number.

Substitute for form 1449/PTO				***Complete if Known***	
INFORMATION DISCLOSURE STATEMENT BY APPLICANT				**Application Number**	10/711,389
Date Submitted: March 1, 2013				**Filing Date**	09/15/2004
				First Named Inventor	Werner Zumbrunn
(use as many sheets as necessary)				Art Unit	1615
				Examiner Name	Melissa S. Mercier
Sheet	1	of	1	Attorney Docket Number	095473-0106

U.S. PATENT DOCUMENTS

Examiner Initials*	Cite No.[1]	Document Number Number-Kind Code[2] *(if known)*	Publication Date MM-DD-YYYY	Name of Patentee or Applicant of Cited Document	Pages, Columns, Lines, Where Relevant Passages or Relevant Figures Appear

FOREIGN PATENT DOCUMENTS

Examiner Initials*	Cite No.[1]	Foreign Patent Document Country Code[3]-Number[4]-Kind Code[5] *(if known)*	Publication Date MM-DD-YYYY	Name of Patentee or Applicant of Cited Documents	Pages, Columns, Lines, Where Relevant Passages or Relevant Figures Appear	T[6]

NON PATENT LITERATURE DOCUMENTS

Examiner Initials*	Cite No.[1]	Include name of the author (in CAPITAL LETTERS), title of the article (when appropriate), title of the item (book, magazine, journal, serial, symposium, catalog, etc.) date, page(s), volume-issue number(s), publisher, city and/or country where published.	T[6]
	A1	Office Action cited in related U.S. Patent Application No. 12/835693, dated December 20, 2012.	

Examiner Signature		Date Considered	

*EXAMINER: Initial if reference considered, whether or not citation is in conformance with MPEP 609. Draw line through citation if not in conformance and not considered. Include copy of this form with next communication to applicant. 1 Applicant's unique citation designation number (optional). 2 See Kinds Codes of USPTO Patent Documents at www.uspto.gov or MPEP 901.04. 3 Enter Office that issued the document, by the two-letter code (WIPO Standard ST.3). 4 For Japanese patent documents, the indication of the year of the reign of the Emperor must precede the serial number of the patent document. 5 Kind of document by the appropriate symbols as indicated on the document under WIPO Standard ST.16 if possible. 6 Applicant is to place a check mark here if English language Translation is attached.

Electronic Patent Application Fee Transmittal

Application Number:	10711389
Filing Date:	15-Sep-2004
Title of Invention:	TRANSDERMAL DRUG DELIVERY METHOD AND SYSTEM
First Named Inventor/Applicant Name:	Werner Zumbrunn
Filer:	Michelle M. Simkin
Attorney Docket Number:	095473-0106

Filed as Large Entity

Utility under 35 USC 111(a) Filing Fees

Description	Fee Code	Quantity	Amount	Sub-Total in USD($)
Basic Filing:				
Pages:				
Claims:				
Miscellaneous-Filing:				
Petition:				
Patent-Appeals-and-Interference:				
Post-Allowance-and-Post-Issuance:				
Extension-of-Time:				

Description	Fee Code	Quantity	Amount	Sub-Total in USD($)
Miscellaneous:				
Submission- Information Disclosure Stmt	1806	1	180	180
		Total in USD ($)		**180**

Electronic Acknowledgement Receipt

EFS ID:	15100972
Application Number:	10711389
International Application Number:	
Confirmation Number:	5388
Title of Invention:	TRANSDERMAL DRUG DELIVERY METHOD AND SYSTEM
First Named Inventor/Applicant Name:	Werner Zumbrunn
Customer Number:	22428
Filer:	Michelle M. Simkin
Filer Authorized By:	
Attorney Docket Number:	095473-0106
Receipt Date:	03-MAR-2013
Filing Date:	15-SEP-2004
Time Stamp:	22:08:41
Application Type:	Utility under 35 USC 111(a)

Payment information:

Submitted with Payment	yes
Payment Type	Credit Card
Payment was successfully received in RAM	$180
RAM confirmation Number	9369
Deposit Account	
Authorized User	

File Listing:

Document Number	Document Description	File Name	File Size(Bytes)/ Message Digest	Multi Part /.zip	Pages (if appl.)

1		IDS_COV_LTR.pdf	176050 28ce3ad8344327928752ef2f6b7aedfaaab18f4e	yes	4

Multipart Description/PDF files in .zip description		
Document Description	**Start**	**End**
Transmittal Letter	1	3
Information Disclosure Statement (IDS) Form (SB08)	4	4

Warnings:

Information:

2	Non Patent Literature	OA_12_835693_dated_12_20_12.pdf	702622 d1f16779fcaf4f44e7b86fbea84e11dfd97cac8a	no	16

Warnings:

Information:

3	Fee Worksheet (SB06)	fee-info.pdf	30493 ebcfbd9f241387cd6c75d044367ce0c2b8a8bacf	no	2

Warnings:

Information:

Total Files Size (in bytes):	909165

This Acknowledgement Receipt evidences receipt on the noted date by the USPTO of the indicated documents, characterized by the applicant, and including page counts, where applicable. It serves as evidence of receipt similar to a Post Card, as described in MPEP 503.

New Applications Under 35 U.S.C. 111

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National Stage of an International Application under 35 U.S.C. 371

If a timely submission to enter the national stage of an international application is compliant with the conditions of 35 U.S.C. 371 and other applicable requirements a Form PCT/DO/EO/903 indicating acceptance of the application as a national stage submission under 35 U.S.C. 371 will be issued in addition to the Filing Receipt, in due course.

New International Application Filed with the USPTO as a Receiving Office

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IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Applicant:	Zumbrunn et al.
Title:	TRANSDERMAL DRUG DELIVERY METHOD AND SYSTEM
Appl. No.:	10/711,389
Filing Date:	9/13/2004
Examiner:	Mercier, Melissa S.
Art Unit:	1615
Confirmation Number:	5388

INFORMATION DISCLOSURE STATEMENT UNDER 37 CFR §1.56

Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

Commissioner:

Applicant submits herewith documents for the Examiner's consideration in accordance with 37 CFR §§1.56, 1.97 and 1.98.

Applicants respectfully request that each listed document be considered by the Examiner and be made of record in the present application and that an initialed copy of Form PTO/SB/08 be returned in accordance with MPEP §609.

The submission of any document herewith is not an admission that such document constitutes prior art against the claims of the present application or that such document is considered material to patentability as defined in 37 CFR §1.56(b). Applicants do not waive any rights to take any action which would be appropriate to antedate or otherwise remove as a competent reference any document submitted herewith.

TIMING OF THE DISCLOSURE

The listed document is being submitted in compliance with 37 CFR §1.97(d), before payment of the issue fee.

STATEMENT UNDER 37 CFR §1.97(e)

The undersigned hereby states in accordance with 37 CFR §1.97(e)(2) that no item of information contained in this information disclosure statement was cited in a communication from a foreign patent office in a counterpart foreign application and, to the knowledge of the undersigned, after making reasonable inquiry, no item of information contained in the information disclosure statement was known to any individual designated in 37 CFR §1.56(c) more than three months prior to the filing of the information disclosure statement.

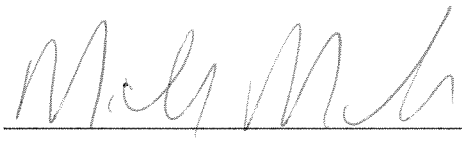
FEE

Fees in the amount of $180.00 to cover the fee associated with an information disclosure statement under 37 CFR §1.97(d) are being paid by credit card via EFS-Web.

The Commissioner is hereby authorized to charge any additional fees which may be required regarding this submission under 37 C.F.R. §§ 1.16-1.17, or credit any overpayment, to Deposit Account No. 19-0741. Should no proper payment be enclosed herewith, as by the credit card payment instructions in EFS-Web being incorrect or absent, resulting in a rejected or incorrect credit card transaction, the Commissioner is authorized to charge the unpaid amount to Deposit Account No. 19-0741.

Respectfully submitted,

Date: March 1, 2013

By 

FOLEY & LARDNER LLP
Customer Number: 26371
Telephone: (202) 672-5538
Facsimile: (202) 672-5399

Michele M. Simkin
Attorney for Applicant
Registration No. 34,717

UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/711,389	09/15/2004	Werner Zumbrunn	095473-0106	5388

7590 02/20/2013

FOLEY AND LARDNER LLP
SUITE 500
3000 K STREET NW
WASHINGTON, DC 20007

EXAMINER	
MERCIER, MELISSA S	
ART UNIT	PAPER NUMBER
1615	

DATE MAILED: 02/20/2013

PRIORITY ACKNOWLEDGMENT

☑ 1. Receipt is acknowledged of priority papers submitted under 35 U.S.C. 119. The papers have been placed of record in the file.

☐ 2. Applicant's claim for priority, based on papers filed in parent Application Number _____ submitted under 35 U.S.C. 119, is acknowledged.

☐ 3. The priority papers, submitted _____, after payment of the issue fee are

- ☐ acknowledged
  While the priority claim or certified copy filed will be placed in the file record, neither will be reviewed and the patent when published will not include the priority claim.
  See 37 CFR 1.55(a)(2).
- ☐ not acknowledged since the processing fee in 37 CFR 1.17(i) has not been received.

☐ 4. For utility and plant applications filed on or after November 29, 2000, the priority claim is not entered because the claim was not presented within the time limit required by 37 CFR 1.55(a)(1). A petition to accept a delayed claim for priority under 35 U.S.C. 119(a) - (d) or (f), or 365(a) may be filed. See 37 CFR 1.55(c) and MPEP 201.14(a).

A. Marty Wilkins

571-272-4200 or 1-888-786-0101
Application Assistance Unit
Office of Data Management

Atty. Dkt. No. 095473-0106

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Applicant: Zumbrunn et al.

Title: TRANSDERMAL DRUG DELIVERY METHOD AND SYSTEM

Appl. No.: 10/711,389

Filing Date: 9/13/2004

Examiner: Mercier, Melissa S.

Art Unit: 1615

Conf. No.: 5388

CLAIM FOR CONVENTION PRIORITY

Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

Commissioner:

The benefit of the filing date of the following prior foreign application filed in the following foreign country is hereby requested, and the right of priority provided in 35 U.S.C. § 119 was previously claimed.

In support of this claim, filed herewith is a copy of said original foreign application which was filed in related International Patent Application No. PCT/IB04/002947.

- Switzerland Patent Application No. 01833/03 filed 10/27/2003.

Respectfully submitted,

Date 2/8/2013

By _____

FOLEY & LARDNER LLP
Customer Number: 26371
Telephone: (202) 672-5538
Facsimile: (202) 672-5399

Michele M. Simkin
Attorney for Applicant
Registration No. 34,717

SCHWEIZERISCHE EIDGENOSSENSCHAFT
CONFÉDÉRATION SUISSE
CONFEDERAZIONE SVIZZERA

Bescheinigung

Die beiliegenden Akten stimmen mit den ursprünglichen technischen Unterlagen des auf der nächsten Seite bezeichneten Patentgesuches für die Schweiz und Liechtenstein überein. Die Schweiz und das Fürstentum Liechtenstein bilden ein einheitliches Schutzgebiet. Der Schutz kann deshalb nur für beide Länder gemeinsam beantragt werden.

Attestation

Les documents ci-joints sont conformes aux pièces techniques originales de la demande de brevet pour la Suisse et le Liechtenstein spécifiée à la page suivante. La Suisse et la Principauté de Liechtenstein constituent un territoire unitaire de protection. La protection ne peut donc être revendiquée que pour l'ensemble des deux Etats.

Attestazione

I documenti allegati sono conformi agli atti tecnici originali della domanda di brevetto per la Svizzera e il Liechtenstein specificata nella pagina seguente. La Svizzera e il Principato di Liechtenstein formano un unico territorio di protezione. La protezione può dunque essere rivendicata solamente per l'insieme dei due Stati.

Bern, 14. NOV. 2004

Eidgenössisches Institut für Geistiges Eigentum
Institut Fédéral de la Propriété Intellectuelle
Istituto Federale della Proprietà Intellettuale

Patentverfahren
Administration des brevets
Amministrazione dei brevetti

Heinz Jenni

Outfitted
Proprietary Intelligence

Hinterlegungsbescheinigung zum Patentgesuch Nr. 01833/03 (Art. 46 Abs. 5 PatV)

Das Eidgenössische Institut für Geistiges Eigentum bescheinigt den Eingang des unten näher bezeichneten schweizerischen Patentgesuches.

Titel:
Transdermales System.

Patentbewerber:
Fachhochschule Solothurn Nordwestschweiz
Riggenbachstrasse 16
4601 Olten

Anmeldedatum: 27.10.2003

Voraussichtliche Klassen: A61M

Transdermales System

Die Erfindung betrifft ein transdermales System für die kontrollierte Abgabe eines Medikamentes oder einer Kombination von Medikamenten durch die Haut.

Systeme dieser Art sind schon seit mehr als zwanzig Jahren bekannt; zum Beispiel ist das Produkt TransdermScop® der Firma Novartis schon seit 1981 auf dem Markt. Grundsätzlich gibt es verschiedene Systeme, um eine kontrollierte Abgabe eines Medikamentes durch die Haut zu erreichen. Die bekannten Systeme sind als Hautpflaster konzipiert. Diese Pflaster haben mehrere Schichten. Die wichtigste Schicht ist ein Wirkstoffreservoir oder eine Polymer-Matrix, in welche der Wirkstoff eingebettet ist, entweder gelöst in einem Lösungsmittel oder eingeschlossen in Mikrokapseln. Der Wirkstoffspeicher ist von einer Oberschicht bedeckt, welche das Pflaster gegen aussen schützt. Sie muss sowohl für Wirkstoff, Lösungsmittel als auch von aussen einwirkende Substanzen undurchlässig sein.
Zwischen Wirkstoffreservoir und Haut können zwei Schichten eingebaut sein: Einerseits eine Klebstoffschicht, die allenfalls mit einer vor dem Gebrauch zu entfernenden Schutzfolie bedeckt ist. Andererseits kann direkt angrenzend an den Wirkstoffspeicher eine Membran eingebaut sein, welche die Abgabe des Wirkstoffes steuert; sie kann dies tun, weil ihre Durchlässigkeit für den Wirkstoff so gewählt worden ist, dass die Diffusionsrate des Wirkstoffes vornehmlich von der Membran bestimmt wird – und nicht von der Durchlässigkeit der Haut, die bekanntlich von Mensch zu Mensch und auch in Abhängigkeit vom Ort der Applikation in weiten Grenzen variieren kann.
Diese vorbekannten Systeme haben die Eigenschaft, dass beim Fehlen der Steuermembran die Diffusionsrate wegen der unterschiedlichen Hauteigenschaften sehr unterschiedlich sein kann. Bei guter Durchlässigkeit besteht dann die Gefahr einer Überdosierung oder bei schlechter Durchlässigkeit die Gefahr, dass kein therapeutisch wirksamer Effekt erzielt wird. Ist hingegen eine wirksame Steuermembran vorhanden, ist deren Durchlässigkeit viel kleiner als derjenige der verschiedenen Hauttypen – mit dem Effekt, dass pro Flächeneinheit viel weniger Wirkstoff durch die Haut transportiert werden kann als möglich wäre; deshalb muss die Fläche des Pflasters viel grösser als notwendig gewählt werden.
Das Problem kann gelöst werden, indem der Transport durch die Haut mit verschiedenen Hilfsmitteln beschleunigt wird. In Frage kommen elektrische Felder, Ultraschall,

Strahlung, Wärme oder auch chemische Beschleuniger (s. zum Beispiel die Patente DE10105759, DE10103158, US5405614, WO03022349, US5405614, US4379454). Alle diese Hilfsmittel, mit Ausnahme der chemischen Beschleuniger, benötigen aber viel Hilfsenergie oder sind technisch sehr aufwendig und teuer. Die chemischen Beschleuniger erhöhen die Wahrscheinlichkeit, dass die Haut allergisch, mit Endzündungen oder mit Schwellungen reagiert.

Die Erfindung zeigt nun einen Weg auf, wie diese Nachteile vermieden werden können. Das primäre Ziel ist es, den Wirkstoff, gelöst in einem Lösungsmittel, auf die Haut zu dosieren – zum Beispiel mit einer Pumpe; damit wird ein ähnlicher Weg verfolgt, wie er von der bewährten intravenösen Infusion her bekannt ist. Eine den Wirkstofftransport hemmende Membran wird vermieden, und die Diffusionsrate durch die Haut ist nur durch den Hauttyp mit der geringsten Durchlässigkeit für den Wirkstoff begrenzt. Auf diese Art und Weise kann im Vergleich zu herkömmlichen transdermalen Systemen eine viel grössere Diffusionsrate erreicht werden, d. h. es wird eine viel kleinere Hautfläche benötigt. Überdies ermöglicht es ein solches System, die Wirkstoffabgabe in weiten Grenzen und zeitlich zu steuern; dies ist ein grosser Vorteil, der den konventionellen transdermalen Systemen abgeht.
Allerdings handelt man sich mit Dosiersystemen eine Schwierigkeit ein, die konventionelle Systeme nicht haben: Wenn das Lösungsmittel nicht oder mit ungenügender Diffusionsrate durch die Haut geht, stellt sich das Problem der Entfernung des Lösungsmittels. Es kann nicht auf der Haut akkumuliert werden, weil sonst die Konzentration des zudosierten Wirkstoffes ständig abnimmt, was zu ständig abnehmenden Diffusionsraten durch die Haut führen würde.
Eine Möglichkeit besteht nun darin, das Lösungsmittel verdampfen oder auf einem anderen Weg als durch die Haut wegdiffundieren zu lassen; vor allem Wasser oder Alkohole haben bei Temperaturen im Bereich der Hauttemperatur einen genügend hohen Dampfdruck. Notwendig ist aber, dass die Verdampfungsrate oder die Diffusionsrate des Lösungsmittels auf die Diffusionsrate des Wirkstoffes durch die Haut abgestimmt werden kann, um die Akkumulation des Lösungsmittels auf der Haut oder das Ausfällen respektive das Auskristallisieren des Wirkstoffes in grösseren Mengen zu verhindern. Erfindungsgemäss wird dies dadurch bewerkstelligt, dass die Abgabe des Lösungsmittels an die Umgebung mit Hilfe einer Membran gesteuert wird.
Im folgenden wird die Erfindung anhand einer vorteilhaften Ausführungsform erläutert.

Die Zeichnung Nr. 1 zeigt ein erfindungsgemässes System.

Über eine Zuleitung (1) wird der Wirkstoff, gelöst in einem flüssigen Lösungsmittel, in ein flaches Zwischenstück (2) dosiert – entweder kontinuierlich oder in Portionen. Das Zwischenstück (2) hat die Aufgabe, die Lösung entlang der Grenzfläche zur Haut (3) zu verteilen. Zu diesem Zweck kann das Zwischenstück (2) ein Material mit Kapillarwirkung enthalten; diese darf allerdings nicht so gross sein, dass der Austritt von Wirkstoff oder Lösungsmittel massgeblich behindert wird. Des weiteren soll das Zwischenstück ein möglichst kleines Volumen haben, damit Effekte wegen der Zwischenspeicherung – sie führen zu Laufzeiteffekten – möglichst klein gehalten werden können; andererseits muss das Volumen so gross sein, dass eine zudosierte Portion aufgenommen werden kann. Allenfalls kann zwischen Haut (3) und Zwischenstück (2) eine Schicht (4) eines hautverträglichen Klebstoffes angebracht werden, um einen möglichst guten Kontakt des Zwischenstückes (2) mit der Haut (3) zu ermöglichen. Das Lösungsmittel, welches sich im Zwischenstück (2) befindet, kann durch eine lösungsmitteldurchlässige Membran (5) – sie darf für den Wirkstoff nicht durchlässig sein – diffundieren. Es gelangt dann an die Grenzfläche zum Hohlraum (6), verdampft und kann dann zum Beispiel durch Spülen mit Gas entfernt werden. Eine andere Möglichkeit besteht darin, den Hohlraum (6) mit einem Lösungsmittel ad- oder absorbierenden Stoff, im Falle von Wasser zum Beispiel Silica-Gel, zu füllen. Weil dadurch – bis zur Sättigung des Stoffes mit Lösungsmittel – die Lösungsmittelkonzentration an der Grenzfläche zwischen Membran (5) und Hohlraum (6) klein bleibt, wird die Diffusionsrate des Lösungsmittels erhöht und gleichzeitig steuerbar.

Allenfalls kann der Hohlraum (6) entfallen; das Lösungsmittel verdampft dann in die Umgebung. Die Verdampfung kann durch Spülen mit Gas oder mit anderen Methoden zur Erhöhung der Konvektion an der Oberfläche der Membran (5) erhöht werden.

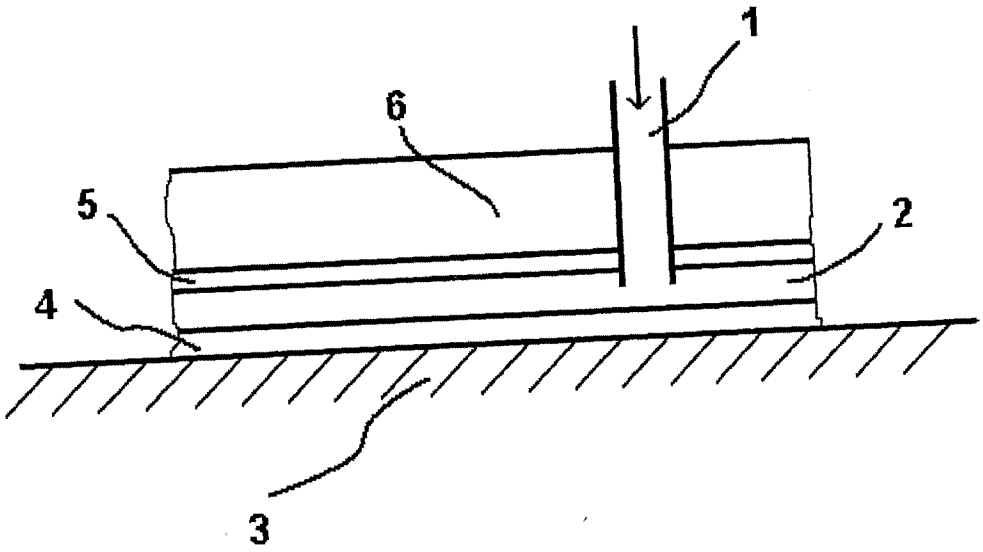
Patentansprüche

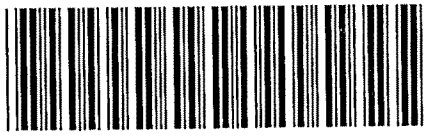
1. Transdermales System für die Applikation von in Lösungsmitteln gelösten Wirkstoffen auf die Haut, auf dem Prinzip eines Dosiersystems beruhend, mit einem Zwischenstück, auch Interface genannt, welches die Aufgabe hat, den dosierten Wirkstoff an der Grenzfläche zur Haut oder zu einer hautverträglichen Klebstoffschicht zu verteilen, dadurch gekennzeichnet, dass das Zwischenstück eine Oberschicht hat, welche für den Wirkstoff undurchlässig, aber für das Lösungsmittel durchlässig ist.
2. Transdermales System nach Anspruch 1, dadurch gekennzeichnet, dass die besagte Oberschicht mit einer Schicht aus Material bedeckt ist, welche das Lösungsmittel ab- oder adsorbieren kann.
3. Transdermales System nach Anspruch 1, dadurch gekennzeichnet, dass ein Hilfsmittel die Verdampfung des Lösungsmittels an der Oberfläche der besagten Oberschicht hemmt oder beschleunigt.

Zusammenfassung

Über eine Zuleitung (1) wird der Wirkstoff, gelöst in einem flüssigen Lösungsmittel, in ein flaches Zwischenstück (2), auch Interface genannt, dosiert – entweder kontinuierlich oder in Portionen. Das Zwischenstück (2) hat die Aufgabe, die Lösung entlang der Grenzfläche zur Haut (3) zu verteilen. Zu diesem Zweck kann das Zwischenstück (2) ein Material mit Kapillarwirkung enthalten; diese darf allerdings nicht so gross sein, dass der Austritt von Wirkstoff oder Lösungsmittel massgeblich behindert wird. Allenfalls kann zwischen Haut (3) und Zwischenstück (2) eine Schicht (4) eines hautverträglichen Klebstoffes angebracht werden, um einen möglichst guten Kontakt des Zwischenstückes (2) mit der Haut (3) zu ermöglichen. Das Lösungsmittel, welches sich im Zwischenstück (2) befindet, kann durch eine lösungsmitteldurchlässige Membran (5) – sie darf aber für den Wirkstoff nicht durchlässig sein – diffundieren. Es gelangt dann an die Grenzfläche zu einem Hohlraum (6), der mit einem Lösungsmittel ad- oder absorbierenden Stoff gefüllt ist. Weil dadurch – bis zur Sättigung des Stoffes mit Lösungsmittel – die Lösungsmittelkonzentration an der Grenzfläche zwischen Membran (5) und Hohlraum (6) klein bleibt, wird die Diffusionsrate des Lösungsmittels erhöht und gleichzeitig steuerbar.

Zeichnung Nr. 1





Electronic Acknowledgement Receipt

EFS ID:	14927212
Application Number:	10711389
International Application Number:	
Confirmation Number:	5388
Title of Invention:	TRANSDERMAL DRUG DELIVERY METHOD AND SYSTEM
First Named Inventor/Applicant Name:	Werner Zumbrunn
Customer Number:	22428
Filer:	Michelle M. Simkin
Filer Authorized By:	
Attorney Docket Number:	095473-0106
Receipt Date:	11-FEB-2013
Filing Date:	15-SEP-2004
Time Stamp:	15:20:36
Application Type:	Utility under 35 USC 111(a)

Payment information:

Submitted with Payment	no

File Listing:

Document Number	Document Description	File Name	File Size(Bytes)/ Message Digest	Multi Part /.zip	Pages (if appl.)
1	Miscellaneous Incoming Letter	CLAIM_CONVENTION_PRIORITY.pdf	496548 d1dabb24b487df1e1132c8fd14e20a6c6e3835c6	no	11

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New Applications Under 35 U.S.C. 111

If a new application is being filed and the application includes the necessary components for a filing date (see 37 CFR 1.53(b)-(d) and MPEP 506), a Filing Receipt (37 CFR 1.54) will be issued in due course and the date shown on this Acknowledgement Receipt will establish the filing date of the application.

National Stage of an International Application under 35 U.S.C. 371

If a timely submission to enter the national stage of an international application is compliant with the conditions of 35 U.S.C. 371 and other applicable requirements a Form PCT/DO/EO/903 indicating acceptance of the application as a national stage submission under 35 U.S.C. 371 will be issued in addition to the Filing Receipt, in due course.

New International Application Filed with the USPTO as a Receiving Office

If a new international application is being filed and the international application includes the necessary components for an international filing date (see PCT Article 11 and MPEP 1810), a Notification of the International Application Number and of the International Filing Date (Form PCT/RO/105) will be issued in due course, subject to prescriptions concerning national security, and the date shown on this Acknowledgement Receipt will establish the international filing date of the application.

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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/711,389	09/15/2004	Werner Zumbrunn	095473-0106	5388

22428 7590 01/04/2013

FOLEY AND LARDNER LLP
SUITE 500
3000 K STREET NW
WASHINGTON, DC 20007

EXAMINER	
MERCIER, MELISSA S	
ART UNIT	PAPER NUMBER
1615	

MAIL DATE	DELIVERY MODE
01/04/2013	PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Supplemental Notice of Allowability	Application No. 10/711,389	Applicant(s) ZUMBRUNN ET AL.	
	Examiner MELISSA MERCIER	Art Unit 1615	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address--

All claims being allowable, PROSECUTION ON THE MERITS IS (OR REMAINS) CLOSED in this application. If not included herewith (or previously mailed), a Notice of Allowance (PTOL-85) or other appropriate communication will be mailed in due course. **THIS NOTICE OF ALLOWABILITY IS NOT A GRANT OF PATENT RIGHTS.** This application is subject to withdrawal from issue at the initiative of the Office or upon petition by the applicant. See 37 CFR 1.313 and MPEP 1308.

1. ☒ This communication is responsive to *Applicants submission on 12/18/12*.

2. ☐ An election was made by the applicant in response to a restriction requirement set forth during the interview on _____; the restriction requirement and election have been incorporated into this action.

3. ☒ The allowed claim(s) is/are *17-24,26-35 and 38-44*. As a result of the allowed claim(s), you may be eligible to benefit from the **Patent Prosecution Highway** program at a participating intellectual property office for the corresponding application. For more information, please see http://www.uspto.gov/patents/init_events/pph/index.jsp or send an inquiry to PPHfeedback@uspto.gov .

4. ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
   a) ☐ All b) ☐ Some* c) ☒ None of the:
      1. ☐ Certified copies of the priority documents have been received.
      2. ☐ Certified copies of the priority documents have been received in Application No. _____ .
      3. ☒ Copies of the certified copies of the priority documents have been received in this national stage application from the International Bureau (PCT Rule 17.2(a)).

   * Certified copies not received: _____.

Applicant has THREE MONTHS FROM THE "MAILING DATE" of this communication to file a reply complying with the requirements noted below. Failure to timely comply will result in ABANDONMENT of this application.
THIS THREE-MONTH PERIOD IS NOT EXTENDABLE.

5. ☐ CORRECTED DRAWINGS (as "replacement sheets") must be submitted.
   ☐ including changes required by the attached Examiner's Amendment / Comment or in the Office action of Paper No./Mail Date _____.

Identifying indicia such as the application number (see 37 CFR 1.84(c)) should be written on the drawings in the front (not the back) of each sheet. Replacement sheet(s) should be labeled as such in the header according to 37 CFR 1.121(d).

6. ☐ DEPOSIT OF and/or INFORMATION about the deposit of BIOLOGICAL MATERIAL must be submitted. Note the attached Examiner's comment regarding REQUIREMENT FOR THE DEPOSIT OF BIOLOGICAL MATERIAL.

Attachment(s)

1. ☐ Notice of References Cited (PTO-892)
2. ☒ Information Disclosure Statements (PTO/SB/08), Paper No./Mail Date 12/18/12
3. ☐ Examiner's Comment Regarding Requirement for Deposit of Biological Material
4. ☐ Interview Summary (PTO-413), Paper No./Mail Date _____ .
5. ☐ Examiner's Amendment/Comment
6. ☐ Examiner's Statement of Reasons for Allowance
7. ☐ Other _____.

/ANAND U DESAI/
Primary Examiner, Art Unit 1656

PTO/SB/08 (09-06)
Approved for use through 03/31/2007. OMB 0651-0031
U.S. Patent and Trademark Office: U.S. DEPARTMENT OF COMMERCE
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Substitute for form 1449/PTO				Complete if Known	
INFORMATION DISCLOSURE STATEMENT BY APPLICANT				**Application Number**	10/711,389
				Filing Date	09/15/2004
Date Submitted: December 18, 2012				**First Named Inventor**	Werner Zumbrunn
				Art Unit	1615
(use as many sheets as necessary)				Examiner Name	Melissa S. Mercier
Sheet	1	of	1	Attorney Docket Number	095473-0106

U.S. PATENT DOCUMENTS

Examiner Initials*	Cite No.[1]	Document Number Number-Kind Code[2] (*if known*)	Publication Date MM-DD-YYYY	Name of Patentee or Applicant of Cited Document	Pages, Columns, Lines, Where Relevant Passages or Relevant Figures Appear
	A1	6,539,250	03/2003	Bettinger	

FOREIGN PATENT DOCUMENTS

Examiner Initials*	Cite No.[1]	Foreign Patent Document Country Code[3]-Number[4]-Kind Code[5] (*if known*)	Publication Date MM-DD-YYYY	Name of Patentee or Applicant of Cited Documents	Pages, Columns, Lines, Where Relevant Passages or Relevant Figures Appear	T[6]

NON PATENT LITERATURE DOCUMENTS

Examiner Initials*	Cite No.[1]	Include name of the author (in CAPITAL LETTERS), title of the article (when appropriate), title of the item (book, magazine, journal, serial, symposium, catalog, etc.) date, page(s), volume-issue number(s), publisher, city and/or country where published.	T[6]
	B1	Office Action cited in related U.S. Patent Application No. 11/162,517, dated Nov. 19, 2012.	

Examiner Signature	/Melissa Mercier/ (12/20/2012)	Date Considered	

*EXAMINER: Initial if reference considered, whether or not citation is in conformance with MPEP 609. Draw line through citation if not in conformance and not considered. Include copy of this form with next communication to applicant. 1 Applicant's unique citation designation number (optional). 2 See Kinds Codes of USPTO Patent Documents at www.uspto.gov or MPEP 901.04. 3 Enter Office that issued the document, by the two-letter code (WIPO Standard ST.3). 4 For Japanese patent documents, the indication of the year of the reign of the Emperor must precede the serial number of the patent document. 5 Kind of document by the appropriate symbols as indicated on the document under WIPO Standard ST.16 if possible. 6 Applicant is to place a check mark here if English language Translation is attached. This collection of information is required by 37 CFR 1.97 and 1.98. The information is required to obtain or retain a benefit by the public which is to file (and by the USPTO to process) an application. Confidentiality is governed by 35 U.S.C. 122 and 37 CFR 1.14. This collection is estimated to take 2 hours to complete, including gathering, preparing, and submitting the completed application form to the USPTO. Time will vary depending upon the individual case. Any comments on the amount of time you require to complete this form and/or suggestions for reducing this burden, should be sent to the Chief Information Officer, U.S. Patent and Trademark Office, P.O. Box 1450, Alexandria, VA 22313-1450. DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS. **SEND TO: Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450.**

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4833-5699-0482.1

ALL REFERENCES CONSIDERED EXCEPT WHERE LINED THROUGH. /MM/

PTO/SB/08 (09-06)
Approved for use through 03/31/2007. OMB 0651-0031
U.S. Patent and Trademark Office: U.S. DEPARTMENT OF COMMERCE

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Substitute for form 1449/PTO				*Complete if Known*	
INFORMATION DISCLOSURE STATEMENT BY APPLICANT				**Application Number**	10/711,389
Date Submitted: December 18, 2012				**Filing Date**	09/15/2004
				First Named Inventor	Werner Zumbrunn
(use as many sheets as necessary)				Art Unit	1615
				Examiner Name	Melissa S. Mercier
Sheet	1	of	1	Attorney Docket Number	095473-0106

U.S. PATENT DOCUMENTS

Examiner Initials*	Cite No.[1]	Document Number Number-Kind Code[2] (*if known*)	Publication Date MM-DD-YYYY	Name of Patentee or Applicant of Cited Document	Pages, Columns, Lines, Where Relevant Passages or Relevant Figures Appear
	A1	6,539,250	03/2003	Bettinger	

FOREIGN PATENT DOCUMENTS

Examiner Initials*	Cite No.[1]	Foreign Patent Document Country Code[3]-Number[4]-Kind Code[5] (*if known*)	Publication Date MM-DD-YYYY	Name of Patentee or Applicant of Cited Documents	Pages, Columns, Lines, Where Relevant Passages or Relevant Figures Appear	T[6]

NON PATENT LITERATURE DOCUMENTS

Examiner Initials*	Cite No.[1]	Include name of the author (in CAPITAL LETTERS), title of the article (when appropriate), title of the item (book, magazine, journal, serial, symposium, catalog, etc.) date, page(s), volume-issue number(s), publisher, city and/or country where published.	T[6]
	B1	Office Action cited in related U.S. Patent Application No. 11/162,517, dated Nov. 19, 2012.	

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Electronic Patent Application Fee Transmittal

Application Number:	10711389
Filing Date:	15-Sep-2004
Title of Invention:	TRANSDERMAL DRUG DELIVERY METHOD AND SYSTEM
First Named Inventor/Applicant Name:	Werner Zumbrunn
Filer:	Michelle M. Simkin
Attorney Docket Number:	095473-0106

Filed as Large Entity

Utility under 35 USC 111(a) Filing Fees

Description	Fee Code	Quantity	Amount	Sub-Total in USD($)
Basic Filing:				
Pages:				
Claims:				
Miscellaneous-Filing:				
Petition:				
Patent-Appeals-and-Interference:				
Post-Allowance-and-Post-Issuance:				
Extension-of-Time:				

Description	Fee Code	Quantity	Amount	Sub-Total in USD($)
Miscellaneous:				
Submission- Information Disclosure Stmt	1806	1	180	180
		Total in USD ($)		**180**

Electronic Acknowledgement Receipt

EFS ID:	14506228
Application Number:	10711389
International Application Number:	
Confirmation Number:	5388
Title of Invention:	TRANSDERMAL DRUG DELIVERY METHOD AND SYSTEM
First Named Inventor/Applicant Name:	Werner Zumbrunn
Customer Number:	22428
Filer:	Michelle M. Simkin
Filer Authorized By:	
Attorney Docket Number:	095473-0106
Receipt Date:	18-DEC-2012
Filing Date:	15-SEP-2004
Time Stamp:	18:39:02
Application Type:	Utility under 35 USC 111(a)

Payment information:

Submitted with Payment	yes
Payment Type	Credit Card
Payment was successfully received in RAM	$180
RAM confirmation Number	7092
Deposit Account	
Authorized User	

File Listing:

Document Number	Document Description	File Name	File Size(Bytes)/ Message Digest	Multi Part /.zip	Pages (if appl.)

1		IDS_COV_LTR.pdf	174066 dad13e977843b7968fd0505769d00aedc29c0960	yes	4

Multipart Description/PDF files in .zip description		
Document Description	**Start**	**End**
Transmittal Letter	1	3
Information Disclosure Statement (IDS) Form (SB08)	4	4

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2	Non Patent Literature	OA_11_162517_11_19_12.pdf	1222623 f2283ae8e638ff24545c5b1cc422270a96b37982	no	26

Warnings:

Information:

3	Fee Worksheet (SB06)	fee-info.pdf	30495 905622084537dd2530d9c89ac2a446aeec58ff2d	no	2

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New International Application Filed with the USPTO as a Receiving Office

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IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Applicant: Zumbrunn et al.

Title: TRANSDERMAL DRUG DELIVERY METHOD AND SYSTEM

Appl. No.: 10/711,389

Filing Date: 9/13/2004

Examiner: Mercier, Melissa S.

Art Unit: 1615

Conf. No.: 5388

INFORMATION DISCLOSURE STATEMENT UNDER 37 CFR §1.56

Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

Commissioner:

Applicant submits herewith documents for the Examiner's consideration in accordance with 37 CFR §§1.56, 1.97 and 1.98.

Applicants respectfully request that each listed document be considered by the Examiner and be made of record in the present application and that an initialed copy of Form PTO/SB/08 be returned in accordance with MPEP §609.

The submission of any document herewith is not an admission that such document constitutes prior art against the claims of the present application or that such document is considered material to patentability as defined in 37 CFR §1.56(b). Applicants do not waive any rights to take any action which would be appropriate to antedate or otherwise remove as a competent reference any document submitted herewith.

98185

TIMING OF THE DISCLOSURE

The listed documents are being submitted in compliance with 37 CFR §1.97(d), before payment of the issue fee.

CONCISE EXPLANATION OF RELEVANCE

Attached to the PTO/SB/08 is an Office Action cited by the Examiner in related U.S. Patent Application No. 11/162,517, dated November 19, 2012.

STATEMENT UNDER 37 CFR §1.704(d)

The undersigned hereby states in accordance with 37 CFR §1.704(d) that each item of information contained in the information disclosure statement was first cited in any communication from a patent office in a counterpart foreign or international application or from the Office, and that this communication was not received by any individual designated in 37 CFR §1.56(c) more than thirty days prior to the filing of the information disclosure statement.

FEE

Fees in the amount of $180.00 to cover the fee associated with an information disclosure statement under 37 CFR §1.97(d) are being paid by credit card via EFS-Web.

The Commissioner is hereby authorized to charge any additional fees which may be required regarding this submission under 37 C.F.R. §§ 1.16-1.17, or credit any overpayment, to Deposit Account No. 19-0741. Should no proper payment be enclosed herewith, as by the credit card payment instructions in EFS-Web being incorrect or absent, resulting in a rejected or incorrect credit card transaction, the Commissioner is authorized to charge the unpaid amount to Deposit Account No. 19-0741.

Respectfully submitted,

Date: December 18, 2012

By /Michele M. Simkin, Reg. No. 34,717/

FOLEY & LARDNER LLP
Customer Number: 26371
Telephone: (202) 672-5538
Facsimile: (202) 672-5399

Michele M. Simkin
Attorney for Applicant
Registration No. 34,717

UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

NOTICE OF ALLOWANCE AND FEE(S) DUE

22428 7590 12/06/2012

FOLEY AND LARDNER LLP
SUITE 500
3000 K STREET NW
WASHINGTON, DC 20007

EXAMINER
MERCIER, MELISSA S

ART UNIT	PAPER NUMBER
1615	

DATE MAILED: 12/06/2012

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/711,389	09/15/2004	Werner Zumbrunn	095473-0106	5388

TITLE OF INVENTION: TRANSDERMAL DRUG DELIVERY METHOD AND SYSTEM

APPLN. TYPE	SMALL ENTITY	ISSUE FEE DUE	PUBLICATION FEE DUE	PREV. PAID ISSUE FEE	TOTAL FEE(S) DUE	DATE DUE
nonprovisional	YES	$885	$300	$0	$1185	03/06/2013

THE APPLICATION IDENTIFIED ABOVE HAS BEEN EXAMINED AND IS ALLOWED FOR ISSUANCE AS A PATENT. PROSECUTION ON THE MERITS IS CLOSED. THIS NOTICE OF ALLOWANCE IS NOT A GRANT OF PATENT RIGHTS. THIS APPLICATION IS SUBJECT TO WITHDRAWAL FROM ISSUE AT THE INITIATIVE OF THE OFFICE OR UPON PETITION BY THE APPLICANT. SEE 37 CFR 1.313 AND MPEP 1308.

THE ISSUE FEE AND PUBLICATION FEE (IF REQUIRED) MUST BE PAID WITHIN THREE MONTHS FROM THE MAILING DATE OF THIS NOTICE OR THIS APPLICATION SHALL BE REGARDED AS ABANDONED. THIS STATUTORY PERIOD CANNOT BE EXTENDED. SEE 35 U.S.C. 151. THE ISSUE FEE DUE INDICATED ABOVE DOES NOT REFLECT A CREDIT FOR ANY PREVIOUSLY PAID ISSUE FEE IN THIS APPLICATION. IF AN ISSUE FEE HAS PREVIOUSLY BEEN PAID IN THIS APPLICATION (AS SHOWN ABOVE), THE RETURN OF PART B OF THIS FORM WILL BE CONSIDERED A REQUEST TO REAPPLY THE PREVIOUSLY PAID ISSUE FEE TOWARD THE ISSUE FEE NOW DUE.

HOW TO REPLY TO THIS NOTICE:

I. Review the SMALL ENTITY status shown above.

If the SMALL ENTITY is shown as YES, verify your current SMALL ENTITY status:

A. If the status is the same, pay the TOTAL FEE(S) DUE shown above.

B. If the status above is to be removed, check box 5b on Part B - Fee(s) Transmittal and pay the PUBLICATION FEE (if required) and twice the amount of the ISSUE FEE shown above, or

If the SMALL ENTITY is shown as NO:

A. Pay TOTAL FEE(S) DUE shown above, or

B. If applicant claimed SMALL ENTITY status before, or is now claiming SMALL ENTITY status, check box 5a on Part B - Fee(s) Transmittal and pay the PUBLICATION FEE (if required) and 1/2 the ISSUE FEE shown above.

II. PART B - FEE(S) TRANSMITTAL, or its equivalent, must be completed and returned to the United States Patent and Trademark Office (USPTO) with your ISSUE FEE and PUBLICATION FEE (if required). If you are charging the fee(s) to your deposit account, section "4b" of Part B - Fee(s) Transmittal should be completed and an extra copy of the form should be submitted. If an equivalent of Part B is filed, a request to reapply a previously paid issue fee must be clearly made, and delays in processing may occur due to the difficulty in recognizing the paper as an equivalent of Part B.

III. All communications regarding this application must give the application number. Please direct all communications prior to issuance to Mail Stop ISSUE FEE unless advised to the contrary.

IMPORTANT REMINDER: Utility patents issuing on applications filed on or after Dec. 12, 1980 may require payment of maintenance fees. It is patentee's responsibility to ensure timely payment of maintenance fees when due.

PART B - FEE(S) TRANSMITTAL

Complete and send this form, together with applicable fee(s), to: Mail **Mail Stop ISSUE FEE**
Commissioner for Patents
P.O. Box 1450
Alexandria, Virginia 22313-1450
or Fax (571)-273-2885

INSTRUCTIONS: This form should be used for transmitting the ISSUE FEE and PUBLICATION FEE (if required). Blocks 1 through 5 should be completed where appropriate. All further correspondence including the Patent, advance orders and notification of maintenance fees will be mailed to the current correspondence address as indicated unless corrected below or directed otherwise in Block 1, by (a) specifying a new correspondence address; and/or (b) indicating a separate "FEE ADDRESS" for maintenance fee notifications.

CURRENT CORRESPONDENCE ADDRESS (Note: Use Block 1 for any change of address)

22428 7590 12/06/2012
FOLEY AND LARDNER LLP
SUITE 500
3000 K STREET NW
WASHINGTON, DC 20007

Note: A certificate of mailing can only be used for domestic mailings of the Fee(s) Transmittal. This certificate cannot be used for any other accompanying papers. Each additional paper, such as an assignment or formal drawing, must have its own certificate of mailing or transmission.

Certificate of Mailing or Transmission

I hereby certify that this Fee(s) Transmittal is being deposited with the United States Postal Service with sufficient postage for first class mail in an envelope addressed to the Mail Stop ISSUE FEE address above, or being facsimile transmitted to the USPTO (571) 273-2885, on the date indicated below.

(Depositor's name)
(Signature)
(Date)

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/711,389	09/15/2004	Werner Zumbrunn	095473-0106	5388

TITLE OF INVENTION: TRANSDERMAL DRUG DELIVERY METHOD AND SYSTEM

APPLN. TYPE	SMALL ENTITY	ISSUE FEE DUE	PUBLICATION FEE DUE	PREV. PAID ISSUE FEE	TOTAL FEE(S) DUE	DATE DUE
nonprovisional	YES	$885	$300	$0	$1185	03/06/2013

EXAMINER	ART UNIT	CLASS-SUBCLASS
MERCIER, MELISSA S	1615	424-449000

1. Change of correspondence address or indication of "Fee Address" (37 CFR 1.363).

❑ Change of correspondence address (or Change of Correspondence Address form PTO/SB/122) attached.

❑ "Fee Address" indication (or "Fee Address" Indication form PTO/SB/47; Rev 03-02 or more recent) attached. **Use of a Customer Number is required.**

2. For printing on the patent front page, list

(1) the names of up to 3 registered patent attorneys or agents OR, alternatively,

(2) the name of a single firm (having as a member a registered attorney or agent) and the names of up to 2 registered patent attorneys or agents. If no name is listed, no name will be printed.

1 _____

2 _____

3 _____

3. ASSIGNEE NAME AND RESIDENCE DATA TO BE PRINTED ON THE PATENT (print or type)

PLEASE NOTE: Unless an assignee is identified below, no assignee data will appear on the patent. If an assignee is identified below, the document has been filed for recordation as set forth in 37 CFR 3.11. Completion of this form is NOT a substitute for filing an assignment.

(A) NAME OF ASSIGNEE (B) RESIDENCE: (CITY and STATE OR COUNTRY)

Please check the appropriate assignee category or categories (will not be printed on the patent) : ❑ Individual ❑ Corporation or other private group entity ❑ Government

4a. The following fee(s) are submitted:

❑ Issue Fee

❑ Publication Fee (No small entity discount permitted)

❑ Advance Order - # of Copies _____

4b. Payment of Fee(s): **(Please first reapply any previously paid issue fee shown above)**

❑ A check is enclosed.

❑ Payment by credit card. Form PTO-2038 is attached.

❑ The Director is hereby authorized to charge the required fee(s), any deficiency, or credit any overpayment, to Deposit Account Number _____ (enclose an extra copy of this form).

5. **Change in Entity Status** (from status indicated above)

❑ a. Applicant claims SMALL ENTITY status. See 37 CFR 1.27.

❑ b. Applicant is no longer claiming SMALL ENTITY status. See 37 CFR 1.27(g)(2).

NOTE: The Issue Fee and Publication Fee (if required) will not be accepted from anyone other than the applicant; a registered attorney or agent; or the assignee or other party in interest as shown by the records of the United States Patent and Trademark Office.

Authorized Signature _____ Date _____

Typed or printed name _____ Registration No. _____

This collection of information is required by 37 CFR 1.311. The information is required to obtain or retain a benefit by the public which is to file (and by the USPTO to process) an application. Confidentiality is governed by 35 U.S.C. 122 and 37 CFR 1.14. This collection is estimated to take 12 minutes to complete, including gathering, preparing, and submitting the completed application form to the USPTO. Time will vary depending upon the individual case. Any comments on the amount of time you require to complete this form and/or suggestions for reducing this burden, should be sent to the Chief Information Officer, U.S. Patent and Trademark Office, U.S. Department of Commerce, P.O. Box 1450, Alexandria, Virginia 22313-1450. DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS. SEND TO: Commissioner for Patents, P.O. Box 1450, Alexandria, Virginia 22313-1450.

Under the Paperwork Reduction Act of 1995, no persons are required to respond to a collection of information unless it displays a valid OMB control number.

UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/711,389	09/15/2004	Werner Zumbrunn	095473-0106	5388

22428 7590 12/06/2012

FOLEY AND LARDNER LLP
SUITE 500
3000 K STREET NW
WASHINGTON, DC 20007

EXAMINER	
MERCIER, MELISSA S	
ART UNIT	PAPER NUMBER
1615	

DATE MAILED: 12/06/2012

Determination of Patent Term Adjustment under 35 U.S.C. 154 (b)
(application filed on or after May 29, 2000)

The Patent Term Adjustment to date is 556 day(s). If the issue fee is paid on the date that is three months after the mailing date of this notice and the patent issues on the Tuesday before the date that is 28 weeks (six and a half months) after the mailing date of this notice, the Patent Term Adjustment will be 556 day(s).

If a Continued Prosecution Application (CPA) was filed in the above-identified application, the filing date that determines Patent Term Adjustment is the filing date of the most recent CPA.

Applicant will be able to obtain more detailed information by accessing the Patent Application Information Retrieval (PAIR) WEB site (http://pair.uspto.gov).

Any questions regarding the Patent Term Extension or Adjustment determination should be directed to the Office of Patent Legal Administration at (571)-272-7702. Questions relating to issue and publication fee payments should be directed to the Customer Service Center of the Office of Patent Publication at 1-(888)-786-0101 or (571)-272-4200.

Privacy Act Statement

The Privacy Act of 1974 (P.L. 93-579) requires that you be given certain information in connection with your submission of the attached form related to a patent application or patent. Accordingly, pursuant to the requirements of the Act, please be advised that: (1) the general authority for the collection of this information is 35 U.S.C. 2(b)(2); (2) furnishing of the information solicited is voluntary; and (3) the principal purpose for which the information is used by the U.S. Patent and Trademark Office is to process and/or examine your submission related to a patent application or patent. If you do not furnish the requested information, the U.S. Patent and Trademark Office may not be able to process and/or examine your submission, which may result in termination of proceedings or abandonment of the application or expiration of the patent.

The information provided by you in this form will be subject to the following routine uses:

1. The information on this form will be treated confidentially to the extent allowed under the Freedom of Information Act (5 U.S.C. 552) and the Privacy Act (5 U.S.C 552a). Records from this system of records may be disclosed to the Department of Justice to determine whether disclosure of these records is required by the Freedom of Information Act.
2. A record from this system of records may be disclosed, as a routine use, in the course of presenting evidence to a court, magistrate, or administrative tribunal, including disclosures to opposing counsel in the course of settlement negotiations.
3. A record in this system of records may be disclosed, as a routine use, to a Member of Congress submitting a request involving an individual, to whom the record pertains, when the individual has requested assistance from the Member with respect to the subject matter of the record.
4. A record in this system of records may be disclosed, as a routine use, to a contractor of the Agency having need for the information in order to perform a contract. Recipients of information shall be required to comply with the requirements of the Privacy Act of 1974, as amended, pursuant to 5 U.S.C. 552a(m).
5. A record related to an International Application filed under the Patent Cooperation Treaty in this system of records may be disclosed, as a routine use, to the International Bureau of the World Intellectual Property Organization, pursuant to the Patent Cooperation Treaty.
6. A record in this system of records may be disclosed, as a routine use, to another federal agency for purposes of National Security review (35 U.S.C. 181) and for review pursuant to the Atomic Energy Act (42 U.S.C. 218(c)).
7. A record from this system of records may be disclosed, as a routine use, to the Administrator, General Services, or his/her designee, during an inspection of records conducted by GSA as part of that agency's responsibility to recommend improvements in records management practices and programs, under authority of 44 U.S.C. 2904 and 2906. Such disclosure shall be made in accordance with the GSA regulations governing inspection of records for this purpose, and any other relevant (i.e., GSA or Commerce) directive. Such disclosure shall not be used to make determinations about individuals.
8. A record from this system of records may be disclosed, as a routine use, to the public after either publication of the application pursuant to 35 U.S.C. 122(b) or issuance of a patent pursuant to 35 U.S.C. 151. Further, a record may be disclosed, subject to the limitations of 37 CFR 1.14, as a routine use, to the public if the record was filed in an application which became abandoned or in which the proceedings were terminated and which application is referenced by either a published application, an application open to public inspection or an issued patent.
9. A record from this system of records may be disclosed, as a routine use, to a Federal, State, or local law enforcement agency, if the USPTO becomes aware of a violation or potential violation of law or regulation.

Notice of Allowability	Application No.	Applicant(s)	
	10/711,389	ZUMBRUNN ET AL.	
	Examiner	Art Unit	
	MELISSA MERCIER	1615	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address--

All claims being allowable, PROSECUTION ON THE MERITS IS (OR REMAINS) CLOSED in this application. If not included herewith (or previously mailed), a Notice of Allowance (PTOL-85) or other appropriate communication will be mailed in due course. **THIS NOTICE OF ALLOWABILITY IS NOT A GRANT OF PATENT RIGHTS.** This application is subject to withdrawal from issue at the initiative of the Office or upon petition by the applicant. See 37 CFR 1.313 and MPEP 1308.

1. ☒ This communication is responsive to *9-27-12*.

2. ☐ An election was made by the applicant in response to a restriction requirement set forth during the interview on _____; the restriction requirement and election have been incorporated into this action.

3. ☒ The allowed claim(s) is/are *17-24,26-35 and 38-44*. As a result of the allowed claim(s), you may be eligible to benefit from the **Patent Prosecution Highway** program at a participating intellectual property office for the corresponding application. For more information, please see http://www.uspto.gov/patents/init_events/pph/index.jsp or send an inquiry to PPHfeedback@uspto.gov .

4. ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
   a) ☐ All b) ☐ Some* c) ☒ None of the:
      1. ☐ Certified copies of the priority documents have been received.
      2. ☐ Certified copies of the priority documents have been received in Application No. _____ .
      3. ☒ Copies of the certified copies of the priority documents have been received in this national stage application from the International Bureau (PCT Rule 17.2(a)).

   * Certified copies not received: _____.

Applicant has THREE MONTHS FROM THE "MAILING DATE" of this communication to file a reply complying with the requirements noted below. Failure to timely comply will result in ABANDONMENT of this application.
THIS THREE-MONTH PERIOD IS NOT EXTENDABLE.

5. ☐ CORRECTED DRAWINGS (as "replacement sheets") must be submitted.

   ☐ including changes required by the attached Examiner's Amendment / Comment or in the Office action of Paper No./Mail Date _____.

   Identifying indicia such as the application number (see 37 CFR 1.84(c)) should be written on the drawings in the front (not the back) of each sheet. Replacement sheet(s) should be labeled as such in the header according to 37 CFR 1.121(d).

6. ☐ DEPOSIT OF and/or INFORMATION about the deposit of BIOLOGICAL MATERIAL must be submitted. Note the attached Examiner's comment regarding REQUIREMENT FOR THE DEPOSIT OF BIOLOGICAL MATERIAL.

Attachment(s)

1. ☐ Notice of References Cited (PTO-892)
2. ☒ Information Disclosure Statements (PTO/SB/08), Paper No./Mail Date 9-27-12
3. ☐ Examiner's Comment Regarding Requirement for Deposit of Biological Material
4. ☐ Interview Summary (PTO-413), Paper No./Mail Date _____ .
5. ☒ Examiner's Amendment/Comment
6. ☐ Examiner's Statement of Reasons for Allowance
7. ☐ Other _____.

/ANAND U DESAI/
Primary Examiner, Art Unit 1656

DETAILED ACTION

Election/Restrictions

Claims 17-18, 20-23, 26, 33-35 and 38-40 are allowable. The election of species requirement, as set forth in the Office action mailed on June 11, 2008, has been reconsidered in view of the allowability of claims to the elected invention pursuant to MPEP § 821.04(a). **The restriction requirement is hereby withdrawn as to any claim that requires all the limitations of an allowable claim.** Claims 19, 24, and 27-32 directed to alternative embodiments are no longer withdrawn from consideration because the claim(s) requires all the limitations of an allowable claim.

In view of the above noted withdrawal of the restriction requirement, applicant is advised that if any claim presented in a continuation or divisional application is anticipated by, or includes all the limitations of, a claim that is allowable in the present application, such claim may be subject to provisional statutory and/or nonstatutory double patenting rejections over the claims of the instant application.

Once a restriction requirement is withdrawn, the provisions of 35 U.S.C. 121 are no longer applicable. See *In re Ziegler*, 443 F.2d 1211, 1215, 170 USPQ 129, 131-32 (CCPA 1971). See also MPEP § 804.01.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to MELISSA MERCIER whose telephone number is

(571)272-9039. The examiner can normally be reached on 8:00am-4:30pm Mon through Friday.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Robert A. Wax can be reached on (571) 272-0623. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Melissa S Mercier/
Examiner, Art Unit 1615

/ANAND U DESAI/
Primary Examiner, Art Unit 1656
December 3, 2012

PTO/SB/08 (09-06)
Approved for use through 03/31/2007. OMB 0651-0031
U.S. Patent and Trademark Office: U.S. DEPARTMENT OF COMMERCE

Substitute for form 1449/PTO

INFORMATION DISCLOSURE STATEMENT BY APPLICANT

Date Submitted: 9/27/2012

(use as many sheets as necessary)

Sheet 1 of 1

Complete if Known	
Application Number	10/711,389
Filing Date	9/15/2004
First Named Inventor	Werner Zumbrunn
Art Unit	1615
Examiner Name	Melissa S. Mercier
Attorney Docket Number	095473-0106

U.S. PATENT DOCUMENTS

Examiner Initials*	Cite No.[1]	Document Number Number-Kind Code[2] (*if known*)	Publication Date MM-DD-YYYY	Name of Patentee or Applicant of Cited Document	Pages, Columns, Lines, Where Relevant Passages or Relevant Figures Appear

FOREIGN PATENT DOCUMENTS

Examiner Initials*	Cite No.[1]	Foreign Patent Document Country Code[3] Number[4] Kind Code[5] (*if known*)	Publication Date MM-DD-YYYY	Name of Patentee or Applicant of Cited Documents	Pages, Columns, Lines, Where Relevant Passages or Relevant Figures Appear	T[6]

NON PATENT LITERATURE DOCUMENTS

Examiner Initials*	Cite No.[1]	Include name of the author (in CAPITAL LETTERS), title of the article (when appropriate), title of the item (book, magazine, journal, serial, symposium, catalog, etc.) date, page(s), volume-issue number(s), publisher, city and/or country where published.	T[6]
	A1	Office Action cited in related U.S. Patent Application No. 12/835,693, dated 8/1/2012.	

Examiner Signature	/Melissa Mercier/ (11/27/2012)	Date Considered	

*EXAMINER: Initial if reference considered, whether or not citation is in conformance with MPEP 609. Draw line through citation if not in conformance and not considered. Include copy of this form with next communication to applicant. 1 Applicant's unique citation designation number (optional). 2 See Kinds Codes of USPTO Patent Documents at www.uspto.gov or MPEP 901.04. 3 Enter Office that issued the document, by the two-letter code (WIPO Standard ST.3). 4 For Japanese patent documents, the indication of the year of the reign of the Emperor must precede the serial number of the patent document. 5 Kind of document by the appropriate symbols as indicated on the document under WIPO Standard ST.16 if possible. 6 Applicant is to place a check mark here if English language Translation is attached.

ALL REFERENCES CONSIDERED EXCEPT WHERE LINED THROUGH. /MM/

Issue Classification

Application/Control No.	Applicant(s)/Patent Under Reexamination
10711389	ZUMBRUNN ET AL.
Examiner	**Art Unit**
MELISSA MERCIER	1615

ORIGINAL		INTERNATIONAL CLASSIFICATION										
CLASS	SUBCLASS	CLAIMED					NON-CLAIMED					
424	449	A	6	1	K	9 / 70 (2006.01.01)						

CROSS REFERENCE(S)					
CLASS	SUBCLASS (ONE SUBCLASS PER BLOCK)				

☐ Claims renumbered in the same order as presented by applicant ☐ CPA ☐ T.D. ☐ R.1.47

Final	Original	Final	Original	Final	Original	Final	Original	Final	Original	Final	Original	Final	Original	Final	Original
	1	1	17	16	33										
	2	2	18	17	34										
	3	3	19	18	35										
	4	4	20		36										
	5	5	21		37										
	6	6	22	19	38										
	7	7	23	20	39										
	8	8	24	21	40										
	9		25	22	41										
	10	9	26	23	42										
	11	10	27	24	43										
	12	11	28	25	44										
	13	12	29												
	14	13	30												
	15	14	31												
	16	15	32												

/MELISSA MERCIER/ Examiner.Art Unit 1615	11-27-12	**Total Claims Allowed:**	
(Assistant Examiner)	(Date)	25	
/ANAND DESAI/ Primary Examiner.Art Unit 1656	12/03/2012	O.G. Print Claim(s)	O.G. Print Figure
(Primary Examiner)	(Date)	1	1

UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

BIB DATA SHEET

CONFIRMATION NO. 5388

SERIAL NUMBER	FILING or 371(c) DATE RULE	CLASS	GROUP ART UNIT	ATTORNEY DOCKET NO.
10/711,389	09/15/2004	424	1615	095473-0106

APPLICANTS

Werner Zumbrunn, Muttenz, SWITZERLAND;
George Imanidis, Binningen, SWITZERLAND;
Hans Werner Van de Venn, Oenangen, SWITZERLAND;
Guy DiPierro, New York, NY;

**** CONTINUING DATA ****************************

This application is a CON of PCT/IB04/02947 09/13/2004

**** FOREIGN APPLICATIONS ****************************

SWITZERLAND 01833/03 10/27/2003

**** IF REQUIRED, FOREIGN FILING LICENSE GRANTED **** ** SMALL ENTITY **

11/02/2004

Foreign Priority claimed ☑ Yes ☐ No 35 USC 119(a-d) conditions met ☐ Yes ☑ No Verified and Acknowledged /MELISSA S MERCIER/ Examiner's Signature	☐ Met after Allowance Initials	STATE OR COUNTRY	SHEETS DRAWINGS	TOTAL CLAIMS	INDEPENDENT CLAIMS
		SWITZERLAND	4	34	2

ADDRESS

FOLEY AND LARDNER LLP
SUITE 500
3000 K STREET NW
WASHINGTON, DC 20007
UNITED STATES

TITLE

TRANSDERMAL DRUG DELIVERY METHOD AND SYSTEM

FILING FEE RECEIVED	FEES: Authority has been given in Paper No._____ to charge/credit DEPOSIT ACCOUNT No._____ for following:	☐ All Fees ☐ 1.16 Fees (Filing) ☐ 1.17 Fees (Processing Ext. of time) ☐ 1.18 Fees (Issue) ☐ Other _____ ☐ Credit
729		

Search Notes	Application/Control No.	Applicant(s)/Patent Under Reexamination
	10711389	ZUMBRUNN ET AL.
	Examiner	Art Unit
	MELISSA S MERCIER	1615

SEARCHED

Class	Subclass	Date	Examiner

SEARCH NOTES

Search Notes	Date	Examiner
East-see attached	11-27-12	MMercier

INTERFERENCE SEARCH

Class	Subclass	Date	Examiner
424	AND transdermal AND reservoir AND interface AND solvent removal	11-27-12	MMercier

/MELISSA S MERCIER/ Examiner.Art Unit 1615	

EAST Search History (Prior Art)

Ref #	Hits	Search Query	DBs	Default Operator	Plurals	Time Stamp
S1	2	"20030065294"	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2009/05/17 14:18
S3	19	transdermal SAME (device apparatus controller) AND (drug pharmacuetical "active agent") AND reservior AND solvent	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2009/06/08 10:24
S4	13	transdermal SAME (device apparatus controller) AND (drug pharmacuetical "active agent") AND reservior AND solvent AND interface	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2009/06/08 10:25
S5	10	transdermal SAME (device apparatus controller) AND (drug pharmacuetical "active agent") AND reservior AND solvent AND removal	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2009/06/08 13:35
S6	2	transdermal SAME (device apparatus controller) AND (drug pharmacuetical "active agent") AND reservior AND solvent ADJ3 removal	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2009/06/08 13:36
S7	1598	transdermal AND solvent ADJ3 removal	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2009/06/08 13:40
S8	20	transdermal AND solvent ADJ3 removal SAME absorption	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2009/06/08 13:41

EAST Search History (Prior Art)

S9	89	transdermal AND (waste solvent ADJ3 removal) SAME absorption	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2009/06/08 13:47
S10	20	transdermal AND (waste adj3 removal solvent ADJ3 removal) SAME absorption	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2009/06/08 13:48
S11	22	transdermal AND (waste adj3 reservoir solvent ADJ3 removal) SAME absorption	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2009/06/08 13:48
S12	1630	transdermal AND (waste adj3 reservoir solvent ADJ3 removal)	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2009/06/08 13:49
S13	906	transdermal AND (waste adj3 reservoir solvent ADJ3 removal) AND absorption	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2009/06/08 13:49
S14	3	transdermal AND waste adj3 reservoir AND solvent ADJ3 removal AND absorption	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2009/06/08 13:49
S15	3	transdermal AND waste adj3 reservoir AND solvent ADJ3 removal	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2009/06/08 13:51

EAST Search History (Prior Art)

S16	3	(transdermal transmucosal) AND waste adj3 reservoir AND solvent ADJ3 removal	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2009/06/08 13:51
S17	4431	iontophoretic	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2009/06/08 14:57
S18	2954	iontophoretic AND transdermal	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2009/06/08 14:57
S19	214	iontophoretic AND transdermal AND solvent same removal	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2009/06/08 14:57
S20	0	"6374136" AND sensor	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2009/06/22 15:00
S21	0	"6374136" AND sensor	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2009/06/22 15:00
S22	7604	(transdermal transmucosal) AND sensor	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2009/06/22 15:11

EAST Search History (Prior Art)

S23	2165	iontophoretic SAME transdermal	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2009/06/22 15:46
S24	331	iontophoretic SAME transdermal AND sensor	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2009/06/22 15:46
S25	275	iontophoretic SAME transdermal AND sensor AND signal	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2009/06/22 15:46
S26	208	iontophoretic SAME transdermal AND sensor SAME signal	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2009/06/22 15:47
S27	102	iontophoretic SAME transdermal AND sensor SAME signal	USPAT	OR	ON	2009/06/22 15:47

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Applicant: Zumbrunn et al.

Title: TRANSDERMAL DRUG DELIVERY METHOD AND SYSTEM

Appl. No.: 10/711,389

Filing Date: 9/15/2004

Examiner: Mercier, Melissa S.

Art Unit: 1615

Confirmation Number: 5388

AMENDMENT AND REPLY UNDER 37 C.F.R. § 1.111

Mail Stop Amendment
Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

Sir:

This communication is responsive to the non-Final Office Action dated June 15, 2012, concerning the above-referenced patent application. While the shortened statutory period for response has expired, filed herewith is a Petition for a one month extension of time to extend the period for response to **October 15, 2012**. Accordingly, this response is timely filed.

Listing of Claims begins on page 2 of this document.

Remarks/Arguments begin on page 6 of this document.

AMENDMENTS TO THE CLAIMS

1.-16. (Cancelled)

17. (Currently Amended) A device for transdermal administration of at least one active substance to a porous surface, comprising:

(a) an administration reservoir;

(b) a dispensing device interconnected to the administration reservoir for delivery of at least one active substance dissolved in a solvent to the administration reservoir, wherein the administration reservoir is suitable to receive the active substance dissolved in the solvent;

(c) an interface configured to contact the porous surface and suitable for transferring the active substance from the administration reservoir to the porous surface; and

(d) a solvent removal element configured to absorb solvent from the administration reservoir by evaporation when the interface is in contact with the porous surface, wherein the solvent removal element does not remove the active substance, and wherein the solvent removal element is not in contact with the interface;

wherein the transfer of the active substance from the administration reservoir to the porous surface is controlled via the absorption of solvent by the solvent removal element.

18. (Previously presented) The device according to claim 17 wherein the interface is suitable to be arranged in vicinity to the porous surface.

19. (Withdrawn) The device according to claim 18 wherein the interface comprises an adhesive surface suitable to be attached to the porous surface.

20. (Previously presented) The device according to claim 17 wherein the interface is a membrane permeable for the active substance.

21. (Previously presented) The device according to claim 17 wherein the solvent removal element is separated from the administration reservoir by a separation means.

22. (Previously presented) The device according to claim 21 wherein the separation means is selected from the group consisting of a membrane, a foam, a cellular material, a honeycomb, and an air gap.

23. (Previously presented) The device according to claim 21 wherein the administration reservoir and the solvent removal element are spaced apart a distance by the separation means.

24. (Withdrawn) The device according to claim 17 wherein the solvent removal element comprises one or more of the following materials: Desiccant, general or a selective absorbent material, silica gel, a molecular sieve, and active carbon.

25. (Cancelled)

26. (Previously presented) The device according to claim 17 wherein the dispensing device comprises at least one reservoir for an active substance which is interconnected to the administration reservoir.

27. (Withdrawn) The device according to claim 26 wherein the dispensing device comprises a propellant means to propel the active substance from the one reservoir into the administration reservoir.

28. (Withdrawn) The device according to claim 27 wherein the propellant means is a pump and/or a propellant gas.

29. (Withdrawn) The device according to claim 26 wherein the dispensing device comprises a first reservoir comprising a first active substance and a second reservoir comprising a second active substance and the first and the second active substance are mixed by mixing means before delivery to the administration reservoir.

30. (Withdrawn) The device according to claim 29 wherein the mixing means is a pipe with vortex means providing an appropriate preparation of mixture.

31. (Withdrawn) The device according to claim 35 wherein the control device is interconnected to at least one valve for controlling the administration of the at least one active substance.

32. (Withdrawn) The device according to claim 35 wherein the control device is programmable according to a predetermined regime or time pattern or interval of administration of the at least one active substance.

33. (Previously presented) The device according to claim 35 wherein the control device is interconnected with at least one sensor for measuring a condition of the at least one active substance within the administration reservoir.

34. (Previously presented) The device according to claim 33 wherein the administration of the active substance is based on the signal of the at least one sensor.

35. (Previously presented) The control device according to claim 17 wherein the administration of the active substance is controlled by a control device.

36.-37. (Cancelled)

38. (Previously presented) The device of claim 17 wherein the solvent removal element controls the transfer of the active substance from the administration reservoir to the porous surface by controlling the concentration of the at least one active substance in the administration reservoir.

39. (Previously presented) The device of claim 17 wherein the solvent removal element controls termination of the transfer of the active substance from the administration reservoir to the porous surface by drying the interface.

40. (Previously presented) The device of claim 17, further comprising a housing, wherein the administration reservoir, the dispensing device, and the solvent removal element are located within the housing.

41, (New) The device of claim 17, wherein the solvent removal element comprises an evaporation means.

42. (New) The device of claim 17, wherein the solvent removal element comprises a heating element for supporting evaporation.

43. (New) The device of claim 17, wherein the solvent removal element comprises a compartment through which gas is guided to promote evaporation.

44. (New) The device of claim 17, wherein the solvent removal element comprises a hydrophilic substance.

REMARKS

Applicants respectfully request reconsideration of the present application.

I. Status of the Claims

Claims 1-16, 36, and 37 are cancelled as being drawn to a non-elected invention, without prejudice or disclaimer thereof. In addition, claim 25 is cancelled, without prejudice or disclaimer thereof. Applicants reserve the right to prosecute the subject matter of the cancelled claims in this or another application.

Claim 17 is amended to state that "the solvent removal element does not remove the active substance" and that "the solvent removal element is not in contact with the interface." *See e.g.,* paragraph [0037] of US 2005/0238704. The former amendment is made to clarify the language of the claim and merely explicitly states that which was already recited in the claim. Specifically, the claim language recites "a solvent removal means," which means just that – a means for removing *solvent*. *See e.g.,* paragraph [0037] of US 2005/0238704 which states that "[t]he solvent recovery element reclaims *the solvent* that was dispensed with the formulation onto the interface and was not absorbed otherwise" (emphasis added). In the Office Action dated June 15, 2012, the Examiner incorrectly construed this element as *also* encompassing removal of the active agent. This construction is incorrect as the "solvent removal means" *only* removes solvent and not active agent.

Additionally, claims 41-44 are added to the application. Exemplary support for the new claims can be found in the published application as detailed in the table below.

Claim	US 2005/0238704
41	Original claim 2, 17; paragraph [0034]
42	Original claim 3; paragraph [0034]
43	Paragraph [0050]
44	Paragraph [0074]

As the foregoing amendments do not introduce new matter, entry thereof by the Examiner is respectfully requested.

II. Summary of the Claimed Invention

The critical aspect of the claimed invention is the ability to turn drug delivery on and off, or to change the dosage of drug delivery. Conventional patch-based delivery systems, such as those described in the cited prior art references, comprise a patch and an interconnected dispensing unit. Such prior art devices are suitable for administering a drug under a specific time regime, where the quantity of the specific drug dose delivered to the patch can be predetermined more or less accurately, and the time period for dispensing the substance can be predetermined as well. However, turning drug delivery for a prior art patch on and off causes uncontrolled time lag in the delivery rate to or through the skin. *See e.g.*, page 14, lines 5-14, of WO 2005/039685 (Exhibit 1). As a result, the prior art delivery systems often lead to a constantly diminishing dispensing rate for the active agent. These problems are avoided by the claimed invention.

Specifically, the claimed invention enables the ability to turn drug delivery off and on, to slow drug delivery, or to change drug delivery dosage by controlling removal of solvent present in the device. As amended, the claims recite that only solvent, and not drug, is removed via the solvent removal element. Solvent removal elements according to the invention can comprise, *e.g.*, an expandable waste reservoir, a desiccant, heating element, or an element utilizing evaporation.

The ability to precisely modulate drug delivery is highly desirable, as this ability enables tailoring the amount of drug needed, at the time needed, for an individual patient. This ability is not found in the prior art.

III. Claim Rejections – 35 U.S.C. § 103

A. Pickup and Frate

Claims 17-18, 20-23, 26, 33-35, and 38-40 are rejected under 35 U.S.C. 103(a) as being allegedly unpatentable over Pickup et al. (US 2003/0064294) ("Pickup") in view of Frate (US Patent No. 6,211,296). Office Action at pages 3-5. Applicants respectfully traverse this ground for rejection.

1. Pickup does not teach or suggest Applicants' claimed solvent removal system which enables controlled drug delivery

Pickup discloses a "transdermal application system 20 ... for applying a bioactive substance to a subject." *See* paragraph [0038] of Pickup. In some of the embodiments taught by Pickup, the bioactive substance is applied "to an absorbent member, such as a patch 25 of a fabric or other absorbent material," and "the patch may be removed, recharged with the drug, and then reapplied." *See* paragraphs [0038] and [0039] of Pickup. In other words, Pickup discloses terminating drug delivery via *removal of a used patch to be recharged.*

As such, Pickup does not teach: (1) a solvent removal element configured to *selectively* absorb solvent from the administration reservoir by evaporation when the interface is in contact with the porous surface; (2) wherein the solvent removal element does not remove the active substance; (3) wherein the solvent removal element is not in contact with the interface; or (4) wherein the transfer of the active substance from the administration reservoir to the porous surface is controlled via the absorption of solvent by the solvent removal element, all of which are required by the claimed invention.

These features of the claimed invention are significant as they enable *controlled* delivery of the active agent, *i.e.,* stopping drug delivery, starting drug delivery, as well as modulating drug delivery. These desirable features are not possible with the device of Pickup, except by *physical removal and application of the transdermal device of Pickup.* Applicants' claimed device, which does not require such physical removal, is beneficial as using the claimed device it is significantly easier to obtain patient compliance with the desired optimal drug administration schedule – both in terms of dose timing and drug dosage – for all patients.

2. Frate does not teach selective removal of the solvent

Frate does not remedy the deficiencies of Pickup, as Frate does not teach or suggest (1) selective removal of the solvent, or (2) a solvent removal means which does not come into direct contact with the interface, both of which are required by the claimed invention.

Specifically, Frate teaches a hydrogel blend which can be used as an application vehicle. *See* Abstract of Frate. The hydrogel blend can be applied to a substrate such as

human skin, and can be used to remove "a compound from the substrate by binding an absorptive substance to the substrate." *See* col. 1, line 63, through col. 2, line 3, of Frate. When functioning as a removal system, the hydrogel acts as a "sponge" that mops up "undesired oil or other components from the skin." *See* col. 2, lines 4-6, of Frate.

The device of Frate does not teach or suggest *selective* removal of solvent from a transdermal delivery system, such as required by the claimed invention.

3. Frate does not teach a solvent removal means which is not in contact with the substrate

Applicants' claimed device requires a solvent removal system "which is not in contact with the interface." This is not taught or suggested by Frate, as Frate's hydrogel must contact the substrate (or interface) to accomplish removal of a solvent. A benefit of Applicants' claimed selective solvent removal system is that it does not additionally capture oils and "gunk" present on the substrate.

Accordingly, Pickup in combination with Frate does not teach or suggest the claimed invention and, as such, withdrawal of this ground for rejection is respectfully requested.

B. Henley

Claims 17-18, 20, 33-35, and 38-40 are rejected under 35 U.S.C. § 103(a) as being allegedly unpatentable over Henley (US Patent No. 5,538,502). Office Action at pages 6-8. Applicants respectfully traverse this ground for rejection.

Henley is directed to a transdermal apparatus comprising driver electronics, application electrodes, and a medication reservoir. *See* col. 4, lines 32-37, of Henley. According to the Examiner, "[w]hen the delivery of the active is stopped, the medicament is absorbed into the porous material, thereby reading on the solvent removal element since the bioactive agent is dissolved in the solvent." Office Action at page 7.

Applicants have amended claim 17 to clarify that the claimed device *selectively* removes solvent from the interface. This is not taught or suggested by Henley. Accordingly withdrawal of this ground for rejection is respectfully requested.

IV. Conclusion

The present application is in condition for allowance. Favorable reconsideration of the application is respectfully requested. The Examiner is invited to contact the undersigned by telephone if it is felt that a telephone interview would advance the prosecution of the present application.

The Commissioner is hereby authorized to charge any additional fees which may be required regarding this application under 37 C.F.R. §§ 1.16-1.17, or credit any overpayment, to Deposit Account No. 19-0741. Should no proper payment be enclosed herewith, as by the credit card payment instructions in EFS-Web being incorrect or absent, resulting in a rejected or incorrect credit card transaction, the Commissioner is authorized to charge the unpaid amount to Deposit Account No. 19-0741. If any extensions of time are needed for timely acceptance of papers submitted herewith, Applicants hereby petition for such extension under 37 C.F.R. §1.136 and authorizes payment of any such extensions fees to Deposit Account No. 19-0741.

Respectfully submitted,

Date: Sept 27, 2012

By _____

FOLEY & LARDNER LLP
Customer Number: 22428
Telephone: (202) 672-5300
Facsimile: (202) 672-5399

Michele M. Simkin
Attorney for Applicant
Registration No. 34,717

Exhibit 1

(12) INTERNATIONAL APPLICATION PUBLISHED UNDER THE PATENT COOPERATION TREATY (PCT)

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(71) Applicants *(for all designated States except US)*: **UNIVERSITY OF BASEL** [CH/CH]; Petersgraben 35, CH-4003 Basel (CH). **FACHHOCHSCHULE SOLOTHURN Nordwestschweiz** [CH/CH]; Postfach, CH-4601 Olten (CH).

(72) Inventors; and

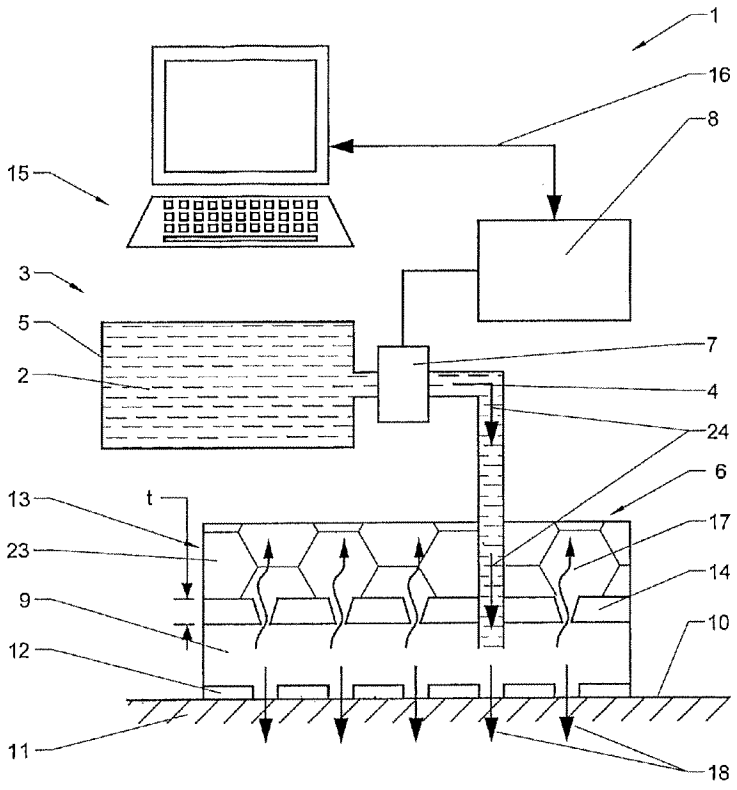
(75) Inventors/Applicants *(for US only)*: **IMANIDIS, Georgios** [GR/CH]; Bruderholzstrasse 34, CH-4102 Binningen (CH). **ZUMBRUNN, Werner** [CH/CH]; Hallenweg 9, CH-4132 Muttenz (CH). **DI PIERRO, Guy** [US/US]; 6 Tulip Court, Nanuet, NY 10954 (US).

(74) Common Representative: **UNIVERSITY OF BASEL**; Petersgraben 35, CH-4003 Basel (CH).

(81) Designated States *(unless otherwise indicated, for every kind of national protection available)*: AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BW, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, EG, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NA, NI, NO, NZ, OM, PG, PH, PL, PT, RO, RU, SC, SD, SE, SG, SK, SL, SY, TJ, TM, TN, TR, TT, TZ, UA, UG, US, UZ, VC, VN, YU, ZA, ZM, ZW.

[Continued on next page]

(54) Title: TRANSDERMAL DRUG DELIVERY METHOD AND SYSTEM



(57) Abstract: The invention concerns a transdermal delivery system for controlled dispensing of an active substance to and through a porous surface. A certain amount of fluid comprising at least one active substance and at least one solvent is dispensed into an administration reservoir. In the administration reservoir the at least one solvent is separated from the administration reservoir by a solvent recovery means such that the active substance achieves a certain level on an interface device which is permeable for the one active substance. Thereby the active substance is absorbable via diffusion from the interface device by a porous surface to be treated.

WO 2005/039685 A1

WO 2005/039685 A1

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— *with international search report*

For two-letter codes and other abbreviations, refer to the "Guidance Notes on Codes and Abbreviations" appearing at the beginning of each regular issue of the PCT Gazette.

TRANSDERMAL DRUG DELIVERY METHOD AND SYSTEM

FIELD OF THE INVENTION

The invention concerns a delivery system for a chemical substance for the controlled dispensing of the chemical substance to and through a surface, respectively skin. More specifically the invention relates to a method and a system usable, i.e. for transdermal drug delivery.

BACKGROUND OF THE INVENTION

Delivery of chemical substance to and through a surface administrated over a desired time is a subject matter in different areas. A very important subject area, where the delivery of chemical substances to or through a permeable surface is important, is medicine. Although the invention is not restricted to the field of medicine the invention is described in the following mainly with respect to this field of application.

Pharmaceutical substances provide effective treatments for a variety of illnesses. In general it is necessary that medication is applied at a certain time or with a certain time pattern or it is necessary to keep the level of medication at a certain value to achieve the aimed therapeutic result most efficiently. Unfortunately patients often fail to take their medications at the proper prescribed intervals or period of time. Moreover there are drugs, which are partially or totally inactivated following oral ingestion, by the highly acidic environment of the stomach or by the filter impact of the liver.

In order to overcome such problems, drugs are administered by transdermal delivery. The most common parenteral methods (methods avoiding digestion) for drug delivery are the administration in separate dosages by injections with a needle or continuously by drip. For a long term treatment these methods may be

uncomfortable for the patient because of the repeated injury by needle injections and the limited liberty of action due to intravenous drip apparatus.

A more comfortable method for drug delivery utilizes patches which are applied on the surface of the skin. Patches are known since more than twenty years; i.e. the product TransdermScop® of Novartis has been on the market since 1981. Those patches are portable and therefore very comfortable and furthermore very suitable for patients which are scared by needles and cannulae. Examples of drugs that are routinely administered by skin applied patches are nicotine, steroid hormones, and some analgesics (such as fentanyl). Using plaster-like patches for drug delivery provides continuous dosages usually over a relatively short period of time (such as a day up to a week), without requiring active participation of the patient.

In order to provide a more flexible, precise and complex administration of drugs by a patch based system over a certain period of time, portable dispensing systems have been developed in the last few years which are connectable or connected in a fixed way to a patch. These systems in general comprise a dispensing system with a reservoir for a drug. In case of more than one reservoir the reservoirs are provided for one drug or different drugs or different components of a drug. Further the dispensing system has a dispensing unit. The reservoir and the dispensing unit are interconnected to the patch. Different types of dispensing units are known from prior art.

US5785688 (Joshi, et al.) discloses an apparatus for subcutaneous drug delivery having a fluid reservoir disposed within a housing for storing the fluid, a pump or pressurized chamber for pressurizing a driving gas is foreseen for exerting a force on the fluid reservoir to expel the fluid reservoir's contents. A needle or absorbent pad are interconnected with the reservoir.

US5405614 (D'Angelo, et al.) discloses a drug delivery system for transdermal delivery of drugs through the skin. The delivery system comprises a container for

containing the drug with a drug release opening. An ultrasonic transducer is disposed in the general conduit area for generating ultrasonic waves aimed at the skin area.

US5932240 (D'Angelo, et al.) describes a patch-like multidose transdermal drug delivery system having a laminate composite with a plurality of compartments. Each compartment is a reservoir for a unit dose of a drug active to be transdermally administered. Individual seals are removable to release a unit dose of drug into contact with the skin of a patient.

US6723077 (Pickup et al.) is directed to a jet dispenser using inkjet technology for delivery of bioactive agents. The dispenser propels a certain volume of bioactive agent directly towards the skin, where they exert a local or topical effect, or move through the skin for transdermal systemic delivery. Drugs are either delivered directly to the skin, or are introduced into a transdermal patch, which may receive repeated dosages. A controller in the dispenser controls delivery and timing of drug administration. Due to the direct application of the active substance to the skin the process of medication is difficult to control and mainly determined by the diffusion rate of the skin.

US6165155 (Jacobsen, et al.) discloses an automatic drug delivery system utilizing a control pad coupled to a disposable drug storage and delivery system. Expanding propellant gas exerts pressure on a drug in a chamber and forces it from the storage reservoir. Drug delivery is based upon a hypodermic needle, a jet nozzle injecting the drug into a subcutaneous tissue or a patch for passive transdermal delivery or iontophoretic transdermal diffusion.

US4917895 (Lee, et al.) describes a diffusional drug with a metal layer and activating means which are inert when dry. The system is activated by moisture whereby the activating means provide release of an eroding agent which erodes

the metal layer through which the therapeutic agent diffuses and is subsequently delivered.

US4379454 (Campbell, et al.) discloses a one-way skin patch with a top backing layer, a drug reservoir, a diffusion membrane and a contact adhesive layer. The backing layer defines the top of the patch and is made from a material or combination of materials that is substantially impermeable to the components contained in the drug reservoir. The diffusion membrane is made of a dense or microporous polymer film that is permeable for the drug and the enhancer. The patch coadministers a drug and a percutaneous absorption enhancer to a defined area of the skin. The drug is provided to a basal surface at a rate at least as great as the rate at which the skin is able to absorb the drug whereas the enhancer is via a rate controlling means at a substantially constant rate that increases the permeability of the treated area of skin to the drug to a level at which the drug is absorbed at a therapeutically effective rate.

US4708716 (Sibalis) describes a transdermal drug applicator for administration of drugs through the skin into the blood stream of a patient. The drug applicator embodies a plurality of reservoirs for containing the medicament. A battery is disposed adjacent to one side of the reservoirs. When the applicator is adhered to and mounted on the skin a complete electrical circuit through the skin is formed and the medicament in the reservoir migrates out of the reservoir and through the skin into the patient's blood stream.

US6129702 (Woias, et al.) describes a medicament dosing system which is based on overpressure. The medicament dosing system comprises a replaceable and a permanent unit. The replaceable unit has a fluid reservoir for receiving a medicament in liquid form. The permanent unit comprises valve and control means which are coupled to a temperature sensor and the valve so as to control a flow rate of the liquid medicament by clocked actuation the valve depending on the temperature detected.

US5273756 (Fallon, et al.) is directed to a transdermal drug delivery device using a microporous membrane to achieve delayed onset. The transdermal drug delivery device comprises a layered setup with a pressure rupturable layer. The device is made such that it initially takes at least about six hours for the drug to diffuse to the skin from the reservoir once the reservoir is ruptured.

US5505958 (Bello, et al.) describes a one-way transdermal drug delivery device which has a drug-storing matrix made out of a flexible cellular structure fabricated from a flexible cellular thermoplastic for storing at least one drug.

US587322 (Lattin, et al.) is directed to a self-contained transdermal drug delivery device by electro transport means with electrodes designed to be worn on the skin. The electro transport device can be used by patients to deliver a drug during a prescribed course of therapy, e.g. the delivery of an analgesic to control pain.

CA2142871 (Miranda, et al.) discloses a one-way transdermal drug delivery device in the form of a laminated composite which delivers a drug continuously over approximately 16 hours, especially in case of problems such as drug tolerance (e.g., nitroglycerin) or sleep disorders (e.g., nicotine). The drug is loaded in the device in a concentration such that the drug becomes depleted from the device after approximately 16 hours to the extent that the rate of delivery of the drug to the patient is slowed to such an extent that the pharmacological effect of the drug on the patient becomes substantially nonexistent.

PCT/GB02/04064 (Watmough, et al.) describes an apparatus which utilises megahertz ultrasound from a piezoelectric transducer to produce liquid jets which penetrate into or through porous media such as animal skin and egg shells. A device in the form of a gun is described that is suitable to receive cartons of drug. A cloud of drops can be driven towards or into the nose or mouth of a patient using a suitable fan or pipework.

It has been tried to accelerate the diffusion rate of an active substance through the skin by various measures, i.e. applying an electric field, ultrasonic, radiation, heat or chemical accelerators. However, all these measures, by exception of chemical accelerators, require much auxiliary power or are technically very complex and expensive. Chemical accelerators often increase the probability of skin irritations, allergic reactions, inflammation and/or swelling.

The efficiency of transdermal drug delivery systems using patches depends often on the diffusion rate of the active substance through the skin, which on one hand depends on the active substance and its solvent and on the other hand varies in a wide range from mammal to mammal even within the same species, thus as from human being to human being, and also from the body area the patch is applied to. The constructions of the patches known from prior art usually try to control these dependencies by a set up of several layers. One important layer is an active substance reservoir or a Polymer-Matrix, in which the active substance is embedded, either dissolved in a solvent or embedded in micro capsules. The reservoir for the active substance is covered with an upper-layer which protects the patch against the environment. The upper-layer has to be impermeable to the active substance and the solvent as well as to substances acting from outside. Two layers may be arranged between the active substance reservoir and the skin: The first layer is a membrane, which is arranged directly adjacent to the active substance reservoir, and the second is an adhesive layer to be patched on the skin which is, if appropriate, covered by a removable protection film before use.

In systems known from prior art the membrane adjacent to the active substance reservoir controls the dispensing of the active substance to the skin. The dispensing rate of the active substance into the skin is mainly influenced by the permeability of the membrane and the concentration. Therefore, to obtain controllable results the permeability of the membrane is chosen such that the diffusion rate of the active substance from the reservoir through the membrane and through the skin into the body is defined mainly by the permeability of the

membrane and not by the diffusion rate of the active substance through the skin. The absence of an appropriate membrane would result in very different transport rates of the active substance into the body, because of the different skin characteristics. High diffusion characteristics of the skin imply the risk of an overdose, whereas low diffusion characteristics imply the risk of no therapeutic effect. In order to minimize said problems the permeability of the membrane in some systems has been chosen much lower than the permeability of the different skin types. However, in this case the amount of active substance which diffuses through a specific skin area is much less than the theoretical maximum given by the characteristics of the skin. Hence the size of the patch has to be chosen much bigger than intrinsically necessary.

Patch based delivery systems which are able to effectively administrate the delivery of an active substance to a subject over a certain period of time in precise doses, e.g. delivered at predetermined intervals, are a problem that has not been solved by now. Turning delivery on and off may cause uncontrolled time lag in the delivery rate of the on and off events and leads often over the long term run to a constantly diminishing diffusion rate through the skin.

Most drugs used today perform better therapeutically when delivered in a modulated rather than in a continuous fashion throughout the applied period of time, for example, a circadian rhythm. A number of chemicals are, e.g., needed only at a certain time during the day. Therefore it is necessary to be able to precisely control and apply drugs according to predetermined rules. Currently no technology that is non invasive, does not need an extensive power supply and can be independently used by the targeted individual, such as customer and/or patient is available affording automated control of drug delivery in real time.

It is an object of the present invention to provide a delivery system for an active substance which avoids the draw backs known from the prior art. It is a further object of the present invention to provide a patch based delivery system for an

active substance which is able to administrate the delivery of a chemical substance to a subject over a period of time in a controllable way.

SUMMARY OF THE INVENTION

According to the present invention an active substance (drug) normally is dissolved in a fluid solution comprising a solvent. The active substance and/or the solvent are dispensed directly or indirectly via at least one interface device on a porous surface, e.g. skin, such that the active substance is absorbed through or by the porous surface primarily by diffusion.

A device according to the present invention in general comprises dispensing means, e.g. a pump, at least one drug reservoir, at least one administration element (patch reservoir, administration reservoir, administration compartment, administration chamber) and at least one solvent removal and/or recovery element and if necessary control means interconnected to each other. In a preferred embodiment of the invention the administration reservoir and the solvent recovery means are incorporated in an administration unit (patch). The at least one drug reservoir contains a sufficient amount of one or more active substance dissolved or dispersed at an appropriate concentration in a formulation which may contain a solvent or a solvent mixture that is volatile. If appropriate other excipients, for example tissue permeation promoters (enhancers), thickening substances, solubilizers, buffers, chemical stabilizers, preservatives are present too.

The active substance may be any dispensable fluid (for example a liquid, gel or powder), although liquids are particularly of use in the dispensing unit. In some embodiments, at least one of the reservoirs may contain an active substance in powder or other dry form. The powder or other agent is dispensed from the

reservoir, and may be combined with a solvent and/or another liquid such as a penetration enhancer. If appropriate the dispensing unit may allow chemical reactions to occur, e.g. in the administration reservoir, as well as phase changes to stabilize (such as a change from a solid to a liquid state).

Examples of active substances which can be administered by the device according to the present invention include pharmaceutical compositions that are capable of transdermal delivery. Such agents include drugs having sufficient lipophilicity or hydrophilicity to move through the skin surface and stratum corneum. Certain of these agents are designed to reach the microvasculature of the skin, for subsequent systemic absorption and distribution. Examples of agents that are suitable for transdermal delivery include scopolamine, nitrates such as nitroglycerine, an antihypertensive or anti-adrenergic drug such as clonidine, steroid hormones such as 17-beta-estradiol and testosterone, analgesics, such as the opioid analgesic fentanyl, and treatments for nicotine withdrawal, such as nicotine. Many analogues of these drugs retain their biological activity, and are also suitable for transdermal delivery. Although the disclosed dispensing unit is particularly suited for transdermal delivery of drugs, it can also be used for topical surface application of drugs, such as antibiotics, corticosteroids, minoxidil or retinoids (such as Retin A). For example it is also possible that an active substance, e.g. an insoluble drug, may be encapsulated in a nanoparticular form dispersed in a solvent.

A device according to the present invention may comprise several reservoirs for active substances comprising the same or different agents, for example different agents that combine before or at the time of delivery to modify one or both of the agents, or to produce a desired effect. An example of a modifying substance that may be combined at the point of application is a enhancer that improves cutaneous penetration of the at least one active substance. Penetration enhancers that may be mixed with a bioactive agent at the time of delivery may include solvents such as water; alcohols (such as methanol, ethanol and 2-

propanol); alkyl methyl sulfoxides (such as dimethyl sulfoxide, decylmethyl sulfoxide and tetradecylmethyl sulfoxide); pyrrolidones (such as 2-pyrrolidone, N-methyl-2-pyrroloidone and N-(2-hydroxyethyl)pyrrolidone); laurocapram; and miscellaneous solvents such as acetone, dimethyl acetamide, dimethyl formamide, and tetrahyrdofurfuryl alcohol. Other penetration enhancers include amphiphiles such as L-amino acids, anionic surfactants, cationic surfactants, amphoteric surfactants, nonionic surfactants, fatty acids and alcohols. Additional penetration enhancers are disclosed in Remington: The Science and Practice of Pharmacy, 19.sup.th Edition (1995) on page 1583. Of course agents such as penetration enhancers can also be premixed with the bioactive agent prior to the point of application, for example the bioactive agent and modifying substance can be present together in a reservoir.

US6723077 (from now on US'077), already mentioned above, is directed to an applicator for cutaneous delivery of a bioactive composition using a jet dispenser, such as a piezoelectric or thermal jet dispenser, for instance of a construction used in the inkjet printing arts. In difference to US'077 the present invention uses at least one solvent which is at least partially separated during administration of the at least one active substance by a solvent recovery means. A major disadvantage of the piezo electric or thermal jet dispenser described in US'077 is that the bioactive composition is stressed due to heat and/or high pressure which inevitably may occur while application.

In operation the formulation contained in the at least one drug reservoir is dispensed by the dispensing unit into the at least one administration reservoir (patch reservoir). Volume and frequency of administration of the active substance are controlled by a control unit which preferably is freely programmable according to given needs. The solvent recovery means reclaim solvent that was dispensed together with the formulation into the patch reservoir and is not absorbed. The preferably volatile solvent evaporates from the interface continuously and is guided to the solvent recovery means. If appropriate a heating element or other

helping means may be used for supporting evaporation of the solvent. However the temperature of the skin in general is sufficient. The solvent recovery means serve to remove depleted solvent from the interface such that, e.g. after repeated dispensing, active substance concentration maintains at a certain concentration and no unwanted substance is accumulated within the device. Upon quitting dispensing of formula, the residual solvent is recovered and dryness of the interface is achieved, which results in controlled termination of drug delivery. Alternatively or in addition depleted solvent may be discharged into environment only, e.g. by direct evaporation.

In general the active substance is completely enclosed in the administration/patch reservoir and is not in contact with the environment or other components. The interface may comprise a membrane (polymer membrane) which may be lined with an absorbent material, such as blotting paper, suitable to receive active substance and facing inwards to the interior of the device. The membrane of the interface is in functional contact with the surface to be treated. The drug formulation is dispensed onto the interface by the dispensing unit which is interconnected to the drug reservoir. The solvent recovery means are normally arranged at a certain distance from the absorbent material preventing uncontrolled absorption of solvent. The volume and frequency of dispensing are freely programmable and are used to control the delivery rate and the time pattern of delivery of the drug.

Due to the reason that an organism in general does not show a steady sensibility with respect to a certain drug and to avoid tolerances against a certain drug the present invention foresees, if appropriate, a non-constant administration of at least one drug over a certain period of time or intervals of time. Because of that it is possible to avoid an increasing need of active substance to achieve a certain result. By administering an active substance adjusted to the circadian rhythm the result of therapy may be increased significantly. Depending on the field of application and embodiment the present invention offers the opportunity to

precisely administer at least one active substance according to a preset or real-time regime. This method is applicable e.g. to reduce the addiction to nicotine or other drugs.

Drug is delivered from the interface primarily by diffusion. The solvent recovery element reclaims the solvent that was dispensed with the formulation onto the interface and was not absorbed otherwise. The solvent recovery element preferably is located within the device and comprises one or more desiccants and/or general adsorbents such as silica gel, molecular sieves or active carbon. These materials are normally arranged within a bag consisting of non-wettable but vapor permeable material e.g. such as Gore-Tex®. In a preferred embodiment the solvent recovery element is arranged close to but in non-contact with the interface. The volatile solvent evaporates from the interface continuously under the influence of body heat and the vapors are trapped in the solvent recovery element. The solvent recovery element serves the purpose of removing depleted solvent from the interface so that, after repeated dispensing, drug concentration maintains its highest value and no freely moving liquid is formed within the device. Upon quitting dispensing of drug formula, the residual solvent is recovered and dryness of the interface is achieved, which brings about stoppage of drug delivery. The solvent recovery element is contained in a non-wettable material in order to avoid uptake of drug formula and consequent loss of drug.

Several parameters are relevant for the amount of active substance absorbed by the surface to be treated such as concentration of the active substance in the solvent, the repetition-rate of supply and the volume supplied. These parameters are controllable by the described invention.

Solvent that is not absorbed by the skin in a sufficient way is carried off in another way than by absorption through the skin, e.g. by evaporation into the environment and/or by absorption by an other mean, e.g. absorbing substance such as silica gel. By this it is possible to avoid negative decrease of the active substance due

to accumulation of the solvent which would impact the diffusion rate through the skin. Especially solvents based on water and/or alcohol are having at temperatures nearby the temperature of skin a vapor pressure which is sufficiently high to carry off the solvent by evaporation. However, the carrying off and/or diffusion rate of the solvent preferably is adjusted to the diffusion rate of the active substance through the skin to avoid accumulation of the solvent or precipitation of the active substance on the skin in a negative way.

According to the present invention a membrane which obstructs the transportation of the active substance e.g. due to a lower transfer rate than the skin can be successfully avoided and the achievable diffusion rate through the skin is therefore primarily only depending on the type of skin. Compared to conventional systems known from prior art it is possible to achieve higher diffusion rates and due to this only a smaller area of skin is necessary to absorb a certain amount of active substance.

The described invention offers the opportunity to precisely control the rate and the time pattern of systemic drug delivery. It can be applied to the delivery of drug into and/or across the skin. With the methodology according to the present invention the amount of active substance delivered per unit of time can be adjusted to values ranging between zero and a known maximum, the moments of time can be defined at which the delivery rate is set to a predetermined value and the delivery of drug over time spanning hours or days can be regulated in a programmed manner, e.g. using real time control. A device suitable to carry out the described technology offers the opportunity of fully automated transdermal drug delivery.

The method most widely used in prior art for automated controlled transdermal delivery is iontophoresis. With this method control of delivery of a drug is achieved by an electric current which is applied to the skin. By adjusting the current the delivery rate of the drug is regulated. Advantages of the present invention over iontophoresis are the ability to completely turn off delivery or reduce the delivery

rate below a minimal value corresponding to passive skin permeation, the absence of skin irritation that the electric current may cause when applied to the skin and the low energy consumption compared to iontophoresis because normally no high currents are needed for extensive periods of time.

Conventional patch based delivery systems as known from prior art comprising a patch and a therewith interconnected dispensing unit are more or less suitable to administrate a chemical substance under a specific time regime, where the quantity of the specific dose delivered to the patch can be predetermined more or less accurate and each time period of dispensing the substance can be predetermined as well. However, turning delivery to a patch as known from prior art on and off causes uncontrolled time lag in the delivery rate to or through the skin. The delivery systems known from prior art often lead to a constantly diminishing dispensing rate. These problems are avoided by the present invention.

The disclosed invention offers a combination of formula dispensing with an on- and off-turning delivery of the formula and a simultaneous solvent recovery for the purpose of maintaining a constant and high drug delivery rate. The achievable delivery rate and the time lag due to on- and off-events result from the interplay between the rate of formula dispensing and the rate of solvent recovery. The former is preferably controlled by a freely programmable pump and the latter by amount and quality of the material of the solvent recovery element.

Precise control of delivery of the active substance is very important. Related thereto is the precise control of the solvent. The solvent may be controlled by additional means e.g. as described as follows.

A solvent removal system comprises a waste reservoir which is interconnected by a waste valve, e.g. a pinch valve, and/or a waste pump to the administration reservoir. In the case of a pin valve the waste valve preferably is driven by utilizing

a wire made out of Shape-Memory-Alloy (SMA) or an alternative device pursuant to a pre programmed regimen. In a given example the waste valve is opened or the waste pump is turned on such that the solvent is removed and e.g. brought in contact to a desiccant such that the solvent is safely absorbed. Proper administration may be achieved by opening and closing the connection to the waste reservoir by an appropriate time regime. In certain applications it is helpful to switch the connection to the waste reservoir with a certain delay with respect to the administration of the active substance. Instead or in addition to a pinch valve a micro pump may be appropriate to pump excessive solvent into a waste reservoir. In a further embodiment the tubing e.g. for depletion of solvent can comprise absorbent material which thereby is brought into direct contact with depleted carrier solution. It is possible to remove depleted fluid either pursuant to a pre programmed profile or systematically, e.g. depleted fluid is brought into contact every 20 minutes with desiccant, by using a small lever or arm, or otherwise made to come into direct contact with the depleted carrier solution, resulting in absorption of the depleted carrier solution. Alternatively, a waste reservoir, e.g. a sponge, is lowered by a small lever or arm or otherwise to come into direct contact with the depleted carrier solution, resulting in immediate absorption of the depleted carrier solution. In a different embodiment a selectively permeable membrane surrounds a sponge or absorbent material, and the selectively permeable membrane primarily allows the solvent to pass through it (whether due to electric charge of the molecule or molecular size or acidity of the solvent vs. the drug or some other regulating means) and this semi permeable membrane either remains in constant contact with the diffusion surface or is periodically brought in to contact with the diffusion surface using an above described method. In a further embodiment a sponge or an absorbent material is in contact with the diffusion surface and a pre-tested and timed capillary action of the sponge is such that depleted carrier solution is absorbed at the right time and in proper amounts as to assist with the achievement of pre programmed dosage profiles, i.e. even though much active substance may be absorbed along with the carrier solution still sufficient drug is present to achieve the objectives.

Modulated dispensing of drug formula brings about a significant increase of delivery rate over the one-time addition of formula at equal drug concentration. Thus, maximization of drug delivery rate is achieved. This is because the removal of solvent from the relatively small dispensed volume creates in situ an increase of drug concentration with subsequent saturation and precipitation of drug in the interface in immediate contact with the skin as evidenced by dryness of the interface. By the herein described method it is possible that the delivery rate of the active substance can be adjusted using the same drug solution by changing the dispensed volume of solution. Depending on the field of application it was found that about 2 gram of desiccant are sufficient for trapping solvent over at least 9 hours when e.g. dispensing 40 µl/hr of a given drug formula. It was found that increase of drug concentration in the formula causes a corresponding increase of delivery rate for dispensing of e.g. 40 µl/hr but not for e.g. 15 µl/hr. Apparently, dryness of the interface for the latter dispensing volume is achieved far before each consecutive dispensing step, thus hampering drug permeation.

It was found that the dependency between delivery rate and dispensing volume is in general not linear but there exist optimal dispensing volume and frequency for maximal drug delivery. The found results are scalable for larger surface areas.

Possibilities to dispense a drug solution to at least one interface (administration device) may include a reservoir with an actuator such as a (micro)pump, a pressurized reservoir with a valve, a pressurized reservoir with a pump, a collapsible bag with a valve and/or a collapsible bag with a pump. Examples for appropriate pumps are a piezoelectric pump; an osmotic pump; an ink jet-like pump, a peristaltic pump, a pneumatic pump, a nebulizer pump, etc. Examples for valves are a pitch valve, a valve based on memory alloys, etc.

Depending on the field of application, solvent removal means may be for example: a desiccant in a bag, any other absorbent material in a bag, a desiccant/absorbent connected to the interface by a tube, a desiccant/absorbent connected to the

interface by a tube which comprises a valve, a compartment connected to the environment for evaporation, a compartment through which gas is guided to promote evaporation, an absorbent sponge, an absorbent sponge attached to an arm that moves it to and away from the interface, an absorbent sponge with a gas blowing device for drying. The material surrounding the solvent removal means preferably is made out of tissue, cloth, membrane, etc. The administration device (compartment) may comprise, if appropriate, at least one sensor, e.g. a humidity sensor for feed back control to the dispenser.

For best results, the invention offers the opportunity to control and administer at least one active substance depending on the need defined by a certain therapy / target to be achieved. E.g. it is possible to slightly increase the dose over a certain period of time until a certain level is achieved. Then the administration of drug may be stopped, decreased in a certain manner or the administration of a further active substance may be overlaid or substituted by. If the therapy lasts more than (e.g.) one day it is possible to further adjust the dose administered depending on the time of the day or the physical behavior of the patient. Alternatively it is possible to deliver at first a higher dose of an active substance which is followed by a decrease and/or an increase and so on.

BRIEF DESCRIPTION OF THE DRAWINGS

Fig. 1 a first embodiment of a transdermal drug delivery system;

Fig. 2 a second embodiment of a transdermal drug delivery system;

Fig. 3 a third embodiment of a transdermal drug delivery system;

Fig 4 three further embodiments of a drug delivery system according to the present invention.

DETAILED DESCRIPTION OF PREFERRED EMBODIMENTS

In the following the invention is explained in more detail on the basis of a few preferred embodiments. Same devices are indicated with same reference numbers. A person skilled in the art knows how to combine the different components shown in the different embodiments in a useful way.

Figure 1 shows in a simplified manner a first embodiment of a dispensing system 1 for the non-invasive administration of at least one active substance 2 according to the present invention.

The dispensing system 1 comprises a dispensing unit 3 with a drug reservoir 5 for storing a liquid with at least one active substance 2. The reservoir 5 interconnects via pipes 4 to an administration device 6. To propel the active substance 2 from the reservoir 5 into the administration unit 6 the dispensing unit 3 comprises a propellant means, such as a pump 7 and/or the reservoir 5 may comprise a propellant gas and/or the active substance 2 is propelled in another way. In the herein shown simplified representation the control of the flow of the active substance (arrows 24) into the administration device 6 is accomplished by a pump 7 which is interconnected to a control unit 8 for precisely controlling delivery rate and the time pattern of the active substance administered. The control unit 8 can be or connected to a personal computer or any other suitable device, e.g. programmable by a touch screen and/or a keyboard and/or another user interface. In the herein described embodiment the control unit 8 is interconnected to an external unit 15, i.e. a microprocessor on a chip card or a computer unit connectable by a data connection 16 to the dispensing unit 3.

The administration unit 6 comprises an administration reservoir 9 which is interconnected by pipe 4 to the dispensing unit 3. The administration unit 6 is in the herein described embodiment attached to a surface of the skin 10 by a non-irritant adhesive layer 12 which acts as an interface device and is at least

permeable for active substance contained in the administration chamber 9. Alternatively or in addition the administration device may be attached to the skin 11 in another way. If appropriate a membrane may be arranged between the administration reservoir 9 and skin 11 acting as interface device for transportation of the active substance (drug) into the skin or, depending on the field of application, the active substance may be applied direct onto the skin. The administration unit 6 comprises solvent recovery means 13 interconnected to the administration reservoir opposite to the adhesive layer 12. Between the solvent recovery means 13 and the administration reservoir 9 a separation means 14, here in the form of a layer, is located which is at least permeable for the solvent but preferably not for the active substance contained in the administration reservoir 9. In the shown embodiment the solvent recovery means 13 and the administration reservoir 9 are spaced apart a distance t by the separation means 14 such that direct contact is avoided between the solvent recovery means 13 and the active substance. In a preferred embodiment the solvent recovery means 13 and the administration reservoir 9 are separated by an air gap.

The liquid 2 stored in the drug reservoir 5 contains a sufficient amount of one or more active substances dissolved or dispersed at an appropriate concentration in a formulation which contains a solvent or a mixture of solvents which in general are more volatile then the active substance. If appropriate other excipients, for example tissue permeation promoters (enhancers), thickening substances, solubilizers, buffers, chemical stabilizers, preservatives may be present too. Alternatively or in addition the at least one active substance is dissolved or dispersed in a solvent outside the drug reservoir 5 before it is dripped into the administration reservoir 9 of administration unit 6. The formulation is dispensed by the dispensing unit 3 into the at least one administration reservoir 9, whereby volume and frequency of administration are controlled by the control unit 8. The volatile solvent evaporates from the administration reservoir 9 and is guided (indicated by first arrows 17) through a separation layer 14 to the solvent recovery means 13 where it is reclaimed or discharged. The active substance remains in

the administration reservoir 9 and diffuses (indicated by second arrows 18) through an adhesive layer 12 into the skin 11. The solvent recovery means 13 serve to remove depleted solvent from the active area of the administration reservoir 9 such that the active substance concentration is maintained at a certain concentration and no unwanted substance is accumulated within the administration device 6. Upon quitting dispensing of formula into the administration device 6, the residual solvent is recovered and dryness of the interface is achieved, which results in controlled termination of drug delivery into skin 11. Normally the temperature of skin 11 is sufficient to evaporate and discharge the solvent. However, a heating element or other helping means may be used for supporting evaporation.

In general the active substance is completely enclosed in the administration/patch reservoir 9 of the administrative device 6 and is not in direct contact with the environment or other components. The administration device 6 may comprise interface means, e.g. comprising a membrane made out of a polymer, lined with a material, such as blotting paper, suitable to temporarily receive active substance, whereby the interface membrane is in functional contact with the surface 10 of the skin 11 to be treated. The drug formulation is dispensed onto the interface means by the dispensing unit 3.

The solvent recovery means 13 are normally arranged at a certain distance from the interface, the administration reservoir 9 respectively, is preventing uncontrolled absorption of solvent. The separation layer 14 may e.g. comprise or consist of an inert foam or an appropriate cellular material or honeycomb. The solvent recovery means 13 are preferably located within the administrative device 6 and preferably comprise one or more desiccants 23 and/or general or selective adsorbents 23 such as silica gel, molecular sieves or active carbon preferably surrounded by a non-wettable material permeable for the vapors of solvent, e.g. such as Gore-Tex®.

Subsequent the method will be described in a general manner: The drug formulation is dispensed into the administration reservoir 9 by the dispensing system 3. The volume and frequency of dispensing are freely programmable and are used to control the delivery rate and the time pattern of delivery of the chemical substance into the skin 11. The chemical substance is delivered from the administration reservoir 9 by diffusion in the skin 11 or onto the surface of the skin 10. The solvent recovery element 13 reclaims solvent that was dispensed with the formulation into the administration reservoir 9. The solvent recovery element is in close vicinity to but in general not in direct contact with the administration reservoir 9 to avoid uncontrolled absorption of solvent.

The volatile solvent evaporates from the interface under the influence of body heat and the vapors are trapped by the solvent recovery means 13, e.g. a chamber filled with absorbing material 23. The solvent recovery element 13 serves the purpose of removing depleted solvent from the patch reservoir 9 so that, after repeated dispensing, drug concentration maintains its highest value and no detrimental fluid (liquid) is accumulated within the administrating device 6. Upon quitting dispensing of drug formula, the residual solvent is recovered and dryness of the interface is achieved, which brings about stoppage of drug delivery.

By the pipe 4 fluid 2 comprising the active substance dissolved in a liquid dissolver is dosed into the administration device 6 either continuous or in portions. The administration device 6 solves the task to distribute the solution along the interface to the skin 11. In certain fields of application the administration device 6 can contain a material with capillary action preferably not so strong that the emission of active substance or dissolver is decisively hampered. At the most between skin 11 and administration device 6 a layer 12 of a skin compatible adhesive can be placed to allow a contact as good as possible between the administration device 6 and the surface of the skin 10. The dissolver in the administration device 6 in general is separated via a dissolver-permeable membrane which preferably is not extensively permeable for the at least one

active substance. The separated dissolver reaches into a hollow space 13 which may be filled with a substance that absorbs the dissolver. Thereby the concentration of the dissolver in the region of the interface 12 may be kept below a certain level.

Figure 2 is showing a further embodiment of a dispensing system 1 according to the present invention. The dispensing system 1 works in general similar to the one as described according to figure 1 and therefore only the differences are explained in more detail. In difference to figure 1 the reservoir 5 for the active substance 2 comprises a propellant gas 21 which is separated from the active substance 2 by a piston 22. The propellant gas 21 is under high pressure and thereby presses the active substance 2 through the pipe 4 into the administrative device 6. The flow (arrows 24) of the active substance 2 is controlled by the programmable control unit 8 via valve 19. The here shown device comprises an adhesive layer 12 whereby it is attached to the surface of the skin 10. As it can be seen the whole dispensing device 1 is incorporated as a portable device in a housing 20. The dispensing system 1 comprises a power source (not shown in detail) preferably in the form of a battery, e.g. foil battery or rechargeable battery. The dispensing device 1 may comprise control and programming means to control and program the device 1. Alternatively or in addition the device 1 may comprise an interface device such that it is connectable to an external data processing unit such as a computer or a laptop.

Compared to the device according to figure 1 the solvent recovery means 13 of the herein shown embodiment discharges the collected solvent into environment by evaporation 17. This offers the opportunity that no depleted solvent has to be collected separately. Depending of the environmental condition outside the administration device 6 the diffusion rate of the active substance into the skin may be influenced.

Figure 3 is showing a third embodiment of a dispensing system 1. A first and a second active substance s1, s2 is stored in a first and a second reservoir 5.1, 5.2. The flow (indicated by arrows) of the first and the second fluid s1, s2 into a connecting pipe 25 is controlled by a first and a second valve 19.1, 19.2, as described above interconnected, to a programmable flow control device 15. The connecting pipe 25 may comprise mixing means 26 such as impellers or vortex means providing an appropriate preparation of mixture of the active substances s1, s2. This offers the opportunity to administer drugs which cannot be stored together due to incompatibility or another reason. Alternatively or in addition the bringing together of several active substances may take place in the administration chamber 9 of the administration device 6. The solvent absorption chamber 13 is separated by separation means 14 in the described manner from the administration chamber 9. The separation means 14 are made such that solvent is preferably absorbed by evaporation (indicated by arrows 17). In the shown embodiment the evaporation rate is controlled/adjusted by a fluid stream (indicated by arrows 27), preferably air, which is guided into the solvent absorption chamber 13 by an inlet 28 and exits by an outlet 29. The condition of the administration device and the absorption of the at least one active substance into the skin 11 as indicated by arrows 18, may be controlled by sensors 30, 31 interconnected to the control device 15 by data connections 32. The sensors of the herein described embodiment are arranged in the administration chamber 9 and the solvent absorption chamber 13 such that the administration of the at least one active substance and/or the absorption of the at least one solvent may be controlled. Depending on the field of application, the sensors 30, 31 are suitable to measure relevant parameters such as temperature and/or humidity and/or pressure and/or concentration.

The drug formulation is dispensed into the administration reservoir 9 via a connecting pipe 25. The volume and frequency of active substance discharged by the reservoirs 5.1, 5.2 is herein freely programmable and suitable to control the

delivery rate and the time pattern of delivery of the at least one chemical substance to the patient.

By the connecting pipe 25 active substance dissolved in a liquid dissolver is dosed into the administration device 6 either continuous or in portions. Between skin 11 and administration chamber 9 a porous layer 12 is arranged in general having a higher transfer rate then the skin 11.

Solvent delivered with the active substance is absorbed by the solvent recovery chamber 13 and carried away by the fluid stream 27. The solvent recovery element 13 serves the purpose of removing solvent from the patch reservoir 9 so that, after repeated dispensing, drug concentration maintains its value and no detrimental fluid (liquid) is accumulated within the administrating device 6. Upon quitting the dispensing of drug formula, the residual solvent is recovered and dryness of the interface is achieved in a defined manner. Quick stop of the administration may be achieved by flushing the device 6, respectively the administration reservoir 9, by an appropriate fluid containing no active substance, e.g. air, and/or detergent. A separate piping with adequate reservoirs pumps and valves may be foreseen for that purpose, preferably interconnected to the control device 15. In the shown embodiment it is possible to store a fluid s1 comprising at least one active substance in the first reservoir 5.1 and a solvent s2 in the second reservoir 5.2. This offers the opportunity to determine the concentration of active substance s1 in the solvent s2 depending on given need. By this it is also possible to flush the administration device 6 by solvent s2 e.g. to bring administration of active substance to a quick stop. Additional means for carrying off of the flush may be foreseen.

Figures 4 a) to **c)** are showing three further embodiment of a dispensing system 1 for administration of at least one active substance s. The dispensing systems 1 according to figures 4 a) to 4 c) have in general a similar set up comprising an outer housing 39 with a display 38 interconnected to a programmable control unit

8. The lower surface of the devices 1 serves as footstep 40 while in use on a porous surface 10 and comprises an interface 12 for transferring active substance to a skin 11 through the porous surface 10. Inside the housing 39 the devices 1 comprise a drug reservoir 5 for at least one active substance s. The drug reservoir 5 is preferably a collapsible bag or a pressurized compartment due to internal or external pressure suitable to expel active substance into the administration chamber 9 via a pipe 4 which interconnects the drug reservoir 5 with the administration reservoir 9. In use the administration reservoir 9 is fluidly interconnected to the porous surface 10 of skin 11 such that active substance s dispensed into the administration chamber 9 may pass into skin 11 as indicated by arrows 18. The flow of the active substance s is controlled by a first valve and/or a pump 36 which is logically interconnected to the control unit 8 which controls the administration of active substance s according to a preset regime. A solvent recovery means 13 is used to remove depleted solvent from the administration chamber 9 by waste pipe 41. If administration of the active substance needs to be stopped it is possible to pump active substance from the administration chamber back into the administration reservoir 5 or the connecting pipe 4 by pump 36.

In the dispensing device 1 according to Figure 4 a) a pressurized drug reservoir 5 is interconnected with a tube or pipette 4. A pinch valve 36 and an SMA driven wire opens and closes the valve 36 according to a preprogrammed regimen. At inception of delivery of active substance valve 36 is opened to release the active substance pipe 4 onto the membrane of the interface device 12 which is in functional contact with the skin 11. A second valve 37 controls the removal of depleted solvent into the waste reservoir of the solvent removal means 13.

Figure 4 b) shows a dispensing device 1 with a collapsible drug reservoir 5 which is used in conjunction with a tube or pipette 4 and a micro pump 36 preprogrammed to dispense onto interface 12. The micro pump 36 is interconnected to control unit 8 which controls administration of the active

substance s. Depleted solvent is in the present embodiment absorbed from the administration chamber 9 by a waste reservoir 13 filled with hydrophilic substance.

The embodiment of figure 4 c) comprises a pressurised drug reservoir 5 in conjunction with a tube or pipette 4, a micro pump 36 controled by control unit 8 pre-programmed to dispense and start pumping active substance s onto diffusion surface 12. A second pinch valve and/or micro pump 37 interconnects the administration chamber 9 with the waste reservoir 13. The micro pump 37 either pumps solution into the waste reservoir 13 and/or the valve 36 opens and depleted carrier solution is absorbed into the waste reservoir 13.

It is obvious to one skilled in the art that, without leaving the scope of the invention, further embodiments may be achieved by combination of features of the herein described embodiments.

Reference signs

s1	Active substance 1	20	housing
s2	Active substance 2	21	propellant gas
		22	piston
1	dispensing system	23	absorbing material
2	active substance	24	flow of active substance (arrow)
3	dispensing unit		
4	pipe	25	connecting pipe
5	drug/active substance reservoir (5.1, 5.2)	26	mixing means
		27	fluid stream (arrow)
		28	inlet
6	administration device	29	outlet
7	pump	30	sensor 1
8	control unit	31	sensor 2
9	administration reservoir / chamber	32	
		33	
10	surface of skin	34	
11	skin	35	pressurized reservoir
12	adhesive/interface layer	36	first valve / pump
		37	second valve / pump
13	solvent recovery / absorption means / chamber	38	display
		39	housing
		40	footstep
14	separation layer	41	waste pipefigure
15	programmable device / control device	42	
16	data connection		
17	vapor (arrow)		
18	diffusion (arrow)		
19	valve		

Claims

1 Method for transdermal administration of at least one active substance to a porous surface, comprising the following steps:

a) Dispensing a certain amount of a liquid comprising at least one active substance and at least one solvent into an administration reservoir;

b) Separation of the at least one solvent from the administration reservoir by a solvent recovery means such that the at least one active substance achieves a certain level of concentration in vicinity to a porous surface to be treated;

c) Absorption of active substance by the porous surface to be treated via diffusion such that the level of concentration in the administration reservoir decreases.

2 Method according to claim 1 **wherein** the solvent is separated by evaporation.

3 Method according to claim 2 **wherein** the evaporation of the solvent is supported by a heating element.

4 Method according to claim 2 **wherein** the solvent is evaporated through a membrane passable preferably for the solvent.

5 Method according to claim 2 where the solvent is removed by a pre-programmed opening a pinch valve that is in contact with porous surface.

6 Method according to claim 5 where the solvent is removed by programming the pumping of the solvent.

7 Method according to claim 2 where the solvent is removed by a programmed lowering of an arm or lever.

8 Method according to one of the claims 2 or 3 **wherein** the solvent is absorbed by a desiccant.

9 Method according to claim 5 **wherein** the desiccant is one or a combination out of the group of silica gel, molecular sieves, active carbon.

10 Method according to one of the claims 2 or 3 **wherein** the solvent is discharged into the environment.

11 Method according to one of the claims 2 or 3 **wherein** the solvent is flushed by a fluid.

12 Method according to claim 1 **wherein** the at least one active substance passes an interface device which is permeable for the at least one active substance.

13 Method according to claim 12 **wherein** the interface device comprises a membrane.

14 Method according to claim 12 **wherein** the interface device comprises an adhesive layer suitable to be attached to the porous surface.

15 Method according to claim 1 **wherein** the steps a to c are repeated at predefined intervals such that the level of concentration of the at least one active substance in the administration reservoir is kept above a certain level.

16 Method according to claim 15 **wherein** the dispensing rate and the time pattern of dispensing the liquid into the administration reservoir are controlled by a programmable device.

17 Device for transdermal administration of at least one active substance to a porous surface, comprising a dispensing device interconnected to an administration device for delivery of at least one active substance solved in a solvent to said administration device, wherein the administration device comprises an administration reservoir suitable to receive the active substance solved in the solvent, a solvent removal means for absorption of solvent from the administration reservoir by evaporation and an interface means for transfer of the active substance from the administration reservoir to the porous surface.

18 Device according to claim 17 **wherein** the interface device is suitable to be arranged in vicinity to the porous surface.

19 Device according to claim 18 **wherein** the interface means comprises an adhesive surface suitable to be attached to the porous surface.

20 Device according to claim 17 **wherein** the interface means is a membrane permeable for the active substance.

21 Device according to claim 17 **wherein** the solvent removal means is separated from the administration reservoir by a separation means.

22 Device according to claim 21 wherein the separation means is a membrane or a foam or a cellular material or a honeycomb or an air gap.

23 Device according to claim 21 wherein the administration reservoir and the solvent removal means are spaced apart a distance by the separation means 14.

24 Device according to claim 17 **wherein** the solvent removal means comprises one out or a combination out of the group of the following materials: Desiccant, general or a selective adsorbent material, silica gel, a molecular sieve, active carbon.

25 Device according to claim 17 **wherein** the solvent removal means comprises a chamber with an inlet and an outlet for flushing by a fluid.

26 Device according to claim 17 **wherein** the dispensing device comprises at least one reservoir for an active substance which is interconnected to the administration device.

27 Device according to claim 26 **wherein** the dispensing device comprises a propellant means to propel the active substance from the reservoir into the administration reservoir.

28 Device according to 27 **wherein** the propellant means is a pump and/or a propellant gas.

29 Device according to claim 26 **wherein** the dispensing means comprises a first reservoir comprising a first active substance and a second reservoir comprising a second active substance and the first and the second active substance are mixed by mixing means before delivery to the administration device.

30 Device according to claim 29 **wherein** the mixing means is a pipe with vortex means providing an appropriate preparation of mixture.

31 Device according to one of the claims 17 to 30 **wherein** the administration of the active substance is controlled by a control device.

32 Device according to claim 31 **wherein** the control device is interconnected to at least one valve for controlling the administration of the at least one active substance.

33 Device according to claim 31 **wherein** the control device is programmable according to a predetermined regime or time pattern or interval of administration of the at least one active substance.

34 Device according to claim 31 **wherein** the control device is interconnected with at least one sensor for measuring the administration and the condition of at least one active substance.

35 Device according to claim 34 **wherein** the administration of the active substance is determined by the signal of the at least one sensor.

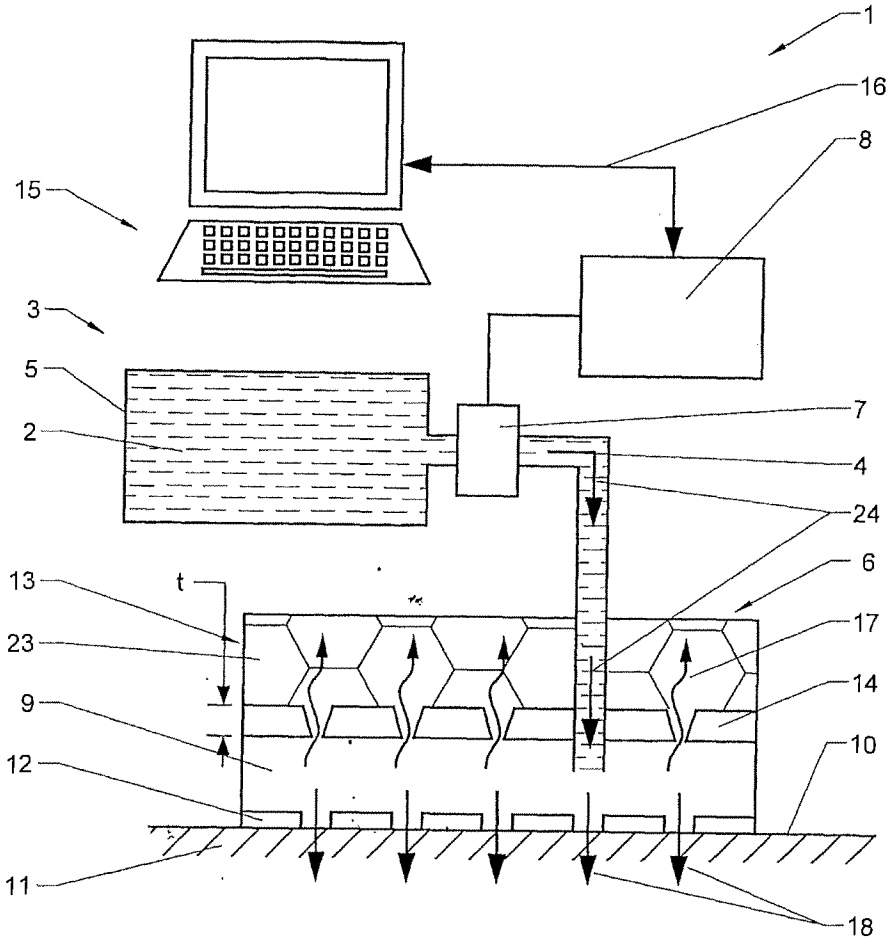

Fig. 1

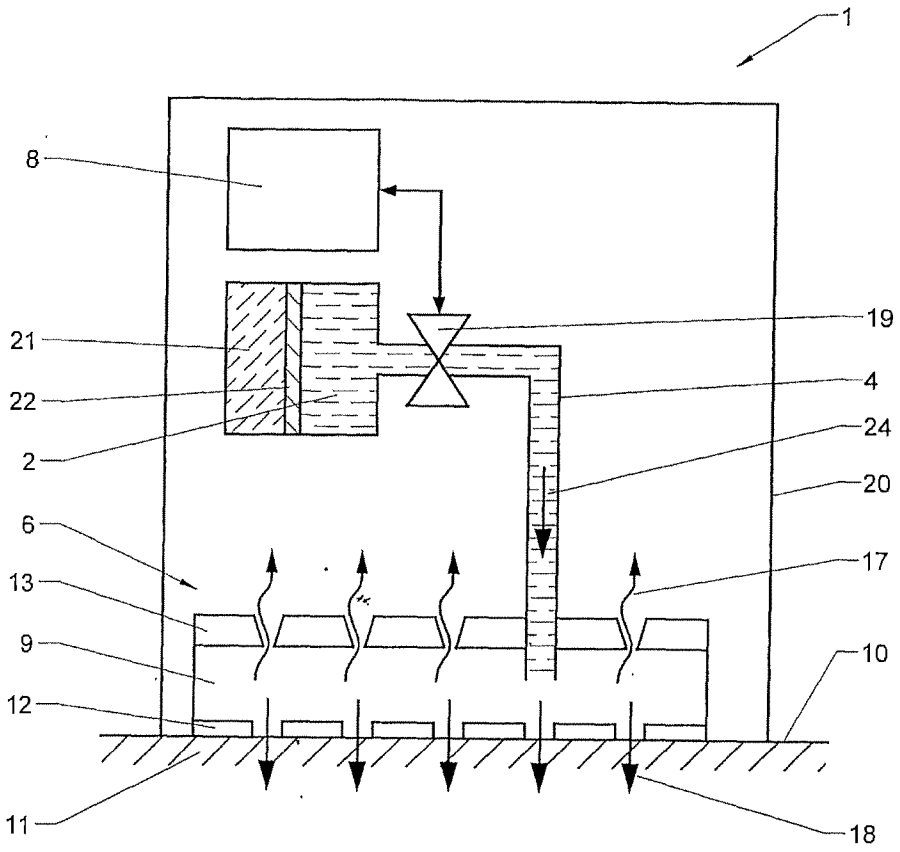

Fig. 2

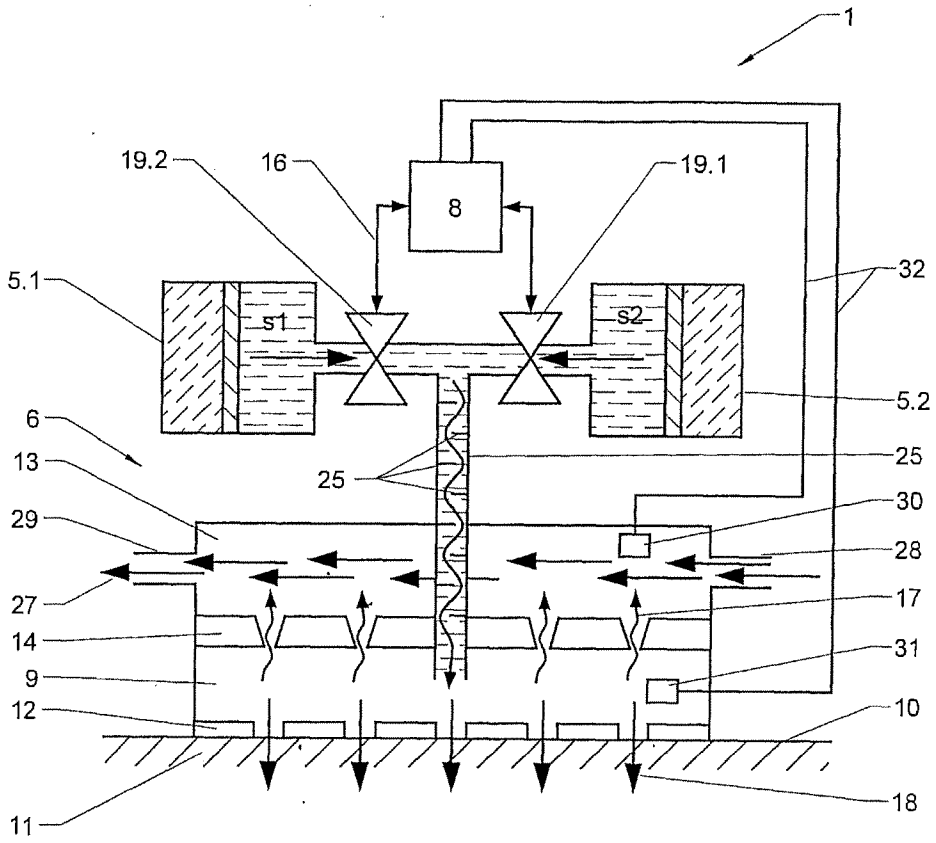
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Fig. 3

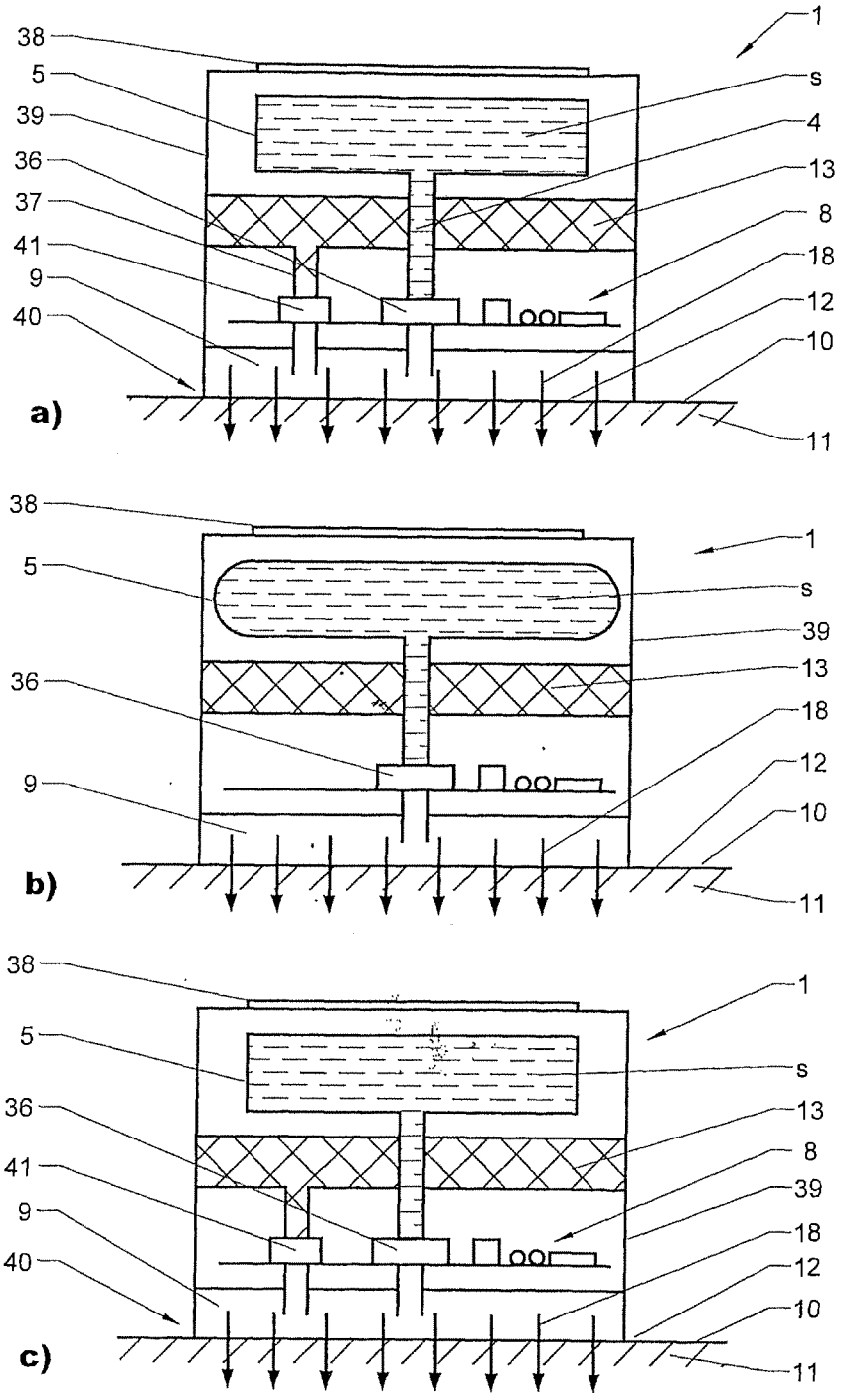
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Fig. 4

INTERNATIONAL SEARCH REPORT

International Application No
PCT/IB2004/002947

A. CLASSIFICATION OF SUBJECT MATTER
IPC 7 A61M35/00 A61K31/00

According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)
IPC 7 A61K

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practical, search terms used)
EPO-Internal, WPI Data

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category °	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
A	US 2003/065294 A1 (PICKUP RAY L ET AL) 3 April 2003 (2003-04-03) the whole document	17-35
A	US 5 370 635 A (STRAUSAK ET AL) 6 December 1994 (1994-12-06) the whole document	17-35
A	DE 199 58 554 A1 (LTS LOHMANN THERAPIE-SYSTEME AG) 11 January 2001 (2001-01-11) the whole document	17-35
A	US 4 708 716 A (SIBALIS ET AL) 24 November 1987 (1987-11-24) cited in the application the whole document	17-35

☐ Further documents are listed in the continuation of box C.

☒ Patent family members are listed in annex.

° Special categories of cited documents :

"A" document defining the general state of the art which is not considered to be of particular relevance

"E" earlier document but published on or after the international filing date

"L" document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified)

"O" document referring to an oral disclosure, use, exhibition or other means

"P" document published prior to the international filing date but later than the priority date claimed

"T" later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention

"X" document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone

"Y" document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art.

"&" document member of the same patent family

Date of the actual completion of the international search	Date of mailing of the international search report
28 January 2005	15/02/2005

Name and mailing address of the ISA	Authorized officer
European Patent Office, P.B. 5818 Patentlaan 2 NL – 2280 HV Rijswijk Tel. (+31–70) 340–2040, Tx. 31 651 epo nl, Fax: (+31–70) 340–3016	Cuiper, R

Form PCT/ISA/210 (second sheet) (January 2004)

INTERNATIONAL SEARCH REPORT

International application No.
PCT/IB2004/002947

Box II Observations where certain claims were found unsearchable (Continuation of item 2 of first sheet)

This International Search Report has not been established in respect of certain claims under Article 17(2)(a) for the following reasons:

1. [X] Claims Nos.: 1-16
because they relate to subject matter not required to be searched by this Authority, namely:

Rule 39.1(iv) PCT - Method for treatment of the human or animal body by therapy

2. [ ] Claims Nos.:
because they relate to parts of the International Application that do not comply with the prescribed requirements to such an extent that no meaningful International Search can be carried out, specifically:

3. [ ] Claims Nos.:
because they are dependent claims and are not drafted in accordance with the second and third sentences of Rule 6.4(a).

Box III Observations where unity of invention is lacking (Continuation of item 3 of first sheet)

This International Searching Authority found multiple inventions in this international application, as follows:

1. [ ] As all required additional search fees were timely paid by the applicant, this International Search Report covers all searchable claims.

2. [ ] As all searchable claims could be searched without effort justifying an additional fee, this Authority did not invite payment of any additional fee.

3. [ ] As only some of the required additional search fees were timely paid by the applicant, this International Search Report covers only those claims for which fees were paid, specifically claims Nos.:

4. [ ] No required additional search fees were timely paid by the applicant. Consequently, this International Search Report is restricted to the invention first mentioned in the claims; it is covered by claims Nos.:

Remark on Protest

[ ] The additional search fees were accompanied by the applicant's protest.

[ ] No protest accompanied the payment of additional search fees.

INTERNATIONAL SEARCH REPORT

Information on patent family members

International Application No
PCT/IB2004/002947

Patent document cited in search report	Publication date	Patent family member(s)	Publication date
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INTERNATIONAL SEARCH REPORT

Information on patent family members

International Application No
PCT/IB2004/002947

Patent document cited in search report	Publication date	Patent family member(s)	Publication date
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IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Applicant:	Zumbrunn et al.
Title:	TRANSDERMAL DRUG DELIVERY METHOD AND SYSTEM
Appl. No.:	10/711,389
Filing Date:	9/13/2004
Examiner:	Mercier, Melissa S.
Art Unit:	1615
Confirmation Number:	5388

INFORMATION DISCLOSURE STATEMENT UNDER 37 CFR §1.56

Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

Commissioner:

Applicant submits herewith documents for the Examiner's consideration in accordance with 37 CFR §§1.56, 1.97 and 1.98.

Applicants respectfully request that each listed document be considered by the Examiner and be made of record in the present application and that an initialed copy of Form PTO/SB/08 be returned in accordance with MPEP §609.

The submission of any document herewith is not an admission that such document constitutes prior art against the claims of the present application or that such document is considered material to patentability as defined in 37 CFR §1.56(b). Applicants do not waive any

rights to take any action which would be appropriate to antedate or otherwise remove as a competent reference any document submitted herewith.

TIMING OF THE DISCLOSURE

The listed document is being submitted in compliance with 37 CFR §1.97(c), before the mailing date of any of a final action under 37 CFR §1.113, a notice of allowance under 37 CFR §1.311, or an action that otherwise closes prosecution in the application.

EXPLANATION OF RELEVANCE

Attached to the PTO/SB/08 is a copy of an Office Action cited in related U.S. Patent Application No. 12/835,693, dated August 1, 2012. The references listed in this Office Action were already cited in the present application.

STATEMENT UNDER 37 CFR §1.97(e)

The undersigned hereby states in accordance with 37 CFR §1.97(e)(2) that no item of information contained in this information disclosure statement was cited in a communication from a foreign patent office in a counterpart foreign application and, to the knowledge of the undersigned, after making reasonable inquiry, no item of information contained in the information disclosure statement was known to any individual designated in 37 CFR §1.56(c) more than three months prior to the filing of the information disclosure statement.

Although Applicant believes that no fee is required, the Commissioner is hereby authorized to charge any additional fees which may be due to Deposit Account No. 19-0741.

Respectfully submitted,

Date: September 27, 2012

By _____

FOLEY & LARDNER LLP
Customer Number: 26371
Telephone: (202) 672-5538
Facsimile: (202) 672-5399

Michele M. Simkin
Attorney for Applicant
Registration No. 34,717

PTO/SB/08 (09-06)
Approved for use through 03/31/2007. OMB 0651-0031
U.S. Patent and Trademark Office: U.S. DEPARTMENT OF COMMERCE

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Date Submitted: 9/27/2012

(use as many sheets as necessary)

Sheet 1 of 1

Complete if Known	
Application Number	10/711,389
Filing Date	9/15/2004
First Named Inventor	Werner Zumbrunn
Art Unit	1615
Examiner Name	Melissa S. Mercier
Attorney Docket Number	095473-0106

U.S. PATENT DOCUMENTS

Examiner Initials*	Cite No.[1]	Document Number Number-Kind Code[2] *(if known)*	Publication Date MM-DD-YYYY	Name of Patentee or Applicant of Cited Document	Pages, Columns, Lines, Where Relevant Passages or Relevant Figures Appear

FOREIGN PATENT DOCUMENTS

Examiner Initials*	Cite No.[1]	Foreign Patent Document Country Code[3]-Number[4]-Kind Code[5] *(if known)*	Publication Date MM-DD-YYYY	Name of Patentee or Applicant of Cited Documents	Pages, Columns, Lines, Where Relevant Passages or Relevant Figures Appear	T[6]

NON PATENT LITERATURE DOCUMENTS

Examiner Initials*	Cite No.[1]	Include name of the author (in CAPITAL LETTERS), title of the article (when appropriate), title of the item (book, magazine, journal, serial, symposium, catalog, etc.) date, page(s), volume-issue number(s), publisher, city and/or country where published.	T[6]
	A1	Office Action cited in related U.S. Patent Application No. 12/835,693, dated 8/1/2012.	

Examiner Signature		Date Considered	

*EXAMINER: Initial if reference considered, whether or not citation is in conformance with MPEP 609. Draw line through citation if not in conformance and not considered. Include copy of this form with next communication to applicant. 1 Applicant's unique citation designation number (optional). 2 See Kinds Codes of USPTO Patent Documents at www.uspto.gov or MPEP 901.04. 3 Enter Office that issued the document, by the two-letter code (WIPO Standard ST.3). 4 For Japanese patent documents, the indication of the year of the reign of the Emperor must precede the serial number of the patent document. 5 Kind of document by the appropriate symbols as indicated on the document under WIPO Standard ST.16 if possible. 6 Applicant is to place a check mark here if English language Translation is attached. This collection of information is required by 37 CFR 1.97 and 1.98. The information is required to obtain or retain a benefit by the public which is to file (and by the USPTO to process) an application. Confidentiality is governed by 35 U.S.C. 122 and 37 CFR 1.14. This collection is estimated to take 2 hours to complete, including gathering, preparing, and submitting the completed application form to the USPTO. Time will vary depending upon the individual case. Any comments on the amount of time you require to complete this form and/or suggestions for reducing this burden, should be sent to the Chief Information Officer, U.S. Patent and Trademark Office, P.O. Box 1450, Alexandria, VA 22313-1450. DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS. **SEND TO: Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450.**

If you need assistance in completing the form, call 1-800-PTO-9199 (1-800-786-9199) and select option 2.

Electronic Patent Application Fee Transmittal

Application Number:	10711389
Filing Date:	15-Sep-2004
Title of Invention:	TRANSDERMAL DRUG DELIVERY METHOD AND SYSTEM
First Named Inventor/Applicant Name:	Werner Zumbrunn
Filer:	Michelle M. Simkin
Attorney Docket Number:	095473-0106

Filed as Small Entity

Utility under 35 USC 111(a) Filing Fees

Description	Fee Code	Quantity	Amount	Sub-Total in USD($)
Basic Filing:				
Pages:				
Claims:				
Miscellaneous-Filing:				
Petition:				
Patent-Appeals-and-Interference:				
Post-Allowance-and-Post-Issuance:				
Extension-of-Time:				
Extension - 1 month with $0 paid	2251	1	75	75

Description	Fee Code	Quantity	Amount	Sub-Total in USD($)
Miscellaneous:				
			Total in USD ($)	**75**

Electronic Acknowledgement Receipt

EFS ID:	13858736
Application Number:	10711389
International Application Number:	
Confirmation Number:	5388
Title of Invention:	TRANSDERMAL DRUG DELIVERY METHOD AND SYSTEM
First Named Inventor/Applicant Name:	Werner Zumbrunn
Customer Number:	22428
Filer:	Michelle M. Simkin
Filer Authorized By:	
Attorney Docket Number:	095473-0106
Receipt Date:	27-SEP-2012
Filing Date:	15-SEP-2004
Time Stamp:	17:46:22
Application Type:	Utility under 35 USC 111(a)

Payment information:

Submitted with Payment	yes
Payment Type	Credit Card
Payment was successfully received in RAM	$75
RAM confirmation Number	5313
Deposit Account	
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File Listing:

Document Number	Document Description	File Name	File Size(Bytes)/ Message Digest	Multi Part /.zip	Pages (if appl.)

1	Amendment/Req. Reconsideration-After Non-Final Reject	AMENDMENT_AND_REPLY.pdf	391736 1e9a43aeffe6bc9b6f5d6682454c3d7f81dddadd	no	10
Warnings:					
Information:					
2	Examination support document	EXHIBIT_1.pdf	1884429 8ba1cd452e5161298b461e54aed6fc685a97897d	no	42
Warnings:					
Information:					
3		IDS_COV_LTR.pdf	171647 f5da8f6780eec00bbd03a3eee644d68643af0a82	yes	4

Multipart Description/PDF files in .zip description

Document Description	Start	End
Transmittal Letter	1	3
Information Disclosure Statement (IDS) Form (SB08)	4	4

Warnings:					
Information:					
4	Non Patent Literature	OA_12_835693_dtd_8_1_12.pdf	1011169 2b4b4fa7a732717a8990227bfe43772e6c3523d2	no	18
Warnings:					
Information:					
5	Fee Worksheet (SB06)	fee-info.pdf	30413 1822ba576472eb6100b709c2d3a5264b9aeea1ed	no	2
Warnings:					
Information:					
			Total Files Size (in bytes):	3489394	

This Acknowledgement Receipt evidences receipt on the noted date by the USPTO of the indicated documents, characterized by the applicant, and including page counts, where applicable. It serves as evidence of receipt similar to a Post Card, as described in MPEP 503.

New Applications Under 35 U.S.C. 111

If a new application is being filed and the application includes the necessary components for a filing date (see 37 CFR 1.53(b)-(d) and MPEP 506), a Filing Receipt (37 CFR 1.54) will be issued in due course and the date shown on this Acknowledgement Receipt will establish the filing date of the application.

National Stage of an International Application under 35 U.S.C. 371

If a timely submission to enter the national stage of an international application is compliant with the conditions of 35 U.S.C. 371 and other applicable requirements a Form PCT/DO/EO/903 indicating acceptance of the application as a national stage submission under 35 U.S.C. 371 will be issued in addition to the Filing Receipt, in due course.

New International Application Filed with the USPTO as a Receiving Office

If a new international application is being filed and the international application includes the necessary components for an international filing date (see PCT Article 11 and MPEP 1810), a Notification of the International Application Number and of the International Filing Date (Form PCT/RO/105) will be issued in due course, subject to prescriptions concerning national security, and the date shown on this Acknowledgement Receipt will establish the international filing date of the application.

PTO/SB/06 (07-06)
Approved for use through 1/31/2007. OMB 0651-0032
U.S. Patent and Trademark Office; U.S. DEPARTMENT OF COMMERCE
Under the Paperwork Reduction Act of 1995, no persons are required to respond to a collection of information unless it displays a valid OMB control number.

PATENT APPLICATION FEE DETERMINATION RECORD Substitute for Form PTO-875	Application or Docket Number 10/711,389	Filing Date 09/15/2004	☐ To be Mailed

APPLICATION AS FILED – PART I

	(Column 1)	(Column 2)	SMALL ENTITY ☒		OR	OTHER THAN SMALL ENTITY	
FOR	NUMBER FILED	NUMBER EXTRA	RATE ($)	FEE ($)		RATE ($)	FEE ($)
☐ BASIC FEE (37 CFR 1.16(a), (b), or (c))	N/A	N/A	N/A			N/A	
☐ SEARCH FEE (37 CFR 1.16(k), (i), or (m))	N/A	N/A	N/A			N/A	
☐ EXAMINATION FEE (37 CFR 1.16(o), (p), or (q))	N/A	N/A	N/A			N/A	
TOTAL CLAIMS (37 CFR 1.16(i))	minus 20 =	*	X $ =		OR	X $ =	
INDEPENDENT CLAIMS (37 CFR 1.16(h))	minus 3 =	*	X $ =			X $ =	
☐ APPLICATION SIZE FEE (37 CFR 1.16(s))	If the specification and drawings exceed 100 sheets of paper, the application size fee due is $250 ($125 for small entity) for each additional 50 sheets or fraction thereof. See 35 U.S.C. 41(a)(1)(G) and 37 CFR 1.16(s).						
☐ MULTIPLE DEPENDENT CLAIM PRESENT (37 CFR 1.16(j))							
* If the difference in column 1 is less than zero, enter "0" in column 2.			TOTAL			TOTAL	

APPLICATION AS AMENDED – PART II

AMENDMENT	09/27/2012	(Column 1) CLAIMS REMAINING AFTER AMENDMENT		(Column 2) HIGHEST NUMBER PREVIOUSLY PAID FOR	(Column 3) PRESENT EXTRA	SMALL ENTITY RATE ($)	ADDITIONAL FEE ($)	OR	OTHER THAN SMALL ENTITY RATE ($)	ADDITIONAL FEE ($)
	Total (37 CFR 1.16(i))	* 25	Minus	** 40	= 0	X $30 =	0	OR	X $ =	
	Independent (37 CFR 1.16(h))	* 1	Minus	***3	= 0	X $125 =	0	OR	X $ =	
	☐ Application Size Fee (37 CFR 1.16(s))									
	☐ FIRST PRESENTATION OF MULTIPLE DEPENDENT CLAIM (37 CFR 1.16(j))							OR		
						TOTAL ADD'L FEE	0	OR	TOTAL ADD'L FEE	

AMENDMENT		(Column 1) CLAIMS REMAINING AFTER AMENDMENT		(Column 2) HIGHEST NUMBER PREVIOUSLY PAID FOR	(Column 3) PRESENT EXTRA	RATE ($)	ADDITIONAL FEE ($)		RATE ($)	ADDITIONAL FEE ($)
	Total (37 CFR 1.16(i))	*	Minus	**	=	X $ =		OR	X $ =	
	Independent (37 CFR 1.16(h))	*	Minus	***	=	X $ =		OR	X $ =	
	☐ Application Size Fee (37 CFR 1.16(s))									
	☐ FIRST PRESENTATION OF MULTIPLE DEPENDENT CLAIM (37 CFR 1.16(j))							OR		
						TOTAL ADD'L FEE		OR	TOTAL ADD'L FEE	

* If the entry in column 1 is less than the entry in column 2, write "0" in column 3.

** If the "Highest Number Previously Paid For" IN THIS SPACE is less than 20, enter "20".

*** If the "Highest Number Previously Paid For" IN THIS SPACE is less than 3, enter "3".

The "Highest Number Previously Paid For" (Total or Independent) is the highest number found in the appropriate box in column 1.

Legal Instrument Examiner:
/RUTH LLOYD/

This collection of information is required by 37 CFR 1.16. The information is required to obtain or retain a benefit by the public which is to file (and by the USPTO to process) an application. Confidentiality is governed by 35 U.S.C. 122 and 37 CFR 1.14. This collection is estimated to take 12 minutes to complete, including gathering, preparing, and submitting the completed application form to the USPTO. Time will vary depending upon the individual case. Any comments on the amount of time you require to complete this form and/or suggestions for reducing this burden, should be sent to the Chief Information Officer, U.S. Patent and Trademark Office, U.S. Department of Commerce, P.O. Box 1450, Alexandria, VA 22313-1450. DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS. **SEND TO: Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450.**

If you need assistance in completing the form, call 1-800-PTO-9199 and select option 2.

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www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/711,389	09/15/2004	Werner Zumbrunn	095473-0106	5388

22428 7590 06/15/2012

FOLEY AND LARDNER LLP
SUITE 500
3000 K STREET NW
WASHINGTON, DC 20007

EXAMINER	
MERCIER, MELISSA S	
ART UNIT	PAPER NUMBER
1615	

MAIL DATE	DELIVERY MODE
06/15/2012	PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No.	Applicant(s)	
	10/711,389	ZUMBRUNN ET AL.	
	Examiner	Art Unit	
	MELISSA MERCIER	1615	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE *3* MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *08 March 2012*.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ An election was made by the applicant in response to a restriction requirement set forth during the interview on _____; the restriction requirement and election have been incorporated into this action.

4)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

5)☒ Claim(s) *1-40* is/are pending in the application.

5a) Of the above claim(s) *1-16; 19, 24-25, 27-32, 36-37* is/are withdrawn from consideration.

6)☐ Claim(s) _____ is/are allowed.

7)☒ Claim(s) *17,18,20-23,26,33-35 and 38-40* is/are rejected.

8)☐ Claim(s) _____ is/are objected to.

9)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

10)☐ The specification is objected to by the Examiner.

11)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

12)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

13)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date *3-8-12*.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

Continued Examination Under 37 CFR 1.114

A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on March 8, 2012 has been entered.

Summary

Receipt of Applicants Remarks and Amended Claims filed on March 8, 2012. Claims 1-40 are pending in this application. Claims 1-16, 19, 24-25, 27-32, and 36-37 remain withdrawn from consideration. Claims 17-18, 20-23, 26, 33-35, and 38-40 remain under examination in this application.

Applicant states the office action is defective and the “Examiner expressly admitted that she mixed up the present application with a copending application"; however, this statement is not correct. During the conversation with Applicants representative, the Examiner stated that she would look into the matter and it was possible there was a transcription error between applications, but more research would need to be done into the matter. No definitive answers and clarification was given in any interview with Applicants representative. An after final response was promptly filed and during review of the after final amendment, clarification as to the term solvent removal

system was given and it was determined by the Examiner that no errors with regard to transcription errors were made in the application with another application.

It is further noted that the application of 11/162,517 is structurally very similar to the instant application and the Examiner has consulted with the Examiner of the copending application on the instant claims.

Information Disclosure Statement

Receipt of the Information Disclosure Statement filed on March 8, 2012 is acknowledged. A signed copy is attached to this office action.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

Claim 17-18, 20-23, 26, 33-35, and 38-40 are rejected under 35 U.S.C. 103(a) as being unpatentable over Pickup et al. (US 2003/0065294) in view of Frate (US Patent 6,211,296).

Pickup teaches a transdermal application device that comprises a dispenser to dispense bioactive compounds in liquid form on a transdermal patch to the skin, which reads on permeable interface for coupling to the porous surface (skin), and has a

controller for automatically dispensing the bioactive agent on patch at a selected programmed time (a mechanism for causing the bioactive agent to be delivered) and can be programmed to a particular time of day or more than one time a day (abstract).

A spacer can be provided between the dispenser and cutaneous target (paragraph 0021). The dispenser comprises programmable microchip contains pre-programmed information that is controlled by programmed computer to activate piezoelectric member to expel the bioactive material or liquid. The dispenser further comprises active agents in a replaceable container (a source of the bioactive agent that also is a waste reservoir when the delivery is completed).

The target for delivery is a patch that acts a reservoir, comprising the drug initially before delivery is complete. Figure 3 shows electronic programming of the device. The reference teaches collapsible reservoir that delivers bioactive agents. The device can deliver one or more than one drug at different times. Pickup discloses using the device to deliver bioactive agents such as nicotine to treat nicotine withdrawal (abstract; paragraphs: 0021-0023, 0040, 0045, 0050, 0060, 0061, 0065, 0069, claims, figures). The figures show the device encased within housing.

Although Pickup teaches the desire to remove excess bioactive agent to avoid undesired toxic effect if the drug is absorbed to the skin, see paragraph [0005], Pickup however, does not explicitly discuss the inclusion of a waste hydrogel reservoir. However, the patch disclosed by Pickup absorbs the bioactive composition, and anything applied to this patch that does not get transdermally absorbed will remain in

the patch, which then acts as a removable reservoir separated from the rest of the system.

Frate teaches hydrogel used to remove undesirable compounds of substrate by absorption of the waste to form single unite that can be removed and easily handled (column 1, lines 1-25). It is expected that the hydrogel expands when absorbs waste.

Therefore, it would have been obvious to one having ordinary skill in the art at the time of the invention to provide preprogrammed device to deliver bioactive agent to the skin comprising reservoir containing the agent and an interface patch on the skin as taught by Pickup, and further add a hydrogel absorbent layer to the interface patch as taught by Frate. One would have been motivated to do so because Pickup desired to avoid excess drug absorption and because Frate teaches that hydrogel can remove undesirable compounds from a substrate by absorption of the waste to form single unite that can be later removed and easily handled. One would reasonably expected formulating preprogrammed device to deliver bioactive agent to the skin comprising reservoir containing the agent and an interface patch on the skin and further the patch comprised hydrogel layer to absorb the waste and then easily and safely removed as single unit.

Response to Arguments

Applicant's arguments have been fully considered but they are not persuasive.

Applicant argues:

***The instant claims do not recite a "waste hydrogel reservoir" and therefore, the rejection is in error.**

The Examiner respectfully disagrees. The claims recite a "solvent removal element" which is regarded as an equivalent of the waste hydrogel reservoir of the prior art. While they may have different names, they are the same component and function identically.

***Pickup discloses a transdermal system for applying a bioactive substance to a subject and the patch is removed to be recharged, which is not a solvent removal element configured to absorb solvent from the administration reservoir by evaporation when the interface is in contact with the porous surface.**

The Instant claims require that the bioactive agent be dissolved in the solvent; therefore, when excess solvent is removed, excess bioactive agent is also removed. Once necessarily results in the other. Therefore, the disclosure of Pickup that it is desirable to remove excess active agent in order to avoid the undesirable effects of excess active being present on the skin results from removing excess solvent via a waste removal system.

Claims 17-18, 20, 33-35, 38-40 are rejected under 35 U.S.C. 103(a) as being unpatentable over Henley (US Patent 5,538,503).

Henley discloses a programmable apparatus for transdermal drug delivery. The apparatus comprises at least 2 iontophoriesis electrodes and programmable means for controlling the application of voltage to the electrodes (claim 1). The apparatus also

comprises a medicament carrying layer made of a porous material in which the ductive gel comprising the dispersed medicament is applied to and an electrically conductive layer (claim 1). The conductive layer is in contact with the skin. Thereby reading on the administration reservoirs and the interface configured to contact the porous surface recited in parts (a) through (c) of claim 17.

When the delivery of the active is stopped, the medicament is absorbed into the porous material, thereby reading on the solvent removal element since the bioactive agent is dissolved in the solvent.

"[W]hen a patent simply arranges old elements with each performing the same function it had been known to perform and yields no more than one would expect from such an arrangement, the combination is obvious". *KSR v.Teleflex,* 127 S.Ct. 1727, 1740 (2007) (quoting *Sakraida v. A.G. Pro,* 425 U.S. 273,282 (1976)). "[W]hen the question is whether a patent claiming the combination of elements of prior art is obvious", the relevant question is "whether the improvement is more than the predictable use of prior art elements according to their established functions." *(Id.).* Addressing the issue of obviousness, the Supreme Court noted that the analysis under 35 USC 103 "need not seek out precise teachings directed to the specific subject matter of the challenged claim, for a court can take account of the inferences and creative steps that a person of ordinary skill in the art would employ." *KSR v. Teleflex,* 127 S.Ct. 1727, 1741 (2007). The Court emphasized that "[a] person of ordinary skill is... a person of ordinary creativity, not an automaton." *Id.* at 1742.

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to have selected from the disclosed components to arrive at a combination of different ways in which to load the drug onto the device, materials used for the construction of the medicament carrying layer, the drug to be delivered from within the disclosure of Henley to arrive at compositions "yielding no more than one would expect from such an arrangement".

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to MELISSA MERCIER whose telephone number is (571)272-9039. The examiner can normally be reached on 8:00am-4:30pm Mon through Friday.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Robert A. Wax can be reached on (571) 272-0623. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Melissa S Mercier/
Examiner, Art Unit 1615

/ANAND U DESAI/
Primary Examiner, Art Unit 1656
June 14, 2012

Notice of References Cited	Application/Control No. 10/711,389	Applicant(s)/Patent Under Reexamination ZUMBRUNN ET AL.	
	Examiner MELISSA MERCIER	Art Unit 1615	Page 1 of 1

U.S. PATENT DOCUMENTS

*		Document Number Country Code-Number-Kind Code	Date MM-YYYY	Name	Classification
*	A	US-2003/0065294	04-2003	Pickup et al.	604/304
*	B	US-6,211,296	04-2001	Frate et al.	525/207
*	C	US-5,538,503	07-1996	Henley, Julian L.	604/20
	D	US-			
	E	US-			
	F	US-			
	G	US-			
	H	US-			
	I	US-			
	J	US-			
	K	US-			
	L	US-			
	M	US-			

FOREIGN PATENT DOCUMENTS

*		Document Number Country Code-Number-Kind Code	Date MM-YYYY	Country	Name	Classification
	N					
	O					
	P					
	Q					
	R					
	S					
	T					

NON-PATENT DOCUMENTS

*		Include as applicable: Author, Title Date, Publisher, Edition or Volume, Pertinent Pages)
	U	
	V	
	W	
	X	

*A copy of this reference is not being furnished with this Office action. (See MPEP § 707.05(a).)
Dates in MM-YYYY format are publication dates. Classifications may be US or foreign.

PTO/SB/08 (09-06)
Approved for use through 03/31/2007. OMB 0651-0031
U.S. Patent and Trademark Office: U.S. DEPARTMENT OF COMMERCE

Substitute for form 1449/PTO

INFORMATION DISCLOSURE STATEMENT BY APPLICANT

Date Submitted: March 8, 2012

(use as many sheets as necessary)

Sheet 1 of 2

Complete if Known	
Application Number	10/711,389
Filing Date	9/15/2004
First Named Inventor	Werner Zumbrunn
Art Unit	1615
Examiner Name	Melissa S. Mercier
Attorney Docket Number	095473-0106

U.S. PATENT DOCUMENTS

Examiner Initials*	Cite No.[1]	Document Number Number-Kind Code[2] (*if known*)	Publication Date MM-DD-YYYY	Name of Patentee or Applicant of Cited Document	Pages, Columns, Lines, Where Relevant Passages or Relevant Figures Appear
	A1	5,389,679	02/1995	Alliger	
	A2	5,616,332	04/1997	Herstein	
	A3	2002/0127256 A1	09/2002	Murad	
	A4	2004/0138074 A1	07/2004	Ahmad et al.	
	A5	4,545,990	10/1985	Le Foyer de Costil et al.	

FOREIGN PATENT DOCUMENTS

Examiner Initials*	Cite No.[1]	Foreign Patent Document Country Code[3] Number[4] Kind Code[5] (*if known*)	Publication Date MM-DD-YYYY	Name of Patentee or Applicant of Cited Documents	Pages, Columns, Lines, Where Relevant Passages or Relevant Figures Appear	T[6]

NON PATENT LITERATURE DOCUMENTS

Examiner Initials*	Cite No.[1]	Include name of the author (in CAPITAL LETTERS), title of the article (when appropriate), title of the item (book, magazine, journal, serial, symposium, catalog, etc.) date, page(s), volume-issue number(s), publisher, city and/or country where published.	T[6]
	B1	Benzoyl Peroxide: "Enhancing Antibiotic Efficacy in Acne Management," http://www.skintherapyletter.com/2010/15.10/2.html, November 2010, pp. 1-8, Accessed 5/18/11.	
	B2	Notice of Allowance cited in related U.S. Patent Application No. 11/981,672, dated 3/2/2012.	
	B3	Office Action cited in related U.S. Patent Application No. 11/981,672, dated 11/10/2011.	
	B4	Office Action cited in related U.S. Patent Application No. 11/981,672, dated 04/04/2011.	
	B5	Office Action cited in related U.S. Patent Application No. 11/083,178, dated 01/26/2012.	

Examiner Signature	/Melissa Mercier/ (06/06/2012)	Date Considered	

*EXAMINER: Initial if reference considered, whether or not citation is in conformance with MPEP 609. Draw line through citation if not in conformance and not considered. Include copy of this form with next communication to applicant. 1 Applicant's unique citation designation number (optional). 2 See Kinds Codes of USPTO Patent Documents at www.uspto.gov or MPEP 901.04. 3 Enter Office that issued the document, by the two-letter code (WIPO Standard ST.3). 4 For Japanese patent documents, the indication of the year of the reign of the Emperor must precede the serial number of the patent document. 5 Kind of document by the appropriate symbols as indicated on the document under WIPO Standard ST.16 if possible. 6 Applicant is to place a check mark here if English language Translation is attached. This collection of information is required by 37 CFR 1.97 and 1.98. The information is required to obtain or retain a benefit by the public which is to file (and by the USPTO to process) an application. Confidentiality is governed by 35 U.S.C. 122 and 37 CFR 1.14. This collection is estimated to take 2 hours to complete, including gathering, preparing, and submitting the completed application form to the USPTO. Time will vary depending upon the individual case. Any comments on the amount of time you require to complete this form and/or suggestions for reducing this burden, should be sent to the Chief Information Officer, U.S. Patent and Trademark Office, P.O. Box 1450, Alexandria, VA 22313-1450. DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS. **SEND TO: Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450.**

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4812-0751-8223.1

ALL REFERENCES CONSIDERED EXCEPT WHERE LINED THROUGH. /MM/

PTO/SB/08 (09-06)
Approved for use through 03/31/2007. OMB 0651-0031
U.S. Patent and Trademark Office: U.S. DEPARTMENT OF COMMERCE

Substitute for form 1449/PTO

INFORMATION DISCLOSURE STATEMENT BY APPLICANT

Date Submitted: March 8, 2012

(use as many sheets as necessary)

Sheet 2 of 2

Complete if Known	
Application Number	10/711,389
Filing Date	9/15/2004
First Named Inventor	Werner Zumbrunn
Art Unit	1615
Examiner Name	Melissa S. Mercier
Attorney Docket Number	095473-0106

NON PATENT LITERATURE DOCUMENTS

Examiner Initials*	Cite No.[1]	Include name of the author (in CAPITAL LETTERS), title of the article (when appropriate), title of the item (book, magazine, journal, serial, symposium, catalog, etc.) date, page(s), volume-issue number(s), publisher, city and/or country where published.	T[6]
	B6	Office Action cited in related U.S. Patent Application No. 11/083,178, dated 05/27/2011.	

Examiner Signature	/Melissa Mercier/ (06/06/2012)	Date Considered	

*EXAMINER: Initial if reference considered, whether or not citation is in conformance with MPEP 609. Draw line through citation if not in conformance and not considered. Include copy of this form with next communication to applicant. 1 Applicant's unique citation designation number (optional). 2 See Kinds Codes of USPTO Patent Documents at www.uspto.gov or MPEP 901.04. 3 Enter Office that issued the document, by the two-letter code (WIPO Standard ST.3). 4 For Japanese patent documents, the indication of the year of the reign of the Emperor must precede the serial number of the patent document. 5 Kind of document by the appropriate symbols as indicated on the document under WIPO Standard ST.16 if possible. 6 Applicant is to place a check mark here if English language Translation is attached. This collection of information is required by 37 CFR 1.97 and 1.98. The information is required to obtain or retain a benefit by the public which is to file (and by the USPTO to process) an application. Confidentiality is governed by 35 U.S.C. 122 and 37 CFR 1.14. This collection is estimated to take 2 hours to complete, including gathering, preparing, and submitting the completed application form to the USPTO. Time will vary depending upon the individual case. Any comments on the amount of time you require to complete this form and/or suggestions for reducing this burden, should be sent to the Chief Information Officer, U.S. Patent and Trademark Office, P.O. Box 1450, Alexandria, VA 22313-1450. DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS. **SEND TO: Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450.**

If you need assistance in completing the form, call 1-800-PTO-9199 (1-800-786-9199) and select option 2.

4812-0751-8223.1

ALL REFERENCES CONSIDERED EXCEPT WHERE LINED THROUGH. /MM/

Search Notes	Application/Control No.	Applicant(s)/Patent Under Reexamination
	10711389	ZUMBRUNN ET AL.
	Examiner	Art Unit
	MELISSA S MERCIER	1615

SEARCHED			
Class	Subclass	Date	Examiner

SEARCH NOTES		
Search Notes	Date	Examiner
East-see attached	6-8-12	MMercier
Palm inventor search	6-8-12	MMercier

INTERFERENCE SEARCH			
Class	Subclass	Date	Examiner

/MELISSA S MERCIER/ Examiner.Art Unit 1615	

EAST Search History (Prior Art)

Ref #	Hits	Search Query	DBs	Default Operator	Plurals	Time Stamp
S1	2	"20030065294"	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2009/05/17 14:18
S3	19	transdermal SAME (device apparatus controller) AND (drug pharmacuetical "active agent") AND reservior AND solvent	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2009/06/08 10:24
S4	13	transdermal SAME (device apparatus controller) AND (drug pharmacuetical "active agent") AND reservior AND solvent AND interface	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2009/06/08 10:25
S5	10	transdermal SAME (device apparatus controller) AND (drug pharmacuetical "active agent") AND reservior AND solvent AND removal	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2009/06/08 13:35
S6	2	transdermal SAME (device apparatus controller) AND (drug pharmacuetical "active agent") AND reservior AND solvent ADJ3 removal	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2009/06/08 13:36
S7	1598	transdermal AND solvent ADJ3 removal	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2009/06/08 13:40
S8	20	transdermal AND solvent ADJ3 removal SAME absorption	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2009/06/08 13:41

EAST Search History (Prior Art)

S9	89	transdermal AND (waste solvent ADJ3 removal) SAME absorption	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2009/06/08 13:47
S10	20	transdermal AND (waste adj3 removal solvent ADJ3 removal) SAME absorption	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2009/06/08 13:48
S11	22	transdermal AND (waste adj3 reservoir solvent ADJ3 removal) SAME absorption	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2009/06/08 13:48
S12	1630	transdermal AND (waste adj3 reservoir solvent ADJ3 removal)	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2009/06/08 13:49
S13	906	transdermal AND (waste adj3 reservoir solvent ADJ3 removal) AND absorption	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2009/06/08 13:49
S14	3	transdermal AND waste adj3 reservoir AND solvent ADJ3 removal AND absorption	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2009/06/08 13:49
S15	3	transdermal AND waste adj3 reservoir AND solvent ADJ3 removal	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2009/06/08 13:51

EAST Search History (Prior Art)

S16	3	(transdermal transmucosal) AND waste adj3 reservoir AND solvent ADJ3 removal	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2009/06/08 13:51
S17	4431	iontophoretic	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2009/06/08 14:57
S18	2954	iontophoretic AND transdermal	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2009/06/08 14:57
S19	214	iontophoretic AND transdermal AND solvent same removal	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2009/06/08 14:57
S20	0	"6374136" AND sensor	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2009/06/22 15:00
S21	0	"6374136" AND sensor	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2009/06/22 15:00
S22	7604	(transdermal transmucosal) AND sensor	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2009/06/22 15:11

EAST Search History (Prior Art)

S23	2165	iontophoretic SAME transdermal	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2009/06/22 15:46
S24	331	iontophoretic SAME transdermal AND sensor	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2009/06/22 15:46
S25	275	iontophoretic SAME transdermal AND sensor AND signal	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2009/06/22 15:46
S26	208	iontophoretic SAME transdermal AND sensor SAME signal	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2009/06/22 15:47
S27	102	iontophoretic SAME transdermal AND sensor SAME signal	USPAT	OR	ON	2009/06/22 15:47

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Applicant:	Zumbrunn et al.
Title:	TRANSDERMAL DRUG DELIVERY METHOD AND SYSTEM
Appl. No.:	10/711,389
Appl. Filing Date:	9/13/2004
Examiner:	Mercier, Melissa S.
Art Unit:	1615
Confirmation Number:	5388

REQUEST FOR CONTINUED EXAMINATION (RCE) TRANSMITTAL

Mail Stop RCE
Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

Commissioner:

This is a Request for Continued Examination (RCE) under 37 C.F.R. § 1.114 of the above-identified application. This RCE and the enclosed items listed below are being filed prior to the earliest of: (1) payment of the issue fee (unless a petition under 37 C.F.R. § 1.313 is granted); (2) abandonment of the application; or (3) the filing of a notice of appeal to the U.S. Court of Appeals for the Federal Circuit under 35 U.S.C. §141, or the commencement of a civil action under 35 U.S.C. §145 or §146 (unless the appeal or civil action is terminated).

Submission **required** under 37 C.F.R. §1.114: (check items that apply)

Enclosed are:

[**X**] Amendment and Reply (15 pages).

[**X**] Information Disclosure Statement (2 pages).

[**X**] Form PTO/SB/08 with copies of 6 reference(s).

The filing fee is calculated below:

	Claims as Amended		Previously Paid For		Extra Claims Present		Rate		Fee Totals
RCE Fee 1.17(e):							$930.00	=	$930.00
Total Claims:	40	-	40	=	0	x	$60.00	=	$0.00
Independents	3	-	3	=	0	x	$250.00	=	$0.00
First presentation of any Multiple Dependent Claims:						+	$450.00	=	$0.00
CLAIMS FEE TOTAL:								=	$930.00

[**X**] Applicant hereby petitions for an extension of time under 37 C.F.R. §1.136(a) for the total number of months checked below:

[ ]	Extension for response filed within the first month:	$150.00	0	$0.00
[X]	Extension for response filed within the second month:	$560.00		$560.00
[ ]	Extension for response filed within the third month:	$1,270.00		$0.00
[ ]	Extension for response filed within the fourth month:	$1,980.00		$0.00
[ ]	Extension for response filed within the fifth month:	$2,690.00		$0.00
	EXTENSION FEE SUBTOTAL:			$560.00
	EXTENSION FEE ALREADY PAID:		-	$0.00
	EXTENSION FEE TOTAL			$560.00

	CLAIMS AND EXTENSION FEE TOTAL:	$1490.00
[X]	Small Entity Fees Apply (subtract ½ of above):	$745.00
[ ]	Suspension of action requested under 37 C.F.R. § 1.103(c)	$0.00
	TOTAL FEE:	$745.00

The above-identified fees of $745.00 are being paid by credit card via EFS-Web.

The Commissioner is hereby authorized to charge any additional fees which may be required regarding this application under 37 C.F.R. §§ 1.16-1.17, or credit any overpayment, to Deposit Account No. 19-0741. Should no proper payment be enclosed herewith, as by the credit card payment instructions in EFS-Web being incorrect or absent, resulting in a rejected or incorrect credit card transaction, the Commissioner is authorized to charge the unpaid amount to Deposit Account No. 19-0741.

Please direct all correspondence to the undersigned attorney or agent at the address indicated below.

Respectfully submitted,

Date: March 8, 2012

By 

FOLEY & LARDNER LLP
Customer Number: 26371
Telephone: (202) 672-5538
Facsimile: (202) 672-5399

Michele M. Simkin
Attorney for Applicant
Registration No. 34,717

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Applicant: Zumbrunn et al.

Title: TRANSDERMAL DRUG DELIVERY METHOD AND SYSTEM

Appl. No.: 10/711,389

Filing Date: 9/15/2004

Examiner: Mercier, Melissa S.

Art Unit: 1615

Confirmation Number: 5388

AMENDMENT AND REPLY UNDER 37 C.F.R. § 1.114

Mail Stop RCE
Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

Sir:

This communication is responsive to the Final Office Action dated May 10, 2011 and the Advisory Action issued on January 3, 2012, concerning the above-referenced patent application. By virtue of the Notice of Appeal filed on November 9, 2011, and the payment of the prescribed fees for an extension of time, this response is timely filed on or before March 9, 2012, along with a Request for Continued Examination (RCE).

Listing of Claims begins on page 3 of this document.

Remarks/Arguments begin on page 8 of this document.

AMENDMENTS TO THE CLAIMS

1. (Withdrawn) A method for transdermal administration of at least one active substance to a porous surface, comprising the following steps:

a) dispensing a certain amount of a liquid comprising at least one active substance and at least one solvent into an administration reservoir,

b) separating at least a portion of the at least one solvent from the administration reservoir by a solvent recovery means such that the at least wherein one active substance achieves a certain level of concentration in vicinity to the porous surface to be treated;

c) absorption of the active substance by the porous surface to be treated via diffusion such that the level of concentration in the administration reservoir decreases.

2. (Withdrawn) The method according to claim 1 wherein the solvent is separated by evaporation.

3. (Withdrawn) The method according to claim 2 wherein the evaporation of the solvent is supported by a heating element.

4. (Withdrawn) The method according to claim 3 wherein the solvent is evaporated through a membrane passable preferably for the solvent.

5. (Withdrawn) The method according to claim 2 where the solvent is removed by a pre-programmed opening a pinch valve that is in contact with the porous surface.

6. (Withdrawn) The method according to claim 5 where the solvent is removed by programming the pumping of the solvent.

7. (Withdrawn) The method according to claim 2 where the solvent is removed by a programmed lowering of an arm or lever.

8. (Withdrawn) The method according to claims 2 wherein the solvent is absorbed by a desiccant.

9. (Withdrawn) The method according to claim 5 wherein the desiccant is one or a combination out of the group of silica get, molecular sieves, active carbon.

10. (Withdrawn) The method according to claim one of the claims 2 wherein the solvent is discharged into the environment.

11. (Withdrawn) The method of claim one of the claims 2 wherein the solvent is flushed by a fluid.

12. (Withdrawn) The method according to claim 1 wherein the at least one active substance passes an interface device which is permeable for the at least one active substance.

13. (Withdrawn) The method according to claim 12 wherein the interface device comprises a membrane.

14. (Withdrawn) The method according to claim 12 wherein the interface device comprises an adhesive layer suitable to be attached to the porous surface.

15. (Withdrawn) The method according to claim 1 wherein the steps a to c are repeated at predefined intervals such that the level of concentration of the at least one active substance in the administration reservoir is kept above a certain level.

16. (Withdrawn) The method according to claim 15 wherein the dispensing rate and the time pattern of dispensing the liquid into the administration reservoir are controlled by a programmable device.

17. (Previously presented) A device for transdermal administration of at least one active substance to a porous surface, comprising:

(a) an administration reservoir;

(b) a dispensing device interconnected to the administration reservoir for delivery of at least one active substance dissolved in a solvent to the administration reservoir, wherein the administration reservoir is suitable to receive the active substance dissolved in the solvent;

(c) an interface configured to contact the porous surface and suitable for transferring the active substance from the administration reservoir to the porous surface; and

(d) a solvent removal element configured to absorb solvent from the administration reservoir by evaporation when the interface is in contact with the porous surface;

wherein the transfer of the active substance from the administration reservoir to the porous surface is controlled via the absorption of solvent by the solvent removal element.

18. (Previously presented) The device according to claim 17 wherein the interface is suitable to be arranged in vicinity to the porous surface.

19. (Withdrawn) The device according to claim 18 wherein the interface comprises an adhesive surface suitable to be attached to the porous surface.

20. (Previously presented) The device according to claim 17 wherein the interface is a membrane permeable for the active substance.

21. (Previously presented) The device according to claim 17 wherein the solvent removal element is separated from the administration reservoir by a separation means.

22. (Previously presented) The device according to claim 21 wherein the separation means is selected from the group consisting of a membrane, a foam, a cellular material, a honeycomb, and an air gap.

23. (Previously presented) The device according to claim 21 wherein the administration reservoir and the solvent removal element are spaced apart a distance by the separation means.

24. (Withdrawn) The device according to claim 17 wherein the solvent removal element comprises one or more of the following materials: Desiccant, general or a selective absorbent material, silica gel, a molecular sieve, and active carbon.

25. (Withdrawn) The device according to claim 17 wherein the solvent removal element comprises a chamber with an inlet and an outlet for flushing by a fluid.

26. (Previously presented) The device according to claim 17 wherein the dispensing device comprises at least one reservoir for an active substance which is interconnected to the administration reservoir.

27. (Withdrawn) The device according to claim 26 wherein the dispensing device comprises a propellant means to propel the active substance from the one reservoir into the administration reservoir.

28. (Withdrawn) The device according to claim 27 wherein the propellant means is a pump and/or a propellant gas.

29. (Withdrawn) The device according to claim 26 wherein the dispensing device comprises a first reservoir comprising a first active substance and a second reservoir comprising a second active substance and the first and the second active substance are mixed by mixing means before delivery to the administration reservoir.

30. (Withdrawn) The device according to claim 29 wherein the mixing means is a pipe with vortex means providing an appropriate preparation of mixture.

31. (Withdrawn) The device according to claim 35 wherein the control device is interconnected to at least one valve for controlling the administration of the at least one active substance.

32. (Withdrawn) The device according to claim 35 wherein the control device is programmable according to a predetermined regime or time pattern or interval of administration of the at least one active substance.

33. (Previously presented) The device according to claim 35 wherein the control device is interconnected with at least one sensor for measuring a condition of the at least one active substance within the administration reservoir.

34. (Previously presented) The device according to claim 33 wherein the administration of the active substance is based on the signal of the at least one sensor.

35. (Previously presented) The control device according to claim 17 wherein the administration of the active substance is controlled by a control device.

36. (Withdrawn) An administration unit for application of at least one active substance to skin wherein the at least one active substance is dissolved in a solvent, comprising an administration unit configured to distribute the active substance to the skin or to a skin-compatible adhesive layer, wherein the administration unit comprises an administration reservoir and a solvent removal element comprising a separation layer that is imperrmeant to the active substance and permeable to the solvent.

37. (Withdrawn) The administration unit of claim 36, wherein the separation layer further comprises a material that controls evaporation rate of the solvent at a surface of the separation layer.

38. (Previously presented) The device of claim 17 wherein the solvent removal element controls the transfer of the active substance from the administration reservoir to the porous surface by controlling the concentration of the at least one active substance in the administration reservoir.

39. (Previously presented) The device of claim 17 wherein the solvent removal element controls termination of the transfer of the active substance from the administration reservoir to the porous surface by drying the interface.

40. (Previously presented) The device of claim 17, further comprising a housing, wherein the administration reservoir, the dispensing device, and the solvent removal element are located within the housing.

REMARKS

Applicants respectfully request consideration of the following comments upon continued examination of the present application.

I. Status of the Claims

No claim amendments are made in this response. Claims 1-40 are pending with claims 1-16, 19, 24, 25, 27-32, 36 and 37 withdrawn from consideration.

II. The Final Office Action on the record is defective.

In the final Office Action issued on May 10, 2011, the Examiner has erroneously misinterpreted claims by discussing claim limitations which are not recited in the pending claims. In fact, during a teleconference between Examiner Melissa Mercier and Applicants' representative, Yang Tang, on November 1, 2011, Examiner Mercier expressly admitted that she "mixed up" the present application with another co-assigned pending application. As a result, the Examiner has failed to consider the patentability arguments presented in the response filed on March 4, 2011.

A. The Final Office Action discusses claim elements and arguments which do not appear in Applicants' claims and prior response.

In the Final Office Action, the Examiner argues that Applicants' claims are obvious over the cited combination of Pickup and Frate as these references allegedly teach Applicants' claimed "a waste hydrogel reservoir" and the use of a "a hydrogel". The Examiner's argument is surprising as ***these elements are not recited in any of Applicants' claims.***

Specifically, Applicants' independent claim 17, as of March 4, 2011, reads as follows:

> *17. A device for transdermal administration of at least one active substance to a porous surface, comprising:*
> *(a) an administration reservoir;*

(b) a dispensing device interconnected to the administration reservoir for delivery of at least one active substance dissolved in a solvent to the administration reservoir, wherein the administration reservoir is suitable to receive the active substance dissolved in the solvent;

(c) an interface configured to contact the porous surface and suitable for transferring the active substance from the administration reservoir to the porous surface; and

(d) a solvent removal element configured to absorb solvent from the administration reservoir by evaporation when the interface is in contact with the porous surface;

wherein the transfer of the active substance from the administration reservoir to the porous surface is controlled via the absorption of solvent by the solvent removal element.

The first three paragraphs of the rejection discuss the teachings of the primary reference, Pickup, without expressly referencing Applicants' claims. *See* final Office Action, the paragraph bridging pages 2 and 3, through page 3, 2nd full paragraph. Therefore, it is unclear which prior-art component is intended to correlate to each claim element discussed in the final Office Action.

However, continuing the final Office Action states that "[a]lthough Pickup teaches the desire to remove excess bioactive agent to avoid undesired toxic effect if the drug is absorbed to the skin, see paragraph [0005], Pickup however, does not explicitly discuss the inclusion of ***a waste hydrogel reservoir***." *See* the paragraph bridging pages 3 and 4 of the final Office Action. The first paragraph at page 4 further cites the secondary reference, Frate, for the alleged teaching of use of hydrogel to remove undesirable compounds. The following paragraph at page 4 continues to explain why one of ordinary skill in the art would have "add[ed] absorbent layer" because "Frate teaches that hydrogel can remove undesirable compounds."

This rejection is severely defective because none of Applicants' claims recite "a waste hydrogel reservoir" or "a hydrogel".

The facial defect is more obvious in the section entitled "Response to Arguments," at page 5 and the top of page 6, where the Examiner discusses "an expandable waste reservoir," the

limitation "expandable," etc. at length. However, ***these elements are not recited in any of Applicants' claims, and were not argued by Applicants in the response filed on March 4, 2011, as the Examiner accused.*** Accordingly, the Examiner's assertions in the final Office Action are manifestly incorrect and lack factual basis.

B. The Examiner has failed to meet the initial burden as required by the examination guidelines.

Pursuant to MPEP 707.07(f), the Examiner is required to answer all material traversed, which entails providing "clear explanations of all actions taken by the examiner during prosecution of an application." Where the applicant traverses any rejection, even if the Examiner repeats the rejection, the Examiner is required to "take note of the applicant's argument and answer the substance of it."

The Examiner clearly fails to meet the threshold requirement because she neither "took note" of Applicants' argument nor "answered the substance" of Applicants' argument. Rather, the Examiner focused on claim limitations and "arguments" that did not exist in the prosecution history of the present application.

C. The Examiner expressly admits that the Final Office Action was confused with an Office Action in another pending co-assigned application.

During the teleconference, Examiner Mercier admitted that the final Office Action was mixed up with the action in another pending co-assigned application. In fact, the final Office Action appears similar to the final Office Action in copending Application No. 11/162,517 ("the '517 application") issued on June 3, 2010 by a ***different*** Examiner, Examiner Isis Ghali. Moreover, almost the entire Office Action is excerpted from the Office Action in the '517 application, with only minor modifications. The comparison of the contents, as well as the minor modification, is detailed in the table below.

Contents in the Present Office Action	Contents in the Office Action of the '517 Application
The paragraph bridging pages 2 and 3	Page 10, lines 11-16
Page 3, 1st full paragraph (except for the first sentence)	Page 10, lines 16-18, and 21-22
Page 3, 2nd full paragraph (except for the last sentence)	Page 10, line 22, through page 11, line 5
The paragraph bridging pages 3 and 4	Page 11, lines 6-13
Page 4, 1st full paragraph	Page 11, lines 14-16
Page 4, 2nd full paragraph	Page 11, line 17, through page 12, line 6
The paragraph spanning pages 5 and 6	Page 13, line 15, through page 14, line 18

In view of the striking similarities between the outstanding Office Action and the Office Action in a copending application (which recites different claim elements!), plus the lack of any specific comments regarding Applicants' prior response and claim limitations, Applicants believe that the present Office Action was issued in error and materially waived Applicants' right to an examination opinion. Accordingly, it does not serve the interest of justice that Applicants file two applications pursuing different subject matter but receive only one examination opinion.

III. Claim Rejections – 35 U.S.C. § 103

Claims 17-18, 20-23, 26, 33-35 and 38-40 are rejected under 35 U.S.C. §103(a) for allegedly being obvious over U.S. Patent Application Publication No. 2003/0065294 by Pickup et al. ("Pickup") in view of U.S. Patent No. 6, 211,296 to Frate ("Frate"). Applicants respectfully traverse the rejection.

A. The Final Office Action fails to address the substances of Applicants' response to the prior, non-final Office Action.

As discussed above, the Final Office Action fails to address the substance of Applicants' prior response filed on March 4, 2011. In fact, the Final Office Action discusses claim elements

such as "an expandable waste reservoir" and "a waste hydrogel reservoir" which do not exist in Applicants' pending claims.

Specifically, Applicants argued in the prior response that the first element of claim 17, "a solvent removal element configured to absorbed solvent from the administration reservoir by evaporation when the interface is in contact with the porous surface," was not taught or suggested by the cited references by pointing out the differences between the solvent removal element of the claimed invention and Frate's hydrogel. *See* prior response, page 8, last full paragraph, through page 9, last full paragraph.

Additionally, Applicants argued in the prior response that the second element of claim 17, "wherein the transfer of the active substance from the administration reservoir to the porous surface is controlled via the absorption of solvent by the solvent removal element," was not taught or suggested by the cited references by pointing out the differences between the claimed invention and Pickup's teaching of patch removal and Frate's teaching of hydrogel. *See* prior response, the paragraph bridging pages 9 and 10, through page 10, 3rd full paragraph.

The Examiner is completely silent as to Applicants' arguments. Rather, the Examiner discussed in length several arguments allegedly made by Applicants, but *which were never made, stated, or advanced by Applicants in the present application. See* final Office Action, pages 5 and 6. The Examiner's examination procedure clearly contradicts the requirements set forth in MPEP 707.07(f), which mandates the Examiner to "answer ***all*** material traversed" (emphasis added).

To this end, the MPEP further cites *In re Herrmann*, 261 F.2d 598 (CCPA 1958) and *In re Soni*, 54 F.3d 746 (Fed. Cir. 1995), where the court ruled that Applicants' statement was accepted at face value and found claims to be allowable because the PTO had failed to rebut Applicants' argument.

In view of the legal precedent and Examiner's failure to rebut Applicants' arguments,

Applicants respectfully submit that the rejection under 35 U.S.C. §103(a) should be withdrawn.

B. The Advisory Action continues to dismiss Applicants' arguments without any factual basis or supporting rationale.

Similar to the Final Office Action, the Advisory Action issued on January 3, 2012 fails to provide any factual basis or supporting rationale to substantiate the Examiner's maintenance of the rejection under 35 U.S.C. §103(a). Rather, the Examiner simply repeated the prior rejection:

> *. . . as discussed in the rejection, the patch of the prior art, Pickup, discloses the desire to remove excess bioactive agents and anything else that does not get transdermally absorbed (i.e. a waste reservoir). The Frate reference teaches the use of hydrogels are waste reserviours. It is well known that hydrogels absorb liquids.*

Advisory Action, page 2, last paragraph.

First, the Examiner's argument of a "desire" to remove excess bioactive agents is irrelevant because Applicants' prior argument concerns that the claim element "a solvent removal element configured to absorbed solvent from the administration reservoir by evaporation when the interface is in contact with the porous surface" was not met by the teachings of the cited references.

Second, the Examiner's comments are unclear about whether she deems the patch of Pickup or the hydrogel of Frate teaches or suggests the claim element at issue. This question imposed in Applicants' response to non-final Office Action dated March 4, 2011 remains unaddressed by the Examiner throughout the final Office Action and the Advisory Action. Applicants respectfully renew their request that the Examiner respond to the substance of the prior arguments, reproduced below:

> *In contrast to claim 17, Pickup teaches a "transdermal application system 20 ... for applying a bioactive substance to a subject." Paragraph [0038]. In some of the embodiments taught by Pickup, the bioactive substance is applied "to an absorbent member, such as a patch 25 of a fabric or other absorbent*

material," and "the patch may be removed, recharged with the drug, and then reapplied." See paragraphs [0038] and [0039]. In other words, Pickup discloses removal of a used patch to be recharged. However, removal of a used patch from the skin of the user does not provide a teaching of "a solvent removal element configured to absorb solvent from the administration reservoir by evaporation when the interface is in contact with the porous surface," as recited in claim 17.

Frate does not remedy the deficiencies of Pickup. Specifically, Frate discloses a "hydrogel [that] is typically applied to a substrate such as human skin and contains therein a substance such as a personal care compound, a pharmaceutical, an active ingredient, or the like." Col. 1, lines 63-67. Frate also discloses that the hydrogel and its active ingredient act as absorbents of impurities or irritants. An example of this would be the removal of undesired oil or other components from the skin. See col. 2, lines 1-6. Specifically, according to Frate "[t]he substance may remove unwanted components from the substrate such as removing oil, greases, irritants, nail polish, etc.; removing blemishes, defects, unusual texture, scars, growths (e.g. warts); removing hair; etc." See col. 11, lines 24-27. As can be seen, Frate relates to a substance that is applied to the skin for delivering a substance (e.g., a drug, etc.) to the skin and/or for removing an unwanted substance (e.g., oil, irritants, etc.) from the skin. Frate provides no teaching regarding "a solvent removal element configured to ***absorb solvent from the administration reservoir by evaporation*** *when the interface is in contact with the porous surface," as recited in claim 17.*

Further, in the Office Action, the Examiner has failed to identify those portions of either Pickup or Frate that teach a solvent removal element configured to absorb solvent from the administration reservoir by evaporation.

Response filed on March 4, 2011, pages 8-9.

In view of the foregoing, Applicants respectfully request withdrawal of the rejection.

IV. Conclusion

The present application is in condition for allowance. Favorable reconsideration of the application is respectfully requested. The Examiner is invited to contact the undersigned by telephone if it is felt that a telephone interview would advance the prosecution of the present application.

The Commissioner is hereby authorized to charge any additional fees which may be required regarding this application under 37 C.F.R. §§ 1.16-1.17, or credit any overpayment, to Deposit Account No. 19-0741. Should no proper payment be enclosed herewith, as by the credit card payment instructions in EFS-Web being incorrect or absent, resulting in a rejected or incorrect credit card transaction, the Commissioner is authorized to charge the unpaid amount to Deposit Account No. 19-0741. If any extensions of time are needed for timely acceptance of papers submitted herewith, Applicants hereby petition for such extension under 37 C.F.R. §1.136 and authorizes payment of any such extensions fees to Deposit Account No. 19-0741.

Respectfully submitted,

Date: March 8, 2012

By _____

FOLEY & LARDNER LLP
Customer Number: 22428
Telephone: (202) 672-5300
Facsimile: (202) 672-5399

Michele M. Simkin
Attorney for Applicant
Registration No. 34,717

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Applicant: Zumbrunn et al.

Title: TRANSDERMAL DRUG DELIVERY METHOD AND SYSTEM

Appl. No.: 10/711,389

Filing Date: 9/13/2004

Examiner: Mercier, Melissa S.

Art Unit: 1615

Conf. No.: 5388

INFORMATION DISCLOSURE STATEMENT UNDER 37 CFR §1.56

Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

Commissioner:

Submitted herewith on Form PTO/SB/08 is a listing of documents known to Applicants in order to comply with Applicants' duty of disclosure pursuant to 37 CFR §1.56.

A copy of each non-U.S. patent document and each non-patent document is being submitted to comply with the provisions of 37 CFR §1.97 and §1.98.

The submission of any document herewith, which is not a statutory bar, is not intended as an admission that such document constitutes prior art against the claims of the present application or that such document is considered material to patentability as defined in 37 CFR §1.56(b). Applicants do not waive any rights to take any action which would be appropriate to antedate or otherwise remove as a competent reference any document which is determined to be a *prima facie* art reference against the claims of the present application.

TIMING OF THE DISCLOSURE

The listed documents are being submitted in compliance with 37 CFR §1.97(b), before the mailing of a first Office action after the filing of a Request for Continued Examination under §1.114.

RELEVANCE OF EACH DOCUMENT

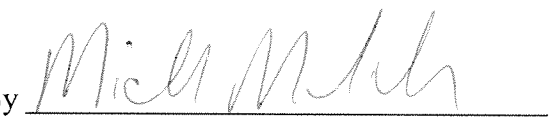
The Office Actions and Notice of Allowance listed on the attached PTO/SB/08 were cited by the Examiners in related U.S. Patent Application Nos. 11/981,672 and 11/083,178. The references listed in these documents are listed and/or attached; unless they were already cited in the present applications.

Applicants respectfully request that each listed document be considered by the Examiner and be made of record in the present application and that an initialed copy of Form PTO/SB/08 be returned in accordance with MPEP §609.

Although Applicant believes that no fee is required, the Commissioner is hereby authorized to charge any additional fees which may be due to Deposit Account No. 19-0741.

Respectfully submitted,

Date: March 8, 2012

By 

FOLEY & LARDNER LLP
Customer Number: 26371
Telephone: (202) 672-5538
Facsimile: (202) 672-5399

Michele M. Simkin
Attorney for Applicant
Registration No. 34,717

PTO/SB/08 (09-06)
Approved for use through 03/31/2007. OMB 0651-0031
U.S. Patent and Trademark Office: U.S. DEPARTMENT OF COMMERCE

Substitute for form 1449/PTO

INFORMATION DISCLOSURE STATEMENT BY APPLICANT

Date Submitted: March 8, 2012

(use as many sheets as necessary)

Sheet 1 of 2

Complete if Known	
Application Number	10/711,389
Filing Date	9/15/2004
First Named Inventor	Werner Zumbrunn
Art Unit	1615
Examiner Name	Melissa S. Mercier
Attorney Docket Number	095473-0106

U.S. PATENT DOCUMENTS

Examiner Initials*	Cite No.[1]	Document Number Number-Kind Code[2] (*if known*)	Publication Date MM-DD-YYYY	Name of Patentee or Applicant of Cited Document	Pages, Columns, Lines, Where Relevant Passages or Relevant Figures Appear
	A1	5,389,679	02/1995	Alliger	
	A2	5,616,332	04/1997	Herstein	
	A3	2002/0127256 A1	09/2002	Murad	
	A4	2004/0138074 A1	07/2004	Ahmad et al.	
	A5	4,545,990	10/1985	Le Foyer de Costil et al.	

FOREIGN PATENT DOCUMENTS

Examiner Initials*	Cite No.[1]	Foreign Patent Document Country Code[3]-Number[4]-Kind Code[5] (*if known*)	Publication Date MM-DD-YYYY	Name of Patentee or Applicant of Cited Documents	Pages, Columns, Lines, Where Relevant Passages or Relevant Figures Appear	T[6]

NON PATENT LITERATURE DOCUMENTS

Examiner Initials*	Cite No.[1]	Include name of the author (in CAPITAL LETTERS), title of the article (when appropriate), title of the item (book, magazine, journal, serial, symposium, catalog, etc.) date, page(s), volume-issue number(s), publisher, city and/or country where published.	T[6]
	B1	Benzoyl Peroxide: "Enhancing Antibiotic Efficacy in Acne Management," http://www.skintherapyletter.com/2010/15.10/2.html, November 2010, pp. 1-8, Accessed 5/18/11.	
	B2	Notice of Allowance cited in related U.S. Patent Application No. 11/981,672, dated 3/2/2012.	
	B3	Office Action cited in related U.S. Patent Application No. 11/981,672, dated 11/10/2011.	
	B4	Office Action cited in related U.S. Patent Application No. 11/981,672, dated 04/04/2011.	
	B5	Office Action cited in related U.S. Patent Application No. 11/083,178, dated 01/26/2012.	

Examiner Signature		Date Considered	

*EXAMINER: Initial if reference considered, whether or not citation is in conformance with MPEP 609. Draw line through citation if not in conformance and not considered. Include copy of this form with next communication to applicant. 1 Applicant's unique citation designation number (optional). 2 See Kinds Codes of USPTO Patent Documents at www.uspto.gov or MPEP 901.04. 3 Enter Office that issued the document, by the two-letter code (WIPO Standard ST.3). 4 For Japanese patent documents, the indication of the year of the reign of the Emperor must precede the serial number of the patent document. 5 Kind of document by the appropriate symbols as indicated on the document under WIPO Standard ST.16 if possible. 6 Applicant is to place a check mark here if English language Translation is attached.

PTO/SB/08 (09-06)
Approved for use through 03/31/2007. OMB 0651-0031
U.S. Patent and Trademark Office: U.S. DEPARTMENT OF COMMERCE
Under the Paperwork Reduction Act of 1995, no persons are required to respond to a collection of information unless it contains a valid OMB control number.

Substitute for form 1449/PTO				***Complete if Known***	
INFORMATION DISCLOSURE STATEMENT BY APPLICANT				**Application Number**	10/711,389
Date Submitted: March 8, 2012				**Filing Date**	9/15/2004
				First Named Inventor	Werner Zumbrunn
				Art Unit	1615
(use as many sheets as necessary)				Examiner Name	Melissa S. Mercier
Sheet	2	of	2	Attorney Docket Number	095473-0106

NON PATENT LITERATURE DOCUMENTS			
Examiner Initials*	Cite No.[1]	Include name of the author (in CAPITAL LETTERS), title of the article (when appropriate), title of the item (book, magazine, journal, serial, symposium, catalog, etc.) date, page(s), volume-issue number(s), publisher, city and/or country where published.	T[6]
	B6	Office Action cited in related U.S. Patent Application No. 11/083,178, dated 05/27/2011.	

Examiner Signature		Date Considered	

*EXAMINER: Initial if reference considered, whether or not citation is in conformance with MPEP 609. Draw line through citation if not in conformance and not considered. Include copy of this form with next communication to applicant. 1 Applicant's unique citation designation number (optional). 2 See Kinds Codes of USPTO Patent Documents at www.uspto.gov or MPEP 901.04. 3 Enter Office that issued the document, by the two-letter code (WIPO Standard ST.3). 4 For Japanese patent documents, the indication of the year of the reign of the Emperor must precede the serial number of the patent document. 5 Kind of document by the appropriate symbols as indicated on the document under WIPO Standard ST.16 if possible. 6 Applicant is to place a check mark here if English language Translation is attached. This collection of information is required by 37 CFR 1.97 and 1.98. The information is required to obtain or retain a benefit by the public which is to file (and by the USPTO to process) an application. Confidentiality is governed by 35 U.S.C. 122 and 37 CFR 1.14. This collection is estimated to take 2 hours to complete, including gathering, preparing, and submitting the completed application form to the USPTO. Time will vary depending upon the individual case. Any comments on the amount of time you require to complete this form and/or suggestions for reducing this burden, should be sent to the Chief Information Officer, U.S. Patent and Trademark Office, P.O. Box 1450, Alexandria, VA 22313-1450. DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS. **SEND TO: Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450.**

If you need assistance in completing the form, call 1-800-PTO-9199 (1-800-786-9199) and select option 2.

Electronic Patent Application Fee Transmittal

Application Number:	10711389
Filing Date:	15-Sep-2004
Title of Invention:	TRANSDERMAL DRUG DELIVERY METHOD AND SYSTEM
First Named Inventor/Applicant Name:	Werner Zumbrunn
Filer:	Michelle M. Simkin
Attorney Docket Number:	095473-0106

Filed as Small Entity

Utility under 35 USC 111(a) Filing Fees

Description	Fee Code	Quantity	Amount	Sub-Total in USD($)
Basic Filing:				
Pages:				
Claims:				
Miscellaneous-Filing:				
Petition:				
Patent-Appeals-and-Interference:				
Post-Allowance-and-Post-Issuance:				
Extension-of-Time:				
Extension - 2 months with $0 paid	2252	1	280	280

Description	Fee Code	Quantity	Amount	Sub-Total in USD($)
Miscellaneous:				
Request for continued examination	2801	1	465	465
		Total in USD ($)		**745**

Electronic Acknowledgement Receipt

EFS ID:	12260932
Application Number:	10711389
International Application Number:	
Confirmation Number:	5388
Title of Invention:	TRANSDERMAL DRUG DELIVERY METHOD AND SYSTEM
First Named Inventor/Applicant Name:	Werner Zumbrunn
Customer Number:	22428
Filer:	Michelle M. Simkin
Filer Authorized By:	
Attorney Docket Number:	095473-0106
Receipt Date:	08-MAR-2012
Filing Date:	15-SEP-2004
Time Stamp:	17:49:30
Application Type:	Utility under 35 USC 111(a)

Payment information:

Submitted with Payment	yes
Payment Type	Credit Card
Payment was successfully received in RAM	$745
RAM confirmation Number	4933
Deposit Account	
Authorized User	

File Listing:

Document Number	Document Description	File Name	File Size(Bytes)/ Message Digest	Multi Part /.zip	Pages (if appl.)

1		RCE_TRANSMITTAL.pdf	770872 298afd07271dee7b508159d494215849b92e1ff3	yes	18

Multipart Description/PDF files in .zip description		
Document Description	**Start**	**End**
Request for Continued Examination (RCE)	1	3
Amendment After Final	4	18

Warnings:

Information:

2		IDS_COV_LTR.pdf	274635 f42e4d70f87e3e50beb84f10fe3a87f7eea7db32	yes	4

Multipart Description/PDF files in .zip description		
Document Description	**Start**	**End**
Transmittal Letter	1	2
Information Disclosure Statement (IDS) Form (SB08)	3	4

Warnings:

Information:

3	Non Patent Literature	3_2_12_Notice_Allowance_11_981672.pdf	425930 8dc3677c502a019fb04aa0fe2de2e7ef324ca363	no	7

Warnings:

Information:

4	Non Patent Literature	Benzoyl_Peroxide_Article.pdf	458770 da2cb5820efac35a7ae37a596d20575901cae6c2	no	8

Warnings:

Information:

5	Non Patent Literature	OA_11_083178_01_26_12.pdf	456197 970fd3a16841a45c0a2bbfe4eed0c0c1f3069c19	no	14

Warnings:

Information:

6	Non Patent Literature	OA_11_083178_05_27_11.pdf	719849 50e9937674975d1c87fe5645d986ff0776078f9e	no	17

Warnings:

Information:

7	Non Patent Literature	OA_11_981672_04_04_11.pdf	464437 6499acdcb9fd923a3bcc6c997321a5996b649173	no	12
Warnings:					
Information:					
8	Non Patent Literature	OA_11_981672_11_10_2011.pdf	177216 dafbbb42b597033bc8073d1699af5cc56bd8dba9	no	5
Warnings:					
Information:					
9	Fee Worksheet (SB06)	fee-info.pdf	32248 f8bb61eda15c2af9e7fd611bcf29038df0c48b7c	no	2
Warnings:					
Information:					
			Total Files Size (in bytes):	3780154	

This Acknowledgement Receipt evidences receipt on the noted date by the USPTO of the indicated documents, characterized by the applicant, and including page counts, where applicable. It serves as evidence of receipt similar to a Post Card, as described in MPEP 503.

New Applications Under 35 U.S.C. 111

If a new application is being filed and the application includes the necessary components for a filing date (see 37 CFR 1.53(b)-(d) and MPEP 506), a Filing Receipt (37 CFR 1.54) will be issued in due course and the date shown on this Acknowledgement Receipt will establish the filing date of the application.

National Stage of an International Application under 35 U.S.C. 371

If a timely submission to enter the national stage of an international application is compliant with the conditions of 35 U.S.C. 371 and other applicable requirements a Form PCT/DO/EO/903 indicating acceptance of the application as a national stage submission under 35 U.S.C. 371 will be issued in addition to the Filing Receipt, in due course.

New International Application Filed with the USPTO as a Receiving Office

If a new international application is being filed and the international application includes the necessary components for an international filing date (see PCT Article 11 and MPEP 1810), a Notification of the International Application Number and of the International Filing Date (Form PCT/RO/105) will be issued in due course, subject to prescriptions concerning national security, and the date shown on this Acknowledgement Receipt will establish the international filing date of the application.

PTO/SB/06 (07-06)
Approved for use through 1/31/2007. OMB 0651-0032
U.S. Patent and Trademark Office; U.S. DEPARTMENT OF COMMERCE

PATENT APPLICATION FEE DETERMINATION RECORD

Substitute for Form PTO-875

Application or Docket Number	Filing Date	☐ To be Mailed
10/711,389	09/15/2004	

APPLICATION AS FILED – PART I

FOR	(Column 1) NUMBER FILED	(Column 2) NUMBER EXTRA	SMALL ENTITY ☒ RATE ($)	SMALL ENTITY ☒ FEE ($)	OR	OTHER THAN SMALL ENTITY RATE ($)	OTHER THAN SMALL ENTITY FEE ($)
☐ BASIC FEE (37 CFR 1.16(a), (b), or (c))	N/A	N/A	N/A			N/A	
☐ SEARCH FEE (37 CFR 1.16(k), (i), or (m))	N/A	N/A	N/A			N/A	
☐ EXAMINATION FEE (37 CFR 1.16(o), (p), or (q))	N/A	N/A	N/A			N/A	
TOTAL CLAIMS (37 CFR 1.16(i))	minus 20 =	*	X $ =		OR	X $ =	
INDEPENDENT CLAIMS (37 CFR 1.16(h))	minus 3 =	*	X $ =			X $ =	
☐ APPLICATION SIZE FEE (37 CFR 1.16(s))	If the specification and drawings exceed 100 sheets of paper, the application size fee due is $250 ($125 for small entity) for each additional 50 sheets or fraction thereof. See 35 U.S.C. 41(a)(1)(G) and 37 CFR 1.16(s).						
☐ MULTIPLE DEPENDENT CLAIM PRESENT (37 CFR 1.16(j))							
* If the difference in column 1 is less than zero, enter "0" in column 2.			TOTAL			TOTAL	

APPLICATION AS AMENDED – PART II

AMENDMENT 03/08/2012	(Column 1) CLAIMS REMAINING AFTER AMENDMENT		(Column 2) HIGHEST NUMBER PREVIOUSLY PAID FOR	(Column 3) PRESENT EXTRA	SMALL ENTITY RATE ($)	SMALL ENTITY ADDITIONAL FEE ($)	OR	OTHER THAN SMALL ENTITY RATE ($)	OTHER THAN SMALL ENTITY ADDITIONAL FEE ($)
Total (37 CFR 1.16(i))	* 40	Minus	** 40	= 0	X $30 =	0	OR	X $ =	
Independent (37 CFR 1.16(h))	* 3	Minus	***3	= 0	X $125 =	0	OR	X $ =	
☐ Application Size Fee (37 CFR 1.16(s))									
☐ FIRST PRESENTATION OF MULTIPLE DEPENDENT CLAIM (37 CFR 1.16(j))							OR		
					TOTAL ADD'L FEE	0	OR	TOTAL ADD'L FEE	

AMENDMENT	(Column 1) CLAIMS REMAINING AFTER AMENDMENT		(Column 2) HIGHEST NUMBER PREVIOUSLY PAID FOR	(Column 3) PRESENT EXTRA	RATE ($)	ADDITIONAL FEE ($)	OR	RATE ($)	ADDITIONAL FEE ($)
Total (37 CFR 1.16(i))	*	Minus	**	=	X $ =		OR	X $ =	
Independent (37 CFR 1.16(h))	*	Minus	***	=	X $ =		OR	X $ =	
☐ Application Size Fee (37 CFR 1.16(s))									
☐ FIRST PRESENTATION OF MULTIPLE DEPENDENT CLAIM (37 CFR 1.16(j))							OR		
					TOTAL ADD'L FEE		OR	TOTAL ADD'L FEE	

* If the entry in column 1 is less than the entry in column 2, write "0" in column 3.

** If the "Highest Number Previously Paid For" IN THIS SPACE is less than 20, enter "20".

*** If the "Highest Number Previously Paid For" IN THIS SPACE is less than 3, enter "3".

The "Highest Number Previously Paid For" (Total or Independent) is the highest number found in the appropriate box in column 1.

Legal Instrument Examiner:
/MARISSA BLYTHER/

OK TO ENTER: /MM/ (12/30/2011)

Attorney Docket No. 095473-0106

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Applicant: Zumbrunn et al.

Title: TRANSDERMAL DRUG DELIVERY METHOD AND SYSTEM

Appl. No.: 10/711,389

Filing Date: 9/15/2004

Examiner: Mercier, Melissa S.

Art Unit: 1615

Confirmation Number: 5388

AMENDMENT AND REPLY UNDER 37 C.F.R. § 1.116

Mail Stop AF
Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

Sir:

This communication is responsive to the Final Office Action dated May 10, 2011, concerning the above-referenced patent application. While the shortened statutory period of response has expired, filed herewith is a Petition for a three month extension of time to extend the period for response to November 10, 2011. Accordingly, this response is timely filed.

Listing of Claims begins on page 3 of this document.

Remarks/Arguments begin on page 8 of this document.

.

UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/711,389	09/15/2004	Werner Zumbrunn	095473-0106	5388

22428 7590 01/03/2012

FOLEY AND LARDNER LLP
SUITE 500
3000 K STREET NW
WASHINGTON, DC 20007

EXAMINER	
MERCIER, MELISSA S	

ART UNIT	PAPER NUMBER
1615	

MAIL DATE	DELIVERY MODE
01/03/2012	PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Advisory Action Before the Filing of an Appeal Brief	**Application No.** 10/711,389	**Applicant(s)** ZUMBRUNN ET AL.
	Examiner MELISSA MERCIER	**Art Unit** 1615

--The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

THE REPLY FILED 09 November 2011 FAILS TO PLACE THIS APPLICATION IN CONDITION FOR ALLOWANCE.

1. ☐ The reply was filed after a final rejection, but prior to or on the same day as filing a Notice of Appeal. To avoid abandonment of this application, applicant must timely file one of the following replies: (1) an amendment, affidavit, or other evidence, which places the application in condition for allowance; (2) a Notice of Appeal (with appeal fee) in compliance with 37 CFR 41.31; or (3) a Request for Continued Examination (RCE) in compliance with 37 CFR 1.114. The reply must be filed within one of the following time periods:
   a) ☐ The period for reply expires _____months from the mailing date of the final rejection.
   b) ☐ The period for reply expires on: (1) the mailing date of this Advisory Action, or (2) the date set forth in the final rejection, whichever is later. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of the final rejection.

   Examiner Note: If box 1 is checked, check either box (a) or (b). ONLY CHECK BOX (b) WHEN THE FIRST REPLY WAS FILED WITHIN TWO MONTHS OF THE FINAL REJECTION. See MPEP 706.07(f).

Extensions of time may be obtained under 37 CFR 1.136(a). The date on which the petition under 37 CFR 1.136(a) and the appropriate extension fee have been filed is the date for purposes of determining the period of extension and the corresponding amount of the fee. The appropriate extension fee under 37 CFR 1.17(a) is calculated from: (1) the expiration date of the shortened statutory period for reply originally set in the final Office action; or (2) as set forth in (b) above, if checked. Any reply received by the Office later than three months after the mailing date of the final rejection, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

NOTICE OF APPEAL

2. ☒ The Notice of Appeal was filed on *09 November 2011*. A brief in compliance with 37 CFR 41.37 must be filed within two months of the date of filing the Notice of Appeal (37 CFR 41.37(a)), or any extension thereof (37 CFR 41.37(e)), to avoid dismissal of the appeal. Since a Notice of Appeal has been filed, any reply must be filed within the time period set forth in 37 CFR 41.37(a).

AMENDMENTS

3. ☐ The proposed amendment(s) filed after a final rejection, but prior to the date of filing a brief, will not be entered because
   (a) ☐ They raise new issues that would require further consideration and/or search (see NOTE below);
   (b) ☐ They raise the issue of new matter (see NOTE below);
   (c) ☐ They are not deemed to place the application in better form for appeal by materially reducing or simplifying the issues for appeal; and/or
   (d) ☐ They present additional claims without canceling a corresponding number of finally rejected claims.

   NOTE: _____. (See 37 CFR 1.116 and 41.33(a)).
4. ☐ The amendments are not in compliance with 37 CFR 1.121. See attached Notice of Non-Compliant Amendment (PTOL-324).
5. ☐ Applicant's reply has overcome the following rejection(s): _____.
6. ☐ Newly proposed or amended claim(s) _____ would be allowable if submitted in a separate, timely filed amendment canceling the non-allowable claim(s).
7. ☒ For purposes of appeal, the proposed amendment(s): a) ☐ will not be entered, or b) ☒ will be entered and an explanation of how the new or amended claims would be rejected is provided below or appended.
   The status of the claim(s) is (or will be) as follows:
   Claim(s) allowed: _____.
   Claim(s) objected to: _____.
   Claim(s) rejected: *17,18,20-23,26,33-35 and 38-40*.
   Claim(s) withdrawn from consideration: *1-16,19,24,25,27-32,36 and 37*.

AFFIDAVIT OR OTHER EVIDENCE

8. ☐ The affidavit or other evidence filed after a final action, but before or on the date of filing a Notice of Appeal will not be entered because applicant failed to provide a showing of good and sufficient reasons why the affidavit or other evidence is necessary and was not earlier presented. See 37 CFR 1.116(e).
9. ☐ The affidavit or other evidence filed after the date of filing a Notice of Appeal, but prior to the date of filing a brief, will not be entered because the affidavit or other evidence failed to overcome all rejections under appeal and/or appellant fails to provide a showing a good and sufficient reasons why it is necessary and was not earlier presented. See 37 CFR 41.33(d)(1).
10. ☐ The affidavit or other evidence is entered. An explanation of the status of the claims after entry is below or attached.

REQUEST FOR RECONSIDERATION/OTHER

11. ☒ The request for reconsideration has been considered but does NOT place the application in condition for allowance because: See Continuation Sheet.
12. ☐ Note the attached Information *Disclosure Statement*(s). (PTO/SB/08) Paper No(s). _____
13. ☐ Other: _____.

/Melissa S Mercier/ Examiner, Art Unit 1615	/ANAND U DESAI/ Primary Examiner, Art Unit 1656

Continuation of 11. does NOT place the application in condition for allowance because: Applicants arguments have been fully considered but are not persuasive. Applicant argues:
the solvent removal element configured to absorb solvent from the administration reserviour by evaporation whenthe interface is in contact with the porous surface is not taught.
The Examiner respectfully disagrees, as discussed in the rejection, the patch of the prior art, Pickup, discloses the desire to remove excess bioactive agents and anything else that does not get transdermally absorbed (ie a waste reservoir). The Frate reference teaches the use of hydrogels are waste reserviours. It is well known that hydrogels absorb liquids.

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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/711,389	09/15/2004	Werner Zumbrunn	095473-0106	5388

22428 7590 11/17/2011
FOLEY AND LARDNER LLP
SUITE 500
3000 K STREET NW
WASHINGTON, DC 20007

EXAMINER	
MERCIER, MELISSA S	

ART UNIT	PAPER NUMBER
1615	

MAIL DATE	DELIVERY MODE
11/17/2011	PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

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NOV 17 2011

FOLEY AND LARDNER LLP
SUITE 500
3000 K STREET, NW
WASHINGTON, DC 20007

In re Application of:
Zumbrunn, et al.
Serial No.: 10/711,389.
Filed: September 15, 2004
Attorney Docket No.: **095473-0106**

: PETITION DECISION

This is in response to the petition under 37 CFR § 1.181, filed November 9, 2011, requesting that the final Office action of May 10, 2011 be withdrawn.

Applicants' arguments have been accorded careful consideration but they are not persuasive for the following reasons. The petition was untimely and therefore the merits of such won't be considered. Applicant should note that 37 CFR 1.181(f) indicates that any petition not filed within two months of the mailing date of the action from which relief is requested may be dismissed as untimely, that action being the final rejection of May 10, 2011. If the applicant wants consideration after the two months they should file a petition, and corresponding petition fee for such, under 37 CFR 1.183 and ask for a suspension of the Rule 181 and ask that consideration be made later than the 2 months.

Accordingly, the petition filed under 37 CFR 1. 181 is **DISMISSED** as untimely.

Should there be any questions about this decision please contact Marianne C. Seidel, by letter addressed to Director, TC 1600, at the address listed above, or by telephone at 571-272-0584 or by facsimile sent to the general Office facsimile number, 571-273-8300.

Remy Yucel
Director, Technology Center 1600

Attorney Docket No. 095473-0106

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Applicant: Zumbrunn et al.

Title: TRANSDERMAL DRUG DELIVERY METHOD AND SYSTEM

Appl. No.: 10/711,389

Filing Date: 9/15/2004

Examiner: Mercier, Melissa S.

Art Unit: 1615

Confirmation Number: 5388

PETITION UNDER 37 C.F.R. §1.181(a) REQUESTING WITHDRAWAL OF PREMATURE FINALITY

Mail Stop Petitions
Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

Sir:

This petition relates to the Final Office Action dated May 10, 2011, concerning the above-referenced patent application. This petition is timely by virtue of its filing while pending before the Examiner and because the requirement under 37 C.F.R. §1.181(f) is permissive, and not mandatory.

I. Action Requested

In accordance with MPEP §§1002 and 706-707, as well as 37 C.F.R. §1.181, Applicants respectfully request withdrawal of the finality of the Final Office Action of May 10, 2011, and issuance of a non-final Office Action if the Examiner finds the claims not allowable.

II. Grounds in Support of Withdrawal of Finality

Applicants respectfully request that the finality of the Office Action issued on May 10, 2011 be withdrawn because the Examiner has erroneously misinterpreted claims by discussing claim limitations that are not in the pending claims. In fact, during a teleconference between Examiner Melissa Mercier and Applicants' representative, Yang Tang, on November 1, 2011, Examiner Mercier expressly admitted that she "mixed up" the present application with another pending application of Applicants. As a result, the Examiner has failed to consider the patentability arguments presented in the response filed on March 4, 2011.

A. The Final Office Action discusses claim elements and arguments that do not appear in Applicants' claims and prior response.

Specifically, Applicants independent claim 17, as of March 4, 2011, reads as follows:

17. A device for transdermal administration of at least one active substance to a porous surface, comprising:

(a) an administration reservoir;

(b) a dispensing device interconnected to the administration reservoir for delivery of at least one active substance dissolved in a solvent to the administration reservoir, wherein the administration reservoir is suitable to receive the active substance dissolved in the solvent;

(c) an interface configured to contact the porous surface and suitable for transferring the active substance from the administration reservoir to the porous surface; and

(d) a solvent removal element configured to absorb solvent from the administration reservoir by evaporation when the interface is in contact with the porous surface;

wherein the transfer of the active substance from the administration reservoir to the porous surface is controlled via the absorption of solvent by the

solvent removal element.

The first three paragraphs of the rejection discuss the teachings of the primary reference, Pickup, without expressly referencing Applicants' claims. *See* final Office Action, the paragraph bridging pages 2 and 3, through page 3, 2nd full paragraph. Therefore, it is unclear which prior-art component is intended to correlate to each claim element.

In the final Office Action, the paragraph bridging pages 3 and 4 states "[a]lthough Pickup teaches the desire to remove excess bioactive agent to avoid undesired toxic effect if the drug is absorbed to the skin, see paragraph [0005], Pickup however, does not explicitly discuss the inclusion of ***a waste hydrogel reservoir***." The first paragraph at page 4 further cites the secondary reference, Frate, for the alleged teaching of use of hydrogel to remove undesirable compounds. The following paragraph at page 4 continues to explain why one of ordinary skill in the art would have "add[ed] absorbent layer" because "Frate teaches that hydrogel can remove undesirable compounds." This rejection is severely defective because neither "a waste hydrogel reservoir" nor "a hydrogel" is an element of ***any*** of Applicants' pending claims.

The facial defect is more obvious in the section entitled "Response to Arguments," at page 5 and the top of page 6, where the Examiner discusses "an expandable waste reservoir," the limitation "expandable," etc. at length. However, these are not Applicants' claim elements in any of the pending claims, and were not argued by Applicants in the response filed on March 4, 2011, as the Examiner accused. Accordingly, the Examiner's assertions in the final Office Action are manifestly incorrect and lack factual basis.

B. The Examiner has failed to meet the initial burden as required by the examination guidelines.

Pursuant to MPEP 707.07(f), the Examiner is required to answer all material traversed, which entails providing "clear explanations of all actions taken by the examiner during prosecution of an application." Where the applicant traverses any rejection, even if the

Examiner repeats the rejection, the Examiner is required to "take note of the applicant's argument and answer the substance of it."

The Examiner clearly fails to meet the threshold requirement because she neither "took note" of Applicants' argument nor "answered the substance" of Applicants' argument. Rather, the Examiner focused on claim limitations and "arguments" that did not exist in the prosecution history of the present application.

C. The Examiner expressly admits that the final Office Action was confused with an action in another pending application of Applicants.

During the teleconference, Examiner Mercier admitted that the final Office Action was mixed up with the action in another pending application of Applicants. In fact, the final Office Action appears similar to the final Office Action in copending Application No. 11/162,517 issued on June 3, 2010 by a ***different*** Examiner, Examiner Isis Ghali. In fact, almost the entire Office Action is excerpted from the Office Action in the '517 application, with only minor modifications. The comparison of the contents, as well as the minor modification, is detailed in the table below.

Contents in the Present Office Action	Contents in the Office Action of the '517 Application
The paragraph bridging pages 2 and 3	Page 10, lines 11-16
Page 3, 1st full paragraph (except for the first sentence)	Page 10, lines 16-18, and 21-22
Page 3, 2nd full paragraph (except for the last sentence)	Page 10, line 22, through page 11, line 5
The paragraph bridging pages 3 and 4	Page 11, lines 6-13
Page 4, 1st full paragraph	Page 11, lines 14-16
Page 4, 2nd full paragraph	Page 11, line 17, through page 12, line 6
The paragraph spanning pages 5 and 6	Page 13, line 15, through page 14, line 18

In view of the striking similarities between the outstanding Office Action and the Office Action in a copending application, plus the lack of any specific comments on Applicants' prior response and claim limitations, Applicants believe that the present Office Action was issued in error and materially waived Applicants' right to an examination opinion. Accordingly, it does not serve the interest of justice that Applicants file two applications pursuing different subject matter but receive only one examination opinion.

III. Conclusion

In view of the law and facts presented above, Applicants respectfully request withdrawal of the finality of the outstanding Office Action and replacing the final Office Action with a non-final Office Action to enable the Applicants to exercise their right to respond to the Action.

In support of the petition, Applicants submit:

(1) A copy of the final Office Action issued in the present application, dated May 10, 2011; and

(2) A copy of the final Office Action issued in the copending Application No. 11/162,517, dated June 3, 2010.

It is believed that no fees are due in connection with the filing of this petition. If this understanding is incorrect, the Commissioner is authorized to make appropriate charges to Deposit Account No. 19-0741.

Respectfully submitted,

Date: November 9, 2011

By /Michele M. Simkin, Reg. No. 34,717/
Michele M. Simkin
Attorney for Applicant
Registration No. 34,717

FOLEY & LARDNER LLP
Customer Number: 22428
Telephone: (202) 672-5300
Facsimile: (202) 672-5399

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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/711,389	09/15/2004	Werner Zumbrunn	095473-0106	5388

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EXAMINER	
MERCIER, MELISSA S	

ART UNIT	PAPER NUMBER
1615	

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05/10/2011	PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No.	Applicant(s)	
	10/711,389	ZUMBRUNN ET AL.	
	Examiner	Art Unit	
	MELISSA MERCIER	1615	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE *3* MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *3-4-11*.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-40* is/are pending in the application.

4a) Of the above claim(s) *1-16,19,24,25,27-32,36 and 37* is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *17,18,20-23,26,33-35 and 38-40* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

Summary

Receipt of Applicants Remarks and Amended Claims filed on March 4, 2011. Claims 1-40 are pending in this application. Claims 1-16, 19, 24-25, 27-32, and 36-37 remain withdrawn from consideration. Claims 17-18, 20-23, 26, 33-35, 38-40 remain under examination in this application.

Maintained Rejections

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

Claim 17-18, 20-23, 26, 33-35, and 38-40 are rejected under 35 U.S.C. 103(a) as being unpatentable over Pickup et al. (US 2003/0065294) in view of Frate (US Patent 6,211,296).

Pickup teaches a transdermal application device that comprises a dispenser to dispense bioactive compounds in liquid form on a transdermal patch to the skin, which reads on permeable interface for coupling to the porous surface (skin), and has a controller for automatically dispensing the bioactive agent on patch at a selected programmed time (a mechanism for causing the

bioactive agent to be delivered) and can be programmed to a particular time of day or more than one time a day (abstract).

A spacer can be provided between the dispenser and cutaneous target (paragraph 0021). The dispenser comprises programmable microchip contains pre-programmed information that is controlled by programmed computer to activate piezoelectric member to expel the bioactive material or liquid. The dispenser further comprises active agents in a replaceable container (a source of the bioactive agent that also is a waste reservoir when the delivery is completed).

The target for delivery is a patch that acts a reservoir, comprising the drug initially before delivery is complete. Figure 3 shows electronic programming of the device. The reference teaches collapsible reservoir that delivers bioactive agents. The device can deliver one or more than one drug at different times. Pickup discloses using the device to deliver bioactive agents such as nicotine to treat nicotine withdrawal (abstract; paragraphs: 0021-0023, 0040, 0045, 0050, 0060, 0061, 0065, 0069, claims, figures). The figures show the device encased within housing.

Although Pickup teaches the desire to remove excess bioactive agent to avoid undesired toxic effect if the drug is absorbed to the skin, see paragraph [0005], Pickup however, does not explicitly discuss the inclusion of a waste hydrogel reservoir. However, the patch disclosed by Pickup absorbs the bioactive composition, and anything applied to this patch that does not get transdermally

absorbed will remain in the patch, which then acts as a removable reservoir separated from the rest of the system.

Frate teaches hydrogel used to remove undesirable compounds of substrate by absorption of the waste to form single unite that can be removed and easily handled (column 1, lines 1-25). It is expected that the hydrogel expands when absorbs waste.

Therefore, it would have been obvious to one having ordinary skill in the art at the time of the invention to provide preprogrammed device to deliver bioactive agent to the skin comprising reservoir containing the agent and an interface patch on the skin as taught by Pickup, and further add a hydrogel absorbent layer to the interface patch as taught by Frate. One would have been motivated to do so because Pickup desired to avoid excess drug absorption and because Frate teaches that hydrogel can remove undesirable compounds from a substrate by absorption of the waste to form single unite that can be later removed and easily handled. One would reasonably expected formulating preprogrammed device to deliver bioactive agent to the skin comprising reservoir containing the agent and an interface patch on the skin and further the patch comprised hydrogel layer to absorb the waste and then easily and safely removed as single unit.

Response to Arguments

Applicant's arguments have been fully considered but they are not persuasive.

Applicant argues that Pickup does not teach or suggest an expandable waste reservoir configured to remove the active composition from the membrane to discontinue delivery of the active composition from the membrane to the skin of the host without decoupling the membrane from the skin of the host. Specifically, Pickup discloses a "transdermal application system 20 ... for applying a bioactive substance to a subject." In some of the embodiments taught by Pickup, the bioactive substance is applied "to an absorbent member, such as a patch 25 of a fabric or other absorbent material," and "the patch may be removed, recharged with the drug, and then reapplied." In other words, Pickup discloses removal of a used patch to be recharged. In response to this argument, it is argued that the present claims are directed to a product, and all the elements of the product are taught by combination of the prior art. The device taught by Pickup absorbs the bioactive composition, and anything applied to this patch that does not get transdermally absorbed will remain in the patch, which then acts as a removable reservoir separated from the rest of the system. Pickup teaches the active agents in a replaceable container (a source of the bioactive agent that also is a waste reservoir when the delivery is completed). The combination of the references teaches hydrogel waste removal material, and hydrogel expands in volume when absorbs waste, therefore expandable. The patch when delivers active agent losses weight and volume, and when absorbs waste expands in weight or volume. Removal of the patch for recharging is not part of the claimed invention. It is also obvious to make parts separable instead of having attached together, *In re Dulberg,* 289 F.2d 522,523, 129 USPQ

348,349 (CCPA 1961). Regarding the limitation "expandable", It is argued that the combination of Pickup and Frate teaches hydrogel that absorb materials, and the applicant disclosed the expandable waste removal element is hydrogel. Therefore, such limitation is met.

Conclusion

THIS ACTION IS MADE FINAL. Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to MELISSA S. MERCIER whose telephone number is (571)272-9039. The examiner can normally be reached on 8:00am-4:30pm Mon through Friday.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Robert A. Wax can be reached on (571) 272-0623. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Melissa S Mercier/
Examiner, Art Unit 1615

/ANAND U DESAI/
Primary Examiner, Art Unit 1656
May 7, 2011

Notice of References Cited	Application/Control No. 10/711,389	Applicant(s)/Patent Under Reexamination ZUMBRUNN ET AL.	
	Examiner MELISSA MERCIER	Art Unit 1615	Page 1 of 1

U.S. PATENT DOCUMENTS

*		Document Number Country Code-Number-Kind Code	Date MM-YYYY	Name	Classification
*	A	US-2003/0065294	04-2003	Pickup et al.	604/304
*	B	US-6,211,296	04-2001	Frate et al.	525/207
	C	US-			
	D	US-			
	E	US-			
	F	US-			
	G	US-			
	H	US-			
	I	US-			
	J	US-			
	K	US-			
	L	US-			
	M	US-			

FOREIGN PATENT DOCUMENTS

*		Document Number Country Code-Number-Kind Code	Date MM-YYYY	Country	Name	Classification
	N					
	O					
	P					
	Q					
	R					
	S					
	T					

NON-PATENT DOCUMENTS

*		Include as applicable: Author, Title Date, Publisher, Edition or Volume, Pertinent Pages)
	U	
	V	
	W	
	X	

*A copy of this reference is not being furnished with this Office action. (See MPEP § 707.05(a).)
Dates in MM-YYYY format are publication dates. Classifications may be US or foreign.

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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
11/162,517	09/13/2005	Guy DiPierro	095473-0105	3516

22428 7590 06/03/2010

FOLEY AND LARDNER LLP
SUITE 500
3000 K STREET NW
WASHINGTON, DC 20007

EXAMINER	
GHALI, ISIS A D	

ART UNIT	PAPER NUMBER
1611	

MAIL DATE	DELIVERY MODE
06/03/2010	PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No.	Applicant(s)	
	11/162,517	DIPIERRO, GUY	
	Examiner	Art Unit	
	Isis A. Ghali	1611	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *05 March 2010*.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *8-11,19,22-26 and 30-35* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *8-11,19,22-26 and 30-35* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☐ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date *05/03/2010*.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

The receipt is acknowledged of applicant's amendment filed 03/05/2010 and IDS filed 05/03/2010.

Claims 8-11 and 19-35 previously presented. Claims 20-21, 27-29 are currently canceled.

Claims are 8-11, 19, 22-26, 30-35 are pending and included in the prosecution.

Rejections and/or objections not reiterated from previous office actions are hereby withdrawn. The following rejections and/or objections are either reiterated or newly applied. They constitute the complete set presently being applied to the instant application.

Claim Rejections - 35 USC § 112

1. The following is a quotation of the first paragraph of 35 U.S.C. 112:

> The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

2. Claims 8-11, 19, 22-26, 30-35 are rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the written description requirement. The claim(s) contains

subject matter which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention. Amendment made to claim 8 to recite "without decoupling the membrane from the skin". Applicant refers to paragraph [0078] for support. Recourse to the specification, and paragraph [0078] in particular, no support has been found for "without decoupling the membrane from the skin". Paragraph [0078] stated:

> "The present invention is particularly useful in applications in which it is necessary and/or desirable to start the administration of a drug, stop the administration of a drug, and/or increase/decrease the dosage of a drug at a time when it is inconvenient or impossible for a patient to initiate the necessary actions. This is particularly useful for a wide variety of drug administration applications that benefit when administration is started, stopped, or changed while a person is sleeping. As chronotherapy knowledge increases, it is contemplated that a wide variety of applications will be discovered in which benefit is realized by starting, stopping and/or changing the drug administration while a patient sleeps."

In accordance to MPEP 714.02, applicant should specifically point out to where in the disclosure a support for any amendment made to the claims can be found.

3. Claims 8-11, 19, 22-26, 30-35 are rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the written description requirement. The claim(s) contains subject matter which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention. The claims as currently amended are drawn to "an expandable waste reservoir **configured to remove the active composition from the membrane to discontinue delivery of the active composition from the membrane to the skin of the host without decoupling the**

membrane from the skin of the host". The specification gives no guidance to one of skilled in the art regarding what configuration of the reservoir that leads to discontinuation of the delivery of the active agent to the skin of the host. Is it vacuum, or suction force? Further claim 11 recites "wherein the active composition includes carrier materials, and further wherein the expandable waste reservoir is configured **to remove carrier materials from the membrane**". It is not clear from the disclosure how the carrier is removed? Is it removed by itself or as part of the active composition? The limitations of **"discontinue delivery of the active composition from the membrane to the skin of the host without decoupling the membrane from the skin of the host**" or "**remove carrier materials from the membrane**" without partial or complete description of how discontinuity of delivery is achieved, how the active composition is removed or how the carrier is removed, do not convey to one of ordinary skill in the art that applicants were in possession of the claimed subject matter. Disclosure should describe the claimed subject matter by descriptive words, structure, diagrams or figures, and in the instant case the specification does not contain any of these ways of description on how expandable waste reservoir discontinue the drug delivery or remove the carrier? The figures does not show the expandable reservoir. It is not clear from the disclosure where the expandable reservoir is positioned in the device? This limitation added to the claims without any description on how it works does not meet the written description requirement as one of ordinary skill in the art could not recognize or understand the limitation from its mere recitation. Claims employing limitation at the point of novelty, such as applicants', neither provide those elements required to practice

the inventions, nor "inform the public" during the life of the patent of the limits of the monopoly asserted. The limitation could encompass various ways to discontinue the drug delivery using the waste reservoir and applicants claimed limitation represents only an invitation to experiment regarding all possible ways.

Regarding the requirement for adequate written description of chemical entities, Applicants' attention is directed to MPEP § 2163. In particular, *Regents of the University of California v. Eli Lilly & Co.,* 119 F. 3d 1559, 1568 (Fed. Cir. 1997), cert denied, 523 U.S. 1089, 118 S. Ct. 1548 (1998), holds that an adequate written description requires a precise definition, such as by structure, formula, chemical name, or physical properties, "not a mere wish list or plan for obtaining the claimed chemical invention." *Eli Lilly*, 119 F. 3d at 1566. The Federal Circuit has adopted the standard set forth in the Patent and Trademark Office ("PTO") Guidelines for Examination of Patent Applications under the U.S.C. 112.1 "Written Description" Requirement ("Guidelines"), 66 Fed. Reg. 1099 (Jan. 5, 2001), which state that the written description requirement can be met by "showing that an invention is complete by disclosure of sufficiently detailed, relevant identifying characteristics," including inter alia, "functional characteristics when coupled with a known or disclosed correlation between function and structure..." *Enzo Biochem Inc. v. Gen-Probe Inc.*, 296 F. 3d 316, 1324-25 (Fed. Cir. 2002) (quoting Guidelines, 66 Fed. Reg. At 1106 (emphasis added)). Moreover, although *Eli Lilly and Enzo* were decided within the factual context of DNA sequences, this does not preclude extending the reasoning of those cases to chemical structures in general. *Univ. of Rochester v. G.D. Searle & Co.,* 249 Supp. 2d 216,225 (W.D.N.Y. 2003).

The test for determining compliance with the written description requirement is whether the disclosure of the application as **originally filed reasonably conveys to one skilled in the art that the inventor had the possession at the time of the later claimed subject matter, rather than the presence or absence of literal support in the specification for the claimed language**. See *In re Kaslow,* 707 F 2d 1366, 1375 (Fed. Cir. 1983). See MPEP 2163.06.

The written description requirement prevents applications from using the amendment process to update the disclosure in their disclosures (claims or specification) during the pendency before the patent office. Otherwise applicants could add new matter to their disclosures and date them back to their original filing date, thus defeating an accurate accounting of the priority of the invention. See 35 USC 132. **The function of description requirement is to ensure that the inventor had possession, as of filing date of the application relied on, the specific subject matter claimed by him.** See *Genetech,* 108 F 3d 1361, 1365 (Fed. Cir. at 1366, 78, 1999).

4. The following is a quotation of the second paragraph of 35 U.S.C. 112:

> The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

5. Claim 10 is rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. The claim is confusing because it depends from claim 8 that recites "supplying a quantity of the active composition from the reservoir to the interface

membrane **in response to a control signal**". Claim 10, to the contrary, recites "by **passive diffusion** from the membrane into the skin". therefore claims 8 and 10 recites two contradicting mechanisms of delivery of the active agent.

Double Patenting

6. The nonstatutory double patenting rejection is based on a judicially created doctrine grounded in public policy (a policy reflected in the statute) so as to prevent the unjustified or improper timewise extension of the "right to exclude" granted by a patent and to prevent possible harassment by multiple assignees. A nonstatutory obviousness-type double patenting rejection is appropriate where the conflicting claims are not identical, but at least one examined application claim is not patentably distinct from the reference claim(s) because the examined application claim is either anticipated by, or would have been obvious over, the reference claim(s). See, e.g., *In re Berg*, 140 F.3d 1428, 46 USPQ2d 1226 (Fed. Cir. 1998); *In re Goodman*, 11 F.3d 1046, 29 USPQ2d 2010 (Fed. Cir. 1993); *In re Longi*, 759 F.2d 887, 225 USPQ 645 (Fed. Cir. 1985); *In re Van Ornum*, 686 F.2d 937, 214 USPQ 761 (CCPA 1982); *In re Vogel*, 422 F.2d 438, 164 USPQ 619 (CCPA 1970); and *In re Thorington*, 418 F.2d 528, 163 USPQ 644 (CCPA 1969).

A timely filed terminal disclaimer in compliance with 37 CFR 1.321(c) or 1.321(d) may be used to overcome an actual or provisional rejection based on a nonstatutory double patenting ground provided the conflicting application or patent either is shown to be commonly owned with this application, or claims an invention made as a result of activities undertaken within the scope of a joint research agreement.

Effective January 1, 1994, a registered attorney or agent of record may sign a terminal disclaimer. A terminal disclaimer signed by the assignee must fully comply with 37 CFR 3.73(b).

7. Claims 8-11, 19-35 are provisionally rejected on the ground of nonstatutory obviousness-type double patenting as being unpatentable over claims 9-12 of copending Application No. 11/162,525. Although the conflicting claims are not identical, they are not patentably distinct from each other because the subject matter claimed in the instant application is fully disclosed in the referenced copending applications and would be covered by any patent granted on the copending applications since the

referenced copending applications and the instant application are claiming common subject matter as follows: a programmable transdermal drug delivery device comprising an interface for coupling to the skin of a host; a reservoir storing a quantity of an active composition; a delivery mechanism for modulating the quantity of the active composition supplied from the reservoir to the interface in response to a control signal; and a timing mechanism coupled to the delivery mechanism and configured to generate the control signal according to a programmed administration schedule. The claims are obvious over each other.

This is a provisional obviousness-type double patenting rejection because the conflicting claims have not in fact been patented.

8. Claims 8-11, 19-35 are provisionally rejected on the ground of nonstatutory obviousness-type double patenting as being unpatentable over claims 14-16 of copending Application No. 11/981,672. Although the conflicting claims are not identical, they are not patentably distinct from each other because the subject matter claimed in the instant application is fully disclosed in the referenced copending applications and would be covered by any patent granted on the copending applications since the referenced copending applications and the instant application are claiming common subject matter as follows: a programmable transdermal drug delivery device comprising an interface for coupling to the skin of a host; a reservoir storing a quantity of an active composition; a delivery mechanism for modulating the quantity of the active composition supplied from the reservoir to the interface in response to a control signal; and a timing

mechanism coupled to the delivery mechanism and configured to generate the control signal according to a programmed administration schedule. The claims are obvious over each other.

This is a provisional obviousness-type double patenting rejection because the conflicting claims have not in fact been patented.

Response to Arguments

9. The examiner acknowledges applicant's request to hold in abeyance provisional obviousness-type double patenting rejections over copending claims in Application No. 11/162,525 and Application No. 11/981,672 until allowable claims are indicated.

However, the rejection is maintained because "provisional" double patenting rejection should continue to be made by the examiner in each application as long as there are conflicting claims in more than one application unless that "provisional" double patenting rejection is the only rejection remaining in one of the applications.

Claim Rejections - 35 USC § 103

10. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

11. The factual inquiries set forth in *Graham* **v.** *John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

12. Claims 8-11, 19, 22-26, 30, 33-35 are rejected under 35 U.S.C. 103(a) as being unpatentable over Pickup et al. (US 2003/0065294) in view of Frate (US 6,211,296).

Pickup teaches a transdermal application device that comprises a dispenser to dispense bioactive compounds in liquid form on a transdermal patch to the skin, which reads on permeable interface for coupling to the skin, and has a controller for automatically dispensing the bioactive agent on patch at a selected programmed time (a mechanism for causing the bioactive agent to be delivered) and can be programmed to a particular time of day or more than one time a day. The dispenser comprises programmable microchip contains pre-programmed information that is controlled by programmed computer to activate piezoelectric member to expel the bioactive material or liquid, which reads on pressurized reservoir. Bioactive compounds are dispensed on the patch using applicator ejection head, which reads on valve mechanism. The dispenser further comprises active agents in a replaceable container (a source of the bioactive agent that also is a waste reservoir when the delivery is completed). The target for delivery is a patch that acts a reservoir, comprising the drug initially before delivery is complete. Figure 3 shows electronic programming of the device. The

reference teaches collapsible reservoir that delivers bioactive agents. The device can deliver one or more than one drug at different times. Pickup discloses using the device to deliver bioactive agents such as nicotine to treat nicotine withdrawal. The device comprises kit comprising flash memory card. See abstract; paragraphs: 0021-0023, 0040, 0045, 0050, 0060, 0061, 0065, 0069, claims, figures.

Although Pickup teaches the desire to remove excess bioactive agent to avoid undesired toxic effect if the drug is absorbed to the skin, see paragraph [0005], Pickup however, does not explicitly discuss the inclusion of a expansible waste hydrogel reservoir.

However, the patch disclosed by Pickup absorbs the bioactive composition, and anything applied to this patch that does not get transdermally absorbed will remain in the patch, which then acts as a removable reservoir separated from the rest of the system.

Frate teaches hydrogel used to remove undesirable compounds of substrate by absorption of the waste to form single unite that can be removed and easily handled, see col.1, lines 1-25. It is expected that the hydrogel expands when absorbs waste.

Therefore, it would have been obvious to one having ordinary skill in the art at the time of the invention to provide preprogrammed device to deliver bioactive agent to the skin comprising reservoir containing the agent and an interface patch on the skin as taught by Pickup, and further add a hydrogel absorbent layer to the interface patch as taught by Frate. One would have been motivated to do so because Pickup desired to avoid excess drug absorption and because Frate teaches that hydrogel can remove

undesirable compounds from a substrate by absorption of the waste to form single unite that can be later removed and easily handled. One would reasonably expected formulating preprogrammed device to deliver bioactive agent to the skin comprising reservoir containing the agent and an interface patch on the skin and further the patch comprised hydrogel layer to absorb the waste and then easily and safely removed as single unit.

13. Claims 31 and 32 are rejected under 35 U.S.C. 103(a) as being unpatentable over Pickup et al. (US 2003/0065294) in view of Frate (US 6,211,296) and further in view of Prosise et al. (Effect of abstinence from smoking on sleep and day time sleepiness).

The combined teachings of Pickup and Frate are previously discussed in this office action.

Although Pickup teaches treatment of nicotine withdrawal symptoms and delivery of the bioactive agents over the 24 hour period and delivering more than one bioactive agent, however, Pickup does not explicitly teach the delivery of the drug while patient is asleep.

Prosise teaches withdrawal of nicotine disturbs sleep and provides day time sleepiness and suggests administration of benzodiazepines to decrease these symptoms, see the conclusion pages 1139-1140.

Therefore, it would have been obvious to one having ordinary skill in the art at the time of the invention to provide preprogrammed device to treat nicotine withdrawal

symptoms as taught by the combination of Pickup and Frate, and administer drugs that help to avoid the side effects of nicotine withdrawal such as lack of sleep during night by administering drugs that helps to induce night sleep such as benzodiazepines as taught by Prosise. One would have been motivated to do so because Prosise faced the problem of lack of sleep and day time sleepiness during nicotine cessation and suggested to overcome such a problem by administering drugs that induce sleep such as benzodiazepines. One would reasonably expected formulating preprogrammed device to treat nicotine withdrawal symptoms by delivering nicotine and further delivers benzodiazepines during night to avoid the problem of lack of sleep and day time sleepiness during nicotine cessation and to provide smooth comfortable nicotine withdrawal process.

Response to Arguments

14. Applicant's arguments filed 03/05/2010 have been fully considered but they are not persuasive.

Applicant argues that Pickup does not teach or suggest an expandable waste reservoir configured to remove the active composition from the membrane to discontinue delivery of the active composition from the membrane to the skin of the host without decoupling the membrane from the skin of the host. Specifically, Pickup discloses a "transdermal application system 20 ... for applying a bioactive substance to a subject." In some of the embodiments taught by Pickup, the bioactive substance is applied "to an absorbent member, such as a patch 25 of a fabric or other absorbent

material," and "the patch may be removed, recharged with the drug, and then reapplied." In other words, Pickup discloses removal of a used patch to be recharged.

In response to this argument, it is argued that the present claims are directed to a product, and all the elements of the product are taught by combination of the prior art. The device taught by Pickup absorbs the bioactive composition, and anything applied to this patch that does not get transdermally absorbed will remain in the patch, which then acts as a removable reservoir separated from the rest of the system. Pickup teaches the active agents in a replaceable container (a source of the bioactive agent that also is a waste reservoir when the delivery is completed). The combination of the references teaches hydrogel waste removal material, and hydrogel expands in volume when absorbs waste, therefore expandable. The patch when delivers active agent losses weight and volume, and when absorbs waste expands in weight or volume. Removal of the patch for recharging is not part of the claimed invention. It is also obvious to make parts separable instead of having attached together, *In re Dulberg*, 289 F.2d 522, 523, 129 USPQ 348, 349 (CCPA 1961).

Regarding the limitation "expandable", It is argued that the combination of Pickup and Frate teaches hydrogel that absorb materials, and the applicant disclosed the expandable waste removal element is hydrogel. Therefore, such limitation is met.

Applicant argues that Frate does not remedy the deficiencies of Pickup. Frate relates to a substance that is applied to the skin for delivering a substance (e.g., a drug, etc.) to the skin and/or for removing an unwanted substance (e.g., oil, irritants, etc.)

from the skin. Further, it is Applicants understanding that to discontinue drug delivery by the hydrogel of Frate, the hydrogel would need to be removed from the skin. While Frate does teach a hydrogel removing unwanted substances from the skin, Frate does not teach utilizing the hydrogel as part of a drug delivery device to remove an active composition from a membrane of a drug delivery device to discontinue delivery of the active composition.

In response to this argument, it is argued that Frate is relied upon for the solely teaching of hydrogel as agent to remove waste products from the skin either the waste is drug, skin secretion or cosmetic, etc. The combination of Pickup and Frate teaches the present invention as whole. Removal of the hydrogel from the skin is directed to method of use of the device that impart no patentability to product claims. A conclusion of obviousness under 35 U.S.C. 103 (a) does not require absolute predictability, only a reasonable expectation of success; and references are evaluated by what they suggest to one versed in the art, rather than by their specific disclosure. *In re Bozek*, 163 USPQ 545 (CCPA 1969).

In the light of the foregoing discussion, the Examiner's ultimate legal conclusion is that the subject matter as a whole as defined by the claims would have been prima facie obvious within the meaning of 35 U.S.C. 103 (a).

Applicant argues that Prosise does not remedy the deficiencies of Pickup. Prosise does not teach or suggest "an expandable waste reservoir configured to remove the active composition from the membrane to discontinue delivery of the active

composition from the membrane to the skin of the host without decoupling the membrane from the skin of the host," as recited in independent claim 8.

In response to this argument, it is argued that waste reservoir is suggested by Pickup, and expandable hydrogel is taught by Frate. Prosise is relied upon for the solely teaching of the fact that withdrawal of nicotine disturbs sleep and provides day time sleepiness.

Conclusion

15. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

16. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Isis A. Ghali whose telephone number is (571) 272-0595. The examiner can normally be reached on Monday-Thursday, 6:30 AM to 5:00 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Sharmila Landau can be reached on (571) 272-0614. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Isis A Ghali/
Primary Examiner, Art Unit 1611

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PTO/SB/08 (09-06)

Approved for use through 03/31/2007. OMB 0651-0031

U.S. Patent and Trademark Office: U.S. DEPARTMENT OF COMMERCE

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Substitute for form 1449/PTO

INFORMATION DISCLOSURE STATEMENT BY APPLICANT

Date Submitted: May 3, 2010

(use as many sheets as necessary)

Sheet 1 of 3

Complete if Known	
Application Number	11/162,517
Filing Date	9/13/2005
First Named Inventor	Guy DiPierro
Art Unit	1611
Examiner Name	Ghali, Isis A.D.
Attorney Docket Number	095473-0105

U.S. PATENT DOCUMENTS

Examiner Initials*	Cite No.[1]	Document Number Number-Kind Code[2] (*if known*)	Publication Date MM-YYYY	Name of Patentee or Applicant of Cited Document	Pages, Columns, Lines, Where Relevant Passages or Relevant Figures Appear
	A1	5,505,958	04/09/1996	Bello et al.	
	A2	6,723,086	04/20/2004	Bussek et al.	
	A3	4,379,454	04/12/1983	Campbell et al.	
	A4	6,887,202	05/03/2005	Currie et al.	
	A5	2005/0182307	08/18/2005	Currie et al.	
	A6	5,932,240	08/03/1999	D'Angelo et al.	
	A7	5,405,614	04/11/1995	D'Angelo et al.	
	A8	2007/0191815	08/2007	DiPierro	
	A9	5,273,756	12/28/1993	Fallon et al.	
	A10	5,820,875	10/13/1998	Fallon et al.	
	A11	6,214,379	04/10/2001	Hermelin	
	A12	5,993,435	11/1999	Haak et al.	
	A13	2005/0034842	02/17/2005	Huber et al.	
	A14	6,867,342	03/15/2005	Johnston et al.	
	A15	6,638,528	10/28/2003	Kanios	
	A16	5,879,322	03/09/1999	Lattin et al.	
	A17	4,917,895	04/17/1990	Lee et al.	
	A18	6,090,404	07/2000	Meconi et al.	
	A19	2005/0151110	07/2005	Minro et al.	
	A20	6,374,136	04/2002	Murdock	
	A21	6,861,066	03/01/2005	Van de Casteele	
	A22	6,129,702	10/10/2000	Woias et al.	
	A23	2005/0238704	10/27/2005	Zumbrunn et al.	

FOREIGN PATENT DOCUMENTS

Examiner Initials*	Cite No.[1]	Foreign Patent Document Country Code[3] Number[4] Kind Code[5] (*if known*)	Publication Date MM-DD-YYYY	Name of Patentee or Applicant of Cited Documents	Pages, Columns, Lines, Where Relevant Passages or Relevant Figures Appear	T[6]
	B1	JP 2208813	8/10/1990	Tsukahara Hiroko et al.	Full Engl. Translation	
	B2	CA 2,142,871 (published as WO 94/04109)	03/03/1994	Miranda et al.		

Examiner Signature	/Isis Ghali/	Date Considered	05/30/2010

*EXAMINER: Initial if reference considered, whether or not citation is in conformance with MPEP 609. Draw line through citation if not in conformance and not considered. Include copy of this form with next communication to applicant. 1 Applicant's unique citation designation number (optional). 2 See Kinds Codes of USPTO Patent Documents at www.uspto.gov or MPEP 901.04. 3 Enter Office that issued the document, by the two-letter code (WIPO Standard ST.3). 4 For Japanese patent documents, the indication of the year of the reign of the Emperor must precede the serial number of the patent document. 5 Kind of document by the appropriate symbols as indicated on the document under WIPO Standard ST.16 if possible. 6 Applicant is to place a check mark here if English language Translation is attached.

ALL REFERENCES CONSIDERED EXCEPT WHERE LINED THROUGH. /I.G./

Receipt date: 05/03/2010

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Date Submitted: May 3, 2010

(use as many sheets as necessary)

Sheet 2 of 3

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	B3	PCT/GB02/04064 (published as WO 03/022349 A2	03/20/2003	Watmough et al.		

NON PATENT LITERATURE DOCUMENTS

Examiner Initials*	Cite No.[1]	Include name of the author (in CAPITAL LETTERS), title of the article (when appropriate), title of the item (book, magazine, journal, serial, symposium, catalog, etc.) date, page(s), volume-issue number(s), publisher, city and/or country where published.	T[6]
	C1	Office Action cited by the Examiner in related U.S. Patent Application No. 11/083,178, dated 10/2/2009.	
	C2	Office Action cited by the Examiner in related U.S. Patent Application No. 11/083,178, dated 10/292008.	
	C3	Office Action cited by the Examiner in related U.S. Patent Application No. 11/981,672, dated 10/7/2009.	
	C4	Office Action cited by the Examiner in related U.S. Patent Application No. 10/711,389, dated 7/01/2009.	
	C5	Office Action cited by the Examiner in related U.S. Patent Application No. 11/162,525, dated 2/19/2009.	
	C6	Office Action cited by the Examiner in related U.S. Patent Application No. 11/162,525, dated 02/05/2010.	
	C7	Office Action cited by the Examiner in related U.S. Patent Application No. 11/981,672, dated 10/07/2009.	
	C8	Office Action cited by the Examiner in related U.S. Patent Application No. 10/711,389, dated 02/01/2010.	
	C9	Office Action cited by the Examiner in related U.S. Patent Application No. 11/981,672, dated 03/23/2009.	

Examiner Signature	/Isis Ghali/	Date Considered	05/30/2010

*EXAMINER: Initial if reference considered, whether or not citation is in conformance with MPEP 609. Draw line through citation if not in conformance and not considered. Include copy of this form with next communication to applicant. 1 Applicant's unique citation designation number (optional). 2 See Kinds Codes of USPTO Patent Documents at www.uspto.gov or MPEP 901.04. 3 Enter Office that issued the document, by the two-letter code (WIPO Standard ST.3). 4 For Japanese patent documents, the indication of the year of the reign of the Emperor must precede the serial number of the patent document. 5 Kind of document by the appropriate symbols as indicated on the document under WIPO Standard ST.16 if possible. 6 Applicant is to place a check mark here if English language Translation is attached.

ALL REFERENCES CONSIDERED EXCEPT WHERE LINED THROUGH. /I.G./

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Date Submitted: May 3, 2010				**Filing Date**	9/13/2005
				First Named Inventor	Guy DiPierro
				Art Unit	1611
(use as many sheets as necessary)				Examiner Name	Ghali, Isis A.D.
Sheet	3	of	3	Attorney Docket Number	095473-0105

NON PATENT LITERATURE DOCUMENTS			
Examiner Initials*	Cite No.[1]	Include name of the author (in CAPITAL LETTERS), title of the article (when appropriate), title of the item (book, magazine, journal, serial, symposium, catalog, etc.) date, page(s), volume-issue number(s), publisher, city and/or country where published.	T[6]
	C10	Office Action cited by the Examiner in related U.S. Patent Application No. 11/162,525, dated 08/27/2009.	
	C11	Office Action cited by the Examiner in related U.S. Patent Application No. 11/162,525, dated 09/24/2008.	
	C12	R. Guy, "Current Status and Future Prospects of Transdermal Drug Delivery" Pharm. Res. 1996, 13 (12) pgs. 1765-1769.	
	C13	L. Molander et al., "Reduction of Tobacco Withdrawl Symptons with a Sublingual Nicotine Tablet: A Placebo Controlled Study," Nicotine & Tob. Res., 2000, 2, pgs. 187-191.	
	C14	The Science and Practice of Pharmacy, 19th Ed., page 1582-1584, (1995).	
	C15	V. Kotwal, "Enahncement of Iontophoretic Transport of Diphenhydramine Hydrocholoride Thermosensitive Gel by Optimization of pH, Polymer Concentration, Electrode Design, and Pulse Rate" AAPS PharmSciTech, 2007 8(4), E1-E6.	
	C16	Shin et al., "Ehanced Bioavailability of Triprolidine from the Transdermal TPX Matrix System in Rabbits," *Intern. Journ. Of Pharm.*, Vol. 234, pp. 67-73 (2002).	
	C17	International Preliminary Report on Patentability; PCT/IB2004/002947, May 1, 2006.	
	C18	Notice of Allowance received in related patent application no. 11/162,525, dated 4/26/2010,	

Examiner Signature	/Isis Ghali/	Date Considered	05/30/2010

*EXAMINER: Initial if reference considered, whether or not citation is in conformance with MPEP 609. Draw line through citation if not in conformance and not considered. Include copy of this form with next communication to applicant. 1 Applicant's unique citation designation number (optional). 2 See Kinds Codes of USPTO Patent Documents at www.uspto.gov or MPEP 901.04. 3 Enter Office that issued the document, by the two-letter code (WIPO Standard ST.3). 4 For Japanese patent documents, the indication of the year of the reign of the Emperor must precede the serial number of the patent document. 5 Kind of document by the appropriate symbols as indicated on the document under WIPO Standard ST.16 if possible. 6 Applicant is to place a check mark here if English language Translation is attached. This collection of information is required by 37 CFR 1.97 and 1.98. The information is required to obtain or retain a benefit by the public which is to file (and by the USPTO to process) an application. Confidentiality is governed by 35 U.S.C. 122 and 37 CFR 1.14. This collection is estimated to take 2 hours to complete, including gathering, preparing, and submitting the completed application form to the USPTO. Time will vary depending upon the individual case. Any comments on the amount of time you require to complete this form and/or suggestions for reducing this burden, should be sent to the Chief Information Officer, U.S. Patent and Trademark Office, P.O. Box 1450, Alexandria, VA 22313-1450. DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS. **SEND TO: Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450.**

If you need assistance in completing the form, call 1-800-PTO-9199 (1-800-786-9199) and select option 2.

ALL REFERENCES CONSIDERED EXCEPT WHERE LINED THROUGH. /I.G./

Electronic Patent Application Fee Transmittal

Application Number:	10711389
Filing Date:	15-Sep-2004
Title of Invention:	TRANSDERMAL DRUG DELIVERY METHOD AND SYSTEM
First Named Inventor/Applicant Name:	Werner Zumbrunn
Filer:	Michelle M. Simkin
Attorney Docket Number:	095473-0106

Filed as Small Entity

Utility under 35 USC 111(a) Filing Fees

Description	Fee Code	Quantity	Amount	Sub-Total in USD($)
Basic Filing:				
Pages:				
Claims:				
Miscellaneous-Filing:				
Petition:				
Patent-Appeals-and-Interference:				
Notice of appeal	2401	1	310	310
Post-Allowance-and-Post-Issuance:				
Extension-of-Time:				

Description	Fee Code	Quantity	Amount	Sub-Total in USD($)
Extension - 3 months with $0 paid	2253	1	635	635
Miscellaneous:				
			Total in USD ($)	**945**

Electronic Acknowledgement Receipt

EFS ID:	11371024
Application Number:	10711389
International Application Number:	
Confirmation Number:	5388
Title of Invention:	TRANSDERMAL DRUG DELIVERY METHOD AND SYSTEM
First Named Inventor/Applicant Name:	Werner Zumbrunn
Customer Number:	22428
Filer:	Michelle M. Simkin
Filer Authorized By:	
Attorney Docket Number:	095473-0106
Receipt Date:	09-NOV-2011
Filing Date:	15-SEP-2004
Time Stamp:	17:48:52
Application Type:	Utility under 35 USC 111(a)

Payment information:

Submitted with Payment	yes
Payment Type	Deposit Account
Payment was successfully received in RAM	$945
RAM confirmation Number	4724
Deposit Account	190741
Authorized User	

File Listing:

Document Number	Document Description	File Name	File Size(Bytes)/ Message Digest	Multi Part /.zip	Pages (if appl.)

1	Amendment After Final	Amendment_and_Reply.pdf	128150 552ca9d4345cf78062b483fd97d27daa27f4a4fd	no	10
Warnings:					
Information:					
2	Notice of Appeal Filed	Notice_of_Appeal.pdf	90112 593c5ea02bbac1ae34ebb3c3f5bf6f79ad19ced2	no	2
Warnings:					
Information:					
3	Petition for review by the Office of Petitions.	Petition_Withdraw_Finality.pdf	129194 7e4822fb8aeb6fa08d2d8c82b370d151852adc2c	no	5
Warnings:					
Information:					
4	Non Patent Literature	Copy_Final_OA_dated_5_10_11.pdf	298195 f0f4ff0020bf1ab5662e00b711d15daf4b76f49e	no	9
Warnings:					
Information:					
5	Non Patent Literature	Copy_Final_OA_related_Appln_6_3_10.pdf	872704 7c2271fa5d063fd0a930d06e2a095324329818a7	no	21
Warnings:					
Information:					
6	Fee Worksheet (SB06)	fee-info.pdf	32294 c10405097a6d033e72083148d6fb649a6ae5de39	no	2
Warnings:					
Information:					
			Total Files Size (in bytes):	1550649	

This Acknowledgement Receipt evidences receipt on the noted date by the USPTO of the indicated documents, characterized by the applicant, and including page counts, where applicable. It serves as evidence of receipt similar to a Post Card, as described in MPEP 503.

New Applications Under 35 U.S.C. 111

If a new application is being filed and the application includes the necessary components for a filing date (see 37 CFR 1.53(b)-(d) and MPEP 506), a Filing Receipt (37 CFR 1.54) will be issued in due course and the date shown on this Acknowledgement Receipt will establish the filing date of the application.

National Stage of an International Application under 35 U.S.C. 371

If a timely submission to enter the national stage of an international application is compliant with the conditions of 35 U.S.C. 371 and other applicable requirements a Form PCT/DO/EO/903 indicating acceptance of the application as a national stage submission under 35 U.S.C. 371 will be issued in addition to the Filing Receipt, in due course.

New International Application Filed with the USPTO as a Receiving Office

If a new international application is being filed and the international application includes the necessary components for an international filing date (see PCT Article 11 and MPEP 1810), a Notification of the International Application Number and of the International Filing Date (Form PCT/RO/105) will be issued in due course, subject to prescriptions concerning national security, and the date shown on this Acknowledgement Receipt will establish the international filing date of the application.

Attorney Docket No. 095473-0106

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Applicant: Zumbrunn et al.

Title: TRANSDERMAL DRUG DELIVERY METHOD AND SYSTEM

Appl. No.: 10/711,389

Filing Date: 9/15/2004

Examiner: Mercier, Melissa S.

Art Unit: 1615

Confirmation Number: 5388

AMENDMENT AND REPLY UNDER 37 C.F.R. § 1.116

Mail Stop AF
Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

Sir:

This communication is responsive to the Final Office Action dated May 10, 2011, concerning the above-referenced patent application. While the shortened statutory period of response has expired, filed herewith is a Petition for a three month extension of time to extend the period for response to November 10, 2011. Accordingly, this response is timely filed.

Listing of Claims begins on page 3 of this document.

Remarks/Arguments begin on page 8 of this document.

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AMENDMENTS TO THE CLAIMS

1. (Withdrawn) A method for transdermal administration of at least one active substance to a porous surface, comprising the following steps:

a) dispensing a certain amount of a liquid comprising at least one active substance and at least one solvent into an administration reservoir,

b) separating at least a portion of the at least one solvent from the administration reservoir by a solvent recovery means such that the at least wherein one active substance achieves a certain level of concentration in vicinity to the porous surface to be treated;

c) absorption of the active substance by the porous surface to be treated via diffusion such that the level of concentration in the administration reservoir decreases.

2. (Withdrawn) The method according to claim 1 wherein the solvent is separated by evaporation.

3. (Withdrawn) The method according to claim 2 wherein the evaporation of the solvent is supported by a heating element.

4. (Withdrawn) The method according to claim 3 wherein the solvent is evaporated through a membrane passable preferably for the solvent.

5. (Withdrawn) The method according to claim 2 where the solvent is removed by a pre-programmed opening a pinch valve that is in contact with the porous surface.

6. (Withdrawn) The method according to claim 5 where the solvent is removed by programming the pumping of the solvent.

7. (Withdrawn) The method according to claim 2 where the solvent is removed by a programmed lowering of an arm or lever.

8. (Withdrawn) The method according to claims 2 wherein the solvent is absorbed by a desiccant.

9. (Withdrawn) The method according to claim 5 wherein the desiccant is one or a combination out of the group of silica get, molecular sieves, active carbon.

10. (Withdrawn) The method according to claim one of the claims 2 wherein the solvent is discharged into the environment.

11. (Withdrawn) The method of claim one of the claims 2 wherein the solvent is flushed by a fluid.

12. (Withdrawn) The method according to claim 1 wherein the at least one active substance passes an interface device which is permeable for the at least one active substance.

13. (Withdrawn) The method according to claim 12 wherein the interface device comprises a membrane.

14. (Withdrawn) The method according to claim 12 wherein the interface device comprises an adhesive layer suitable to be attached to the porous surface.

15. (Withdrawn) The method according to claim 1 wherein the steps a to c are repeated at predefined intervals such that the level of concentration of the at least one active substance in the administration reservoir is kept above a certain level.

16. (Withdrawn) The method according to claim 15 wherein the dispensing rate and the time pattern of dispensing the liquid into the administration reservoir are controlled by a programmable device.

17. (Previously presented) A device for transdermal administration of at least one active substance to a porous surface, comprising:

(a) an administration reservoir;

(b) a dispensing device interconnected to the administration reservoir for delivery of at least one active substance dissolved in a solvent to the administration reservoir, wherein the administration reservoir is suitable to receive the active substance dissolved in the solvent;

(c) an interface configured to contact the porous surface and suitable for transferring the active substance from the administration reservoir to the porous surface; and

(d) a solvent removal element configured to absorb solvent from the administration reservoir by evaporation when the interface is in contact with the porous surface;

wherein the transfer of the active substance from the administration reservoir to the porous surface is controlled via the absorption of solvent by the solvent removal element.

18. (Previously presented) The device according to claim 17 wherein the interface is suitable to be arranged in vicinity to the porous surface.

19. (Withdrawn) The device according to claim 18 wherein the interface comprises an adhesive surface suitable to be attached to the porous surface.

20. (Previously presented) The device according to claim 17 wherein the interface is a membrane permeable for the active substance.

21. (Previously presented) The device according to claim 17 wherein the solvent removal element is separated from the administration reservoir by a separation means.

22. (Previously presented) The device according to claim 21 wherein the separation means is selected from the group consisting of a membrane, a foam, a cellular material, a honeycomb, and an air gap.

23. (Previously presented) The device according to claim 21 wherein the administration reservoir and the solvent removal element are spaced apart a distance by the separation means.

24. (Withdrawn) The device according to claim 17 wherein the solvent removal element comprises one or more of the following materials: Desiccant, general or a selective absorbent material, silica gel, a molecular sieve, and active carbon.

25. (Withdrawn) The device according to claim 17 wherein the solvent removal element comprises a chamber with an inlet and an outlet for flushing by a fluid.

26. (Previously presented) The device according to claim 17 wherein the dispensing device comprises at least one reservoir for an active substance which is interconnected to the administration reservoir.

27. (Withdrawn) The device according to claim 26 wherein the dispensing device comprises a propellant means to propel the active substance from the one reservoir into the administration reservoir.

28. (Withdrawn) The device according to claim 27 wherein the propellant means is a pump and/or a propellant gas.

29. (Withdrawn) The device according to claim 26 wherein the dispensing device comprises a first reservoir comprising a first active substance and a second reservoir comprising a second active substance and the first and the second active substance are mixed by mixing means before delivery to the administration reservoir.

30. (Withdrawn) The device according to claim 29 wherein the mixing means is a pipe with vortex means providing an appropriate preparation of mixture.

31. (Withdrawn) The device according to claim 35 wherein the control device is interconnected to at least one valve for controlling the administration of the at least one active substance.

32. (Withdrawn) The device according to claim 35 wherein the control device is programmable according to a predetermined regime or time pattern or interval of administration of the at least one active substance.

33. (Previously presented) The device according to claim 35 wherein the control device is interconnected with at least one sensor for measuring a condition of the at least one active substance within the administration reservoir.

34. (Previously presented) The device according to claim 33 wherein the administration of the active substance is based on the signal of the at least one sensor.

35. (Previously presented) The control device according to claim 17 wherein the administration of the active substance is controlled by a control device.

36. (Withdrawn) An administration unit for application of at least one active substance to skin wherein the at least one active substance is dissolved in a solvent, comprising an administration unit configured to distribute the active substance to the skin or to a skin-compatible adhesive layer, wherein the administration unit comprises an administration reservoir and a solvent removal element comprising a separation layer that is imperrmeant to the active substance and permeable to the solvent.

37. (Withdrawn) The administration unit of claim 36, wherein the separation layer further comprises a material that controls evaporation rate of the solvent at a surface of the separation layer.

38. (Previously presented) The device of claim 17 wherein the solvent removal element controls the transfer of the active substance from the administration reservoir to the

porous surface by controlling the concentration of the at least one active substance in the administration reservoir.

39. (Previously presented) The device of claim 17 wherein the solvent removal element controls termination of the transfer of the active substance from the administration reservoir to the porous surface by drying the interface.

40. (Previously presented) The device of claim 17, further comprising a housing, wherein the administration reservoir, the dispensing device, and the solvent removal element are located within the housing.

REMARKS

Applicants respectfully request reconsideration of the present application in view of the following reasons.

I. Status of the Claims

No claim amendments are made in this response. Claims 1-40 are pending with claims 1-16, 19, 24, 25, 27-32, 36 and 37 withdrawn from consideration.

II. Statement of the Substance of the Examiner's Interview

Applicants thank Examiner Melissa Mercier for the courtesies extended during an interview with Applicants' representative, Yang Tang, on November 1, 2011. During the interview, a clarification was requested in view of the discussion of non-existing claim limitations and arguments in the outstanding Office Action. Examiner Mercier admitted that the outstanding Office Action was inadvertently mixed up with an Office Action in a copending application of Applicants, such that the present Office Action incorporated arguments made against claim limitations not present in Applicants' pending claims (but are present in the claims of the co-pending application). However, Examiner Mercier refused to withdraw the finality of the present Office Action and replace the present Office Action with a new non-final Office Action that properly addresses the pending claims in the present application.

In keeping with Examiner Mercier's recommendation, Applicants file herewith a Notice of Appeal to ensure the pendency of the present application. Meanwhile, Applicants concurrently file a Petition to Withdraw Finality.

III. Claim Rejections – 35 U.S.C. § 103

Claims 17-18, 20-23, 26, 33-35 and 38-40 are rejected under 35 U.S.C. §103(a) for allegedly being obvious over U.S. Patent Application Publication No. 2003/0065294 by Pickup et al. ("Pickup") in view of U.S. Patent No. 6, 211,296 to Frate ("Frate"). Applicants

respectfully traverse the rejection.

As submitted in the accompanying Petition to Withdraw Finality, the outstanding Office Action fails to address the substance of Applicants' prior response filed on March 4, 2011. In fact, the present Office Action discusses claim elements such as "an expandable waste reservoir" and "a waste hydrogel reservoir" which do not exist in Applicants' pending claims.

Specifically, Applicants argued in the prior response that the first element of claim 17, "a solvent removal element configured to absorbed solvent from the administration reservoir by evaporation when the interface is in contact with the porous surface," was not taught or suggested by the cited references by pointing out the difference between the solvent removal element of the claimed invention and Frate's hydrogel. *See* prior response, page 8, last full paragraph, through page 9, last full paragraph.

Additionally, Applicants argued in the prior response that the second element of claim 17, "wherein the transfer of the active substance from the administration reservoir to the porous surface is controlled via the absorption of solvent by the solvent removal element," was not taught or suggested by the cited references by pointing out the difference between the claimed invention and Pickup's teaching of patch removal and Frate's teaching of hydrogel. *See* prior response, the paragraph bridging pages 9 and 10, through page 10, 3rd full paragraph.

The Examiner is completely silent as to Applicants' arguments. Rather, the Examiner discussed in length several arguments allegedly made by Applicants, but *which were never made, stated, or advanced by Applicants in the present application*. *See* final Office Action, pages 5 and 6. The Examiner's examination procedure clearly contradicts the requirements set forth in MPEP 707.07(f), which mandates the Examiner to "answer ***all*** material traversed" (emphasis added).

To this end, the MPEP further cites *In re Herrmann*, 261 F.2d 598 (CCPA 1958) and *In re Soni*, 54 F.3d 746 (Fed. Cir. 1995), where the court ruled that Applicants' statement was accepted at face value and found claims to be allowable because the PTO had failed to rebut

Applicants' argument.

In view of the legal precedent and Examiner's failure to rebut Applicants' arguments, Applicants respectfully submit that the rejection under 35 U.S.C. §103(a).

IV. Conclusion

The present application is in condition for allowance. Favorable reconsideration of the application is respectfully requested. The Examiner is invited to contact the undersigned by telephone if it is felt that a telephone interview would advance the prosecution of the present application.

The Commissioner is hereby authorized to charge any additional fees which may be required regarding this application under 37 C.F.R. §§ 1.16-1.17, or credit any overpayment, to Deposit Account No. 19-0741. Should no proper payment be enclosed herewith, as by the credit card payment instructions in EFS-Web being incorrect or absent, resulting in a rejected or incorrect credit card transaction, the Commissioner is authorized to charge the unpaid amount to Deposit Account No. 19-0741. If any extensions of time are needed for timely acceptance of papers submitted herewith, Applicants hereby petition for such extension under 37 C.F.R. §1.136 and authorizes payment of any such extensions fees to Deposit Account No. 19-0741.

Respectfully submitted,

Date: November 9, 2011

By /Michele M. Simkin, Reg. 34,717/

FOLEY & LARDNER LLP
Customer Number: 22428
Telephone: (202) 672-5300
Facsimile: (202) 672-5399

Michele M. Simkin
Attorney for Applicant
Registration No. 34,717

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Applicant: Zumbrunn et al.

Title: TRANSDERMAL DRUG DELIVERY METHOD AND SYSTEM

Appl. No.: 10/711,389

Filing Date: 9/13/2004

Examiner: Mercier, Melissa S.

Art Unit: 1615

Confirmation Number: 5388

NOTICE OF APPEAL FROM THE EXAMINER TO THE BOARD OF PATENT APPEALS AND INTERFERENCES

Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

Sir:

Applicant hereby appeals to the Board of Patent Appeals and Interferences from the decision of the Examiner in the Final Office Action dated May 10, 2011, finally rejecting Claims 17, 18, 20-23, 26, 33-35, and 38-40.

[**X**] Applicant claims small entity status.

[**X**] Applicant hereby petitions for an extension of time under 37 C.F.R. §1.136(a) for the total number of months checked below:

[**X**] Notice of Appeal Fee.

[**X**] To be paid as detailed below.

The required fees are calculated below:

[X]	Notice of Appeal Fee	$620.00
[X]	Extension for response filed within the third month:	$1,270.00
[ ]	Extension:	$0.00
	FEE TOTAL:	$1,890.00
[X]	Small Entity Fees Apply (subtract ½ of above):	$945.00
	TOTAL FEE:	$945.00

The above-identified fees of $945.00 are being paid by credit card via EFS-Web.

The Commissioner is hereby authorized to charge any additional fees which may be required regarding this application under 37 C.F.R. §§ 1.16, 1.17 and 41.20, or credit any overpayment, to Deposit Account No. 19-0741. Should no proper payment be enclosed herewith, as by the credit card payment instructions in EFS-Web being incorrect or absent, resulting in a rejected or incorrect credit card transaction, the Commissioner is authorized to charge the unpaid amount to Deposit Account No. 19-0741.

Please direct all correspondence to the undersigned attorney or agent at the address indicated below.

Respectfully submitted,

Date: November 9, 2011

By /Michele M. Simkin, Reg. No. 34,717/

FOLEY & LARDNER LLP
Customer Number: 26371
Telephone: (202) 672-5538
Facsimile: (202) 672-5399

Michele M. Simkin
Attorney for Applicant
Registration No. 34,717

UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/711,389	09/15/2004	Werner Zumbrunn	095473-0106	5388

22428 7590 11/08/2011

FOLEY AND LARDNER LLP
SUITE 500
3000 K STREET NW
WASHINGTON, DC 20007

EXAMINER	
MERCIER, MELISSA S	
ART UNIT	PAPER NUMBER
1615	

MAIL DATE	DELIVERY MODE
11/08/2011	PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Applicant-Initiated Interview Summary	Application No.	Applicant(s)	
	10/711,389	ZUMBRUNN ET AL.	
	Examiner	Art Unit	
	MELISSA MERCIER	1615	

All participants (applicant, applicant's representative, PTO personnel):

(1) *MELISSA MERCIER*. (3) *N/A*.

(2) *Yang Tang*. (4) *N/A*.

Date of Interview: *01 November 2011*.

Type: ☒ Telephonic ☐ Video Conference
☐ Personal [copy given to: ☐ applicant ☐ applicant's representative]

Exhibit shown or demonstration conducted: ☐ Yes ☐ No.
If Yes, brief description: _____.

Issues Discussed ☐101 ☐112 ☐102 ☐103 ☒Others
(For each of the checked box(es) above, please describe below the issue and detailed description of the discussion)

Claim(s) discussed: *N/A*.

Identification of prior art discussed: *N/A*.

Substance of Interview
(For each issue discussed, provide a detailed description and indicate if agreement was reached. Some topics may include: identification or clarification of a reference or a portion thereof, claim interpretation, proposed amendments, arguments of any applied references etc...)

Applicant argued the final office action was premature, did not fully address their arguments and requested it be reissued. The Examiner informed Applicant if they feel the office action did not fully address their arguments then they were welcome to file an After final amendment and all arguments would be fully considered. However, the statutory period of response has expired and the Application will go abandoned before the Examiner will have an opportunity to consider the response since the 6 month date is on November 10, 2011. It was suggested Applicant file a notice of appeal in order to keep the application pending .

Applicant recordation instructions: The formal written reply to the last Office action must include the substance of the interview. (See MPEP section 713.04). If a reply to the last Office action has already been filed, applicant is given a non-extendable period of the longer of one month or thirty days from this interview date, or the mailing date of this interview summary form, whichever is later, to file a statement of the substance of the interview

Examiner recordation instructions: Examiners must summarize the substance of any interview of record. A complete and proper recordation of the substance of an interview should include the items listed in MPEP 713.04 for complete and proper recordation including the identification of the general thrust of each argument or issue discussed, a general indication of any other pertinent matters discussed regarding patentability and the general results or outcome of the interview, to include an indication as to whether or not agreement was reached on the issues raised.

☐ Attachment

/ANAND U DESAI/ Primary Examiner, Art Unit 1656	/Melissa S Mercier/ Examiner, Art Unit 1615

Summary of Record of Interview Requirements

Manual of Patent Examining Procedure (MPEP), Section 713.04, Substance of Interview Must be Made of Record
A complete written statement as to the substance of any face-to-face, video conference, or telephone interview with regard to an application must be made of record in the application whether or not an agreement with the examiner was reached at the interview.

Title 37 Code of Federal Regulations (CFR) § 1.133 Interviews
Paragraph (b)

In every instance where reconsideration is requested in view of an interview with an examiner, a complete written statement of the reasons presented at the interview as warranting favorable action must be filed by the applicant. An interview does not remove the necessity for reply to Office action as specified in §§ 1.111, 1.135. (35 U.S.C. 132)

37 CFR §1.2 Business to be transacted in writing.
All business with the Patent or Trademark Office should be transacted in writing. The personal attendance of applicants or their attorneys or agents at the Patent and Trademark Office is unnecessary. The action of the Patent and Trademark Office will be based exclusively on the written record in the Office. No attention will be paid to any alleged oral promise, stipulation, or understanding in relation to which there is disagreement or doubt.

The action of the Patent and Trademark Office cannot be based exclusively on the written record in the Office if that record is itself incomplete through the failure to record the substance of interviews.

It is the responsibility of the applicant or the attorney or agent to make the substance of an interview of record in the application file, unless the examiner indicates he or she will do so. It is the examiner's responsibility to see that such a record is made and to correct material inaccuracies which bear directly on the question of patentability.

Examiners must complete an Interview Summary Form for each interview held where a matter of substance has been discussed during the interview by checking the appropriate boxes and filling in the blanks. Discussions regarding only procedural matters, directed solely to restriction requirements for which interview recordation is otherwise provided for in Section 812.01 of the Manual of Patent Examining Procedure, or pointing out typographical errors or unreadable script in Office actions or the like, are excluded from the interview recordation procedures below. Where the substance of an interview is completely recorded in an Examiners Amendment, no separate Interview Summary Record is required.

The Interview Summary Form shall be given an appropriate Paper No., placed in the right hand portion of the file, and listed on the "Contents" section of the file wrapper. In a personal interview, a duplicate of the Form is given to the applicant (or attorney or agent) at the conclusion of the interview. In the case of a telephone or video-conference interview, the copy is mailed to the applicant's correspondence address either with or prior to the next official communication. If additional correspondence from the examiner is not likely before an allowance or if other circumstances dictate, the Form should be mailed promptly after the interview rather than with the next official communication.

The Form provides for recordation of the following information:
- Application Number (Series Code and Serial Number)
- Name of applicant
- Name of examiner
- Date of interview
- Type of interview (telephonic, video-conference, or personal)
- Name of participant(s) (applicant, attorney or agent, examiner, other PTO personnel, etc.)
- An indication whether or not an exhibit was shown or a demonstration conducted
- An identification of the specific prior art discussed
- An indication whether an agreement was reached and if so, a description of the general nature of the agreement (may be by attachment of a copy of amendments or claims agreed as being allowable). Note: Agreement as to allowability is tentative and does not restrict further action by the examiner to the contrary.
- The signature of the examiner who conducted the interview (if Form is not an attachment to a signed Office action)

It is desirable that the examiner orally remind the applicant of his or her obligation to record the substance of the interview of each case. It should be noted, however, that the Interview Summary Form will not normally be considered a complete and proper recordation of the interview unless it includes, or is supplemented by the applicant or the examiner to include, all of the applicable items required below concerning the substance of the interview.

A complete and proper recordation of the substance of any interview should include at least the following applicable items:
1) A brief description of the nature of any exhibit shown or any demonstration conducted,
2) an identification of the claims discussed,
3) an identification of the specific prior art discussed,
4) an identification of the principal proposed amendments of a substantive nature discussed, unless these are already described on the Interview Summary Form completed by the Examiner,
5) a brief identification of the general thrust of the principal arguments presented to the examiner,
   (The identification of arguments need not be lengthy or elaborate. A verbatim or highly detailed description of the arguments is not required. The identification of the arguments is sufficient if the general nature or thrust of the principal arguments made to the examiner can be understood in the context of the application file. Of course, the applicant may desire to emphasize and fully describe those arguments which he or she feels were or might be persuasive to the examiner.)
6) a general indication of any other pertinent matters discussed, and
7) if appropriate, the general results or outcome of the interview unless already described in the Interview Summary Form completed by the examiner.

Examiners are expected to carefully review the applicant's record of the substance of an interview. If the record is not complete and accurate, the examiner will give the applicant an extendable one month time period to correct the record.

Examiner to Check for Accuracy

If the claims are allowable for other reasons of record, the examiner should send a letter setting forth the examiner's version of the statement attributed to him or her. If the record is complete and accurate, the examiner should place the indication, "Interview Record OK" on the paper recording the substance of the interview along with the date and the examiner's initials.

UNITED STATES PATENT AND TRADEMARK OFFICE

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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/711,389	09/15/2004	Werner Zumbrunn	095473-0106	5388

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FOLEY AND LARDNER LLP
SUITE 500
3000 K STREET NW
WASHINGTON, DC 20007

EXAMINER	
MERCIER, MELISSA S	

ART UNIT	PAPER NUMBER
1615	

MAIL DATE	DELIVERY MODE
05/10/2011	PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No.	Applicant(s)	
	10/711,389	ZUMBRUNN ET AL.	
	Examiner	Art Unit	
	MELISSA MERCIER	1615	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE *3* MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *3-4-11*.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-40* is/are pending in the application.

4a) Of the above claim(s) *1-16,19,24,25,27-32,36 and 37* is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *17,18,20-23,26,33-35 and 38-40* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

Summary

Receipt of Applicants Remarks and Amended Claims filed on March 4, 2011. Claims 1-40 are pending in this application. Claims 1-16, 19, 24-25, 27-32, and 36-37 remain withdrawn from consideration. Claims 17-18, 20-23, 26, 33-35, 38-40 remain under examination in this application.

Maintained Rejections

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

Claim 17-18, 20-23, 26, 33-35, and 38-40 are rejected under 35 U.S.C. 103(a) as being unpatentable over Pickup et al. (US 2003/0065294) in view of Frate (US Patent 6,211,296).

Pickup teaches a transdermal application device that comprises a dispenser to dispense bioactive compounds in liquid form on a transdermal patch to the skin, which reads on permeable interface for coupling to the porous surface (skin), and has a controller for automatically dispensing the bioactive agent on patch at a selected programmed time (a mechanism for causing the

bioactive agent to be delivered) and can be programmed to a particular time of day or more than one time a day (abstract).

A spacer can be provided between the dispenser and cutaneous target (paragraph 0021). The dispenser comprises programmable microchip contains pre-programmed information that is controlled by programmed computer to activate piezoelectric member to expel the bioactive material or liquid. The dispenser further comprises active agents in a replaceable container (a source of the bioactive agent that also is a waste reservoir when the delivery is completed).

The target for delivery is a patch that acts a reservoir, comprising the drug initially before delivery is complete. Figure 3 shows electronic programming of the device. The reference teaches collapsible reservoir that delivers bioactive agents. The device can deliver one or more than one drug at different times. Pickup discloses using the device to deliver bioactive agents such as nicotine to treat nicotine withdrawal (abstract; paragraphs: 0021-0023, 0040, 0045, 0050, 0060, 0061, 0065, 0069, claims, figures). The figures show the device encased within housing.

Although Pickup teaches the desire to remove excess bioactive agent to avoid undesired toxic effect if the drug is absorbed to the skin, see paragraph [0005], Pickup however, does not explicitly discuss the inclusion of a waste hydrogel reservoir. However, the patch disclosed by Pickup absorbs the bioactive composition, and anything applied to this patch that does not get transdermally

absorbed will remain in the patch, which then acts as a removable reservoir separated from the rest of the system.

Frate teaches hydrogel used to remove undesirable compounds of substrate by absorption of the waste to form single unite that can be removed and easily handled (column 1, lines 1-25). It is expected that the hydrogel expands when absorbs waste.

Therefore, it would have been obvious to one having ordinary skill in the art at the time of the invention to provide preprogrammed device to deliver bioactive agent to the skin comprising reservoir containing the agent and an interface patch on the skin as taught by Pickup, and further add a hydrogel absorbent layer to the interface patch as taught by Frate. One would have been motivated to do so because Pickup desired to avoid excess drug absorption and because Frate teaches that hydrogel can remove undesirable compounds from a substrate by absorption of the waste to form single unite that can be later removed and easily handled. One would reasonably expected formulating preprogrammed device to deliver bioactive agent to the skin comprising reservoir containing the agent and an interface patch on the skin and further the patch comprised hydrogel layer to absorb the waste and then easily and safely removed as single unit.

Response to Arguments

Applicant's arguments have been fully considered but they are not persuasive.

Applicant argues that Pickup does not teach or suggest an expandable waste reservoir configured to remove the active composition from the membrane to discontinue delivery of the active composition from the membrane to the skin of the host without decoupling the membrane from the skin of the host. Specifically, Pickup discloses a "transdermal application system 20 ... for applying a bioactive substance to a subject." In some of the embodiments taught by Pickup, the bioactive substance is applied "to an absorbent member, such as a patch 25 of a fabric or other absorbent material," and "the patch may be removed, recharged with the drug, and then reapplied." In other words, Pickup discloses removal of a used patch to be recharged. In response to this argument, it is argued that the present claims are directed to a product, and all the elements of the product are taught by combination of the prior art. The device taught by Pickup absorbs the bioactive composition, and anything applied to this patch that does not get transdermally absorbed will remain in the patch, which then acts as a removable reservoir separated from the rest of the system. Pickup teaches the active agents in a replaceable container (a source of the bioactive agent that also is a waste reservoir when the delivery is completed). The combination of the references teaches hydrogel waste removal material, and hydrogel expands in volume when absorbs waste, therefore expandable. The patch when delivers active agent losses weight and volume, and when absorbs waste expands in weight or volume. Removal of the patch for recharging is not part of the claimed invention. It is also obvious to make parts separable instead of having attached together, *In re Dulberg,* 289 F.2d 522,523, 129 USPQ

348,349 (CCPA 1961). Regarding the limitation "expandable", It is argued that the combination of Pickup and Frate teaches hydrogel that absorb materials, and the applicant disclosed the expandable waste removal element is hydrogel. Therefore, such limitation is met.

Conclusion

THIS ACTION IS MADE FINAL. Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to MELISSA S. MERCIER whose telephone number is (571)272-9039. The examiner can normally be reached on 8:00am-4:30pm Mon through Friday.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Robert A. Wax can be reached on (571) 272-0623. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Melissa S Mercier/
Examiner, Art Unit 1615

/ANAND U DESAI/
Primary Examiner, Art Unit 1656
May 7, 2011

Notice of References Cited	Application/Control No. 10/711,389	Applicant(s)/Patent Under Reexamination ZUMBRUNN ET AL.	
	Examiner MELISSA MERCIER	Art Unit 1615	Page 1 of 1

U.S. PATENT DOCUMENTS

*		Document Number Country Code-Number-Kind Code	Date MM-YYYY	Name	Classification
*	A	US-2003/0065294	04-2003	Pickup et al.	604/304
*	B	US-6,211,296	04-2001	Frate et al.	525/207
	C	US-			
	D	US-			
	E	US-			
	F	US-			
	G	US-			
	H	US-			
	I	US-			
	J	US-			
	K	US-			
	L	US-			
	M	US-			

FOREIGN PATENT DOCUMENTS

*		Document Number Country Code-Number-Kind Code	Date MM-YYYY	Country	Name	Classification
	N					
	O					
	P					
	Q					
	R					
	S					
	T					

NON-PATENT DOCUMENTS

*		Include as applicable: Author, Title Date, Publisher, Edition or Volume, Pertinent Pages)
	U	
	V	
	W	
	X	

*A copy of this reference is not being furnished with this Office action. (See MPEP § 707.05(a).)
Dates in MM-YYYY format are publication dates. Classifications may be US or foreign.

EAST Search History (Prior Art)

Ref #	Hits	Search Query	DBs	Default Operator	Plurals	Time Stamp
S1	2	"20030065294"	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2009/05/17 14:18
S3	19	transdermal SAME (device apparatus controller) AND (drug pharmacuetical "active agent") AND reservior AND solvent	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2009/06/08 10:24
S4	13	transdermal SAME (device apparatus controller) AND (drug pharmacuetical "active agent") AND reservior AND solvent AND interface	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2009/06/08 10:25
S5	10	transdermal SAME (device apparatus controller) AND (drug pharmacuetical "active agent") AND reservior AND solvent AND removal	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2009/06/08 13:35
S6	2	transdermal SAME (device apparatus controller) AND (drug pharmacuetical "active agent") AND reservior AND solvent ADJ3 removal	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2009/06/08 13:36
S7	1598	transdermal AND solvent ADJ3 removal	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2009/06/08 13:40
S8	20	transdermal AND solvent ADJ3 removal SAME absorption	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2009/06/08 13:41

EAST Search History (Prior Art)

S9	89	transdermal AND (waste solvent ADJ3 removal) SAME absorption	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2009/06/08 13:47
S10	20	transdermal AND (waste adj3 removal solvent ADJ3 removal) SAME absorption	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2009/06/08 13:48
S11	22	transdermal AND (waste adj3 reservoir solvent ADJ3 removal) SAME absorption	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2009/06/08 13:48
S12	1630	transdermal AND (waste adj3 reservoir solvent ADJ3 removal)	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2009/06/08 13:49
S13	906	transdermal AND (waste adj3 reservoir solvent ADJ3 removal) AND absorption	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2009/06/08 13:49
S14	3	transdermal AND waste adj3 reservoir AND solvent ADJ3 removal AND absorption	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2009/06/08 13:49
S15	3	transdermal AND waste adj3 reservoir AND solvent ADJ3 removal	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2009/06/08 13:51

EAST Search History (Prior Art)

S16	3	(transdermal transmucosal) AND waste adj3 reservoir AND solvent ADJ3 removal	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2009/06/08 13:51
S17	4431	iontophoretic	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2009/06/08 14:57
S18	2954	iontophoretic AND transdermal	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2009/06/08 14:57
S19	214	iontophoretic AND transdermal AND solvent same removal	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2009/06/08 14:57
S20	0	"6374136" AND sensor	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2009/06/22 15:00
S21	0	"6374136" AND sensor	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2009/06/22 15:00
S22	7604	(transdermal transmucosal) AND sensor	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2009/06/22 15:11

EAST Search History (Prior Art)

S23	2165	iontophoretic SAME transdermal	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2009/06/22 15:46
S24	331	iontophoretic SAME transdermal AND sensor	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2009/06/22 15:46
S25	275	iontophoretic SAME transdermal AND sensor AND signal	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2009/06/22 15:46
S26	208	iontophoretic SAME transdermal AND sensor SAME signal	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2009/06/22 15:47
S27	102	iontophoretic SAME transdermal AND sensor SAME signal	USPAT	OR	ON	2009/06/22 15:47

Search Notes	Application/Control No.	Applicant(s)/Patent Under Reexamination
	10711389	ZUMBRUNN ET AL.
	Examiner	Art Unit
	MELISSA S MERCIER	1615

SEARCHED			
Class	Subclass	Date	Examiner

SEARCH NOTES		
Search Notes	Date	Examiner
East-see attached	5-6-11	MMercier

INTERFERENCE SEARCH			
Class	Subclass	Date	Examiner

/MELISSA S MERCIER/ Examiner.Art Unit 1615	

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Applicant:	Zumbrunn et al.
Title:	TRANSDERMAL DRUG DELIVERY METHOD AND SYSTEM
Appl. No.:	10/711,389
Filing Date:	9/15/2004
Examiner:	Mercier, Melissa S.
Art Unit:	1615
Confirmation Number:	5388

Mail Stop Amendment
Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

REPLY UNDER 37 CFR 1.111

This communication is responsive to the Non-Final Office Action dated September 9, 2010, concerning the above-referenced patent application. While the shortened statutory period of response has expired, filed herewith is a Petition for a three month extension of time to extend the period for response to March 9, 2011. Accordingly, this response is timely filed.

Listing of the Current Claims begins on page 2 of this document. No amendments are made with this Reply. The listing of the current claims is being provided in this document for the convenience of the Examiner.

Remarks begin on page 8 of this document.

Listing of Claims:

1. (Withdrawn) A method for transdermal administration of at least one active substance to a porous surface, comprising the following steps:

a) dispensing a certain amount of a liquid comprising at least one active substance and at least one solvent into an administration reservoir,

b) separating at least a portion of the at least one solvent from the administration reservoir by a solvent recovery means such that the at least wherein one active substance achieves a certain level of concentration in vicinity to the porous surface to be treated;

c) absorption of the active substance by the porous surface to be treated via diffusion such that the level of concentration in the administration reservoir decreases.

2. (Withdrawn) The method according to claim 1 wherein the solvent is separated by evaporation.

3. (Withdrawn) The method according to claim 2 wherein the evaporation of the solvent is supported by a heating element.

4. (Withdrawn) The method according to claim 3 wherein the solvent is evaporated through a membrane passable preferably for the solvent.

5. (Withdrawn) The method according to claim 2 where the solvent is removed by a pre-programmed opening a pinch valve that is in contact with the porous surface.

6. (Withdrawn) The method according to claim 5 where the solvent is removed by programming the pumping of the solvent.

7. (Withdrawn) The method according to claim 2 where the solvent is removed by a programmed lowering of an arm or lever.

8. (Withdrawn) The method according to claims 2 wherein the solvent is absorbed by a desiccant.

9. (Withdrawn) The method according to claim 5 wherein the desiccant is one or a combination out of the group of silica get, molecular sieves, active carbon.

10. (Withdrawn) The method according to claim one of the claims 2 wherein the solvent is discharged into the environment.

11. (Withdrawn) The method of claim one of the claims 2 wherein the solvent is flushed by a fluid.

12. (Withdrawn) The method according to claim 1 wherein the at least one active substance passes an interface device which is permeable for the at least one active substance.

13. (Withdrawn) The method according to claim 12 wherein the interface device comprises a membrane.

14. (Withdrawn) The method according to claim 12 wherein the interface device comprises an adhesive layer suitable to be attached to the porous surface.

15. (Withdrawn) The method according to claim 1 wherein the steps a to c are repeated at predefined intervals such that the level of concentration of the at least one active substance in the administration reservoir is kept above a certain level.

16. (Withdrawn) The method according to claim 15 wherein the dispensing rate and the time pattern of dispensing the liquid into the administration reservoir are controlled by a programmable device.

17. (Previously presented) A device for transdermal administration of at least one active substance to a porous surface, comprising:

(a) an administration reservoir;

(b) a dispensing device interconnected to the administration reservoir for delivery of at least one active substance dissolved in a solvent to the administration reservoir, wherein the administration reservoir is suitable to receive the active substance dissolved in the solvent;

(c) an interface configured to contact the porous surface and suitable for transferring the active substance from the administration reservoir to the porous surface; and

(d) a solvent removal element configured to absorb solvent from the administration reservoir by evaporation when the interface is in contact with the porous surface;

wherein the transfer of the active substance from the administration reservoir to the porous surface is controlled via the absorption of solvent by the solvent removal element.

18. (Previously presented) The device according to claim 17 wherein the interface is suitable to be arranged in vicinity to the porous surface.

19. (Withdrawn) The device according to claim 18 wherein the interface comprises an adhesive surface suitable to be attached to the porous surface.

20. (Previously presented) The device according to claim 17 wherein the interface is a membrane permeable for the active substance.

21. (Previously presented) The device according to claim 17 wherein the solvent removal element is separated from the administration reservoir by a separation means.

22. (Previously presented) The device according to claim 21 wherein the separation means is selected from the group consisting of a membrane, a foam, a cellular material, a honeycomb, and an air gap.

23. (Previously presented) The device according to claim 21 wherein the administration reservoir and the solvent removal element are spaced apart a distance by the separation means.

24. (Withdrawn) The device according to claim 17 wherein the solvent removal element comprises one or more of the following materials: Desiccant, general or a selective absorbent material, silica gel, a molecular sieve, and active carbon.

25. (Withdrawn) The device according to claim 17 wherein the solvent removal element comprises a chamber with an inlet and an outlet for flushing by a fluid.

26. (Previously presented) The device according to claim 17 wherein the dispensing device comprises at least one reservoir for an active substance which is interconnected to the administration reservoir.

27. (Withdrawn) The device according to claim 26 wherein the dispensing device comprises a propellant means to propel the active substance from the one reservoir into the administration reservoir.

28. (Withdrawn) The device according to claim 27 wherein the propellant means is a pump and/or a propellant gas.

29. (Withdrawn) The device according to claim 26 wherein the dispensing device comprises a first reservoir comprising a first active substance and a second reservoir comprising a second active substance and the first and the second active substance are mixed by mixing means before delivery to the administration reservoir.

30. (Withdrawn) The device according to claim 29 wherein the mixing means is a pipe with vortex means providing an appropriate preparation of mixture.

31. (Withdrawn) The device according to claim 35 wherein the control device is interconnected to at least one valve for controlling the administration of the at least one active substance.

32. (Withdrawn) The device according to claim 35 wherein the control device is programmable according to a predetermined regime or time pattern or interval of administration of the at least one active substance.

33. (Previously presented) The device according to claim 35 wherein the control device is interconnected with at least one sensor for measuring a condition of the at least one active substance within the administration reservoir.

34. (Previously presented) The device according to claim 33 wherein the administration of the active substance is based on the signal of the at least one sensor.

35. (Previously presented) The control device according to claim 17 wherein the administration of the active substance is controlled by a control device.

36. (Withdrawn) An administration unit for application of at least one active substance to skin wherein the at least one active substance is dissolved in a solvent, comprising an administration unit configured to distribute the active substance to the skin or to a skin-compatible adhesive layer, wherein the administration unit comprises an administration reservoir and a solvent removal element comprising a separation layer that is imperrmeant to the active substance and permeable to the solvent.

37. (Withdrawn) The administration unit of claim 36, wherein the separation layer further comprises a material that controls evaporation rate of the solvent at a surface of the separation layer.

38. (Previously presented) The device of claim 17 wherein the solvent removal element controls the transfer of the active substance from the administration reservoir to the

porous surface by controlling the concentration of the at least one active substance in the administration reservoir.

39. (Previously presented) The device of claim 17 wherein the solvent removal element controls termination of the transfer of the active substance from the administration reservoir to the porous surface by drying the interface.

40. (Previously presented) The device of claim 17, further comprising a housing, wherein the administration reservoir, the dispensing device, and the solvent removal element are located within the housing.

REMARKS

Applicants respectfully request reconsideration of the present application in view of the reasons that follow.

I. Status of the Claims

Claims 1-40 are pending in this application, and claims 1-16, 19, 24, 25, 27-32, 36 and 37 are withdrawn.

Applicants believe that each of the rejections raised by the Examiner have been addressed and the application is in condition for allowance. Reconsideration and allowance of the application is respectfully requested.

II. Claim Rejections – 35 U.S.C. § 103

Claims 17, 18, 20-23, 26, 33-35, and 38-40 were rejected under 35 U.S.C. § 103(a) as allegedly obvious over U.S. Patent Application Publication No. 2003/0065294 to Pickup et al. ("Pickup") in view of U.S. Patent No. 6,211,296 to Frate et al. ("Frate"). Office Action, pages 3-5. Applicants respectfully traverse this ground for rejection.

1. First Element of Claim 17 Not Taught by Pickup or Frate

Claim 17 recites a "device for transdermal administration of at least one active substance" including, among other elements, "a solvent removal element configured to absorb solvent from the administration reservoir by evaporation when the interface is in contact with the porous surface." Pickup and Frate do not disclose, teach or suggest a solvent removal element configured *to absorb solvent from the administration reservoir by evaporation* when the interface is in contact with the porous surface as recited in claim 17.

In contrast to claim 17, Pickup teaches a "transdermal application system 20 ... for applying a bioactive substance to a subject." Paragraph [0038]. In some of the embodiments taught by Pickup, the bioactive substance is applied "to an absorbent member, such as a patch 25

of a fabric or other absorbent material," and "the patch may be removed, recharged with the drug, and then reapplied." See paragraphs [0038] and [0039]. In other words, Pickup discloses removal of a *used* patch to be recharged. However, removal of a used patch from the skin of the user does not provide a teaching of "a solvent removal element configured to absorb solvent from *the administration reservoir by evaporation* when the interface is in contact with the porous surface," as recited in claim 17.

Frate does not remedy the deficiencies of Pickup. Specifically, Frate discloses a "hydrogel [that] is typically applied to a substrate such as human skin and contains therein a substance such as a personal care compound, a pharmaceutical, an active ingredient, or the like." Col. 1, lines 63-67. Frate also discloses that the hydrogel and its active ingredient act as absorbents of impurities or irritants. An example of this would be the removal of undesired oil or other components from the skin. See col. 2, lines 1-6. Specifically, according to Frate "[t]he substance may remove unwanted components from the substrate such as removing oil, greases, irritants, nail polish, etc.; removing blemishes, defects, unusual texture, scars, growths (e.g. warts); removing hair; etc." See col. 11, lines 24-27. As can be seen, Frate relates to a substance that is applied to the skin for delivering a substance (e.g., a drug, etc.) to the skin and/or for removing an unwanted substance (e.g., oil, irritants, etc.) from the skin. Frate provides no teaching regarding "a solvent removal element configured to absorb solvent from *the administration reservoir by evaporation* when the interface is in contact with the porous surface," as recited in claim 17.

Further, in the Office Action, the Examiner has failed to identify those portions of either Pickup or Frate that teach a solvent removal element configured to absorb solvent from the administration reservoir by evaporation.

2. Second Element of Claim 17 Not Taught by Pickup or Frate

Claim 17 recites a device "wherein the transfer of the active substance from the administration reservoir to the porous surface is controlled via the absorption of solvent by the

solvent removal element." Pickup and Frate do not disclose, teach or suggest a device wherein the transfer of the active substance from the administration reservoir to the porous surface is controlled *via the absorption of solvent by the solvent removal element* as recited in claim 17.

As noted above, Pickup discloses removal of a used patch to be recharged. Even if the patch of Pickup contains some remaining "bioactive substance" when the patch is removed from the skin of the user, Pickup does not teach a system in which transfer of an active substance is controlled via the absorption of solvent by the solvent removal element, as recited in claim 17. Also as noted above, Frate relates to a substance that is applied to the skin for delivering a substance (e.g., a drug, etc.) to the skin and/or for removing an unwanted substance (e.g., oil, irritants, etc.) from the skin. However, Frate's teaching of removal of an unwanted substance from the skin provides no teaching regarding how to control transfer of an active substance via the absorption of solvent by the solvent removal element, as recited in claim 17.

Further, in the Office Action, the Examiner has failed to identify those portions of either Pickup or Frate that teach a device wherein the transfer of the active substance from the administration reservoir to the porous surface is controlled via the absorption of solvent by the solvent removal element as recited in claim 17.

Because Pickup and Frate fail to teach the device recited in independent claim 17, Applicants respectfully request withdrawal of the rejections of claims 17, 18, 20-23, 26, 33-35, and 38-40 under 35 U.S.C. § 103(a) based upon Pickup and Frate.

III. Conclusion

Applicants believe that the present application is in condition for allowance. Favorable reconsideration of the application is respectfully requested.

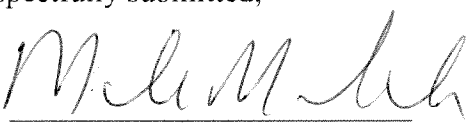
The Examiner is invited to contact the undersigned by telephone if it is felt that a telephone interview would advance the prosecution of the present application.

It should be noted that, for the sake of clarity and simplicity, Applicants' remarks have focused on the rejections of the independent claim set forth in the Office Action with the understanding that the dependent claims are patentable for at least the same reasons as the independent claim. Further, in addressing the Examiner's rejections, Applicants' remarks have set forth only some of the available arguments for patentability of the rejected claims. Applicants expressly reserve the right to argue the patentability of all claims separately and to provide new, different, and/or additional arguments for patentability not set forth herein, including, but not limited to, the failure of cited references to disclose, teach, or suggest other elements of the claims, the lack of motivation to combine cited references, or teaching away from the combination of cited references, in this or any future proceedings.

The Commissioner is hereby authorized to charge any additional fees which may be required regarding this application under 37 C.F.R. §§ 1.16-1.17, or credit any overpayment, to Deposit Account No. 19-0741. Should no proper payment be enclosed herewith, as by the credit card payment instructions in EFS-Web being incorrect or absent, resulting in a rejected or incorrect credit card transaction, the Commissioner is authorized to charge the unpaid amount to Deposit Account No. 19-0741. If any extensions of time are needed for timely acceptance of papers submitted herewith, Applicants hereby petition for such extension under 37 C.F.R. §1.136 and authorizes payment of any such extensions fees to Deposit Account No. 19-0741.

Respectfully submitted,

Date: March 4, 2011

By 

Michele M. Simkin
Attorney for Applicant
Registration No. 34,717

FOLEY & LARDNER LLP
Customer Number: 22428
Telephone: (202) 672-5300
Facsimile: (202) 672-5399

Electronic Patent Application Fee Transmittal

Application Number:	10711389
Filing Date:	15-Sep-2004
Title of Invention:	TRANSDERMAL DRUG DELIVERY METHOD AND SYSTEM
First Named Inventor/Applicant Name:	Werner Zumbrunn
Filer:	Michelle M. Simkin/Stella Walker
Attorney Docket Number:	095473-0106

Filed as Small Entity

Utility under 35 USC 111(a) Filing Fees

Description	Fee Code	Quantity	Amount	Sub-Total in USD($)
Basic Filing:				
Pages:				
Claims:				
Miscellaneous-Filing:				
Petition:				
Patent-Appeals-and-Interference:				
Post-Allowance-and-Post-Issuance:				
Extension-of-Time:				
Extension - 3 months with $0 paid	2253	1	555	555

Description	Fee Code	Quantity	Amount	Sub-Total in USD($)
Miscellaneous:				
			Total in USD ($)	**555**

Electronic Acknowledgement Receipt

EFS ID:	9591235
Application Number:	10711389
International Application Number:	
Confirmation Number:	5388
Title of Invention:	TRANSDERMAL DRUG DELIVERY METHOD AND SYSTEM
First Named Inventor/Applicant Name:	Werner Zumbrunn
Customer Number:	22428
Filer:	Michelle M. Simkin
Filer Authorized By:	
Attorney Docket Number:	095473-0106
Receipt Date:	04-MAR-2011
Filing Date:	15-SEP-2004
Time Stamp:	17:27:37
Application Type:	Utility under 35 USC 111(a)

Payment information:

Submitted with Payment	yes
Payment Type	Credit Card
Payment was successfully received in RAM	$555
RAM confirmation Number	4027
Deposit Account	
Authorized User	

File Listing:

Document Number	Document Description	File Name	File Size(Bytes)/ Message Digest	Multi Part /.zip	Pages (if appl.)

1		Amendment_and_EOT.pdf	269712 31c21cdf6785b4745178eb6da6302be963d82138	yes	13

Multipart Description/PDF files in .zip description		
Document Description	**Start**	**End**
Extension of Time	1	2
Amendment/Req. Reconsideration-After Non-Final Reject	3	13

Warnings:

Information:

2	Fee Worksheet (PTO-875)	fee-info.pdf	30423 9309f1fa3424240ce9eb429ff74d89ab84218d83	no	2

Warnings:

Information:

Total Files Size (in bytes):	300135

This Acknowledgement Receipt evidences receipt on the noted date by the USPTO of the indicated documents, characterized by the applicant, and including page counts, where applicable. It serves as evidence of receipt similar to a Post Card, as described in MPEP 503.

New Applications Under 35 U.S.C. 111

If a new application is being filed and the application includes the necessary components for a filing date (see 37 CFR 1.53(b)-(d) and MPEP 506), a Filing Receipt (37 CFR 1.54) will be issued in due course and the date shown on this Acknowledgement Receipt will establish the filing date of the application.

National Stage of an International Application under 35 U.S.C. 371

If a timely submission to enter the national stage of an international application is compliant with the conditions of 35 U.S.C. 371 and other applicable requirements a Form PCT/DO/EO/903 indicating acceptance of the application as a national stage submission under 35 U.S.C. 371 will be issued in addition to the Filing Receipt, in due course.

New International Application Filed with the USPTO as a Receiving Office

If a new international application is being filed and the international application includes the necessary components for an international filing date (see PCT Article 11 and MPEP 1810), a Notification of the International Application Number and of the International Filing Date (Form PCT/RO/105) will be issued in due course, subject to prescriptions concerning national security, and the date shown on this Acknowledgement Receipt will establish the international filing date of the application.

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Applicant:	Zumbrunn et al.
Title:	TRANSDERMAL DRUG DELIVERY METHOD AND SYSTEM
Appl. No.:	10/711,389
Filing Date:	9/13/2004
Examiner:	Mercier, Melissa S.
Art Unit:	1615
Confirmation Number:	5388

PETITION FOR EXTENSION OF TIME

Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

Sir:

Applicant hereby petitions the Commissioner under 37 C.F.R. §1.136(a) for a three-month extension of time for response in the above-identified application for the period required to make the attached response timely.

The extension fee for response within the third month is $555.00.

The above-identified fees of $555.00 are being paid by credit card via EFS-Web.

The Commissioner is hereby authorized to charge any additional fees which may be required regarding this application under 37 C.F.R. §§ 1.16-1.17, or credit any overpayment, to

Deposit Account No. 19-0741. Should no proper payment be enclosed herewith, as by the credit card payment instructions in EFS-Web being incorrect or absent, resulting in a rejected or incorrect credit card transaction, the Commissioner is authorized to charge the unpaid amount to Deposit Account No. 19-0741.

Respectfully submitted,

Date: March 4, 2011

By _____

FOLEY & LARDNER LLP
Customer Number: 26371
Telephone: (202) 672-5538
Facsimile: (202) 672-5399

Michele M. Simkin
Attorney for Applicant
Registration No. 34,717

PTO/SB/06 (07-06)
Approved for use through 1/31/2007. OMB 0651-0032
U.S. Patent and Trademark Office; U.S. DEPARTMENT OF COMMERCE

PATENT APPLICATION FEE DETERMINATION RECORD

Substitute for Form PTO-875

Application or Docket Number	Filing Date	☐ To be Mailed
10/711,389	09/15/2004	

APPLICATION AS FILED – PART I

FOR	(Column 1) NUMBER FILED	(Column 2) NUMBER EXTRA	SMALL ENTITY ☒ RATE ($)	SMALL ENTITY ☒ FEE ($)	OR	OTHER THAN SMALL ENTITY RATE ($)	OTHER THAN SMALL ENTITY FEE ($)
☐ BASIC FEE (37 CFR 1.16(a), (b), or (c))	N/A	N/A	N/A			N/A	
☐ SEARCH FEE (37 CFR 1.16(k), (i), or (m))	N/A	N/A	N/A			N/A	
☐ EXAMINATION FEE (37 CFR 1.16(o), (p), or (q))	N/A	N/A	N/A			N/A	
TOTAL CLAIMS (37 CFR 1.16(i))	minus 20 =	*	X $ =		OR	X $ =	
INDEPENDENT CLAIMS (37 CFR 1.16(h))	minus 3 =	*	X $ =			X $ =	
☐ APPLICATION SIZE FEE (37 CFR 1.16(s))	If the specification and drawings exceed 100 sheets of paper, the application size fee due is $250 ($125 for small entity) for each additional 50 sheets or fraction thereof. See 35 U.S.C. 41(a)(1)(G) and 37 CFR 1.16(s).						
☐ MULTIPLE DEPENDENT CLAIM PRESENT (37 CFR 1.16(j))							
* If the difference in column 1 is less than zero, enter "0" in column 2.			TOTAL			TOTAL	

APPLICATION AS AMENDED – PART II

AMENDMENT	03/04/2011	(Column 1) CLAIMS REMAINING AFTER AMENDMENT		(Column 2) HIGHEST NUMBER PREVIOUSLY PAID FOR	(Column 3) PRESENT EXTRA	SMALL ENTITY RATE ($)	SMALL ENTITY ADDITIONAL FEE ($)	OR	OTHER THAN SMALL ENTITY RATE ($)	OTHER THAN SMALL ENTITY ADDITIONAL FEE ($)
	Total (37 CFR 1.16(i))	* 40	Minus	** 40	= 0	X $26 =	0	OR	X $ =	
	Independent (37 CFR 1.16(h))	* 3	Minus	***3	= 0	X $110 =	0	OR	X $ =	
	☐ Application Size Fee (37 CFR 1.16(s))									
	☐ FIRST PRESENTATION OF MULTIPLE DEPENDENT CLAIM (37 CFR 1.16(j))							OR		
						TOTAL ADD'L FEE	0	OR	TOTAL ADD'L FEE	

AMENDMENT		(Column 1) CLAIMS REMAINING AFTER AMENDMENT		(Column 2) HIGHEST NUMBER PREVIOUSLY PAID FOR	(Column 3) PRESENT EXTRA	RATE ($)	ADDITIONAL FEE ($)	OR	RATE ($)	ADDITIONAL FEE ($)
	Total (37 CFR 1.16(i))	*	Minus	**	=	X $ =		OR	X $ =	
	Independent (37 CFR 1.16(h))	*	Minus	***	=	X $ =		OR	X $ =	
	☐ Application Size Fee (37 CFR 1.16(s))									
	☐ FIRST PRESENTATION OF MULTIPLE DEPENDENT CLAIM (37 CFR 1.16(j))							OR		
						TOTAL ADD'L FEE		OR	TOTAL ADD'L FEE	

* If the entry in column 1 is less than the entry in column 2, write "0" in column 3.

** If the "Highest Number Previously Paid For" IN THIS SPACE is less than 20, enter "20".

*** If the "Highest Number Previously Paid For" IN THIS SPACE is less than 3, enter "3".

The "Highest Number Previously Paid For" (Total or Independent) is the highest number found in the appropriate box in column 1.

Legal Instrument Examiner:
/ROZENIA HARMON/

UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/711,389	09/15/2004	Werner Zumbrunn	095473-0106	5388

22428 7590 09/09/2010

FOLEY AND LARDNER LLP
SUITE 500
3000 K STREET NW
WASHINGTON, DC 20007

EXAMINER	
MERCIER, MELISSA S	

ART UNIT	PAPER NUMBER
1615	

MAIL DATE	DELIVERY MODE
09/09/2010	PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No.	Applicant(s)	
	10/711,389	ZUMBRUNN ET AL.	
	Examiner	Art Unit	
	MELISSA S. MERCIER	1615	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE *3* MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *01 July 2010*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-40* is/are pending in the application.

4a) Of the above claim(s) *1-16, 19, 24, 25, 27-32, 36-37* is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *17,18,20-23,26,33-35 and 38-40* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date *7-1-10*.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

Continued Examination Under 37 CFR 1.114

A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on July 1, 2010 has been entered.

Claims 1-40 are pending in this application. Claims 1-16, 19, 24, 25, 27-32, 36-37 remain withdrawn from consideration. Claims 17-18, 20-23, 26, 33-35, and 38-40 are under prosecution in this application.

Information Disclosure Statement

Receipt of the Information Disclosure Statement filed on July 1, 2010 is acknowledged. A signed copy is attached to this office action.

Withdrawn Rejections

Claim Rejections - 35 USC § 102

The rejection of claims 17-18, 20-23, 26, 35, and 38-39 under 35 U.S.C. 102(b) as being anticipated by Murdock (US Patent 6,374,136) has been withdrawn in view of Applicants extensive amendments to claim 17 to recite additional structural and

functional limitations including the location of the interface and a solvent removal system.

Claim Rejections - 35 USC § 103

The rejection of claims 33-34 under 35 U.S.C. 103(a) as being unpatentable over Murdock (US Patent 6,374,136) in view of Haak et al. (US Patent 5,993,435) has been withdrawn for the reasons indicated above.

Newly Applied Rejections

Claim Rejections - 35 USC § 103

The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior Office action.

Claim 17-18, 20-23, 26, 33-35, and 38-40 are rejected under 35 U.S.C. 103(a) as being unpatentable over Pickup et al. (US 2003/0065294) in view of Frate (US Patent 6,211,296).

Pickup teaches a transdermal application device that comprises a dispenser to dispense bioactive compounds in liquid form on a transdermal patch to the skin, which reads on permeable interface for coupling to the porous surface (skin), and has a controller for automatically dispensing the bioactive agent on patch at a selected programmed time (a mechanism for causing the bioactive agent to be delivered) and can be programmed to a particular time of day or more than one time a day (abstract).

A spacer can be provided between the dispenser and cutaneous target (paragraph 0021). The dispenser comprises programmable microchip contains pre-

programmed information that is controlled by programmed computer to activate piezoelectric member to expel the bioactive material or liquid. The dispenser further comprises active agents in a replaceable container (a source of the bioactive agent that also is a waste reservoir when the delivery is completed).

The target for delivery is a patch that acts a reservoir, comprising the drug initially before delivery is complete. Figure 3 shows electronic programming of the device. The reference teaches collapsible reservoir that delivers bioactive agents. The device can deliver one or more than one drug at different times. Pickup discloses using the device to deliver bioactive agents such as nicotine to treat nicotine withdrawal (abstract; paragraphs: 0021-0023, 0040, 0045, 0050, 0060, 0061, 0065, 0069, claims, figures). The figures show the device encased within housing.

Although Pickup teaches the desire to remove excess bioactive agent to avoid undesired toxic effect if the drug is absorbed to the skin, see paragraph [0005], Pickup however, does not explicitly discuss the inclusion of a waste hydrogel reservoir.

However, the patch disclosed by Pickup absorbs the bioactive composition, and anything applied to this patch that does not get transdermally absorbed will remain in the patch, which then acts as a removable reservoir separated from the rest of the system.

Frate teaches hydrogel used to remove undesirable compounds of substrate by absorption of the waste to form single unite that can be removed and easily handled (column 1, lines 1-25). It is expected that the hydrogel expands when absorbs waste.

Therefore, it would have been obvious to one having ordinary skill in the art at the time of the invention to provide preprogrammed device to deliver bioactive agent to the skin comprising reservoir containing the agent and an interface patch on the skin as taught by Pickup, and further add a hydrogel absorbent layer to the interface patch as taught by Frate. One would have been motivated to do so because Pickup desired to avoid excess drug absorption and because Frate teaches that hydrogel can remove undesirable compounds from a substrate by absorption of the waste to form single unite that can be later removed and easily handled. One would reasonably expected formulating preprogrammed device to deliver bioactive agent to the skin comprising reservoir containing the agent and an interface patch on the skin and further the patch comprised hydrogel layer to absorb the waste and then easily and safely removed as single unit.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to MELISSA S. MERCIER whose telephone number is (571)272-9039. The examiner can normally be reached on 8:00am-4:30pm Mon through Friday.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Robert A. Wax can be reached on (571) 272-0623. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Melissa S Mercier/
Examiner, Art Unit 1615

/Carlos A. Azpuru/
Primary Examiner, Art Unit 1617

Notice of References Cited	Application/Control No. 10/711,389	Applicant(s)/Patent Under Reexamination ZUMBRUNN ET AL.	
	Examiner MELISSA S. MERCIER	Art Unit 1615	Page 1 of 1

U.S. PATENT DOCUMENTS

*		Document Number Country Code-Number-Kind Code	Date MM-YYYY	Name	Classification
*	A	US-2003/0065294	04-2003	Pickup et al.	604/304
*	B	US-6,211,296	04-2001	Frate et al.	525/207
	C	US-			
	D	US-			
	E	US-			
	F	US-			
	G	US-			
	H	US-			
	I	US-			
	J	US-			
	K	US-			
	L	US-			
	M	US-			

FOREIGN PATENT DOCUMENTS

*		Document Number Country Code-Number-Kind Code	Date MM-YYYY	Country	Name	Classification
	N					
	O					
	P					
	Q					
	R					
	S					
	T					

NON-PATENT DOCUMENTS

*		Include as applicable: Author, Title Date, Publisher, Edition or Volume, Pertinent Pages)
	U	
	V	
	W	
	X	

*A copy of this reference is not being furnished with this Office action. (See MPEP § 707.05(a).)
Dates in MM-YYYY format are publication dates. Classifications may be US or foreign.

Search Notes	Application/Control No.	Applicant(s)/Patent Under Reexamination
	10711389	ZUMBRUNN ET AL.
	Examiner	Art Unit
	MELISSA S MERCIER	1615

SEARCHED			
Class	Subclass	Date	Examiner

SEARCH NOTES		
Search Notes	Date	Examiner
East-see attached	9-7-10	MMercier

INTERFERENCE SEARCH			
Class	Subclass	Date	Examiner

/MELISSA S MERCIER/ Examiner.Art Unit 1615	

EAST Search History (Prior Art)

Ref #	Hits	Search Query	DBs	Default Operator	Plurals	Time Stamp
S1	2	"20030065294"	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2009/05/17 14:18
S3	19	transdermal SAME (device apparatus controller) AND (drug pharmacuetical "active agent") AND reservior AND solvent	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2009/06/08 10:24
S4	13	transdermal SAME (device apparatus controller) AND (drug pharmacuetical "active agent") AND reservior AND solvent AND interface	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2009/06/08 10:25
S5	10	transdermal SAME (device apparatus controller) AND (drug pharmacuetical "active agent") AND reservior AND solvent AND removal	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2009/06/08 13:35
S6	2	transdermal SAME (device apparatus controller) AND (drug pharmacuetical "active agent") AND reservior AND solvent ADJ3 removal	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2009/06/08 13:36
S7	1598	transdermal AND solvent ADJ3 removal	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2009/06/08 13:40
S8	20	transdermal AND solvent ADJ3 removal SAME absorption	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2009/06/08 13:41

EAST Search History (Prior Art)

S9	89	transdermal AND (waste solvent ADJ3 removal) SAME absorption	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2009/06/08 13:47
S10	20	transdermal AND (waste adj3 removal solvent ADJ3 removal) SAME absorption	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2009/06/08 13:48
S11	22	transdermal AND (waste adj3 reservoir solvent ADJ3 removal) SAME absorption	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2009/06/08 13:48
S12	1630	transdermal AND (waste adj3 reservoir solvent ADJ3 removal)	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2009/06/08 13:49
S13	906	transdermal AND (waste adj3 reservoir solvent ADJ3 removal) AND absorption	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2009/06/08 13:49
S14	3	transdermal AND waste adj3 reservoir AND solvent ADJ3 removal AND absorption	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2009/06/08 13:49
S15	3	transdermal AND waste adj3 reservoir AND solvent ADJ3 removal	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2009/06/08 13:51

EAST Search History (Prior Art)

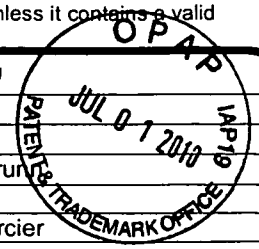
S16	3	(transdermal transmucosal) AND waste adj3 reservoir AND solvent ADJ3 removal	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2009/06/08 13:51
S17	4431	iontophoretic	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2009/06/08 14:57
S18	2954	iontophoretic AND transdermal	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2009/06/08 14:57
S19	214	iontophoretic AND transdermal AND solvent same removal	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2009/06/08 14:57
S20	0	"6374136" AND sensor	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2009/06/22 15:00
S21	0	"6374136" AND sensor	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2009/06/22 15:00
S22	7604	(transdermal transmucosal) AND sensor	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2009/06/22 15:11

EAST Search History (Prior Art)

S23	2165	iontophoretic SAME transdermal	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2009/06/22 15:46
S24	331	iontophoretic SAME transdermal AND sensor	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2009/06/22 15:46
S25	275	iontophoretic SAME transdermal AND sensor AND signal	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2009/06/22 15:46
S26	208	iontophoretic SAME transdermal AND sensor SAME signal	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2009/06/22 15:47
S27	102	iontophoretic SAME transdermal AND sensor SAME signal	USPAT	OR	ON	2009/06/22 15:47
S29	2	"20030065294"	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2010/09/08 10:05

PTO/SB/08 (09-06)
Approved for use through 03/31/2007. OMB 0651-0031
U.S. Patent and Trademark Office: U.S. DEPARTMENT OF COMMERCE

Under the Paperwork Reduction Act of 1995, no persons are required to respond to a collection of information unless it contains a valid OMB control number.



Substitute for form 1449/PTO				Complete if Known	
INFORMATION DISCLOSURE STATEMENT BY APPLICANT				**Application Number**	10/711,389
Date Submitted: July 1, 2010				**Filing Date**	9/15/2004
				First Named Inventor	Werner Zumbrunn
(use as many sheets as necessary)				Art Unit	1615
				Examiner Name	Melissa S. Mercier
Sheet	1	of	1	Attorney Docket Number	095473-0106

U.S. PATENT DOCUMENTS

Examiner Initials*	Cite No.[1]	Document Number Number-Kind Code[2] (*if known*)	Publication Date MM-DD-YYYY	Name of Patentee or Applicant of Cited Document	Pages, Columns, Lines, Where Relevant Passages or Relevant Figures Appear
/MM/	A1	2003/0065294	04/2003	Pickup et al.	
/MM/	A2	6,211,296	04/2001	Frate et al.	
/MM/	A3	5,538,503	07/1996	Henley	

FOREIGN PATENT DOCUMENTS

Examiner Initials*	Cite No.[1]	Foreign Patent Document Country Code[3]-Number[4]-Kind Code[5] (*if known*)	Publication Date MM-DD-YYYY	Name of Patentee or Applicant of Cited Documents	Pages, Columns, Lines, Where Relevant Passages or Relevant Figures Appear	T[6]

NON PATENT LITERATURE DOCUMENTS

Examiner Initials*	Cite No.[1]	Include name of the author (in CAPITAL LETTERS), title of the article (when appropriate), title of the item (book, magazine, journal, serial, symposium, catalog, etc.) date, page(s), volume-issue number(s), publisher, city and/or country where published.	T[6]
/MM/	B1	Office Action cited in related U.S. Patent Application No. 11/162,525, dated 2/5/2010.	
/MM/	B2	Office Action cited in related U.S. Patent Application No. 11/162,517, dated 11/24/2009.	
/MM/	B3	Prosise et al., (Effect of abstinence from smoking on sleep and day time sleepiness), *Amer. College of Chest Physicians*, Vol. 105, pp. 1136-1141 (1994).	
/MM/	B4	Notice of Allowance cited in related application no. 11/162,525, dated 4/26/2010.	
/MM/	B5	U.S. Office Action cited in related U.S. Patent Application No. 11/162,517, dated June 3, 2010.	
/MM/	B6	U.S. Office Action cited in related U.S. Patent Application No. 11/981,672, dated 3/23/2009.	

Examiner Signature	/Melissa Mercier/ (09/07/2010)	Date Considered	

*EXAMINER: Initial if reference considered, whether or not citation is in conformance with MPEP 609. Draw line through citation if not in conformance and not considered. Include copy of this form with next communication to applicant. 1 Applicant's unique citation designation number (optional). 2 See Kinds Codes of USPTO Patent Documents at www.uspto.gov or MPEP 901.04. 3 Enter Office that issued the document, by the two-letter code (WIPO Standard ST.3). 4 For Japanese patent documents, the indication of the year of the reign of the Emperor must precede the serial number of the patent document. 5 Kind of document by the appropriate symbols as indicated on the document under WIPO Standard ST.16 if possible. 6 Applicant is to place a check mark here if English language Translation is attached. This collection of information is required by 37 CFR 1.97 and 1.98. The information is required to obtain or retain a benefit by the public which is to file (and by the USPTO to process) an application. Confidentiality is governed by 35 U.S.C. 122 and 37 CFR 1.14. This collection is estimated to take 2 hours to complete, including gathering, preparing, and submitting the completed application form to the USPTO. Time will vary depending upon the individual case. Any comments on the amount of time you require to complete this form and/or suggestions for reducing this burden, should be sent to the Chief Information Officer, U.S. Patent and Trademark Office, P.O. Box 1450, Alexandria, VA 22313-1450. DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS. **SEND TO: Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450.**

If you need assistance in completing the form, call 1-800-PTO-9199 (1-800-786-9199) and select option 2.

RCE

Atty. Dkt. No. 095473-0106

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Applicant:	Zumbrunn et al.
Title:	TRANSDERMAL DRUG DELIVERY METHOD AND SYSTEM
Appl. No.:	10/711,389
Appl. Filing Date:	9/13/2004
Examiner:	Mercier, Melissa S.
Art Unit:	1615
Confirmation Number:	5388

REQUEST FOR CONTINUED EXAMINATION (RCE) TRANSMITTAL

Mail Stop RCE
Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

Sir:

This is a Request for Continued Examination (RCE) under 37 C.F.R. § 1.114 of the above-identified application. This RCE and the enclosed items listed below are being filed prior to the earliest of: (1) payment of the issue fee (unless a petition under 37 C.F.R. § 1.313 is granted); (2) abandonment of the application; or (3) the filing of a notice of appeal to the U.S. Court of Appeals for the Federal Circuit under 35 U.S.C. §141, or the commencement of a civil action under 35 U.S.C. §145 or §146 (unless the appeal or civil action is terminated).

1. Submission **required** under 37 C.F.R. §1.114: (check items that apply)

   a. Previously submitted:

[**X**] Please enter and consider the amendment and/or reply previously filed on **5/20/2010**.

b. Enclosed are:

[**X**] Information Disclosure Statement (2 pages).

[**X**] Form PTO/SB/08 with copies of 6 listed references.

The filing fee is calculated below:

	Claims as Amended		Previously Paid For		Extra Claims Present		Rate		Fee Totals
RCE Fee 1.17(e):							$810.00	=	$810.00
Total Claims:	40	-	40	=	0	x	$52.00	=	$0.00
Independents	3	-	3	=	0	x	$220.00	=	$0.00
First presentation of any Multiple Dependent Claims:						+	$390.00	=	$0.00
CLAIMS FEE TOTAL:								=	$810.00

[**X**] Applicant hereby petitions for an extension of time under 37 C.F.R. §1.136(a) for the total number of months checked below:

[ ]	Extension for response filed within the first month:	$130.00	0	$0.00
[X]	Extension for response filed within the second month:	$490.00		$490.00
[ ]	Extension for response filed within the third month:	$1,110.00		$0.00
[ ]	Extension for response filed within the fourth month:	$1,730.00		$0.00
[ ]	Extension for response filed within the fifth month:	$2,350.00		$0.00
	EXTENSION FEE SUBTOTAL:			$490.00
	EXTENSION FEE ALREADY PAID:		-	$130.00
	EXTENSION FEE TOTAL			$360.00

	CLAIMS AND EXTENSION FEE TOTAL:	$1170.00
[X]	Small Entity Fees Apply (subtract ½ of above):	$585.00
[ ]	Suspension of action requested under 37 C.F.R. § 1.103(c)	$0.00
	TOTAL FEE:	$585.00

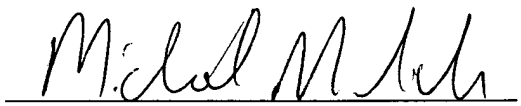
A credit card payment form in the amount of $585.00 to cover the filing fee is enclosed.

The Commissioner is hereby authorized to charge any additional fees which may be required regarding this application under 37 C.F.R. §§ 1.16-1.17, or credit any overpayment, to Deposit Account No. 19-0741. Should no proper payment be enclosed herewith, as by the credit card payment instructions in EFS-Web being incorrect or absent, resulting in a rejected or incorrect credit card transaction, the Commissioner is authorized to charge the unpaid amount to Deposit Account No. 19-0741.

Please direct all correspondence to the undersigned attorney or agent at the address indicated below.

Respectfully submitted,

Date July 1, 2010

By 

FOLEY & LARDNER LLP
Customer Number: 26371
Telephone: (202) 672-5538
Facsimile: (202) 672-5399

Michele M. Simkin
Attorney for Applicant
Registration No. 34,717

Atty. Dkt. No. 095473-0106

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Applicant: Zumbrunn et al.

Title: TRANSDERMAL DRUG DELIVERY METHOD AND SYSTEM

Appl. No.: 10/711,389

Filing Date: 9/13/2004

Examiner: Mercier, Melissa S.

Art Unit: 1615

Confirmation Number: 5388

INFORMATION DISCLOSURE STATEMENT UNDER 37 CFR §1.56

Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

Sir:

Submitted herewith on Form PTO/SB/08 is a listing of documents known to Applicants in order to comply with Applicants' duty of disclosure pursuant to 37 CFR §1.56.

A copy of each non-U.S. patent document and each non-patent document is being submitted to comply with the provisions of 37 CFR §1.97 and §1.98.

The submission of any document herewith, which is not a statutory bar, is not intended as an admission that such document constitutes prior art against the claims of the present application or that such document is considered material to patentability as defined in 37 CFR §1.56(b). Applicants do not waive any rights to take any action which would be appropriate to

antedate or otherwise remove as a competent reference any document which is determined to be a *prima facie* art reference against the claims of the present application.

TIMING OF THE DISCLOSURE

The listed documents are being submitted in compliance with 37 CFR §1.97(b), before the mailing of a first Office action after the filing of a Request for Continued Examination under §1.114.

RELEVANCE OF EACH DOCUMENT

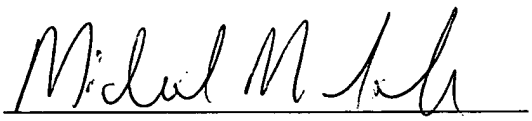
Attached to the PTO/SB/08 are Office Actions, Notice of Allowance, and references cited by the Examiner(s) in several related patent applications. Copies of the references cited by the Examiners are listed on the PTO/SB/08, unless they were already cited in the present application.

Applicants respectfully request that each listed document be considered by the Examiner and be made of record in the present application and that an initialed copy of Form PTO/SB/08 be returned in accordance with MPEP §609.

Although Applicant believes that no fee is required, the Commissioner is hereby authorized to charge any additional fees which may be due to Deposit Account No. 19-0741.

Respectfully submitted,

Date: July 1, 2010

By 

FOLEY & LARDNER LLP
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Michele M. Simkin
Attorney for Applicant
Registration No. 34,717

PTO/SB/08 (09-06)
Approved for use through 03/31/2007. OMB 0651-0031
U.S. Patent and Trademark Office: U.S. DEPARTMENT OF COMMERCE

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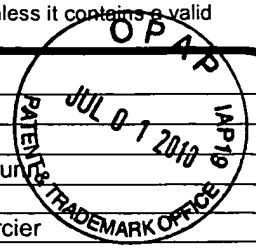

Substitute for form 1449/PTO				Complete if Known	
INFORMATION DISCLOSURE STATEMENT BY APPLICANT				**Application Number**	10/711,389
Date Submitted: July 1, 2010				**Filing Date**	9/15/2004
				First Named Inventor	Werner Zumbrunn
(use as many sheets as necessary)				Art Unit	1615
				Examiner Name	Melissa S. Mercier
Sheet	1	of	1	Attorney Docket Number	095473-0106

U.S. PATENT DOCUMENTS

Examiner Initials*	Cite No.[1]	Document Number Number-Kind Code[2] (*if known*)	Publication Date MM-DD-YYYY	Name of Patentee or Applicant of Cited Document	Pages, Columns, Lines, Where Relevant Passages or Relevant Figures Appear
	A1	2003/0065294	04/2003	Pickup et al.	
	A2	6,211,296	04/2001	Frate et al.	
	A3	5,538,503	07/1996	Henley	

FOREIGN PATENT DOCUMENTS

Examiner Initials*	Cite No.[1]	Foreign Patent Document Country Code[3]-Number[4]-Kind Code[5] (*if known*)	Publication Date MM-DD-YYYY	Name of Patentee or Applicant of Cited Documents	Pages, Columns, Lines, Where Relevant Passages or Relevant Figures Appear	T[6]

NON PATENT LITERATURE DOCUMENTS

Examiner Initials*	Cite No.[1]	Include name of the author (in CAPITAL LETTERS), title of the article (when appropriate), title of the item (book, magazine, journal, serial, symposium, catalog, etc.) date, page(s), volume-issue number(s), publisher, city and/or country where published.	T[6]
	B1	Office Action cited in related U.S. Patent Application No. 11/162,525, dated 2/5/2010.	
	B2	Office Action cited in related U.S. Patent Application No. 11/162,517, dated 11/24/2009.	
	B3	Prosise et al., (Effect of abstinence from smoking on sleep and day time sleepiness), *Amer. College of Chest Physicians*, Vol. 105, pp. 1136-1141 (1994).	
	B4	Notice of Allowance cited in related application no. 11/162,525, dated 4/26/2010.	
	B5	U.S. Office Action cited in related U.S. Patent Application No. 11/162,517, dated June 3, 2010.	
	B6	U.S. Office Action cited in related U.S. Patent Application No. 11/981,672, dated 3/23/2009.	

Examiner Signature		Date Considered	

*EXAMINER: Initial if reference considered, whether or not citation is in conformance with MPEP 609. Draw line through citation if not in conformance and not considered. Include copy of this form with next communication to applicant. 1 Applicant's unique citation designation number (optional). 2 See Kinds Codes of USPTO Patent Documents at www.uspto.gov or MPEP 901.04. 3 Enter Office that issued the document, by the two-letter code (WIPO Standard ST.3). 4 For Japanese patent documents, the indication of the year of the reign of the Emperor must precede the serial number of the patent document. 5 Kind of document by the appropriate symbols as indicated on the document under WIPO Standard ST.16 if possible. 6 Applicant is to place a check mark here if English language Translation is attached. This collection of information is required by 37 CFR 1.97 and 1.98. The information is required to obtain or retain a benefit by the public which is to file (and by the USPTO to process) an application. Confidentiality is governed by 35 U.S.C. 122 and 37 CFR 1.14. This collection is estimated to take 2 hours to complete, including gathering, preparing, and submitting the completed application form to the USPTO. Time will vary depending upon the individual case. Any comments on the amount of time you require to complete this form and/or suggestions for reducing this burden, should be sent to the Chief Information Officer, U.S. Patent and Trademark Office, P.O. Box 1450, Alexandria, VA 22313-1450. DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS. **SEND TO: Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450.**

If you need assistance in completing the form, call 1-800-PTO-9199 (1-800-786-9199) and select option 2.

PTO/SB/06 (07-06)
Approved for use through 1/31/2007. OMB 0651-0032
U.S. Patent and Trademark Office; U.S. DEPARTMENT OF COMMERCE

PATENT APPLICATION FEE DETERMINATION RECORD

Substitute for Form PTO-875

Application or Docket Number	Filing Date	☐ To be Mailed
10/711,389	09/15/2004	

APPLICATION AS FILED – PART I

FOR	(Column 1) NUMBER FILED	(Column 2) NUMBER EXTRA	SMALL ENTITY ☒ RATE ($)	SMALL ENTITY ☒ FEE ($)	OR	OTHER THAN SMALL ENTITY RATE ($)	OTHER THAN SMALL ENTITY FEE ($)
☐ BASIC FEE (37 CFR 1.16(a), (b), or (c))	N/A	N/A	N/A			N/A	
☐ SEARCH FEE (37 CFR 1.16(k), (i), or (m))	N/A	N/A	N/A			N/A	
☐ EXAMINATION FEE (37 CFR 1.16(o), (p), or (q))	N/A	N/A	N/A			N/A	
TOTAL CLAIMS (37 CFR 1.16(i))	minus 20 =	*	X $ =		OR	X $ =	
INDEPENDENT CLAIMS (37 CFR 1.16(h))	minus 3 =	*	X $ =			X $ =	
☐ APPLICATION SIZE FEE (37 CFR 1.16(s))	If the specification and drawings exceed 100 sheets of paper, the application size fee due is $250 ($125 for small entity) for each additional 50 sheets or fraction thereof. See 35 U.S.C. 41(a)(1)(G) and 37 CFR 1.16(s).						
☐ MULTIPLE DEPENDENT CLAIM PRESENT (37 CFR 1.16(j))							
* If the difference in column 1 is less than zero, enter "0" in column 2.			TOTAL			TOTAL	

APPLICATION AS AMENDED – PART II

AMENDMENT	07/01/2010	(Column 1) CLAIMS REMAINING AFTER AMENDMENT		(Column 2) HIGHEST NUMBER PREVIOUSLY PAID FOR	(Column 3) PRESENT EXTRA	SMALL ENTITY RATE ($)	SMALL ENTITY ADDITIONAL FEE ($)	OR	OTHER THAN SMALL ENTITY RATE ($)	OTHER THAN SMALL ENTITY ADDITIONAL FEE ($)
	Total (37 CFR 1.16(i))	* 40	Minus	** 40	= 0	X $26 =	0	OR	X $ =	
	Independent (37 CFR 1.16(h))	* 3	Minus	***3	= 0	X $110 =	0	OR	X $ =	
	☐ Application Size Fee (37 CFR 1.16(s))									
	☐ FIRST PRESENTATION OF MULTIPLE DEPENDENT CLAIM (37 CFR 1.16(j))							OR		
						TOTAL ADD'L FEE	0	OR	TOTAL ADD'L FEE	

AMENDMENT		(Column 1) CLAIMS REMAINING AFTER AMENDMENT		(Column 2) HIGHEST NUMBER PREVIOUSLY PAID FOR	(Column 3) PRESENT EXTRA	RATE ($)	ADDITIONAL FEE ($)	OR	RATE ($)	ADDITIONAL FEE ($)
	Total (37 CFR 1.16(i))	*	Minus	**	=	X $ =		OR	X $ =	
	Independent (37 CFR 1.16(h))	*	Minus	***	=	X $ =		OR	X $ =	
	☐ Application Size Fee (37 CFR 1.16(s))									
	☐ FIRST PRESENTATION OF MULTIPLE DEPENDENT CLAIM (37 CFR 1.16(j))							OR		
						TOTAL ADD'L FEE		OR	TOTAL ADD'L FEE	

* If the entry in column 1 is less than the entry in column 2, write "0" in column 3.

** If the "Highest Number Previously Paid For" IN THIS SPACE is less than 20, enter "20".

*** If the "Highest Number Previously Paid For" IN THIS SPACE is less than 3, enter "3".

The "Highest Number Previously Paid For" (Total or Independent) is the highest number found in the appropriate box in column 1.

Legal Instrument Examiner:
/TINA J. BARDEN/

UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
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Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/711,389	09/15/2004	Werner Zumbrunn	095473-0106	5388

22428 7590 05/27/2010
FOLEY AND LARDNER LLP
SUITE 500
3000 K STREET NW
WASHINGTON, DC 20007

EXAMINER	
MERCIER, MELISSA S	

ART UNIT	PAPER NUMBER
1615	

MAIL DATE	DELIVERY MODE
05/27/2010	PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Advisory Action Before the Filing of an Appeal Brief	**Application No.** 10/711,389	**Applicant(s)** ZUMBRUNN ET AL.	
	Examiner MELISSA S. MERCIER	**Art Unit** 1615	

--The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

THE REPLY FILED 20 May 2010 FAILS TO PLACE THIS APPLICATION IN CONDITION FOR ALLOWANCE.

1. ☒ The reply was filed after a final rejection, but prior to or on the same day as filing a Notice of Appeal. To avoid abandonment of this application, applicant must timely file one of the following replies: (1) an amendment, affidavit, or other evidence, which places the application in condition for allowance; (2) a Notice of Appeal (with appeal fee) in compliance with 37 CFR 41.31; or (3) a Request for Continued Examination (RCE) in compliance with 37 CFR 1.114. The reply must be filed within one of the following time periods:
   a) ☒ The period for reply expires *4* months from the mailing date of the final rejection.
   b) ☐ The period for reply expires on: (1) the mailing date of this Advisory Action, or (2) the date set forth in the final rejection, whichever is later. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of the final rejection.

   Examiner Note: If box 1 is checked, check either box (a) or (b). ONLY CHECK BOX (b) WHEN THE FIRST REPLY WAS FILED WITHIN TWO MONTHS OF THE FINAL REJECTION. See MPEP 706.07(f).

Extensions of time may be obtained under 37 CFR 1.136(a). The date on which the petition under 37 CFR 1.136(a) and the appropriate extension fee have been filed is the date for purposes of determining the period of extension and the corresponding amount of the fee. The appropriate extension fee under 37 CFR 1.17(a) is calculated from: (1) the expiration date of the shortened statutory period for reply originally set in the final Office action; or (2) as set forth in (b) above, if checked. Any reply received by the Office later than three months after the mailing date of the final rejection, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

NOTICE OF APPEAL

2. ☐ The Notice of Appeal was filed on _____. A brief in compliance with 37 CFR 41.37 must be filed within two months of the date of filing the Notice of Appeal (37 CFR 41.37(a)), or any extension thereof (37 CFR 41.37(e)), to avoid dismissal of the appeal. Since a Notice of Appeal has been filed, any reply must be filed within the time period set forth in 37 CFR 41.37(a).

AMENDMENTS

3. ☒ The proposed amendment(s) filed after a final rejection, but prior to the date of filing a brief, will not be entered because
   (a) ☒ They raise new issues that would require further consideration and/or search (see NOTE below);
   (b) ☒ They raise the issue of new matter (see NOTE below);
   (c) ☒ They are not deemed to place the application in better form for appeal by materially reducing or simplifying the issues for appeal; and/or
   (d) ☒ They present additional claims without canceling a corresponding number of finally rejected claims.

   NOTE: *See Continuation Sheet*. (See 37 CFR 1.116 and 41.33(a)).

4. ☐ The amendments are not in compliance with 37 CFR 1.121. See attached Notice of Non-Compliant Amendment (PTOL-324).
5. ☐ Applicant's reply has overcome the following rejection(s): _____.
6. ☐ Newly proposed or amended claim(s) _____ would be allowable if submitted in a separate, timely filed amendment canceling the non-allowable claim(s).
7. ☐ For purposes of appeal, the proposed amendment(s): a) ☐ will not be entered, or b) ☐ will be entered and an explanation of how the new or amended claims would be rejected is provided below or appended.
   The status of the claim(s) is (or will be) as follows:
   Claim(s) allowed: _____.
   Claim(s) objected to: _____.
   Claim(s) rejected: _____.
   Claim(s) withdrawn from consideration: _____.

AFFIDAVIT OR OTHER EVIDENCE

8. ☐ The affidavit or other evidence filed after a final action, but before or on the date of filing a Notice of Appeal will not be entered because applicant failed to provide a showing of good and sufficient reasons why the affidavit or other evidence is necessary and was not earlier presented. See 37 CFR 1.116(e).
9. ☐ The affidavit or other evidence filed after the date of filing a Notice of Appeal, but prior to the date of filing a brief, will not be entered because the affidavit or other evidence failed to overcome all rejections under appeal and/or appellant fails to provide a showing a good and sufficient reasons why it is necessary and was not earlier presented. See 37 CFR 41.33(d)(1).
10. ☐ The affidavit or other evidence is entered. An explanation of the status of the claims after entry is below or attached.

REQUEST FOR RECONSIDERATION/OTHER

11. ☐ The request for reconsideration has been considered but does NOT place the application in condition for allowance because: _____.
12. ☐ Note the attached Information *Disclosure Statement*(s). (PTO/SB/08) Paper No(s). _____
13. ☐ Other: _____.

/Melissa S Mercier/
Examiner, Art Unit 1615

/Carlos A. Azpuru/
Primary Examiner, Art Unit 1615

Continuation of 3. NOTE: Applicant has amended claim 17 to incorporate additional claim limitations which were not presented prior to the final office action, specifically the location and contact locations of the porous surface. Applicant has also presented new claim 40 which also adds new claim limitations which were not previously presented. While the Applicant asserts the paragraph 0066 provides explicit support for new claim 40, the new claim will require new consideration and search.

Attorney Docket No. 095473-0106

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Applicant:	Zumbrunn et al.
Title:	TRANSDERMAL DRUG DELIVERY METHOD AND SYSTEM
Appl. No.:	10/711,389
Filing Date:	9/15/2004
Examiner:	Mercier, Melissa S.
Art Unit:	1615
Confirmation Number:	5388

Mail Stop AF
Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

AMENDMENT AND REPLY UNDER 37 CFR 1.116

This communication is responsive to the Final Office Action dated February 1, 2010, concerning the above-referenced patent application.

Amendments to the Claims are reflected in the listing of claims which begins on page 2 of this document.

Remarks begin on page 8 of this document.

Please amend the application as follows.

Attorney Docket No. 095473-0106

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Applicant:	Zumbrunn et al.
Title:	TRANSDERMAL DRUG DELIVERY METHOD AND SYSTEM
Appl. No.:	10/711,389
Filing Date:	9/15/2004
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Mail Stop AF
Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

AMENDMENT AND REPLY UNDER 37 CFR 1.116

This communication is responsive to the Final Office Action dated February 1, 2010, concerning the above-referenced patent application.

Amendments to the Claims are reflected in the listing of claims which begins on page 2 of this document.

Remarks begin on page 8 of this document.

Please amend the application as follows.

Amendments to the Claims:

This listing of claims will replace all prior versions, and listings, of claims in the application.

Listing of Claims:

1. (Withdrawn) A method for transdermal administration of at least one active substance to a porous surface, comprising the following steps:

a) dispensing a certain amount of a liquid comprising at least one active substance and at least one solvent into an administration reservoir,

b) separating at least a portion of the at least one solvent from the administration reservoir by a solvent recovery means such that the at least wherein one active substance achieves a certain level of concentration in vicinity to the porous surface to be treated;

c) absorption of the active substance by the porous surface to be treated via diffusion such that the level of concentration in the administration reservoir decreases.

2. (Withdrawn) The method according to claim 1 wherein the solvent is separated by evaporation.

3. (Withdrawn) The method according to claim 2 wherein the evaporation of the solvent is supported by a heating element.

4. (Withdrawn) The method according to claim 3 wherein the solvent is evaporated through a membrane passable preferably for the solvent.

5. (Withdrawn) The method according to claim 2 where the solvent is removed by a pre-programmed opening a pinch valve that is in contact with the porous surface.

6. (Withdrawn) The method according to claim 5 where the solvent is removed by programming the pumping of the solvent.

7. (Withdrawn) The method according to claim 2 where the solvent is removed by a programmed lowering of an arm or lever.

8. (Withdrawn) The method according to claims 2 wherein the solvent is absorbed by a desiccant.

9. (Withdrawn) The method according to claim 5 wherein the desiccant is one or a combination out of the group of silica get, molecular sieves, active carbon.

10. (Withdrawn) The method according to claim one of the claims 2 wherein the solvent is discharged into the environment.

11. (Withdrawn) The method of claim one of the claims 2 wherein the solvent is flushed by a fluid.

12. (Withdrawn) The method according to claim 1 wherein the at least one active substance passes an interface device which is permeable for the at least one active substance.

13. (Withdrawn) The method according to claim 12 wherein the interface device comprises a membrane.

14. (Withdrawn) The method according to claim 12 wherein the interface device comprises an adhesive layer suitable to be attached to the porous surface.

15. (Withdrawn) The method according to claim 1 wherein the steps a to c are repeated at predefined intervals such that the level of concentration of the at least one active substance in the administration reservoir is kept above a certain level.

16. (Withdrawn) The method according to claim 15 wherein the dispensing rate and the time pattern of dispensing the liquid into the administration reservoir are controlled by a programmable device.

17. (Currently Amended) A device for transdermal administration of at least one active substance to a porous surface, comprising:

(a) an administration reservoir;

(b) a dispensing device interconnected to the administration reservoir for delivery of at least one active substance dissolved in a solvent to the administration reservoir, wherein the administration reservoir is suitable to receive the active substance dissolved in the solvent;

(c) ~~a solvent removal element configured to absorb solvent from the administration reservoir by evaporation; and~~

~~(d)~~ an interface configured to contact the porous surface and suitable for transferring the active substance from the administration reservoir to the porous surface; and

(d) a solvent removal element configured to absorb solvent from the administration reservoir by evaporation when the interface is in contact with the porous surface;

wherein the transfer of the active substance from the administration reservoir to the porous surface is controlled via the absorption of solvent by the solvent removal element.

18. (Previously presented) The device according to claim 17 wherein the interface is suitable to be arranged in vicinity to the porous surface.

19. (Withdrawn) The device according to claim 18 wherein the interface comprises an adhesive surface suitable to be attached to the porous surface.

20. (Previously presented) The device according to claim 17 wherein the interface is a membrane permeable for the active substance.

21. (Previously presented) The device according to claim 17 wherein the solvent removal element is separated from the administration reservoir by a separation means.

22. (Previously presented) The device according to claim 21 wherein the separation means is selected from the group consisting of a membrane, a foam, a cellular material, a honeycomb, and an air gap.

23. (Previously presented) The device according to claim 21 wherein the administration reservoir and the solvent removal element are spaced apart a distance by the separation means.

24. (Withdrawn) The device according to claim 17 wherein the solvent removal element comprises one or more of the following materials: Desiccant, general or a selective absorbent material, silica gel, a molecular sieve, and active carbon.

25. (Withdrawn) The device according to claim 17 wherein the solvent removal element comprises a chamber with an inlet and an outlet for flushing by a fluid.

26. (Currently Amended) The device according to claim 17 wherein the dispensing device comprises at least one reservoir for an active substance which is interconnected to the administration ~~device~~ reservoir.

27. (Withdrawn) The device according to claim 26 wherein the dispensing device comprises a propellant means to propel the active substance from the one reservoir into the administration reservoir.

28. (Withdrawn) The device according to claim 27 wherein the propellant means is a pump and/or a propellant gas.

29. (Withdrawn) The device according to claim 26 wherein the dispensing device comprises a first reservoir comprising a first active substance and a second reservoir comprising a second active substance and the first and the second active substance are mixed by mixing means before delivery to the administration reservoir.

30. (Withdrawn) The device according to claim 29 wherein the mixing means is a pipe with vortex means providing an appropriate preparation of mixture.

31. (Withdrawn) The device according to claim 35 wherein the control device is interconnected to at least one valve for controlling the administration of the at least one active substance.

32. (Withdrawn) The device according to claim 35 wherein the control device is programmable according to a predetermined regime or time pattern or interval of administration of the at least one active substance.

33. (Currently Amended) The device according to claim 35 wherein the control device is interconnected with at least one sensor for measuring a condition of the at least one active substance within the administration reservoir.

34. (Previously presented) The device according to claim 33 wherein the administration of the active substance is based on the signal of the at least one sensor.

35. (Previously presented) The control device according to claim 17 wherein the administration of the active substance is controlled by a control device.

36. (Withdrawn) An administration unit for application of at least one active substance to skin wherein the at least one active substance is dissolved in a solvent, comprising an administration unit configured to distribute the active substance to the skin or to a skin-compatible adhesive layer, wherein the administration unit comprises an administration reservoir and a solvent removal element comprising a separation layer that is impermeant to the active substance and permeable to the solvent.

37. (Withdrawn) The administration unit of claim 36, wherein the separation layer further comprises a material that controls evaporation rate of the solvent at a surface of the separation layer.

38. (Previously presented) The device of claim 17 wherein the solvent removal element controls the transfer of the active substance from the administration reservoir to the

porous surface by controlling the concentration of the at least one active substance in the administration reservoir.

39. (Previously presented) The device of claim 17 wherein the solvent removal element controls termination of the transfer of the active substance from the administration reservoir to the porous surface by drying the interface.

40. (New) The device of claim 17, further comprising a housing, wherein the administration reservoir, the dispensing device, and the solvent removal element are located within the housing.

REMARKS

Applicants respectfully request reconsideration of the present application in view of the foregoing amendments and the reasons that follow.

I. Status of the Claims

Claims 1-39 are pending in this application, and claims 1-16, 19, 24, 25, 27-32, 36 and 37 are withdrawn. Upon entry of this amendment, new claim 40 will be added.

Claim 17 is amended and recites "an interface configured to contact the porous surface" and "a solvent removal element configured to absorb solvent from the administration reservoir by evaporation when the interface is in contact with the porous surface." Exemplary support for this claim language can be found in paragraphs [0035] and [0037] and [0059] and FIG. 1 of the Application as filed.

Claim 33 is amended and recites " wherein the control device is interconnected with at least one sensor for measuring a condition of the at least one active substance within the administration reservoir." Exemplary support for this claim language can be found in paragraph [0068] and FIG. 3.

Claim 26 is amended to more clearly state the invention. No new matter has been added with the amendments.

New claim 40 is added. Exemplary support for this claim language can be found in paragraph [0066] of the Application as filed.

Applicants believe that each of the rejections raised by the Examiner have been addressed and the application is in condition for allowance. Reconsideration and allowance of the application, as amended, is respectfully requested. It is acknowledged that the foregoing amendments are submitted after final rejection of the claims. However, because the amendments

do not introduce new matter, and either place the application in condition for allowance or at least in better condition for appeal, entry thereof by the Examiner is respectfully requested.

II. Claim Rejections – 35 U.S.C. § 102

Claims 17-18, 20-23, 26, 35, 38 and 39 were rejected under 35 U.S.C. § 102(b) as allegedly being anticipated by U.S. Patent No. 6,374,136 to Murdock ("Murdock"). Office Action at pages 2-3. Applicants respectfully traverse this ground for rejection.

A. Independent Claim 17

Applicants have amended claim 17 to further distinguish the claimed invention from the electrode assembly and the method of forming an anhydrous reservoir layer of the electrode assembly disclosed by Murdock.

Claim 17, as amended, recites "a solvent removal element configured to absorb solvent from the administration reservoir by evaporation *when the interface is in contact with the porous surface.*" Murdock does not disclose or teach a solvent removal element as recited in claim 17.

Murdock discloses an "electrotransport delivery device 10" that includes a "reservoir layer 24" that "contains the beneficial agent to be iontophoretically delivered." See col. 6, lines 14-15 and lines 31-33. Murdock discloses solvent removal as a step in the formation of the reservoir layer, and, as noted by the Examiner, Murdock discloses that the "solvent may be removed from the polymer membrane by drying the membrane in a forced air oven, a vacuum drying oven, a desiccator, or by lyophilizing the polymer membrane." See col. 5, lines 48-51, and Office Action page 3. Thus, solvent removal, as taught by Murdock, is a step in the manufacture of an electrode assembly, and does not occur when the device is in use (i.e., solvent removal as taught by Murdock does not occur when the device is in contact with a user's skin). In contrast to Murdock, claim 17, as amended, recites a solvent removal element that that is configured to absorb solvent *when the interface is in contact with the porous surface.*

Further, to anticipate a claim the "identical invention must be shown in *as complete detail as is contained in the ... claim.*" MPEP § 2131 quoting *Richardson v. Suzuki Motor Co.*, 868 F.2d 1226, 1236, 9 USPQ2d 1913, 1920 (Fed. Cir.1989) (emphasis added). Claim 17 recites a solvent removal element as one component of a device for transdermal administration of an active substance. As noted above, Murdock discloses removal of a solvent during the manufacture of the "reservoir layer" of "delivery device 10" by the use of drying devices such as ovens and desiccators. However, the drying devices (e.g., the ovens, desiccators, etc.) disclosed by Murdock are not a component of "delivery device 10" taught by Murdock. Thus, Murdock does not disclose a solvent removal element as one component of a device for transdermal administration of an active substance as recited in claim 17.

Because Murdock fails to disclose the device of amended claim 17, Applicants respectfully request withdrawal of the rejection of claims 17-18, 20-23, 26, 35, 38 and 39 under 35 U.S.C. § 102(b) based upon Murdock.

B. Dependent Claims 38 and 39

In addition to the reasons set forth above regarding independent claim 17, Applicants respectfully assert that dependent claims 38 and 39 are further patentable for the reasons set forth below.

Claim 38 recites "wherein *the solvent removal element controls the transfer of the active substance from the administration reservoir to the porous surface* by controlling the concentration of the at least one active substance in the administration reservoir." Claim 39 recites "wherein *the solvent removal element controls termination of the transfer of the active substance from the administration reservoir to the porous surface* by drying the interface." As discussed above, Murdock discloses solvent removal during manufacture of the reservoir layer and not during use of "delivery device 10." As such, solvent removal as disclosed by Murdock is not related to the control of drug delivery by "delivery device 10."

Accordingly, because Murdock fails to disclose the device of claims 38 and 39, Applicants respectfully assert that claims 38 and 39 are not anticipated by Murdock under 35 U.S.C. § 102(b).

III. Claim Rejections – 35 U.S.C. § 103

Claims 33 and 34 were rejected under 35 U.S.C. § 103(a) as being allegedly unpatentable over Murdock in view of U.S. Patent No. 5,993,435 to Haak et al. ("Haak"). Office Action at pages 3-5. Applicants respectfully traverse this ground for rejection.

Claims 33 and 34 depend from independent claim 17. For the reasons discussed above, Murdock fails to teach or suggest "a solvent removal element configured to absorb solvent from the administration reservoir by evaporation when the interface is in contact with the porous surface," as recited in independent claim 17. Haak does not remedy the deficiencies of Murdock. Specifically, Haak discloses an "iontophoretic delivery device 10" that includes a "donor electrode assembly 8" having "a donor electrode 11, an electrolyte reservoir 13, a selectively permeable separator membrane 14 and an agent reservoir 15" and a "counter electrode assembly 9." See col. 6, lines 52-54 and col. 7, lines 1-3. However, Haak does not teach or suggest "a solvent removal element configured to absorb solvent from the administration reservoir by evaporation when the interface is in contact with the porous surface," as recited in independent claim 17.

Dependent claims 33 and 34 are patentable over Murdock in view of Haak for at least the following additional reasons. Claim 33, as amended, recites "at least one sensor for measuring a condition of the at least one active substance *within the administration reservoir*." Haak does not teach or suggest such a sensor. Rather, Haak states generally that "[c]ontrol circuit 19 may also include an integrated circuit which could be designed ... to respond to sensor signals in order to regulate the dosage to maintain a predetermined dosage regimen." Col. 11, lines 3-7. As an example of the signal that the control circuit is responsive to, Haak discusses monitoring

"a biosignal" such as blood sugar level. See col. 11, lines 11-15. As such, Haak does not teach or suggest "at least one sensor for measuring a condition of the at least one active substance within the administration reservoir," as recited in claim 33.

Accordingly, claims 33 and 34 are patentable over Murdock in view of Haak under 35 U.S.C. § 103(a). Withdrawal of this ground for rejection is respectfully requested.

IV. New Claim 40

New dependent claim 40 recites the "device of claim 17, further comprising a housing, wherein the administration reservoir, the dispensing device, and the solvent removal element are located within the housing." As noted above, the drying devices (e.g., the ovens, desiccators, etc.) disclosed by Murdock are not a component of "delivery device 10" taught by Murdock and are not located within a housing along with any other components of "delivery device 10."

Accordingly, because Murdock fails to disclose the device of claim 40, Applicants respectfully assert that claim 40 is not anticipated by Murdock under 35 U.S.C. § 102(b).

V. Conclusion

Applicants believe that the present application is in condition for allowance. Favorable reconsideration of the application, as amended, is respectfully requested.

The Examiner is invited to contact the undersigned by telephone if it is felt that a telephone interview would advance the prosecution of the present application.

It should be noted that, for the sake of clarity and simplicity, Applicants' remarks have focused on the rejections of the independent claims and certain dependent claims set forth in the Office Action with the understanding that the dependent claims are patentable for at least the same reasons as the independent claims. Further, in addressing the Examiner's rejections, Applicants' remarks have set forth only some of the available arguments for patentability of the rejected claims. Applicants expressly reserve the right to argue the patentability of all claims

separately and to provide new, different, and/or additional arguments for patentability not set forth herein, including, but not limited to, the failure of cited references to disclose, teach, or suggest other elements of the claims, the lack of motivation to combine cited references, or teaching away from the combination of cited references, in this or any future proceedings.

The Commissioner is hereby authorized to charge any additional fees which may be required regarding this application under 37 C.F.R. §§ 1.16-1.17, or credit any overpayment, to Deposit Account No. 19-0741. Should no proper payment be enclosed herewith, as by the credit card payment instructions in EFS-Web being incorrect or absent, resulting in a rejected or incorrect credit card transaction, the Commissioner is authorized to charge the unpaid amount to Deposit Account No. 19-0741. If any extensions of time are needed for timely acceptance of papers submitted herewith, Applicants hereby petition for such extension under 37 C.F.R. §1.136 and authorizes payment of any such extensions fees to Deposit Account No. 19-0741.

Respectfully submitted,

Date: May 20, 2010

By /Michele M. Simkin/

FOLEY & LARDNER LLP
Customer Number: 22428
Telephone: (202) 672-5538
Facsimile: (202) 672-5399

Michele M. Simkin
Attorney for Applicant
Registration No. 34,717

Electronic Patent Application Fee Transmittal

Application Number:	10711389
Filing Date:	15-Sep-2004
Title of Invention:	TRANSDERMAL DRUG DELIVERY METHOD AND SYSTEM
First Named Inventor/Applicant Name:	Werner Zumbrunn
Filer:	Michelle M. Simkin
Attorney Docket Number:	095473-0106

Filed as Small Entity

Utility under 35 USC 111(a) Filing Fees

Description	Fee Code	Quantity	Amount	Sub-Total in USD($)
Basic Filing:				
Pages:				
Claims:				
Claims in excess of 20	2202	1	26	26
Miscellaneous-Filing:				
Petition:				
Patent-Appeals-and-Interference:				
Post-Allowance-and-Post-Issuance:				
Extension-of-Time:				

Description	Fee Code	Quantity	Amount	Sub-Total in USD($)
Extension - 1 month with $0 paid	2251	1	65	65
Miscellaneous:				
			Total in USD ($)	**91**

Electronic Acknowledgement Receipt

EFS ID:	7657002
Application Number:	10711389
International Application Number:	
Confirmation Number:	5388
Title of Invention:	TRANSDERMAL DRUG DELIVERY METHOD AND SYSTEM
First Named Inventor/Applicant Name:	Werner Zumbrunn
Customer Number:	22428
Filer:	Michelle M. Simkin
Filer Authorized By:	
Attorney Docket Number:	095473-0106
Receipt Date:	20-MAY-2010
Filing Date:	15-SEP-2004
Time Stamp:	19:35:59
Application Type:	Utility under 35 USC 111(a)

Payment information:

Submitted with Payment	yes
Payment Type	Credit Card
Payment was successfully received in RAM	$91
RAM confirmation Number	5453
Deposit Account	
Authorized User	

File Listing:

Document Number	Document Description	File Name	File Size(Bytes)/ Message Digest	Multi Part /.zip	Pages (if appl.)

1		Amendment_and_Reply.pdf	142878 ffa4e602cf7f135468115327ce099057d37a9b66	yes	16

Multipart Description/PDF files in .zip description		
Document Description	**Start**	**End**
Miscellaneous Incoming Letter	1	3
Amendment After Final	4	16

Warnings:

Information:

2	Fee Worksheet (PTO-875)	fee-info.pdf	32316 7ee63420c760b4a7cd4672be0602cfc33c326eea	no	2

Warnings:

Information:

Total Files Size (in bytes):	175194

This Acknowledgement Receipt evidences receipt on the noted date by the USPTO of the indicated documents, characterized by the applicant, and including page counts, where applicable. It serves as evidence of receipt similar to a Post Card, as described in MPEP 503.

New Applications Under 35 U.S.C. 111

If a new application is being filed and the application includes the necessary components for a filing date (see 37 CFR 1.53(b)-(d) and MPEP 506), a Filing Receipt (37 CFR 1.54) will be issued in due course and the date shown on this Acknowledgement Receipt will establish the filing date of the application.

National Stage of an International Application under 35 U.S.C. 371

If a timely submission to enter the national stage of an international application is compliant with the conditions of 35 U.S.C. 371 and other applicable requirements a Form PCT/DO/EO/903 indicating acceptance of the application as a national stage submission under 35 U.S.C. 371 will be issued in addition to the Filing Receipt, in due course.

New International Application Filed with the USPTO as a Receiving Office

If a new international application is being filed and the international application includes the necessary components for an international filing date (see PCT Article 11 and MPEP 1810), a Notification of the International Application Number and of the International Filing Date (Form PCT/RO/105) will be issued in due course, subject to prescriptions concerning national security, and the date shown on this Acknowledgement Receipt will establish the international filing date of the application.

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Applicant:	Zumbrunn et al.
Title:	TRANSDERMAL DRUG DELIVERY METHOD AND SYSTEM
Appl. No.:	10/711,389
Filing Date:	9/13/2004
Examiner:	Mercier, Melissa S.
Art Unit:	1615
Confirmation Number:	5388

AMENDMENT TRANSMITTAL

Mail Stop Amendment
Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

Sir:

Transmitted herewith is an amendment in the above-identified application.

[**X**] Small Entity status under 37 C.F.R. § 1.9 and § 1.27 has been established by a previous assertion of Small Entity status.

[ ] Assertion of Small Entity status is enclosed.

[**X**] The fee required for additional claims is calculated below:

	Claims As Amended		Previously Paid For		Extra Claims Present		Rate		Additional Claims Fee
Total Claims:	40	-	39	=	1	x	$52.00	=	$52.00
Independent Claims:	3	-	3	=	0	x	$220.00	=	$0.00
First presentation of any Multiple Dependent Claims:						+	$390.00	=	$0.00
							CLAIMS FEE TOTAL	=	$52.00

[**X**] Applicant hereby petitions for an extension of time under 37 C.F.R. §1.136(a) for the total number of months checked below:

[X]	Extension for response filed within the first month:	$130.00	$130.00
[ ]	Extension for response filed within the second month:	$490.00	$0.00
[ ]	Extension for response filed within the third month:	$1,110.00	$0.00
[ ]	Extension for response filed within the fourth month:	$1,730.00	$0.00
[ ]	Extension for response filed within the fifth month:	$2,350.00	$0.00
		EXTENSION FEE TOTAL:	$0.00
[ ]	Statutory Disclaimer Fee under 37 C.F.R. 1.20(d):	$140.00	$0.00
		CLAIMS, EXTENSION AND DISCLAIMER FEE TOTAL:	$182.00
[X]		Small Entity Fees Apply (subtract ½ of above):	$91.00
		Extension Fees Previously Paid:	$0.00
		TOTAL FEE:	$91.00

The above-identified fees of $91.00 are being paid by credit card via EFS-Web.

The Commissioner is hereby authorized to charge any additional fees which may be required regarding this application under 37 C.F.R. §§ 1.16-1.17, or credit any overpayment, to

Deposit Account No. 19-0741. Should no proper payment be enclosed herewith, as by the credit card payment instructions in EFS-Web being incorrect or absent, resulting in a rejected or incorrect credit card transaction, the Commissioner is authorized to charge the unpaid amount to Deposit Account No. 19-0741.

If any extensions of time are needed for timely acceptance of papers submitted herewith, applicant hereby petitions for such extension under 37 C.F.R. §1.136 and authorizes payment of any such extensions fees to Deposit Account No. 19-0741.

Please direct all correspondence to the undersigned attorney or agent at the address indicated below.

Respectfully submitted,

Date: May 20, 2010

By /Michele M. Simkin/
Michele M. Simkin
Attorney for Applicant
Registration No. 34,717

FOLEY & LARDNER LLP
Customer Number: 22428
Telephone: (202) 672-5538
Facsimile: (202) 672-5399

PTO/SB/06 (07-06)
Approved for use through 1/31/2007. OMB 0651-0032
U.S. Patent and Trademark Office; U.S. DEPARTMENT OF COMMERCE
Under the Paperwork Reduction Act of 1995, no persons are required to respond to a collection of information unless it displays a valid OMB control number.

PATENT APPLICATION FEE DETERMINATION RECORD Substitute for Form PTO-875	Application or Docket Number 10/711,389	Filing Date 09/15/2004	☐ To be Mailed

APPLICATION AS FILED – PART I

	(Column 1)	(Column 2)	SMALL ENTITY ☒		OR	OTHER THAN SMALL ENTITY	
FOR	NUMBER FILED	NUMBER EXTRA	RATE ($)	FEE ($)		RATE ($)	FEE ($)
☐ BASIC FEE (37 CFR 1.16(a), (b), or (c))	N/A	N/A	N/A			N/A	
☐ SEARCH FEE (37 CFR 1.16(k), (i), or (m))	N/A	N/A	N/A			N/A	
☐ EXAMINATION FEE (37 CFR 1.16(o), (p), or (q))	N/A	N/A	N/A			N/A	
TOTAL CLAIMS (37 CFR 1.16(i))	minus 20 =	*	X $ =		OR	X $ =	
INDEPENDENT CLAIMS (37 CFR 1.16(h))	minus 3 =	*	X $ =			X $ =	
☐ APPLICATION SIZE FEE (37 CFR 1.16(s))	If the specification and drawings exceed 100 sheets of paper, the application size fee due is $250 ($125 for small entity) for each additional 50 sheets or fraction thereof. See 35 U.S.C. 41(a)(1)(G) and 37 CFR 1.16(s).						
☐ MULTIPLE DEPENDENT CLAIM PRESENT (37 CFR 1.16(j))							
* If the difference in column 1 is less than zero, enter "0" in column 2.			TOTAL			TOTAL	

APPLICATION AS AMENDED – PART II

		(Column 1)		(Column 2)	(Column 3)	SMALL ENTITY		OR	OTHER THAN SMALL ENTITY	
	05/20/2010	CLAIMS REMAINING AFTER AMENDMENT		HIGHEST NUMBER PREVIOUSLY PAID FOR	PRESENT EXTRA	RATE ($)	ADDITIONAL FEE ($)		RATE ($)	ADDITIONAL FEE ($)
AMENDMENT	Total (37 CFR 1.16(i))	* 40	Minus	** 39	= 1	X $26 =	26	OR	X $ =	
	Independent (37 CFR 1.16(h))	* 3	Minus	***3	= 0	X $110 =	0	OR	X $ =	
	☐ Application Size Fee (37 CFR 1.16(s))									
	☐ FIRST PRESENTATION OF MULTIPLE DEPENDENT CLAIM (37 CFR 1.16(j))							OR		
						TOTAL ADD'L FEE	26	OR	TOTAL ADD'L FEE	

		(Column 1)		(Column 2)	(Column 3)					
		CLAIMS REMAINING AFTER AMENDMENT		HIGHEST NUMBER PREVIOUSLY PAID FOR	PRESENT EXTRA	RATE ($)	ADDITIONAL FEE ($)		RATE ($)	ADDITIONAL FEE ($)
AMENDMENT	Total (37 CFR 1.16(i))	*	Minus	**	=	X $ =		OR	X $ =	
	Independent (37 CFR 1.16(h))	*	Minus	***	=	X $ =		OR	X $ =	
	☐ Application Size Fee (37 CFR 1.16(s))									
	☐ FIRST PRESENTATION OF MULTIPLE DEPENDENT CLAIM (37 CFR 1.16(j))							OR		
						TOTAL ADD'L FEE		OR	TOTAL ADD'L FEE	

* If the entry in column 1 is less than the entry in column 2, write "0" in column 3.

** If the "Highest Number Previously Paid For" IN THIS SPACE is less than 20, enter "20".

*** If the "Highest Number Previously Paid For" IN THIS SPACE is less than 3, enter "3".

The "Highest Number Previously Paid For" (Total or Independent) is the highest number found in the appropriate box in column 1.

Legal Instrument Examiner:
/BARBARA A. FRIESON/

This collection of information is required by 37 CFR 1.16. The information is required to obtain or retain a benefit by the public which is to file (and by the USPTO to process) an application. Confidentiality is governed by 35 U.S.C. 122 and 37 CFR 1.14. This collection is estimated to take 12 minutes to complete, including gathering, preparing, and submitting the completed application form to the USPTO. Time will vary depending upon the individual case. Any comments on the amount of time you require to complete this form and/or suggestions for reducing this burden, should be sent to the Chief Information Officer, U.S. Patent and Trademark Office, U.S. Department of Commerce, P.O. Box 1450, Alexandria, VA 22313-1450. DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS. **SEND TO: Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450.**

If you need assistance in completing the form, call 1-800-PTO-9199 and select option 2.

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Alexandria, Virginia 22313-1450
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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/711,389	09/15/2004	Werner Zumbrunn	095473-0106	5388

22428 7590 02/01/2010

FOLEY AND LARDNER LLP
SUITE 500
3000 K STREET NW
WASHINGTON, DC 20007

EXAMINER	
MERCIER, MELISSA S	

ART UNIT	PAPER NUMBER
1615	

MAIL DATE	DELIVERY MODE
02/01/2010	PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No.	Applicant(s)	
	10/711,389	ZUMBRUNN ET AL.	
	Examiner	Art Unit	
	MELISSA S. MERCIER	1615	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE *3* MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *07 October 2009*.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-39* is/are pending in the application.

4a) Of the above claim(s) *1-16,19,24,25,27-32,36 and 37* is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *17-18, 20-23, 26, 33-35, 38-39* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date *10-27-09*.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

Summary

Receipt of Applicants Remarks and Amended Claims filed October 7, 2009 is acknowledged. Claims 1-39 are pending in this application. Claims 1-16, 19, 24, 25, 27-32, 36-37 remain withdrawn from consideration. Claims 17-18, 20-23, 26, 33-35, and 38-39 are under prosecution in this application.

Information Disclosure Statement

Receipt of the Information Disclosure Statement filed on October 27, 2009 is acknowledged. A signed copy is attached to this office action.

Withdrawn Rejections

Claim Rejections - 35 USC § 112

The rejection of claims 23 under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention has been withdrawn in view of Applicants amendment to the claim to remove the recitation of 14.

Maintained Rejections

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Claims 17-18, 20-23, 26, 35, and 38-39 are rejected under 35 U.S.C. 102(b) as being anticipated by Murdock (US Patent 6,374,136).

Murdock discloses an electrode assembly and a method of forming an anhydrous reservoirs layer of an electrode assembly in an electro transport transdermal agent delivery device. The reservoir layer is adapted to be placed in agent transmitting relation with a body surface and an electrode in electric contact with a power source and the reservoir layer. The method includes the steps of dissolving a beneficial agent in a solvent, applying the solvent and dissolved beneficial agent to a surface of a hydrophilic polymer filtration membrane, removing the solvent from the surface of the filtration membrane and disposing the beneficial agent/filtration membrane with the electrode assembly (abstract). The solvent can be removed from the polymer membrane by drying the membrane in a forced air oven, a vacuum drying oven, a desiccators, or by lyophilizing the polymer membrane (column 5, lines 48-51).

Applicant has identified the porous structure to be skin; therefore, application of the transdermal patch meets the limitation of arranged in the vicinity of the porous surface.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

The factual inquiries set forth in *Graham* **v.** *John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

Claims 33-34 are rejected under 35 U.S.C. 103(a) as being unpatentable over Murdock (US Patent 6,374,136) in view of Haak et al. (US Patent 5,993,435).

The teachings of Murdock are discussed above and applied in the same manner.

Murdock does not disclose the use of sensors.

Haak discloses an iontophoretic delivery device comprising a selectively permeable membrane positioned between the agent reservoirs and electrode (abstract).

A control circuit is optionally provided. It may take the form of an on-off switch for on demand drug delivery, a timer, a fixed or variable electrical resistor and a controller which automatically turn the device on and off at some desired periodicity to match the natural or circadian patterns of the body (column 10, lines 57-60). The control circuit may include an integrated circuit which could be designed to control the dosage of beneficial agent, or to respond to sensor signals in order to regulate the dosage to maintain a predetermined dosage regimen (column 11, lines 3-7).

It would have been obvious to one of ordinary skill in the art at the time the invention was made to have incorporated the circuit control of Haak into the device of Murdock in order to control the dosage of the beneficial agent and to regulate the dosage to maintain a predetermined dosage as described by Haak.

Response to Arguments

Applicant's arguments have been fully considered but they are not persuasive. Applicant argues:

***The reference discloses the making of the device and not the use of the device.**

The claims are drawn to the device and not a method of using. The device comprises the elements recited in the instant claims. Therefore, absent a showing of evidence to the contrary, it is the position of the Examiner that it would necessarily perform the functional properties as those disclosed in the instant claims.

***Haak does not disclose a sensor for measuring a condition of the at least one active substance.**

The Examiner respectfully disagrees. The sensors are discloses to be useful for monitoring the blood sugar level for controlled administration of insulin, as argued by Applicant. The Examiner has interpreted such a monitoring to meet the limitation of measuring a condition of the at least one active substance, since blood glucose levels rise and fall in relation to the amount of insulin present in the blood stream.

Conclusion

THIS ACTION IS MADE FINAL. Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to MELISSA S. MERCIER whose telephone number is

(571)272-9039. The examiner can normally be reached on 8:00am-4:30pm Mon through Friday.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Robert A. Wax can be reached on (571) 272-0623. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Melissa S Mercier/
Examiner, Art Unit 1615

/Robert A. Wax/
Supervisory Patent Examiner, Art Unit 1615

Notice of References Cited	Application/Control No. 10/711,389	Applicant(s)/Patent Under Reexamination ZUMBRUNN ET AL.	
	Examiner MELISSA S. MERCIER	Art Unit 1615	Page 1 of 1

U.S. PATENT DOCUMENTS

*		Document Number Country Code-Number-Kind Code	Date MM-YYYY	Name	Classification
*	A	US-6,374,136	04-2002	Murdock, Thomas O.	604/20
*	B	US-5,993,435	11-1999	Haak et al.	604/501
	C	US-			
	D	US-			
	E	US-			
	F	US-			
	G	US-			
	H	US-			
	I	US-			
	J	US-			
	K	US-			
	L	US-			
	M	US-			

FOREIGN PATENT DOCUMENTS

*		Document Number Country Code-Number-Kind Code	Date MM-YYYY	Country	Name	Classification
	N					
	O					
	P					
	Q					
	R					
	S					
	T					

NON-PATENT DOCUMENTS

*		Include as applicable: Author, Title Date, Publisher, Edition or Volume, Pertinent Pages)
	U	
	V	
	W	
	X	

*A copy of this reference is not being furnished with this Office action. (See MPEP § 707.05(a).)
Dates in MM-YYYY format are publication dates. Classifications may be US or foreign.

PTO/SB/08 (09-06)
Approved for use through 03/31/2007. OMB 0651-0031
U.S. Patent and Trademark Office: U.S. DEPARTMENT OF COMMERCE

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Substitute for form 1449/PTO

INFORMATION DISCLOSURE STATEMENT BY APPLICANT

Date Submitted: October 27, 2009

(use as many sheets as necessary)

Sheet 1 of 2

Complete if Known	
Application Number	10/711,389
Filing Date	09/13/2004
First Named Inventor	Zumbrunn et al.
Art Unit	1615
Examiner Name	Melissa S. Mercier
Attorney Docket Number	095473-0106

U.S. PATENT DOCUMENTS

Examiner Initials*	Cite No.[1]	Document Number Number-Kind Code[2] (*if known*)	Publication Date MM-DD-YYYY	Name of Patentee or Applicant of Cited Document	Pages, Columns, Lines, Where Relevant Passages or Relevant Figures Appear
	A1	4,379,454	04/12/1983	Campbell et al.	
	A2	4,917,895	04/17/1990	Lee et al.	
	A3	5,273,756	12/28/1993	Fallon et al.	
	A4	5,405,614	04/11/1995	D'Angelo et al.	
	A5	5,505,958	04/09/1996	Bello et al.	
	A6	5,879,322	03/09/1999	Lattin et al.	
	A7	5,932,240	08/03/1999	D'Angelo et al.	
	A8	6,129,702	10/10/2000	Woias et al.	
	A9	5,993,435	11/30/1999	Haak et al.	
	A10	6,374,136	6,374,136 B1	Murdock	

FOREIGN PATENT DOCUMENTS

Examiner Initials*	Cite No.[1]	Foreign Patent Document Country Code[3]-Number[4]-Kind Code[5] (*if known*)	Publication Date MM-DD-YYYY	Name of Patentee or Applicant of Cited Documents	Pages, Columns, Lines, Where Relevant Passages or Relevant Figures Appear	T[6]
	B1	CA 2,142,871 (published as WO 94/04109)	03/03/1994	Miranda et al.		
	B2	PCT/GB02/04064 (published as WO 03/022349 A2	03/20/2003	Watmough et al.		
	B4	JP 2202813	08/10/1990	Tsukahara et al.	Engl. Translation	

NON PATENT LITERATURE DOCUMENTS

Examiner Initials*	Cite No.[1]	Include name of the author (in CAPITAL LETTERS), title of the article (when appropriate), title of the item (book, magazine, journal, serial, symposium, catalog, etc.) date, page(s), volume-issue number(s), publisher, city and/or country where published.	T[6]
	C1	The Science and Practice of Pharmacy, 19th Ed., page 1582-1584, (1995).	
	C2	L. Molander et al., "Reduction of Tobacco Withdrawl Symptons with a Sublingual Nicotine Tablet: A Placebo Controlled Study," Nicotine & Tob. Res., 2000, 2, pgs. 187-191.	

Examiner Signature	/Melissa Mercier/ (01/18/2010)	Date Considered	

*EXAMINER: Initial if reference considered, whether or not citation is in conformance with MPEP 609. Draw line through citation if not in conformance and not considered. Include copy of this form with next communication to applicant. 1 Applicant's unique citation designation number (optional). 2 See Kinds Codes of USPTO Patent Documents at www.uspto.gov or MPEP 901.04. 3 Enter Office that issued the document, by the two-letter code (WIPO Standard ST.3). 4 For Japanese patent documents, the indication of the year of the reign of the Emperor must precede the serial number of the patent document. 5 Kind of document by the appropriate symbols as indicated on the document under WIPO Standard ST.16 if possible. 6 Applicant is to place a check mark here if English language Translation is attached. This collection of information is required by 37 CFR 1.97 and 1.98. The information is required to obtain or retain a benefit by the public which is to file (and by the USPTO to process) an application. Confidentiality is governed by 35 U.S.C. 122 and 37 CFR 1.14. This collection is estimated to take 2 hours to complete, including gathering, preparing, and submitting the completed application form to the USPTO. Time will vary depending upon the individual case. Any comments on the amount of time you require to complete this form and/or suggestions for reducing this burden, should be sent to the Chief Information Officer, U.S. Patent and Trademark Office, P.O. Box 1450, Alexandria, VA 22313-1450. DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS. **SEND TO: Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450.**

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ALL REFERENCES CONSIDERED EXCEPT WHERE LINED THROUGH. /MM/

PTO/SB/08 (09-06)
Approved for use through 03/31/2007. OMB 0651-0031
U.S. Patent and Trademark Office: U.S. DEPARTMENT OF COMMERCE

Substitute for form 1449/PTO				Complete if Known	
INFORMATION DISCLOSURE STATEMENT BY APPLICANT				**Application Number**	10/711,389
Date Submitted: October 27, 2009				**Filing Date**	09/13/2004
				First Named Inventor	Zumbrunn et al.
(use as many sheets as necessary)				Art Unit	1615
				Examiner Name	Melissa S. Mercier
Sheet	2	of	2	Attorney Docket Number	095473-0106

NON PATENT LITERATURE DOCUMENTS			
Examiner Initials*	Cite No.[1]	Include name of the author (in CAPITAL LETTERS), title of the article (when appropriate), title of the item (book, magazine, journal, serial, symposium, catalog, etc.) date, page(s), volume-issue number(s), publisher, city and/or country where published.	T[6]
	C3	Shin et al., 'Enhanced Bioavailability of Triprolidine from the Transdermal TPX Matrix System in Rabbits," *Intern. Journ. Of Pharm.*, 234, pp. 67-73 (2002).	
	C4	Office Action for related U.S. Patent Application No. 11/162,525 dated 2/19/2009.	
	C5	Office Action for related U.S. Patent Application No. 11/162,525 dated 08/27/2009.	
	C6	Office Action for related U.S. Patent Application No. 10/711,389 dated 07/01/2009.	
	C7	Office Action for related U.S. Patent Application No. 11/083,178 dated 10/02/2009.	
	C8	Office Action for related U.S. Patent Application No. 11/981,672 dated 10/07/2009.	

Examiner Signature	/Melissa Mercier/ (01/18/2010)	Date Considered	

*EXAMINER: Initial if reference considered, whether or not citation is in conformance with MPEP 609. Draw line through citation if not in conformance and not considered. Include copy of this form with next communication to applicant. 1 Applicant's unique citation designation number (optional). 2 See Kinds Codes of USPTO Patent Documents at www.uspto.gov or MPEP 901.04. 3 Enter Office that issued the document, by the two-letter code (WIPO Standard ST.3). 4 For Japanese patent documents, the indication of the year of the reign of the Emperor must precede the serial number of the patent document. 5 Kind of document by the appropriate symbols as indicated on the document under WIPO Standard ST.16 if possible. 6 Applicant is to place a check mark here if English language Translation is attached. This collection of information is required by 37 CFR 1.97 and 1.98. The information is required to obtain or retain a benefit by the public which is to file (and by the USPTO to process) an application. Confidentiality is governed by 35 U.S.C. 122 and 37 CFR 1.14. This collection is estimated to take 2 hours to complete, including gathering, preparing, and submitting the completed application form to the USPTO. Time will vary depending upon the individual case. Any comments on the amount of time you require to complete this form and/or suggestions for reducing this burden, should be sent to the Chief Information Officer, U.S. Patent and Trademark Office, P.O. Box 1450, Alexandria, VA 22313-1450. DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS. **SEND TO: Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450.**

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APPLICATION NUMBER	FILING OR 371(C) DATE	FIRST NAMED APPLICANT	ATTY. DOCKET NO./TITLE
10/711,389	09/15/2004	Werner Zumbrunn	CT0002

CONFIRMATION NO. 5388

POA ACCEPTANCE LETTER

22428
FOLEY AND LARDNER LLP
SUITE 500
3000 K STREET NW
WASHINGTON, DC 20007

OC000000038888344

Date Mailed: 12/01/2009

NOTICE OF ACCEPTANCE OF POWER OF ATTORNEY

This is in response to the Power of Attorney filed 10/07/2009.

The Power of Attorney in this application is accepted. Correspondence in this application will be mailed to the above address as provided by 37 CFR 1.33.

/tjjackson woodruff/

Office of Data Management, Application Assistance Unit (571) 272-4000, or (571) 272-4200, or 1-888-786-0101

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United States Patent and Trademark Office
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APPLICATION NUMBER	FILING OR 371(C) DATE	FIRST NAMED APPLICANT	ATTY. DOCKET NO./TITLE
10/711,389	09/15/2004	Werner Zumbrunn	CT0002

CONFIRMATION NO. 5388

POWER OF ATTORNEY NOTICE

25235
HOGAN & HARTSON LLP
ONE TABOR CENTER, SUITE 1500
1200 SEVENTEENTH ST
DENVER, CO 80202

OC000000038888283

Date Mailed: 12/01/2009

NOTICE REGARDING CHANGE OF POWER OF ATTORNEY

This is in response to the Power of Attorney filed 10/07/2009.

- The Power of Attorney to you in this application has been revoked by the assignee who has intervened as provided by 37 CFR 3.71. Future correspondence will be mailed to the new address of record(37 CFR 1.33).

/tjjackson woodruff/

Office of Data Management, Application Assistance Unit (571) 272-4000, or (571) 272-4200, or 1-888-786-0101

PTO/SB/08 (09-06)
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INFORMATION DISCLOSURE STATEMENT BY APPLICANT

Date Submitted: October 27, 2009

(use as many sheets as necessary)

Sheet 1 of 2

Complete if Known	
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Filing Date	09/13/2004
First Named Inventor	Zumbrunn et al.
Art Unit	1615
Examiner Name	Melissa S. Mercier
Attorney Docket Number	095473-0106

U.S. PATENT DOCUMENTS

Examiner Initials*	Cite No.[1]	Document Number Number-Kind Code[2] (*if known*)	Publication Date MM-DD-YYYY	Name of Patentee or Applicant of Cited Document	Pages, Columns, Lines, Where Relevant Passages or Relevant Figures Appear
	A1	4,379,454	04/12/1983	Campbell et al.	
	A2	4,917,895	04/17/1990	Lee et al.	
	A3	5,273,756	12/28/1993	Fallon et al.	
	A4	5,405,614	04/11/1995	D'Angelo et al.	
	A5	5,505,958	04/09/1996	Bello et al.	
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Examiner Initials*	Cite No.[1]	Foreign Patent Document Country Code[3]-Number[4]-Kind Code[5] (*if known*)	Publication Date MM-DD-YYYY	Name of Patentee or Applicant of Cited Documents	Pages, Columns, Lines, Where Relevant Passages or Relevant Figures Appear	T[6]
	B1	CA 2,142,871 (published as WO 94/04109)	03/03/1994	Miranda et al.		
	B2	PCT/GB02/04064 (published as WO 03/022349 A2	03/20/2003	Watmough et al.		
	B4	JP 2202813	08/10/1990	Tsukahara et al.	Engl. Translation	

NON PATENT LITERATURE DOCUMENTS

Examiner Initials*	Cite No.[1]	Include name of the author (in CAPITAL LETTERS), title of the article (when appropriate), title of the item (book, magazine, journal, serial, symposium, catalog, etc.) date, page(s), volume-issue number(s), publisher, city and/or country where published.	T[6]
	C1	The Science and Practice of Pharmacy, 19th Ed., page 1582-1584, (1995).	
	C2	L. Molander et al., "Reduction of Tobacco Withdrawl Symptons with a Sublingual Nicotine Tablet: A Placebo Controlled Study," Nicotine & Tob. Res., 2000, 2, pgs. 187-191.	

Examiner Signature		Date Considered	

*EXAMINER: Initial if reference considered, whether or not citation is in conformance with MPEP 609. Draw line through citation if not in conformance and not considered. Include copy of this form with next communication to applicant. 1 Applicant's unique citation designation number (optional). 2 See Kinds Codes of USPTO Patent Documents at www.uspto.gov or MPEP 901.04. 3 Enter Office that issued the document, by the two-letter code (WIPO Standard ST.3). 4 For Japanese patent documents, the indication of the year of the reign of the Emperor must precede the serial number of the patent document. 5 Kind of document by the appropriate symbols as indicated on the document under WIPO Standard ST.16 if possible. 6 Applicant is to place a check mark here if English language Translation is attached.

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	C3	Shin et al., 'Enhanced Bioavailability of Triprolidine from the Transdermal TPX Matrix System in Rabbits," *Intern. Journ. Of Pharm.*, 234, pp. 67-73 (2002).	
	C4	Office Action for related U.S. Patent Application No. 11/162,525 dated 2/19/2009.	
	C5	Office Action for related U.S. Patent Application No. 11/162,525 dated 08/27/2009.	
	C6	Office Action for related U.S. Patent Application No. 10/711,389 dated 07/01/2009.	
	C7	Office Action for related U.S. Patent Application No. 11/083,178 dated 10/02/2009.	
	C8	Office Action for related U.S. Patent Application No. 11/981,672 dated 10/07/2009.	

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(54) Printed Transdermal Drug Delivery Device

(72) Miranda, Jesus - U.S.A. ;
Cleary, Gary W. - U.S.A. ;

(71) Cygnus Therapeutic Systems - U.S.A. ;

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(71) Applicant: CYGNUS THERAPEUTIC SYSTEMS [US/US]; 400 Penobscot Drive, Redwood City, CA 94063 (US).

(72) Inventors: MIRANDA, Jesus ; 14714 Southwest 153rd Place, Miami, FL 33186 (US). CLEARY, Gary, W. ; 154 11th Avenue, San Mateo, CA 94401 (US).

(74) Agents: BOZICEVIC, Karl et al.; Morrison & Foerster, 755 Page Mill Road, Palo Alto, CA 94304-1018 (US).

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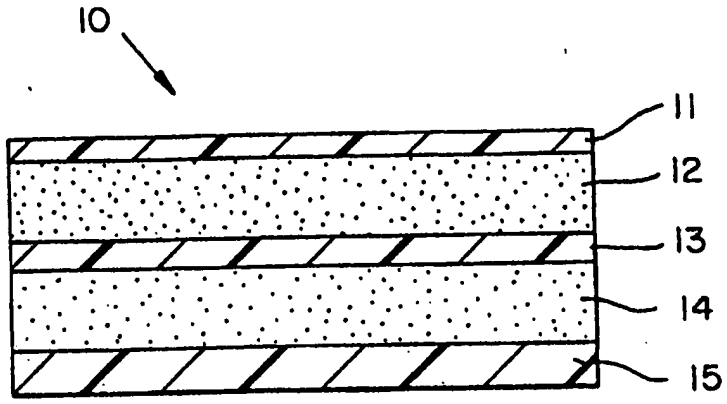

(57) Abstract

A transdermal drug delivery device (10) which can be worn by a human patient for 24 hours while continuously delivering a drug to the patient for approximately 16 hours is produced by a particular method of manufacture. The device (10) is particularly useful with respect to the delivery of drugs which, if delivered for 24 hours, result in problems such as drug tolerance (e.g., nitroglycerin) or sleep disorders (e.g., nicotine). The drug is loaded into the device (10) in a concentration such that the drug becomes depleted from the device after approximately 16 hours to the extent that the rate of delivery of the drug to the patient is slowed to such an extent that the pharmacological effect of the drug on the patient becomes substantially nonexistent. The device (10) is in the form of a laminated composite that is adpated to be adhered to a predetermined area of unbroken skin or mucosal tissue. The individual layers of the device include an upper backing or "outer skin" layer (11), an anchor adhesive layer (12), a source layer (13) onto which the drug and/or vehicles are deposited initially, a contact adhesive (14) which is adapted to adhere to the skin or mucosa, and a release liner (15).

PRINTED TRANSDERMAL DRUG DELIVERY DEVICE

Cross-Reference to Related Applications

This application is a continuation-in-part of our earlier filed pending U.S. application Serial No. 07/769,155, filed September 27, 1991, which is a continuation of U.S. application Serial No. 07/453,617, filed December 20, 1989 (abandoned), which is a divisional of U.S. application Serial No. 07/215,074, filed July 5, 1988 (U.S. Patent 4,915,950), which is a continuation-in-part of U.S. application Serial No. 07/155,327, filed February 12, 1988 (abandoned), all of which applications are incorporated herein by reference and to which applications we claim priority under 35 U.S.C. §120.

Field of the Invention

This invention relates generally to transdermal delivery devices and to methods of making and using such devices. More particularly the invention relates to transdermal nicotine delivery systems which include particular amounts of nicotine within a matrix allowing the device to be worn for 24 hours but be depleted of nicotine to the extent that nicotine is not further delivered to the patient after a period of about 16 hours.

Background of the Invention

A variety of devices have been proposed or used for administering drugs transdermally. These devices are generally in the form of a bandage or skin patch that includes a reservoir that contains the drug and a pressure-sensitive adhesive component by which the device is attached to the skin. Depending upon the inherent permeability of the skin to a particular drug, the device may also include means for coadministering a percutaneous absorption enhancer or an element, such as a membrane interposed between the reservoir and the skin, that regulates the rate at which the drug or the percutaneous absorption enhancer is administered to the skin.

The commercially available techniques for manufacturing these devices involve conventional casting and laminating processes. Actual incorporation of the drug is typically effected by (1) admixture of the drug with a compatible solvent, (2) incorporation of the drug into the drug reservoir by immersion in the drug/solvent admixture, and (3) evaporation of the solvent. In practice, this method has proved to have several disadvantages.

First, for many drugs, the solvent selected is necessarily organic, rather than aqueous. As many organic solvents are flammable and/or toxic, an element of risk is thus introduced into device fabrication and use. Another shortcoming is that with volatile drugs or drugs that are sensitive to heat, evaporation of the solvent can either volatilize or degrade the drug. The present invention is addressed to these shortcomings, and provides a device fabrication process which eliminates the necessity for both organic solvents and high-temperature evaporation. The process minimizes drug degradation and loss to the environment, while eliminating the possibility of contamination with organic residues

which may be harmful to the skin, e.g., as irritants, sensitizers, carcinogens, or the like.

Furthermore, conventional casting is done in solid sheets or stripes. When laminated and die cut out, the remaining web is left unusable and is discarded. Highly expensive drugs are costly to discard, as dangerous or controlled narcotic drugs can be delivered for abuse or present other uncontrollable hazards. By carrying out the method disclosed herein it is possible to eliminate some of the disadvantages of earlier methods and provide a system which can include a precise amount of a drug which, after use, will be depleted of the drug to the extent that further drug could not be delivered to the patient, thus reducing the costs, potential dangers and potentials for abuse.

Most drug delivery devices are designed so that they can be worn for 24 hours. The 24-hour wear period provides for good patient compliance in that the patient can replace the patch each day at approximately the same time. Further, most patches are designed so as to continually deliver a particular drug to the patient during the entire 24-hour period. Although the once a day dosing regime is desirable, the continuous delivery of drug to a patient over a 24-hour period is often not desirable. Problems related to the continuous delivery of the drug to the patient over a 24-hour period varied depending on the type of drug. With respect to certain drugs the problem becomes one of tolerance, i.e., the patient becomes less reactive to larger and larger amounts of drugs in that the drugs are continually being delivered. Tolerance is a problem with drugs such as narcotics and nitroglycerin used as a vasodilator. With other drugs, such as nicotine the continuous delivery of the nicotine to the patient can result in problems such as sleep disorders, skin irritation and

the like (see D.M. Daughton et al., Arch. Intern. Med. 151:749-752 (1991) and K.O. Fagerstrom et al., J. Smoking Related Dis., in press). The present invention addresses these problems by loading specific amounts of the drug into the device such that the drug will be substantially depleted from the patch after a given period of time, i.e., the drug is depleted from the patch to the extent that drug is no longer delivered to the patient even though it may remain in the patch.

Because the fabrication process does not involve the use of high temperatures, it is also useful in incorporating volatile vehicles, excipients or enhancers into transdermal delivery devices. In addition, a device may be fabricated using the present process so as to contain a volatile fragrance. Such a device is designed to exude fragrance over a protracted, predetermined period of time.

Summary of the Invention

Transdermal delivery devices are disclosed which include a backing layer which is substantially impermeable to the drug, and a drug matrix layer which may be in the form of a pressure-sensitive pharmaceutically acceptable contact adhesive having the drug dispersed therein. The drug is loaded into the drug matrix layer in an amount such that the drug will, after about 14-18 hours (preferably 16 hours) of contact with the patient, be depleted of the drug to the extent that delivery of the drug to the patient is slowed to a rate such that the effect of the drug on the patient is negligible. To achieve this effect the loading amount of the drug into the drug matrix layer is closely controlled and varies somewhat depending on the particular drug in that different drugs have different rates of delivery. For example, when the system is designed to deliver nicotine, the nicotine

is loaded into the drug matrix layer in an amount in the range of about 0.70 to about 1.15, more preferably 0.75 to 0.95 mg/cm^2. By placing a drug delivery system of the invention on a patient there is provided a method of drug delivery whereby the patch is placed on the patient for a period of 24 hours during which time the drug is delivered to the patient during only about 14-18 hours (preferably about 16 hours) after which the drug is depleted from the patch to the extent that any further delivery to the patient is so insignificant as to not have any detectable pharmacological effect on the patient.

The delivery devices of the invention are obtained by a method comprising:

(a) laminating an adsorbent source layer to a pressure-sensitive, pharmaceutically acceptable contact adhesive layer, the contact adhesive layer comprised of a material that is permeable to the drug and which defines a basal surface for adhesion to skin;

(b) depositing a drug in liquid form on one face of the adsorbent source layer;

(c) laminating an anchor adhesive layer to the opposing face of the source layer; and

(d) applying a backing layer to the anchor adhesive layer which defines the upper surface of the device and is substantially impermeable to the drug.

A preferred embodiment of the invention is a transdermal drug delivery device for administering nicotine to a human patient transdermally and continuously for a period of approximately 16 hours. The device is comprised of a backing layer which is substantially impermeable to nicotine, which backing layer defines the upper surface of the device. The device is further comprised of an anchor adhesive layer which is adjacent to the backing layer and laminated thereto. Thereafter, a layer of pressure-

sensitive, pharmaceutically acceptable, contact adhesive which is permeable to nicotine is provided. This pressure-sensitive adhesive layer defines the basal surface of the device which is adhered to the skin of the patient. The device is also preferably comprised of an adsorbent source layer which is in contact with and contained between the anchor adhesive layer and layer of pressure-sensitive adhesive. The nicotine is preferably dispersed uniformly throughout the layer of pressure-sensitive contact adhesive in an amount such that the nicotine in the device will, after 16 hours of contact with the patient, be depleted to the extent that the delivery of the nicotine to the patient is slowed to a rate such that the effect of the nicotine on the patient is negligible, i.e., no pharmacological detectable effect. The amount of nicotine is preferably in the range of 0.75 to 0.95 mg/cm^2 but can vary outside that range in an amount of about 25% ±.

In still another aspect of the invention, a method and device similar to the aforementioned are provided for the incorporation and release of fragrance. In such a case, the fragrance is initially deposited onto the source layer and then released over time through the adhesive and backing layers which are selected so as to be permeable to the fragrance.

A key advantage of the present invention is in the "printing" of the selected drug, drug-vehicle combination, or other material, in liquid form, on the adsorbent source layer in a particular amount. That is, the material is loaded into the device by substantially uniform deposition on the surface of the source layer. For many materials, this one-step deposition eliminates the need for organic solvents as well as the need for heat treatment.

After loading of the drug onto the source layer, the drug migrates into the underlying contact

adhesive layer and, depending on the material selected for the anchor adhesive layer, into that layer as well. The release kinetics of the drug into the skin from the contact adhesive layer are determined by the degree of drug loading (which can be at, above, or below saturation in this system) and the diffusivity and solubility of the drug in the two adhesive layers. The source layer thus serves to initially retain the deposited drug which then migrates from the source layer into one or both adhesive layers.

Brief Description of the Drawings

Figure 1 shows a partly schematic, sectional view of a transdermal drug delivery device according to the invention.

Figure 2 shows an apparatus which may be used in fabricating a transdermal drug delivery device according to the method of the invention.

Figure 3 shows the in vitro permeation of nicotine through human cadaver skin from a transdermal drug delivery device fabricated according to the presently disclosed method.

Detailed Description of the Invention

Before the present transdermal delivery device, method of delivering drugs and method of manufacturing such devices is described, it is to be understood that this invention is not limited to the particular devices, methods and processes described, as such may, of course, vary. It is also to be understood that the terminology used herein is for the purpose of describing particular devices, methods and processes only, and is not intended to be limiting since the scope of the present invention will be limited only by the appended claims.

It must be noted that as used in this specification and in the appended claims, the singular

forms "a", "an" and "the" include plural reference unless the context clearly dictates otherwise. Thus, for example, reference to "a drug permeation enhancer" includes mixtures of such permeation enhancers, reference to "an adhesive" includes mixtures of adhesives and reference to "the method of delivery" includes one or more methods of delivery of the general type described herein and of a type which would be deduced by those skilled in the art upon reading this disclosure.

Before providing a detailed description of the invention, the following definition of terms will be provided.

1. Definitions:

By "printed" as used herein to describe the method of incorporating a drug or other material into the source layer is meant a substantially uniform deposition of the drug, in liquid form, onto one surface of the source layer. As the source layer comprises a porous material, the drug is initially retained by that layer, i.e., prior to equilibration, and then diffuses into one or both of the adjacent layers. It will be appreciated by those skilled in the art that a variety of techniques may be used to effect substantially uniform deposition of material, e.g., Gravure-type printing, extrusion coating, screen coating, spraying, painting, or the like.

By a drug in "liquid form" as used herein is meant either a drug that is itself a liquid or a drug which is suspended, dissolved or dispersed in a selected solvent. Solvents may or may not be aqueous, depending on the particular drug used, and may include commonly used liquid vehicles and skin penetration enhancers. Preferred solvents are nonaqueous and selected so that they can be incorporated into the final system without adverse effect.

By "pharmaceutically acceptable" material as used herein is meant a material which does not interfere with the biological effectiveness of the drug administered and which is not for any reason biologically or otherwise undesirable.

By a "permeable" adhesive is meant a material in which the selected drug has at least moderate solubility and diffusivity, i.e., drug solubility ont he order of 5 to 50 wt.%, preferably 10 to 30 wt.%, and diffusivity in the range of about 1 x 10^{-6} to about 1 x 10^{-12} cm^2/sec.

By "substantially impermeable" as used herein to describe the backing layer is meant that an effective amount of the selected drug will be contained within the device without loss of any substantial amount through the backing layer. It should be noted that where the device is used for the release of fragrance, however, the backing layer is, by contrast, permeable to the fragrance. In such an embodiment, the device thus allows for release of fragrance into the atmosphere.

Description of the Transdermal Drug Delivery Device

Referring now to Figure 1, the transdermal drug delivery device provided by the present method is shown generally at 10. The device is designed specifically for transdermal administration of a drug at controllable, therapeutically effective rates. The device 10 is in the form of a laminated composite that is adapted to be adhered to a predetermined area of unbroken skin or mucosal tissue. The individual layers of the device include an upper backing or "outer skin" layer 11, an anchor adhesive layer 12, a source layer 13 onto which the drug and/or vehicles are deposited initially, a contact adhesive 14 which is adapted to adhere to the skin or mucosa, and a release liner 15.

The backing layer 11 functions as the primary structural element of the device and provides the device with much of its flexibility, suitable drape, and, where necessary, depending upon the material incorporated into the device, occlusivity. In the preferred embodiment in which the device serves as a transdermal drug delivery system, the backing layer also serves as a protective covering to prevent loss of the drug (and/or vehicle, solubilizer or permeation enhancer, if present) via transmission through the upper surface of the device. (In the alternative embodiment in which the device serves as a fragrance patch, as noted above, the backing layer will by contrast allow release of fragrance into the atmosphere.) Backing layer 11 may also be used to impart the device with a desirable or necessary degree of occlusivity which in turn causes the area of skin on which the device is placed to become hydrated. In such a case, a layer is selected that has a level of water vapor transmissibility that makes the device occlusive to the degree required to cause the area of skin to be hydrated. It is then preferable that the device provide at least about 90% hydration, more preferably at least about 95% hydration of the skin, as measured by a dielectric hydration probe available from Dr. Howard Maibach, U.C.S.F., San Francisco, California. Such occlusivity is desirable when drugs such as estradiol or other steroids are being administered. If the drug being administered is such that skin hydration is not necessary or desirable, it is preferable to use layers that provide a composite that is "breathable", i.e., transmits water vapor from the skin to the atmosphere. Such breathability contributes to the nonocclusive nature of the composite and lessens the likelihood that the area of skin on which the composite is worn will become highly hydrated and irritated.

Backing 11 is preferably made of a sheet or film of a preferably flexible elastomeric material that is substantially impermeable to the selected drug. The layer is preferably on the order of 0.0005" to 0.003" in thickness, and may or may not contain pigment. The layer is preferably of a material that permits the device to mimic the contours of the skin and be worn comfortably on areas of skin, such as at joints or other points of flexure, that are normally subjected to mechanical strain with little or no likelihood of the device disengaging from the skin due to differences in the flexibility or resiliency of the skin and the device. Examples of elastomeric polymers that are useful for making layer 11 are polyether block amide copolymers (e.g., PEBAX copolymers), such as NUKRELL polymers, polyurethanes such as PELLATHANE or ESTANE polymers, silicone elastomers, polyester block copolymers that are composed of hard and soft segments (e.g., HYTREL polymers), rubber-based polyisobutylene, styrene, and styrene-butadiene and styrene-isoprene copolymers. Polymers that are flexible include polyethylene, polypropylene, polyesters, e.g., polyester terephthalate (PET), which may be in the form of films or laminates. The preferred polymer used for the backing will depend on the material or drug incorporated into the device and on the nature of any vehicles, solubilizers, or the like that are used.

Anchor adhesive layer 12 adheres to backing layer 11 and to source layer 13. The anchor adhesive is preferably but not necessarily of a material in which the selected drug or vehicle has moderate solubility and diffusivity. In such a case, after equilibration, the drug will have diffused not only into the contact adhesive layer 14, but also into the anchor adhesive. Diffusion into both adhesive layers is useful insofar as regulation of release kinetics is

concerned. That is, by careful selection of the materials used for the anchor and contact adhesive layers, the distribution of drug throughout the entire system can be regulated. This is because the release kinetics of the drug from the device can be controlled by the diffusivity and solubility of the drug in both of the adhesive layers as well as in backing layer 11. When the drug is below saturation in all layers, the total drug loading controls the release kinetics.

An important aspect of the invention is providing for a specific range of drug loading which will allow the drug to be delivered to the patient over a period of about 14-18 hours (preferably 16 hours) even though the device is worn by the patient for 24 hours. This is accomplished by including a particular concentration of the drug into a layer such as the pressure-sensitive contact adhesive layer. The concentration of the drug within this layer will vary somewhat depending upon the particular drug being delivered. In connection with the present invention it has been found that it is necessary to include nicotine in a concentration within the range of about 0.70 to about 1.15 mg/cm^2, preferably 0.75 - 0.95 mg/cm^2 and most preferably about 0.83 mg/cm^2. By including nicotine in the adhesive layer in this concentration and placing the patch on the patient the nicotine will be delivered to the patient for approximately 16 hours, after which the drug will be depleted from the delivery system to the extent that the rate of delivery of the drug to the patient is slowed to such an extent that the delivery of nicotine to the patient becomes negligible, i.e., no detectable pharmacological effect. The nicotine may be in the form of a free base or a salt and a particularly useful salt is nicotine monoacetate. The concentration of any particular drug in the adhesive layer will vary somewhat depending on the permeability

of that drug to human skin and also somewhat based on the adhesive material.

Examples of suitable materials for anchor adhesive layer 12 include polyethylenes, polysiloxanes, polyisobutylenes, polyacrylates, polyurethanes, plasticized ethylene-vinyl acetate copolymers, low molecular weight polyether block amide copolymers (PEBAX copolymers), tacky rubbers such as polyisobutene, polystyrene-isoprene copolymers, polystyrene-butadiene copolymers, and mixtures thereof. The particular polymer(s) used for the anchor adhesive layer will depend on the drug, vehicle, enhancer, etc., selected. The thickness of the anchor adhesive layer may vary but is typically in the range of about 0.0005" to about 0.005". In the case of a fragrance patch, the material serving as the anchor adhesive layer should, like the backing layer, be selected so as to be substantially permeable to the fragrance incorporated into the patch.

Source layer 13 is a thin, flexible layer of an adsorbent material which provides the surface on which the drug is printed or otherwise deposited. The source layer allows the liquid drug (together with vehicle, solubilizer or the like) to be printed on its surface as a result of having surface properties not found in either the contact or anchor adhesive layers. During fabrication, the drug is deposited in liquid form onto one face of this layer in a substantially uniform pattern. The drug must wet the surface in such a way that squeezing of liquid to the periphery of the device during lamination is substantially prevented. The material is selected so that the drug is adsorbed, rather than absorbed, by the layer, since the drug must be available to migrate into contact adhesive layer 14 and preferably into anchor adhesive layer 12 as well. The source layer is preferably of a non-woven fabric, e.g., polyester, polyethylene,

polypropylene, polyamides, rayon or cotton, and a particularly preferred material for the source layer is a 100% non-woven polyester. Woven fabrics, however, can also be used if desired. The thickness of the source layer may vary, but is preferably in the range of about 0.001" to 0.010".

It should be pointed out that the source layer does not serve as a drug reservoir; the drug is only transiently adsorbed by the source layer pending equilibration, i.e., migration into one or both of the adjacent adhesive layers.

Alternatively, the inner surface of either the anchor or contact adhesive layers may be treated and thus itself serve as the source layer for purposes of drug deposition. Still another alternative is to use a contact or adhesive layer that has a porous surface, enabling the drug to be printed "into" the surface pores. Contact adhesive layer 14, which plays the principal role in determining the rate at which drug is released from the device, is a pressure-sensitive skin contact adhesive comprised of a pharmaceutically acceptable material. Like source layer 13, it must be chemically and physically compatible with the drug and with any enhancer used. Further, the drug selected must have at least moderate solubility and diffusivity in this layer, since the drug must be able to readily migrate from source layer 13 into and through contact adhesive layer 14 and to the skin. The thickness of the contact adhesive layer is preferably in the range of about 0.0005" to about 0.005".

Suitable materials for contact adhesive layer 14 include those enumerated for anchor adhesive 12. It is possible (in some cases) to use materials for the contact adhesive layer that are relatively impermeable to the drug, e.g., where the diffusivity of the drug through skin is quite high. In the case

of a fragrance patch, contact adhesive layer 14 may or may not be permeable to the fragrance. In any particular device fabricated according to the present process, the materials chosen for the contact and anchor adhesive layers may be the same or different.

Prior to use, device 10 includes a release liner 15. Just prior to use, this layer is removed from the device to expose contact adhesive layer 14. The release liner will normally be made from a drug/vehicle/enhancer impermeable material that is inherently "strippable" or rendered so by techniques such as silicone or fluorocarbon treatment.

Device 10 need not include a means for controlling the rate at which either the drug or the enhancer is administered to skin. Instead, the release kinetics of the drug from the bandage can be controlled by the materials selected for the anchor and contact adhesive layers and by the degree of drug loading. Either the contact adhesive layer or the source layer could be rate-controlling, depending on the drug and materials selected. Alternatively, the drug and/or vehicle microencapsulated to provide controlled release could be deposited on the source layer prior to lamination, i.e., instead of deposition of the drug in "liquid form" as previously defined. Typically, over the effective lifetime of the device, the drug is presented to the skin at a rate in excess of the rate that the treated area of skin is able to absorb. It will be appreciated, however, that depending upon the particular drug (and enhancer when one is needed) that is being administered, that it may be necessary or desirable to include an element in the device that will control the release rate of the drug and/or the enhancer. Such elements are known in the art. The most common is a polymer membrane having appropriate drug/enhancer permeability properties

interposed between the source layer and the contact adhesive layer.

The term "drug" as used to describe the principal active ingredient of the device intends a biologically active compound or mixture of compounds that has a therapeutic, prophylactic or other beneficial pharmacological and/or physiological effect on the wearer of the device. Examples of types of drugs that may be used in the inventive device are anti-inflammatory drugs, analgesics, antiarthritic drugs, tranquilizers, narcotic antagonistis, antiparkinsonism agents, anticancer drugs, immunosuppression agents, antiviral agents, antibiotic agents, appetite suppressants, antiemetics, anticholinergics, antihistaminics, antimigraine agents, coronary, cerebral or peripheral vasodilators, anti-anginals, e.g., calcium channel blockers, hormonal agents, contraceptive agents, antithrombotic agents, diuretics, antihypertensive agents, cardiovascular drugs, chemical dependency drugs, and the like. The appropriate drugs of such types are capable of permeating through the skin either inherently or by virtue of treatment of the skin with a percutaneous absorption enhancer.

Because the size of the device is limited for patient acceptance reasons, the preferred drugs are those which are effective at low concentration in the blood stream. Examples of specific drugs are steroids such as estradiol, progesterone, norethindrone, norethindrone acetate, levonorgestrel, ethynodiol diacetate, norgestamate, gestadene, desogestrel, 3-keto desogestrel, demegestone, promegestrone, testosterone, hydrocortisone, and their esters; nitro compounds such as amyl nitrate, nitroglycerine and isosorbide nitrates; amine compounds such as nicotine, chlorpheniramine, terfenadine and triprolidine; oxicam derivatives such

as piroxicam; mucopolysaccharidases such as thiomucase; opioids such as buprenorphine, fentanyl and fentanyl derivatives or analogs, naloxone, codeine, dihydroergotamine, pizotiline, slabutamol and terbutaline; prostaglandins such as those in the PGA, PGB, PGE and PGF series, e.g., misoprostol and enprostil, omeprazole, imipramine; benzamides such as metoclopramine and scopolamine; peptides such as growth releasing factor, growth factors (EGF, TGF, PDGF and the like), and somatostatin; clonidine; dihydropyridines such as nifedipine, verapamil, diltiazem, ephedrine, propanolol, metoprolol and spironolactone; thiazides such as hydrochlorothiazide and flunarizine; sydononimines such as molsidomine; sulfated polysaccharides such as heparin fractions; and the salts of such compounds with pharmaceutically acceptable acids or bases, as the case may be.

It should be noted that the present method and device are suitable for use with volatile drugs and excipients, as no heat treatment step is involved or necessary. Thus, the present invention is useful with drugs such as nicotine, nitroglycerin, amyl nitrate, and scopolamine. The present device is also useful with drugs such as fentanyl, which will typically be incorporated into the patch using nonaqueous, volatile vehicles and/or enhancers which, because they volatilize during heat treatment, have proven difficult to incorporate into a transdermal delivery device by conventional means.

Since the inherent permeability of the skin to some drugs, such as steroids, is too low to permit therapeutic levels of such drugs to pass through a reasonably sized area of unbroken skin, it is necessary to coadminister a percutaneous absorption enhancer with such drugs. Accordingly, in such a case, a percutaneous absorption enhancer will be present in the device along with the drug, i.e., will

be initially deposited on source layer 13 together with the drug. In addition to affecting the permeability of the skin to the drug, the enhancer may also increase the diffusivity of the drug in the source layer and in the adhesive layers, thus increasing the permeability of the device as a whole to the drug. Any number of the many percutaneous absorption enhancers known in the art may be used in conjunction with the present invention. For examples of suitable enhancers, see U.S. Patents Nos. 3,996,934; 4,460,372; 4,552,872; 4,557,934 and 4,568,343 and the patents referenced therein.

When the inventive device is used to administer drugs to which the permeability of the skin is inherently too low to allow passage of therapeutic amounts of the drug, enhancers will be included in the device, "printed" onto the source layer along with the drug or incorporated into one or both of the adhesive layers. Correlatively, when the device is used to administer a drug to which the permeability of the skin is inherently sufficient to pass therapeutic amounts, it is not necessary to coadminister an enhancer. Thus, in general terms, the inclusion of an enhancer in the device is optional, depending on the particular drug that is being administered.

Processes of Making the Transdermal Devices

The device of the present invention is readily manufactured as follows. As illustrated by Figure 2, anchor adhesive 12 may be roll-coated onto a backing layer 11 of a commercially available film at a coating weight in the range of about 0.2 mg/cm^2 to 15 mg/cm^2, more preferably in the range of about 1 mg/cm^2 to 10 mg/cm^2. Similarly, the pressure-sensitive skin contact adhesive 14 may be coated onto release liner 15 at a coating weight in the range of 0.2 mg/cm^2 to 15 mg/cm^2, more preferably 1 mg/cm^2 to 10 mg/cm^2. The

source layer 13 is then deposited onto either contact adhesive layer 14 or onto anchor adhesive 12, preferably onto the contact adhesive. The selected drug in liquid form (optionally admixed with enhancer), is then printed onto the exposed surface of source layer 13 using conventional printing techniques. In an alternative embodiment of the invention, the drug is initially contained in one or both of the anchor and contact adhesive layers (e.g., by incorporation of the drug into the layers prior to lamination), and enhancer and/or vehicle is printed onto the source layer.

EXAMPLES

The following examples are put forth so as to provide those of ordinary skill in the art with a complete disclosure and description of how to make the transdermal drug delivery devices of the invention and are not intended to limit the scope of what the inventors regard as their invention. Efforts have been made to ensure accuracy with respect to numbers used (e.g., amounts, temperature, concentrations, etc.) but some experimental errors and deviations should be accounted for. Unless indicated otherwise, parts are parts by weight, molecular weight is weight average molecular weight, concentrations are milligrams per square centimeter of device, temperature is in degrees centigrade and pressure is at or near atmospheric.

Example 1

A bandage for delivering nicotine transdermally for approximately 16 hours was prepared as follows. The anchor adhesive was coated onto a facestock of about 0.0015" flexible polyester laminate at a coating weight of 6.5 mg/cm^2. The composition of the anchor adhesive was approximately 1:5:2

polyisobutylene, m.w. 1.2 x 10^6/ polyisobutylene, m.w. 35,000/ polybutene blend, m.w. 2300. The pressure-sensitive contact adhesive having the same composition as the anchor adhesive layer was coated, also at 6.5 mg/cm^2, onto a 0.003" siliconized polyester release liner. The source layer, a 100% non-woven polyester fabric at 4.2 mg/cm^2, was then laminated to the anchor adhesive. Nicotine free base was deposited, neat, onto the source layer using a fine mist airbrush in a uniform pattern, at about 0.9 mg/cm^2. The contact adhesive/release liner composite was then laminated onto the exposed surface of the drug reservoir, forming a laminate of the final device as shown in Figure 1. Individual devices were die cut from the laminated product. The resulting in vitro skin permeation over 13 hours is shown in Figure 3.

Example 2

Example 1 was repeated, except that prior to deposition the nicotine was diluted with freon to a concentration of 10 wt.% to facilitate dispersal in the source layer. After deposition, the freon is removed by blowing warm air (about 30°C) over the laminate for about 2 minutes.

Example 3

A bandage for delivering nitroglycerine was made in a manner similar to that described in Example 1 for the nicotine bandage. The nitroglycerine was deposited onto the source layer as a 10% solution in ethanol using polyethylene glycol monolaurate (PGML) as carrier. The ethanol was allowed to evaporate and the final laminate was prepared as described in Example 1.

Example 4

A transdermal device for delivering nicotine monoacetate transdermally for approximately 16 hours was prepared as follows. A first subassembly PIB adhesive was coated onto a facestock of a 12.5 micron flexible polyester film at a coating weight of 4.0 mg/cm^2. The PIB adhesive was coated, also at 4.0 mg/cm^2, onto a 0.003" siliconized polyester release liner to provide a second subassembly. A 100% polyester non-woven fabric at 35 g/yd^2 was then laminated to the PIB adhesive of the first assembly. Nicotine monoacetate was deposited, neat, onto the fabric in a uniform pattern, at about 1.1 mg/cm^2. The second subassembly composite was then laminated onto the exposed surface of the drug-containing fabric forming a five-layer laminate. Individual devices were die cut from the laminated composite.

The instant invention has been shown and described herein in what is considered to be the most practical, and preferred embodiments. It is recognized, however, that departures may be made therefrom which are within the scope of the invention, and that obvious modifications will occur to one skilled in the art upon reading this disclosure.

CLAIMS

1. A transdermal drug delivery device for administering a drug to a human patient, transdermally and continuously for a period of approximately 14 to 18 hours, the device being comprised of a laminated composite, comprising:

(a) a backing layer that is substantially impermeable to the drug, which backing layer defines an upper surface of the device; and

(b) a layer of a pressure-sensitive, pharmaceutically acceptable, contact adhesive which is permeable to the drug, and which defines a basal surface of the device to be adhered to the skin of the human patient;

wherein the drug is dispersed throughout the adhesive and is present in a concentration such that the drug will be delivered in a pharmacologically effective amount for about 14 to 18 hours but, after 14 to 18 hours of contact with the skin of the patient, will be depleted to the extent that delivery of the drug to the patient is slowed to a rate such that the effect of the drug on the patient is negligible when the device is in contact with the skin for a total of about 24 hours.

2. The device of claim 1, wherein the drug is nicotine.

3. The device of claim 2, wherein the nicotine is dispersed in the adhesive in an amount in the range of 0.70 to about 1.15 mg/cm^2.

4. The device of claim 3, wherein the nicotine is dispersed in the adhesive in an amount in the range of 0.75 to 0.95 mg/cm^2.

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5. The device of claim 4, wherein the nicotine is dispersed in the adhesive in an amount of about 0.83 mg/cm².

6. The device of claim 1, wherein the drug is nicotine, the nicotine is delivered continuously for a period of approximately 16 hours, and the nicotine is dispersed in the adhesive in an amount in the range of about 0.75 to 0.95 mg/cm².

7. A transdermal drug delivery device for administering nicotine to a human patient transdermally and continuously for a period of approximately 14 to 18 hours, the device being in the form of a laminated composite, comprising:

(a) a backing layer that is substantially impermeable to nicotine, which defines the upper surface of the device;

(b) an anchor adhesive layer adjacent to the backing layer and laminated thereto;

(c) a layer of a pressure-sensitive, pharmaceutically acceptable contact adhesive which is permeable to nicotine, and which defines the basal surface of the device to be adhered to the skin of the human patient; and

(d) a porous adsorbent source layer in contact with and contained between layers (b) and (c),

wherein the nicotine is dispersed throughout said contact adhesive layer and is present within the laminated composite at a loading of in the range such that the nicotine in the device will be delivered in a pharmacologically effective amount for about 14 to 18 hours but, after 14 to 18 hours of contact with skin of the patient, will be depleted to the extent that delivery of nicotine to the patient is slowed to a rate such that the pharmacological effect of the nicotine on the patient

is negligible when the device is in contact with the skin for a total of about 24 hours.

8. The device of claim 7, wherein the nicotine is present in the pressure-sensitive adhesive in an amount in the range of about 0.75 to about 0.95 mg/cm^2 and is delivered continuously for a period of about 16 hours.

9. The device of claim 7, wherein the nicotine is present in the form of nicotine free base.

10. The device of claim 7, wherein the nicotine is present as a salt.

11. The device of claim 10, wherein the nicotine salt is nicotine monoacetate.

12. The device of claim 7, wherein the contact adhesive layer and the anchor adhesive layer are substantially permeable to the nicotine.

13. The device of claim 7, wherein the anchor adhesive layer comprises polyisobutylene.

14. The device of claim 7, wherein the anchor adhesive layer comprises a mixture of polyisobutylene and polybutene.

15. The device of claim 7, wherein the contact adhesive layer comprises polyisobutylene.

16. The method of claim 7, wherein the contact adhesive layer comprises a mixture of polyisobutylene and polybutene.

17. The device of claim 7, wherein the source layer comprises a nonwoven fabric.

18. The device of claim 17, wherein the nonwoven fabric is comprised of polyester.

19. A transdermal drug delivery device for administering nicotine to a human patient transdermally and continuously for a period of approximately 16 hours, the device being in the form of a laminated composite, comprising:

(a) a backing layer that is substantially impermeable to nicotine, which defines the upper surface of the device;

(b) an anchor adhesive layer adjacent to the backing layer and laminated thereto, comprising a composition selected from the group consisting of polyisobutylene and a mixture of polyisobutylene and polybutene;

(c) a layer of a pressure-sensitive, pharmaceutically acceptable contact adhesive which defines the basal surface of the device to be adhered to the skin of the human patient; and

(d) an adsorbent, nonwoven fabric layer in contact with and contained between layers (b) and (c),

wherein the nicotine is selected from the group consisting of nicotine free base and nicotine monoacetate, and is dispersed throughout said contact adhesive layer and is present within the laminated composite at a loading of in the range such that the nicotine in the device will be delivered in a pharmacologically effective amount for approximately 24 hours but, after 16 hours of contact with skin of the patient, will be depleted to the extent that delivery of nicotine to the patient is slowed to a rate such that the pharmacological effect of the nicotine on the patient is

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negligible when the device is in contact with the skin for a total of about 24 hours.

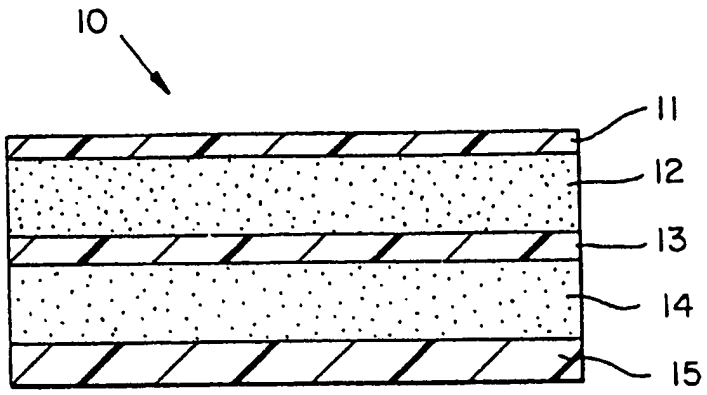
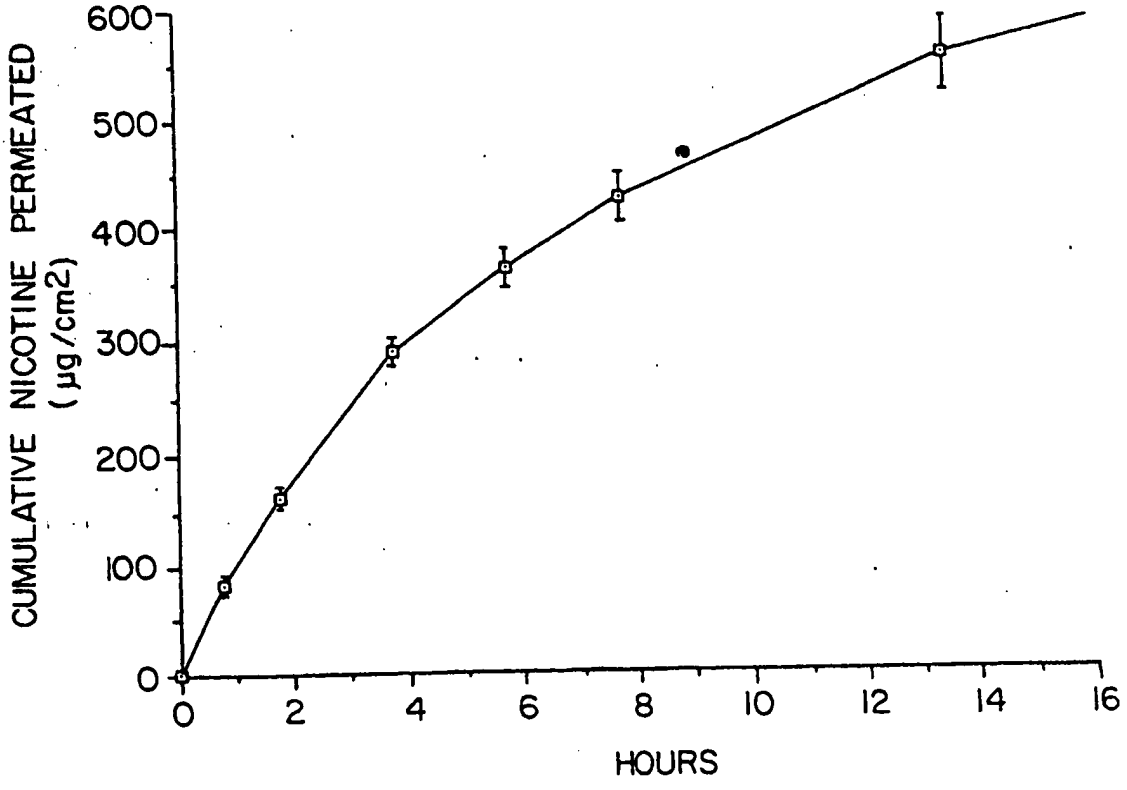

10
11
12
13
14
15

FIG. 1


CUMULATIVE NICOTINE PERMEATED (µg/cm2)
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300
200
100
0
0
2
4
6
8
10
12
14
16
HOURS

FIG. 3

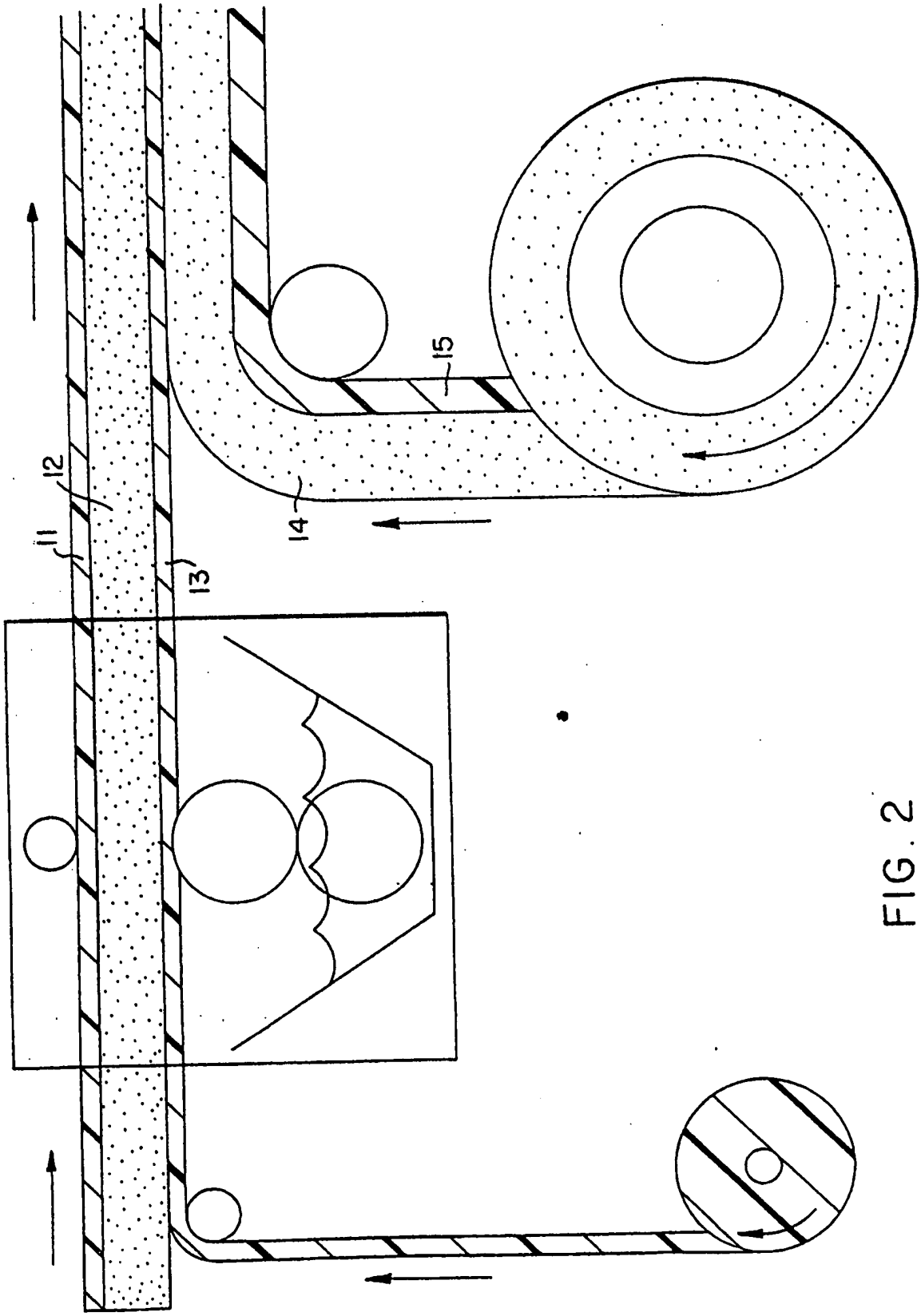

FIG. 2

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(71) Applicants and
(72) Inventors: **WATMOUGH, David, John** [GB/GB]; 16 Blackpark Terrace, Inverness IN3 8NE (GB). **MOFFAT, Ronald, James** [GB/GB]; Castle View Cottage, Drumnadrochit, Inveness-shire (GB).

(74) Agents: **JENKINS, Peter, David** et al.; Page White & Farrer, 54 Doughty Street, London WC1N 2LS (GB).

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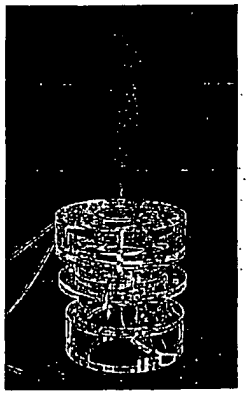

(57) Abstract: Apparatus is described which utilises megahertz ultrasound from a concave piezoelectric transducer to produce liquid jets which penetrate into or through porous media such as human or animal skin and egg shells. The invention permits high power ultrasound to be decoupled from the skin or shell avoiding undesirable temperature rise or other bioeffects of ultrasound. The liquid can be water or a drug or anaesthetic. By pulsing the electrical drive signal the apparatus can be utilised to produce liquid droplets with a predetermined size distribution suited to drug delivery by inhalation. A device in the form of a gun has been devised into which cartons of drug, vaccine or other liquid material can be plugged so that repeated use of the device is made possible. The droplet formation can also be performed in a cylindrical form of apparatus and the cloud of drops can be driven towards or into the nose or mouth of a patient using a suitable fan and pipework. The requirement of both types of device is that an ultrasonic focus coincides within a few millimetres above or below the liquid level from which drug delivery is required. The same condition applies where controlled droplet formation is the objective.

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ULTRASOUND DRIVEN DEVICE FOR ACCELERATED TRANSFER OF SUBSTANCES ACROSS POROUS BOUNDARIES

FIELD OF THE INVENTION

The present invention relates to an apparatus and a method for using ultrasound to produce liquid jets which penetrate into or through porous media.

BACKGROUND OF THE INVENTION

There is considerable interest in delivering drugs and vaccines transdermally without the use of a hypodermic needle and syringe. There are two methods currently employed: one uses compressed helium gas to drive powdered preparations through the epidermis at high speed and the other uses compressed nitrogen gas to 'squirt' liquid formulations of drugs at the epidermis. This type of device has a limited supply of gas and is normally disposable after one or two uses. This increases significantly the cost of drug delivery. In consequence there is enormous interest in an electronically driven system which can facilitate rapid delivery of drugs and be capable of being used and re-used indefinitely.

WO 00/21605 discloses a method and an apparatus for delivering active agents across or into a porous surface by ultrasound phonophersis in which an ultrasound beam is focussed on the porous surface.

SUMMARY OF THE INVENTION

According to a first aspect of the present invention there is provided an apparatus for phonophoretic transfer of a liquid into or through a porous medium, said apparatus comprising: a housing; a first chamber in the housing for holding a liquid said chamber having an opening in a side thereof; an ultrasound transducer mounted in the housing for generating a sound beam; a focussing device for focusing the sound beam to a focus; said ultrasound transducer having an operating frequency between 0.5 and 5 MHz and said focus being located within the first chamber, whereby in use the focus is located at an air/liquid interface for generating a jet of liquid which projects through the opening.

Preferably, the ultrasound transducer and the focussing device are integral forming a focussed ultrasound transducer.

Preferably, the transducer is air-backed.

Preferably, the apparatus further comprises an ultrasound power generator for driving said transducer.

Preferably, the apparatus further comprises a pistol grip having a trigger which activates the device.

Preferably, the apparatus further comprises an acoustic reflector.

Preferably, the acoustic reflector is a metal plate.

Preferably, the acoustic reflector is a stainless steel plate.

Preferably, the acoustic reflector is air-backed.

Preferably, the acoustic reflector is inclined at between 10 and 45 degrees to the horizontal.

Preferably, the apparatus further comprises a second chamber.

Preferably, the apparatus further comprises a membrane, said membrane separating the first chamber and the second chamber.

Preferably, said membrane is impervious to the transfer of air or dissolved gases.

Preferably, the housing comprises two parts which are held together and sealed.

Preferably, the membrane is located between the two parts of the housing.

Preferably, the transducer is sealed to the housing forming a third chamber at a rear side of said transducer.

Preferably, the operating frequency of the transducer is 2 MHz.

Preferably, the transducer is arranged to generate a continuous sound wave beam.

Alternatively, the transducer is arranged to generate a sound beam which is pulsed on and off.

Preferably, the transducer is arranged to generate a pulsed sound beam which is pulsed on for 10 millisecond and off for 50 millisecond.

According to a second aspect of the present invention there is provided a method of phonophoretic transfer of a liquid into or through a porous medium, which method comprises: providing a body of liquid held in a first chamber whereby the body of liquid has a liquid / air interface; generating a sound beam having a frequency between 0.5 and 5 MHz; focusing the sound beam on the liquid / air interface thereby generating a jet of the liquid which projects from the interface, said jet of liquid impinging on the porous medium whereby a portion of the liquid is transferred into or through the porous medium.

Preferably, the liquid in the jet which is not transferred into or through the porous medium falls back into the first chamber thereby recycling said liquid which is not transferred.

Preferably, the liquid is selected from one of a drug, a vaccine, an anaesthetic, a paint and a toxic material.

Preferably, a body of non-cavitating liquid is provided in a second chamber.

Preferably, the non-cavitating liquid is distilled degassed water.

According to a third aspect of the present invention there is provided a method of generating a jet of liquid, which method comprises: providing a body of liquid held in a first chamber whereby the body of liquid has a surface; generating a sound beam having a frequency between 0.5 and 5 MHz; focusing the sound beam on the surface of the liquid thereby generating a jet of the liquid which projects from the surface.

Preferably, the jet comprises droplets and a fan is provided which transports the droplets within the jet.

BRIEF DESCRIPTION OF THE DRAWINGS

Embodiments of the present invention will now be described by way of example with reference to the accompanying drawings in which:

Figure 1 shows an apparatus for demonstrating the effect of focussing ultrasound on a liquid / air interface in accordance with the invention;

Figure 2 is a vertical section showing schematically a device for transdermally delivering substances by ultrasound but avoiding sonification of the skin in accordance with an embodiment of the invention;

Figure 3 is a vertical section showing schematically the device shown in Figure 2 in use;

Figure 4 is a plan view of the device shown in Figure 2, omitting pistol grip to improve clarity;

Figure 5 shows an ultrasonic power generator for use with the device of Figure 2;

Figure 6 shows a circuit diagram of an oscillator employed in the power generator shown in Figure 5;

Figure 7 is a circuit diagram of a power amplifier where the input is generated by the oscillator described in Figure 6; and

Figure 8 shows pulse circuitry to control output from the power amplifier of Figure 7.

DESCRIPTION OF THE PREFERRED EMBODIMENT

In devising the present invention, the inventors investigated the effect of focussing ultrasound on a liquid / air interface and produced the apparatus shown in Figure 1 for demonstrating such effects. Figure 1 shows an apparatus comprising a chamber holding a liquid and a circular focussed ultrasound transducer for generating a sound beam which is connected via a cable to an ultrasonic power generator (not shown). Two tubes are connected to the chamber for filling and emptying the chamber so as to maintain the liquid / air interface at the focus of the transducer. The transducer has an operating frequency between 0.5 and 5 MHz and has a focus which coincides with an upper surface of the liquid in the chamber at the liquid / air interface. The operating frequency was 2 MHz, the acoustic power was circa 40 Watts and the output was pulsed 75 milliseconds on and 150 milliseconds off. In the course of investigating the effects of a beam of focussed ultrasound propagating through a liquid, the inventors observed that when the focus coincides with a liquid / air interface as in figure 1 that streams of liquid droplets are projected upwards at high speed reaching considerable height. Even when the ultrasound is limited to a 10 milli-second pulse it was still possible to observe the effect. Jets composed of droplets rose far above the water surface for a range of ultrasound pulses of varying length and various values of off times (e.g. 10 milli-seconds on 20 milliseconds off).

The effect (i.e. of a large number of individual trajectories emerging from the liquid phase into air) only became apparent when recorded photographically using a slow film speed, e.g. 50 ASA Fujichrome Velvia film.

Without being bound by theory, as the inventors presently understand the mechanism of jet formation, gaseous cavitation causes the occurence of an unexpectedly high value of ultrasonic absorption coefficient, μ, and consequent large pressure gradient $\Delta P / \Delta x$ in the

fluid near the ultrasonic focus. This violent fluid streaming, along the axis of the beam, can itself propel the liquid upwards into the air. Also there seems to be another enhancing effect namely the small gaseous cavities induced by the sound wave merge into a single larger cavity which collapses producing a shock wave which adds kinetic energy to the upward motion of the fluid. The relative importance of these two effects is presently unclear. One can hear audible sounds associated with violent collapse of cavities.

Theory indicates, in a plane sound beam produced by a circular piston transducer vibrating in its thickness mode, that the driving pressure ΔP is given by

$\Delta P = I / c [\exp(-\mu x_1) - \exp(-\mu x_2)]$ where I is intensity, c is the velocity of sound, μ is the absorption coefficient and x_1 and x_2 are the chosen distances along the beam axis. For a focussed beam and with cavitation occuring, no equivalent theory, as far as we are aware, has been developed . The driving pressure ΔP clearly leads to fluid streaming but the magnitude depends on the absorption coefficient (in the present case anomolously high due to cavitation).

The significance of these observations is that it is possible to use ultrasound to drive fluids towards the skin at high speed without the ultrasound beam being directly incident upon and reaching the skin. Clearly avoiding ultrasonic treatment of the skin avoids any possibility of heating or other undesirable bioeffects on skin or underlying tissues.

To utilise the effect to deliver drugs or vaccines in fluid formulation it is necessary to devise an arrangement so that a liquid / air interface is situated within a suitably sized compartment adjacent to the skin. Preferably, the ultrasound beam is propagated into that compartment without significant attenuation. Accordingly, distilled degassed water, which has a very small attenuation coefficient, may be situated on the side next to the drug compartment. Since it is preferable for the drug not to be diluted (or the dose would not be controlled) an airtight membrane, transparent to ultrasound, may be provided in order to separate the two compartments.

In order to maintain an upward flow of liquid, in jet or droplet form, the sound beam is directed (in the simplest case) vertically upwards. In consequence a 45 degree reflector is located in the drug compartment and the focus of the beam coincides with the level of the

liquid containing the drug to be delivered. In this way a fountain-like stream of fluid strikes the skin and part of it is absorbed through the pores and hair follicles. The part not absorbed drops back into the cup and is recycled until all the dose is delivered.

A suitable arrangement for transdermal drug delivery is shown in vertical section in Figure 2. The device comprises a transducer 1, a housing 40, a first chamber 30, a second chamber 6, a third chamber 50, an acoustically transparent membrane 4 separating the first and second chambers, a reflector plate 3, a pistol grip 8 having a trigger 7, and a BNC connector 9. The two chambers / compartments are held together and sealed by bolts 5. The ultrasonic transducer 1 is sealed to the housing and is air-backed for maximum power output. The reflector 3 may be a stainless steel plate or other metal plate air-backed to provide good acoustically reflective properties. The device can be housed inside an outer casing to improve its aesthetic appeal. The membrane 4 can be positioned beyond the reflector plate if this proves more convenient for manufacture of the device.

Figure 3 shows the device of Figure 2 in use. The transducer 1 directs a beam of sound from a first chamber through the acoustically transparent membrane 4 into the second chamber containing an aqueous formulation of drug or vaccine. The reflector plate directs the ultrasound vertically upward and the geometry is chosen so that the focus lies at the liquid / air interface. The walls of the drug containing chamber are chosen so that the upward jets described in Figure 1 strike any surface placed at 2. The skin would normally be located at 2. The pistol grip 8 has a trigger 7 which switches on the ultrasonic excitation from a generator connected to a BNC connector 9. The compartments housing the drug and the transducer are held together and sealed by bolts 5. The ultrasonic transducer 1 is sealed to the housing and is air-backed for maximum power output. Jets and droplets emerge within the drug compartment and the direction is indicated by arrows. The reflector 3 may be a stainless steel plate or other metal plate air-backed to provide good acoustically reflective properties. The vertical orientation of the drug compartment could be modified to lie at an acute angle provided only that the liquid / air interface is maintained. The device can be housed inside an outer casing to improve its aesthetic appeal. The drug could be introduced in a small thin walled tub. The membrane 4 can be positioned beyond the reflector plate if this proves more convenient for manufacture of the device.

A plan view of the drug delivery gun is shown schematically in Figure 4. The compartment on the left containing the transducer 10 contains distilled degassed water (or other fluid with near zero ultrasonic absorption coefficient). This chamber carries the ultrasound into the drug containing compartment 12 on the right. The sound is reflected by the plate 11 and the beam comes to a focus at the liquid surface. The volume behind the transducer is occupied by air. The electrical connections to the transducer faces and to the BNC connector are omitted to avoid confusion.

The two chambers are separated by a thin acoustically transparent membrane which is diffusion proof to gas passing (backwards) from the drug compartment into the degassed water. The pistol grip and trigger are also omitted for the sake of clarity as are wiring connections.

The device, called a phonophoretic gun, is placed against the skin (or other porous surface) and the sound switched on either in continuous or pulsed mode. The jets and streams of droplets, containing the drug or vaccine, strike the skin and a percentage is transferred into subcutaneous layers. The fraction not taken up by the target falls back into the drug compartment (indicated by arrows in Figure 2) and is recycled until the desired dose is delivered.

Accordingly, the jet impinges on the skin 2 and liquid not transferred into the porous material in one pulse of the ultrasound falls back to be recycled in the next. The output of a pulsed ultrasound power generator shown in Figure 5 and whose circuitry is described in Figures 6, 7 and 8 drives the piezoelectric transducer which leads to jet formation.

The ultrasound power generator used in this embodiment gives out up to 50 Watts of acoustic power at frequencies of 2MHz, 1 MHz and 250 kHz. An LCD meter reads in percent of maximum output. The sound intensity at the focus can reach in excess of 100 Watts per cm^2. It operates in pulsed mode down to a single pulse of 10 milliseconds duration (on time) and a wide range of off times and can be run for total times up to 90 minutes in automatic mode. The objective however is to deliver useful drug doses in times from a few milliseconds to seconds.

Figure 5 shows the ultrasonic power generator which can operate at 3 frequencies: 2 MHz; 1 MHz; and 250 KHz, with variable pulse on and off times and variable total time. This generator drives the focussed transducer in the ultrasonic drug delivery gun. The power supply for the generator is selected from one of mains electricity and a rechargable battery.

Figure 6 is the circuit diagram of the 2 MHz oscillator we have employed in the power generator of Figure 5. The oscillators for other frequencies are of similar design but with different component values. The 2 MHz signal is fed to a power amplifier.

Figure 7 is the circuit diagram of the power amplifier where the input is generated by the oscillator described in Figure 6. The power amplifier generates the signal to excite the ultrasound piezoelectric bowl shaped transducers.

Figure 8 is the pulse circuitry used to control the output from the power oscillator and thus to provide the pulsed output which excites the ultrasound focussed bowls used to produce the liquid jets and droplets employed for drug / vaccine delivery. The pulse circuitry controls output from the power amplifier allowing excitation by continuous or a wide range of pulsing regimes. That is, on times and off times of the ultrasound beam can be chosen from a wide range of values.

Other embodiments of the invention are envisaged. The material forming the jet and droplets may be chosen to overcome an assailant by projecting a toxic or anaesthetic spray towards the face. Alternatively, an embodiment may be provided for use in a respirator/inhaler, which may include a fan and tubes, whereby droplets of fluid are transported by the fan or other means along the tubes to the face for inhalation.

CLAIMS

1. An apparatus for phonophoretic transfer of a liquid into or through a porous medium, said apparatus comprising:

a housing;

a first chamber in the housing for holding a liquid said first chamber having an opening in a side thereof;

an ultrasound transducer mounted in the housing for generating a sound beam;

a focussing device for focusing the sound beam to a focus;

said ultrasound transducer having an operating frequency between 0.5 and 5 MHz and said focus being located within the first chamber,

whereby in use the focus is located at an air / liquid interface for generating a jet of liquid which projects through the opening.

2. An apparatus according to claim 1, wherein the ultrasound transducer and the focussing device are integral forming a focussed ultrasound transducer.

3. An apparatus according to claim 1 or claim 2, wherein the transducer is air-backed.

4. An apparatus according to any preceding claim, wherein the apparatus further comprises an ultrasound power generator for driving said transducer.

5. An apparatus according to any preceding claim, wherein the apparatus further comprises a pistol grip having a trigger which activates the device.

6. An apparatus according to any one of the preceding claims, wherein the apparatus further comprises an acoustic reflector.

7. An apparatus according to claim 6, wherein the acoustic reflector is a metal plate.

8. An apparatus according to claim 6 or claim 7, wherein the acoustic reflector is a stainless steel plate.

9. An apparatus according to any one of claims 6 to 8, wherein the acoustic reflector is air-backed.

10. An apparatus according to any one of claims 6 to 9, wherein the acoustic reflector is inclined at between 10 and 45 degrees to the horizontal.

11. An apparatus according to any previous claim, wherein the apparatus further comprises a second chamber.

12. An apparatus according to claim 11, wherein the apparatus further comprises a membrane, said membrane separating the first chamber and the second chamber.

13. An apparatus according to claim 12, wherein said membrane is impervious to the transfer of air or dissolved gases.

14. An apparatus according to any preceding claim, wherein the housing comprises two parts which are held together and sealed.

15. An apparatus according to claim 14 when appended to claim 12 or claim 13, wherein the membrane is located between the two parts of the housing.

16. An apparatus according any previous claim, wherein the transducer is sealed to the housing forming a third chamber at a rear side of said transducer.

17. An apparatus according to any previous claim, wherein the first chamber has an opening in an upper side thereof.

18. An apparatus according to any one of the preceding claims, wherein the operating frequency of the transducer is 2 MHz.

19. An apparatus according to any one of the preceding claims, wherein the transducer is arranged to generate a continuous sound wave beam.

20. An apparatus according to any one of the preceding claims, wherein the transducer is arranged to generate a sound beam which is pulsed on and off.

21. An apparatus according to claim 20, wherein transducer is arranged to generate a pulsed sound beam which is pulsed on for 10 millisecond and off for 50 millisecond.

22. A method of phonophoretic transfer of a liquid into or through a porous medium, which method comprises:

providing a body of liquid held in a first chamber whereby the body of liquid has a liquid / air interface;

generating a sound beam having a frequency between 0.5 and 5 MHz;

focusing the sound beam on the liquid / air interface thereby generating a jet of the liquid which projects from the interface, said jet of liquid impinging on the porous medium whereby a portion of the liquid is transferred into or through the porous medium.

23. A method according to claim 22, wherein the liquid in the jet which is not transferred into or through the porous medium falls back into the first chamber thereby recycling said liquid which is not transferred.

24. A method according to claim 22 or claim 23, wherein the liquid is selected from one of a drug, a vaccine, an anaesthetic, a paint and a toxic material.

25. A method according to any one of claims 22 to 24, wherein the sound beam is generated by an ultrasound transducer.

26. A method according to claim 25, wherein the sound beam is focussed by the ultrasound transducer.

27. A method according to claim 25 or claim 26, wherein the transducer is air-backed.

28. A method according to any one of claim 25 to 27, wherein the transducer is driven by an ultrasound power generator.

29. A method according to any one of claims 25 to 28, wherein the transducer is activated by a trigger on a pistol grip.

30. A method according to any one of claims 22 to 29, wherein the sound beam is reflected by an acoustic reflector.

31. A method according to claim 30, wherein the acoustic reflector is a metal plate.

32. A method according to claim 30 or claim 31, wherein the acoustic reflector is a stainless steel plate.

33. A method according to any one of claims 30 to 32, wherein the acoustic reflector is air-backed.

34. A method according to any one of claims 30 to 33, wherein the acoustic reflector is inclined at between 10 and 45 degrees to the horizontal.

35 A method according to any one of claims 22 to 34, wherein a body of non-cavitating liquid is provided in a second chamber.

36. A method according to claim 35, wherein the non-cavitating liquid is distilled degassed water.

37. A method according to claim 35 or 36, wherein a membrane is provided which separates the first and second chambers.

38. A method according to claim 37, wherein said membrane is impervious to the transfer of air or dissolved gases.

39. A method according to claims 37 or 38, wherein a housing is provided comprising two parts which are held together and sealed with the membrane located therebetween.

40. A method according to claim 25, wherein the transducer is sealed to a housing forming a third chamber at a rear side of the transducer.

41. A method according to any one of claims 22 to 40, wherein the first chamber is vertically orientated with an opening in an upper side thereof whereby the jet of liquid projects through the opening.

42. A method according to claim 25, wherein the operating frequency of the transducer is 2 MHz.

43. A method according to claim 25, wherein the transducer is arranged to generate a continuous sound wave beam.

44. A method according to claim 25, wherein the transducer is arranged to generate a sound beam which is pulsed on and off.

45. A method according to claim 44, wherein the transducer is arranged to generate a pulsed sound beam which is pulsed on for 10 millisecond and off for 50 millisecond.

46. A method of generating a jet of liquid, which method comprises:

providing a body of liquid held in a first chamber whereby the body of liquid has a surface;

generating a sound beam having a frequency between 0.5 and 5 MHz;

focusing the sound beam on the surface of the liquid thereby generating a jet of the liquid which projects from the surface.

47. A method according to claim 46, wherein the jet comprises droplets and wherein a fan is provided which transports the droplets within the jet.

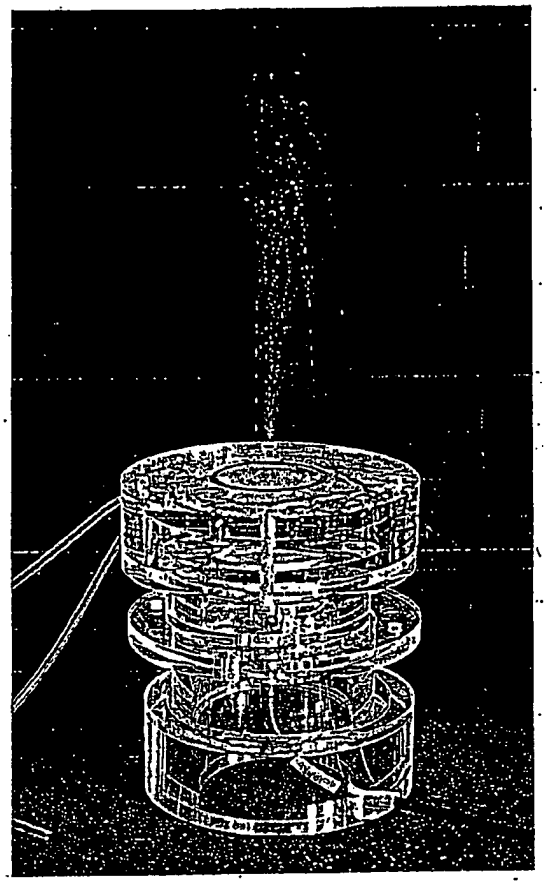

Figure 1

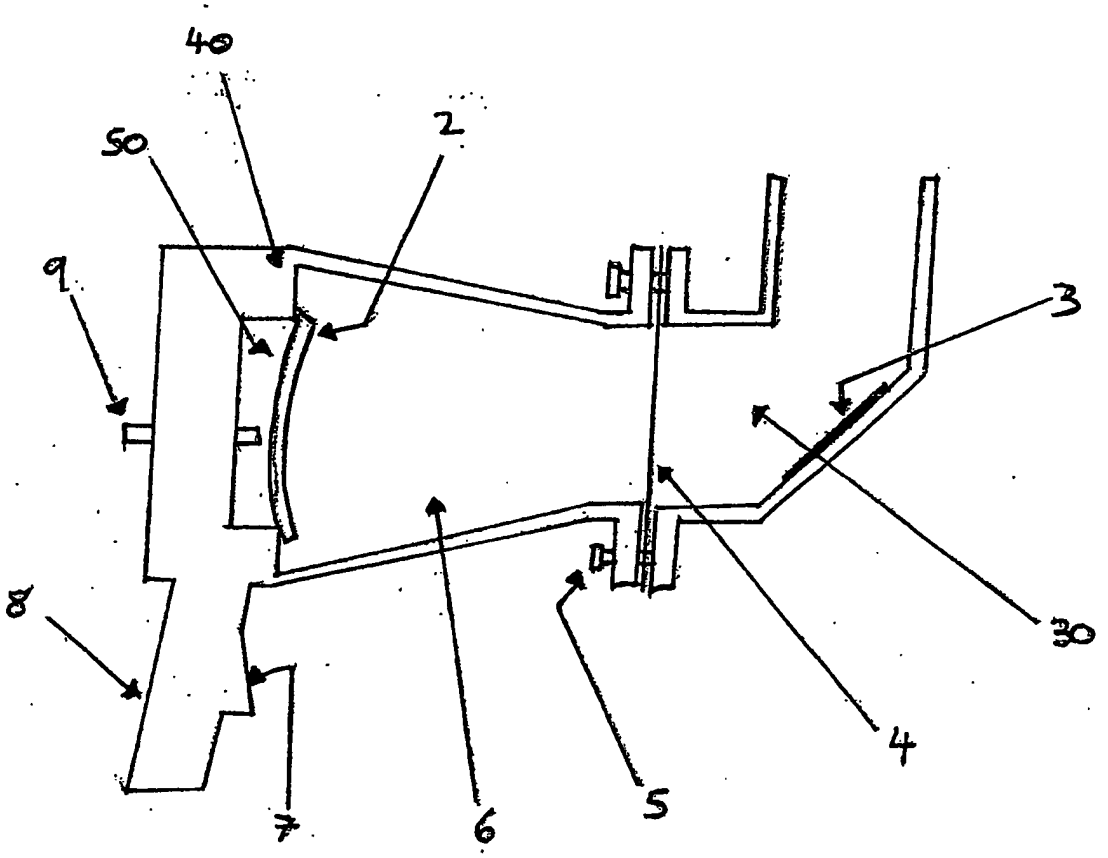

Figure 2

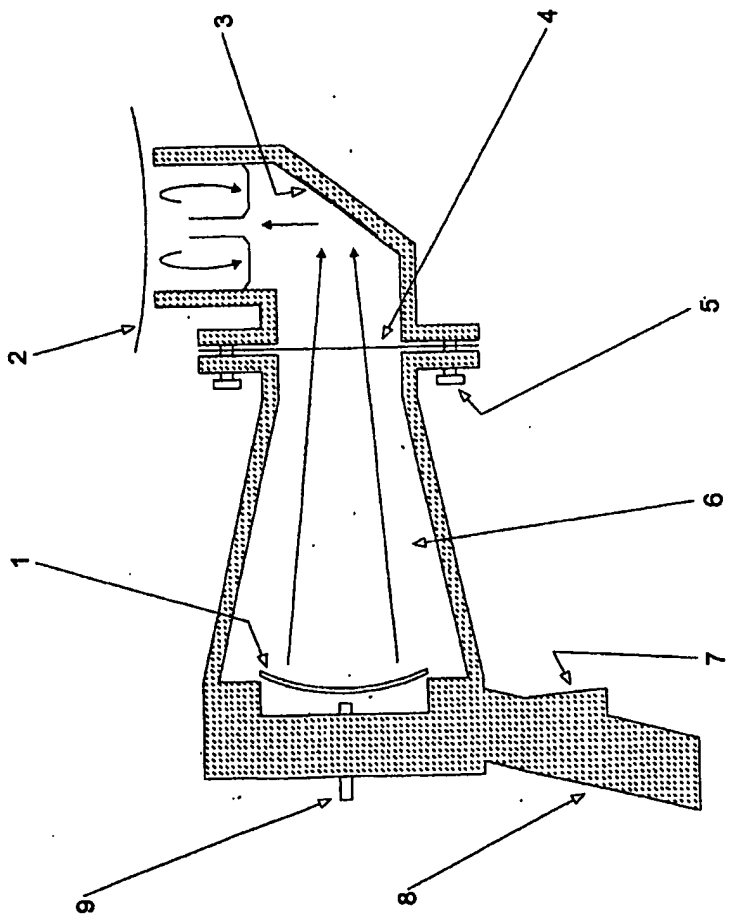

Figure 3

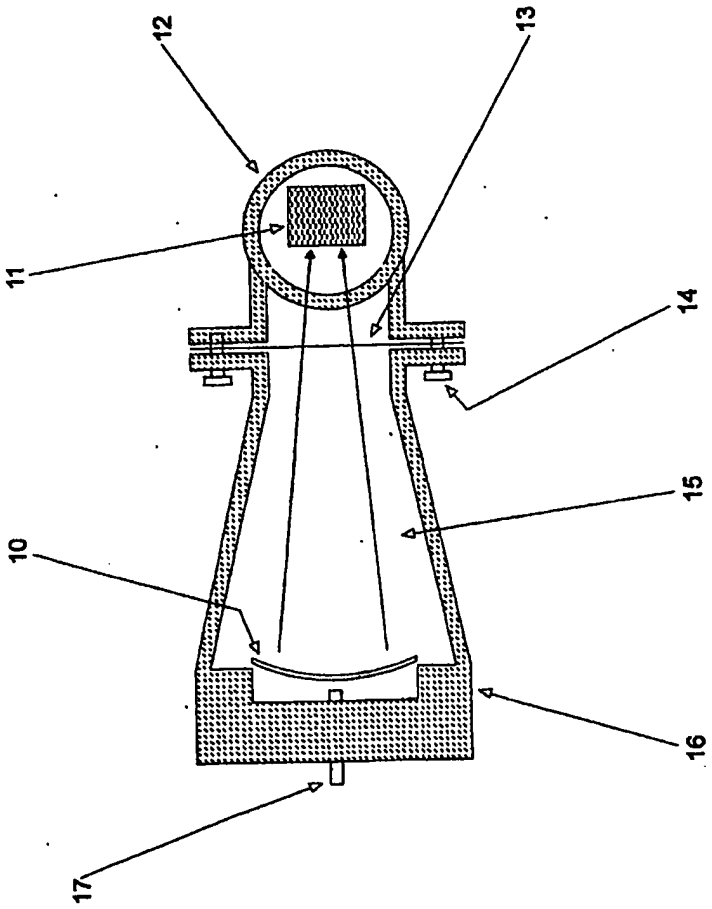

Figure 4

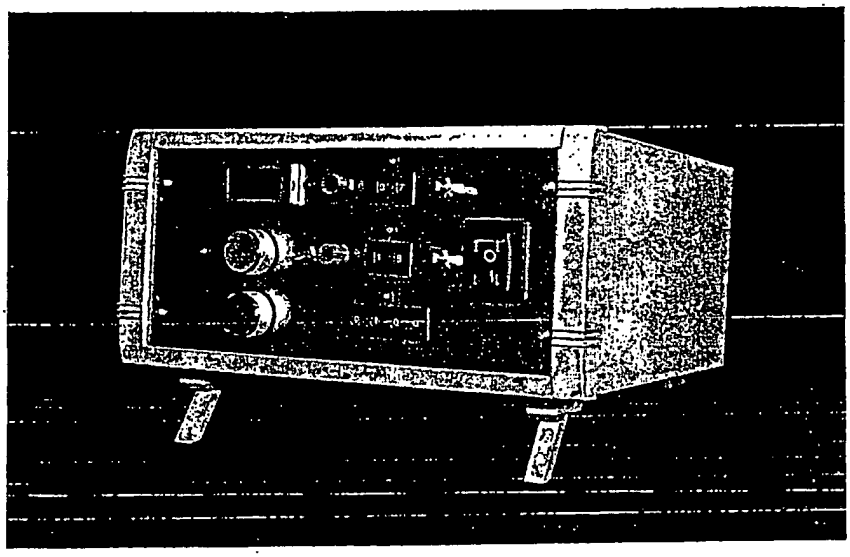

Figure 5

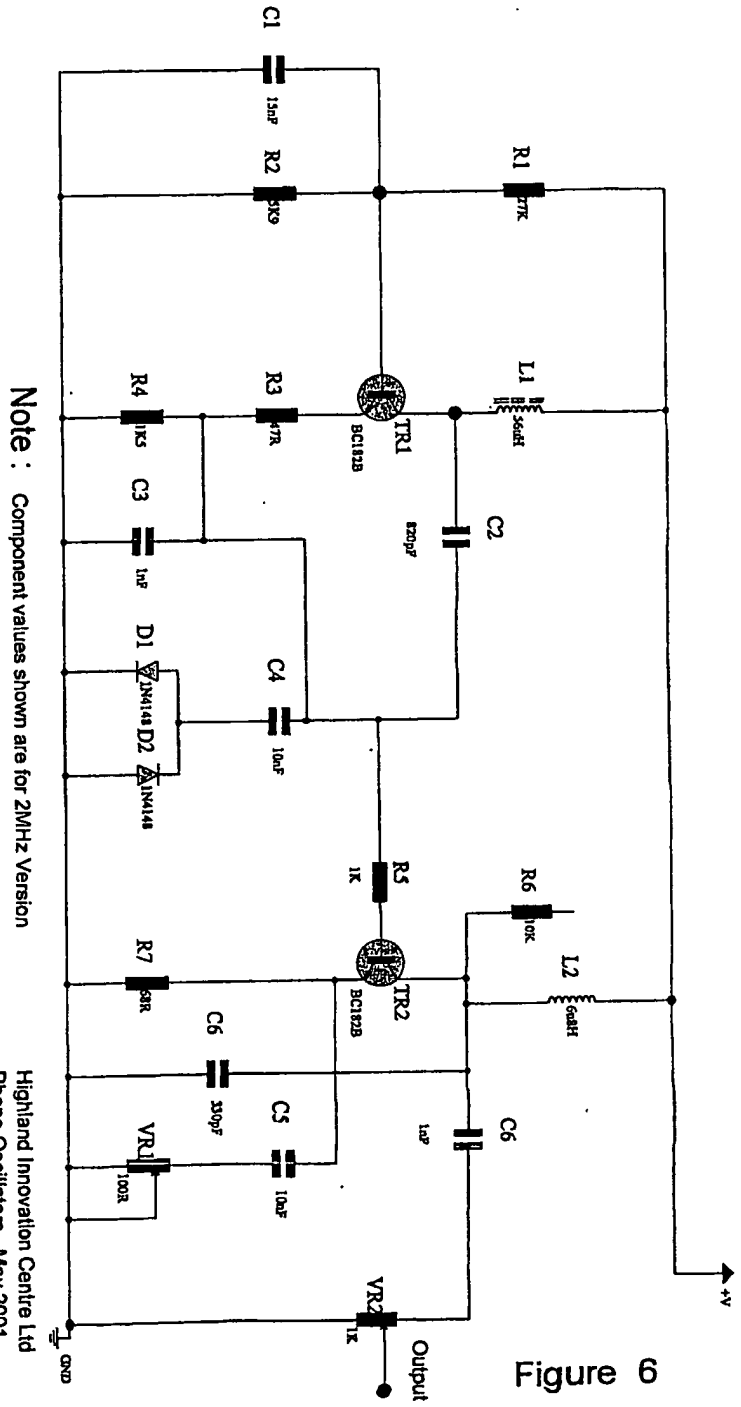
C1
15nF
R2
33K9
R1
27K
R4
1K5
R3
47R
TR1
BC182B
L1
56uH
C3
1nF
C2
820pF
D1
1N4148
D2
1N4148
C4
10nF
R5
1K
R6
10K
R7
68R
TR2
BC182B
L2
68uH
C6
330pF
C5
10nF
VR1
100R
C6
1nF
VR2
1K
+V
GND
Output
Note : Component values shown are for 2MHz Version
Highland Innovation Centre Ltd
Phono Oscillators May 2001

Figure 6

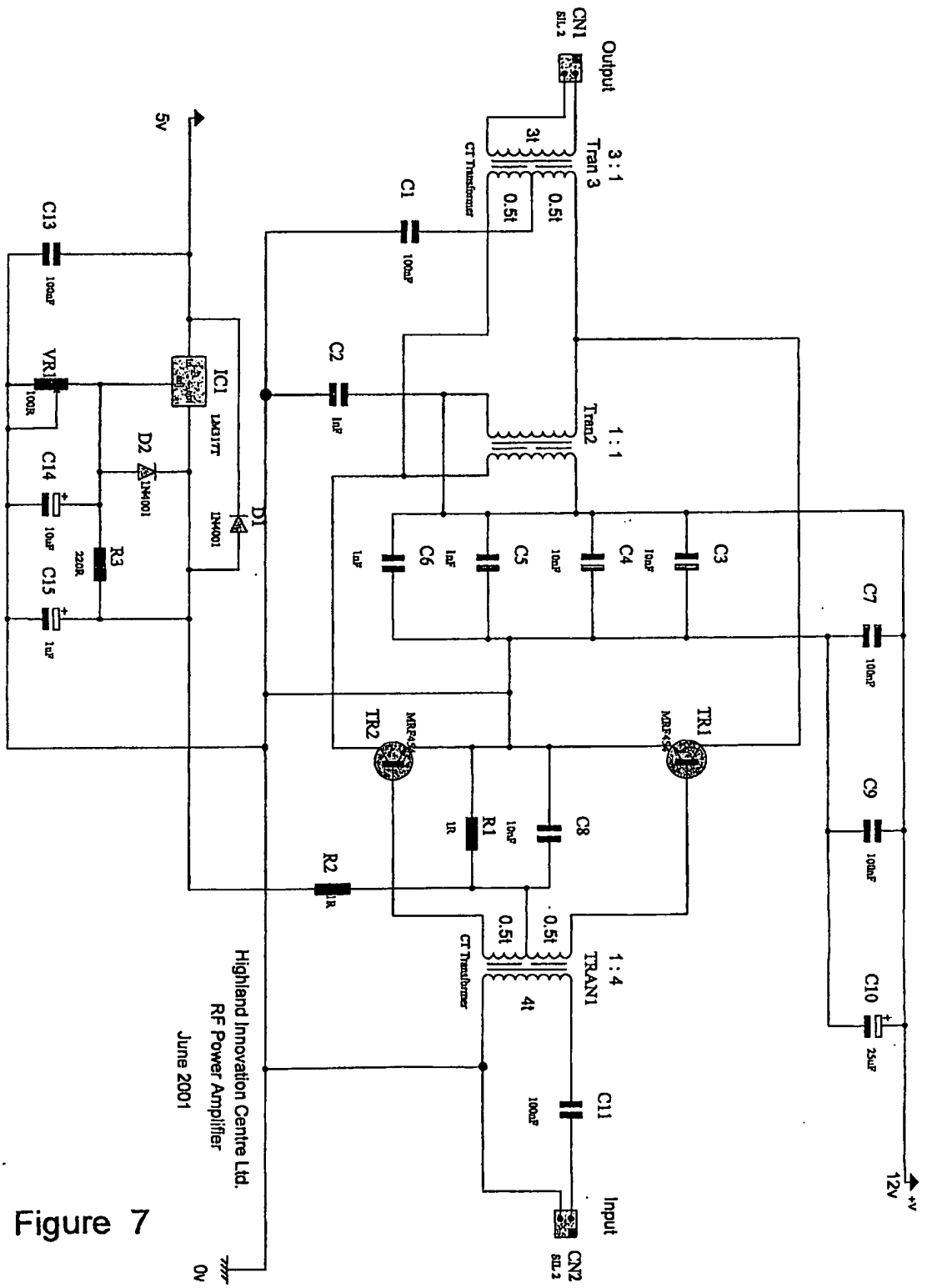
CN1
SIL 2
Output
3 : 1
Tran 3
3t
0.5t
0.5t
CT Transformer
C1
100nF
5v
C13
100nF
VR1
100R
IC1
LM317T
C2
1uF
1 : 1
Tran2
D2
1N4001
D1
1N4001
C14
10uF
R3
220R
C15
1uF
C6
1uF
C5
10nF
C4
10nF
C3
C7
100nF
C9
100nF
C10
25uF
+v
12v
TR2
MRF454
TR1
MRF454
R1
1R
10nF
C8
R2
1R
0.5t
0.5t
CT Transformer
4t
1 : 4
TRAN1
C11
100nF
Input
CN2
SIL 2
0v
Highland Innovation Centre Ltd.
RF Power Amplifier
June 2001

Figure 7

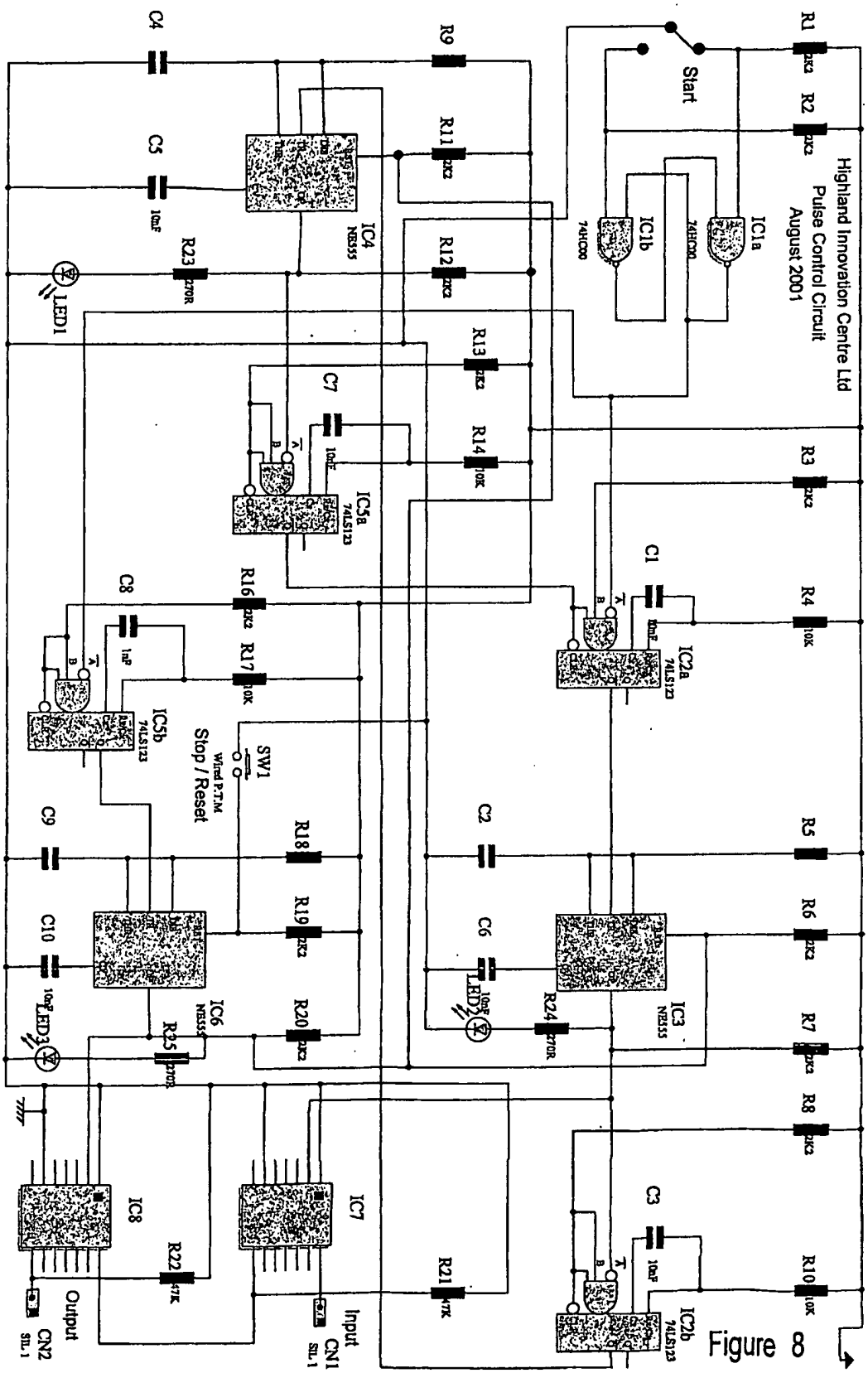
Highland Innovation Centre Ltd
Pulse Control Circuit
August 2001
Start
Stop / Reset
SW1
Output
Input
CN1
CN2
IC1a
IC1b
IC2a
IC2b
IC3
IC4
IC5a
IC5b
IC6
IC7
IC8
LED1
LED2
LED3
R1
R2
R3
R4
R5
R6
R7
R8
R9
R10
R11
R12
R13
R14
R16
R17
R18
R19
R20
R21
R22
R23
R24
R25
C1
C2
C3
C4
C5
C6
C7
C8
C9
C10

Figure 8

Atty. Dkt. No. 095473-0106

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Applicant: Zumbrunn et al.

Title: TRANSDERMAL DRUG DELIVERY METHOD AND SYSTEM

Appl. No.: 10/711,389

Filing Date: 9/13/2004

Examiner: Mercier, Melissa S.

Art Unit: 1615

Confirmation Number: 5388

INFORMATION DISCLOSURE STATEMENT UNDER 37 CFR §1.56

Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

Sir:

Submitted herewith on Form PTO/SB/08 is a listing of documents known to Applicants in order to comply with Applicants' duty of disclosure pursuant to 37 CFR §1.56.

A copy of each non-U.S. patent document and each non-patent document is being submitted to comply with the provisions of 37 CFR §1.97 and §1.98.

The submission of any document herewith, which is not a statutory bar, is not intended as an admission that such document constitutes prior art against the claims of the present application or that such document is considered material to patentability as defined in 37 CFR §1.56(b). Applicants do not waive any rights to take any action which would be appropriate to

antedate or otherwise remove as a competent reference any document which is determined to be a *prima facie* art reference against the claims of the present application.

TIMING OF THE DISCLOSURE

The listed documents are being submitted in compliance with 37 CFR §1.97(c), before the mailing date of either a final action under 37 CFR §1.113, a notice of allowance under 37 CFR §1.311, or an action that otherwise closes prosecution in the application.

RELEVANCE OF EACH DOCUMENT

The references listed on the attached PTO/SB/08 were cited in the specification, and in the Office Actions cited by the Examiner(s) in several related applications. All of the references listed in the attached Office Actions are listed on the PTO/SB/08, unless they were already cited in the present application. Please note that WO 2005/039685 has not been cited in the present application, nor is it listed on the attached PTO/SB/08. The present application no. 10/711,389, is a CIP of PCT/IB2004/002947, which published as WO 2005/039685.

Applicants respectfully request that each listed document be considered by the Examiner and be made of record in the present application and that an initialed copy of Form PTO/SB/08 be returned in accordance with MPEP §609.

FEE

A credit card payment form in the amount of $180.00 is enclosed to cover the fee associated with an information disclosure statement under 37 CFR §1.97(c).

The Commissioner is hereby authorized to charge any additional fees which may be required regarding this submission under 37 C.F.R. §§ 1.16-1.17, or credit any overpayment, to Deposit Account No. 19-0741. Should no proper payment be enclosed herewith, as by the credit

card payment form being unsigned, providing incorrect information resulting in a rejected credit card transaction, or even entirely missing, the Commissioner is authorized to charge the unpaid amount to Deposit Account No. 19-0741.

Respectfully submitted,

Date: October 27, 2009

By _____

FOLEY & LARDNER LLP
Customer Number: 22428
Telephone: (202) 672-5538
Facsimile: (202) 672-5399

Michele M. Simkin
Attorney for Applicant
Registration No. 34,717

Attorney Docket No. 095473-0106

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Applicant: Zumbrunn et al.

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Mail Stop Amendment
Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

AMENDMENT AND REPLY UNDER 37 CFR 1.111

This communication is responsive to the Non-Final Office Action dated July 1, 2009, concerning the above-referenced patent application. As the shortened statutory period for response expired on October 1, 2009, attached is a Petition for a one-month Extension of Time to make this response timely filed.

Amendments to the Claims are reflected in the listing of claims which begins on page 2 of this document.

Remarks begin on page 8 of this document.

Please amend the application as follows.

Amendments to the Claims:

This listing of claims will replace all prior versions, and listings, of claims in the application.

Listing of Claims:

1. (Withdrawn) A method for transdermal administration of at least one active substance to a porous surface, comprising the following steps:

a) dispensing a certain amount of a liquid comprising at least one active substance and at least one solvent into an administration reservoir,

b) separating at least a portion of the at least one solvent from the administration reservoir by a solvent recovery means such that the at least wherein one active substance achieves a certain level of concentration in vicinity to the porous surface to be treated;

c) absorption of the active substance by the porous surface to be treated via diffusion such that the level of concentration in the administration reservoir decreases.

2. (Withdrawn) The method according to claim 1 wherein the solvent is separated by evaporation.

3. (Withdrawn) The method according to claim 2 wherein the evaporation of the solvent is supported by a heating element.

4. (Withdrawn) The method according to claim 3 wherein the solvent is evaporated through a membrane passable preferably for the solvent.

5. (Withdrawn) The method according to claim 2 where the solvent is removed by a pre-programmed opening a pinch valve that is in contact with the porous surface.

6. (Withdrawn) The method according to claim 5 where the solvent is removed by programming the pumping of the solvent.

7. (Withdrawn) The method according to claim 2 where the solvent is removed by a programmed lowering of an arm or lever.

8. (Withdrawn) The method according to claims 2 wherein the solvent is absorbed by a desiccant.

9. (Withdrawn) The method according to claim 5 wherein the desiccant is one or a combination out of the group of silica get, molecular sieves, active carbon.

10. (Withdrawn) The method according to claim one of the claims 2 wherein the solvent is discharged into the environment.

11. (Withdrawn) The method of claim one of the claims 2 wherein the solvent is flushed by a fluid.

12. (Withdrawn) The method according to claim 1 wherein the at least one active substance passes an interface device which is permeable for the at least one active substance.

13. (Withdrawn) The method according to claim 12 wherein the interface device comprises a membrane.

14. (Withdrawn) The method according to claim 12 wherein the interface device comprises an adhesive layer suitable to be attached to the porous surface.

15. (Withdrawn) The method according to claim 1 wherein the steps a to c are repeated at predefined intervals such that the level of concentration of the at least one active substance in the administration reservoir is kept above a certain level.

16. (Withdrawn) The method according to claim 15 wherein the dispensing rate and the time pattern of dispensing the liquid into the administration reservoir are controlled by a programmable device.

17. (Currently Amended) A device for transdermal administration of at least one active substance to a porous surface, comprising:

(a) an administration reservoir;

(b) a dispensing device interconnected to ~~an~~ the administration ~~device~~ reservoir for delivery of at least one active substance dissolved in a solvent to ~~said~~ the administration ~~device~~ reservoir, wherein the ~~administration device comprises an~~ administration reservoir is suitable to receive the active substance ~~solved~~ dissolved in the solvent;[[,]]

(c) a solvent removal element ~~means for absorption of~~ configured to absorb solvent from the administration reservoir by evaporation; and

(d) an interface suitable for transferring the active substance from the administration reservoir to the porous surface;

wherein the transfer of the active substance from the administration reservoir to the porous surface is controlled via the absorption of solvent by the solvent removal element.

18. (Currently Amended) The device according to claim 17 wherein the interface ~~device~~ is suitable to be arranged in vicinity to the porous surface.

19. (Withdrawn – Currently Amended) The device according to claim 18 wherein the interface ~~means~~ comprises an adhesive surface suitable to be attached to the porous surface.

20. (Currently Amended) The device according to claim 17 wherein the interface ~~means~~ is a membrane permeable for the active substance.

21. (Currently Amended) The device according to claim 17 wherein the solvent removal ~~means~~ element is separated from the administration reservoir by a separation means.

22. (Previously presented) The device according to claim 21 wherein the separation means is selected from the group consisting of a membrane, a foam, a cellular material, a honeycomb, and an air gap.

23. (Currently Amended) The device according to claim 21 wherein the administration reservoir and the solvent removal ~~means~~ element are spaced apart a distance by the separation means ~~14~~.

24. (Withdrawn – Currently Amended) The device according to claim 17 wherein the solvent removal ~~means~~ element comprises one or more ~~our or a combination out of the group~~ of the following materials: Desiccant, general or a selective absorbent material, silica gel, a molecular sieve, and active carbon.

25. (Withdrawn – Currently Amended) The device according to claim 17 wherein the solvent removal ~~means~~ element comprises a chamber with an inlet and an outlet for flushing by a fluid.

26. (Previously presented) The device according to claim 17 wherein the dispensing device comprises at least one reservoir for an active substance which is interconnected to the administration device.

27. (Withdrawn – Currently Amended) The device according to claim ~~17~~ 26 wherein the dispensing device comprises a propellant means to propel the active substance from the one reservoir into the administration reservoir.

28. (Withdrawn) The device according to claim 27 wherein the propellant means is a pump and/or a propellant gas.

29. (Withdrawn – Currently Amended) The device according to claim 26 wherein the dispensing ~~means~~ device comprises a first reservoir comprising a first active substance and a second reservoir comprising a second active substance and the first and the second active substance are mixed by mixing means before delivery to the administration ~~device~~ reservoir.

30. (Withdrawn – Currently Amended) The device according to claim ~~28~~ 29 wherein the mixing means is a pipe with vortex means providing an appropriate preparation of mixture.

31. (Withdrawn) The device according to claim 35 wherein the control device is interconnected to at least one valve for controlling the administration of the at least one active substance.

32. (Withdrawn – Currently Amended) The device according to claim ~~30~~ 35 wherein the control device is programmable according to a predetermined regime or time pattern or interval of administration of the at least one active substance.

33. (Currently Amended) The device according to claim ~~30~~ 35 wherein the control device is interconnected with at least one sensor for measuring ~~the administration and the~~ a condition of the at least one active substance.

34. (Currently Amended) The device according to claim 33 wherein the administration of the active substance is ~~determined by~~ based on the signal of the at least one sensor.

35. (Previously presented) The control device according to claim 17 wherein the administration of the active substance is controlled by a control device.

36. (Withdrawn) An administration unit for application of at least one active substance to skin wherein the at least one active substance is dissolved in a solvent, comprising an administration unit configured to distribute the active substance to the skin or to a skin-compatible adhesive layer, wherein the administration unit comprises an administration reservoir and a solvent removal element comprising a separation layer that is imperrmeant to the active substance and permeable to the solvent.

37. (Withdrawn) The administration unit of claim 36, wherein the separation layer further comprises a material that controls evaporation rate of the solvent at a surface of the separation layer.

38. (New) The device of claim 17 wherein the solvent removal element controls the transfer of the active substance from the administration reservoir to the porous surface by controlling the concentration of the at least one active substance in the administration reservoir.

39. (New) The device of claim 17 wherein the solvent removal element controls termination of the transfer of the active substance from the administration reservoir to the porous surface by drying the interface.

REMARKS

Applicants respectfully request reconsideration of the present application in view of the foregoing amendments and the reasons that follow.

I. Status of the Claims

Claims 1-37 are pending in this application, and claims 1-16, 19, 24, 25, 27-32, 36 and 37 are withdrawn.

Claim 17 is amended to recite "wherein the transfer of the active substance from the administration reservoir to the porous surface is controlled via the absorption of solvent by the solvent removal element." Exemplary support for this claim language can be found in paragraphs [0037] and [0060] of the present Application as filed.

Claims 18-20, 21, 23, 24, 25, 27, 29, 30, and 32-34 are amended to more clearly state the invention. No new matter has been added with the amendments.

New claims 38 and 39 are added. Exemplary support for this claim language can be found in paragraphs [0037] and [0060] of the present Application as filed.

Applicants believe that each of the rejections raised by the Examiner have been addressed and the application is in condition for allowance. Reconsideration and allowance of the application, as amended, is respectfully requested.

II. Claim Rejections – 35 U.S.C. § 112 ¶ 2

Claim 23 was rejected under 35 U.S.C. § 112, second paragraph, as being allegedly indefinite for failing to particularly point out and distinctly claim the subject matter. Office Action at page 2. Applicants respectfully traverse this ground for rejection.

Applicants have amended claim 23 to remove the numeral "14", which was the basis for the rejection. No new matter is added. Withdrawal of this ground for rejection is respectfully requested.

III. Claim Rejections – 35 U.S.C. § 102

Claims 17-18, 20-23, 26 and 35 were rejected under 35 U.S.C. § 102(b) as allegedly being anticipated by U.S. Patent No. 6,374,136 to Murdock ("Murdock"). Office Action at pages 3-4. Applicants respectfully traverse this ground for rejection.

Claim 17, as amended, recites a "device for transdermal administration of at least one active substance to a porous surface". The device includes a solvent removal element configured to absorb solvent from the administration reservoir by evaporation. The transfer of the active substance from the administration reservoir to the porous surface is controlled via the absorption of solvent by the solvent removal element.

Murdock does not disclose the device recited in Applicant's claim 17. Specifically, Murdock discloses an "electrotransport delivery device 10" that includes a "reservoir layer 24" that "contains the beneficial agent to be iontophoretically delivered." See col. 6, lines 14-15 and lines 31-33. Murdock discloses solvent removal as a step in the formation of the reservoir layer to increase the "shelf life" of the device. See col. 5, lines 5-8 and lines 24-29. In other words, solvent removal as taught by Murdock is related to the *manufacture* of "delivery device 10" but is not related to the *use or operation* of "delivery device 10." In contrast to Murdock, the device of Applicants' claim 17 includes a "solvent removal element" that provides for control of "the transfer of the active substance from the administration reservoir to the porous surface", *i.e.,* in contrast to Murdock's device, Applicants' claimed device utilizes solvent removal in the *use or operation* of the device.

Because Murdock fails to teach the device of amended claim 17, Applicants respectfully request withdrawal of the rejection of claims 17-18, 20-23, 26 and 35 under 35 U.S.C. § 102(b) based upon Murdock.

IV. Claim Rejections – 35 U.S.C. § 103

Claims 33 and 34 were rejected under 35 U.S.C. § 103(a) as being allegedly unpatentable over Murdock in view of U.S. Patent No. 5,993,435 to Haak et al. ("Haak"). Office Action at page 5. Applicants respectfully traverse this ground for rejection.

Claims 33 and 34 depend from independent claim 17. For the reasons discussed above, Murdock fails to teach or suggest a "a solvent removal element configured to absorb solvent from the administration reservoir by evaporation ... wherein the transfer of the active substance from the administration reservoir to the porous surface is controlled via the absorption of solvent by the solvent removal element," as recited in independent claim 17. Haak does not remedy the deficiencies of Murdock. Specifically, Haak discloses an "iontophoretic delivery device 10" that includes a "donor electrode assembly 8" having "a donor electrode 11, an electrolyte reservoir 13, a selectively permeable separator membrane 14 and an agent reservoir 15" and a "counter electrode assembly 9." See col. 6, lines 52-54 and col. 7, lines 1-3. However, Haak does not teach or suggest "a solvent removal element configured to absorb solvent from the administration reservoir by evaporation ... wherein the transfer of the active substance from the administration reservoir to the porous surface is controlled via the absorption of solvent by the solvent removal element," as recited in independent claim 17.

Dependent claims 33 and 34 are patentable over Murdock in view of Haak for at least the following additional reasons. Claim 33, as amended, recites "at least one sensor for measuring a condition of the at least one active substance." Haak does not teach or suggest such a sensor. Rather, Haak states generally that "[c]ontrol circuit 19 may also include an integrated circuit which could be designed ... to respond to sensor signals in order to regulate the dosage to maintain a predetermined dosage regimen." Col. 11, lines 3-7. As an example of the signal that the control circuit is responsive to, Haak discusses monitoring "a biosignal" such as blood sugar level. See col. 11, lines 11-15. As such, Haak does not teach or suggest "at least one sensor for measuring a condition of the at least one active substance," as recited in claim 33.

Accordingly, claims 33 and 34 are patentable over Murdock in view of Haak under 35 U.S.C. § 103(a). Withdrawal of this ground for rejection is respectfully requested.

V. Conclusion

Applicants believe that the present application is in condition for allowance. Favorable reconsideration of the application, as amended, is respectfully requested.

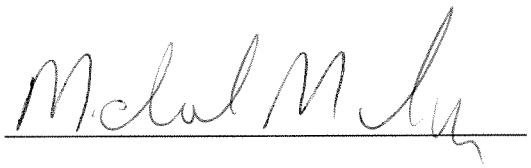
The Examiner is invited to contact the undersigned by telephone if it is felt that a telephone interview would advance the prosecution of the present application.

It should be noted that, for the sake of clarity and simplicity, Applicants' remarks have focused on the rejections of the independent claims and certain dependent claims set forth in the Office Action with the understanding that the dependent claims are patentable for at least the same reasons as the independent claims. Further, in addressing the Examiner's rejections, Applicants' remarks have set forth only some of the available arguments for patentability of the rejected claims. Applicants expressly reserve the right to argue the patentability of all claims separately and to provide new, different, and/or additional arguments for patentability not set forth herein, including, but not limited to, the failure of cited references to disclose, teach, or suggest other elements of the claims, the lack of motivation to combine cited references, or teaching away from the combination of cited references, in this or any future proceedings.

The Commissioner is hereby authorized to charge any additional fees which may be required regarding this application under 37 C.F.R. §§ 1.16-1.17, or credit any overpayment, to Deposit Account No. 19-0741. Should no proper payment be enclosed herewith, as by the credit card payment instructions in EFS-Web being incorrect or absent, resulting in a rejected or incorrect credit card transaction, the Commissioner is authorized to charge the unpaid amount to Deposit Account No. 19-0741. If any extensions of time are needed for timely acceptance of papers submitted herewith, Applicants hereby petition for such extension under 37 C.F.R. §1.136 and authorizes payment of any such extensions fees to Deposit Account No. 19-0741.

Respectfully submitted,

Date: October 7, 2009

By 

FOLEY & LARDNER LLP
Customer Number: 22428
Telephone: (202) 672-5538
Facsimile: (202) 672-5399

Michele M. Simkin
Attorney for Applicant
Registration No. 34,717

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Applicants:	Werner Zumbrunn et al.
Title:	TRANSDERMAL DRUG DELIVERY METHOD AND SYSTEM
Appl. No.:	10/711,389
Filing Date:	09/15/2004
Examiner:	Melissa S. MERCIER
Art Unit:	1615
Conf. No.:	5388

REVOCATION OF PRIOR POWERS OF ATTORNEY BY ASSIGNEE
APPOINTMENT OF NEW POWER OF ATTORNEY BY ASSIGNEE
CHANGE OF CORRESPONDENCE ADDRESS

Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

Sir:

CHRONO THERAPEUTICS, INC. is the assignee in part of Application No. 10/711,389, filed September 15, 2004, and all continuing applications thereof, as evidenced by the enclosed Statement under 3.73(b).

CHRONO THERAPEUTICS, INC. through its duly-delegated representative, hereby revokes all prior Powers of Attorney submitted in this application, and hereby appoints

the registered patent attorneys and patent agents associated with Customer Number:

22428

as its principal attorneys to have full power to prosecute this application and any continuations, divisions, reissues, and reexaminations thereof, to receive the patent, to transact all business in

the United States Patent and Trademark Office connected therewith, and to have full power of substitution, association, and revocation, including the power to revoke the power of attorney of any associate attorney.

Please direct all future correspondence concerning this application to:

Michele M. Simkin
FOLEY & LARDNER LLP
Customer Number: 22428

Telephone: (202) 672-5538
Facsimile: (202) 672-5399

Executed this 30 day of September, 2009.

CHRONO THERAPEUTICS, INC.

By: Guy DiPierro
(Signature)

Guy DiPierro
(Printed Name)

President
(Title)

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Applicants: Werner Zumbrunn et al.

Title: TRANSDERMAL DRUG DELIVERY METHOD AND SYSTEM

Appl. No.: 10/711,389

Filing Date: 09/15/2004

Examiner: Melissa S. MERCIER

Art Unit: 1615

Conf. No.: 5388

REVOCATION OF PRIOR POWERS OF ATTORNEY BY ASSIGNEE
APPOINTMENT OF NEW POWER OF ATTORNEY BY ASSIGNEE
CHANGE OF CORRESPONDENCE ADDRESS

Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

Sir:

UNIVERSITY OF BASEL is the assignee in part of Application No. 10/711,389, filed September 15, 2004, and all continuing applications thereof, as evidenced by the enclosed Statement under 3.73(b).

UNIVERSITY OF BASEL through its duly-delegated representative, hereby revokes all prior Powers of Attorney submitted in this application, and hereby appoints

the registered patent attorneys and patent agents associated with Customer Number:

22428

as its principal attorneys to have full power to prosecute this application and any continuations, divisions, reissues, and reexaminations thereof, to receive the patent, to transact all business in

the United States Patent and Trademark Office connected therewith, and to have full power of substitution, association, and revocation, including the power to revoke the power of attorney of any associate attorney.

Please direct all future correspondence concerning this application to:

Michele M. Simkin
FOLEY & LARDNER LLP
Customer Number: 22428

Telephone: (202) 672-5538
Facsimile: (202) 672-5399

Executed this 5 day of October, 2009.

UNIVERSITY OF BASEL

By: B. Dalle Carbonare
(Signature)

Dr. Bruno H. Dalle Carbonare
(Printed Name)

Head Office of Technology Transfer University of Basel
(Title)

PTO/SB/96 (06-04)
Approved for use through 07/31/2006. OMB 0651-0031
U.S. Patent and Trademark Office; U.S. DEPARTMENT OF COMMERCE

STATEMENT UNDER 37 CFR 3.73(b)

Applicant/Patent Owner:	Werner Zumbrunn et al.		
Application No.:	**10/711,389**	Filed:	**09/15/2004**
Patent No.:		Issue Date:	
Docket Number:	095473-0106		
Entitled:	TRANSDERMAL DRUG DELIVERY METHOD AND SYSTEM		

CHRONO THERAPEUTICS INC. AND UNIVERSITY OF BASEL (Name of Assignees)

CORPORATION AND UNIVERSITY (Type of Assignee, e.g., corporation, partnership, university, government agency, etc.)

states that it is:

1. ☒ the assignees of the entire right, title, and interest; or
2. ☐ an assignee of less than the entire right, title, and interest
The extent (by percentage) of its ownership interest is %

in the patent application/patent identified above by virtue of either:

A. ☐ An assignment from the inventor(s) of the patent application/patent identified above. The assignment was filed on July 13, 2009, in the United States Patent and Trademark Office for which a copy thereof is attached.

OR

B. ☒ A chain of title from the inventor(s), of the patent application/patent identified above, to the current assignee as shown below:

1. From: **Hans Werner VAN DE VENN** To: **FACHHOCHSCHULE SOLOTHURN**
The document was recorded in the United States Patent and Trademark Office on **07/24/2007** at Reel **019604**, Frame **0184**, or for which a copy thereof is attached.

2. From: **Werner ZUMBRUNN** To: **FACHHOCHSCHULE SOLOTHURN**
The document was recorded in the United States Patent and Trademark Office on **07/24/2007** at Reel **019604**, Frame **0688**, or for which a copy thereof is attached.

3. From: **FACHHOCHSCHULE SOLOTHURN** To: **UNIVERSITY OF BASEL**
A copy of the Assignment is attached.

4. From: **George IMANIDIS and Guy DIPIERRO** To: **CHRONO THERAPEUTICS, INC.**
The document was recorded in the United States Patent and Trademark Office on **01/11/2006** at Reel **017178**, Frame **0266**, or for which a copy thereof is attached.

☐ Additional documents in the chain of title are listed on a supplemental sheet.

☒ Copies of assignments or other documents in the chain of title are attached.
[**NOTE**: A separate copy (i.e., a true copy of the original document(s)) must be submitted to Assignment Division in accordance with 37 CFR Part 3, if the assignment is to be recorded in the records of the USPTO. See MPEP 302.08]

The undersigned (whose title is supplied below) is authorized to act on behalf of the assignee.

Signature	October 7, 2009 Date
Michele M. Simkin, Reg. No. 34,717 Printed or Typed Name	(202) 672-5538 Telephone Number
Registered Attorney Title	

Assignment of Patent Rights

Fachhochschule Nordwestschweiz, formerly Fachhochschule Solothurn, ("ASSIGNOR") having a residence at Schulthess-Allee 1, 5201 Brugg, Switzerland assigns to University of Basel ("ASSIGNEE") having its place of business at Petersgraben 35, 4003 Basel, Switzerland, its part in the entire right, title, and interest in and to the invention relating to "TRANSDERMAL DRUG DELIVERY METHOD AND SYSTEM", as fully described and claimed in the PCT patent application **PCT/IB2004/02947** accorded a filing date being September 13, 2004, and any and all applications for patent and patents in any and all countries, including all divisions, continuations, reissues, and extensions thereof and all rights of priority resulting from the filing of the Swiss patent application No. 01833/03 filed October 27, 2003, and authorize and request any official whose duty it is to issue patents to issue any patent on said invention or resulting therefrom to ASSIGNEE, or its successors, assigns, or nominees, and agrees that on request and without further consideration, but at the expense of ASSIGNEE, ASSIGNOR will testify in any legal proceedings, sign all lawful papers and make all rightful oaths.

ASSIGNOR further transfers and assigns to ASSIGNEE all causes of action, rights, and remedies arising under any such patent or application prior to or after the effective date of this Agreement. Effective date shall be March 15, 2006.

ASSIGNOR

Place/Date: Olten, 22.6.06

Prof. Rainer Schnaidt, Head Transfer

Place/Date: Huber, 20-6-06

Prof. Gerda Huber, Director FHNW Life Science

ASSIGNEE

Place/Date: Basel, 14.6.06

Prof. Dr. Peter Meier-Abt, Vicerector

Place/Date: 13.6.06

Dr. Bruno H. Dalle Carbonare, Head Office of Technology Transfer

Electronic Patent Application Fee Transmittal

Application Number:	10711389
Filing Date:	15-Sep-2004
Title of Invention:	TRANSDERMAL DRUG DELIVERY METHOD AND SYSTEM
First Named Inventor/Applicant Name:	Werner Zumbrunn
Filer:	Michelle M. Simkin
Attorney Docket Number:	CT0002

Filed as Small Entity

Utility under 35 USC 111(a) Filing Fees

Description	Fee Code	Quantity	Amount	Sub-Total in USD($)
Basic Filing:				
Pages:				
Claims:				
Claims in excess of 20	2202	2	26	52
Miscellaneous-Filing:				
Petition:				
Patent-Appeals-and-Interference:				
Post-Allowance-and-Post-Issuance:				
Extension-of-Time:				

Description	Fee Code	Quantity	Amount	Sub-Total in USD($)
Extension - 1 month with $0 paid	2251	1	65	65
Miscellaneous:				
			Total in USD ($)	**117**

Electronic Acknowledgement Receipt

EFS ID:	6222008
Application Number:	10711389
International Application Number:	
Confirmation Number:	5388
Title of Invention:	TRANSDERMAL DRUG DELIVERY METHOD AND SYSTEM
First Named Inventor/Applicant Name:	Werner Zumbrunn
Customer Number:	25235
Filer:	Michelle M. Simkin
Filer Authorized By:	
Attorney Docket Number:	CT0002
Receipt Date:	07-OCT-2009
Filing Date:	15-SEP-2004
Time Stamp:	18:02:19
Application Type:	Utility under 35 USC 111(a)

Payment information:

Submitted with Payment	yes
Payment Type	Credit Card
Payment was successfully received in RAM	$117
RAM confirmation Number	4383
Deposit Account	
Authorized User	

File Listing:

Document Number	Document Description	File Name	File Size(Bytes)/ Message Digest	Multi Part /.zip	Pages (if appl.)

1	Miscellaneous Incoming Letter	Amendment_Transmittal.pdf	27480 c6ab361e6640f0c7584f630a82ad24c620de3563	no	3
Warnings:					
Information:					
2	Amendment/Req. Reconsideration-After Non-Final Reject	Amendment_and_Reply.pdf	101986 d1d758183b9a06db6ba73a0c6932ea6df2199a8e	no	12
Warnings:					
Information:					
3	Power of Attorney	Power_of_Attorney.pdf	67608 99a30ce330875c883150cd556c1465b6e6974745	no	4
Warnings:					
Information:					
4	Assignee showing of ownership per 37 CFR 3.73(b).	Statement_37CFR373b_and_Assignment.pdf	54297 52b2f4872fe32fa3268c459838b834af4e77e434	no	2
Warnings:					
Information:					
5	Fee Worksheet (PTO-875)	fee-info.pdf	32229 ea60137e094a33b2be9f0a29282d56e365ba1e44	no	2
Warnings:					
Information:					
		Total Files Size (in bytes):	283600		

This Acknowledgement Receipt evidences receipt on the noted date by the USPTO of the indicated documents, characterized by the applicant, and including page counts, where applicable. It serves as evidence of receipt similar to a Post Card, as described in MPEP 503.

<u>New Applications Under 35 U.S.C. 111</u>
If a new application is being filed and the application includes the necessary components for a filing date (see 37 CFR 1.53(b)-(d) and MPEP 506), a Filing Receipt (37 CFR 1.54) will be issued in due course and the date shown on this Acknowledgement Receipt will establish the filing date of the application.

<u>National Stage of an International Application under 35 U.S.C. 371</u>
If a timely submission to enter the national stage of an international application is compliant with the conditions of 35 U.S.C. 371 and other applicable requirements a Form PCT/DO/EO/903 indicating acceptance of the application as a national stage submission under 35 U.S.C. 371 will be issued in addition to the Filing Receipt, in due course.

<u>New International Application Filed with the USPTO as a Receiving Office</u>
If a new international application is being filed and the international application includes the necessary components for an international filing date (see PCT Article 11 and MPEP 1810), a Notification of the International Application Number and of the International Filing Date (Form PCT/RO/105) will be issued in due course, subject to prescriptions concerning national security, and the date shown on this Acknowledgement Receipt will establish the international filing date of the application.

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Applicant: Zumbrunn et al.

Title: TRANSDERMAL DRUG DELIVERY METHOD AND SYSTEM

Appl. No.: 10/711,389

Filing Date: 9/13/2004

Examiner: Mercier, Melissa S.

Art Unit: 1615

Confirmation Number: 5388

AMENDMENT TRANSMITTAL

Mail Stop Amendment
Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

Sir:

Transmitted herewith is an amendment in the above-identified application.

[**X**] Small Entity status under 37 C.F.R. § 1.9 and § 1.27 has been established by a previous assertion of Small Entity status.

[**X**] The fee required for additional claims is calculated below:

	Claims As Amended		Previously Paid For		Extra Claims Present		Rate		Additional Claims Fee
Total Claims:	39	-	37	=	2	x	$52.00	=	$104.00

Independent Claims:	3	-	3	=	0	x	$220.00	=	$0.00
First presentation of any Multiple Dependent Claims:						+	$390.00	=	$0.00
							CLAIMS FEE TOTAL	=	$104.00

[**X**] Applicant hereby petitions for an extension of time under 37 C.F.R. §1.136(a) for the total number of months checked below:

[X]	Extension for response filed within the first month:	$130.00	$130.00
[ ]	Extension for response filed within the second month:	$490.00	$0.00
[ ]	Extension for response filed within the third month:	$1,110.00	$0.00
[ ]	Extension for response filed within the fourth month:	$1,730.00	$0.00
[ ]	Extension for response filed within the fifth month:	$2,350.00	$0.00
	EXTENSION FEE TOTAL:		$130.00
[ ]	Statutory Disclaimer Fee under 37 C.F.R. 1.20(d):	$140.00	$0.00
	CLAIMS, EXTENSION AND DISCLAIMER FEE TOTAL:		$234.00
[X]	Small Entity Fees Apply (subtract ½ of above):		$117.00
	Extension Fees Previously Paid:		$0.00
	TOTAL FEE:		$117.00

The above-identified fees of $117.00 are being paid by credit card via EFS-Web.

The Commissioner is hereby authorized to charge any additional fees which may be required regarding this application under 37 C.F.R. §§ 1.16-1.17, or credit any overpayment, to Deposit Account No. 19-0741. Should no proper payment be enclosed herewith, as by the credit card payment instructions in EFS-Web being incorrect or absent, resulting in a rejected or incorrect credit card transaction, the Commissioner is authorized to charge the unpaid amount to Deposit Account No. 19-0741.

If any extensions of time are needed for timely acceptance of papers submitted herewith, applicant hereby petitions for such extension under 37 C.F.R. §1.136 and authorizes payment of any such extensions fees to Deposit Account No. 19-0741.

Please direct all correspondence to the undersigned attorney or agent at the address indicated below.

Respectfully submitted,

Date: October 7, 2009

By /James D. Borchardt/

FOLEY & LARDNER LLP
Customer Number: 22428
Telephone: (414) 319-7077
Facsimile: (414) 297-4900

James D. Borchardt
Attorney for Applicant
Registration No. 62,025

PTO/SB/06 (07-06)
Approved for use through 1/31/2007. OMB 0651-0032
U.S. Patent and Trademark Office; U.S. DEPARTMENT OF COMMERCE
Under the Paperwork Reduction Act of 1995, no persons are required to respond to a collection of information unless it displays a valid OMB control number.

PATENT APPLICATION FEE DETERMINATION RECORD Substitute for Form PTO-875	Application or Docket Number 10/711,389	Filing Date 09/15/2004	☐ To be Mailed

APPLICATION AS FILED – PART I

	(Column 1)	(Column 2)	SMALL ENTITY ☒		OR	OTHER THAN SMALL ENTITY	
FOR	NUMBER FILED	NUMBER EXTRA	RATE ($)	FEE ($)		RATE ($)	FEE ($)
☒ BASIC FEE (37 CFR 1.16(a), (b), or (c))	N/A	N/A	N/A	0		N/A	
☐ SEARCH FEE (37 CFR 1.16(k), (i), or (m))	N/A	N/A	N/A			N/A	
☐ EXAMINATION FEE (37 CFR 1.16(o), (p), or (q))	N/A	N/A	N/A			N/A	
TOTAL CLAIMS (37 CFR 1.16(i))	minus 20 =	*	X $ =		OR	X $ =	
INDEPENDENT CLAIMS (37 CFR 1.16(h))	minus 3 =	*	X $ =			X $ =	
☐ APPLICATION SIZE FEE (37 CFR 1.16(s))	If the specification and drawings exceed 100 sheets of paper, the application size fee due is $250 ($125 for small entity) for each additional 50 sheets or fraction thereof. See 35 U.S.C. 41(a)(1)(G) and 37 CFR 1.16(s).						
☐ MULTIPLE DEPENDENT CLAIM PRESENT (37 CFR 1.16(j))							
* If the difference in column 1 is less than zero, enter "0" in column 2.			TOTAL	0		TOTAL	

APPLICATION AS AMENDED – PART II

	(Column 1)		(Column 2)	(Column 3)	SMALL ENTITY		OR	OTHER THAN SMALL ENTITY	
AMENDMENT	**10/07/2009**	CLAIMS REMAINING AFTER AMENDMENT		HIGHEST NUMBER PREVIOUSLY PAID FOR	PRESENT EXTRA	RATE ($)	ADDITIONAL FEE ($)		RATE ($)	ADDITIONAL FEE ($)
	Total (37 CFR 1.16(i))	* 39	Minus	** 37	= 2	X $26 =	52	OR	X $ =	
	Independent (37 CFR 1.16(h))	* 3	Minus	***3	= 0	X $110 =	0	OR	X $ =	
	☐ Application Size Fee (37 CFR 1.16(s))									
	☐ FIRST PRESENTATION OF MULTIPLE DEPENDENT CLAIM (37 CFR 1.16(j))							OR		
						TOTAL ADD'L FEE	52	OR	TOTAL ADD'L FEE	

		(Column 1) CLAIMS REMAINING AFTER AMENDMENT		(Column 2) HIGHEST NUMBER PREVIOUSLY PAID FOR	(Column 3) PRESENT EXTRA	RATE ($)	ADDITIONAL FEE ($)		RATE ($)	ADDITIONAL FEE ($)
AMENDMENT	Total (37 CFR 1.16(i))	*	Minus	**	=	X $ =		OR	X $ =	
	Independent (37 CFR 1.16(h))	*	Minus	***	=	X $ =		OR	X $ =	
	☐ Application Size Fee (37 CFR 1.16(s))									
	☐ FIRST PRESENTATION OF MULTIPLE DEPENDENT CLAIM (37 CFR 1.16(j))							OR		
						TOTAL ADD'L FEE		OR	TOTAL ADD'L FEE	

* If the entry in column 1 is less than the entry in column 2, write "0" in column 3.

** If the "Highest Number Previously Paid For" IN THIS SPACE is less than 20, enter "20".

*** If the "Highest Number Previously Paid For" IN THIS SPACE is less than 3, enter "3".

The "Highest Number Previously Paid For" (Total or Independent) is the highest number found in the appropriate box in column 1.

Legal Instrument Examiner:
/TER J. JACKSON WOODRUFF/

UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/711,389	09/15/2004	Werner Zumbrunn	CT0002	5388

25235 7590 07/01/2009

HOGAN & HARTSON LLP
ONE TABOR CENTER, SUITE 1500
1200 SEVENTEENTH ST
DENVER, CO 80202

EXAMINER
MERCIER, MELISSA S

ART UNIT	PAPER NUMBER
1615	

NOTIFICATION DATE	DELIVERY MODE
07/01/2009	ELECTRONIC

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Notice of the Office communication was sent electronically on above-indicated "Notification Date" to the following e-mail address(es):

patentcolorado@hhlaw.com

Office Action Summary	Application No.	Applicant(s)	
	10/711,389	ZUMBRUNN ET AL.	
	Examiner	Art Unit	
	MELISSA S. MERCIER	1615	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE *3* MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *26 November 2008*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-37* is/are pending in the application.

4a) Of the above claim(s) *1-16,19,24,25,27-32,36 and 37* is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *17,18,20-23,26 and 33-35* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date *1-23-07, 8-17-07*.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

Election/Restrictions

Claims 1-16 and 36-37 have been withdrawn from further consideration pursuant to 37 CFR 1.142(b) as being drawn to a nonelected Groups I and III, there being no allowable generic or linking claim. Election was made **without** traverse in the reply filed on August 1, 2008.

Claims 19, 24-25 and 27-32 have been withdrawn from further consideration pursuant to 37 CFR 1.142(b) as being drawn to a nonelected species, there being no allowable generic or linking claim. Election was made **without** traverse in the reply filed on November 26, 2008.

Claims 17-18, 20-23, 26 and 33-35 are under prosecution in this application.

Information Disclosure Statement

Receipt of the Information Disclosure Statements filed on January 23, 2007 and August 17, 2007 is acknowledged. Signed copies are attached to this office action.

Claim Rejections - 35 USC § 112

The following is a quotation of the second paragraph of 35 U.S.C. 112:

> The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

Claims 23 rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

It is unclear what the separation means “14” is meant to convey. It is suggested Applicant amend the claim to recite the actual component represented by "14".

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Claims 17-18, 20-23, 26 and 35 are rejected under 35 U.S.C. 102(b) as being anticipated by Murdock (US Patent 6,374,136).

Murdock discloses an electrode assembly and a method of forming an anhydrous reservoirs layer of an electrode assembly in an electro transport transdermal agent delivery device. The reservoir layer is adapted to be placed in agent transmitting relation with a body surface and an electrode in electric contact with a power source and the reservoir layer. The method includes the steps of dissolving a beneficial agent in a solvent, applying the solvent and dissolved beneficial agent to a surface of a hydrophilic polymer filtration membrane, removing the solvent from the surface of the filtration membrane and disposing the beneficial agent/filtration membrane with the electrode assembly (abstract). The solvent can be removed from the polymer membrane by drying the membrane in a forced air oven, a vacuum drying oven, a desiccators, or by lyophilizing the polymer membrane (column 5, lines 48-51).

Applicant has identified the porous structure to be skin; therefore, application of the transdermal patch meets the limitation of arranged in the vicinity of the porous surface.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

The factual inquiries set forth in *Graham* **v.** *John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to

consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

Claims 33-34 are rejected under 35 U.S.C. 103(a) as being unpatentable over Murdock (US Patent 6,374,136) in view of Haak et al. (US Patent 5,993,435).

The teachings of Murdock are discussed above and applied in the same manner.

Murdock does not disclose the use of sensors.

Haak discloses an iontophoretic delivery device comprising a selectively permeable membrane positioned between the agent reservoirs and electrode (abstract).

A control circuit is optionally provided. It may take the form of an on-off switch for on demand drug delivery, a timer, a fixed or variable electrical resistor and a controller which automatically turn the device on and off at some desired periodicity to match the natural or circadian patterns of the body (column 10, lines 57-60). The control circuit may include an integrated circuit which could be designed to control the dosage of beneficial agent, or to respond to sensor signals in order to regulate the dosage to maintain a predetermined dosage regimen (column 11, lines 3-7).

It would have been obvious to one of ordinary skill in the art at the time the invention was made to have incorporated the circuit control of Haak into the device of Murdock in order to control the dosage of the beneficial agent and to regulate the dosage to maintain a predetermined dosage as described by Haak.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to MELISSA S. MERCIER whose telephone number is (571)272-9039. The examiner can normally be reached on 8:00am-4:30pm Mon through Friday.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Michael Woodward can be reached on (571) 272-8373. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Melissa S Mercier/
Examiner, Art Unit 1615

/MP WOODWARD/
Supervisory Patent Examiner, Art Unit 1615

Notice of References Cited	Application/Control No. 10/711,389	Applicant(s)/Patent Under Reexamination ZUMBRUNN ET AL.	
	Examiner MELISSA S. MERCIER	Art Unit 1615	Page 1 of 1

U.S. PATENT DOCUMENTS

*		Document Number Country Code-Number-Kind Code	Date MM-YYYY	Name	Classification
*	A	US-5,993,435	11-1999	Haak et al.	604/501
*	B	US-6,374,136	04-2002	Murdock, Thomas O.	604/20
	C	US-			
	D	US-			
	E	US-			
	F	US-			
	G	US-			
	H	US-			
	I	US-			
	J	US-			
	K	US-			
	L	US-			
	M	US-			

FOREIGN PATENT DOCUMENTS

*		Document Number Country Code-Number-Kind Code	Date MM-YYYY	Country	Name	Classification
	N					
	O					
	P					
	Q					
	R					
	S					
	T					

NON-PATENT DOCUMENTS

*		Include as applicable: Author, Title Date, Publisher, Edition or Volume, Pertinent Pages)
	U	
	V	
	W	
	X	

*A copy of this reference is not being furnished with this Office action. (See MPEP § 707.05(a).)
Dates in MM-YYYY format are publication dates. Classifications may be US or foreign.

Search Notes	Application/Control No.	Applicant(s)/Patent Under Reexamination
	10711389	ZUMBRUNN ET AL.
	Examiner	Art Unit
	MELISSA S MERCIER	1615

SEARCHED

Class	Subclass	Date	Examiner

SEARCH NOTES

Search Notes	Date	Examiner
East-see attached	6-22-09	MMercier
Palm inventor search	6-20-09	MMercier

INTERFERENCE SEARCH

Class	Subclass	Date	Examiner

/MELISSA S MERCIER/ Examiner.Art Unit 1615	

PTO/SB/08a(08/03)
Approved for use through 07/31/2006. OMB 0651-0031
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Substitute for form 1449A/PTO

INFORMATION DISCLOSURE STATEMENT BY APPLICANT

(Use as many sheets as necessary)

Sheet 1 of 1

Application Number	**10/711,389**
Filing Date	**September 15, 2004**
First Named Inventor	**Guy DiPierro**
Art Unit	**3761**
Examiner Name	**Not Yet Assigned**
Attorney Docket No.	**DIPI0002**

U.S. PATENT DOCUMENTS

Examiner Initials	Cite No.[1]	Document No. No. – Kind Code[2]	Publication Date MM-DD-YYYY	Name of Patentee or Applicant of Cited Doc	Pages, Columns, Lines, Where Relevant Passages or Relevant Figures Appear
		US-4,708,716	11/24/1987	Sibalis	
		US-5,242,941	09/07/1993	Lewy et al.	
		US-5,352,456	10/04/1994	Fallon et al.	
		US-5,370,635	12/06/1994	Stausak et al.	
		US-5,538,503	07/23/1996	Henley	
		US-5,370,635	12/06/1994	Strausak et al.	
		US-5,785,688	07/28/1998	Joshi et al.	
		US-5,820,875	10/13/1998	Fallon et al.	
		US-6,068,853	05/30/2000	Giannos et al.	
		US-6,165,155	12/26/2000	Jacobsen et al.	
		US-6,214,379	04/10/2001	Hermelin	
		US-6,638,528	10/28/2003	Kanios	
		US-6,595,956	07/22/2003	Gross et al.	
		US-6,723,077	04/20/2004	Pickup et al.	
		US-6,723,086	04/20/2004	Bussek et al.	
		US-6,861,066	03/01/2005	Van de Casteele	
		US-6,867,342	03/15/2005	Johnston et al.	
		US-6,887,202	05/03/2005	Currie et al.	
		US-2005/0034842	02/17/2005	Huber et al.	
		US-2005/0182307	08/18/2005	Currie et al.	
		US-2005/0238704	10/27/2005	Zumbrunn, Werner et al.	

EXAMINER SIGNATURE	/Melissa Mercier/ (06/23/2009)	DATE CONSIDERED	

EXAMINER: Initial if reference considered, whether or not citation is in conformance with MPEP 609. Draw line through citation if not in conformance and not considered. Include copy of this form with next communication to applicant. [1] Applicant's unique citation designation number (optional). [2] See Kinds Codes of USPTO Patent Documents at www.uspto.gov or MPEP 901.04. [3] Enter Office that issued the document, by the two-letter code (WIPO Standard ST.3). [4] For Japanese patent documents, the indication of the year of the reign of the Emperor must precede the serial number of the patent document. [5] Kind of document by the appropriate symbols as indicated on the document under WIPO Standard ST. 16 if possible. 6 Applicant is to place a check mark here if English language Translation is attached.

This collection of information is required by 37 CFR 1.97 and 1.98. The information is required to obtain or retain a benefit by the public which is to file (and by the USPTO to process) and application. Confidentiality is governed by 35 U.S.C. 122 and 37 CFR 1.14. This collection is estimated to take 2 hours to complete, including gathering, preparing, and submitting the completed application form to the USPTO. Time will vary depending upon the individual case. Any comments on the amount of time you require to complete this form and/or suggestions for reducing this burden, should be sent to the Chief information Officer, U.S. Patent and Trademark Office, U.S. Department of Commerce, P.O. Box 1450, Alexandria, VA 22313-1450. DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS. **SEND TO: Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450.**

ALL REFERENCES CONSIDERED EXCEPT WHERE LINED THROUGH. /MM/

PTO/SB/08a(08/03)
Approved for use through 07/31/2006. OMB 0651-0031
Patent and Trademark Office; U.S. DEPARTMENT OF COMMERCE

Substitute for form 1449A/PTO				Application Number	10/711,389
				Filing Date	September 15, 2004
INFORMATION DISCLOSURE STATEMENT BY APPLICANT				First Named Inventor	Georgio IMANIDIS
				Art Unit	1615
(Use as many sheets as necessary)				Examiner Name	Melissa S. MERCIER
Sheet	1	of	2	Attorney Docket No.	DIPI0002

U.S. PATENT DOCUMENTS

Examiner Initials	Cite No.[1]	Document No. No. – Kind Code[2]	Publication Date MM-DD-YYYY	Name of Patentee or Applicant of Cited Doc	Pages, Columns, Lines, Where Relevant Passages or Relevant Figures Appear

FOREIGN PATENT DOCUMENTS

Examiner Initials	Cite No.[1]	Foreign Patent Document Country Code[3] Number[4] Kind Code[5]	Publication Date MM-DD-YYYY	Name of Patentee or Applicant of Cited Doc	Pages, Columns. Lines Where Relevant Passages or Relevant Figures Appear	T[6]

EXAMINER SIGNATURE	/Melissa Mercier/ (06/23/2009)	DATE CONSIDERED	

EXAMINER: Initial if reference considered, whether or not citation is in conformance with MPEP 609. Draw line through citation if not in conformance and not considered. Include copy of this form with next communication to applicant. [1] Applicant's unique citation designation number (optional). [2] See Kinds Codes of USPTO Patent Documents at www.uspto.gov or MPEP 901.04. [3] Enter Office that issued the document, by the two-letter code (WIPO Standard ST.3). [4] For Japanese patent documents, the indication of the year of the reign of the Emperor must precede the serial number of the patent document. [5] Kind of document by the appropriate symbols as indicated on the document under WIPO Standard ST. 16 if possible. 6 Applicant is to place a check mark here if English language Translation is attached.

PTO/SB/08a(08/03)
Approved for use through 07/31/2006. OMB 0651-0031
Patent and Trademark Office; U.S. DEPARTMENT OF COMMERCE
Under the Paperwork Reduction Act of 1995, no persons are required to respond to a collection of information unless it displays a valid. OMB control number.

Substitute for form 1449A/PTO				Application Number	10/711,389
INFORMATION DISCLOSURE STATEMENT BY APPLICANT				Filing Date	September 15, 2004
				First Named Inventor	Georgio IMANIDIS
				Art Unit	1615
(Use as many sheets as necessary)				Examiner Name	Melissa S. MERCIER
Sheet	2	of	2	Attorney Docket No.	DIPI0002

NON PATENT LITERATURE DOCUMENTS			
Examiner Initials*	Cite No.[1]	Include name of the author (in CAPITAL LETTERS), title of the article (when appropriate), title of the item (book, magazine, journal, serial, symposium, catalog, etc.), date, page(s), volume-issue number(s) publisher, city and/or country where published	T[2]
/MM/		**INTERNATIONAL PRELIMINARY REPORT ON PATENTABILITY; PCT/IB2004/002947; MAY 1, 2006**	

EXAMINER SIGNATURE	/Melissa Mercier/ (06/23/2009)	DATE CONSIDERED	

EXAMINER: Initial if reference considered, whether or not citation is in conformance with MPEP 609. Draw line through citation if not in conformance and not considered. Include copy of this form with next communication to applicant.

[1] Applicant's unique citation designation number (optional). [2] Applicant is to place a check mark here if English language Translation is attached. This collection of information is required by 37 CFR 1.97 and 1.98. The information is required to obtain or retain a benefit by the public which is to file (and by the USPTO to process) and application. Confidentiality is governed by 35 U.S.C. 122 and 37 CFR 1.14. This collection is estimated to take 2 hours to complete, including gathering, preparing, and submitting the completed application form to the USPTO. Time will vary depending upon the individual case. Any comments on the amount of time you require to complete this form and/or suggestions for reducing this burden, should be sent to the Chief information Officer, U.S. Patent and Trademark Office, U.S. Department of Commerce, P.O. Box 1450, Alexandria, VA 22313-1450. DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS. **SEND TO: Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450.**

Attorney Docket No. CT0002
Client Matter No. 22494.0003

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Appl. No.	10/711,389	Confirmation No. 5388	
Inventor(s):	Guy DIPIERRO, et al.	Title:	TRANSDERMAL DRUG DELIVERY METHOD AND SYSTEM
Filed:	September 15, 2004		
TC/A.U.	1615		
Examiner:	Melissa S. MERCIER		
Docket No.	CT0002		
Customer No. 25235			

RESPONSE TO COMMUNICATION

Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

Sir:

In response to the Communication mailed October 20, 2008 in the above case, please consider the remarks which follow.

Remarks begin on page 2 hereof.

REMARKS

A Restriction Requirement was mailed June 11, 2008 in the above-referenced application. A response was filed August 1, 2008, electing the claims of Group II.

An Office Communication was then mailed October 30, 2008, requesting an election of species with respect to type of interface device, type of separation means, type of dispensing device and operation of control device.

Applicant hereby elects a membrane as the type of interface device, an air gap as the type of separation means, a pump as the type of dispensing device and a control means interconnected with at least one sensor for measuring the administration of at least one active unit as the operation of control device.

Should the Examiner like to discuss this matter further, or if it would otherwise expedite prosecution, the Examiner is invited to telephone the undersigned at her convenience. Although no fees are believed due for this filing, the Office is authorized to charges any fees deemed associated with this filing to Deposit Account No. 50-1123.

Respectfully submitted,

November 26, 2008

Carol W. Burton, Reg. No. 35,465
Hogan & Hartson LLP
1200 17th Street, Suite 1500
Denver, Colorado 80202
Telephone (303) 454-2454
Facsimile (303) 899-7333

Electronic Acknowledgement Receipt

EFS ID:	4364665
Application Number:	10711389
International Application Number:	
Confirmation Number:	5388
Title of Invention:	TRANSDERMAL DRUG DELIVERY METHOD AND SYSTEM
First Named Inventor/Applicant Name:	Werner Zumbrunn
Customer Number:	25235
Filer:	Carol W. Burton/Dane Stephenson
Filer Authorized By:	Carol W. Burton
Attorney Docket Number:	CT0002
Receipt Date:	26-NOV-2008
Filing Date:	15-SEP-2004
Time Stamp:	17:15:45
Application Type:	Utility under 35 USC 111(a)

Payment information:

Submitted with Payment	no

File Listing:

Document Number	Document Description	File Name	File Size(Bytes)/ Message Digest	Multi Part /.zip	Pages (if appl.)
1		224940003ResponsetoCommunication.pdf	13382 e1f2db37b8b6cd08b876103370ce419e8b313570	yes	2

	Multipart Description/PDF files in .zip description		
	Document Description	**Start**	**End**
	Response to Election / Restriction Filed	1	1
	Applicant Arguments/Remarks Made in an Amendment	2	2
Warnings:			
Information:			
	Total Files Size (in bytes):	13382	

This Acknowledgement Receipt evidences receipt on the noted date by the USPTO of the indicated documents, characterized by the applicant, and including page counts, where applicable. It serves as evidence of receipt similar to a Post Card, as described in MPEP 503.

New Applications Under 35 U.S.C. 111
If a new application is being filed and the application includes the necessary components for a filing date (see 37 CFR 1.53(b)-(d) and MPEP 506), a Filing Receipt (37 CFR 1.54) will be issued in due course and the date shown on this Acknowledgement Receipt will establish the filing date of the application.

National Stage of an International Application under 35 U.S.C. 371
If a timely submission to enter the national stage of an international application is compliant with the conditions of 35 U.S.C. 371 and other applicable requirements a Form PCT/DO/EO/903 indicating acceptance of the application as a national stage submission under 35 U.S.C. 371 will be issued in addition to the Filing Receipt, in due course.

New International Application Filed with the USPTO as a Receiving Office
If a new international application is being filed and the international application includes the necessary components for an international filing date (see PCT Article 11 and MPEP 1810), a Notification of the International Application Number and of the International Filing Date (Form PCT/RO/105) will be issued in due course, subject to prescriptions concerning national security, and the date shown on this Acknowledgement Receipt will establish the international filing date of the application.

UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/711,389	09/15/2004	Werner Zumbrunn	CT0002	5388

25235 7590 10/30/2008

HOGAN & HARTSON LLP
ONE TABOR CENTER, SUITE 1500
1200 SEVENTEENTH ST
DENVER, CO 80202

EXAMINER	
MERCIER, MELISSA S	
ART UNIT	**PAPER NUMBER**
1615	
MAIL DATE	**DELIVERY MODE**
10/30/2008	PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

UNITED STATES DEPARTMENT OF COMMERCE
U.S. Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450

APPLICATION NO./ CONTROL NO.	FILING DATE	FIRST NAMED INVENTOR / PATENT IN REEXAMINATION	ATTORNEY DOCKET NO.
10711389	9/15/2004	ZUMBRUNN ET AL.	CT0002

HOGAN & HARTSON LLP
ONE TABOR CENTER, SUITE 1500
1200 SEVENTEENTH ST
DENVER, CO 80202

EXAMINER	
MELISSA S. MERCIER	
ART UNIT	**PAPER**
1615	20081020

DATE MAILED:

Please find below and/or attached an Office communication concerning this application or proceeding.

Commissioner for Patents

The reply filed on August 1, 2008 is not fully responsive to the prior Office Action because of the following omission(s) or matter(s): Applicant has not further elected a species Type of Interface device, Type of Separation means, Type of Dispensing device, Operation of control device as required on 6-7. See 37 CFR 1.111. Since the above-mentioned reply appears to be *bona fide*, applicant is given **ONE (1) MONTH or THIRTY (30) DAYS** from the mailing date of this notice, whichever is longer, within which to supply the omission or correction in order to avoid abandonment. EXTENSIONS OF THIS TIME PERIOD MAY BE GRANTED UNDER 37 CFR 1.136(a).

Any inquiry concerning this communication or earlier communications from the examiner should be directed to MELISSA S. MERCIER whose telephone number is (571)272-9039. The examiner can normally be reached on 7:30am-4pm Mon through Friday.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Michael Woodward can be reached on (571) 272-8373. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/MP WOODWARD/
Supervisory Patent Examiner, Art Unit 1615

Attorney Docket No. CT0002
Client Matter No. 22494.0003

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Appl. No.	10/711,389	Confirmation No. 5388	
Inventor(s):	Guy DIPIERRO, et al.	Title:	TRANSDERMAL DRUG DELIVERY METHOD AND SYSTEM
Filed:	September 15, 2004		
TC/A.U.	1615		
Examiner:	Melissa S. MERCIER		
Docket No.	CT0002		
Customer No. 25235			

RESPONSE TO RESTRICTION REQUIREMENT AND PETITION FOR 1-MONTH EXTENSION

Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

Sir:

Please enter the following amendments to the specification as originally filed.

Amendments to the **Claims** begin on page 2 hereof.

Remarks begin on page 6 hereof.

AMENDMENTS TO THE CLAIMS

1. (Withdrawn) A method for transdermal administration of at least one active substance to a porous surface, comprising the following steps:

a) dispensing a certain amount of a liquid comprising at least one active substance and at least one solvent into an administration reservoir,

b) separating at least a portion of the at least one solvent from the administration reservoir by a solvent recovery means such that the at least wherein one active substance achieves a certain level of concentration in vicinity to the porous surface to be treated;

c) absorption of the active substance by the porous surface to be treated via diffusion such that the level of concentration in the administration reservoir decreases.

2. (Withdrawn) The method according to claim 1 wherein the solvent is separated by evaporation.

3. (Withdrawn) The method according to claim 2 wherein the evaporation of the solvent is supported by a heating element.

4. (Withdrawn) The method according to claim 3 wherein the solvent is evaporated through a membrane passable preferably for the solvent.

5. (Withdrawn) The method according to claim 2 where the solvent is removed by a pre-programmed opening a pinch valve that is in contact with the porous surface.

6. (Withdrawn) The method according to claim 5 where the solvent is removed by programming the pumping of the solvent.

7. (Withdrawn) The method according to claim 2 where the solvent is removed by a programmed lowering of an arm or lever.

8. (Withdrawn) The method according to claims 2 wherein the solvent is absorbed by a desiccant.

9. (Withdrawn) The method according to claim 5 wherein the desiccant is one or a combination out of the group of silica gel, molecular sieves, active carbon.

10. (Withdrawn) The method according to claim one of the claims 2 wherein the solvent is discharged into the environment.

11. (Withdrawn) The method claim one of the claims 2 wherein the solvent is flushed by a fluid.

12. (Withdrawn) The method according to claim 1 wherein the at least one active substance passes an interface device which is permeable for the at least one active substance.

13. (Withdrawn) The method according to claim 12 wherein the interface device comprises a membrane.

14. (Withdrawn) The method according to claim 12 wherein the interface device comprises an adhesive layer suitable to be attached to the porous surface.

15. (Withdrawn) The method according to claim 1 wherein the steps a to c are repeated at predefined intervals such that the level of concentration of the at least one active substance in the administration reservoir is kept above a certain level.

16. (Withdrawn) The method according to claim 15 wherein the dispensing rate and the time pattern of dispensing the liquid into the administration reservoir are controlled by a programmable device.

17. (Previously presented) A device for transdermal administration of at least one active substance to a porous surface, comprising a dispensing device interconnected to an administration device for delivery of at least one active substance dissolved in a solvent to said administration device, wherein the administration device comprises an administration reservoir suitable to receive the active substance solved in the solvent, a solvent removal element means for absorption of solvent from the administration reservoir by evaporation and an interface suitable for transferring the active substance from the administration reservoir to the porous surface.

18. (Previously presented) The device according to claim 17 wherein the interface device is suitable to be arranged in vicinity to the porous surface.

19. (Previously presented) The device according to claim 18 wherein the interface means comprises an adhesive surface suitable to be attached to the porous surface.

20. (Previously presented) The device according to claim 17 wherein the interface means is a membrane permeable for the active substance.

21. (Previously presented) The device according to claim 17 wherein the solvent removal means element is separated from the administration reservoir by a separation means.

22. (Previously presented) The device according to claim 21 wherein the separation means is selected from the group consisting of a membrane, a foam, a cellular material, a honeycomb, and an air gap.

23. (Previously presented) The device according to claim 21 wherein the administration reservoir and the solvent removal means element are spaced apart a distance by the separation means 14.

24. (Previously presented) The device according to claim 17 wherein the solvent removal means element comprises one our or a combination out of the group of the following materials: Desiccant, general or a selective adsorbent material, silica gel, a molecular sieve, active carbon.

25. (Previously presented) The device according to claim 17 wherein the solvent removal means element comprises a chamber with an inlet and an outlet for flushing by a fluid.

26. (Previously presented) The device according to claim 17 wherein the dispensing device comprises at least one reservoir for an active substance which is interconnected to the administration device.

27. (Previously presented) The device according to claim 17 wherein the dispensing device comprises a propellant means to propel the active substance from the reservoir into the administration reservoir.

28. (Previously presented) The device according to 27 wherein the propellant means is a pump and/or a propellant gas.

29. (Previously presented) The device according to claim 26 wherein the dispensing means device comprises a first reservoir comprising a first active substance and a

second reservoir comprising a second active substance and the first and the second active substance are mixed by mixing means before delivery to the administration device.

30. (Previously presented) The device according to claim 28 wherein the mixing means is a pipe with vortex means providing an appropriate preparation of mixture.

31. (Previously presented) The device according to claim 35 wherein the control device is interconnected to at least one valve for controlling the administration of the at least one active substance.

32. (Previously presented) The device according to claim 30 wherein the control device is programmable according to a predetermined regime or time pattern or interval of administration of the at least one active substance.

33. (Previously presented) The device according to claim 30 wherein the control device is interconnected with at least one sensor for measuring the administration and the condition of at least one active substance.

34. (Previously presented) The device according to claim 33 wherein the administration of the active substance is determined by the signal of the at least one sensor.

35. (Previously presented) The control device according to claim 17 wherein the administration of the active substance is controlled by a control device.

36. (Withdrawn) An administration unit for application of at least one active substance to skin wherein the at least one active substance is dissolved in a solvent, comprising an administration unit configured to distribute the active substance to the skin or to a skin-compatible adhesive layer, wherein the administration unit comprises an administration reservoir and a solvent removal element comprising a separation layer that is impermeant to the active substance and permeable to the solvent.

37. (Withdrawn) The administration unit of claim 36, wherein the separation layer further comprises a material that controls evaporation rate of the solvent at a surface of the separation layer.

REMARKS

A Restriction Requirement was mailed June 11, 2008 in the above-referenced application, subjecting pending claims 1-37 to restriction and requiring election from: Group I (Claims 1-16, method for transdermal administration); Group II (Claims 17-35, device for transdermal administration); or Group III (Claims 36-37, administration unit for application to the skin).

A. Group II Claims Elected Without Traverse.

The claims of Group II are elected without traverse. Claims 1-16 and 36-37 have been withdrawn.

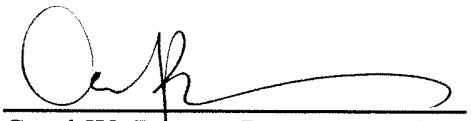
B. Petition for 1-Month Extension.

The undersigned hereby Petitions for a 1-month extension to extend the period for responding to the Restriction Requirement mailed June 11, 2008 from July 11, 2008 to August 11, 2008.

C. Conclusion.

Should the Examiner like to discuss this matter, by phone, she is invited to telephone the undersigned. Please charge the 1-Month Extension fee and any fees deemed associated with this filing to Deposit Account No. 50-1123.

Respectfully submitted,



August 1, 2008

Carol W. Burton, Reg. No. 35,465
Hogan & Hartson LLP
1200 17th Street, Suite 1500
Denver, Colorado 80202
Telephone (303) 454-2454
Facsimile (303) 899-7333

Electronic Patent Application Fee Transmittal

Application Number:	10711389
Filing Date:	15-Sep-2004
Title of Invention:	TRANSDERMAL DRUG DELIVERY METHOD AND SYSTEM
First Named Inventor/Applicant Name:	Werner Zumbrunn
Filer:	Carol W. Burton/Dane Stephenson
Attorney Docket Number:	CT0002

Filed as Small Entity

Utility Filing Fees

Description	Fee Code	Quantity	Amount	Sub-Total in USD($)
Basic Filing:				
Pages:				
Claims:				
Miscellaneous-Filing:				
Petition:				
Patent-Appeals-and-Interference:				
Post-Allowance-and-Post-Issuance:				
Extension-of-Time:				
Extension - 1 month with $0 paid	2251	1	60	60

Description	Fee Code	Quantity	Amount	Sub-Total in USD($)
Miscellaneous:				
			Total in USD ($)	**60**

Electronic Acknowledgement Receipt

EFS ID:	3718086
Application Number:	10711389
International Application Number:	
Confirmation Number:	5388
Title of Invention:	TRANSDERMAL DRUG DELIVERY METHOD AND SYSTEM
First Named Inventor/Applicant Name:	Werner Zumbrunn
Customer Number:	25235
Filer:	Carol W. Burton/Dane Stephenson
Filer Authorized By:	Carol W. Burton
Attorney Docket Number:	CT0002
Receipt Date:	01-AUG-2008
Filing Date:	15-SEP-2004
Time Stamp:	16:07:22
Application Type:	Utility under 35 USC 111(a)

Payment information:

Submitted with Payment	yes
Payment Type	Deposit Account
Payment was successfully received in RAM	$60
RAM confirmation Number	1298
Deposit Account	501123
Authorized User	

The Director of the USPTO is hereby authorized to charge indicated fees and credit any overpayment as follows:

Charge any Additional Fees required under 37 C.F.R. Section 1.21 (Miscellaneous fees and charges)

File Listing:

Document Number	Document Description	File Name	File Size(Bytes) /Message Digest	Multi Part /.zip	Pages (if appl.)
1		224940003ResponseRR.pdf	38056 17efce7dd185a1d25226908555d9f59d28de5968	yes	6

Multipart Description/PDF files in .zip description		
Document Description	**Start**	**End**
Response to Election / Restriction Filed	1	1
Claims	2	5
Applicant Arguments/Remarks Made in an Amendment	6	6

Warnings:

Information:

2	Fee Worksheet (PTO-06)	fee-info.pdf	8155 24b392c20f106b867a0bb33934053ef8c63e2980	no	2

Warnings:

Information:

Total Files Size (in bytes):	46211

This Acknowledgement Receipt evidences receipt on the noted date by the USPTO of the indicated documents, characterized by the applicant, and including page counts, where applicable. It serves as evidence of receipt similar to a Post Card, as described in MPEP 503.

New Applications Under 35 U.S.C. 111

If a new application is being filed and the application includes the necessary components for a filing date (see 37 CFR 1.53(b)-(d) and MPEP 506), a Filing Receipt (37 CFR 1.54) will be issued in due course and the date shown on this Acknowledgement Receipt will establish the filing date of the application.

National Stage of an International Application under 35 U.S.C. 371

If a timely submission to enter the national stage of an international application is compliant with the conditions of 35 U.S.C. 371 and other applicable requirements a Form PCT/DO/EO/903 indicating acceptance of the application as a national stage submission under 35 U.S.C. 371 will be issued in addition to the Filing Receipt, in due course.

New International Application Filed with the USPTO as a Receiving Office

If a new international application is being filed and the international application includes the necessary components for an international filing date (see PCT Article 11 and MPEP 1810), a Notification of the International Application Number and of the International Filing Date (Form PCT/RO/105) will be issued in due course, subject to prescriptions concerning national security, and the date shown on this Acknowledgement Receipt will establish the international filing date of the application.

PTO/SB/06 (07-06)
Approved for use through 1/31/2007. OMB 0651-0032
U.S. Patent and Trademark Office; U.S. DEPARTMENT OF COMMERCE
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PATENT APPLICATION FEE DETERMINATION RECORD Substitute for Form PTO-875	Application or Docket Number 10/711,389	Filing Date 09/15/2004	☐ To be Mailed

APPLICATION AS FILED – PART I

	(Column 1)	(Column 2)	SMALL ENTITY ☒		OR	OTHER THAN SMALL ENTITY	
FOR	NUMBER FILED	NUMBER EXTRA	RATE ($)	FEE ($)		RATE ($)	FEE ($)
☐ BASIC FEE (37 CFR 1.16(a), (b), or (c))	N/A	N/A	N/A			N/A	
☐ SEARCH FEE (37 CFR 1.16(k), (i), or (m))	N/A	N/A	N/A			N/A	
☐ EXAMINATION FEE (37 CFR 1.16(o), (p), or (q))	N/A	N/A	N/A			N/A	
TOTAL CLAIMS (37 CFR 1.16(i))	minus 20 =	*	X $ =		OR	X $ =	
INDEPENDENT CLAIMS (37 CFR 1.16(h))	minus 3 =	*	X $ =			X $ =	
☐ APPLICATION SIZE FEE (37 CFR 1.16(s))	If the specification and drawings exceed 100 sheets of paper, the application size fee due is $250 ($125 for small entity) for each additional 50 sheets or fraction thereof. See 35 U.S.C. 41(a)(1)(G) and 37 CFR 1.16(s).						
☐ MULTIPLE DEPENDENT CLAIM PRESENT (37 CFR 1.16(j))							
* If the difference in column 1 is less than zero, enter "0" in column 2.			TOTAL			TOTAL	

APPLICATION AS AMENDED – PART II

AMENDMENT	08/01/2008	(Column 1) CLAIMS REMAINING AFTER AMENDMENT		(Column 2) HIGHEST NUMBER PREVIOUSLY PAID FOR	(Column 3) PRESENT EXTRA	SMALL ENTITY RATE ($)	ADDITIONAL FEE ($)	OR	OTHER THAN SMALL ENTITY RATE ($)	ADDITIONAL FEE ($)
	Total (37 CFR 1.16(i))	* 37	Minus	** 37	= 0	X $25 =	0	OR	X $ =	
	Independent (37 CFR 1.16(h))	* 3	Minus	***3	= 0	X $105 =	0	OR	X $ =	
	☐ Application Size Fee (37 CFR 1.16(s))									
	☐ FIRST PRESENTATION OF MULTIPLE DEPENDENT CLAIM (37 CFR 1.16(j))							OR		
						TOTAL ADD'L FEE	0	OR	TOTAL ADD'L FEE	

AMENDMENT		(Column 1) CLAIMS REMAINING AFTER AMENDMENT		(Column 2) HIGHEST NUMBER PREVIOUSLY PAID FOR	(Column 3) PRESENT EXTRA	RATE ($)	ADDITIONAL FEE ($)		RATE ($)	ADDITIONAL FEE ($)
	Total (37 CFR 1.16(i))	*	Minus	**	=	X $ =		OR	X $ =	
	Independent (37 CFR 1.16(h))	*	Minus	***	=	X $ =		OR	X $ =	
	☐ Application Size Fee (37 CFR 1.16(s))									
	☐ FIRST PRESENTATION OF MULTIPLE DEPENDENT CLAIM (37 CFR 1.16(j))							OR		
						TOTAL ADD'L FEE		OR	TOTAL ADD'L FEE	

* If the entry in column 1 is less than the entry in column 2, write "0" in column 3.

** If the "Highest Number Previously Paid For" IN THIS SPACE is less than 20, enter "20".

*** If the "Highest Number Previously Paid For" IN THIS SPACE is less than 3, enter "3".

The "Highest Number Previously Paid For" (Total or Independent) is the highest number found in the appropriate box in column 1.

Legal Instrument Examiner:
/DORIS m. BURNS/

UNITED STATES PATENT AND TRADEMARK OFFICE

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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/711,389	09/15/2004	Werner Zumbrunn	CT0002	5388

25235 7590 06/11/2008

HOGAN & HARTSON LLP
ONE TABOR CENTER, SUITE 1500
1200 SEVENTEENTH ST
DENVER, CO 80202

EXAMINER	
MERCIER, MELISSA S	
ART UNIT	**PAPER NUMBER**
1615	

MAIL DATE	DELIVERY MODE
06/11/2008	PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No.	Applicant(s)	
	10/711,389	ZUMBRUNN ET AL.	
	Examiner	Art Unit	
	MELISSA S. MERCIER	1615	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE *1* MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☐ Responsive to communication(s) filed on _____.

2a)☐ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-37* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☐ Claim(s) _____ is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☒ Claim(s) *1-37* are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☐ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

Election/Restrictions

Restriction to one of the following inventions is required under 35 U.S.C. 121:

I. Claims 1-16, drawn to a method for transdermal administration, classified in class 604, subclass 19.

II. Claims 17-35, drawn to a device for transdermal administration, classified in class 604, subclass 892.1.

III. Claims 36-37, drawn to an administration unit for application to the skin, classified in class 424, subclass 449.

The inventions are distinct, each from the other because of the following reasons:

Inventions I and II are related as process and apparatus for its practice. The inventions are distinct if it can be shown that either: (1) the process as claimed can be practiced by another and materially different apparatus or by hand, or (2) the apparatus as claimed can be used to practice another and materially different process. (MPEP § 806.05(e)). In this case the product can be used according to numerous embodiments of the method depending on the structure of the product, for example, the solvent can be removed according to evaporation by heating or through a membrane, a pre-programmed opening of a pinch valve, pumping of the solvent, or lowering of an arm or lever, for example.

Inventions I and III are directed to related transdermal application of active agents. The related inventions are distinct if: (1) the inventions as claimed are either not capable of use together or can have a materially different design, mode of operation,

function, or effect; (2) the inventions do not overlap in scope, i.e., are mutually exclusive; and (3) the inventions as claimed are not obvious variants. See MPEP § 806.05(j). In the instant case, the inventions as claimed have materially different designs. The device of Group I does not require the separation layer being impermeable to the active agent but permeable to a solvent. Furthermore, the inventions as claimed do not encompass overlapping subject matter and there is nothing of record to show them to be obvious variants.

Inventions II and III are related as subcombinations disclosed as usable together in a single combination. The subcombinations are distinct if they do not overlap in scope and are not obvious variants, and if it is shown that at least one subcombination is separately usable. In the instant case, subcombination of Invention III has separate utility such as a stand alone transdermal patch, whereas, Invention II additionally requires a separate delivery device. See MPEP § 806.05(d).

The examiner has required restriction between subcombinations usable together. Where applicant elects a subcombination and claims thereto are subsequently found allowable, any claim(s) depending from or otherwise requiring all the limitations of the allowable subcombination will be examined for patentability in accordance with 37 CFR 1.104. See MPEP § 821.04(a). Applicant is advised that if any claim presented in a continuation or divisional application is anticipated by, or includes all the limitations of, a claim that is allowable in the present application, such claim may be subject to provisional statutory and/or nonstatutory double patenting rejections over the claims of the instant application.

Restriction for examination purposes as indicated is proper because all these inventions listed in this action are independent or distinct for the reasons given above and there would be a serious search and examination burden if restriction were not required because one or more of the following reasons apply:

(a) the inventions have acquired a separate status in the art in view of their different classification;

(b) the inventions have acquired a separate status in the art due to their recognized divergent subject matter;

(c) the inventions require a different field of search (for example, searching different classes/subclasses or electronic resources, or employing different search queries);

(d) the prior art applicable to one invention would not likely be applicable to another invention;

(e) the inventions are likely to raise different non-prior art issues under 35 U.S.C. 101 and/or 35 U.S.C. 112, first paragraph.

Applicant is advised that the reply to this requirement to be complete must include (i) an election of a invention to be examined even though the requirement may be traversed (37 CFR 1.143) **and (ii) identification of the claims encompassing the elected invention**.

The election of an invention may be made with or without traverse. To reserve a right to petition, the election must be made with traverse. If the reply does not distinctly and specifically point out supposed errors in the restriction requirement, the election

shall be treated as an election without traverse. Traversal must be presented at the time of election in order to be considered timely. Failure to timely traverse the requirement will result in the loss of right to petition under 37 CFR 1.144. If claims are added after the election, applicant must indicate which of these claims are readable on the elected invention.

If claims are added after the election, applicant must indicate which of these claims are readable upon the elected invention.

Should applicant traverse on the ground that the inventions are not patentably distinct, applicant should submit evidence or identify such evidence now of record showing the inventions to be obvious variants or clearly admit on the record that this is the case. In either instance, if the examiner finds one of the inventions unpatentable over the prior art, the evidence or admission may be used in a rejection under 35 U.S.C. 103(a) of the other invention.

This application contains claims directed to the following patentably distinct species:

If Applicant elects Group I, the following elections are additionally required:

Mode of evaporation of Solvent:

a. by a heating element

b. a preprogrammed opening of a pinch valve that is in contact with the porous surface

c. preprogrammed lowering of an arm or lever

d. absorption by a desiccant

e. discharged into the environment

f. flushed by a fluid

Type of interface device:

a. membrane

b. adhesive layer

If Applicant elects Group II, the following elections are additionally required:

Type of interface device:

a. adhesive surface

b. membrane

Type of separation means:

a. membrane, foam, cellular material, honeycomb

b. desiccant, general or selective adsorbent material, silica gel, molecular sieve, active carbon

c. a chamber with an inlet and an outlet for flushing by a fluid

Type of dispensing device:

a. at least one reservoir for an active substance which is interconnected to the administration reservoir

b. a propellant means to propel the active substance from the reservoir into the administration reservoir.

c. a first reservoir comprising a first active substance and a second reservoir comprising a second active substance, wherein the first and second active substances are mixed by a mixing means

Operation of control device:

a. interconnected to at least one valve for controlling the administration of the at least one active substance

b. programmable according to a predetermined regime or time pattern or interval of administration

c. interconnected with at least one sensor for measuring the administration and condition of at least one active substance

If Applicant elects Group III, no additional election is required.

The species are independent or distinct because claims to the different species recite the mutually exclusive characteristics of such species. In addition, these species are not obvious variants of each other based on the current record. Each species would lead to a device or method of administration with a different mode of operation and possible effect.

Applicant is required under 35 U.S.C. 121 to elect a single disclosed species for prosecution on the merits to which the claims shall be restricted if no generic claim is finally held to be allowable. Currently, claims 1-2, 12, 15-18, 21, 23, and 35-37 are generic.

There is an examination and search burden for these patentably distinct species due to their mutually exclusive characteristics. The species require a different field of search (e.g., searching different classes/subclasses or electronic resources, or employing different search queries); and/or the prior art applicable to one species would not likely be applicable to another species; and/or the species are likely to raise different non-prior art issues under 35 U.S.C. 101 and/or 35 U.S.C. 112, first paragraph.

Applicant is advised that the reply to this requirement to be complete must include (i) an election of a species to be examined even though the requirement may be traversed (37 CFR 1.143) **and (ii) identification of the claims encompassing the elected species**, including any claims subsequently added. An argument that a claim is allowable or that all claims are generic is considered nonresponsive unless accompanied by an election.

The election of the species may be made with or without traverse. To preserve a right to petition, the election must be made with traverse. If the reply does not distinctly and specifically point out supposed errors in the election of species requirement, the election shall be treated as an election without traverse. Traversal must be presented at the time of election in order to be considered timely. Failure to timely traverse the requirement will result in the loss of right to petition under 37 CFR 1.144. If claims are

added after the election, applicant must indicate which of these claims are readable on the elected species.

Should applicant traverse on the ground that the species are not patentably distinct, applicant should submit evidence or identify such evidence now of record showing the species to be obvious variants or clearly admit on the record that this is the case. In either instance, if the examiner finds one of the species unpatentable over the prior art, the evidence or admission may be used in a rejection under 35 U.S.C. 103(a) of the other species.

Upon the allowance of a generic claim, applicant will be entitled to consideration of claims to additional species which depend from or otherwise require all the limitations of an allowable generic claim as provided by 37 CFR 1.141.

The examiner has required restriction between product and process claims. Where applicant elects claims directed to the product, and the product claims are subsequently found allowable, withdrawn process claims that depend from or otherwise require all the limitations of the allowable product claim will be considered for rejoinder. All claims directed to a nonelected process invention must require all the limitations of an allowable product claim for that process invention to be rejoined.

In the event of rejoinder, the requirement for restriction between the product claims and the rejoined process claims will be withdrawn, and the rejoined process claims will be fully examined for patentability in accordance with 37 CFR 1.104. Thus, to be allowable, the rejoined claims must meet all criteria for patentability including the requirements of 35 U.S.C. 101, 102, 103 and 112. Until all claims to the elected product

are found allowable, an otherwise proper restriction requirement between product claims and process claims may be maintained. Withdrawn process claims that are not commensurate in scope with an allowable product claim will not be rejoined. See MPEP § 821.04(b). Additionally, in order to retain the right to rejoinder in accordance with the above policy, applicant is advised that the process claims should be amended during prosecution to require the limitations of the product claims. **Failure to do so may result in a loss of the right to rejoinder**. Further, note that the prohibition against double patenting rejections of 35 U.S.C. 121 does not apply where the restriction requirement is withdrawn by the examiner before the patent issues. See MPEP § 804.01.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to MELISSA S. MERCIER whose telephone number is (571)272-9039. The examiner can normally be reached on 8:00am-4:30pm Mon through Friday.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Michael Woodward can be reached on (571) 272-8373. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Melissa S Mercier/
Examiner, Art Unit 1615

/MP WOODWARD/
Supervisory Patent Examiner, Art Unit 1615

Attorney Docket No. DIPI0002
Client Matter No. 22494.0003

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Serial No.	10/711,389	Confirmation No.	5388
Inventor(s):	Werner ZUMBRUNN , et al.	Title:	TRANSDERMAL DRUG DELIVERY METHOD AND SYSTEM
Filed:	September 15, 2004		
TC/A.U.	1615		
Examiner:	Melissa S. MERCIER		
Docket No.	DIPI0002		
Customer No. 25235			

RESPONSE TO NOTICE OF NON-COMPLIANT AMENDMENT

Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

Sir:

A Notice of Non-Compliant Amendment was mailed November 8, 2007 (copy enclosed), indicating that the Replacement Sheets were not properly identified in the Preliminary Amendment electronically filed October 24, 2007.

In the electronic filing of October 24, 2007, all four drawings were filed. Only sheets 3 and 4 were amended, so only sheets 3 and 4 contained the "Replacement Sheet" label. Sheets 1 and 2 were not amended and so were not titled.

To simplify matters, attached is a Substitute Preliminary Amendment which includes only sheets 3 and 4, both of which labeled as "Replacement Sheet."

Respectfully submitted,

November 29, 2007

Carol W. Burton, Reg. No. 35,465
Hogan & Hartson L.L.P.
1200 17th Street, Suite 1500
Denver, CO 80202
Telephone: (303) 454-2454
Facsimile: (303) 899-7333

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25235 e 11/08/2007

HOGAN & HARTSON LLP
ONE TABOR CENTER, SUITE 1500
1200 SEVENTEENTH ST
DENVER, CO 80202

Paper No.

Application No.:	**10/711,389**	**Date Mailed:**	**11/08/2007**
First Named Inventor:	Zumbrunn, Werner,	Examiner:	MERCIER, MELISSA S
Attorney Docket No.:	CT0002	Art Unit:	1615
Confirmation No.:	5388	Filing Date:	09/15/2004

Please find attached an Office communication concerning this application or proceeding.

Commissioner for Patents

Notice of Non-Compliant Amendment (37 CFR 1.121)

Application No. 10/711,389

Applicant(s) ZUMBRUNN ET AL.

Art Unit 1700

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

The amendment document filed on *24 October, 2007* is considered non-compliant because it has failed to meet the requirements of 37 CFR 1.121 or 1.4. In order for the amendment document to be compliant, correction of the following item(s) is required.

THE FOLLOWING MARKED (X) ITEM(S) CAUSE THE AMENDMENT DOCUMENT TO BE NON-COMPLIANT:

- ☐ 1. Amendments to the specification:
  - ☐ A. Amended paragraph(s) do not include markings.
  - ☐ B. New paragraph(s) should not be underlined.
  - ☐ C. Other .
- ☐ 2. Abstract:
  - ☐ A. Not presented on a separate sheet. 37 CFR 1.72.
  - ☐ B. Other .
- ☒ 3. Amendments to the drawings:
  - ☒ A. The drawings are not properly identified in the top margin as "Replacement Sheet," "New Sheet," or "Annotated Sheet" as required by 37 CFR 1.121(d).
  - ☐ B. The practice of submitting proposed drawing correction has been eliminated. Replacement drawings showing amended figures, without markings, in compliance with 37 CFR 1.84 are required.
  - ☐ C. Other .
- ☐ 4. Amendments to the claims:
  - ☐ A. A complete listing of all of the claims is not present.
  - ☐ B. The listing of claims does not include the text of all pending claims (including withdrawn claims)
  - ☐ C. Each claim has not been provided with the proper status identifier, and as such, the individual status of each claim cannot be identified. Note: the status of every claim must be indicated after its claim number by using one of the following status identifiers: (Original), (Currently amended), (Canceled), (Previously presented), (New), (Not entered), (Withdrawn) and (Withdrawn-currently amended).
  - ☐ D. The claims of this amendment paper have not been presented in ascending numerical order.
  - ☐ E. Other: .
- ☐ 5. Other (e.g., the amendment is unsigned or not signed in accordance with 37 CFR 1.4): For further explanation of the amendment format required by 37 CFR 1.121, see MPEP § 714.

TIME PERIODS FOR FILING A REPLY TO THIS NOTICE:

1. Applicant is given **no new time period** if the non-compliant amendment is an after-final amendment or an amendment filed after allowance, or a drawing submission (only) If applicant wishes to resubmit the non-compliant after-final amendment with corrections, the **entire corrected amendment** must be resubmitted.

2. Applicant is given **one month**, or thirty (30) days, whichever is longer, from the mail date of this notice to supply the correction, if the non-compliant amendment is one of the following: a preliminary amendment, a non-final amendment (including a submission for a request for continued examination (RCE) under 37 CFR 1.114), a supplemental amendment filed within a suspension period under 37 CFR 1.103(a) or (c), and an amendment filed in response to a Quayle action. If any of above boxes 1 to 4 are checked, the correction required is only the corrected section of the non-compliant amendment in compliance with 37 CFR 1.121.

   Extensions of time are available under 37 CFR 1.136(a) only if the non-compliant amendment is a non-final amendment or an amendment filed in response to a *Quayle* action.
   Failure to timely respond to this notice will result in:
   Abandonment of the application if the non-compliant amendment is a non-final amendment or an amendment filed in response to a *Quayle* action; or
   Non-entry of the amendment if the non-compliant amendment is a preliminary amendment or supplemental amendment.

Legal Instruments Examiner (LIE), if applicable Karen T. Washington Telephone No: 571-272-1061

Attorney Docket No. DIPI0002
Client.Matter No. 22494.0003

IN THE UNITED STATES PATENT & TRADEMARK OFFICE

In re Continuation Application of: Werner ZUMBRUNN, George IMANIDIS, Hans Werner VAN DE VENN, and Guy DI PIERRO Serial No. 10/711,389 Filed: September 15, 2004 For: TRANSDERMAL DRUG DELIVERY METHOD AND SYSTEM	Examiner: Melissa S. MERCIER Art Unit: 1615 Confirmation No. 5388

SUBSTITUTE PRELIMINARY AMENDMENT

Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

Dear Sir:

Prior to an examination on the merits, please amend the application as described below.

- **Amendments to the Specification** begin on page 2;
- **Amendments to the Claims** begin on page 5;
- **Amendments to the Drawings** being on page 10 (annotated sheets showing the changes and replacement sheets are attached); and
- **Remarks** begin on page 11.

AMENDMENTS TO THE SPECIFICATION

Please replace paragraph number **[0019]** of Publication Number US 2005/0238704 A1 with the following amended paragraph:

US5879322 (Lattin, et al.) is directed to a self-contained transdermal drug delivery device by electro transport means with electrodes designed to be worn on the skin. The electro transport device can be used by patients to deliver a drug during a prescribed course of therapy, e.g. the delivery of an analgesic to control pain.

Please replace paragraph number **[0039]** of Publication Number US 2005/0238704 A1 with the following amended paragraph:

Solvent that is not absorbed by the skin in a sufficient way is carried off in another way than by absorption through the skin, e.g. by evaporation into the environment and/or by absorption by ~~an other mean,~~ another means, e.g. absorbing substance such as silica gel. By this it is possible to avoid negative decrease of the concentration of active substance due to accumulation of the solvent which would impact the diffusion rate through the skin. Especially solvents based on water and/or alcohol are having at temperatures nearby the temperature of skin a vapor pressure which is sufficiently high to carry off the solvent by evaporation. However, the carrying off and/or diffusion rate of the solvent preferably is adjusted to the diffusion rate of the active substance through the skin to avoid accumulation of the solvent or precipitation of the active substance on the skin in a negative way.

Please replace paragraph number **[0068]** of Publication Number US 2005/0238704 A1 with the following amended paragraph:

FIG. 3 is showing a third embodiment of a dispensing system 1. A first and a second active substance s1, s2 is stored in a first and a second reservoir 5.1, 5.2. The flow (indicated by arrows) of the first and the second fluid s1, s2 into a connecting pipe 25 is controlled by a first and a second valve 19.1, 19.2, as described above interconnected, to a programmable flow control device [[15]] 8. The connecting pipe 25 may comprise mixing means 26 such as impellers or vortex means providing an appropriate preparation

of mixture of the active substances s1, s2. This offers the opportunity to administer drugs which cannot be stored together due to incompatibility or another reason. Alternatively or in addition the bringing together of several active substances may take place in the administration chamber 9 of the administration device 6. The solvent absorption chamber 13 is separated by separation means 14 in the described manner from the administration chamber 9. The separation means 14 are made such that solvent is preferably absorbed by evaporation (indicated by arrows 17). In the shown embodiment the evaporation rate is controlled/adjusted by a fluid stream (indicated by arrows 27), preferably air, which is guided into the solvent absorption chamber 13 by an inlet 28 and exits by an outlet 29. The condition of the administration device and the absorption of the at least one active substance into the skin 11 as indicated by arrows 18, may be controlled by sensors 30, 31 interconnected to the control device [[15]] 8 by data connections 32. The sensors of the herein described embodiment are arranged in the administration chamber 9 and the solvent absorption chamber 13 such that the administration of the at least one active substance and/or the absorption of the at least one solvent may be controlled. Depending on the field of application, the sensors 30, 31 are suitable to measure relevant parameters such as temperature and/or humidity and/or pressure and/or concentration.

Please replace paragraph number **[0072]** of Publication Number US 2005/0238704 A1 with the following amended paragraph:

FIGS. 4 a) to c) are showing three further embodiment of a dispensing system 1 for administration of at least one active substance s. The dispensing systems 1 according to FIGS. 4 a) to 4 c) have in general a similar set up comprising an outer housing 39 with a display 38 interconnected to a programmable control unit 8. The lower surface of the devices 1 serves as footstep 40 while in use on a porous surface 10 and comprises an interface 12 for transferring active substance to a skin 11 through the porous surface 10. Inside the housing 39 the devices 1 comprise a drug reservoir 5 for at least one active substance s. The drug reservoir 5 is preferably a collapsible bag or a pressurized compartment due to internal or external pressure suitable to expel active substance into the administration chamber 9 via a pipe 4 which interconnects the drug reservoir 5 with

the administration reservoir 9. In use the administration reservoir 9 is fluidly interconnected to the porous surface 10 of skin 11 such that active substance s dispensed into the administration chamber 9 may pass into skin 11 as indicated by arrows 18. The flow of the active substance s is controlled by a first valve and/or a pump 36 which is logically interconnected to the control unit 8 which controls the administration of active substance s according to a preset regime. A solvent recovery means 13 is used to remove depleted solvent from the administration chamber 9 by waste pipe 41. If administration of the active substance needs to be stopped it is possible to pump active substance from the administration chamber back into the ~~administration~~ drug reservoir 5 or the connecting pipe 4 by pump 36.

Please replace paragraph number **[0075]** of Publication Number US 2005/0238704 A1 with the following amended paragraph:

The embodiment of FIG. 4c) comprises a pressurized drug reservoir 5 in conjunction with a tube or pipette 4, a micro pump 36 controlled by control unit 8 pre-programmed to dispense and start pumping active substance s onto diffusion surface 12. A second pinch valve and/or micro pump 37 interconnects the administration chamber 9 with the waste reservoir 13. The micro pump 37 either pumps solution into the waste reservoir 13 and/or the valve [[36]] 37 opens and depleted carrier solution is absorbed into the waste reservoir 13.

AMENDMENTS TO THE CLAIMS

This listing of claims will replace all prior versions and listings of claims in the application:

Listing of the Claims:

1. (Currently amended) A [Method] method for transdermal administration of at least one active substance to a porous surface, comprising the following steps:
   a) [Dispensing] dispensing a certain amount of a liquid comprising at least one active substance and at least one solvent into an administration reservoir,
   [B]b) [Separation] separating at least a portion of the at least one solvent from the administration reservoir by a solvent recovery means ~~such that the at least~~ wherein one active substance achieves a certain level of concentration in vicinity to the [[a]] porous surface to be treated;
   c) [Absorption] absorption of the active substance by the porous surface to be treated via diffusion ~~such that the level of concentration in the administration reservoir decreases~~.

2. (Currently amended) The method [Method] according to claim 1 wherein the solvent is separated by evaporation.

3. (Currently amended) The method [Method] according to claim 2 wherein the evaporation of the solvent is supported by a heating element.

4. (Currently amended) The method [Method] according to claim 3 wherein the solvent is evaporated through a membrane passable preferably for the solvent.

5. (Currently amended) The method [Method] according to claim 2 where the solvent is removed by a pre-programmed opening a pinch valve that is in contact with the porous surface.

6. (Currently amended) The method [Method] according to claim 5 where the solvent is removed by programming the pumping of the solvent.

7. (Currently amended) The method [Method] according to claim 2 where the solvent is removed by a programmed lowering of an arm or lever.

8. (Currently amended) The method [Method] according to claims 2 wherein the solvent is absorbed by a desiccant.

9. (Currently amended) The method [Method] according to claim 5 wherein the desiccant is one or a combination out of the group of silica gel, molecular sieves, active carbon.

10. (Currently amended) The method [Method] according to claim ~~one of the claims~~ 2 wherein the solvent is discharged into the environment.

11. (Currently amended) The method [Method] claim ~~one of the claims~~ 2 wherein the solvent is flushed by a fluid.

12. (Currently amended) The method [Method] according to claim 1 wherein the at least one active substance passes an interface device which is permeable for the at least one active substance.

13. (Currently amended) The method [Method] according to claim 12 wherein the interface device comprises a membrane.

14. (Currently amended) The method [Method] according to claim 12 wherein the interface device comprises an adhesive layer suitable to be attached to the porous surface.

15. (Currently amended) The method [Method] according to claim 1 wherein the steps a to c are repeated at predefined intervals such that the level of concentration of the at least one active substance in the administration reservoir is kept above a certain level.

16. (Currently amended) The method [Method] according to claim 15 wherein the dispensing rate and the time pattern of dispensing the liquid into the administration reservoir are controlled by a programmable device.

17. (Currently amended) A device [Device] for transdermal administration of at least one active substance to a porous surface, comprising a dispensing device interconnected to an administration device for delivery of at least one active substance [solved] dissolved in a solvent to said administration device, wherein the administration device comprises an administration reservoir ~~suitable to receive the active substance solved in the solvent~~, a solvent removal element ~~means for absorption of solvent from the administration reservoir by evaporation~~ and an interface [means] suitable for transferring [of] the active substance from the administration reservoir to the porous surface.

18. (Currently amended) The device [Device] according to claim 17 wherein the interface ~~device~~ is suitable to be arranged in vicinity to the porous surface.

19. (Currently amended) The device [Device] according to claim 18 wherein the interface ~~means~~ comprises an adhesive surface suitable to be attached to the porous surface.

20. (Currently amended) The device [Device] according to claim 17 wherein the interface ~~means~~ is a membrane permeable for the active substance.

21. (Currently amended) The device [Device] according to claim 17 wherein the solvent removal ~~means~~ element is separated from the administration reservoir by a separation means.

22. (Currently amended) The device [Device] according to claim 21 wherein the separation means is selected from the group consisting of a membrane, [[or]] a foam, [[or]] a cellular material, [[or]] a honeycomb, and [[or]] an air gap.

23. (Currently amended) The device [Device] according to claim 21 wherein the administration reservoir and the solvent removal ~~means~~ element are spaced apart a distance by the separation means 14.

24. (Currently amended) The device [Device] according to claim 17 wherein the solvent removal ~~means~~ element comprises one our or a combination out of the group of the following materials: Desiccant, general or a selective adsorbent material, silica gel, a molecular sieve, active carbon.

25. (Currently amended) The device [Device] according to claim 17 wherein the solvent removal ~~means~~ element comprises a chamber with an inlet and an outlet for flushing by a fluid.

26. (Currently amended) The device [Device] according to claim 17 wherein the dispensing device comprises at least one reservoir for an active substance which is interconnected to the administration device.

27. (Currently amended) The device [Device] according to claim 17 wherein the dispensing device comprises a propellant means to propel the active substance from the reservoir into the administration reservoir.

28. (Currently amended) The device [Device] according to 27 wherein the propellant means is a pump and/or a propellant gas.

29. (Currently amended) The device [Device] according to claim 26 wherein the dispensing ~~means~~ device comprises a first reservoir comprising a first active substance and a second reservoir comprising a second active substance and the first and the second active substance are mixed by mixing means before delivery to the administration device.

30. (Currently amended) The device [Device] according to claim 28 wherein the mixing means is a pipe with vortex means providing an appropriate preparation of mixture.

31. (Currently amended) The device [Device] according to claim [30] 35 wherein the control device is interconnected to at least one valve for controlling the administration of the at least one active substance.

32. (Currently amended) The device [Device] according to claim 30 wherein the control device is programmable according to a predetermined regime or time pattern or interval of administration of the at least one active substance.

33. (Currently amended) The device [Device] according to claim 30 wherein the control device is interconnected with at least one sensor for measuring the administration and the condition of at least one active substance.

34. (Currently amended) The device [Device] according to claim 33 wherein the administration of the active substance is determined by the signal of the at least one sensor.

35. (New) The control device according to claim 17 wherein the administration of the active substance is controlled by a control device.

36. (New) An administration unit for application of at least one active substance to skin wherein the at least one active substance is dissolved in a solvent, comprising an administration unit configured to distribute the active substance to the skin or to a skin-compatible adhesive layer, wherein the administration unit comprises an administration reservoir and a solvent removal element comprising a separation layer that is impermeant to the active substance and permeable to the solvent.

37. (New) The administration unit of claim 36, wherein the separation layer further comprises a material that controls evaporation rate of the solvent at a surface of the separation layer.

AMENDMENTS TO THE DRAWINGS

The attached Replacement Sheets labeled 3 of 4 and 4 of 4 are provided.

Sheet 3 of 4 shows FIG. 3 and FIG. 4A. FIG. 3 has been amended to correct a typographical error. The reference number 25 on the left of pipe 25 has been changed to 26. Support for this amendment is found in paragraph [0068] of the specification.

Sheet 4 of 4 shows FIG. 4B and FIG. 4C. FIG. 4C has been amended to correct typographical errors. The reference number 4 showing the tube or pipette has been added. The reference number 41 has been changed to 37, the second pinch valve and/or micropump. Support for these changes is found in paragraph [0075].

REMARKS

Summary of Amendments to the Specification

Paragraph [0019] has been amended to correct a typographical error. US587322 (Lattin, et al.) has been changed to US5879322 (Lattin, et al.).

Paragraph [0039] has been amended to correct obvious errors. The phrase "an other mean" has been changed to "another means". The phrase "avoid negative decrease of the active substance due to accumulation of the solvent" has been changed to "avoid negative decrease of the concentration of active substance due to accumulation of the solvent". Support for these amendments is found in paragraph [0039] as originally filed which describes the carrying off of solvent e.g. by evaporation into the environment and the effect of such carrying off on the active substance.

Paragraph [0068] has been amended to correct typographical errors. Reference number 15 has been changed to 8. Support for this amendment is found in paragraph [0068] and FIG. 3 as originally filed.

Paragraph [0072] has been amended to correct an obvious error. The phrase "administration reservoir 5" has been changed to "drug reservoir 5". Support for this amendment is found in paragraph [0072] and FIGS. 4A, B and C as originally filed.

Paragraph [0075] has been amended to correct a typographical error. The sentence "The micro pump 37 either pumps solution into the waste reservoir 13 and/or the valve 36 opens and depleted carrier solution is absorbed into the waste reservoir 13" has been amended to recite "The micro pump 37 either pumps solution into the waste reservoir 13 and/or the valve [[36]] 37 opens and depleted carrier solution is absorbed into the waste reservoir 13." Support for this amendment is found in paragraph [0075] and FIG. 4C as originally filed.

Summary of Claim Amendments

Claim 1 has been amended. New claims 35-37 are being added.

Claim 1 has been amended to recite "A method for transdermal administration, and "dispensing" and "removing" Support for these amendments is found in claim 1 as originally filed and, for example, in paragraph [0064]. Claim 1 has also been amended by replacing the phrase "such that the level of concentration in the administration reservoir decreases" with "wherein". Support for this amendment is found throughout the specification, and in particular in paragraph [0028],

Claims 2-9 and 12-16 have been amended to recite "The method". Claims 10 and 11 have been amended to recite "according to claim 2." Claims 18-34 have been amended to recite "The device".

Claim 17 is amended by replacing the term "solved" with "dissolved", omitting the phrases "suitable to receive the active substance solved in the solvent" and "for adsorption of solvent from the administrative reservoir by evaporation" and replacing solvent removal "means" with solvent removal "element". The "means" term of "interface means" has been omitted.

Claims 19 and 20 are amended by omitting the "means" term of "interface means".

Claims 21 and 23-25 are amended by replacing "solvent removal means" with solvent removal element".

Claim 22 is amended to recite the list is Markush group format.

Claim 29 is amended to recite "dispensing device" in agreement with claim 17.

New claim 35 is being added to provide antecedent basis for the term "control device" claim 31.

Support for new claim 36 is found throughout the specification, for example, in claim 17 as originally filed and in paragraphs [0028], [0034], [0035], [0037], [0039], [0056], [0059], [0062], and [0064]. Support for new claim 37 is found, for example, in paragraphs [0046] and [0050].

Conclusion

The fees for extra claims and any other fees associated with this filing may be

charged to Deposit Account No. 50-1123.

Favorable consideration of all pending claims is respectfully requested. The Examiner is asked to the telephone the undersigned, should the Examiner have any questions or believe such a call would expedite prosecution.

Respectfully submitted,

November 29, 2007

Carol W. Burton, Reg. No. 35,465
Hogan & Hartson LLP
1200 17th Street, Suite 1500
Denver, CO 80202
Telephone: 303.454.2454
Facsimile: 303.899.7333

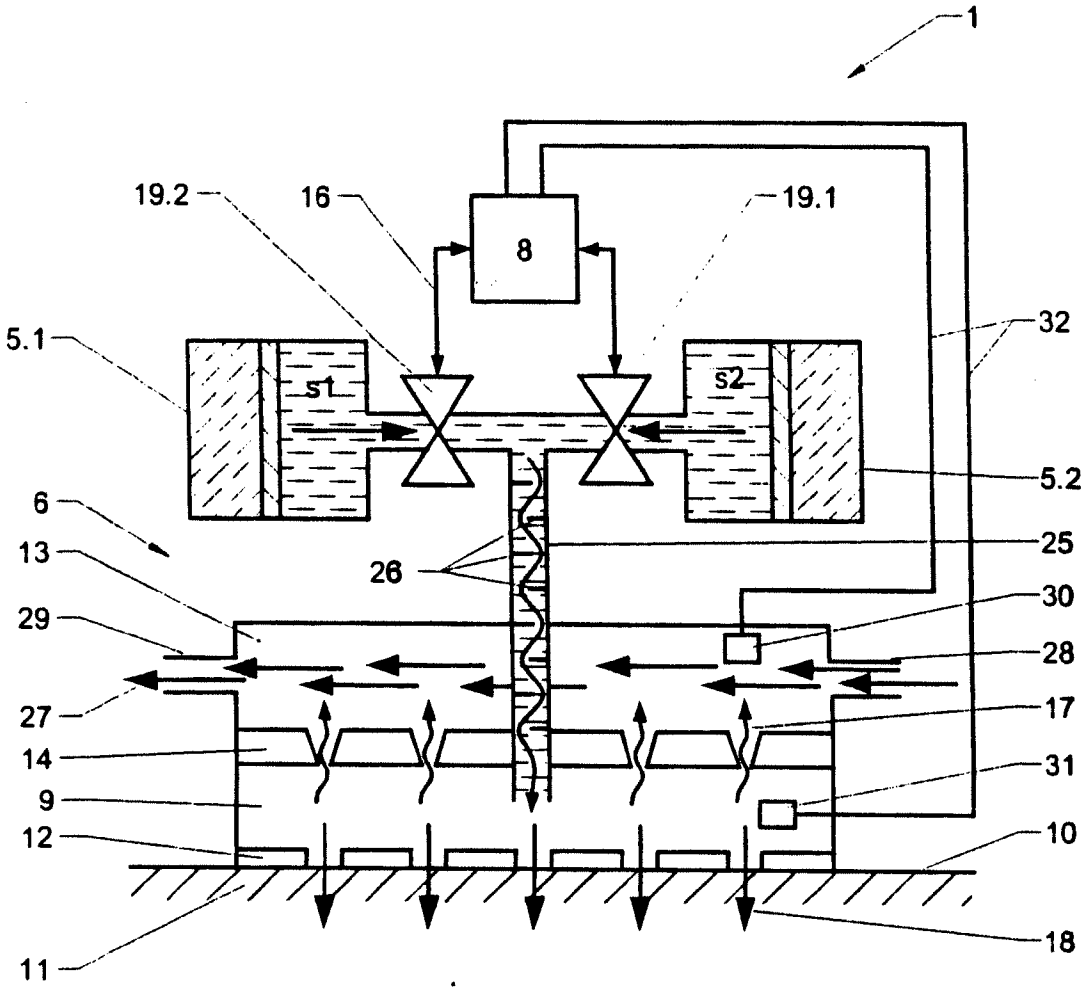
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Fig. 3

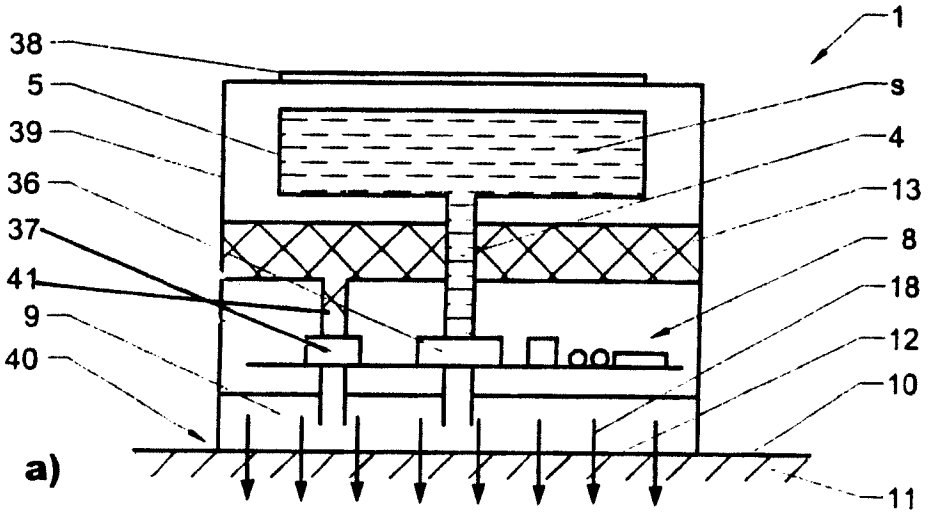
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Fig. 4

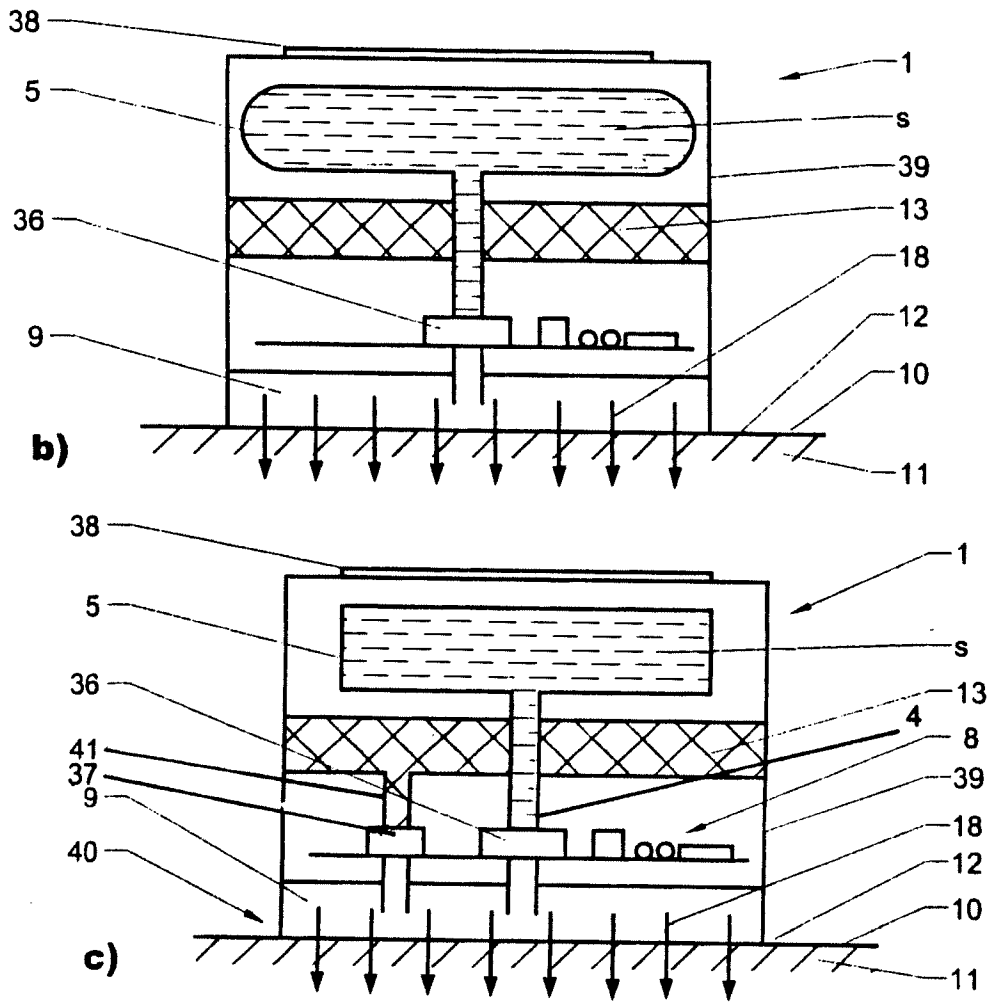
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Fig. 4

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re Continuation Application of: Werner ZUMBRUNN, George IMANIDIS, Hans Werner VAN DE VENN, and Guy DI PIERRO Serial No. 10/711,389 Filed: September 15, 2004 For: TRANSDERMAL DRUG DELIVERY METHOD AND SYSTEM	Examiner: Melissa S. MERCIER Art Unit: 2818 Confirmation No. 5388

DECLARATION OF WERNER ZUMBRUNN

Commissioner for Patents
Alexandria, VA 22313-1450

Sir:

1. I, Werner Zumbrunn, am a co-inventor of Swiss Patent Application No. 01833/03 filed 27 October 2003, entitled TRANSDERMALES SYSTEM. Hans Werner Van de Venn was also co-inventor of Swiss Application No. 01833/03.

2. PCT/IB2004/002947 was filed 13 September 2004, entitled TRANSDERMAL DRUG DELIVERY METHOD AND SYSTEM, claiming priority to Swiss Application No. 01833/03 and listing, in addition to co-inventors Zumbrunn, and Van de Venn, two additional co-inventors, Guy Di Pierro and George Imanidis.

3. The above-referenced U.S. Patent Application Serial No. 10/711,389 was filed 15 September 2004 as TRANSDERMAL DRUG DELIVERY METHOD AND SYSTEM, without my involvement and I recognize it is substantially identical to PCT/IB2004/002947. U.S. Serial No. 10/711,389 claims priority to Swiss Application No. 01833/03. This application lists co-inventors Zumbrunn, Imanidis, Van de Venn, and Di Pierro.

4. At the time co-inventors Van de Venn and I conceived of the invention described and claimed in Swiss Application No. 01833/03, I was employed at Fachhochschule Solothurn, which is now Fachhochschule Nordwestschweiz.

5. I reviewed and participated in the preparation of Swiss Application No. 01833/03, which is standard practice. In addition, I had to sign an inventor disclosure according to article 21 of the Swiss Patentlaw. Apart from that, inventions developed by an employee generally belong to the employer according to article 332(1) of the Swiss Code of Obligation.

6. Fachhochschule Solothurn, my former employer, filed PCT/IB2004/002947 in the International Bureau of WIPO under the Patent Cooperation Treaty (PCT). Because the United States was a designated state, my signature as inventor was necessary for the application, according to Article 27(3) and Rule 18.4(c) of PCT. Beginning of April 2005 I was asked by my employer to sign a DECLARATION FOR UTILITY OR DESIGN APPLICATION (37 CFR 1.63) without having seen the specifications and claims of the US application.

7. Therefore, on 7 April 2005 I sent a letter to the U.S. Patent & Trademark Office by facsimile regarding a Notice to File Missing Parts of Non-Provisional Application relating to U.S. Serial No. 10/711,389, and a Declaration provided to me for signature. I asked the U.S. Patent & Trademark Office whether I should sign the Declaration without having reviewed and understood the application and claims and what should I do if I did not agree with the application and the claims.

8. After having seen the US application thereafter, on 21 April 2005, I wrote to the U.S. Patent & Trademark Office indicating that I had signed the Declaration referred to above, commenting however, that I had not been involved in preparing the U.S. application and that I was not allowed to make any contribution to the description and claims. I then described further comments summarizing my review.

9. I understand that when filing a subsequent application within one year of the first filing, it is permissible to add new specification text, embodiments, and claims to a first application filing, and also to modify language in a first filing. Such additional and revised information may involve contributions of one or more new co-inventors and not all of the original co-inventors may have been involved in all of any new inventions disclosed in the subsequent application.

10. With regard to my comment that I was not involved in preparing the application and was not allowed to make any contribution to the description and

the claims, as described above, I understand that my employer can legitimately cause a patent application to be filed under the Patent Cooperation Treaty in the International Bureau of WIPO with the participation of one or more co-inventors, as it did in this case. I understand that under the auspices of the Patent Cooperation Treaty, such applications can later be filed in other designated countries, such as the United States of America.

11. On September 12, 2007 I took notice of a draft of a preliminary amendment to US patent application 10/711,389 which the patent lawyer is planning to send to the USPTO, and which I would like to comment as follows:

a. I understand that the priority claim to Swiss Application No. 01833/03 allows for the description of embodiments which both correspond to and add to the disclosure of Swiss Application No. 01833/03.

b. Nearly all the comments I made under "Summary of the invention" and under "Claims" and under "Drawings" are addressed now by the above mentioned draft of a Preliminary Amendment which I have read and which is being submitted concurrently herewith.

c. Although I am neither a pharmacist nor a patent attorney, I notice that most of my comments were taken into account when the Preliminary Amendment was drafted. In addition, new claims [36, 37] were added which correspond to claims of my prior invention.

d. Furthermore, as noted above, I understand that it is permissible to add new specification text, embodiments, and claims to a first application filing, and also to modify language in a first filing. Such additional and revised information may involve contributions of one or more new co-inventors and not all of the original co-inventors may have been involved in all of any new inventions disclosed in the subsequent application.

12. Accordingly, I now sign a Supplemental Declaration which references the draft of a Preliminary Amendment to be filed, thereby confirming that I am a co-inventor of one or more of the claims of U.S. Serial No. 10/711,389 and that I have read the contents of its specification, including the claims, as amended by the draft of the Preliminary Amendment.

13. I hereby declare that all statements made herein of my own knowledge are true and that all statements made on information and belief are believed to be true; and further that these statements were made with the knowledge that willful false statements and the like so made are punishable by fine or imprisonment, or both, under Section 1001 of Title 18 of the United States Code, and that such willful false statements may jeopardize the validity of the application or any patent issuing thereon.

W. Zumbrunn

Werner Zumbrunn

Date: Brega 26.9.2007

Attorney Docket No. DIPI0002
Client.Matter No. 22494.0003

IN THE UNITED STATES PATENT & TRADEMARK OFFICE

In re Continuation Application of: Werner ZUMBRUNN, George IMANIDIS, Hans Werner VAN DE VENN, and Guy DI PIERRO Serial No. 11/711,389 Filed: September 1,5 2004 For: TRANSDERMAL DRUG DELIVERY METHOD AND SYSTEM	Examiner: Melissa S. MERCIER Art Unit: 1615 Confirmation No. 5388

PRELIMINARY AMENDMENT

Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

Dear Sir:

Prior to an examination on the merits, please amend the application as described below.

- **Amendments to the Specification** begin on page 2;
- **Amendments to the Claims** begin on page 5;
- **Amendments to the Drawings** being on page 10 (annotated sheets showing the changes and replacement sheets are attached); and
- **Remarks** begin on page 11.

AMENDMENTS TO THE SPECIFICATION

Please replace paragraph number **[0019]** of Publication Number US 2005/0238704 A1 with the following amended paragraph:

US5879322 (Lattin, et al.) is directed to a self-contained transdermal drug delivery device by electro transport means with electrodes designed to be worn on the skin. The electro transport device can be used by patients to deliver a drug during a prescribed course of therapy, e.g. the delivery of an analgesic to control pain.

Please replace paragraph number **[0039]** of Publication Number US 2005/0238704 A1 with the following amended paragraph:

Solvent that is not absorbed by the skin in a sufficient way is carried off in another way than by absorption through the skin, e.g. by evaporation into the environment and/or by absorption by ~~an other mean,~~ another means, e.g. absorbing substance such as silica gel. By this it is possible to avoid negative decrease of the concentration of active substance due to accumulation of the solvent which would impact the diffusion rate through the skin. Especially solvents based on water and/or alcohol are having at temperatures nearby the temperature of skin a vapor pressure which is sufficiently high to carry off the solvent by evaporation. However, the carrying off and/or diffusion rate of the solvent preferably is adjusted to the diffusion rate of the active substance through the skin to avoid accumulation of the solvent or precipitation of the active substance on the skin in a negative way.

Please replace paragraph number **[0068]** of Publication Number US 2005/0238704 A1 with the following amended paragraph:

FIG. 3 is showing a third embodiment of a dispensing system 1. A first and a second active substance s1, s2 is stored in a first and a second reservoir 5.1, 5.2. The flow (indicated by arrows) of the first and the second fluid s1, s2 into a connecting pipe 25 is controlled by a first and a second valve 19.1, 19.2, as described above interconnected, to a programmable flow control device [[15]] 8. The connecting pipe 25 may comprise mixing means 26 such as impellers or vortex means providing an appropriate preparation

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of mixture of the active substances s1, s2. This offers the opportunity to administer drugs which cannot be stored together due to incompatibility or another reason. Alternatively or in addition the bringing together of several active substances may take place in the administration chamber 9 of the administration device 6. The solvent absorption chamber 13 is separated by separation means 14 in the described manner from the administration chamber 9. The separation means 14 are made such that solvent is preferably absorbed by evaporation (indicated by arrows 17). In the shown embodiment the evaporation rate is controlled/adjusted by a fluid stream (indicated by arrows 27), preferably air, which is guided into the solvent absorption chamber 13 by an inlet 28 and exits by an outlet 29. The condition of the administration device and the absorption of the at least one active substance into the skin 11 as indicated by arrows 18, may be controlled by sensors 30, 31 interconnected to the control device [[15]] 8 by data connections 32. The sensors of the herein described embodiment are arranged in the administration chamber 9 and the solvent absorption chamber 13 such that the administration of the at least one active substance and/or the absorption of the at least one solvent may be controlled. Depending on the field of application, the sensors 30, 31 are suitable to measure relevant parameters such as temperature and/or humidity and/or pressure and/or concentration.

Please replace paragraph number **[0072]** of Publication Number US 2005/0238704 A1 with the following amended paragraph:

FIGS. 4 a) to c) are showing three further embodiment of a dispensing system 1 for administration of at least one active substance s. The dispensing systems 1 according to FIGS. 4 a) to 4 c) have in general a similar set up comprising an outer housing 39 with a display 38 interconnected to a programmable control unit 8. The lower surface of the devices 1 serves as footstep 40 while in use on a porous surface 10 and comprises an interface 12 for transferring active substance to a skin 11 through the porous surface 10. Inside the housing 39 the devices 1 comprise a drug reservoir 5 for at least one active substance s. The drug reservoir 5 is preferably a collapsible bag or a pressurized compartment due to internal or external pressure suitable to expel active substance into the administration chamber 9 via a pipe 4 which interconnects the drug reservoir 5 with

14.9.07 C. Zuccaro

the administration reservoir 9. In use the administration reservoir 9 is fluidly interconnected to the porous surface 10 of skin 11 such that active substance s dispensed into the administration chamber 9 may pass into skin 11 as indicated by arrows 18. The flow of the active substance s is controlled by a first valve and/or a pump 36 which is logically interconnected to the control unit 8 which controls the administration of active substance s according to a preset regime. A solvent recovery means 13 is used to remove depleted solvent from the administration chamber 9 by waste pipe 41. If administration of the active substance needs to be stopped it is possible to pump active substance from the administration chamber back into the ~~administration~~ drug reservoir 5 or the connecting pipe 4 by pump 36.

Please replace paragraph number **[0075]** of Publication Number US 2005/0238704 A1 with the following amended paragraph:

The embodiment of FIG. 4c) comprises a pressurized drug reservoir 5 in conjunction with a tube or pipette 4, a micro pump 36 controlled by control unit 8 pre-programmed to dispense and start pumping active substance s onto diffusion surface 12. A second pinch valve and/or micro pump 37 interconnects the administration chamber 9 with the waste reservoir 13. The micro pump 37 either pumps solution into the waste reservoir 13 and/or the valve [[36]] 37 opens and depleted carrier solution is absorbed into the waste reservoir 13.

14.9.07 G. Zundgen

AMENDMENTS TO THE CLAIMS

This listing of claims will replace all prior versions and listings of claims in the application:

Listing of the Claims:

1. (Currently amended) A [Method] method for transdermal administration of at least one active substance to a porous surface, comprising the following steps:
   a) [Dispensing] dispensing a certain amount of a liquid comprising at least one active substance and at least one solvent into an administration reservoir,
   [B]b) [Separation] separating at least a portion of the at least one solvent from the administration reservoir by a solvent recovery means ~~such that the at least~~ wherein one active substance achieves a certain level of concentration in vicinity to the [[a]] porous surface to be treated;
   c) [Absorption] absorption of the active substance by the porous surface to be treated via diffusion ~~such that the level of concentration in the administration reservoir decreases~~.

2. (Currently amended) The method [Method] according to claim 1 wherein the solvent is separated by evaporation.

3. (Currently amended) The method [Method] according to claim 2 wherein the evaporation of the solvent is supported by a heating element.

4. (Currently amended) The method [Method] according to claim 3 wherein the solvent is evaporated through a membrane passable preferably for the solvent.

5. (Currently amended) The method [Method] according to claim 2 where the solvent is removed by a pre-programmed opening a pinch valve that is in contact with the porous surface.

6. (Currently amended) The method [Method] according to claim 5 where the solvent is removed by programming the pumping of the solvent.

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7. (Currently amended) The method [Method] according to claim 2 where the solvent is removed by a programmed lowering of an arm or lever.

8. (Currently amended) The method [Method] according to claims 2 wherein the solvent is absorbed by a desiccant.

9. (Currently amended) The method [Method] according to claim 5 wherein the desiccant is one or a combination out of the group of silica gel, molecular sieves, active carbon.

10. (Currently amended) The method [Method] according to claim ~~one of the claims~~ 2 wherein the solvent is discharged into the environment.

11. (Currently amended) The method [Method] claim ~~one of the claims~~ 2 wherein the solvent is flushed by a fluid.

12. (Currently amended) The method [Method] according to claim 1 wherein the at least one active substance passes an interface device which is permeable for the at least one active substance.

13. (Currently amended) The method [Method] according to claim 12 wherein the interface device comprises a membrane.

14. (Currently amended) The method [Method] according to claim 12 wherein the interface device comprises an adhesive layer suitable to be attached to the porous surface.

15. (Currently amended) The method [Method] according to claim 1 wherein the steps a to c are repeated at predefined intervals such that the level of concentration of the at least one active substance in the administration reservoir is kept above a certain level.

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16. (Currently amended) The method [Method] according to claim 15 wherein the dispensing rate and the time pattern of dispensing the liquid into the administration reservoir are controlled by a programmable device.

17. (Currently amended) A device [Device] for transdermal administration of at least one active substance to a porous surface, comprising a dispensing device interconnected to an administration device for delivery of at least one active substance [solved] dissolved in a solvent to said administration device, wherein the administration device comprises an administration reservoir ~~suitable to receive the active substance solved in the solvent~~, a solvent removal element ~~means for absorption of solvent from the administration reservoir by evaporation~~ and an interface [means] suitable for transferring [of] the active substance from the administration reservoir to the porous surface.

18. (Currently amended) The device [Device] according to claim 17 wherein the interface ~~device~~ is suitable to be arranged in vicinity to the porous surface.

19. (Currently amended) The device [Device] according to claim 18 wherein the interface ~~means~~ comprises an adhesive surface suitable to be attached to the porous surface.

20. (Currently amended) The device [Device] according to claim 17 wherein the interface ~~means~~ is a membrane permeable for the active substance.

21. (Currently amended) The device [Device] according to claim 17 wherein the solvent removal ~~means~~ element is separated from the administration reservoir by a separation means.

22. (Currently amended) The device [Device] according to claim 21 wherein the separation means is selected from the group consisting of a membrane, [[or]] a foam, [[or]] a cellular material, [[or]] a honeycomb, and [[or]] an air gap.

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23. (Currently amended) The device [Device] according to claim 21 wherein the administration reservoir and the solvent removal ~~means~~ element are spaced apart a distance by the separation means 14.

24. (Currently amended) The device [Device] according to claim 17 wherein the solvent removal ~~means~~ element comprises one our or a combination out of the group of the following materials: Desiccant, general or a selective adsorbent material, silica gel, a molecular sieve, active carbon.

25. (Currently amended) The device [Device] according to claim 17 wherein the solvent removal ~~means~~ element comprises a chamber with an inlet and an outlet for flushing by a fluid.

26. (Currently amended) The device [Device] according to claim 17 wherein the dispensing device comprises at least one reservoir for an active substance which is interconnected to the administration device.

27. (Currently amended) The device [Device] according to claim 17 wherein the dispensing device comprises a propellant means to propel the active substance from the reservoir into the administration reservoir.

28. (Currently amended) The device [Device] according to 27 wherein the propellant means is a pump and/or a propellant gas.

29. (Currently amended) The device [Device] according to claim 26 wherein the dispensing ~~means~~ device comprises a first reservoir comprising a first active substance and a second reservoir comprising a second active substance and the first and the second active substance are mixed by mixing means before delivery to the administration device.

30. (Currently amended) The device [Device] according to claim 28 wherein the mixing means is a pipe with vortex means providing an appropriate preparation of mixture.

14.9.07 L. Zeuchner

31. (Currently amended) The device [Device] according to claim [30] 35 wherein the control device is interconnected to at least one valve for controlling the administration of the at least one active substance.

32. (Currently amended) The device [Device] according to claim 30 wherein the control device is programmable according to a predetermined regime or time pattern or interval of administration of the at least one active substance.

33. (Currently amended) The device [Device] according to claim 30 wherein the control device is interconnected with at least one sensor for measuring the administration and the condition of at least one active substance.

34. (Currently amended) The device [Device] according to claim 33 wherein the administration of the active substance is determined by the signal of the at least one sensor.

35. (New) The control device according to claim 17 wherein the administration of the active substance is controlled by a control device.

36. (New) An administration unit for application of at least one active substance to skin wherein the at least one active substance is dissolved in a solvent, comprising an administration unit configured to distribute the active substance to the skin or to a skin-compatible adhesive layer, wherein the administration unit comprises an administration reservoir and a solvent removal element comprising a separation layer that is impermeant to the active substance and permeable to the solvent.

37. (New) The administration unit of claim 36, wherein the separation layer further comprises a material that controls evaporation rate of the solvent at a surface of the separation layer.

14.9.07 G. Zumbrunn

AMENDMENTS TO THE DRAWINGS

The attached Replacement Sheets labeled 3 of 4 and 4 of 4 are provided.

Sheet 3 of 4 shows FIG. 3 and FIG. 4A. FIG. 3 has been amended to correct a typographical error. The reference number 25 on the left of pipe 25 has been changed to 26. Support for this amendment is found in paragraph [0068] of the specification.

Sheet 4 of 4 shows FIG. 4B and FIG. 4C. FIG. 4C has been amended to correct typographical errors. The reference number 4 showing the tube or pipette has been added. The reference number 41 has been changed to 37, the second pinch valve and/or micropump. Support for these changes is found in paragraph [0075].

14.9.07 W. Zuchman

REMARKS

Summary of Amendments to the Specification

Paragraph [0019] has been amended to correct a typographical error. US587322 (Lattin, et al.) has been changed to US5879322 (Lattin, et al.).

Paragraph [0039] has been amended to correct obvious errors. The phrase "an other mean" has been changed to "another means". The phrase "avoid negative decrease of the active substance due to accumulation of the solvent" has been changed to "avoid negative decrease of the concentration of active substance due to accumulation of the solvent". Support for these amendments is found in paragraph [0039] as originally filed which describes the carrying off of solvent e.g. by evaporation into the environment and the effect of such carrying off on the active substance.

Paragraph [0068] has been amended to correct typographical errors. Reference number 15 has been changed to 8. Support for this amendment is found in paragraph [0068] and FIG. 3 as originally filed.

Paragraph [0072] has been amended to correct an obvious error. The phrase "administration reservoir 5" has been changed to "drug reservoir 5". Support for this amendment is found in paragraph [0072] and FIGS. 4A, B and C as originally filed.

Paragraph [0075] has been amended to correct a typographical error. The sentence "The micro pump 37 either pumps solution into the waste reservoir 13 and/or the valve 36 opens and depleted carrier solution is absorbed into the waste reservoir 13" has been amended to recite "The micro pump 37 either pumps solution into the waste reservoir 13 and/or the valve [[36]] 37 opens and depleted carrier solution is absorbed into the waste reservoir 13." Support for this amendment is found in paragraph [0075] and FIG. 4C as originally filed.

Summary of Claim Amendments

Claim 1 has been amended. New claims 35-37 are being added.

14.9.07 M. Zumstein

Claim 1 has been amended to recite "A method for transdermal administration, and "dispensing" and "removing" Support for these amendments is found in claim 1 as originally filed and, for example, in paragraph [0064]. Claim 1 has also been amended by replacing the phrase "such that the level of concentration in the administration reservoir decreases" with "wherein". Support for this amendment is found throughout the specification, and in particular in paragraph [0028],

Claims 2-9 and 12-16 have been amended to recite "The method". Claims 10 and 11 have been amended to recite "according to claim 2." Claims 18-34 have been amended to recite "The device".

Claim 17 is amended by replacing the term "solved" with "dissolved", omitting the phrases "suitable to receive the active substance solved in the solvent" and "for adsorption of solvent from the administrative reservoir by evaporation" and replacing solvent removal "means" with solvent removal "element". The "means" term of "interface means" has been omitted.

Claims 19 and 20 are amended by omitting the "means" term of "interface means".

Claims 21 and 23-25 are amended by replacing "solvent removal means" with solvent removal element".

Claim 22 is amended to recite the list is Markush group format.

Claim 29 is amended to recite "dispensing device" in agreement with claim 17.

New claim 35 is being added to provide antecedent basis for the term "control device" claim 31.

Support for new claim 36 is found throughout the specification, for example, in claim 17 as originally filed and in paragraphs [0028], [0034], [0035], [0037], [0039], [0056], [0059], [0062], and [0064]. Support for new claim 37 is found, for example, in paragraphs [0046] and [0050].

Conclusion

The fees for extra claims and any other fees associated with this filing may be

10.9.07 D. Bradbeer

charged to Deposit Account No. 50-1123.

Favorable consideration of all pending claims is respectfully requested. The Examiner is asked to the telephone the undersigned, should the Examiner have any questions or believe such a call would expedite prosecution.

Respectfully submitted,

August __, 2007

Carol W. Burton, Reg. No. 35,465
Hogan & Hartson LLP
1200 17th Street, Suite 1500
Denver, CO 80202
Telephone: 303.454.2454
Facsimile: 303.899.7333

8/9/07 W Burton

PTO/SB/64 (07-07)
Approved for use through 06/30/2010. OMB 0651-0032
U.S. Patent and Trademark Office; U.S. DEPARTMENT OF COMMERCE

SUPPLEMENTAL DECLARATION FOR UTILITY OR DESIGN PATENT APPLICATION (37 CFR 1.67)

Attorney Docket Number	DIP0002
First Named Inventor	Werner ZURBRUGG
	COMPLETE IF KNOWN
Application Number	10/711,389
Filing Date	SEPTEMBER 15, 2004
Art Unit	1615
Examiner Name	Melissa S. MERCIER

I hereby declare that:

Each inventor's residence, mailing address, and citizenship are as stated below next to their name.

I believe the inventor(s) named below to be the original and first inventor(s) of the subject matter which is claimed and for which a patent is sought on the invention entitled:

TRANSDERMAL DRUG DELIVERY METHOD AND SYSTEM

(Title of the invention)

the specification of which

☐ is attached hereto

OR

☑ was filed on (MM/DD/YYYY) 09/15/2004 as United States Application Number or PCT International

Application Number 10/711,389 and was amended on (MM/DD/YYYY)

I hereby declare that the subject matter of the ☑ attached amendment ☐ amendment filed on _____ was part of the invention and was invented before the filing date of the original application, above identified for such invention.

I hereby state that I have reviewed and understand the contents of the above-identified specification, including the claims, as amended by any amendment specifically referred to above.

I acknowledge the duty to disclose information which is material to patentability as defined in 37 CFR 1.56, including for continuation-in-part applications, material information which became available between the filing date of the prior application and the national or PCT international filing date of the continuation-in-part application.

I hereby claim foreign priority benefits under 35 U.S.C. 119(a)-(d) or (f), or 365(b) of any foreign application(s) for patent, inventor's or plant breeder's rights certificate(s), or 365(a) of any PCT international application which designated at least one country other than the United States of America, listed below and have also identified below, by checking the box, any foreign application for patent, inventor's or plant breeder's rights certificate(s), or of any PCT international application having a filing date before that of the application on which priority is claimed.

Prior Foreign Application Number(s)	Country	Foreign Filing Date (MM/DD/YYYY)	Priority Not Claimed	Certified Copy Attached? YES	Certified Copy Attached? NO
PCT/IB2004/002947	PCT	09/13/2004	☐	☐	☑
01693/03	CH	10/27/2003	☐	☐	☑
			☐	☐	☐

☐ Additional foreign application numbers are listed on a supplemental priority data sheet PTO/SB/02B attached hereto.

PTO/SB/04 (01-07)
Approved for use through 06/30/2010. OMB 0651-0032
U.S. Patent and Trademark Office; U.S. DEPARTMENT OF COMMERCE

SUPPLEMENTAL DECLARATION — UTILITY OR DESIGN PATENT APPLICATION *

Direct all correspondence to: ☑ The address associated with Customer Number: 25235

OR ☐ Correspondence address below

Name		
Address		
Address		
City	State	ZIP
Country	Telephone	Email

WARNING:

Petitioner/applicant is cautioned to avoid submitting personal information in documents filed in a patent application that may contribute to identity theft. Personal information such as social security numbers, bank account numbers, or credit card numbers (other than a check or credit card authorization form PTO-2038 submitted for payment purposes) is never required by the USPTO to support a petition or an application. If this type of personal information is included in documents submitted to the USPTO, petitioners/applicants should consider redacting such personal information from the documents before submitting them to the USPTO. Petitioner/applicant is advised that the record of a patent application is available to the public after publication of the application (unless a non-publication request in compliance with 37 CFR 1.213(a) is made in the application) or issuance of a patent. Furthermore, the record from an abandoned application may also be available to the public if the application is referenced in a published application or an issued patent (see 37 CFR 1.14). Checks and credit card authorization forms PTO-2038 submitted for payment purposes are not retained in the application file and therefore are not publicly available.

I hereby declare that all statements made herein of my own knowledge are true and that all statements made on information and belief are believed to be true; and further that these statements were made with the knowledge that willful false statements and the like so made are punishable by fine or imprisonment, or both, under 18 U.S.C. 1001 and that such willful false statements may jeopardize the validity of the application or any patent issued thereon.

Name of Sole or First Inventor:	☐ A petition has been filed for this unsigned inventor		
Given Name Werner		Family Name or Surname ZUMBRUNN	
Inventor's Signature *W. Zumbrunn*			Date *14.9.07*
Residence: City MUTTENZ	State	Country CH	Citizenship CH
Mailing Address HALLENWEG 9			
Mailing Address			
City MUTTENZ	STATE	ZIP 4132	Country CH

☑ Additional inventor(s) or legal representative(s) are being named on the __1__ supplemental sheet(s) PTO/SB/02A or 02LR attached hereto.

* *concerning the attached preliminary amendment which I reviewed on 14 September 2007.*

PTO/SB/02A (07-07)
Approved for use through 06/30/2010. OMB 0651-0032
U.S. Patent and Trademark Office; U.S. DEPARTMENT OF COMMERCE

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DECLARATION

ADDITIONAL INVENTOR(S)
Supplemental Sheet

Page 1 of 1

Name of Additional Joint Inventor, if any;	☐ A petition has been filed for this unsigned inventor
Given Name (first and middle (if any)): Hans Werner	Family Name or Surname: VAN DE VENN
Inventor's Signature: W Van de Venn	Date: 16.10.07
Residence: City OENSINGEN Switzerland	State	Country CH	Citizenship DE
Mailing Address: ROGGENWEGTT Wiesenweg 7			
City OENSINGEN	State	Zip 4702	Country CH

Name of Additional Joint Inventor, if any:	☐ A petition has been filed for this unsigned inventor
Given Name (first and middle (if any)): George	Family Name or Surname: MANIOS
Inventor's Signature: G Manios	Date: 9.10.07
Residence: City BINNINGEN	State	Country CH	Citizenship GR
Mailing Address: BRUDERHOLZSTRASSE 34			
City BINNINGEN	State	Zip 4102	Country CH

Name of Additional Joint Inventor, if any:	☐ A petition has been filed for this unsigned inventor
Given Name (first and middle (if any)): Guy	Family Name or Surname: DIPIERRO
Inventor's Signature: Guy DiPierro	Date: 10/16/07
Residence: City HAMILTON	State NJ	Country US	Citizenship US
Mailing Address: 7 LEHAVRE COURT			
City HAMILTON	State NJ	Zip 08619	Country US

Electronic Acknowledgement Receipt

EFS ID:	2527473
Application Number:	10711389
International Application Number:	
Confirmation Number:	5388
Title of Invention:	TRANSDERMAL DRUG DELIVERY METHOD AND SYSTEM
First Named Inventor/Applicant Name:	Werner Zumbrunn
Customer Number:	25235
Filer:	Carol W. Burton/Dane Stephenson
Filer Authorized By:	Carol W. Burton
Attorney Docket Number:	CT0002
Receipt Date:	29-NOV-2007
Filing Date:	15-SEP-2004
Time Stamp:	18:17:11
Application Type:	Utility under 35 USC 111(a)

Payment information:

Submitted with Payment	no

File Listing:

Document Number	Document Description	File Name	File Size(Bytes) /Message Digest	Multi Part /.zip	Pages (if appl.)
1		224940003RespNoncompliantAmend.pdf	534800 e72269de81f6f79b5674d841d3cac388e6939d37	yes	38

Multipart Description/PDF files in .zip description		
Document Description	**Start**	**End**
Applicant Response to Pre-Exam Formalities Notice	1	3
Preliminary Amendment	4	4
Specification	5	7
Claims	8	12
Drawings-only black and white line drawings	13	13
Applicant Arguments/Remarks Made in an Amendment	14	16
Drawings-only black and white line drawings	17	18
Oath or Declaration filed	19	35
Oath or Declaration filed	36	38

Warnings:	
Information:	
Total Files Size (in bytes):	534800

This Acknowledgement Receipt evidences receipt on the noted date by the USPTO of the indicated documents, characterized by the applicant, and including page counts, where applicable. It serves as evidence of receipt similar to a Post Card, as described in MPEP 503.

New Applications Under 35 U.S.C. 111
If a new application is being filed and the application includes the necessary components for a filing date (see 37 CFR 1.53(b)-(d) and MPEP 506), a Filing Receipt (37 CFR 1.54) will be issued in due course and the date shown on this Acknowledgement Receipt will establish the filing date of the application.

National Stage of an International Application under 35 U.S.C. 371
If a timely submission to enter the national stage of an international application is compliant with the conditions of 35 U.S.C. 371 and other applicable requirements a Form PCT/DO/EO/903 indicating acceptance of the application as a national stage submission under 35 U.S.C. 371 will be issued in addition to the Filing Receipt, in due course.

New International Application Filed with the USPTO as a Receiving Office
If a new international application is being filed and the international application includes the necessary components for an international filing date (see PCT Article 11 and MPEP 1810), a Notification of the International Application Number and of the International Filing Date (Form PCT/RO/105) will be issued in due course, subject to prescriptions concerning national security, and the date shown on this Acknowledgement Receipt will establish the international filing date of the application.

PTO/SB/06 (07-06)
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U.S. Patent and Trademark Office; U.S. DEPARTMENT OF COMMERCE
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PATENT APPLICATION FEE DETERMINATION RECORD Substitute for Form PTO-875	Application or Docket Number 10/711,389	Filing Date 09/15/2004	☐ To be Mailed

APPLICATION AS FILED – PART I

	(Column 1)	(Column 2)	SMALL ENTITY ☒		OR	OTHER THAN SMALL ENTITY	
FOR	NUMBER FILED	NUMBER EXTRA	RATE ($)	FEE ($)		RATE ($)	FEE ($)
☐ BASIC FEE (37 CFR 1.16(a), (b), or (c))	N/A	N/A	N/A			N/A	
☐ SEARCH FEE (37 CFR 1.16(k), (i), or (m))	N/A	N/A	N/A			N/A	
☐ EXAMINATION FEE (37 CFR 1.16(o), (p), or (q))	N/A	N/A	N/A			N/A	
TOTAL CLAIMS (37 CFR 1.16(i))	minus 20 =	*	X $ =		OR	X $ =	
INDEPENDENT CLAIMS (37 CFR 1.16(h))	minus 3 =	*	X $ =			X $ =	
☐ APPLICATION SIZE FEE (37 CFR 1.16(s))	If the specification and drawings exceed 100 sheets of paper, the application size fee due is $250 ($125 for small entity) for each additional 50 sheets or fraction thereof. See 35 U.S.C. 41(a)(1)(G) and 37 CFR 1.16(s).						
☐ MULTIPLE DEPENDENT CLAIM PRESENT (37 CFR 1.16(j))							
* If the difference in column 1 is less than zero, enter "0" in column 2.			TOTAL			TOTAL	

APPLICATION AS AMENDED – PART II

AMENDMENT	10/24/2007	(Column 1) CLAIMS REMAINING AFTER AMENDMENT		(Column 2) HIGHEST NUMBER PREVIOUSLY PAID FOR	(Column 3) PRESENT EXTRA	SMALL ENTITY RATE ($)	ADDITIONAL FEE ($)	OR	OTHER THAN SMALL ENTITY RATE ($)	ADDITIONAL FEE ($)
	Total (37 CFR 1.16(i))	* 37	Minus	** 34	= 3	X $25 =	75	OR	X $ =	
	Independent (37 CFR 1.16(h))	* 3	Minus	***3	= 0	X $105 =	0	OR	X $ =	
	☐ Application Size Fee (37 CFR 1.16(s))									
	☐ FIRST PRESENTATION OF MULTIPLE DEPENDENT CLAIM (37 CFR 1.16(j))							OR		
						TOTAL ADD'L FEE	75	OR	TOTAL ADD'L FEE	

AMENDMENT		(Column 1) CLAIMS REMAINING AFTER AMENDMENT		(Column 2) HIGHEST NUMBER PREVIOUSLY PAID FOR	(Column 3) PRESENT EXTRA	RATE ($)	ADDITIONAL FEE ($)		RATE ($)	ADDITIONAL FEE ($)
	Total (37 CFR 1.16(i))	*	Minus	**	=	X $ =		OR	X $ =	
	Independent (37 CFR 1.16(h))	*	Minus	***	=	X $ =		OR	X $ =	
	☐ Application Size Fee (37 CFR 1.16(s))									
	☐ FIRST PRESENTATION OF MULTIPLE DEPENDENT CLAIM (37 CFR 1.16(j))							OR		
						TOTAL ADD'L FEE		OR	TOTAL ADD'L FEE	

* If the entry in column 1 is less than the entry in column 2, write "0" in column 3.

** If the "Highest Number Previously Paid For" IN THIS SPACE is less than 20, enter "20".

*** If the "Highest Number Previously Paid For" IN THIS SPACE is less than 3, enter "3".

The "Highest Number Previously Paid For" (Total or Independent) is the highest number found in the appropriate box in column 1.

Legal Instrument Examiner:
Karen T. Washington

UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
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25235 e 11/08/2007

HOGAN & HARTSON LLP
ONE TABOR CENTER, SUITE 1500
1200 SEVENTEENTH ST
DENVER, CO 80202

Paper No.

Application No.:	**10/711,389**	**Date Mailed:**	**11/08/2007**
First Named Inventor:	Zumbrunn, Werner,	Examiner:	MERCIER, MELISSA S
Attorney Docket No.:	CT0002	Art Unit:	1615
Confirmation No.:	5388	Filing Date:	09/15/2004

Please find attached an Office communication concerning this application or proceeding.

Commissioner for Patents

Notice of Non-Compliant Amendment (37 CFR 1.121)	Application No. 10/711,389	Applicant(s) ZUMBRUNN ET AL.	
		Art Unit 1700	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

The amendment document filed on *24 October, 2007* is considered non-compliant because it has failed to meet the requirements of 37 CFR 1.121 or 1.4. In order for the amendment document to be compliant, correction of the following item(s) is required.

THE FOLLOWING MARKED (X) ITEM(S) CAUSE THE AMENDMENT DOCUMENT TO BE NON-COMPLIANT:

- ☐ 1. Amendments to the specification:
  - ☐ A. Amended paragraph(s) do not include markings.
  - ☐ B. New paragraph(s) should not be underlined.
  - ☐ C. Other _____.
- ☐ 2. Abstract:
  - ☐ A. Not presented on a separate sheet. 37 CFR 1.72.
  - ☐ B. Other _____.
- ☒ 3. Amendments to the drawings:
  - ☒ A. The drawings are not properly identified in the top margin as "Replacement Sheet," "New Sheet," or "Annotated Sheet" as required by 37 CFR 1.121(d).
  - ☐ B. The practice of submitting proposed drawing correction has been eliminated. Replacement drawings showing amended figures, without markings, in compliance with 37 CFR 1.84 are required.
  - ☐ C. Other _____.
- ☐ 4. Amendments to the claims:
  - ☐ A. A complete listing of all of the claims is not present.
  - ☐ B. The listing of claims does not include the text of all pending claims (including withdrawn claims)
  - ☐ C. Each claim has not been provided with the proper status identifier, and as such, the individual status of each claim cannot be identified. Note: the status of every claim must be indicated after its claim number by using one of the following status identifiers: (Original), (Currently amended), (Canceled), (Previously presented), (New), (Not entered), (Withdrawn) and (Withdrawn-currently amended).
  - ☐ D. The claims of this amendment paper have not been presented in ascending numerical order.
  - ☐ E. Other: _____.
- ☐ 5. Other (e.g., the amendment is unsigned or not signed in accordance with 37 CFR 1.4): For further explanation of the amendment format required by 37 CFR 1.121, see MPEP § 714.

TIME PERIODS FOR FILING A REPLY TO THIS NOTICE:

1. Applicant is given **no new time period** if the non-compliant amendment is an after-final amendment or an amendment filed after allowance, or a drawing submission (only) If applicant wishes to resubmit the non-compliant after-final amendment with corrections, the **entire corrected amendment** must be resubmitted.

2. Applicant is given **one month**, or thirty (30) days, whichever is longer, from the mail date of this notice to supply the correction, if the non-compliant amendment is one of the following: a preliminary amendment, a non-final amendment (including a submission for a request for continued examination (RCE) under 37 CFR 1.114), a supplemental amendment filed within a suspension period under 37 CFR 1.103(a) or (c), and an amendment filed in response to a Quayle action. If any of above boxes 1 to 4 are checked, the correction required is only the corrected section of the non-compliant amendment in compliance with 37 CFR 1.121.

   Extensions of time are available under 37 CFR 1.136(a) only if the non-compliant amendment is a non-final amendment or an amendment filed in response to a *Quayle* action.
   Failure to timely respond to this notice will result in:
   Abandonment of the application if the non-compliant amendment is a non-final amendment or an amendment filed in response to a *Quayle* action; or
   Non-entry of the amendment if the non-compliant amendment is a preliminary amendment or supplemental amendment.

Legal Instruments Examiner (LIE), if applicable Karen T. Washington Telephone No: 571-272-1061

Attorney Docket No. DIPI0002
Client.Matter No. 22494.0003

IN THE UNITED STATES PATENT & TRADEMARK OFFICE

In re Continuation Application of: Werner ZUMBRUNN, George IMANIDIS, Hans Werner VAN DE VENN, and Guy DI PIERRO Serial No. 10/711,389 Filed: September 15, 2004 For: TRANSDERMAL DRUG DELIVERY METHOD AND SYSTEM	Examiner: Melissa S. MERCIER Art Unit: 1615 Confirmation No. 5388

PRELIMINARY AMENDMENT

Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

Dear Sir:

Prior to an examination on the merits, please amend the application as described below.

- **Amendments to the Specification** begin on page 2;
- **Amendments to the Claims** begin on page 5;
- **Amendments to the Drawings** being on page 10 (annotated sheets showing the changes and replacement sheets are attached); and
- **Remarks** begin on page 11.

AMENDMENTS TO THE SPECIFICATION

Please replace paragraph number **[0019]** of Publication Number US 2005/0238704 A1 with the following amended paragraph:

US5879322 (Lattin, et al.) is directed to a self-contained transdermal drug delivery device by electro transport means with electrodes designed to be worn on the skin. The electro transport device can be used by patients to deliver a drug during a prescribed course of therapy, e.g. the delivery of an analgesic to control pain.

Please replace paragraph number **[0039]** of Publication Number US 2005/0238704 A1 with the following amended paragraph:

Solvent that is not absorbed by the skin in a sufficient way is carried off in another way than by absorption through the skin, e.g. by evaporation into the environment and/or by absorption by ~~an other mean,~~ another means, e.g. absorbing substance such as silica gel. By this it is possible to avoid negative decrease of the concentration of active substance due to accumulation of the solvent which would impact the diffusion rate through the skin. Especially solvents based on water and/or alcohol are having at temperatures nearby the temperature of skin a vapor pressure which is sufficiently high to carry off the solvent by evaporation. However, the carrying off and/or diffusion rate of the solvent preferably is adjusted to the diffusion rate of the active substance through the skin to avoid accumulation of the solvent or precipitation of the active substance on the skin in a negative way.

Please replace paragraph number **[0068]** of Publication Number US 2005/0238704 A1 with the following amended paragraph:

FIG. 3 is showing a third embodiment of a dispensing system 1. A first and a second active substance s1, s2 is stored in a first and a second reservoir 5.1, 5.2. The flow (indicated by arrows) of the first and the second fluid s1, s2 into a connecting pipe 25 is controlled by a first and a second valve 19.1, 19.2, as described above interconnected, to a programmable flow control device [[15]] 8. The connecting pipe 25 may comprise mixing means 26 such as impellers or vortex means providing an appropriate preparation

of mixture of the active substances s1, s2. This offers the opportunity to administer drugs which cannot be stored together due to incompatibility or another reason. Alternatively or in addition the bringing together of several active substances may take place in the administration chamber 9 of the administration device 6. The solvent absorption chamber 13 is separated by separation means 14 in the described manner from the administration chamber 9. The separation means 14 are made such that solvent is preferably absorbed by evaporation (indicated by arrows 17). In the shown embodiment the evaporation rate is controlled/adjusted by a fluid stream (indicated by arrows 27), preferably air, which is guided into the solvent absorption chamber 13 by an inlet 28 and exits by an outlet 29. The condition of the administration device and the absorption of the at least one active substance into the skin 11 as indicated by arrows 18, may be controlled by sensors 30, 31 interconnected to the control device [[15]] 8 by data connections 32. The sensors of the herein described embodiment are arranged in the administration chamber 9 and the solvent absorption chamber 13 such that the administration of the at least one active substance and/or the absorption of the at least one solvent may be controlled. Depending on the field of application, the sensors 30, 31 are suitable to measure relevant parameters such as temperature and/or humidity and/or pressure and/or concentration.

Please replace paragraph number **[0072]** of Publication Number US 2005/0238704 A1 with the following amended paragraph:

FIGS. 4 a) to c) are showing three further embodiment of a dispensing system 1 for administration of at least one active substance s. The dispensing systems 1 according to FIGS. 4 a) to 4 c) have in general a similar set up comprising an outer housing 39 with a display 38 interconnected to a programmable control unit 8. The lower surface of the devices 1 serves as footstep 40 while in use on a porous surface 10 and comprises an interface 12 for transferring active substance to a skin 11 through the porous surface 10. Inside the housing 39 the devices 1 comprise a drug reservoir 5 for at least one active substance s. The drug reservoir 5 is preferably a collapsible bag or a pressurized compartment due to internal or external pressure suitable to expel active substance into the administration chamber 9 via a pipe 4 which interconnects the drug reservoir 5 with

the administration reservoir 9. In use the administration reservoir 9 is fluidly interconnected to the porous surface 10 of skin 11 such that active substance s dispensed into the administration chamber 9 may pass into skin 11 as indicated by arrows 18. The flow of the active substance s is controlled by a first valve and/or a pump 36 which is logically interconnected to the control unit 8 which controls the administration of active substance s according to a preset regime. A solvent recovery means 13 is used to remove depleted solvent from the administration chamber 9 by waste pipe 41. If administration of the active substance needs to be stopped it is possible to pump active substance from the administration chamber back into the ~~administration~~ drug reservoir 5 or the connecting pipe 4 by pump 36.

Please replace paragraph number **[0075]** of Publication Number US 2005/0238704 A1 with the following amended paragraph:

The embodiment of FIG. 4c) comprises a pressurized drug reservoir 5 in conjunction with a tube or pipette 4, a micro pump 36 controlled by control unit 8 pre-programmed to dispense and start pumping active substance s onto diffusion surface 12. A second pinch valve and/or micro pump 37 interconnects the administration chamber 9 with the waste reservoir 13. The micro pump 37 either pumps solution into the waste reservoir 13 and/or the valve [[36]] 37 opens and depleted carrier solution is absorbed into the waste reservoir 13.

AMENDMENTS TO THE CLAIMS

This listing of claims will replace all prior versions and listings of claims in the application:

Listing of the Claims:

1. (Currently amended) A [Method] method for transdermal administration of at least one active substance to a porous surface, comprising the following steps:
   a) [Dispensing] dispensing a certain amount of a liquid comprising at least one active substance and at least one solvent into an administration reservoir,
   [B]b) [Separation] separating at least a portion of the at least one solvent from the administration reservoir by a solvent recovery means ~~such that the at least~~ wherein one active substance achieves a certain level of concentration in vicinity to the [[a]] porous surface to be treated;
   c) [Absorption] absorption of the active substance by the porous surface to be treated via diffusion ~~such that the level of concentration in the administration reservoir decreases~~.

2. (Currently amended) The method [Method] according to claim 1 wherein the solvent is separated by evaporation.

3. (Currently amended) The method [Method] according to claim 2 wherein the evaporation of the solvent is supported by a heating element.

4. (Currently amended) The method [Method] according to claim 3 wherein the solvent is evaporated through a membrane passable preferably for the solvent.

5. (Currently amended) The method [Method] according to claim 2 where the solvent is removed by a pre-programmed opening a pinch valve that is in contact with the porous surface.

6. (Currently amended) The method [Method] according to claim 5 where the solvent is removed by programming the pumping of the solvent.

7. (Currently amended) The method [Method] according to claim 2 where the solvent is removed by a programmed lowering of an arm or lever.

8. (Currently amended) The method [Method] according to claims 2 wherein the solvent is absorbed by a desiccant.

9. (Currently amended) The method [Method] according to claim 5 wherein the desiccant is one or a combination out of the group of silica gel, molecular sieves, active carbon.

10. (Currently amended) The method [Method] according to claim ~~one of the claims~~ 2 wherein the solvent is discharged into the environment.

11. (Currently amended) The method [Method] claim ~~one of the claims~~ 2 wherein the solvent is flushed by a fluid.

12. (Currently amended) The method [Method] according to claim 1 wherein the at least one active substance passes an interface device which is permeable for the at least one active substance.

13. (Currently amended) The method [Method] according to claim 12 wherein the interface device comprises a membrane.

14. (Currently amended) The method [Method] according to claim 12 wherein the interface device comprises an adhesive layer suitable to be attached to the porous surface.

15. (Currently amended) The method [Method] according to claim 1 wherein the steps a to c are repeated at predefined intervals such that the level of concentration of the at least one active substance in the administration reservoir is kept above a certain level.

16. (Currently amended) The method [Method] according to claim 15 wherein the dispensing rate and the time pattern of dispensing the liquid into the administration reservoir are controlled by a programmable device.

17. (Currently amended) A device [Device] for transdermal administration of at least one active substance to a porous surface, comprising a dispensing device interconnected to an administration device for delivery of at least one active substance [solved] dissolved in a solvent to said administration device, wherein the administration device comprises an administration reservoir ~~suitable to receive the active substance solved in the solvent~~, a solvent removal element ~~means for absorption of solvent from the administration reservoir by evaporation~~ and an interface [means] suitable for transferring [of] the active substance from the administration reservoir to the porous surface.

18. (Currently amended) The device [Device] according to claim 17 wherein the interface ~~device~~ is suitable to be arranged in vicinity to the porous surface.

19. (Currently amended) The device [Device] according to claim 18 wherein the interface ~~means~~ comprises an adhesive surface suitable to be attached to the porous surface.

20. (Currently amended) The device [Device] according to claim 17 wherein the interface ~~means~~ is a membrane permeable for the active substance.

21. (Currently amended) The device [Device] according to claim 17 wherein the solvent removal ~~means~~ element is separated from the administration reservoir by a separation means.

22. (Currently amended) The device [Device] according to claim 21 wherein the separation means is selected from the group consisting of a membrane, [[or]] a foam, [[or]] a cellular material, [[or]] a honeycomb, and [[or]] an air gap.

23. (Currently amended) The device [Device] according to claim 21 wherein the administration reservoir and the solvent removal ~~means~~ element are spaced apart a distance by the separation means 14.

24. (Currently amended) The device [Device] according to claim 17 wherein the solvent removal ~~means~~ element comprises one our or a combination out of the group of the following materials: Desiccant, general or a selective adsorbent material, silica gel, a molecular sieve, active carbon.

25. (Currently amended) The device [Device] according to claim 17 wherein the solvent removal ~~means~~ element comprises a chamber with an inlet and an outlet for flushing by a fluid.

26. (Currently amended) The device [Device] according to claim 17 wherein the dispensing device comprises at least one reservoir for an active substance which is interconnected to the administration device.

27. (Currently amended) The device [Device] according to claim 17 wherein the dispensing device comprises a propellant means to propel the active substance from the reservoir into the administration reservoir.

28. (Currently amended) The device [Device] according to 27 wherein the propellant means is a pump and/or a propellant gas.

29. (Currently amended) The device [Device] according to claim 26 wherein the dispensing ~~means~~ device comprises a first reservoir comprising a first active substance and a second reservoir comprising a second active substance and the first and the second active substance are mixed by mixing means before delivery to the administration device.

30. (Currently amended) The device [Device] according to claim 28 wherein the mixing means is a pipe with vortex means providing an appropriate preparation of mixture.

31. (Currently amended) The device [Device] according to claim [30] 35 wherein the control device is interconnected to at least one valve for controlling the administration of the at least one active substance.

32. (Currently amended) The device [Device] according to claim 30 wherein the control device is programmable according to a predetermined regime or time pattern or interval of administration of the at least one active substance.

33. (Currently amended) The device [Device] according to claim 30 wherein the control device is interconnected with at least one sensor for measuring the administration and the condition of at least one active substance.

34. (Currently amended) The device [Device] according to claim 33 wherein the administration of the active substance is determined by the signal of the at least one sensor.

35. (New) The control device according to claim 17 wherein the administration of the active substance is controlled by a control device.

36. (New) An administration unit for application of at least one active substance to skin wherein the at least one active substance is dissolved in a solvent, comprising an administration unit configured to distribute the active substance to the skin or to a skin-compatible adhesive layer, wherein the administration unit comprises an administration reservoir and a solvent removal element comprising a separation layer that is impermeant to the active substance and permeable to the solvent.

37. (New) The administration unit of claim 36, wherein the separation layer further comprises a material that controls evaporation rate of the solvent at a surface of the separation layer.

AMENDMENTS TO THE DRAWINGS

The attached Replacement Sheets labeled 3 of 4 and 4 of 4 are provided.

Sheet 3 of 4 shows FIG. 3 and FIG. 4A. FIG. 3 has been amended to correct a typographical error. The reference number 25 on the left of pipe 25 has been changed to 26. Support for this amendment is found in paragraph [0068] of the specification.

Sheet 4 of 4 shows FIG. 4B and FIG. 4C. FIG. 4C has been amended to correct typographical errors. The reference number 4 showing the tube or pipette has been added. The reference number 41 has been changed to 37, the second pinch valve and/or micropump. Support for these changes is found in paragraph [0075].

REMARKS

Summary of Amendments to the Specification

Paragraph [0019] has been amended to correct a typographical error. US587322 (Lattin, et al.) has been changed to US5879322 (Lattin, et al.).

Paragraph [0039] has been amended to correct obvious errors. The phrase "an other mean" has been changed to "another means". The phrase "avoid negative decrease of the active substance due to accumulation of the solvent" has been changed to "avoid negative decrease of the concentration of active substance due to accumulation of the solvent". Support for these amendments is found in paragraph [0039] as originally filed which describes the carrying off of solvent e.g. by evaporation into the environment and the effect of such carrying off on the active substance.

Paragraph [0068] has been amended to correct typographical errors. Reference number 15 has been changed to 8. Support for this amendment is found in paragraph [0068] and FIG. 3 as originally filed.

Paragraph [0072] has been amended to correct an obvious error. The phrase "administration reservoir 5" has been changed to "drug reservoir 5". Support for this amendment is found in paragraph [0072] and FIGS. 4A, B and C as originally filed.

Paragraph [0075] has been amended to correct a typographical error. The sentence "The micro pump 37 either pumps solution into the waste reservoir 13 and/or the valve 36 opens and depleted carrier solution is absorbed into the waste reservoir 13" has been amended to recite "The micro pump 37 either pumps solution into the waste reservoir 13 and/or the valve [[36]] 37 opens and depleted carrier solution is absorbed into the waste reservoir 13." Support for this amendment is found in paragraph [0075] and FIG. 4C as originally filed.

Summary of Claim Amendments

Claim 1 has been amended. New claims 35-37 are being added.

Claim 1 has been amended to recite "A method for transdermal administration, and "dispensing" and "removing" Support for these amendments is found in claim 1 as originally filed and, for example, in paragraph [0064]. Claim 1 has also been amended by replacing the phrase "such that the level of concentration in the administration reservoir decreases" with "wherein". Support for this amendment is found throughout the specification, and in particular in paragraph [0028],

Claims 2-9 and 12-16 have been amended to recite "The method". Claims 10 and 11 have been amended to recite "according to claim 2." Claims 18-34 have been amended to recite "The device".

Claim 17 is amended by replacing the term "solved" with "dissolved", omitting the phrases "suitable to receive the active substance solved in the solvent" and "for adsorption of solvent from the administrative reservoir by evaporation" and replacing solvent removal "means" with solvent removal "element". The "means" term of "interface means" has been omitted.

Claims 19 and 20 are amended by omitting the "means" term of "interface means".

Claims 21 and 23-25 are amended by replacing "solvent removal means" with solvent removal element".

Claim 22 is amended to recite the list is Markush group format.

Claim 29 is amended to recite "dispensing device" in agreement with claim 17.

New claim 35 is being added to provide antecedent basis for the term "control device" claim 31.

Support for new claim 36 is found throughout the specification, for example, in claim 17 as originally filed and in paragraphs [0028], [0034], [0035], [0037], [0039], [0056], [0059], [0062], and [0064]. Support for new claim 37 is found, for example, in paragraphs [0046] and [0050].

Conclusion

The fees for extra claims and any other fees associated with this filing may be

charged to Deposit Account No. 50-1123.

Favorable consideration of all pending claims is respectfully requested. The Examiner is asked to the telephone the undersigned, should the Examiner have any questions or believe such a call would expedite prosecution.

Respectfully submitted,

October 24, 2007

Carol W. Burton, Reg. No. 35,465
Hogan & Hartson LLP
1200 17th Street, Suite 1500
Denver, CO 80202
Telephone: 303.454.2454
Facsimile: 303.899.7333

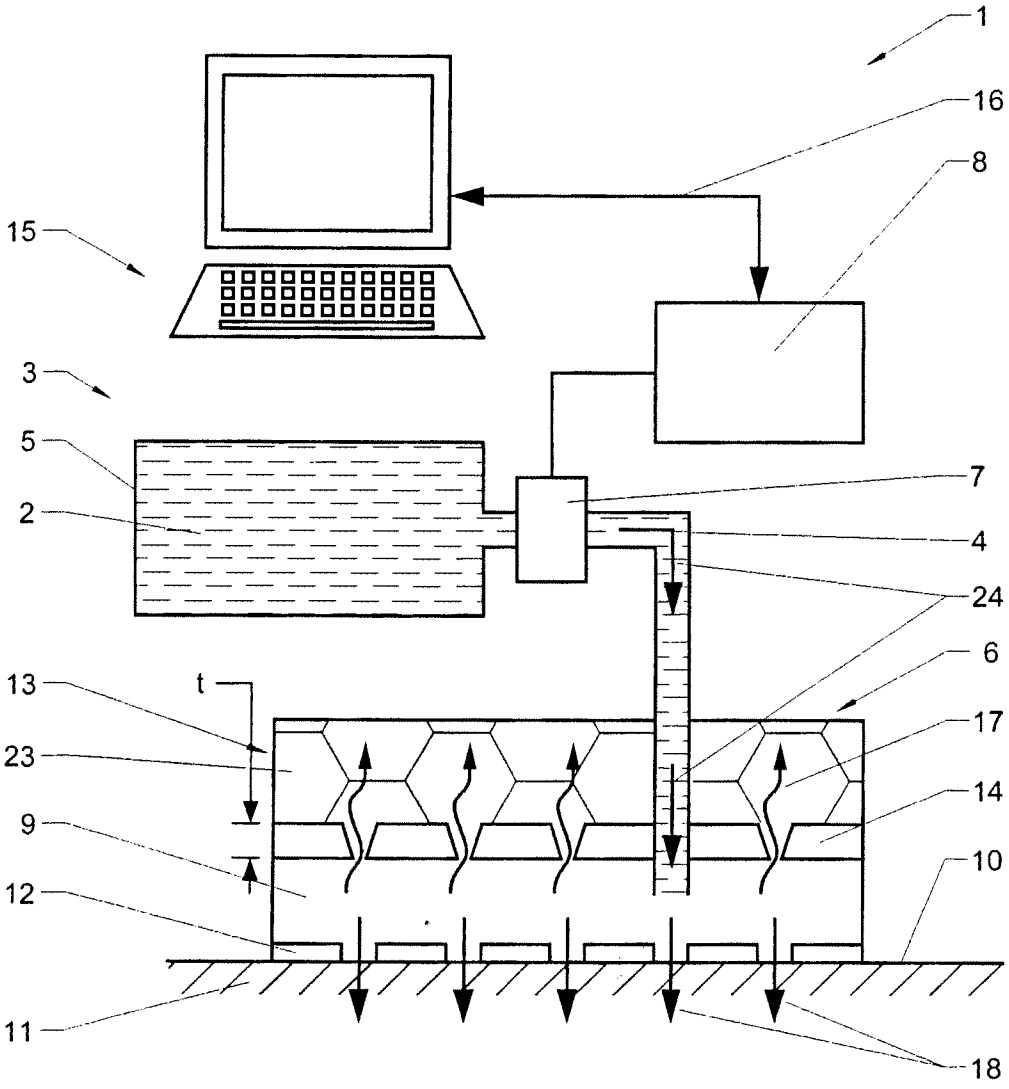

Fig. 1

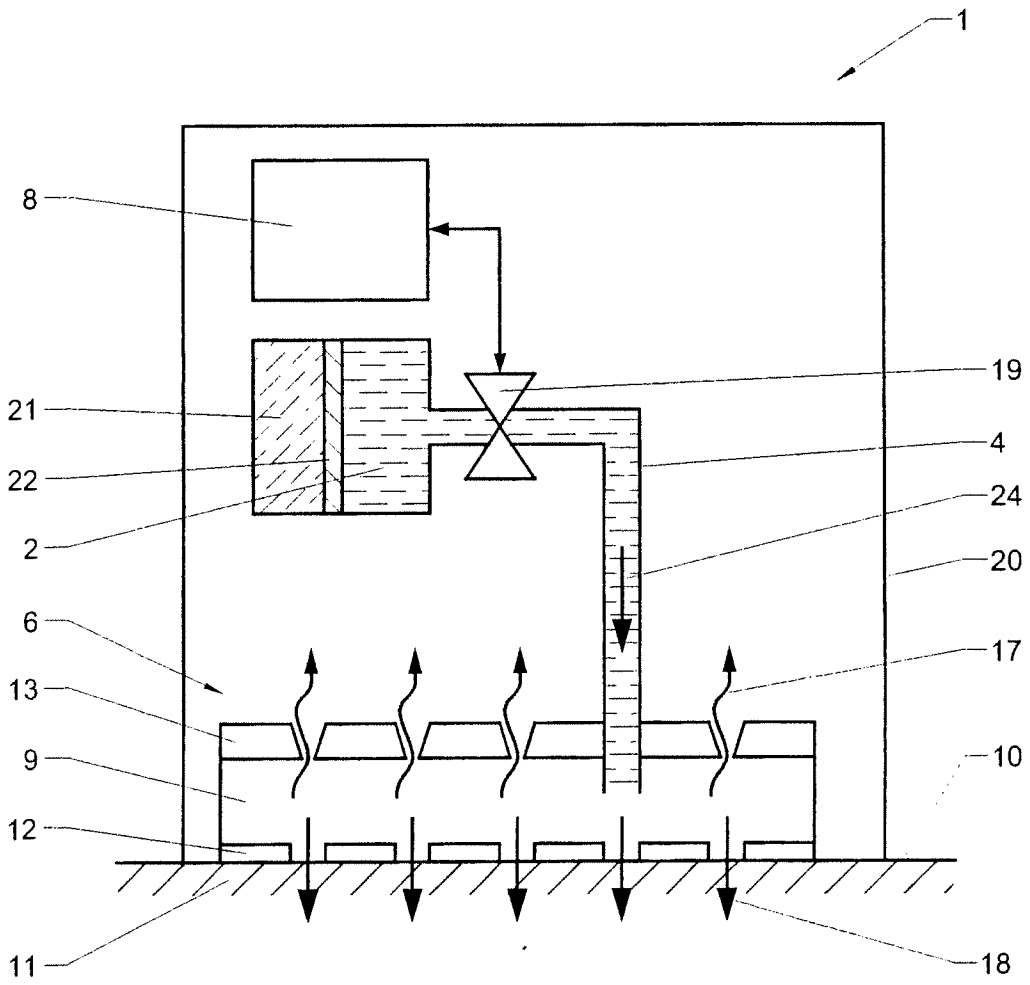

Fig. 2

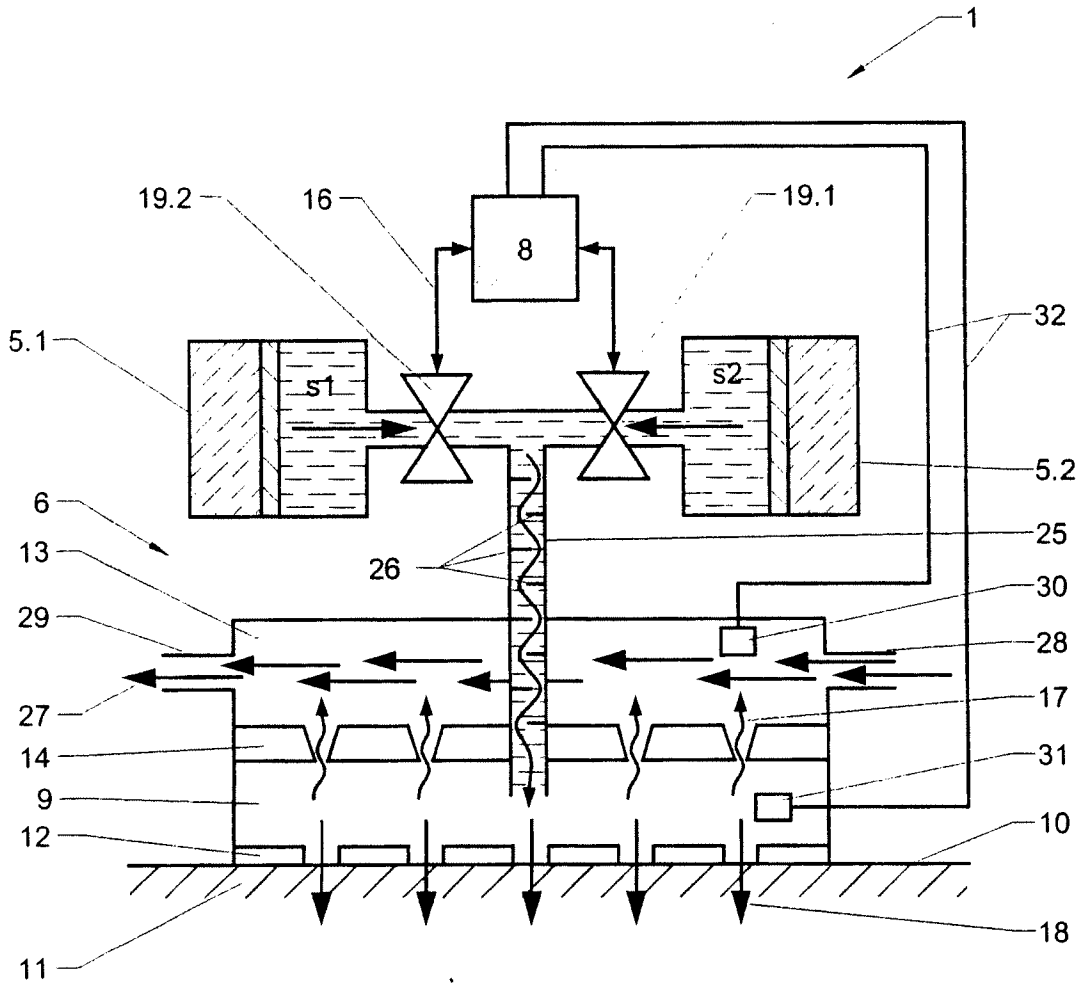
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Fig. 3

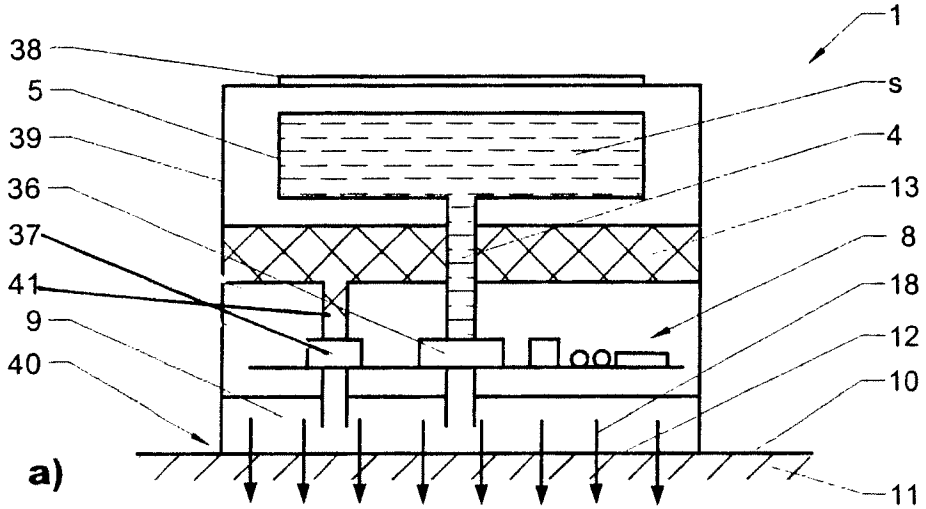
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Fig. 4

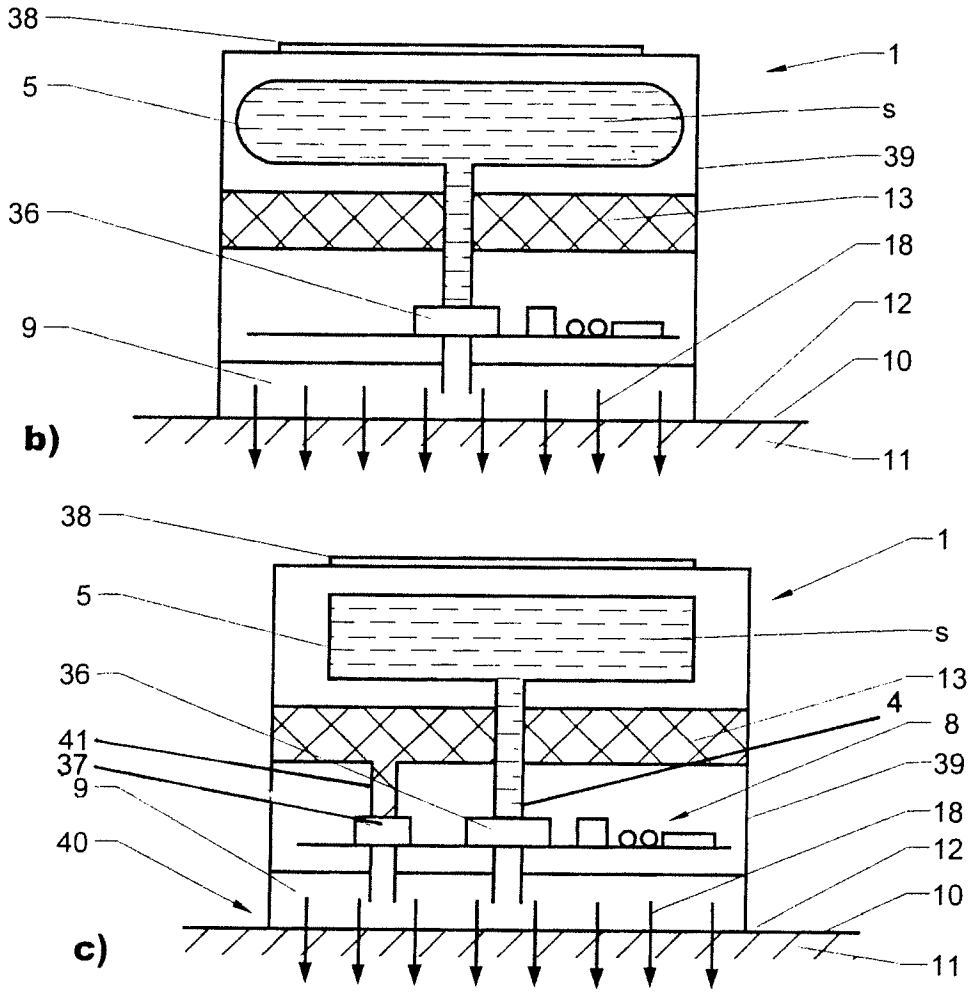
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Fig. 4

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re Continuation Application of: Werner ZUMBRUNN, George IMANIDIS, Hans Werner VAN DE VENN, and Guy DI PIERRO Serial No. 10/711,389 Filed: September 15, 2004 For: TRANSDERMAL DRUG DELIVERY METHOD AND SYSTEM	Examiner: Melissa S. MERCIER Art Unit: 2818 Confirmation No. 5388

DECLARATION OF WERNER ZUMBRUNN

Commissioner for Patents
Alexandria, VA 22313-1450

Sir:

1. I, Werner Zumbrunn, am a co-inventor of Swiss Patent Application No. 01833/03 filed 27 October 2003, entitled TRANSDERMALES SYSTEM. Hans Werner Van de Venn was also co-inventor of Swiss Application No. 01833/03.

2. PCT/IB2004/002947 was filed 13 September 2004, entitled TRANSDERMAL DRUG DELIVERY METHOD AND SYSTEM, claiming priority to Swiss Application No. 01833/03 and listing, in addition to co-inventors Zumbrunn, and Van de Venn, two additional co-inventors, Guy Di Pierro and George Imanidis.

3. The above-referenced U.S. Patent Application Serial No. 10/711,389 was filed 15 September 2004 as TRANSDERMAL DRUG DELIVERY METHOD AND SYSTEM, without my involvement and I recognize it is substantially identical to PCT/IB2004/002947. U.S. Serial No. 10/711,389 claims priority to Swiss Application No. 01833/03. This application lists co-inventors Zumbrunn, Imanidis, Van de Venn, and Di Pierro.

4. At the time co-inventors Van de Venn and I conceived of the invention described and claimed in Swiss Application No. 01833/03, I was employed at Fachhochschule Solothurn, which is now Fachhochschule Nordwestschweiz.

5. I reviewed and participated in the preparation of Swiss Application No. 01833/03, which is standard practice. In addition, I had to sign an inventor disclosure according to article 21 of the Swiss Patentlaw. Apart from that, inventions developed by an employee generally belong to the employer according to article 332(1) of the Swiss Code of Obligation.

6. Fachhochschule Solothurn, my former employer, filed PCT/IB2004/002947 in the International Bureau of WIPO under the Patent Cooperation Treaty (PCT). Because the United States was a designated state, my signature as inventor was necessary for the application, according to Article 27(3) and Rule 18.4(c) of PCT. Beginning of April 2005 I was asked by my employer to sign a DECLARATION FOR UTILITY OR DESIGN APPLICATION (37 CFR 1.63) without having seen the specifications and claims of the US application.

7. Therefore, on 7 April 2005 I sent a letter to the U.S. Patent & Trademark Office by facsimile regarding a Notice to File Missing Parts of Non-Provisional Application relating to U.S. Serial No. 10/711,389, and a Declaration provided to me for signature. I asked the U.S. Patent & Trademark Office whether I should sign the Declaration without having reviewed and understood the application and claims and what should I do if I did not agree with the application and the claims.

8. After having seen the US application thereafter, on 21 April 2005, I wrote to the U.S. Patent & Trademark Office indicating that I had signed the Declaration referred to above, commenting however, that I had not been involved in preparing the U.S. application and that I was not allowed to make any contribution to the description and claims. I then described further comments summarizing my review.

9. I understand that when filing a subsequent application within one year of the first filing, it is permissible to add new specification text, embodiments, and claims to a first application filing, and also to modify language in a first filing. Such additional and revised information may involve contributions of one or more new co-inventors and not all of the original co-inventors may have been involved in all of any new inventions disclosed in the subsequent application.

10. With regard to my comment that I was not involved in preparing the application and was not allowed to make any contribution to the description and

the claims, as described above, I understand that my employer can legitimately cause a patent application to be filed under the Patent Cooperation Treaty in the International Bureau of WIPO with the participation of one or more co-inventors, as it did in this case. I understand that under the auspices of the Patent Cooperation Treaty, such applications can later be filed in other designated countries, such as the United States of America.

11. On September 12, 2007 I took notice of a draft of a preliminary amendment to US patent application 10/711,389 which the patent lawyer is planning to send to the USPTO, and which I would like to comment as follows:

a. I understand that the priority claim to Swiss Application No. 01833/03 allows for the description of embodiments which both correspond to and add to the disclosure of Swiss Application No. 01833/03.

b. Nearly all the comments I made under "Summary of the invention" and under "Claims" and under "Drawings" are addressed now by the above mentioned draft of a Preliminary Amendment which I have read and which is being submitted concurrently herewith.

c. Although I am neither a pharmacist nor a patent attorney, I notice that most of my comments were taken into account when the Preliminary Amendment was drafted. In addition, new claims [36, 37] were added which correspond to claims of my prior invention.

d. Furthermore, as noted above, I understand that it is permissible to add new specification text, embodiments, and claims to a first application filing, and also to modify language in a first filing. Such additional and revised information may involve contributions of one or more new co-inventors and not all of the original co-inventors may have been involved in all of any new inventions disclosed in the subsequent application.

12. Accordingly, I now sign a Supplemental Declaration which references the draft of a Preliminary Amendment to be filed, thereby confirming that I am a co-inventor of one or more of the claims of U.S. Serial No. 10/711,389 and that I have read the contents of its specification, including the claims, as amended by the draft of the Preliminary Amendment.

13. I hereby declare that all statements made herein of my own knowledge are true and that all statements made on information and belief are believed to be true; and further that these statements were made with the knowledge that willful false statements and the like so made are punishable by fine or imprisonment, or both, under Section 1001 of Title 18 of the United States Code, and that such willful false statements may jeopardize the validity of the application or any patent issuing thereon.

W. Zumbrunn

Werner Zumbrunn

Date: Bregg, 26.9.2007

Attorney Docket No. DIPI0002
Client.Matter No. 22494.0003

IN THE UNITED STATES PATENT & TRADEMARK OFFICE

In re Continuation Application of: Werner ZUMBRUNN, George IMANIDIS, Hans Werner VAN DE VENN, and Guy DI PIERRO Serial No. 11/711,389 Filed: September 1,5 2004 For: TRANSDERMAL DRUG DELIVERY METHOD AND SYSTEM	Examiner: Melissa S. MERCIER Art Unit: 1615 Confirmation No. 5388

PRELIMINARY AMENDMENT

Commissioner for Patents
P.O. Box 1450
Alexandria. VA 22313-1450

Dear Sir:

Prior to an examination on the merits, please amend the application as described below.

- **Amendments to the Specification** begin on page 2;
- **Amendments to the Claims** begin on page 5;
- **Amendments to the Drawings** being on page 10 (annotated sheets showing the changes and replacement sheets are attached); and
- **Remarks** begin on page 11.

AMENDMENTS TO THE SPECIFICATION

Please replace paragraph number **[0019]** of Publication Number US 2005/0238704 A1 with the following amended paragraph:

US5879322 (Lattin, et al.) is directed to a self-contained transdermal drug delivery device by electro transport means with electrodes designed to be worn on the skin. The electro transport device can be used by patients to deliver a drug during a prescribed course of therapy, e.g. the delivery of an analgesic to control pain.

Please replace paragraph number **[0039]** of Publication Number US 2005/0238704 A1 with the following amended paragraph:

Solvent that is not absorbed by the skin in a sufficient way is carried off in another way than by absorption through the skin, e.g. by evaporation into the environment and/or by absorption by ~~an other mean,~~ another means, e.g. absorbing substance such as silica gel. By this it is possible to avoid negative decrease of the concentration of active substance due to accumulation of the solvent which would impact the diffusion rate through the skin. Especially solvents based on water and/or alcohol are having at temperatures nearby the temperature of skin a vapor pressure which is sufficiently high to carry off the solvent by evaporation. However, the carrying off and/or diffusion rate of the solvent preferably is adjusted to the diffusion rate of the active substance through the skin to avoid accumulation of the solvent or precipitation of the active substance on the skin in a negative way.

Please replace paragraph number **[0068]** of Publication Number US 2005/0238704 A1 with the following amended paragraph:

FIG. 3 is showing a third embodiment of a dispensing system 1. A first and a second active substance s1, s2 is stored in a first and a second reservoir 5.1, 5.2. The flow (indicated by arrows) of the first and the second fluid s1, s2 into a connecting pipe 25 is controlled by a first and a second valve 19.1, 19.2, as described above interconnected, to a programmable flow control device [[15]] 8. The connecting pipe 25 may comprise mixing means 26 such as impellers or vortex means providing an appropriate preparation

14.3.07 L. Ruehlmann

of mixture of the active substances s1, s2. This offers the opportunity to administer drugs which cannot be stored together due to incompatibility or another reason. Alternatively or in addition the bringing together of several active substances may take place in the administration chamber 9 of the administration device 6. The solvent absorption chamber 13 is separated by separation means 14 in the described manner from the administration chamber 9. The separation means 14 are made such that solvent is preferably absorbed by evaporation (indicated by arrows 17). In the shown embodiment the evaporation rate is controlled/adjusted by a fluid stream (indicated by arrows 27), preferably air, which is guided into the solvent absorption chamber 13 by an inlet 28 and exits by an outlet 29. The condition of the administration device and the absorption of the at least one active substance into the skin 11 as indicated by arrows 18, may be controlled by sensors 30, 31 interconnected to the control device [[15]] 8 by data connections 32. The sensors of the herein described embodiment are arranged in the administration chamber 9 and the solvent absorption chamber 13 such that the administration of the at least one active substance and/or the absorption of the at least one solvent may be controlled. Depending on the field of application, the sensors 30, 31 are suitable to measure relevant parameters such as temperature and/or humidity and/or pressure and/or concentration.

Please replace paragraph number **[0072]** of Publication Number US 2005/0238704 A1 with the following amended paragraph:

FIGS. 4 a) to c) are showing three further embodiment of a dispensing system 1 for administration of at least one active substance s. The dispensing systems 1 according to FIGS. 4 a) to 4 c) have in general a similar set up comprising an outer housing 39 with a display 38 interconnected to a programmable control unit 8. The lower surface of the devices 1 serves as footstep 40 while in use on a porous surface 10 and comprises an interface 12 for transferring active substance to a skin 11 through the porous surface 10. Inside the housing 39 the devices 1 comprise a drug reservoir 5 for at least one active substance s. The drug reservoir 5 is preferably a collapsible bag or a pressurized compartment due to internal or external pressure suitable to expel active substance into the administration chamber 9 via a pipe 4 which interconnects the drug reservoir 5 with

14.9.07 W. Zinnbauer

the administration reservoir 9. In use the administration reservoir 9 is fluidly interconnected to the porous surface 10 of skin 11 such that active substance s dispensed into the administration chamber 9 may pass into skin 11 as indicated by arrows 18. The flow of the active substance s is controlled by a first valve and/or a pump 36 which is logically interconnected to the control unit 8 which controls the administration of active substance s according to a preset regime. A solvent recovery means 13 is used to remove depleted solvent from the administration chamber 9 by waste pipe 41. If administration of the active substance needs to be stopped it is possible to pump active substance from the administration chamber back into the ~~administration~~ drug reservoir 5 or the connecting pipe 4 by pump 36.

Please replace paragraph number **[0075]** of Publication Number US 2005/0238704 A1 with the following amended paragraph:

The embodiment of FIG. 4c) comprises a pressurized drug reservoir 5 in conjunction with a tube or pipette 4, a micro pump 36 controlled by control unit 8 pre-programmed to dispense and start pumping active substance s onto diffusion surface 12. A second pinch valve and/or micro pump 37 interconnects the administration chamber 9 with the waste reservoir 13. The micro pump 37 either pumps solution into the waste reservoir 13 and/or the valve [[36]] 37 opens and depleted carrier solution is absorbed into the waste reservoir 13.

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AMENDMENTS TO THE CLAIMS

This listing of claims will replace all prior versions and listings of claims in the application:

Listing of the Claims:

1. (Currently amended) A [Method] method for transdermal administration of at least one active substance to a porous surface, comprising the following steps:
   a) [Dispensing] dispensing a certain amount of a liquid comprising at least one active substance and at least one solvent into an administration reservoir,
   [B]b) [Separation] separating at least a portion of the at least one solvent from the administration reservoir by a solvent recovery means ~~such that the at least~~ wherein one active substance achieves a certain level of concentration in vicinity to the [[a]] porous surface to be treated;
   c) [Absorption] absorption of the active substance by the porous surface to be treated via diffusion ~~such that the level of concentration in the administration reservoir decreases~~.

2. (Currently amended) The method [Method] according to claim 1 wherein the solvent is separated by evaporation.

3. (Currently amended) The method [Method] according to claim 2 wherein the evaporation of the solvent is supported by a heating element.

4. (Currently amended) The method [Method] according to claim 3 wherein the solvent is evaporated through a membrane passable preferably for the solvent.

5. (Currently amended) The method [Method] according to claim 2 where the solvent is removed by a pre-programmed opening a pinch valve that is in contact with the porous surface.

6. (Currently amended) The method [Method] according to claim 5 where the solvent is removed by programming the pumping of the solvent.

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7. (Currently amended) The method [Method] according to claim 2 where the solvent is removed by a programmed lowering of an arm or lever.

8. (Currently amended) The method [Method] according to claims 2 wherein the solvent is absorbed by a desiccant.

9. (Currently amended) The method [Method] according to claim 5 wherein the desiccant is one or a combination out of the group of silica gel, molecular sieves, active carbon.

10. (Currently amended) The method [Method] according to claim ~~one of the claims~~ 2 wherein the solvent is discharged into the environment.

11. (Currently amended) The method [Method] claim ~~one of the claims~~ 2 wherein the solvent is flushed by a fluid.

12. (Currently amended) The method [Method] according to claim 1 wherein the at least one active substance passes an interface device which is permeable for the at least one active substance.

13. (Currently amended) The method [Method] according to claim 12 wherein the interface device comprises a membrane.

14. (Currently amended) The method [Method] according to claim 12 wherein the interface device comprises an adhesive layer suitable to be attached to the porous surface.

15. (Currently amended) The method [Method] according to claim 1 wherein the steps a to c are repeated at predefined intervals such that the level of concentration of the at least one active substance in the administration reservoir is kept above a certain level.

14.9.07 L. Buchheim

16. (Currently amended) The method [Method] according to claim 15 wherein the dispensing rate and the time pattern of dispensing the liquid into the administration reservoir are controlled by a programmable device.

17. (Currently amended) A device [Device] for transdermal administration of at least one active substance to a porous surface, comprising a dispensing device interconnected to an administration device for delivery of at least one active substance [solved] dissolved in a solvent to said administration device, wherein the administration device comprises an administration reservoir ~~suitable to receive the active substance solved in the solvent~~, a solvent removal element ~~means for absorption of solvent from the administration reservoir by evaporation~~ and an interface [means] suitable for transferring [of] the active substance from the administration reservoir to the porous surface.

18. (Currently amended) The device [Device] according to claim 17 wherein the interface ~~device~~ is suitable to be arranged in vicinity to the porous surface.

19. (Currently amended) The device [Device] according to claim 18 wherein the interface ~~means~~ comprises an adhesive surface suitable to be attached to the porous surface.

20. (Currently amended) The device [Device] according to claim 17 wherein the interface ~~means~~ is a membrane permeable for the active substance.

21. (Currently amended) The device [Device] according to claim 17 wherein the solvent removal ~~means~~ element is separated from the administration reservoir by a separation means.

22. (Currently amended) The device [Device] according to claim 21 wherein the separation means is selected from the group consisting of a membrane, [[or]] a foam, [[or]] a cellular material, [[or]] a honeycomb, and [[or]] an air gap.

14.9.07 L. Beaubien

23. (Currently amended) The device [Device] according to claim 21 wherein the administration reservoir and the solvent removal ~~means~~ element are spaced apart a distance by the separation means 14.

24. (Currently amended) The device [Device] according to claim 17 wherein the solvent removal ~~means~~ element comprises one our or a combination out of the group of the following materials: Desiccant, general or a selective adsorbent material, silica gel, a molecular sieve, active carbon.

25. (Currently amended) The device [Device] according to claim 17 wherein the solvent removal ~~means~~ element comprises a chamber with an inlet and an outlet for flushing by a fluid.

26. (Currently amended) The device [Device] according to claim 17 wherein the dispensing device comprises at least one reservoir for an active substance which is interconnected to the administration device.

27. (Currently amended) The device [Device] according to claim 17 wherein the dispensing device comprises a propellant means to propel the active substance from the reservoir into the administration reservoir.

28. (Currently amended) The device [Device] according to 27 wherein the propellant means is a pump and/or a propellant gas.

29. (Currently amended) The device [Device] according to claim 26 wherein the dispensing ~~means~~ device comprises a first reservoir comprising a first active substance and a second reservoir comprising a second active substance and the first and the second active substance are mixed by mixing means before delivery to the administration device.

30. (Currently amended) The device [Device] according to claim 28 wherein the mixing means is a pipe with vortex means providing an appropriate preparation of mixture.

14.9.07 M. Zumstein

31. (Currently amended) The device [Device] according to claim [30] 35 wherein the control device is interconnected to at least one valve for controlling the administration of the at least one active substance.

32. (Currently amended) The device [Device] according to claim 30 wherein the control device is programmable according to a predetermined regime or time pattern or interval of administration of the at least one active substance.

33. (Currently amended) The device [Device] according to claim 30 wherein the control device is interconnected with at least one sensor for measuring the administration and the condition of at least one active substance.

34. (Currently amended) The device [Device] according to claim 33 wherein the administration of the active substance is determined by the signal of the at least one sensor.

35. (New) The control device according to claim 17 wherein the administration of the active substance is controlled by a control device.

36. (New) An administration unit for application of at least one active substance to skin wherein the at least one active substance is dissolved in a solvent, comprising an administration unit configured to distribute the active substance to the skin or to a skin-compatible adhesive layer, wherein the administration unit comprises an administration reservoir and a solvent removal element comprising a separation layer that is impermeant to the active substance and permeable to the solvent.

37. (New) The administration unit of claim 36, wherein the separation layer further comprises a material that controls evaporation rate of the solvent at a surface of the separation layer.

14.9.07 C. Zumstein

AMENDMENTS TO THE DRAWINGS

The attached Replacement Sheets labeled 3 of 4 and 4 of 4 are provided.

Sheet 3 of 4 shows FIG. 3 and FIG. 4A. FIG. 3 has been amended to correct a typographical error. The reference number 25 on the left of pipe 25 has been changed to 26. Support for this amendment is found in paragraph [0068] of the specification.

Sheet 4 of 4 shows FIG. 4B and FIG. 4C. FIG. 4C has been amended to correct typographical errors. The reference number 4 showing the tube or pipette has been added. The reference number 41 has been changed to 37, the second pinch valve and/or micropump. Support for these changes is found in paragraph [0075].

14.9.07 W. Blackman

REMARKS

Summary of Amendments to the Specification

Paragraph [0019] has been amended to correct a typographical error. US587322 (Lattin, et al.) has been changed to US5879322 (Lattin, et al.).

Paragraph [0039] has been amended to correct obvious errors. The phrase "an other mean" has been changed to "another means". The phrase "avoid negative decrease of the active substance due to accumulation of the solvent" has been changed to "avoid negative decrease of the concentration of active substance due to accumulation of the solvent". Support for these amendments is found in paragraph [0039] as originally filed which describes the carrying off of solvent e.g. by evaporation into the environment and the effect of such carrying off on the active substance.

Paragraph [0068] has been amended to correct typographical errors. Reference number 15 has been changed to 8. Support for this amendment is found in paragraph [0068] and FIG. 3 as originally filed.

Paragraph [0072] has been amended to correct an obvious error. The phrase "administration reservoir 5" has been changed to "drug reservoir 5". Support for this amendment is found in paragraph [0072] and FIGS. 4A, B and C as originally filed.

Paragraph [0075] has been amended to correct a typographical error. The sentence "The micro pump 37 either pumps solution into the waste reservoir 13 and/or the valve 36 opens and depleted carrier solution is absorbed into the waste reservoir 13" has been amended to recite "The micro pump 37 either pumps solution into the waste reservoir 13 and/or the valve [[36]] 37 opens and depleted carrier solution is absorbed into the waste reservoir 13." Support for this amendment is found in paragraph [0075] and FIG. 4C as originally filed.

Summary of Claim Amendments

Claim 1 has been amended. New claims 35-37 are being added.

14.9.07 M. Zaucha

Claim 1 has been amended to recite "A method for transdermal administration, and "dispensing" and "removing" Support for these amendments is found in claim 1 as originally filed and, for example, in paragraph [0064]. Claim 1 has also been amended by replacing the phrase "such that the level of concentration in the administration reservoir decreases" with "wherein". Support for this amendment is found throughout the specification, and in particular in paragraph [0028],

Claims 2-9 and 12-16 have been amended to recite "The method". Claims 10 and 11 have been amended to recite "according to claim 2." Claims 18-34 have been amended to recite "The device".

Claim 17 is amended by replacing the term "solved" with "dissolved", omitting the phrases "suitable to receive the active substance solved in the solvent" and "for adsorption of solvent from the administrative reservoir by evaporation" and replacing solvent removal "means" with solvent removal "element". The "means" term of "interface means" has been omitted.

Claims 19 and 20 are amended by omitting the "means" term of "interface means".

Claims 21 and 23-25 are amended by replacing "solvent removal means" with solvent removal element".

Claim 22 is amended to recite the list is Markush group format.

Claim 29 is amended to recite "dispensing device" in agreement with claim 17.

New claim 35 is being added to provide antecedent basis for the term "control device" claim 31.

Support for new claim 36 is found throughout the specification, for example, in claim 17 as originally filed and in paragraphs [0028], [0034], [0035], [0037], [0039], [0056], [0059], [0062], and [0064]. Support for new claim 37 is found, for example, in paragraphs [0046] and [0050].

Conclusion

The fees for extra claims and any other fees associated with this filing may be

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charged to Deposit Account No. 50-1123.

Favorable consideration of all pending claims is respectfully requested. The Examiner is asked to the telephone the undersigned, should the Examiner have any questions or believe such a call would expedite prosecution.

Respectfully submitted,

August __, 2007

Carol W. Burton, Reg. No. 35,465
Hogan & Hartson LLP
1200 17th Street, Suite 1500
Denver, CO 80202
Telephone: 303.454.2454
Facsimile: 303.899.7333

8-9-07 C. Burton

PTO/SB/01 (07-07)
Approved for use through 06/30/2010. OMB 0651-0032
U.S. Patent and Trademark Office; U.S. DEPARTMENT OF COMMERCE

SUPPLEMENTAL DECLARATION FOR UTILITY OR DESIGN PATENT APPLICATION (37 CFR 1.67)

Attorney Docket Number	DIP0002
First Named Inventor	Werner ZURBRUNN
COMPLETE IF KNOWN	
Application Number	10/711,389
Filing Date	SEPTEMBER 15, 2004
Art Unit	1615
Examiner Name	Melissa S. MERCIER

I hereby declare that:

Each inventor's residence, mailing address, and citizenship are as stated below next to their name.

I believe the inventor(s) named below to be the original and first inventor(s) of the subject matter which is claimed and for which a patent is sought on the invention entitled:

TRANSDERMAL DRUG DELIVERY METHOD AND SYSTEM

(Title of the Invention)

the specification of which

☐ is attached hereto

OR

☑ was filed on (MM/DD/YYYY) 09/15/2004 as United States Application Number or PCT International

Application Number 10/711,389 and was amended on (MM/DD/YYYY)

I hereby declare that the subject matter of the ☑ attached amendment ☐ amendment filed on ____ was part of the invention and was invented before the filing date of the original application, above identified for such invention.

I hereby state that I have reviewed and understand the contents of the above-identified specification, including the claims, as amended by any amendment specifically referred to above.

I acknowledge the duty to disclose information which is material to patentability as defined in 37 CFR 1.56, including for continuation-in-part applications, material information which became available between the filing date of the prior application and the national or PCT International filing date of the continuation-in-part application.

I hereby claim foreign priority benefits under 35 U.S.C. 119(a)-(d) or (f), or 365(b) of any foreign application(s) for patent, inventor's or plant breeder's rights certificate(s), or 365(a) of any PCT international application which designated at least one country other than the United States of America, listed below and have also identified below, by checking the box, any foreign application for patent, inventor's or plant breeder's rights certificate(s), or of any PCT international application having a filing date before that of the application on which priority is claimed.

Prior Foreign Application Number(s)	Country	Foreign Filing Date (MM/DD/YYYY)	Priority Not Claimed	Certified Copy Attached? YES	Certified Copy Attached? NO
PCT/IB2004/002847	PCT	09/13/2004	☐	☐	☑
01833/03	CH	10/27/2003	☐	☐	☑
			☐	☐	☐

☐ Additional foreign application numbers are listed on a supplemental priority data sheet PTO/SB/02B attached hereto.

SUPPLEMENTAL DECLARATION — UTILITY OR DESIGN PATENT APPLICATION *

Direct all correspondence to: ☑ The address associated with Customer Number: 25235

OR ☐ Correspondence address below.

Name		
Address		
Address		
City	State	Zip
Country	Telephone	Email

WARNING:

Petitioner/applicant is cautioned to avoid submitting personal information in documents filed in a patent application that may contribute to identity theft. Personal information such as social security numbers, bank account numbers, or credit card numbers (other than a check or credit card authorization form PTO-2038 submitted for payment purposes) is never required by the USPTO to support a petition or an application. If this type of personal information is included in documents submitted to the USPTO, petitioners/applicants should consider redacting such personal information from the documents before submitting them to the USPTO. Petitioner/applicant is advised that the record of a patent application is available to the public after publication of the application (unless a non-publication request in compliance with 37 CFR 1.213(a) is made in the application) or issuance of a patent. Furthermore, the record from an abandoned application may also be available to the public if the application is referenced in a published application or an issued patent (see 37 CFR 1.14). Checks and credit card authorization forms PTO-2038 submitted for payment purposes are not retained in the application file and therefore are not publicly available.

I hereby declare that all statements made herein of my own knowledge are true and that all statements made on information and belief are believed to be true; and further that these statements were made with the knowledge that willful false statements and the like so made are punishable by fine or imprisonment, or both, under 18 U.S.C. 1001 and that such willful false statements may jeopardize the validity of the application or any patent issued thereon.

Name of Sole or First Inventor:	☐ A petition has been filed for this unsigned inventor		
Given Name Werner	Family Name or Surname ZUMBRUNN		
Inventor's Signature W. Zumbrunn			Date 14.9.07
Residence: City MUTTENZ	State	Country CH	Citizenship CH
Mailing Address HALLENWEG 9			
Mailing Address			
City MUTTENZ	STATE	ZIP 4132	Country CH

☑ Additional inventor(s) or legal representative(s) are being named on the __1__ supplemental sheet(s) PTO/SB/02A or 02LR attached hereto.

* concerning the attached preliminary amendment which I reviewed on 14 September 2007.

PTO/SB/02A (07-07)
Approved for use through 06/30/2010, OMB 0651-0032
U.S. Patent and Trademark Office; U.S. DEPARTMENT OF COMMERCE

DECLARATION

ADDITIONAL INVENTOR(S)
Supplemental Sheet
Page 1 of 1

Name of Additional Joint Inventor, if any:	☐ A petition has been filed for this unsigned inventor
Given Name (first and middle (if any)): Hans Wilhelm	Family Name or Surname: VAN DE VENN
Inventor's Signature: W van de Venn	Date: 16.10.07
Residence: City OENSINGEN Winterthur State	Country CH Citizenship DE
Mailing Address: ROGGENWEG 7 Wilerweg 7	
City OENSINGEN State	Zip 4702 Country CH

Name of Additional Joint Inventor, if any:	☐ A petition has been filed for this unsigned inventor
Given Name (first and middle (if any)): George	Family Name or Surname: MANIOS
Inventor's Signature: G Manios	Date: 9.10.07
Residence: City BINNINGEN State	Country CH Citizenship GR
Mailing Address: BRUDERHOLZSTRASSE 34	
City BINNINGEN State	Zip 4102 Country CH

Name of Additional Joint Inventor, if any:	☐ A petition has been filed for this unsigned inventor
Given Name (first and middle (if any)): Guy	Family Name or Surname: DIPIERRO
Inventor's Signature: Guy DiPierro	Date: 10/16/07
Residence: City HAMILTON State NJ	Country US Citizenship US
Mailing Address: 7 LEHAVRE COURT	
City HAMILTON State NJ	Zip 08619 Country US

Electronic Patent Application Fee Transmittal

Application Number:	10711389
Filing Date:	15-Sep-2004
Title of Invention:	TRANSDERMAL DRUG DELIVERY METHOD AND SYSTEM
First Named Inventor/Applicant Name:	Werner Zumbrunn
Filer:	Carol W. Burton/Dane Stephenson
Attorney Docket Number:	DIPI0002

Filed as Small Entity

Utility Filing Fees

Description	Fee Code	Quantity	Amount	Sub-Total in USD($)
Basic Filing:				
Pages:				
Claims:				
Claims in excess of 20	2202	3	25	75
Miscellaneous-Filing:				
Petition:				
Patent-Appeals-and-Interference:				
Post-Allowance-and-Post-Issuance:				
Extension-of-Time:				

Description	Fee Code	Quantity	Amount	Sub-Total in USD($)
Miscellaneous:				
			Total in USD ($)	**75**

Electronic Acknowledgement Receipt

EFS ID:	2363392
Application Number:	10711389
International Application Number:	
Confirmation Number:	5388
Title of Invention:	TRANSDERMAL DRUG DELIVERY METHOD AND SYSTEM
First Named Inventor/Applicant Name:	Werner Zumbrunn
Customer Number:	25235
Filer:	Carol W. Burton/Dane Stephenson
Filer Authorized By:	Carol W. Burton
Attorney Docket Number:	DIPI0002
Receipt Date:	24-OCT-2007
Filing Date:	15-SEP-2004
Time Stamp:	15:25:34
Application Type:	Utility under 35 USC 111(a)

Payment information:

Submitted with Payment	yes
Payment was successfully received in RAM	$75
RAM confirmation Number	581
Deposit Account	501123
The Director of the USPTO is hereby authorized to charge indicated fees and credit any overpayment as follows: Charge any Additional Fees required under 37 C.F.R. Section 1.16 and 1.17	

File Listing:

Document Number	Document Description	File Name	File Size(Bytes) /Message Digest	Multi Part /.zip	Pages (if appl.)
1		224940003PreliminaryAmendment.pdf	596819 742f0c9095cbfd0c82f3dbd23847fec96511e131	yes	37

Multipart Description/PDF files in .zip description		
Document Description	**Start**	**End**
Preliminary Amendment	1	1
Specification	2	4
Claims	5	9
Drawings-only black and white line drawings	10	10
Applicant Arguments/Remarks Made in an Amendment	11	13
Drawings-only black and white line drawings	14	17
Oath or Declaration filed	18	34
Oath or Declaration filed	35	37

Warnings:					
Information:					
2	Fee Worksheet (PTO-06)	fee-info.pdf	8155 5891edf26e0fc2d01aae11d462308e6b39e56950	no	2
Warnings:					
Information:					
			Total Files Size (in bytes):	604974	

This Acknowledgement Receipt evidences receipt on the noted date by the USPTO of the indicated documents, characterized by the applicant, and including page counts, where applicable. It serves as evidence of receipt similar to a Post Card, as described in MPEP 503.

New Applications Under 35 U.S.C. 111

If a new application is being filed and the application includes the necessary components for a filing date (see 37 CFR 1.53(b)-(d) and MPEP 506), a Filing Receipt (37 CFR 1.54) will be issued in due course and the date shown on this Acknowledgement Receipt will establish the filing date of the application.

National Stage of an International Application under 35 U.S.C. 371

If a timely submission to enter the national stage of an international application is compliant with the conditions of 35 U.S.C. 371 and other applicable requirements a Form PCT/DO/EO/903 indicating acceptance of the application as a national stage submission under 35 U.S.C. 371 will be issued in addition to the Filing Receipt, in due course.

New International Application Filed with the USPTO as a Receiving Office

If a new international application is being filed and the international application includes the necessary components for an international filing date (see PCT Article 11 and MPEP 1810), a Notification of the International Application Number and of the International Filing Date (Form PCT/RO/105) will be issued in due course, subject to prescriptions concerning national security, and the date shown on this Acknowledgement Receipt will establish the international filing date of the application.

Attorney Docket No. DIPI0002
Client Matter No. 22494.0003

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Serial No. 10/711,389	Confirmation No. 5388
Inventor(s): Werner ZUMBRUNN , et al.	Title: TRANSDERMAL DRUG DELIVERY METHOD AND SYSTEM
Filed: September 15, 2004	
TC/A.U. 1615	
Examiner: Melissa S. MERCIER	
Docket No. DIPI0002	
Customer No. 25235	

SUPPLEMENTAL INFORMATION DISCLOSURE STATEMENT UNDER 37 C.F.R. 1.97

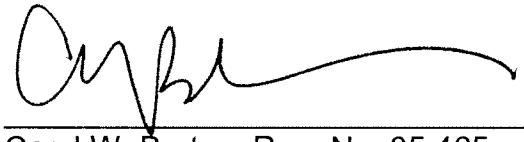
Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

Sir:

Applicant hereby submits for filing under 37 CFR 1.97 a supplemental disclosure statement. In submitting the references listed, no representation is made or implied that the references are or are not material to the examination of this application. The patents, publications or other information of which Applicants are presently aware are listed in Form PTO/SB/08A submitted herewith. Copies of non-U.S. references are enclosed.

Since this is being filed before the receipt of a first office action, no fee is believed due for this submittal. However, any fee deficiency associated with this submittal may be charged to Deposit Account No. 50-1123.

Respectfully submitted,



August 17, 2007

Carol W. Burton, Reg. No. 35,465
Hogan & Hartson L.L.P.
1200 17th Street, Suite 1500
Denver, Colorado 80202
(303) 454-2454 (telephone)
(303) 899-7333 (facsimile)

PTO/SB/08a(08/03)
Approved for use through 07/31/2006. OMB 0651-0031
Patent and Trademark Office; U.S. DEPARTMENT OF COMMERCE
Under the Paperwork Reduction Act of 1995, no persons are required to respond to a collection of information unless it displays a valid. OMB control number.

Substitute for form 1449A/PTO				Application Number	10/711,389
				Filing Date	September 15, 2004
INFORMATION DISCLOSURE STATEMENT BY APPLICANT				First Named Inventor	Georgio IMANIDIS
				Art Unit	1615
(Use as many sheets as necessary)				Examiner Name	Melissa S. MERCIER
Sheet	1	of	2	Attorney Docket No.	DIPI0002

U.S. PATENT DOCUMENTS

Examiner Initials	Cite No.[1]	Document No. No. – Kind Code[2]	Publication Date MM-DD-YYYY	Name of Patentee or Applicant of Cited Doc	Pages, Columns, Lines, Where Relevant Passages or Relevant Figures Appear

FOREIGN PATENT DOCUMENTS

Examiner Initials	Cite No.[1]	Foreign Patent Document Country Code[3] Number[4] Kind Code[5]	Publication Date MM-DD-YYYY	Name of Patentee or Applicant of Cited Doc	Pages, Columns. Lines Where Relevant Passages or Relevant Figures Appear	T[6]

EXAMINER SIGNATURE		DATE CONSIDERED	

EXAMINER: Initial if reference considered, whether or not citation is in conformance with MPEP 609. Draw line through citation if not in conformance and not considered. Include copy of this form with next communication to applicant. [1] Applicant's unique citation designation number (optional). [2] See Kinds Codes of USPTO Patent Documents at www.uspto.gov or MPEP 901.04. [3] Enter Office that issued the document, by the two-letter code (WIPO Standard ST.3). [4] For Japanese patent documents, the indication of the year of the reign of the Emperor must precede the serial number of the patent document. [5] Kind of document by the appropriate symbols as indicated on the document under WIPO Standard ST. 16 if possible. 6 Applicant is to place a check mark here if English language Translation is attached.

This collection of information is required by 37 CFR 1.97 and 1.98. The information is required to obtain or retain a benefit by the public which is to file (and by the USPTO to process) and application. Confidentiality is governed by 35 U.S.C. 122 and 37 CFR 1.14. This collection is estimated to take 2 hours to complete, including gathering, preparing, and submitting the completed application form to the USPTO. Time will vary depending upon the individual case. Any comments on the amount of time you require to complete this form and/or suggestions for reducing this burden, should be sent to the Chief information Officer, U.S. Patent and Trademark Office, U.S. Department of Commerce, P.O. Box 1450, Alexandria, VA 22313-1450. DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS. **SEND TO: Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450.**

PTO/SB/08a(08/03)
Approved for use through 07/31/2006. OMB 0651-0031
Patent and Trademark Office; U.S. DEPARTMENT OF COMMERCE
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Substitute for form 1449A/PTO				Application Number	10/711,389
				Filing Date	September 15, 2004
INFORMATION DISCLOSURE STATEMENT BY APPLICANT				First Named Inventor	Georgio IMANIDIS
				Art Unit	1615
(Use as many sheets as necessary)				Examiner Name	Melissa S. MERCIER
Sheet	2	of	2	Attorney Docket No.	DIPI0002

NON PATENT LITERATURE DOCUMENTS			
Examiner Initials*	Cite No.[1]	Include name of the author (in CAPITAL LETTERS), title of the article (when appropriate), title of the item (book, magazine, journal, serial, symposium, catalog, etc.), date, page(s), volume-issue number(s) publisher, city and/or country where published	T[2]
		INTERNATIONAL PRELIMINARY REPORT ON PATENTABILITY; PCT/IB2004/002947; MAY 1, 2006	

EXAMINER SIGNATURE		DATE CONSIDERED	

EXAMINER: Initial if reference considered, whether or not citation is in conformance with MPEP 609. Draw line through citation if not in conformance and not considered. Include copy of this form with next communication to applicant.

[1] Applicant's unique citation designation number (optional). [2] Applicant is to place a check mark here if English language Translation is attached. This collection of information is required by 37 CFR 1.97 and 1.98. The information is required to obtain or retain a benefit by the public which is to file (and by the USPTO to process) and application. Confidentiality is governed by 35 U.S.C. 122 and 37 CFR 1.14. This collection is estimated to take 2 hours to complete, including gathering, preparing, and submitting the completed application form to the USPTO. Time will vary depending upon the individual case. Any comments on the amount of time you require to complete this form and/or suggestions for reducing this burden, should be sent to the Chief information Officer, U.S. Patent and Trademark Office, U.S. Department of Commerce, P.O. Box 1450, Alexandria, VA 22313-1450. DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS. **SEND TO: Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450.**

Electronic Acknowledgement Receipt

EFS ID:	2095989
Application Number:	10711389
International Application Number:	
Confirmation Number:	5388
Title of Invention:	TRANSDERMAL DRUG DELIVERY METHOD AND SYSTEM
First Named Inventor/Applicant Name:	Werner Zumbrunn
Customer Number:	25235
Filer:	Carol W. Burton/Dane Stephenson
Filer Authorized By:	Carol W. Burton
Attorney Docket Number:	DIPI0002
Receipt Date:	17-AUG-2007
Filing Date:	15-SEP-2004
Time Stamp:	13:57:59
Application Type:	Utility under 35 USC 111(a)

Payment information:

Submitted with Payment	no

File Listing:

Document Number	Document Description	File Name	File Size(Bytes) /Message Digest	Multi Part /.zip	Pages (if appl.)
1		224940003SUPPIDS.pdf	141215 9201fe59f2ddf57b138ba6820d8ab5439897fdbc	yes	10

	Multipart Description/PDF files in .zip description		
	Document Description	**Start**	**End**
	Information Disclosure Statement Letter	1	1
	Information Disclosure Statement (IDS) Filed	2	3
	NPL Documents	4	10
Warnings:			
Information:			
	Total Files Size (in bytes):	141215	

This Acknowledgement Receipt evidences receipt on the noted date by the USPTO of the indicated documents, characterized by the applicant, and including page counts, where applicable. It serves as evidence of receipt similar to a Post Card, as described in MPEP 503.

New Applications Under 35 U.S.C. 111
If a new application is being filed and the application includes the necessary components for a filing date (see 37 CFR 1.53(b)-(d) and MPEP 506), a Filing Receipt (37 CFR 1.54) will be issued in due course and the date shown on this Acknowledgement Receipt will establish the filing date of the application.

National Stage of an International Application under 35 U.S.C. 371
If a timely submission to enter the national stage of an international application is compliant with the conditions of 35 U.S.C. 371 and other applicable requirements a Form PCT/DO/EO/903 indicating acceptance of the application as a national stage submission under 35 U.S.C. 371 will be issued in addition to the Filing Receipt, in due course.

New International Application Filed with the USPTO as a Receiving Office
If a new international application is being filed and the international application includes the necessary components for an international filing date (see PCT Article 11 and MPEP 1810), a Notification of the International Application Number and of the International Filing Date (Form PCT/RO/105) will be issued in due course, subject to prescriptions concerning national security, and the date shown on this Acknowledgement Receipt will establish the international filing date of the application.

01-24-07

AFW

Express Mail No. EV544474900US
Attorney Docket No. DIPI0002
Client/Matter No. 22494.0003

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Serial No. 10/711,389	Art Unit: 3761
Application of: Guy DiPierro, et al.	Confirmation No.: 5388
Filed: September 15, 2004	Customer No.: **25235**
Attorney Docket No. DIPI0002	
For: TRANSDERMAL DRUG DELIVERY METHOD AND SYSTEM	

CERTIFICATE OF MAILING BY EXPRESS MAIL

MAIL STOP AMENDMENT
Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

Sir:

The undersigned hereby certifies that the attached:

- Information Disclosure Statement;
- Form PTO/SB/08A;
- Certificate of Mailing; and
- Return Receipt Postcard

relating to the above application, were deposited as "Express Mail" Mailing Label No. EV544474900US, with the United States Postal Service, addressed to Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450 on January 23, 2007.

1/23/07
Date

Mailer

1/23/07
Date

Kent A. Lembke, Reg. No. 44,866
HOGAN & HARTSON LLP
One Tabor Center
1200 17th Street, Suite 1500
Denver, Colorado 80202
(720) 406-5378 Tel
(303) 899-7333 Fax

Express Mail No.EV544474900US
Attorney Docket No. DIPI0002
Client/Matter No. 22494.0003

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Serial No. 10/711,389	Art Unit: 3761
Application of: Guy DiPierro, et al.	Confirmation No.: 5388
Filed: September 15, 2004	Customer No.: **25235**
Attorney Docket No. DIPI0002	
For: TRANSDERMAL DRUG DELIVERY METHOD AND SYSTEM	

INFORMATION DISCLOSURE STATEMENT
UNDER 37 C.F.R. 1.97

Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

Sir:

Applicant hereby submits for filing under 37 CFR 1.97 a disclosure statement. In submitting these references, no representation is made or implied that the references are or are not material to the examination of this application. The patents, publications or other information of which Applicant is presently aware are listed in Form PTO/SB/08A submitted herewith.

No fee is believed due for this submittal. However, any fee deficiency associated with this submittal may be charged to Deposit Account No. 50-1123.

Respectfully submitted,

1/23/07
Date

Kent A. Lembke, Reg. No. 44,866
HOGAN & HARTSON LLP
One Tabor Center
1200 17th Street, Suite 1500
Denver, Colorado 80202
(720) 406-5378 Tel
(303) 899-7333 Fax

PTO/SB/08a(08/03)
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Patent and Trademark Office; U.S. DEPARTMENT OF COMMERCE
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Substitute for form 1449A/PTO

INFORMATION DISCLOSURE STATEMENT BY APPLICANT

(Use as many sheets as necessary)

Sheet 1 of 1

Application Number	10/711,389
Filing Date	September 15, 2004
First Named Inventor	Guy DiPierro
Art Unit	3761
Examiner Name	Not Yet Assigned
Attorney Docket No.	DIPI0002

U.S. PATENT DOCUMENTS

Examiner Initials	Cite No.[1]	Document No. No. – Kind Code[2]	Publication Date MM-DD-YYYY	Name of Patentee or Applicant of Cited Doc	Pages, Columns, Lines, Where Relevant Passages or Relevant Figures Appear
		US-4,708,716	11/24/1987	Sibalis	
		US-5,242,941	09/07/1993	Lewy et al.	
		US-5,352,456	10/04/1994	Fallon et al.	
		US-5,370,635	12/06/1994	Stausak et al.	
		US-5,538,503	07/23/1996	Henley	
		US-5,370,635	12/06/1994	Strausak et al.	
		US-5,785,688	07/28/1998	Joshi et al.	
		US-5,820,875	10/13/1998	Fallon et al.	
		US-6,068,853	05/30/2000	Giannos et al.	
		US-6,165,155	12/26/2000	Jacobsen et al.	
		US-6,214,379	04/10/2001	Hermelin	
		US-6,638,528	10/28/2003	Kanios	
		US-6,595,956	07/22/2003	Gross et al.	
		US-6,723,077	04/20/2004	Pickup et al.	
		US-6,723,086	04/20/2004	Bussek et al.	
		US-6,861,066	03/01/2005	Van de Casteele	
		US-6,867,342	03/15/2005	Johnston et al.	
		US-6,887,202	05/03/2005	Currie et al.	
		US-2005/0034842	02/17/2005	Huber et al.	
		US-2005/0182307	08/18/2005	Currie et al.	
		US-2005/0238704	10/27/2005	Zumbrunn, Werner et al.	

EXAMINER SIGNATURE		DATE CONSIDERED	

EXAMINER: Initial if reference considered, whether or not citation is in conformance with MPEP 609. Draw line through citation if not in conformance and not considered. Include copy of this form with next communication to applicant. [1] Applicant's unique citation designation number (optional). [2] See Kinds Codes of USPTO Patent Documents at www.uspto.gov or MPEP 901.04. [3] Enter Office that issued the document, by the two-letter code (WIPO Standard ST.3). [4] For Japanese patent documents, the indication of the year of the reign of the Emperor must precede the serial number of the patent document. [5] Kind of document by the appropriate symbols as indicated on the document under WIPO Standard ST. 16 if possible. 6 Applicant is to place a check mark here if English language Translation is attached.

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UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NUMBER	FILING OR 371 (c) DATE	FIRST NAMED APPLICANT	ATTORNEY DOCKET NUMBER
10/711,389	09/15/2004	Georgios IMANIDIS	DIPI0002

CONFIRMATION NO. 5388

FORMALITIES LETTER

OC000000014322547

25235
HOGAN & HARTSON LLP
ONE TABOR CENTER, SUITE 1500
1200 SEVENTEENTH ST
DENVER, CO 80202

Date Mailed: 11/09/2004

NOTICE TO FILE MISSING PARTS OF NONPROVISIONAL APPLICATION

FILED UNDER 37 CFR 1.53(b)

Filing Date Granted

Items Required To Avoid Abandonment:

An application number and filing date have been accorded to this application. The item(s) indicated below, however, are missing. Applicant is given **TWO MONTHS** from the date of this Notice within which to file all required items and pay any fees required below to avoid abandonment. Extensions of time may be obtained by filing a petition accompanied by the extension fee under the provisions of 37 CFR 1.136(a).

- The oath or declaration is missing.
  A properly signed oath or declaration in compliance with 37 CFR 1.63, identifying the application by the above Application Number and Filing Date, is required.
- To avoid abandonment, a late filing fee or oath or declaration surcharge as set forth in 37 CFR 1.16(e) of $65 for a small entity in compliance with 37 CFR 1.27, must be submitted with the missing items identified in this letter.

SUMMARY OF FEES DUE:

Total additional fee(s) required for this application is **$65** for a Small Entity

- **$65** Late oath or declaration Surcharge.

Replies should be mailed to: Mail Stop Missing Parts
Commissioner for Patents
P.O. Box 1450
Alexandria VA 22313-1450

05/11/2005 AKELECH1 00000034 10711389

01 FC:2051 65.00 OP
~~02 FC:2254 795.00 OP~~

A copy of this notice MUST be returned with the reply.

Y.G

Customer Service Center
Initial Patent Examination Division (703) 308-1202
PART 2 - COPY TO BE RETURNED WITH RESPONSE

Express Mail No. EV544476640US
Attorney Docket No. DIPI0002
Client/Matter No. 22494.0003

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re Application of:

Guy DiPierro, et al.

Serial No. 10/711,389

Filed: September 15, 2004

Attorney Docket No. DIPI0002

For: TRANSDERMAL DRUG DELIVERY METHOD AND SYSTEM

Art Unit: 3761

Examiner: Not yet accorded

CERTIFICATE OF MAILING BY EXPRESS MAIL

MAIL STOP MISSING PARTS
Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

Sir:

The undersigned hereby certifies that the following documents:

1. Notice to File Missing Parts of Nonprovisional Application;
2. Executed Declaration;
3. Petition for Extension of Time;
4. Check in the amount of $860;
5. Return postcard; and
6. Certificate of Mailing by Express Mail

relating to the above application, were deposited as "Express Mail," Mailing Label No. EV544476640US, with the U.S. Postal Service, addressed to Mail Stop Missing Parts, Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450.

3/9/05
Date

Stu D Langley
Mailer

3/9/05
Date

Stu D Langley
Stuart T. Langley, Reg. No. 33,940
HOGAN & HARTSON LLP
One Tabor Center
1200 17th Street, Suite 1500
Denver, Colorado 80202
(720) 406-5335 Tel
(720) 406-5301 Fax

PTO/SB/01 (08-03)

DECLARATION FOR UTILITY OR DESIGN PATENT APPLICATION (37 CFR 1.63)

☐ Declaration Submitted with Initial Filing OR ☒ Declaration Submitted after Initial Filing—surcharge 37 CFR 1.16(e) required

Attorney Docket No.	DIP10002
First Named Inventor	Werner Zumbrunn
COMPLETE IF KNOWN	
Application Number	10/711,389
Filing Date	09/15/2004
Art Unit	3761
Examiner Name	NOT YET ASSIGNED

I hereby declare that:

Each inventor's residence, mailing address, and citizenship are as stated below next to their name.

I believe the inventor(s) named below to be the original and first inventor(s) of the subject matter which is claimed and for which a patent is sought on the invention entitled:

TRANSDERMAL DRUG DELIVERY METHOD AND SYSTEM

the specification of which

☐ is attached hereto

OR

☒ was filed on (MM/DD/YYYY) 09/15/2004 as U.S. Application No. or PCT International Application No. 10/711,389

and was amended on (MM/DD/YYYY) _____ (if applicable)

I hereby state that I have reviewed and understand the contents of the above identified specification, including the claims, as amended by any amendment specifically referred to above.

I acknowledge the duty to disclose information which is material to patentability as defined in 37 CFR 1.56, including for continuation-in-part applications, material information which became available between the filing date of the prior application and the national or PCT international filing date of the continuation-in-part application.

I hereby claim foreign priority benefits under 35 U.S.C § 119(a)-(d) or (f), or 365(b) of any foreign application(s) for patent or inventor's or plant breeder's rights certificate(s), or § 365(a) of any PCT international application which designated at least one country other than the United States of America, listed below and have also identified below, by checking the box, any foreign application for patent or inventor's or plant breeder's rights certificate(s), or any PCT international application having a filing date before that of the application on which priority is claimed.

Prior Foreign Appl. No.(s)	Country	Foreign Filing Date (MM/DD/YYYY)	Priority Not Claimed	Certified Copy Attached? Yes	No
21852002	CH	09/13/2002	☐	☐	☐
			☐	☐	☐

☐ Additional foreign application nos. are listed on a supplemental priority data sheet PTO/SB/02B attached hereto.

I hereby claim the benefit under 35 U.S.C. § 119(e) of any United States provisional application(s) listed below.

Application Number(s)	Filing Date (MM/DD/YYYY)

DECLARATION – Utility or Design Patent Application

I hereby claim the benefit under 35 U.S.C. 120 of any U.S. application(s) or 365(c) of any PCT international application designating the United States of America, listed below and, insofar as the subject matter of each of the claims of this application is not disclosed in the prior United States or PCT international application in the manner provided by the first paragraph of 35 U.S.C. 112, I acknowledge the duty to disclose information which is material to patentability as defined in 37 CFR 1.56 which became available between the filing date of the prior application and the national or PCT international filing date of this application.

U.S. Parent Application or PCT Parent No.	Parent Filing Date (MM/DD/YY)	Parent Patent No. (if applicable)
PCT/IB2004/002947	09/13/2004	

☐ Additional U.S. or PCT international application nos. listed on PTO/SB/02B attached hereto.

As a named inventor, I hereby appoint the following registered practitioner(s) to prosecute this application and to transact all business in the Patent Trademark Office connected therewith:

☒ Customer Number 25235

OR

☐ Registered practitioner(s) name/registration number listed below

Name	Registration Number	Name	Registration Number

☐ Additional registered practitioner(s) named on supplemental sheet PTO/SB/02C attached hereto.

Direct all correspondence to: ☒ Customer Number 25235 OR ☐ Correspondence address below

Name					
Address					
City		State		ZIP	
Country		Telephone		Fax	

I hereby declare that all statements made herein of my own knowledge are true and that all statements made on information and belief are believed to be true; and further that these statements were made with the knowledge that willful false statements and the like so made are punishable by fine or imprisonment, or both, under 18 U.S.C. 1001 and such willful false statements may jeopardize the validity of the application or any patent issued thereon.

Name of Sole or First Inventor: ☐ A petition has been filed for this unsigned inventor.

Given Name (first and middle [if any])				Family Name or Surname			
Werner				Zumbrunn			
Inventor's Signature	W. Zumbrunn					Date	04/20/2005
Residence City	Muttenz	State		Country	CH	Citizenship	Swiss
Mailing Address	Hallenweg 9						
City	4132 Muttenz	State		ZIP		Country	Switzerland

☒ Additional inventors or a legal representative are being named on the 1 supplemental additional inventor(s) sheet(s) PTO/SB/02A or 02LR attached hereto.

\\\BO - 2049/0008 - 170105 v1

DECLARATION – Utility or Design Patent Application

I hereby claim the benefit under 35 U.S.C. 120 of any U.S. application(s) or 365(c) of any PCT international application designating the United States of America, listed below and, insofar as the subject matter of each of the claims of this application is not disclosed in the prior United States or PCT international application in the manner provided by the first paragraph of 35 U.S.C. 112, I acknowledge the duty to disclose information which is material to patentability as defined in 37 CFR 1.56 which became available between the filing date of the prior application and the national or PCT international filing date of this application

U.S. Parent Application or PCT Parent No.	Parent Filing Date (MM/DD/YY)	Parent Patent No. (If applicable)
PCT/IB2004/002947	09/13/2004	

☐ Additional U.S. or PCT international application nos. listed on PTO/SB/02B attached hereto.

As a named inventor, I hereby appoint the following registered practitioner(s) to prosecute this application and to transact all business in the Patent Trademark Office connected therewith:

☒ Customer Number 25235
OR
☐ Registered practitioner(s) name/registration number listed below

Name	Registration Number	Name	Registration Number

☐ Additional registered practitioner(s) named on supplemental sheet PTO/SB/02C attached hereto.

Direct all correspondence to: ☒ Customer Number 25235 OR ☐ Correspondence address below

Name					
Address					
City		State		ZIP	
Country		Telephone		Fax	

I hereby declare that all statements made herein of my own knowledge are true and that all statements made on information and belief are believed to be true; and further that these statements were made with the knowledge that willful false statements and the like so made are punishable by fine or imprisonment, or both, under 18 U.S.C. 1001 and that such willful false statements may jeopardize the validity of the application or any patent issued thereon.

Name of Sole or First Inventor: ☐ A petition has been filed for this unsigned inventor.

Given Name (first and middle (if any))	Family Name or Surname
George	Imsandis

Inventor's signature	G Imsandis				Date	March 14 2005	
Residence City	Stmringen	State		Country	CH	Citizenship	GR
Mailing Address	Bruderholzstrasse 34						
City	4102 Stmringen	State		ZIP		Country	CH

☒ Additional inventors or a legal representative are being named on the 1 supplemental additional inventor(s) sheet(s) PTO/SB/02A or 02LR attached hereto.

DECLARATION	ADDITIONAL INVENTOR(S) Supplemental Sheet Page 1 of 1

Name of Additional Joint Inventor, if any:	☐ A petition has been filed for this unsigned inventor						
Given Name (first and middle [if any])	Family Name or Surname						
Hans Werner	van de Venn						
Inventor's Signature	D. van de Venn					Date	04/21/05
Residence: City	Oensingen	State		Country	CH	Citizenship	German
Mailing Address	Roggenweg 11						
City	Oensingen	State		ZIP	4702	Country	Switzerland

Name of Additional Joint Inventor, if any:	☐ A petition has been filed for this unsigned inventor						
Given Name (first and middle [if any])	Family Name or Surname						
George	Imamindis						
Inventor's Signature						Date	
Residence: City	Binningen	State		Country	CH	Citizenship	German
Mailing Address	Bruderholzstrasse 34						
City	4102 Binningen	State		ZIP		Country	Switzerland

Name of Additional Joint Inventor, if any:	☐ A petition has been filed for this unsigned inventor						
Given Name (first and middle [if any])	Family Name or Surname						
Guy	DiPierro						
Inventor's Signature						Date	5/9/05
Residence: City	Hamlet	State	NY	Country	USA	Citizenship	USA
Mailing Address	6 Tulip Court						
City	Hamlet	State	NY	ZIP	14864	Country	USA

05-10-05

PTO/SB/22 (06/04)
Approved for use through 07/31/2006. OMB 0651-0031
Patent and Trademark Office; U.S. DEPARTMENT OF COMMERCE
Under the Paperwork Reduction Act of 1995, no persons are required to respond to a collection of information unless it displays a valid OMB control number.

PETITION FOR EXTENSION OF TIME UNDER 37 CFR 1.136(a)	Docket Number (Optional) DIPI0002

To: Commissioner for Patents P.O. Box 1450 Alexandria, VA 22313-1450	In re Application of Guy DiPierro, et al.	
	Application No. 10/7111,389	Filed September 15, 2004
	For: Transdermal Drug Delivery Method and System	
	Art Unit 3761	Examiner not yet accorded

This is a request under the provisions of 37 CFR 1.136(a) to extend the period for filing a reply in the above-identified application.

The requested extension and fee are as follows (check time period desired):

		Fee	Small Entity Fee	
☐	One month (37 CFR 1.17(a)(1))	$ 120.00	$ 60.00	$ 0
☐	Two months (37 CFR 1.17(a)(2))	$ 450.00	$ 225.00	$
☐	Three months (37 CFR 1.17(a)(3))	$1,020.00	$ 510.00	$ 0
☒	Four months (37 CFR 1.17(a)(4))	$1,590.00	$ 795.00	$ 795.00
☐	Five months (37 CFR 1.17(a)(5))	$2,160.00	$1,080.00	$ 0

05/11/2005 AKELECH1 00000034 10711389
01 FC:2251 ~~65.00 OP~~
02 FC:2254 795.00 OP

☒ Applicant claims small entity status . See 37 CFR 1.27.

☒ A check in the amount of the fee is enclosed.

☐ Payment by credit card. Form PTO-2038 is attached.

☐ The Director has already been authorized to charge fees in this application to a Deposit Account.

☒ The Director is hereby authorized to charge any fees which may be required, or credit any overpayment, to Deposit Account No. 50-1123. I have enclosed a duplicate copy of this sheet.

WARNING: Information on this form may become public. Credit card information should not be included on this form. Provide credit card information and authorization on PTO-2038.

I am the
- ☐ applicant/inventor.
- ☐ assignee of record of the entire interest. See 37 CFR 3.71. Statement under 37 CFR 3.73(b) is enclosed (Form PTO/SB/96).
- ☒ attorney or agent of record. Registration Number 33,940
- ☐ attorney or agent under 37 CFR 1.34(a). Registration number if acting under 37 CFR 1.34(a) _____.

5/9/05
Date

Stuart T. Langley
SIGNATURE

720-406-5335
Telephone Number

Stuart T. Langley
Typed or printed name

NOTE: Signatures of all the inventors or assignees of record of the entire interest or their representative(s) are required. Submit multiple forms if more than one signature is required, see below.

☒ Total of _____one_____forms are submitted.

Werner Zumbrunn
Hallenweg 9
CH-4132 Muttenz / Switzerland

Muttenz, 21st of April 2005

Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450
USA

With regard to:

- **US Patent Application 10/711,389 (Filing Date 09/15/2004)**
- **Fax 7th of April 2005**
- **Fax 21st of April 2005**

Dear Sir or Madam

As I wrote to you, I did not know before 1st of April 2005 that somebody had applied for a US patent on 15th of September 2004 although I am first named inventor of prior CH-01833/03.

Yesterday I signed the corresponding DECLARATION FOR UTILITY OR DESIGN PATENT APPLICATION (first named inventor: Werner Zumbrunn) after having reviewed the application.

I have not been involved in preparing the application and was not allowed to make any contribution to the description and the claims. Therefore I do not agree with everything. I disclosed my review to another joint inventor but he does not accept my considerations.

Therefore I hereby disclose parts of my review to the USPTO.

Summary of the invention

[Para 19]: US587322 doesn't exist. Perhaps US5879322 is meant?

[Para 28, first sentence]: It is mentioned that "an active substance (drug) normally is dissolved in a fluid solution comprising a solvent." Therefore it is incomprehensible when the next sentence reads as follows: "The active substance or the solvent are dispensed directly or indirectly (...)."

[Para 34, 37 and others]: Throughout the description sentences as follows are used: "The solvent recovery means serve to remove **depleted** solvent from the interface (...)." In a lot of cases the fluid solution is not depleted but the concentration of the

drug in the fluid solution rises. In these cases the above mentioned description is wrong.

[Para 34, 37]: The sentences "e.g. after repeated dispensing, active substance concentration maintains at a certain concentration and no unwanted substance is accumulated within the device" or "The solvent recovery element serves the purpose of removing **depleted** solvent from the interface so that, after repeated dispensing, drug concentration maintains its highest value and no freely moving liquid is formed within the device" are not correct.
There are three different cases depending on the permeation rate of the active substance through the skin in relation to the permeation rate of the solvent into the recovery element. Perhaps the authors of the patent description regarded this topic as to be too complicated to be mentioned.

[Para 39]: The sentence "By this it is possible to avoid **negative decrease** of the active substance due to accumulation of the solvent which would impact the diffusion rate through the skin" is not correct.
The active substance does not decrease due to accumulation of the solvent but the **concentration of the active substance** can decrease in this case.

[Para 46/Line 1 to 16, corresponding to figure 4 a) and 4 c) of the drawings]: This first embodiment of a solvent removal system cannot work: When the fluid solution is distributed all over the interface device 12 the solvent cannot be reclaimed by a micro pump or tubing filled with absorbent material. It is impossible because of physics.

[Para 46/Line 16 to 23]: This second embodiment of a solvent removal system has the disadvantage that not only the solvent is picked up but also the dissolved drug. Apart from that the "invention" is obvious if one knows CH-01833/03 the priority of which is claimed.

[Para 46/Line 23 to 30]: This third embodiment of a solvent removal system corresponds to an embodiment in CH-01833/03.

[Para 46 Line 30 to 36]: This forth embodiment of a solvent removal system is not comprehensible to me; I think it is also not comprehensible to a person having ordinary skill in the art. What is a "timed capillary action of a sponge?"

[Para 47]: The explanation why the modulated dispensing of drug formula brings about a significant increase of delivery rate is not correct. Three different cases have to be taken into account (see discussion of Para 34, 37).

[Para 50]: As already mentioned in the discussion of Para 46/first embodiment, "solvent removal means with a desiccant/absorbent connected to the interface by a tube, a desiccant/absorbent connected to the interface by a tube which compromises a valve" cannot function because of physics.

[Para 57 to 65/Figure 1]: This first embodiment corresponds more or less to an embodiment in CH-01833/03.

[Para 65, last line]: "Thereby the **concentration of the dissolver** in the region of the interface 12 may be kept below a certain level." This explanation is not correct. The

dissolver itself has not "a concentration". Therefore it cannot be kept "below a certain level."

[Para 66 to 67/Figure 2]: This further (second) embodiment corresponds more or less to an embodiment in CH-01833/03.

[Para 68 to 71/Figure 3]: This third embodiment corresponds more or less to an embodiment in CH-01833/03 with the exception that now two drug reservoirs are provided.

[Para 68/Line 6 and 21 and Para 71/Line 12]: Control device 15 is wrong. Control device 8 is probably correct.

[Para 72 to 75/Figures 4 a) to 4 c)]: These three further embodiments are characterized by two things:

- In two embodiments a waste pipe 41 is provided.
- If administration of the active substance needs to be stopped it is possible to pump active substance from the administration chamber back into the ~~administration~~ **drug** reservoir 5 or the connecting pipe 4 by pump 36.

Pumping back of active substance into the drug reservoir is not subject matter of the prior invention. The removal of the "depleted solvent" by a second valve 37 and waste pipe 41 instead of the above mentioned means for removal of solvent could be a new invention of a joint inventor unknown to me. Unfortunately, because of physics, it is impossible to remove "the depleted solvent" by pumping or sucking because the active substance/fluid solution is distributed all over the interface 12 and cannot be reclaimed by pumping or sucking (see also discussion of paragraph 46).
The pumping back or sucking of solvent is only partially possible if the administration chamber 9 is filled with active substance, i.e. a good deal more of "active substance" is dispensed than can be accepted by the interface 12. Because the "active substance" absorbed by the interface cannot be removed by pumping or sucking this invention makes no sense.
Only embodiment 4 b) makes sense concerning the removal of solvent. Unfortunately it is not obvious how the removal of solvent should be managed.

Claims

[Claim 1]: There is an incompatibility between step b) and c) and therefore these steps are not comprehensible:
In b) is stated that the solvent is removed in order **to achieve a certain level** of concentration in vicinity to a porous surface to be treated.
In c) is stated that there is absorption of active substance by the surface to be treated such that **the level of concentration in the administration reservoir decreases**.

The problem is that there aren't two steps or sequential processes but these two processes are **concurrent**. What happens after "dispensing a certain amount of a liquid" depends on the permeation rate of the drug through the skin in relation to the permeation rate of the solvent into the recovery element (see discussion of paragraph 34, 37).

[Claims 5 and dependent claims 6 and 9]: Impossible because of physics (as mentioned above).

[Claims 10 and 11]: I think there must be a mistake: "(...) one of the claims 2 wherein (...)"?

[Claim 17, line 8]: The removal of the solvent cannot only happen by evaporation but by diffusion, too.

Drawings

[Fig. 3]: The reference character 25 appears twice.
[Fig. 4c)]: The reference character 37 (valve and/or micro pump) is missing. The reference character 41 points to the wrong object.

With kind regards,

Werner Zumbrunn

Date: 04/21/2005

To: USPTO/Patents
Fax Number 001 703-872-9306

From: Werner Zumbrunn
Scientific assistant
Fachhochschule Solothurn
Riggenbachstrasse 16
CH-4600 Olten / Switzerland
Fax: +41 62 388 25 93 / Email: werner.zumbrunn@fhso.ch

Application Number 10/711,389 / Filing Date 09/15/2004
With regard to: Fax 7th of April 2005

To whom it may concern
In the meantime I could review the application and the claims. Therefore I signed the corresponding DECLARATION FOR UTILITY OR DESIGN PATENT APPLICATION (37 CFR 1.63) yesterday (first named inventor: Werner Zumbrunn).

With kind regards,

W. Zumbrunn

Werner Zumbrunn

To: USPTO/Patents
Fax Number 001 703-872-9306

Application Number 10/711,389 / Filing Date 09/15/2004

To whom it may concern
On Friday, 1st of April 2005, my boss presented a sheet of paper to me. Its title was "DECLARATION FOR UTILITY OR DESIGN PATENT APPLICATION (Application Number 10/711,389, Filing Date 09/15/2004). The boss wanted me to sign this declaration. But I refused to do so because I have never heard before of a corresponding patent application in the United States or reviewed the contents of the application and the claims.
What I know is: I invented a "Transdermales System" (Transdermal system) and I filed a corresponding patent application to the Swiss Federal Intellectual Property Institute on October 2003 (Application Number 01833/03) on behalf of my employer. Then, in fall 2004 I was obliged to sign a PCT application sheet (PCT/IB2004/002947, Filing date 13th of September 2004) although I had never got the chance to review the application or the claims. As joint inventors were mentioned: G. Imanidis, W. Zumbrunn, G. DiPierro. The applicant claimed the priority of the prior CH-application.
Tomorrow, a US patent attorney sent me "a copy taken from the U.S. Patent office with the filed documents". A NOTICE TO FILE MISSING PARTS OF NONPROVISIONAL APPLICATION was enclosed (Date Mailed: 11/09/2004). Now he is expecting me to sign the above-mentioned declaration until 9th of April 2005. But I need time to review the application and the claims.
Please, could you answer the following questions:

- Should I sign the declaration without having reviewed and understood the application and claims?
- What should I do if I do not agree with the application and the claims?

Many thanks for your answer.

With kind regards,

W. Zumbrunn

Werner Zumbrunn
Scientific assistant/University of Applied Sciences Solothurn
Fax: +41 62 388 25 93/E-Mail: werner.zumbrunn@fhso.ch

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APPLICATION NUMBER	FILING OR 371 (c) DATE	FIRST NAMED APPLICANT	ATTORNEY DOCKET NUMBER
10/711,389	09/15/2004	Georgios IMANIDIS	DIPI0002

CONFIRMATION NO. 5388

25235
HOGAN & HARTSON LLP
ONE TABOR CENTER, SUITE 1500
1200 SEVENTEENTH ST
DENVER, CO 80202

FORMALITIES LETTER

OC000000014322547

Date Mailed: 11/09/2004

NOTICE TO FILE MISSING PARTS OF NONPROVISIONAL APPLICATION

FILED UNDER 37 CFR 1.53(b)

Filing Date Granted

Items Required To Avoid Abandonment:

An application number and filing date have been accorded to this application. The item(s) indicated below, however, are missing. Applicant is given **TWO MONTHS** from the date of this Notice within which to file all required items and pay any fees required below to avoid abandonment. Extensions of time may be obtained by filing a petition accompanied by the extension fee under the provisions of 37 CFR 1.136(a).

- The oath or declaration is missing.
  A properly signed oath or declaration in compliance with 37 CFR 1.63, identifying the application by the above Application Number and Filing Date, is required.
- To avoid abandonment, a late filing fee or oath or declaration surcharge as set forth in 37 CFR 1.16(e) of $65 for a small entity in compliance with 37 CFR 1.27, must be submitted with the missing items identified in this letter.

SUMMARY OF FEES DUE:

Total additional fee(s) required for this application is **$65** for a Small Entity

- **$65** Late oath or declaration Surcharge.

Replies should be mailed to: Mail Stop Missing Parts
Commissioner for Patents
P.O. Box 1450
Alexandria VA 22313-1450

A copy of this notice MUST be returned with the reply.

Y. Gr

Customer Service Center
Initial Patent Examination Division (703) 308-1202

PART 3 - OFFICE COPY

PATENT APPLICATION SERIAL NO. _____

U.S. DEPARTMENT OF COMMERCE
PATENT AND TRADEMARK OFFICE
FEE RECORD SHEET

11/08/2004 BHABTEW 00000003 501123 10711389

01 FC:2001 385.00 DA
02 FC:2202 126.00 DA

PTO-1556
(5/87)

*U.S. Government Printing Office: 2001 — 481-697/59173

APPLICATION DATA SHEET

Electronic Version v14

Stylesheet Version v14.0

Title of Invention	TRANSDERMAL DRUG DELIVERY METHOD AND SYSTEM

Application Type :	regular, utility
Attorney Docket Number :	DIPI0002

Correspondence address:

Customer Number: 25235

Continuing Data:

This is a Continuation of WO application number PCT/IB2004/002947, filed 2004-09-13 , now Pending.

Priority Data:

Doc.No: 01833/03; Country -CH ; Date: 2003-10-27 us-priority-claimed

Inventors Information:

Inventor 1:

Applicant Authority Type:	Inventor
Citizenship:	GR
Given Name:	Georgios
Family Name:	IMANIDIS
Residence:	
City of Residence:	Binningen
Country of Residence:	CH
Address-1 of Mailing Address:	Bruderholzstrasse 34
Address-2 of Mailing Address:	4102
City of Mailing Address:	Binningen
State of Mailing Address:	
Postal Code of Mailing Address:	
Country of Mailing Address:	CH
Phone:	
Fax:	
E-mail:	

Inventor 2:

Applicant Authority Type:	Inventor
Citizenship:	CH
Given Name:	Werner
Family Name:	ZUMBRUNN
Residence:	
City of Residence:	Muttenz
Country of Residence:	CH
Address-1 of Mailing Address:	Hallenweg 9
Address-2 of Mailing Address:	4132
City of Mailing Address:	Muttenz
State of Mailing Address:	
Postal Code of Mailing Address:	
Country of Mailing Address:	CH
Phone:	
Fax:	
E-mail:	

Inventor 3:

Applicant Authority Type:	Inventor
Citizenship:	US
Given Name:	Guy
Family Name:	DI PIERRO
Residence:	
City of Residence:	New York
State of Residence:	NY
Country of Residence:	US
Address-1 of Mailing Address:	6 Tulip Court
Address-2 of Mailing Address:	
City of Mailing Address:	Nanuet
State of Mailing Address:	
Postal Code of Mailing Address:	10954
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Publication Information:
Suggested Figure for Publication - 1
Suggested Classification -
Suggested Technology Center -
Total Number of Drawing Sheets - 4

FEE TRANSMITTAL

Electronic Version v08

Stylesheet Version v08.0

Title of Invention	TRANSDERMAL DRUG DELIVERY METHOD AND SYSTEM

Application Number :

Date :

First Named Applicant: Georgios IMANIDIS

Attorney Docket Number: DIPI0002

TOTAL FEE AUTHORIZED $ 0

Patent fees are subject to annual revisions on or about October 1st of each year.

Filing as small entity

BASIC FILING FEE

Fee Description	Fee Code	Amount $	Fee Paid $
Utility Filing Fee	2001	385	385
			Subtotal For Basic Filing Fees: $ 385

EXTRA CLAIM FEES

Fee Description	Extra Claim	Fee Code	Amount $	Fee Paid $
Total Claims : 34	14	2202	9	126
Independent Claims : 2	0	2201	43	0
				Subtotal For Extra Claims Fees: $ 126

AUTHORIZED BILLING INFORMATION

The commissioner is hereby authorized to charge indicated fees and credit any overpayments to:

Deposit account number:	501123
Access Code	****
Deposit name:	Hogan Hartson
Deposit authorized name:	Stuart T. Langley
Signature:	/stl1880/
Date (YYYYMMDD):	2004-09-13

TRANSMITTAL

Electronic Version v1.1

Stylesheet Version v1.1.0

Title of Invention	TRANSDERMAL DRUG DELIVERY METHOD AND SYSTEM

Application Number :

Date :

First Named Applicant: Georgios IMANIDIS

Confirmation Number:

Attorney Docket Number: DIPI0002

I hereby certify that the use of this system is for OFFICIAL correspondence between patent applicants or their representatives and the USPTO. Fraudulent or other use besides the filing of official correspondence by authorized parties is strictly prohibited, and subject to a fine and/or imprisonment under applicable law.

I , the undersigned, certify that I have viewed a display of document(s) being electronically submitted to the United States Patent and Trademark Office, using either the USPTO provided style sheet or software, and that this is the document(s) I intend for initiation or further prosecution of a patent application noted in the submission. This document(s) will become part of the official electronic record at the USPTO.

Submitted By:	Elec. Sign.	Sign. Capacity
Mr. Stuart T Langley Registered Number: 33940	/stl1880/	Attorney

Documents being submitted:	Files
us-fee-sheet	DIPI0002-usfees.xml
	us-fee-sheet.xsl
	us-fee-sheet.dtd
us-request	DIPI0002-usrequ.xml
	us-request.dtd
	us-request.xsl
application-body	DIPI0002ABX.xml
	application-body.dtd
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	isopub.ent
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	mathml2.dtd
	mathml2-qname-1.mod
	mmlalias.ent
	mmlextra.ent
	soextblx.dtd
	us-application-body.xsl
	wipo.ent
application-body-pdf-wrap	DIPI0002ABX-pdf-wrap.xml
abstract-pdf	DIPI0002ABX-abst.pdf
claims-pdf	DIPI0002ABX-clms.pdf
description-pdf	DIPI0002ABX-desc.pdf
drawings-pdf	DIPI0002ABX-draw.pdf
Comments	

ACKNOWLEDGEMENT RECEIPT

Electronic Version 1.1

Stylesheet Version v1.1.1

Title of Invention	TRANSDERMAL DRUG DELIVERY METHOD AND SYSTEM

Submision Type : Utility Patent Filing

Application Number:

10/711389

EFS ID: 68561

Server Response:

Confirmation Code	Message
ISVR1	Submission was successfully submitted - Even if Informational or Warning Messages appear below, please do not resubmit this application
ICON1	5388
USPTOEFSNotice	For assistance with e-filing a patent application, contact the Patent Electronic Business Center: Toll-Free Number:1(866) 217-9197 Website: http://www.uspto.gov/ebc/
WUTL2	Filename= DIPI0002-pkda.xml BusinessRule= The utility patent submission does not include at least one declaration.

First Named Applicant: Georgios IMANIDIS

Attorney Docket Number: DIPI0002

Timestamp: 2004-09-15 19:28:40 EDT

From: us

File Listing:

Doc. Name	File Name	Size (Bytes)	Date Produced (yyyymmdd)
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us-fee-sheet	us-fee-sheet.xsl	24912	2004-09-15
us-fee-sheet	us-fee-sheet.dtd	11069	2004-09-15
us-request	DIPI0002-usrequ.xml	2827	2004-09-15
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application-body	isoamso.ent	1934	2004-09-15
application-body	isoamsr.ent	7073	2004-09-15

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application-body	isopub.ent	6621	2004-09-15
application-body	isotech.ent	5268	2004-09-15
application-body	mathml2.dtd	54588	2004-09-15
application-body	mathml2-qname-1.mod	13225	2004-09-15
application-body	mmlalias.ent	38209	2004-09-15
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application-body	soextblx.dtd	12870	2004-09-15
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application-body	wipo.ent	4956	2004-09-15
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claims-pdf	DIPI0002ABX-clms.pdf	26641	2004-09-15
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drawings-pdf	DIPI0002ABX-draw.pdf	83811	2004-09-15
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package-data	us-package-data.xsl	19263	2004-09-15
	Total files size	2527810	

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Digital Certificate Holder Name: cn=Stuart Todd Langley,ou=Registered Attorneys,ou=Patent and Trademark Office,ou=Department of Commerce,o=U.S. Government,c=US

Transdermal Drug Delivery Method and System

DESCRIPTION

[Para 1] The present application is continuation of PCT Application No. PCT/IB2004/002947 filed on September 13, 2004 entitled Transdermal Drug Delivery Method and System, the specification of which is incorporated herein by reference, which claims priority to Swiss Patent Application No. 01833/03 Filed on 27 October 2003.

Field of the Invention

[Para 2] The invention concerns a delivery system for a chemical substance for the controlled dispensing of the chemical substance to and through a surface, respectively skin. More specifically the invention relates to a method and a system usable, i.e. for transdermal drug delivery.

Background of the Invention

[Para 3] Delivery of chemical substance to and through a surface administrated over a desired time is a subject matter in different areas. A very important subject area, where the delivery of chemical substances to or through a permeable surface is important, is medicine. Although the invention is not restricted to the field of medicine the invention is described in the following mainly with respect to this field of application.

[Para 4] Pharmaceutical substances provide effective treatments for a variety of illnesses. In general it is necessary that medication is applied at a certain time or with a certain time pattern or it is necessary to keep the level of medication at a certain value to achieve the aimed therapeutic result most efficiently. Unfortunately patients often fail to take their medications at the proper prescribed intervals or period of time. Moreover there are drugs, which

are partially or totally inactivated following oral ingestion, by the highly acidic environment of the stomach or by the filter impact of the liver.

[Para 5] In order to overcome such problems, drugs are administered by transdermal delivery. The most common parenteral methods (methods avoiding digestion) for drug delivery are the administration in separate dosages by injections with a needle or continuously by drip. For a long term treatment these methods may be uncomfortable for the patient because of the repeated injury by needle injections and the limited liberty of action due to intravenous drip apparatus.

[Para 6] A more comfortable method for drug delivery utilizes patches which are applied on the surface of the skin. Patches are known since more than twenty years; i.e. the product TransdermScop® of Novartis has been on the market since 1981. Those patches are portable and therefore very comfortable and furthermore very suitable for patients which are scared by needles and cannulae. Examples of drugs that are routinely administered by skin applied patches are nicotine, steroid hormones, and some analgesics (such as fentanyl). Using plaster-like patches for drug delivery provides continuous dosages usually over a relatively short period of time (such as a day up to a week), without requiring active participation of the patient.

[Para 7] In order to provide a more flexible, precise and complex administration of drugs by a patch based system over a certain period of time, portable dispensing systems have been developed in the last few years which are connectable or connected in a fixed way to a patch. These systems in general comprise a dispensing system with a reservoir for a drug. In case of more than one reservoir the reservoirs are provided for one drug or different drugs or different components of a drug. Further the dispensing system has a dispensing unit. The reservoir and the dispensing unit are interconnected to the patch. Different types of dispensing units are known from prior art.

[Para 8] US5785688 (Joshi, et al.) discloses an apparatus for subcutaneous drug delivery having a fluid reservoir disposed within a housing for storing the fluid, a pump or pressurized chamber for pressurizing a driving gas is

foreseen for exerting a force on the fluid reservoir to expel the fluid reservoir's contents. A needle or absorbent pad are interconnected with the reservoir.

[Para 9] US5405614 (D'Angelo, et al.) discloses a drug delivery system for transdermal delivery of drugs through the skin. The delivery system comprises a container for containing the drug with a drug release opening. An ultrasonic transducer is disposed in the general conduit area for generating ultrasonic waves aimed at the skin area.

[Para 10] US5932240 (D'Angelo, et al.) describes a patch-like multidose transdermal drug delivery system having a laminate composite with a plurality of compartments. Each compartment is a reservoir for a unit dose of a drug active to be transdermally administered. Individual seals are removable to release a unit dose of drug into contact with the skin of a patient.

[Para 11] US6723077 (Pickup et al.) is directed to a jet dispenser using inkjet technology for delivery of bioactive agents. The dispenser propels a certain volume of bioactive agent directly towards the skin, where they exert a local or topical effect, or move through the skin for transdermal systemic delivery. Drugs are either delivered directly to the skin, or are introduced into a transdermal patch, which may receive repeated dosages. A controller in the dispenser controls delivery and timing of drug administration. Due to the direct application of the active substance to the skin the process of medication is difficult to control and mainly determined by the diffusion rate of the skin.

[Para 12] US6165155 (Jacobsen, et al.) discloses an automatic drug delivery system utilizing a control pad coupled to a disposable drug storage and delivery system. Expanding propellant gas exerts pressure on a drug in a chamber and forces it from the storage reservoir. Drug delivery is based upon a hypodermic needle, a jet nozzle injecting the drug into a subcutaneous tissue or a patch for passive transdermal delivery or iontophoretic transdermal diffusion.

[Para 13] US4917895 (Lee, et al.) describes a diffusional drug with a metal layer and activating means which are inert when dry. The system is activated by moisture whereby the activating means provide release of an eroding agent

which erodes the metal layer through which the therapeutic agent diffuses and is subsequently delivered.

[Para 14] US4379454 (Campbell, et al.) discloses a one-way skin patch with a top backing layer, a drug reservoir, a diffusion membrane and a contact adhesive layer. The backing layer defines the top of the patch and is made from a material or combination of materials that is substantially impermeable to the components contained in the drug reservoir. The diffusion membrane is made of a dense or microporous polymer film that is permeable for the drug and the enhancer. The patch coadministers a drug and a percutaneous absorption enhancer to a defined area of the skin. The drug is provided to a basal surface at a rate at least as great as the rate at which the skin is able to absorb the drug whereas the enhancer is via a rate controlling means at a substantially constant rate that increases the permeability of the treated area of skin to the drug to a level at which the drug is absorbed at a therapeutically effective rate.

[Para 15] US4708716 (Sibalis) describes a transdermal drug applicator for administration of drugs through the skin into the blood stream of a patient. The drug applicator embodies a plurality of reservoirs for containing the medicament. A battery is disposed adjacent to one side of the reservoirs. When the applicator is adhered to and mounted on the skin a complete electrical circuit through the skin is formed and the medicament in the reservoir migrates out of the reservoir and through the skin into the patient's blood stream.

[Para 16] US6129702 (Woias, et al.) describes a medicament dosing system which is based on overpressure. The medicament dosing system comprises a replaceable and a permanent unit. The replaceable unit has a fluid reservoir for receiving a medicament in liquid form. The permanent unit comprises valve and control means which are coupled to a temperature sensor and the valve so as to control a flow rate of the liquid medicament by clocked actuation the valve depending on the temperature detected.

[Para 17] US5273756 (Fallon, et al.) is directed to a transdermal drug delivery device using a microporous membrane to achieve delayed onset. The

transdermal drug delivery device comprises a layered setup with a pressure rupturable layer. The device is made such that it initially takes at least about six hours for the drug to diffuse to the skin from the reservoir once the reservoir is ruptured.

[Para 18] US5505958 (Bello, et al.) describes a one-way transdermal drug delivery device which has a drug-storing matrix made out of a flexible cellular structure fabricated from a flexible cellular thermoplastic for storing at least one drug.

[Para 19] US587322 (Lattin, et al.) is directed to a self-contained transdermal drug delivery device by electro transport means with electrodes designed to be worn on the skin. The electro transport device can be used by patients to deliver a drug during a prescribed course of therapy, e.g. the delivery of an analgesic to control pain.

[Para 20] CA2142871 (Miranda, et al.) discloses a one-way transdermal drug delivery device in the form of a laminated composite which delivers a drug continuously over approximately 16 hours, especially in case of problems such as drug tolerance (e.g., nitroglycerin) or sleep disorders (e.g., nicotine). The drug is loaded in the device in a concentration such that the drug becomes depleted from the device after approximately 16 hours to the extent that the rate of delivery of the drug to the patient is slowed to such an extent that the pharmacological effect of the drug on the patient becomes substantially nonexistent.

[Para 21] PCT/GB02/04064 (Watmough, et al.) describes an apparatus which utilises megahertz ultrasound from a piezoelectric transducer to produce liquid jets which penetrate into or through porous media such as animal skin and egg shells. A device in the form of a gun is described that is suitable to receive cartons of drug. A cloud of drops can be driven towards or into the nose or mouth of a patient using a suitable fan or pipework.

[Para 22] It has been tried to accelerate the diffusion rate of an active substance through the skin by various measures, i.e. applying an electric field, ultrasonic, radiation, heat or chemical accelerators. However, all these measures, by exception of chemical accelerators, require much auxiliary power

or are technically very complex and expensive. Chemical accelerators often increase the probability of skin irritations, allergic reactions, inflammation and/or swelling.

[Para 23] The efficiency of transdermal drug delivery systems using patches depends often on the diffusion rate of the active substance through the skin, which on one hand depends on the active substance and its solvent and on the other hand varies in a wide range from mammal to mammal even within the same species, thus as from human being to human being, and also from the body area the patch is applied to. The constructions of the patches known from prior art usually try to control these dependencies by a set up of several layers. One important layer is an active substance reservoir or a Polymer-Matrix, in which the active substance is embedded, either dissolved in a solvent or embedded in micro capsules. The reservoir for the active substance is covered with an upper-layer which protects the patch against the environment. The upper-layer has to be impermeable to the active substance and the solvent as well as to substances acting from outside. Two layers may be arranged between the active substance reservoir and the skin: The first layer is a membrane, which is arranged directly adjacent to the active substance reservoir, and the second is an adhesive layer to be patched on the skin which is, if appropriate, covered by a removable protection film before use.

[Para 24] In systems known from prior art the membrane adjacent to the active substance reservoir controls the dispensing of the active substance to the skin. The dispensing rate of the active substance into the skin is mainly influenced by the permeability of the membrane and the concentration. Therefore, to obtain controllable results the permeability of the membrane is chosen such that the diffusion rate of the active substance from the reservoir through the membrane and through the skin into the body is defined mainly by the permeability of the membrane and not by the diffusion rate of the active substance through the skin. The absence of an appropriate membrane would result in very different transport rates of the active substance into the body, because of the different skin characteristics. High diffusion characteristics of

the skin imply the risk of an overdose, whereas low diffusion characteristics imply the risk of no therapeutic effect. In order to minimize said problems the permeability of the membrane in some systems has been chosen much lower than the permeability of the different skin types. However, in this case the amount of active substance which diffuses through a specific skin area is much less than the theoretical maximum given by the characteristics of the skin. Hence the size of the patch has to be chosen much bigger than intrinsically necessary.

[Para 25] Patch based delivery systems which are able to effectively administrate the delivery of an active substance to a subject over a certain period of time in precise doses, e.g. delivered at predetermined intervals, are a problem that has not been solved by now. Turning delivery on and off may cause uncontrolled time lag in the delivery rate of the on and off events and leads often over the long term run to a constantly diminishing diffusion rate through the skin.

[Para 26] Most drugs used today perform better therapeutically when delivered in a modulated rather than in a continuous fashion throughout the applied period of time, for example, a circadian rhythm. A number of chemicals are, e.g., needed only at a certain time during the day. Therefore it is necessary to be able to precisely control and apply drugs according to predetermined rules. Currently no technology that is non invasive, does not need an extensive power supply and can be independently used by the targeted individual, such as customer and/or patient is available affording automated control of drug delivery in real time.

[Para 27] It is an object of the present invention to provide a delivery system for an active substance which avoids the draw backs known from the prior art. It is a further object of the present invention to provide a patch based delivery system for an active substance which is able to administrate the delivery of a chemical substance to a subject over a period of time in a controllable way.

Summary of the invention

[Para 28] According to the present invention an active substance (drug) normally is dissolved in a fluid solution comprising a solvent. The active substance and/or the solvent are dispensed directly or indirectly via at least one interface device on a porous surface, e.g. skin, such that the active substance is absorbed through or by the porous surface primarily by diffusion.

[Para 29] A device according to the present invention in general comprises dispensing means, e.g. a pump, at least one drug reservoir, at least one administration element (patch reservoir, administration reservoir, administration compartment, administration chamber) and at least one solvent removal and/or recovery element and if necessary control means interconnected to each other. In a preferred embodiment of the invention the administration reservoir and the solvent recovery means are incorporated in an administration unit (patch). The at least one drug reservoir contains a sufficient amount of one or more active substance dissolved or dispersed at an appropriate concentration in a formulation which may contain a solvent or a solvent mixture that is volatile. If appropriate other excipients, for example tissue permeation promoters (enhancers), thickening substances, solubilizers, buffers, chemical stabilizers, preservatives are present too.

[Para 30] The active substance may be any dispensable fluid (for example a liquid, gel or powder), although liquids are particularly of use in the dispensing unit. In some embodiments, at least one of the reservoirs may contain an active substance in powder or other dry form. The powder or other agent is dispensed from the reservoir, and may be combined with a solvent and/or another liquid such as a penetration enhancer. If appropriate the dispensing unit may allow chemical reactions to occur, e.g. in the administration reservoir, as well as phase changes to stabilize (such as a change from a solid to a liquid state).

[Para 31] Examples of active substances which can be administered by the device according to the present invention include pharmaceutical compositions that are capable of transdermal delivery. Such agents include drugs having sufficient lipophilicity or hydrophilicity to move through the skin surface and stratum corneum. Certain of these agents are designed to reach the

microvasculature of the skin, for subsequent systemic absorption and distribution. Examples of agents that are suitable for transdermal delivery include scopolamine, nitrates such as nitroglycerine, an antihypertensive or anti-adrenergic drug such as clonidine, steroid hormones such as 17-beta-estradiol and testosterone, analgesics, such as the opioid analgesic fentanyl, and treatments for nicotine withdrawal, such as nicotine. Many analogues of these drugs retain their biological activity, and are also suitable for transdermal delivery. Although the disclosed dispensing unit is particularly suited for transdermal delivery of drugs, it can also be used for topical surface application of drugs, such as antibiotics, corticosteroids, minoxidil or retinoids (such as Retin A). For example it is also possible that an active substance, e.g. an insoluble drug, may be encapsulated in a nanoparticular form dispersed in a solvent.

[Para 32] A device according to the present invention may comprise several reservoirs for active substances comprising the same or different agents, for example different agents that combine before or at the time of delivery to modify one or both of the agents, or to produce a desired effect. An example of a modifying substance that may be combined at the point of application is a enhancer that improves cutaneous penetration of the at least one active substance. Penetration enhancers that may be mixed with a bioactive agent at the time of delivery may include solvents such as water; alcohols (such as methanol, ethanol and 2-propanol); alkyl methyl sulfoxides (such as dimethyl sulfoxide, decylmethyl sulfoxide and tetradecylmethyl sulfoxide); pyrrolidones (such as 2-pyrrolidone, N-methyl-2-pyrroloidone and N-(2-hydroxyethyl)pyrrolidone); laurocapram; and miscellaneous solvents such as acetone, dimethyl acetamide, dimethyl formamide, and tetrahyrdofurfuryl alcohol. Other penetration enhancers include amphiphiles such as L-amino acids, anionic surfactants, cationic surfactants, amphoteric surfactants, nonionic surfactants, fatty acids and alcohols. Additional penetration enhancers are disclosed in Remington: The Science and Practice of Pharmacy, 19.sup.th Edition (1995) on page 1583. Of course agents such as penetration enhancers can also be premixed with the bioactive agent prior to the point of

application, for example the bioactive agent and modifying substance can be present together in a reservoir.

[Para 33] US6723077 (from now on US'077), already mentioned above, is directed to an applicator for cutaneous delivery of a bioactive composition using a jet dispenser, such as a piezoelectric or thermal jet dispenser, for instance of a construction used in the inkjet printing arts. In difference to US'077 the present invention uses at least one solvent which is at least partially separated during administration of the at least one active substance by a solvent recovery means. A major disadvantage of the piezo electric or thermal jet dispenser described in US'077 is that the bioactive composition is stressed due to heat and/or high pressure which inevitably may occur while application.

[Para 34] In operation the formulation contained in the at least one drug reservoir is dispensed by the dispensing unit into the at least one administration reservoir (patch reservoir). Volume and frequency of administration of the active substance are controlled by a control unit which preferably is freely programmable according to given needs. The solvent recovery means reclaim solvent that was dispensed together with the formulation into the patch reservoir and is not absorbed. The preferably volatile solvent evaporates from the interface continuously and is guided to the solvent recovery means. If appropriate a heating element or other helping means may be used for supporting evaporation of the solvent. However the temperature of the skin in general is sufficient. The solvent recovery means serve to remove depleted solvent from the interface such that, e.g. after repeated dispensing, active substance concentration maintains at a certain concentration and no unwanted substance is accumulated within the device. Upon quitting dispensing of formula, the residual solvent is recovered and dryness of the interface is achieved, which results in controlled termination of drug delivery. Alternatively or in addition depleted solvent may be discharged into environment only, e.g. by direct evaporation.

[Para 35] In general the active substance is completely enclosed in the administration/patch reservoir and is not in contact with the environment or

other components. The interface may comprise a membrane (polymer membrane) which may be lined with an absorbent material, such as blotting paper, suitable to receive active substance and facing inwards to the interior of the device. The membrane of the interface is in functional contact with the surface to be treated. The drug formulation is dispensed onto the interface by the dispensing unit which is interconnected to the drug reservoir. The solvent recovery means are normally arranged at a certain distance from the absorbent material preventing uncontrolled absorption of solvent. The volume and frequency of dispensing are freely programmable and are used to control the delivery rate and the time pattern of delivery of the drug.

[Para 36] Due to the reason that an organism in general does not show a steady sensibility with respect to a certain drug and to avoid tolerances against a certain drug the present invention foresees, if appropriate, a non-constant administration of at least one drug over a certain period of time or intervals of time. Because of that it is possible to avoid an increasing need of active substance to achieve a certain result. By administering an active substance adjusted to the circadian rhythm the result of therapy may be increased significantly. Depending on the field of application and embodiment the present invention offers the opportunity to precisely administer at least one active substance according to a preset or real-time regime. This method is applicable e.g. to reduce the addiction to nicotine or other drugs.

[Para 37] Drug is delivered from the interface primarily by diffusion. The solvent recovery element reclaims the solvent that was dispensed with the formulation onto the interface and was not absorbed otherwise. The solvent recovery element preferably is located within the device and comprises one or more desiccants and/or general adsorbents such as silica gel, molecular sieves or active carbon. These materials are normally arranged within a bag consisting of non-wettable but vapor permeable material e.g. such as Gore-Tex®. In a preferred embodiment the solvent recovery element is arranged close to but in non-contact with the interface. The volatile solvent evaporates from the interface continuously under the influence of body heat and the vapors are trapped in the solvent recovery element. The solvent recovery

element serves the purpose of removing depleted solvent from the interface so that, after repeated dispensing, drug concentration maintains its highest value and no freely moving liquid is formed within the device. Upon quitting dispensing of drug formula, the residual solvent is recovered and dryness of the interface is achieved, which brings about stoppage of drug delivery. The solvent recovery element is contained in a non-wettable material in order to avoid uptake of drug formula and consequent loss of drug.

[Para 38] Several parameters are relevant for the amount of active substance absorbed by the surface to be treated such as concentration of the active substance in the solvent, the repetition-rate of supply and the volume supplied. These parameters are controllable by the described invention.

[Para 39] Solvent that is not absorbed by the skin in a sufficient way is carried off in another way than by absorption through the skin, e.g. by evaporation into the environment and/or by absorption by an other mean, e.g. absorbing substance such as silica gel. By this it is possible to avoid negative decrease of the active substance due to accumulation of the solvent which would impact the diffusion rate through the skin. Especially solvents based on water and/or alcohol are having at temperatures nearby the temperature of skin a vapor pressure which is sufficiently high to carry off the solvent by evaporation. However, the carrying off and/or diffusion rate of the solvent preferably is adjusted to the diffusion rate of the active substance through the skin to avoid accumulation of the solvent or precipitation of the active substance on the skin in a negative way.

[Para 40] According to the present invention a membrane which obstructs the transportation of the active substance e.g. due to a lower transfer rate than the skin can be successfully avoided and the achievable diffusion rate through the skin is therefore primarily only depending on the type of skin. Compared to conventional systems known from prior art it is possible to achieve higher diffusion rates and due to this only a smaller area of skin is necessary to absorb a certain amount of active substance.

[Para 41] The described invention offers the opportunity to precisely control the rate and the time pattern of systemic drug delivery. It can be applied to the

delivery of drug into and/or across the skin. With the methodology according to the present invention the amount of active substance delivered per unit of time can be adjusted to values ranging between zero and a known maximum, the moments of time can be defined at which the delivery rate is set to a predetermined value and the delivery of drug over time spanning hours or days can be regulated in a programmed manner, e.g. using real time control. A device suitable to carry out the described technology offers the opportunity of fully automated transdermal drug delivery.

[Para 42] The method most widely used in prior art for automated controlled transdermal delivery is iontophoresis. With this method control of delivery of a drug is achieved by an electric current which is applied to the skin. By adjusting the current the delivery rate of the drug is regulated. Advantages of the present invention over iontophoresis are the ability to completely turn off delivery or reduce the delivery rate below a minimal value corresponding to passive skin permeation, the absence of skin irritation that the electric current may cause when applied to the skin and the low energy consumption compared to iontophoresis because normally no high currents are needed for extensive periods of time.

[Para 43] Conventional patch based delivery systems as known from prior art comprising a patch and a therewith interconnected dispensing unit are more or less suitable to administrate a chemical substance under a specific time regime, where the quantity of the specific dose delivered to the patch can be predetermined more or less accurate and each time period of dispensing the substance can be predetermined as well. However, turning delivery to a patch as known from prior art on and off causes uncontrolled time lag in the delivery rate to or through the skin. The delivery systems known from prior art often lead to a constantly diminishing dispensing rate. These problems are avoided by the present invention.

[Para 44] The disclosed invention offers a combination of formula dispensing with an on- and off-turning delivery of the formula and a simultaneous solvent recovery for the purpose of maintaining a constant and high drug delivery rate. The achievable delivery rate and the time lag due to on- and off-events result

from the interplay between the rate of formula dispensing and the rate of solvent recovery. The former is preferably controlled by a freely programmable pump and the latter by amount and quality of the material of the solvent recovery element.

[Para 45] Precise control of delivery of the active substance is very important. Related thereto is the precise control of the solvent. The solvent may be controlled by additional means e.g. as described as follows.

[Para 46] A solvent removal system comprises a waste reservoir which is interconnected by a waste valve, e.g. a pinch valve, and/or a waste pump to the administration reservoir. In the case of a pin valve the waste valve preferably is driven by utilizing a wire made out of Shape-Memory-Alloy (SMA) or an alternative device pursuant to a pre programmed regimen. In a given example the waste valve is opened or the waste pump is turned on such that the solvent is removed and e.g. brought in contact to a desiccant such that the solvent is safely absorbed. Proper administration may be achieved by opening and closing the connection to the waste reservoir by an appropriate time regime. In certain applications it is helpful to switch the connection to the waste reservoir with a certain delay with respect to the administration of the active substance. Instead or in addition to a pinch valve a micro pump may be appropriate to pump excessive solvent into a waste reservoir. In a further embodiment the tubing e.g. for depletion of solvent can comprise absorbent material which thereby is brought into direct contact with depleted carrier solution. It is possible to remove depleted fluid either pursuant to a pre programmed profile or systematically, e.g. depleted fluid is brought into contact every 20 minutes with desiccant, by using a small lever or arm, or otherwise made to come into direct contact with the depleted carrier solution, resulting in absorption of the depleted carrier solution. Alternatively, a waste reservoir, e.g. a sponge, is lowered by a small lever or arm or otherwise to come into direct contact with the depleted carrier solution, resulting in immediate absorption of the depleted carrier solution. In a different embodiment a selectively permeable membrane surrounds a sponge or absorbent material, and the selectively permeable membrane primarily allows

the solvent to pass through it (whether due to electric charge of the molecule or molecular size or acidity of the solvent vs. the drug or some other regulating means) and this semi permeable membrane either remains in constant contact with the diffusion surface or is periodically brought in to contact with the diffusion surface using an above described method. In a further embodiment a sponge or an absorbent material is in contact with the diffusion surface and a pre-tested and timed capillary action of the sponge is such that depleted carrier solution is absorbed at the right time and in proper amounts as to assist with the achievement of pre programmed dosage profiles, i.e. even though much active substance may be absorbed along with the carrier solution still sufficient drug is present to achieve the objectives.

[Para 47] Modulated dispensing of drug formula brings about a significant increase of delivery rate over the one-time addition of formula at equal drug concentration. Thus, maximization of drug delivery rate is achieved. This is because the removal of solvent from the relatively small dispensed volume creates in situ an increase of drug concentration with subsequent saturation and precipitation of drug in the interface in immediate contact with the skin as evidenced by dryness of the interface. By the herein described method it is possible that the delivery rate of the active substance can be adjusted using the same drug solution by changing the dispensed volume of solution. Depending on the field of application it was found that about 2 gram of desiccant are sufficient for trapping solvent over at least 9 hours when e.g. dispensing 40 µl/hr of a given drug formula. It was found that increase of drug concentration in the formula causes a corresponding increase of delivery rate for dispensing of e.g. 40 µl/hr but not for e.g. 15 µl/hr. Apparently, dryness of the interface for the latter dispensing volume is achieved far before each consecutive dispensing step, thus hampering drug permeation.

[Para 48] It was found that the dependency between delivery rate and dispensing volume is in general not linear but there exist optimal dispensing volume and frequency for maximal drug delivery. The found results are scalable for larger surface areas.

[Para 49] Possibilities to dispense a drug solution to at least one interface (administration device) may include a reservoir with an actuator such as a (micro)pump, a pressurized reservoir with a valve, a pressurized reservoir with a pump, a collapsible bag with a valve and/or a collapsible bag with a pump. Examples for appropriate pumps are a piezoelectric pump; an osmotic pump; an ink jet-like pump, a peristaltic pump, a pneumatic pump, a nebulizer pump, etc. Examples for valves are a pitch valve, a valve based on memory alloys, etc.

[Para 50] Depending on the field of application, solvent removal means may be for example: a desiccant in a bag, any other absorbent material in a bag, a desiccant/absorbent connected to the interface by a tube, a desiccant/absorbent connected to the interface by a tube which comprises a valve, a compartment connected to the environment for evaporation, a compartment through which gas is guided to promote evaporation, an absorbent sponge, an absorbent sponge attached to an arm that moves it to and away from the interface, an absorbent sponge with a gas blowing device for drying. The material surrounding the solvent removal means preferably is made out of tissue, cloth, membrane, etc. The administration device (compartment) may comprise, if appropriate, at least one sensor, e.g. a humidity sensor for feed back control to the dispenser.

[Para 51] For best results, the invention offers the opportunity to control and administer at least one active substance depending on the need defined by a certain therapy / target to be achieved. E.g. it is possible to slightly increase the dose over a certain period of time until a certain level is achieved. Then the administration of drug may be stopped, decreased in a certain manner or the administration of a further active substance may be overlaid or substituted by. If the therapy lasts more than (e.g.) one day it is possible to further adjust the dose administered depending on the time of the day or the physical behavior of the patient. Alternatively it is possible to deliver at first a higher dose of an active substance which is followed by a decrease and/or an increase and so on.

Brief description of the Drawings

[Para 52] Fig. 1 a first embodiment of a transdermal drug delivery system;

[Para 53] Fig. 2 a second embodiment of a transdermal drug delivery system;

[Para 54] Fig. 3 a third embodiment of a transdermal drug delivery system;

[Para 55] Fig. 4 three further embodiments of a drug delivery system according to the present invention.

Detailed Description of Preferred Embodiments

[Para 56] In the following the invention is explained in more detail on the basis of a few preferred embodiments. Same devices are indicated with same reference numbers. A person skilled in the art knows how to combine the different components shown in the different embodiments in a useful way.

[Para 57] Figure 1 shows in a simplified manner a first embodiment of a dispensing system 1 for the non-invasive administration of at least one active substance 2 according to the present invention.

[Para 58] The dispensing system 1 comprises a dispensing unit 3 with a drug reservoir 5 for storing a liquid with at least one active substance 2. The reservoir 5 interconnects via pipes 4 to an administration device 6. To propel the active substance 2 from the reservoir 5 into the administration unit 6 the dispensing unit 3 comprises a propellant means, such as a pump 7 and/or the reservoir 5 may comprise a propellant gas and/or the active substance 2 is propelled in another way. In the herein shown simplified representation the control of the flow of the active substance (arrows 24) into the administration device 6 is accomplished by a pump 7 which is interconnected to a control unit 8 for precisely controlling delivery rate and the time pattern of the active substance administered. The control unit 8 can be or connected to a personal computer or any other suitable device, e.g. programmable by a touch screen and/or a keyboard and/or another user interface. In the herein described embodiment the control unit 8 is interconnected to an external unit 15, i.e. a

microprocessor on a chip card or a computer unit connectable by a data connection 16 to the dispensing unit 3.

[Para 59] The administration unit 6 comprises an administration reservoir 9 which is interconnected by pipe 4 to the dispensing unit 3. The administration unit 6 is in the herein described embodiment attached to a surface of the skin 10 by a non-irritant adhesive layer 12 which acts as an interface device and is at least permeable for active substance contained in the administration chamber 9. Alternatively or in addition the administration device may be attached to the skin 11 in another way. If appropriate a membrane may be arranged between the administration reservoir 9 and skin 11 acting as interface device for transportation of the active substance (drug) into the skin or, depending on the field of application, the active substance may be applied direct onto the skin. The administration unit 6 comprises solvent recovery means 13 interconnected to the administration reservoir opposite to the adhesive layer 12. Between the solvent recovery means 13 and the administration reservoir 9 a separation means 14, here in the form of a layer, is located which is at least permeable for the solvent but preferably not for the active substance contained in the administration reservoir 9. In the shown embodiment the solvent recovery means 13 and the administration reservoir 9 are spaced apart a distance t by the separation means 14 such that direct contact is avoided between the solvent recovery means 13 and the active substance. In a preferred embodiment the solvent recovery means 13 and the administration reservoir 9 are separated by an air gap.

[Para 60] The liquid 2 stored in the drug reservoir 5 contains a sufficient amount of one or more active substances dissolved or dispersed at an appropriate concentration in a formulation which contains a solvent or a mixture of solvents which in general are more volatile then the active substance. If appropriate other excipients, for example tissue permeation promoters (enhancers), thickening substances, solubilizers, buffers, chemical stabilizers, preservatives may be present too. Alternatively or in addition the at least one active substance is dissolved or dispersed in a solvent outside the drug reservoir 5 before it is dripped into the administration reservoir 9 of

administration unit 6. The formulation is dispensed by the dispensing unit 3 into the at least one administration reservoir 9, whereby volume and frequency of administration are controlled by the control unit 8. The volatile solvent evaporates from the administration reservoir 9 and is guided (indicated by first arrows 17) through a separation layer 14 to the solvent recovery means 13 where it is reclaimed or discharged. The active substance remains in the administration reservoir 9 and diffuses (indicated by second arrows 18) through an adhesive layer 12 into the skin 11. The solvent recovery means 13 serve to remove depleted solvent from the active area of the administration reservoir 9 such that the active substance concentration is maintained at a certain concentration and no unwanted substance is accumulated within the administration device 6. Upon quitting dispensing of formula into the administration device 6, the residual solvent is recovered and dryness of the interface is achieved, which results in controlled termination of drug delivery into skin 11. Normally the temperature of skin 11 is sufficient to evaporate and discharge the solvent. However, a heating element or other helping means may be used for supporting evaporation.

[Para 61] In general the active substance is completely enclosed in the administration/patch reservoir 9 of the administrative device 6 and is not in direct contact with the environment or other components. The administration device 6 may comprise interface means, e.g. comprising a membrane made out of a polymer, lined with a material, such as blotting paper, suitable to temporarily receive active substance, whereby the interface membrane is in functional contact with the surface 10 of the skin 11 to be treated. The drug formulation is dispensed onto the interface means by the dispensing unit 3.

[Para 62] The solvent recovery means 13 are normally arranged at a certain distance from the interface, the administration reservoir 9 respectively, is preventing uncontrolled absorption of solvent. The separation layer 14 may e.g. comprise or consist of an inert foam or an appropriate cellular material or honeycomb. The solvent recovery means 13 are preferably located within the administrative device 6 and preferably comprise one or more desiccants 23 and/or general or selective adsorbents 23 such as silica gel, molecular sieves

or active carbon preferably surrounded by a non-wettable material permeable for the vapors of solvent, e.g. such as Gore-Tex®.

[Para 63] Subsequent the method will be described in a general manner: The drug formulation is dispensed into the administration reservoir 9 by the dispensing system 3. The volume and frequency of dispensing are freely programmable and are used to control the delivery rate and the time pattern of delivery of the chemical substance into the skin 11. The chemical substance is delivered from the administration reservoir 9 by diffusion in the skin 11 or onto the surface of the skin 10. The solvent recovery element 13 reclaims solvent that was dispensed with the formulation into the administration reservoir 9. The solvent recovery element is in close vicinity to but in general not in direct contact with the administration reservoir 9 to avoid uncontrolled absorption of solvent.

[Para 64] The volatile solvent evaporates from the interface under the influence of body heat and the vapors are trapped by the solvent recovery means 13, e.g. a chamber filled with absorbing material 23. The solvent recovery element 13 serves the purpose of removing depleted solvent from the patch reservoir 9 so that, after repeated dispensing, drug concentration maintains its highest value and no detrimental fluid (liquid) is accumulated within the administrating device 6. Upon quitting dispensing of drug formula, the residual solvent is recovered and dryness of the interface is achieved, which brings about stoppage of drug delivery.

[Para 65] By the pipe 4 fluid 2 comprising the active substance dissolved in a liquid dissolver is dosed into the administration device 6 either continuous or in portions. The administration device 6 solves the task to distribute the solution along the interface to the skin 11. In certain fields of application the administration device 6 can contain a material with capillary action preferably not so strong that the emission of active substance or dissolver is decisively hampered. At the most between skin 11 and administration device 6 a layer 12 of a skin compatible adhesive can be placed to allow a contact as good as possible between the administration device 6 and the surface of the skin 10. The dissolver in the administration device 6 in general is separated via a

dissolver-permeable membrane which preferably is not extensively permeable for the at least one active substance. The separated dissolver reaches into a hollow space 13 which may be filled with a substance that absorbs the dissolver. Thereby the concentration of the dissolver in the region of the interface 12 may be kept below a certain level.

[Para 66] **Figure 2** is showing a further embodiment of a dispensing system 1 according to the present invention. The dispensing system 1 works in general similar to the one as described according to figure 1 and therefore only the differences are explained in more detail. In difference to figure 1 the reservoir 5 for the active substance 2 comprises a propellant gas 21 which is separated from the active substance 2 by a piston 22. The propellant gas 21 is under high pressure and thereby presses the active substance 2 through the pipe 4 into the administrative device 6. The flow (arrows 24) of the active substance 2 is controlled by the programmable control unit 8 via valve 19. The here shown device comprises an adhesive layer 12 whereby it is attached to the surface of the skin 10. As it can be seen the whole dispensing device 1 is incorporated as a portable device in a housing 20. The dispensing system 1 comprises a power source (not shown in detail) preferably in the form of a battery, e.g. foil battery or rechargeable battery. The dispensing device 1 may comprise control and programming means to control and program the device 1. Alternatively or in addition the device 1 may comprise an interface device such that it is connectable to an external data processing unit such as a computer or a laptop.

[Para 67] Compared to the device according to figure 1 the solvent recovery means 13 of the herein shown embodiment discharges the collected solvent into environment by evaporation 17. This offers the opportunity that no depleted solvent has to be collected separately. Depending of the environmental condition outside the administration device 6 the diffusion rate of the active substance into the skin may be influenced.

[Para 68] **Figure 3** is showing a third embodiment of a dispensing system 1. A first and a second active substance s1, s2 is stored in a first and a second reservoir 5.1, 5.2. The flow (indicated by arrows) of the first and the second

fluid s1, s2 into a connecting pipe 25 is controlled by a first and a second valve 19.1, 19.2, as described above interconnected, to a programmable flow control device 15. The connecting pipe 25 may comprise mixing means 26 such as impellers or vortex means providing an appropriate preparation of mixture of the active substances s1, s2. This offers the opportunity to administer drugs which cannot be stored together due to incompatibility or another reason. Alternatively or in addition the bringing together of several active substances may take place in the administration chamber 9 of the administration device 6. The solvent absorption chamber 13 is separated by separation means 14 in the described manner from the administration chamber 9. The separation means 14 are made such that solvent is preferably absorbed by evaporation (indicated by arrows 17). In the shown embodiment the evaporation rate is controlled/adjusted by a fluid stream (indicated by arrows 27), preferably air, which is guided into the solvent absorption chamber 13 by an inlet 28 and exits by an outlet 29. The condition of the administration device and the absorption of the at least one active substance into the skin 11 as indicated by arrows 18, may be controlled by sensors 30, 31 interconnected to the control device 15 by data connections 32. The sensors of the herein described embodiment are arranged in the administration chamber 9 and the solvent absorption chamber 13 such that the administration of the at least one active substance and/or the absorption of the at least one solvent may be controlled. Depending on the field of application, the sensors 30, 31 are suitable to measure relevant parameters such as temperature and/or humidity and/or pressure and/or concentration.

[Para 69] The drug formulation is dispensed into the administration reservoir 9 via a connecting pipe 25. The volume and frequency of active substance discharged by the reservoirs 5.1, 5.2 is herein freely programmable and suitable to control the delivery rate and the time pattern of delivery of the at least one chemical substance to the patient.

[Para 70] By the connecting pipe 25 active substance dissolved in a liquid dissolver is dosed into the administration device 6 either continuous or in

portions. Between skin 11 and administration chamber 9 a porous layer 12 is arranged in general having a higher transfer rate then the skin 11.

[Para 71] Solvent delivered with the active substance is absorbed by the solvent recovery chamber 13 and carried away by the fluid stream 27. The solvent recovery element 13 serves the purpose of removing solvent from the patch reservoir 9 so that, after repeated dispensing, drug concentration maintains its value and no detrimental fluid (liquid) is accumulated within the administrating device 6. Upon quitting the dispensing of drug formula, the residual solvent is recovered and dryness of the interface is achieved in a defined manner. Quick stop of the administration may be achieved by flushing the device 6, respectively the administration reservoir 9, by an appropriate fluid containing no active substance, e.g. air, and/or detergent. A separate piping with adequate reservoirs pumps and valves may be foreseen for that purpose, preferably interconnected to the control device 15. In the shown embodiment it is possible to store a fluid s1 comprising at least one active substance in the first reservoir 5.1 and a solvent s2 in the second reservoir 5.2. This offers the opportunity to determine the concentration of active substance s1 in the solvent s2 depending on given need. By this it is also possible to flush the administration device 6 by solvent s2 e.g. to bring administration of active substance to a quick stop. Additional means for carrying off of the flush may be foreseen.

[Para 72] Figures 4 a) to c) are showing three further embodiment of a dispensing system 1 for administration of at least one active substance s. The dispensing systems 1 according to figures 4 a) to 4 c) have in general a similar set up comprising an outer housing 39 with a display 38 interconnected to a programmable control unit 8. The lower surface of the devices 1 serves as footstep 40 while in use on a porous surface 10 and comprises an interface 12 for transferring active substance to a skin 11 through the porous surface 10. Inside the housing 39 the devices 1 comprise a drug reservoir 5 for at least one active substance s. The drug reservoir 5 is preferably a collapsible bag or a pressurized compartment due to internal or external pressure suitable to expel active substance into the administration chamber 9 via a pipe 4 which

interconnects the drug reservoir 5 with the administration reservoir 9. In use the administration reservoir 9 is fluidly interconnected to the porous surface 10 of skin 11 such that active substance s dispensed into the administration chamber 9 may pass into skin 11 as indicated by arrows 18. The flow of the active substance s is controlled by a first valve and/or a pump 36 which is logically interconnected to the control unit 8 which controls the administration of active substance s according to a preset regime. A solvent recovery means 13 is used to remove depleted solvent from the administration chamber 9 by waste pipe 41. If administration of the active substance needs to be stopped it is possible to pump active substance from the administration chamber back into the administration reservoir 5 or the connecting pipe 4 by pump 36.

[Para 73] In the dispensing device 1 according to Figure 4 a) a pressurized drug reservoir 5 is interconnected with a tube or pipette 4. A pinch valve 36 and an SMA driven wire opens and closes the valve 36 according to a preprogrammed regimen. At inception of delivery of active substance valve 36 is opened to release the active substance pipe 4 onto the membrane of the interface device 12 which is in functional contact with the skin 11. A second valve 37 controls the removal of depleted solvent into the waste reservoir of the solvent removal means 13.

[Para 74] Figure 4 b) shows a dispensing device 1 with a collapsible drug reservoir 5 which is used in conjunction with a tube or pipette 4 and a micro pump 36 preprogrammed to dispense onto interface 12. The micro pump 36 is interconnected to control unit 8 which controls administration of the active substance s. Depleted solvent is in the present embodiment absorbed from the administration chamber 9 by a waste reservoir 13 filled with hydrophilic substance.

[Para 75] The embodiment of figure 4 c) comprises a pressurised drug reservoir 5 in conjunction with a tube or pipette 4, a micro pump 36 controled by control unit 8 pre-programmed to dispense and start pumping active substance s onto diffusion surface 12. A second pinch valve and/or micro pump 37 interconnects the administration chamber 9 with the waste reservoir 13. The micro pump 37 either pumps solution into the waste reservoir 13

and/or the valve 36 opens and depleted carrier solution is absorbed into the waste reservoir 13.

[Para 76] It is obvious to one skilled in the art that, without leaving the scope of the invention, further embodiments may be achieved by combination of features of the herein described embodiments.

What is claimed is:

[Claim 1] Method for transdermal administration of at least one active substance to a porous surface, comprising the following steps:

a) Dispensing a certain amount of a liquid comprising at least one active substance and at least one solvent into an administration reservoir;
B) Separation of the at least one solvent from the administration reservoir by a solvent recovery means such that the at least one active substance achieves a certain level of concentration in vicinity to a porous surface to be treated;
c) Absorption of active substance by the porous surface to be treated via diffusion such that the level of concentration in the administration reservoir decreases.

[Claim 2] Method according to claim 1 **wherein** the solvent is separated by evaporation.

[Claim 3] Method according to claim 2 **wherein** the evaporation of the solvent is supported by a heating element.

[Claim 4] Method according to claim 3 **wherein** the solvent is evaporated through a membrane passable preferably for the solvent.

[Claim 5] Method according to claim 2 where the solvent is removed by a pre-programmed opening a pinch valve that is in contact with porous surface.

[Claim 6] Method according to claim 5 where the solvent is removed by programming the pumping of the solvent.

[Claim 7] Method according to claim 2 where the solvent is removed by a programmed lowering of an arm or lever.

[Claim 8] Method according to claims 2 **wherein** the solvent is absorbed by a desiccant.

[Claim 9] Method according to claim 5 **wherein** the desiccant is one or a combination out of the group of silica gel, molecular sieves, active carbon.

[Claim 10] Method according to one of the claims 2 **wherein** the solvent is discharged into the environment.

[Claim 11] Method according to one of the claims 2 **wherein** the solvent is flushed by a fluid.

[Claim 12] Method according to claim 1 **wherein** the at least one active substance passes an interface device which is permeable for the at least one active substance.

[Claim 13] Method according to claim 12 **wherein** the interface device comprises a membrane.

[Claim 14] Method according to claim 12 **wherein** the interface device comprises an adhesive layer suitable to be attached to the porous surface.

[Claim 15] Method according to claim 1 **wherein** the steps a to c are repeated at predefined intervals such that the level of concentration of the at least one active substance in the administration reservoir is kept above a certain level.

[Claim 16] Method according to claim 15 **wherein** the dispensing rate and the time pattern of dispensing the liquid into the administration reservoir are controlled by a programmable device.

[Claim 17] Device for transdermal administration of at least one active substance to a porous surface, comprising a dispensing device interconnected to an administration device for delivery of at least one active substance solved in a solvent to said administration device, wherein the administration device comprises an administration reservoir suitable to receive the active substance solved in the solvent, a solvent removal means for absorption of solvent from the administration reservoir by evaporation and an interface means for transfer of the active substance from the administration reservoir to the porous surface.

[Claim 18] Device according to claim 17 **wherein** the interface device is suitable to be arranged in vicinity to the porous surface.

[Claim 19] Device according to claim 18 **wherein** the interface means comprises an adhesive surface suitable to be attached to the porous surface.

[Claim 20] Device according to claim 17 **wherein** the interface means is a membrane permeable for the active substance.

[Claim 21] Device according to claim 17 **wherein** the solvent removal means is separated from the administration reservoir by a separation means.

[Claim 22] Device according to claim 21 wherein the separation means is a membrane or a foam or a cellular material or a honeycomb or an air gap.

[Claim 23] Device according to claim 21 wherein the administration reservoir and the solvent removal means are spaced apart a distance by the separation means 14.

[Claim 24] Device according to claim 17 **wherein** the solvent removal means comprises one out or a combination out of the group of the following materials: Desiccant, general or a selective adsorbent material, silica gel, a molecular sieve, active carbon.

[Claim 25] Device according to claim 17 **wherein** the solvent removal means comprises a chamber with an inlet and an outlet for flushing by a fluid.

[Claim 26] Device according to claim 17 **wherein** the dispensing device comprises at least one reservoir for an active substance which is interconnected to the administration device.

[Claim 27] Device according to claim 17 **wherein** the dispensing device comprises a propellant means to propel the active substance from the reservoir into the administration reservoir.

[Claim 28] Device according to 27 **wherein** the propellant means is a pump and/or a propellant gas.

[Claim 29] Device according to claim 26 **wherein** the dispensing means comprises a first reservoir comprising a first active substance and a second reservoir comprising a second active substance and the first and the second active substance are mixed by mixing means before delivery to the administration device.

[Claim 30] Device according to claim 28 **wherein** the mixing means is a pipe with vortex means providing an appropriate preparation of mixture.

[Claim 31] Device according to claim 30 **wherein** the control device is interconnected to at least one valve for controlling the administration of the at least one active substance.

[Claim 32] Device according to claim 30 **wherein** the control device is programmable according to a predetermined regime or time pattern or interval of administration of the at least one active substance.

[Claim 33] Device according to claim 30 **wherein** the control device is interconnected with at least one sensor for measuring the administration and the condition of at least one active substance.

[Claim 34] Device according to claim 33 **wherein** the administration of the active substance is determined by the signal of the at least one sensor.

ABSTRACT

The invention concerns a transdermal delivery system for controlled dispensing of an active substance to and through a porous surface. A certain amount of fluid comprising at least one active substance and at least one solvent is dispensed into an administration reservoir. In the administration reservoir the at least one solvent is separated from the administration reservoir by a solvent recovery means such that the active substance achieves a certain level on an interface device which is permeable for the one active substance. Thereby the active substance is absorbable via diffusion from the interface device by a porous surface to be treated.

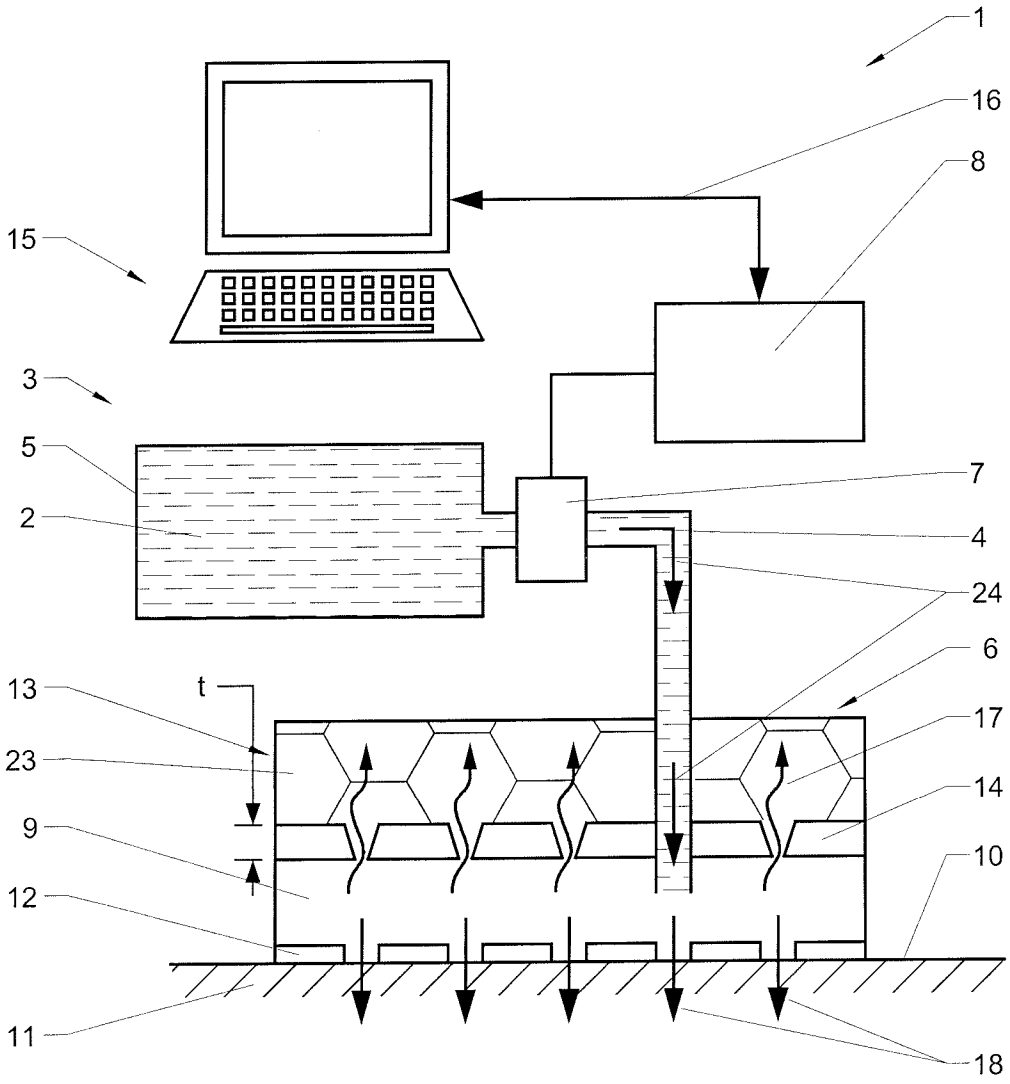

Fig. 1

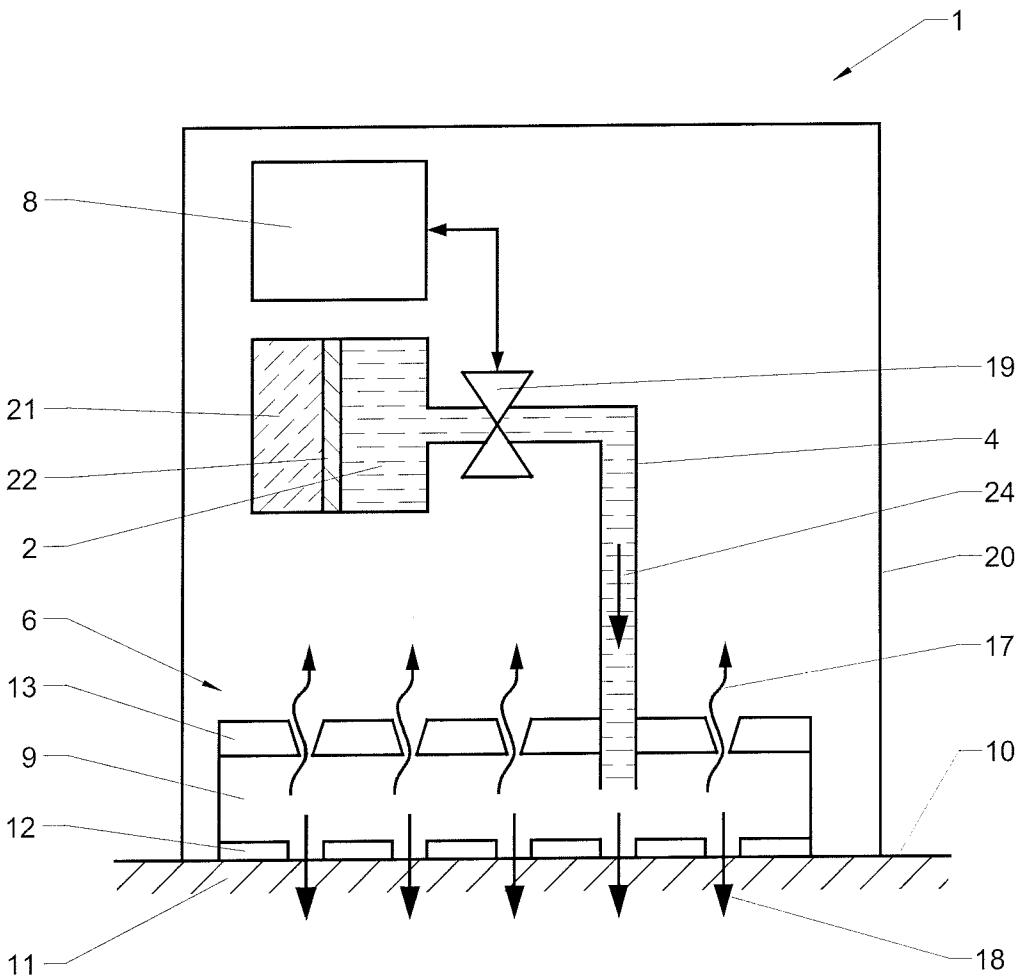

Fig. 2

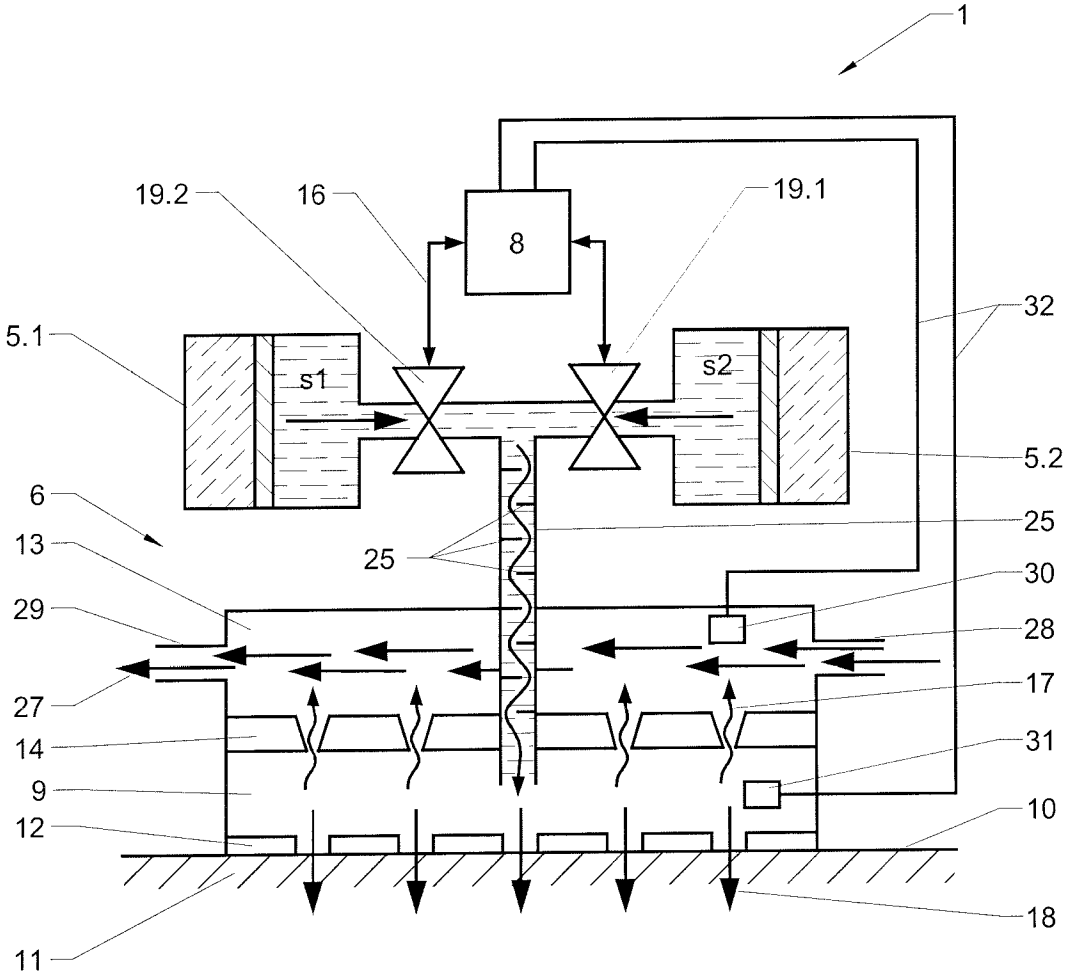
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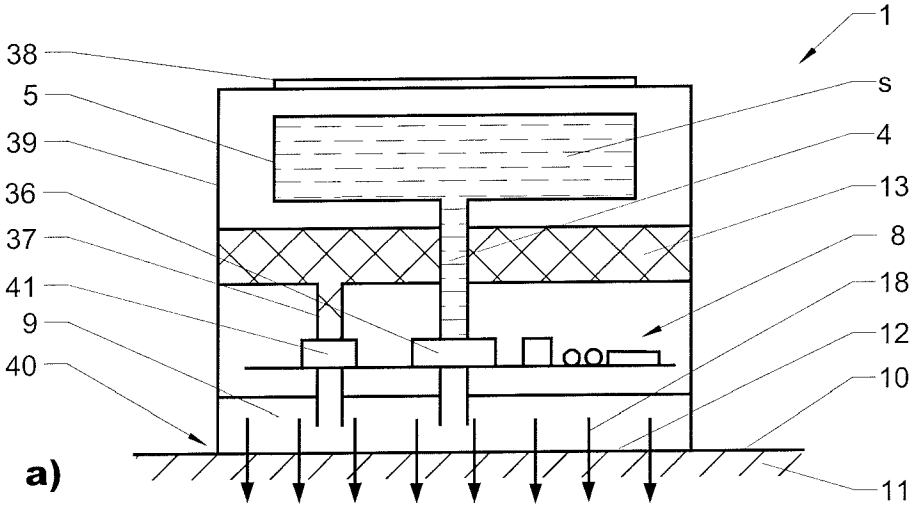
Fig. 3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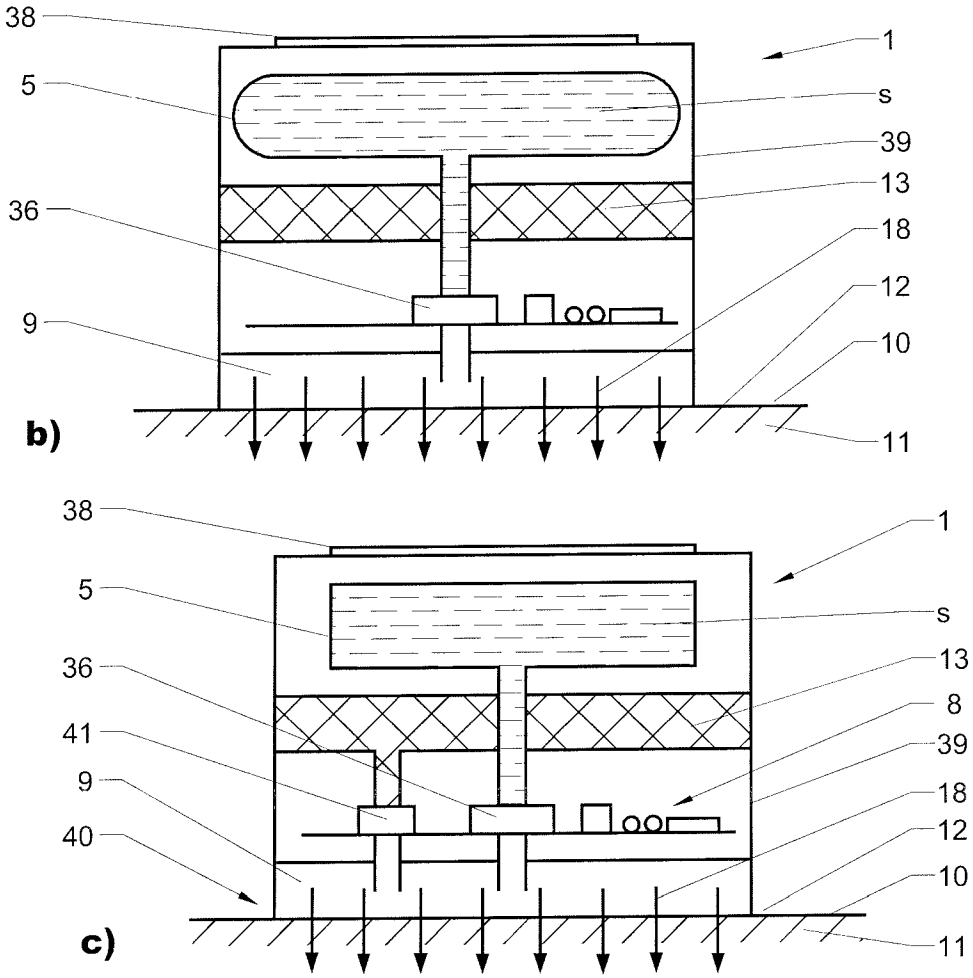

Fig. 4

PATENT APPLICATION FEE DETERMINATION RECORD
Effective October 1, 2004

Application or Docket Number: 10711389

CLAIMS AS FILED - PART I

	(Column 1)	(Column 2)
TOTAL CLAIMS	34	
FOR	NUMBER FILED	NUMBER EXTRA
TOTAL CHARGEABLE CLAIMS	34 minus 20=	* 14
INDEPENDENT CLAIMS	2 minus 3 =	* —
MULTIPLE DEPENDENT CLAIM PRESENT		☐

* If the difference in column 1 is less than zero, enter "0" in column 2

SMALL ENTITY TYPE ☐		OR	OTHER THAN SMALL ENTITY	
RATE	FEE		RATE	FEE
BASIC FEE	395.00	OR	BASIC FEE	790.00
X$ 9=	126	OR	X$18=	
X44=		OR	X88=	
+150=		OR	+300=	
TOTAL	521	OR	TOTAL	

CLAIMS AS AMENDED - PART II

AMENDMENT A	(Column 1) CLAIMS REMAINING AFTER AMENDMENT		(Column 2) HIGHEST NUMBER PREVIOUSLY PAID FOR	(Column 3) PRESENT EXTRA
Total	*	Minus	**	=
Independent	*	Minus	***	=
FIRST PRESENTATION OF MULTIPLE DEPENDENT CLAIM				☐

SMALL ENTITY		OR	OTHER THAN SMALL ENTITY	
RATE	ADDITIONAL FEE		RATE	ADDITIONAL FEE
X$ 9=		OR	X$18=	
X44=		OR	X88=	
+150=		OR	+300=	
TOTAL ADDIT. FEE		OR	TOTAL ADDIT. FEE	

AMENDMENT B	(Column 1) CLAIMS REMAINING AFTER AMENDMENT		(Column 2) HIGHEST NUMBER PREVIOUSLY PAID FOR	(Column 3) PRESENT EXTRA
Total	*	Minus	**	=
Independent	*	Minus	***	=
FIRST PRESENTATION OF MULTIPLE DEPENDENT CLAIM				☐

RATE	ADDITIONAL FEE		RATE	ADDITIONAL FEE
X$ 9=		OR	X$18=	
X44=		OR	X88=	
+150=		OR	+300=	
TOTAL ADDIT. FEE		OR	TOTAL ADDIT. FEE	

AMENDMENT C	(Column 1) CLAIMS REMAINING AFTER AMENDMENT		(Column 2) HIGHEST NUMBER PREVIOUSLY PAID FOR	(Column 3) PRESENT EXTRA
Total	*	Minus	**	=
Independent	*	Minus	***	=
FIRST PRESENTATION OF MULTIPLE DEPENDENT CLAIM				☐

RATE	ADDITIONAL FEE		RATE	ADDITIONAL FEE
X$ 9=		OR	X$18=	
X44=		OR	X88=	
+150=		OR	+300=	
TOTAL ADDIT. FEE		OR	TOTAL ADDIT. FEE	

* If the entry in column 1 is less than the entry in column 2, write "0" in column 3.
** If the "Highest Number Previously Paid For" IN THIS SPACE is less than 20, enter "20."
***If the "Highest Number Previously Paid For" IN THIS SPACE is less than 3, enter "3."
The "Highest Number Previously Paid For" (Total or Independent) is the highest number found in the appropriate box in column 1.