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CA, CH, CL, CN, CO, CR, CU, CZ, DE, DK, DM, DO, DZ, EC, EE, EG, ES, FI, GB, GD, GE, GH, GM, GT, HN, HR, HU, ID, IL, IN, IS, JP, KE, KG, KM, KN, KP, KR, KZ, LA, LC, LK, LR, LS, LT, LU, LY, MA, MD, ME, MG, MK, MN, MW, MX, MY, MZ, NA, NG, NI, NO, NZ, OM, PE, PG, PH, PL, PT, QA, RO, RS, RU, RW, SC, SD, SE, SG, SK, SL, SM, ST, SV, SY, TH, TJ, TM, TN, TR, TT, TZ, UA, UG, US, UZ, VC, VN, ZA, ZM, ZW.

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Published:

- with international search report (Art. 21(3))
- before the expiration of the time limit for amending the claims and to be republished in the event of receipt of amendments (Rule 48.2(h))

(88) **Date of publication of the international search report:**
8 November 2012

(54) **Title:** TRANSDERMAL PATCH CONTAINING MICRONEEDLES

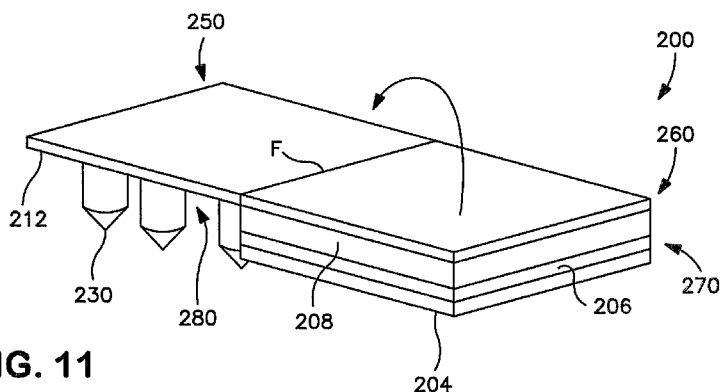


FIG. 11

(57) **Abstract:** A transdermal patch that can easily deliver a controlled volume of a fluidic drug compound to the skin is provided. More particularly, the patch contains a microneedle assembly that is configured to be placed in fluid communication with a drug delivery assembly. The microneedle assembly contains a support and a plurality of microneedles that extend outwardly from the support. The microneedles are formed with one or more channels of a certain dimension such that passive capillary flow drives the flow of the drug compound. The drug delivery system contains a reservoir for the drug compound that is in fluid communication with a rate control membrane that helps control the flow rate of the drug compound by modulating its pressure downstream from the reservoir. A release member is also positioned adjacent to the microneedle and drug delivery assemblies. Prior to use, the release member acts as a barrier to the flow of the drug compound and thus inhibits premature leakage. In this manner, the patch can initially be provided in an "inactive" configuration in which the drug compound is securely retained. When it is desired to release the drug compound, the patch can simply be activated by at least partially separating the release member from the drug delivery and microneedle assemblies.



A. CLASSIFICATION OF SUBJECT MATTER*A61M 37/00(2006.01)i, A61M 35/00(2006.01)i*

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)

A61M 37/00; A61M 5/32; A61N 1/30; A61F 13/02; A61M 25/10; A61M 31/00; A61L 15/16

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

Korean utility models and applications for utility models

Japanese utility models and applications for utility models

Electronic data base consulted during the international search (name of data base and, where practicable, search terms used)

eKOMPASS(KIPO internal) & Keywords: transdermal, patch, reservoir, microneedle, control, layer

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X A	US 2006-0024358 A1 (SANTINI, JR. et al.) 02 February 2006 See the abstract; claims 1, 5-6 and 12; and figs. 5-6.	1-2, 14 3-4, 15-16
A	US 2009-0118662 A1 (SCHNALL) 07 May 2009 See the abstract; claims 1 and 4-5; paragraphs [0023]-[0025]; and fig. 1.	1-4, 14-16
A	US 2008-0015494 A1 (SANTINI, JR. et al.) 17 January 2008 See the abstract; claims 1-2 and 5; and figs. 2A and 2B.	1-4, 14-16
A	US 6611707 B1 (PRAUSNITZ et al.) 26 August 2003 See the abstract; claim 1; and fig. 1.	1-4, 14-16

 Further documents are listed in the continuation of Box C. See patent family 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 application or patent 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 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

29 AUGUST 2012 (29.08.2012)

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Box No. 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. Claims Nos.:
because they relate to subject matter not required to be searched by this Authority, namely:

2. Claims Nos.: 9,12
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:

The claims 9 and 12 do not comply with PCT Article 6 because they refer to unsearchable claims 8 or 11.

3. Claims Nos.: 5-8,10-11,13,17-20
because they are dependent claims and are not drafted in accordance with the second and third sentences of Rule 6.4(a).

Box No. 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 and, where applicable, the payment of a protest fee.
- The additional search fees were accompanied by the applicant's protest but the applicable protest fee was not paid within the time limit specified in the invitation.
- No protest accompanied the payment of additional search fees.

INTERNATIONAL SEARCH REPORT

Information on patent family members

International application No.

PCT/IB2012/050203

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