

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

REVISED VERSION

(19) World Intellectual Property Organization  
International Bureau



(43) International Publication Date  
31 January 2013 (31.01.2013)

(10) International Publication Number  
**WO 2013/016363 A9**

(51) International Patent Classification:  
*A61M 5/142* (2006.01)    *A61M 5/168* (2006.01)

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.

(21) International Application Number:  
PCT/US2012/048020

(22) International Filing Date:  
24 July 2012 (24.07.2012)

(25) Filing Language:  
English

(26) Publication Language:  
English

(30) Priority Data:  
61/511,220    25 July 2011 (25.07.2011)    US

(71) Applicant (for all designated States except US): **TANDEM DIABETES CARE, INC.** [US/US]; 11045 Roselle Street, Suite 200, San Diego, CA 92121 (US).

(72) Inventors; and

(75) Inventors/Applicants (for US only): **DIPERNA, Paul, M.** [US/US]; 1647 Haydn Drive, Cardiff, CA 92007 (US). **GRIFFIE, Steve** [US/US]; 2102 W. Flora Street, Santa Ana, CA 92704 (US).

(74) Agents: **PATTERSON, James H.** et al.; Patterson Thuente Christensen Pedersen, P.A., 4800 IDS Center, 80 South 8th Street, Minneapolis, MN 55402-2100 (US).

(81) Designated States (unless otherwise indicated, for every kind of national protection available): AE, AG, AL, AM, AO, AT, AU, AZ, BA, BB, BG, BH, BN, BR, BW, BY, BZ, CA, CH, CL, CN, CO, CR, CU, CZ, DE, DK, DM,

(84) Designated States (unless otherwise indicated, for every kind of regional protection available): ARIPO (BW, GH, GM, KE, LR, LS, MW, MZ, NA, RW, SD, SL, SZ, TZ, UG, ZM, ZW), Eurasian (AM, AZ, BY, KG, KZ, RU, TJ, TM), European (AL, AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HR, HU, IE, IS, IT, LT, LU, LV, MC, MK, MT, NL, NO, PL, PT, RO, RS, SE, SI, SK, SM, TR), OAPI (BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG).

Published:

— with international search report (Art. 21(3))

(88) Date of publication of the international search report:  
25 April 2013

Date of publication of the revised international search report:

1 August 2013

(15) Information about Correction:  
see Notice of 1 August 2013

(54) Title: MULTI-RESERVOIR INFUSION PUMP SYSTEMS AND METHODS

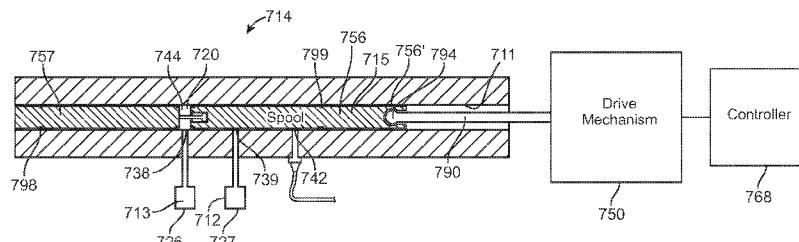


FIG. 11A

(57) Abstract: Embodiments are directed to multi-reservoir infusion devices, systems, and methods of using the same for dispensing materials. In some cases, the devices, systems and methods may be used for infusing a material such as medicament, e.g., insulin, into a body in need thereof.

## INTERNATIONAL SEARCH REPORT

International application No. <b>PCT/US2012/048020</b>
-----------------------------------------------------------

**A. CLASSIFICATION OF SUBJECT MATTER*****A61M 5/142(2006.01)i, A61M 5/168(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 5/142; A61M 31/00; F16K 11/07; F04B 23/00; B21D 53/00; F15B 13/042; A61M 5/168

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:infusion pump,slide spool,drive mechanism,multi reservoir

**C. DOCUMENTS CONSIDERED TO BE RELEVANT**

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
A	US 2011-0152824 A1 (DIPERNA, PAUL M. et al.) 23 June 2011 See claims 1,3, paragraphs [0171],[0173],[0202],[0218],[0221], figs. 14,15A,17	1,2,45,46
A	WO 2009-143188 A2 (DIPERNA, PAUL M.) 26 November 2009 See paragraphs [0038],[0039],[0040], figs. 5,10,11	1,2,45,46
A	US 2008-0097291 A1 (HANSON, IAN B. et al.) 24 April 2008 See paragraphs [0123],[0154],[0157],[0159],[0160], figs. 10,11,13a-c,14,15a-b	1,2,45,46
A	US 2007-0167905 A1 (ESTES, MARK C. et al.) 19 July 2007 See paragraph [0049], fig. 7	1,2,45,46
A	US 04491155 A (MEYER, HANS F. et al.) 01 January 1985 See claim 1, column 2,lines 47-49, column 2,line 66-column 3,1ine 5, column 3 ,lines 23-37, fig. 1	1,2,45,46

 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  
08 May 2013 (08.05.2013)

Date of mailing of the international search report  
**10 May 2013 (10.05.2013)**

Name and mailing address of the ISA/KR  
  
 Korean Intellectual Property Office  
 189 Cheongsa-ro, Seo-gu, Daejeon Metropolitan  
 City, 302-701, Republic of Korea  
 Facsimile No. 82-42-472-7140

Authorized officer

Kang, Sung Hyun  
 Telephone No. 82-42-481-8160



**INTERNATIONAL SEARCH REPORT**

International application No.

**PCT/US2012/048020****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.:  
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 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:

Group I, claims 1, 2, 45, 46, drawn to an infusion pump cartridge for delivering fluid to a patient.  
Group II, claims 3-41, 50-56, drawn to an infusion pump for delivering fluid to a patient.  
Group III, claims 42-44, drawn to a method of delivering fluid to a patient from two independent fluid reservoirs.  
Group IV, claims 57-100, drawn to an infusion pump.  
Group V, claim 101, drawn to an elastomeric annular seal.

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.: 1, 2, 45, 46

**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/US2012/048020**

Patent document cited in search report	Publication date	Patent family member(s)	Publication date
US 2011-0152824 A1	23.06.2011	AU 2010-278894 A1 CA 2769030 A1 EP 2459251 A2 US 2011-0144586 A1 US 2011-0144616 A1 US 2011-0152770 A1 US 2011-0166544 A1 US 2012-029433 A1 US 2012-029468 A1 US 2012-030610 A1 WO 2011-014704 A2 WO 2011-014704 A3 WO 2011-014704 A3	08.03.2012 03.02.2011 06.06.2012 16.06.2011 16.06.2011 23.06.2011 07.07.2011 02.02.2012 02.02.2012 02.02.2012 03.02.2011 03.06.2011 03.02.2011
WO 2009-143188 A2	26.11.2009	AU 2009-249132 A1 CA 2724635 A1 EP 2276525 A2 EP 2276525 A4 US 2009-0287180 A1 US 2010-0065578 A1 US 2010-0065579 A1 WO 2009-143188 A3 WO 2009-143188 A3 WO 2010-033634 A2 WO 2010-033634 A3	26.11.2009 26.11.2009 26.01.2011 04.04.2012 19.11.2009 18.03.2010 18.03.2010 01.04.2010 26.11.2009 25.03.2010 25.03.2010
US 2008-0097291 A1	24.04.2008	CA 2555460 A1 CA 2555460 C CA 2658730 A1 CN 101563120 A EP 1713290 A1 EP 1713290 B1 EP 2066372 A2 JP 04-649473 B2 JP 2007-529926 A JP 2010-501280 A JP 2010-501280 T US 2007-0177552 A1 US 2008-0051716 A1 US 2008-0097375 A1 US 2011-0158332 A1 US 7937110 B2 US 8187228 B2 US 8202250 B2 WO 2006-074607 A1 WO 2008-024808 A2 WO 2008-024808 A3	20.07.2006 09.08.2011 28.02.2008 21.10.2009 18.10.2006 03.03.2010 10.06.2009 17.12.2010 25.10.2007 21.01.2010 21.01.2010 02.08.2007 28.02.2008 24.04.2008 30.06.2011 03.05.2011 29.05.2012 19.06.2012 20.07.2006 28.02.2008 24.04.2008
US 2007-0167905 A1	19.07.2007	AU 2007-223700 A1	13.09.2007

**INTERNATIONAL SEARCH REPORT**

Information on patent family members

International application No.

**PCT/US2012/048020**

Patent document cited in search report	Publication date	Patent family member(s)	Publication date
		AU 2007-223700 B2	11.11.2010
		CA 2643088 A1	13.09.2007
		CN 101489827 A	22.07.2009
		EP 1933901 A2	25.06.2008
		EP 1933902 A2	25.06.2008
		EP 2007472 A2	31.12.2008
		EP 2162168 A2	17.03.2010
		JP 2009-529454 A	20.08.2009
		US 2007-0073228 A1	29.03.2007
		US 2007-0073235 A1	29.03.2007
		US 2007-0073236 A1	29.03.2007
		US 2007-0156092 A1	05.07.2007
		US 2007-0167912 A1	19.07.2007
		US 2007-0173762 A1	26.07.2007
		US 2007-0179444 A1	02.08.2007
		US 2007-0210639 A1	13.09.2007
		US 2008-0045902 A1	21.02.2008
		US 2008-0045903 A1	21.02.2008
		US 2008-0045904 A1	21.02.2008
		US 2008-0045931 A1	21.02.2008
		US 2009-0198186 A1	06.08.2009
		US 2010-0052402 A1	04.03.2010
		US 2011-0112504 A1	12.05.2011
		US 2011-0245773 A1	06.10.2011
		US 7534226 B2	19.05.2009
		US 7644986 B2	12.01.2010
		US 7708717 B2	04.05.2010
		US 7776030 B2	17.08.2010
		US 7789859 B2	07.09.2010
		US 7794427 B2	14.09.2010
		US 7794428 B2	14.09.2010
		US 7887512 B2	15.02.2011
		US 7922708 B2	12.04.2011
		US 7938803 B2	10.05.2011
		US 7981084 B2	19.07.2011
		US 8057436 B2	15.11.2011
		US 8105279 B2	31.01.2012
		WO 2007-038059 A2	05.04.2007
		WO 2007-038059 A3	05.04.2007
		WO 2007-038059 A3	21.06.2007
		WO 2007-038060 A2	05.04.2007
		WO 2007-038060 A3	11.10.2007
		WO 2007-038060 A3	05.04.2007
		WO 2007-038091 A2	05.04.2007
		WO 2007-038091 A3	18.10.2007
		WO 2007-038091 A3	05.04.2007
		WO 2007-103641 A2	13.09.2007
		WO 2007-103641 A3	13.09.2007
US 04491155 A	01.01.1985	US 04491155 A	01.01.1985