

(19) World Intellectual Property Organization  
International Bureau



(43) International Publication Date  
3 February 2011 (03.02.2011)

(10) International Publication Number  
**WO 2011/014704 A3**

(51) International Patent Classification:

A61M 5/145 (2006.01) G06F 19/00 (2011.01)  
A61M 5/168 (2006.01) G06Q 50/00 (2006.01)  
A61J 1/06 (2006.01)

(21) International Application Number:

PCT/US2010/043789

(22) International Filing Date:

29 July 2010 (29.07.2010)

(25) Filing Language:

English

(26) Publication Language:

English

(30) Priority Data:

61/230,061 30 July 2009 (30.07.2009) 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): **BROWN, David** [US/US]; 5402 Torreyanna Circle, Carlsbad, CA 92011 (US). **BURESON, Brian** [US/US]; 4455 34th Street, San Diego, CA 92116 (US). **DABROW, Chris** [US/US]; 927 Beryl, Unit 1, Santa Ana, CA (US). **DIPERNA, Paul, M.** [US/US]; 1647 Haydn Drive, Cardiff, CA 92007 (US). **FARNAN, Jason** [US/US]; 10619 Dabney Drive, Apt. 27, San Diego, CA 92126 (US). **KINCADE, Dan** [US/US]; 409 Pipes Lane, Encinitas, CA 92024 (US). **KRUSE, Geoffrey, A.** [US/US]; 5133 Dawne Street, San Diego, CA 92117 (US). **LAMB, Phil** [US/US]; 3758 Poe Street, San Diego, CA 92107 (US). **MICHAUD, Michael**

[US/US]; 927 Beryl, Unit 1, San Diego, CA 92109 (US). **NADWORN, John** [US/US]; 3857 Pell Place, Unit 107, San Diego, CA 92130 (US). **RIEGER, Kathryn** [US/US]; 13052 Signature Point#49, San Diego, CA 92130 (US). **ROSINKO, Mike** [US/US]; 13014 Texana Street, Anaheim, CA (US). **SAINT, Sean** [US/US]; 13014 Texana Street, San Diego, CA 92129 (US). **SUNDEM, Stuart** [US/US]; 3857 Pell Place, Unit 107, Carlsbad, CA (US). **TREVASKIS, William** [US/US]; 101 Lake Ridge Drive, San Marcos, CA 92078 (US). **ULRICH, Tom** [US/US]; 3857 Pell Place, Unit 107, Rancho Santa Margarita, CA (US). **VERHOEF, Erik** [US/US]; 3857 Pell Place, Unit 107, San Diego, CA (US). **WILLIAMSON, Mark** [US/US]; 3857 Pell Place, Unit 107, Wonder Lake, IL (US).

(74) Agents: **ANDERSON, William, B.** et al.; Grant Anderson LLP, c/o PortfolioIP, P.O. Box 52050, Minneapolis, MN 55402 (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, BR, BW, BY, BZ, 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, RO, RS, RU, 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.

(84) Designated States (unless otherwise indicated, for every kind of regional protection available): ARIPO (BW, GH,

[Continued on next page]

(54) Title: INFUSION PUMP SYSTEM WITH DISPOSABLE CARTRIDGE HAVING PRESSURE VENTING AND PRESSURE FEEDBACK

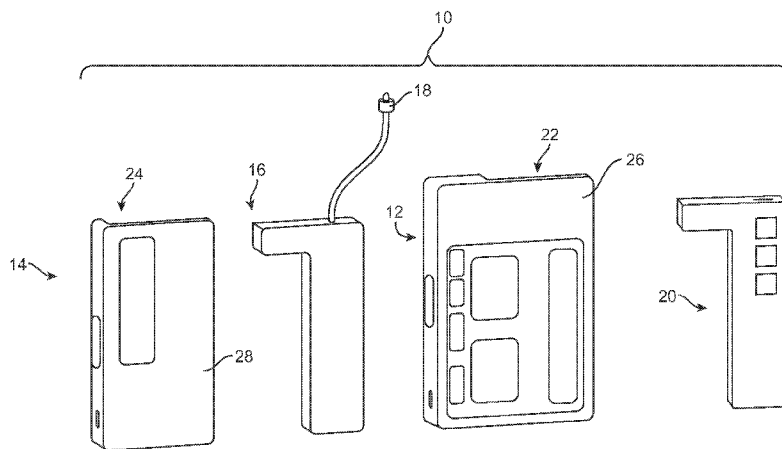


FIG. 1

(57) Abstract: Embodiments are directed to portable 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.

WO 2011/014704 A3



GM, KE, LR, LS, MW, MZ, NA, SD, SL, SZ, TZ, UG, ZM, ZW), Eurasian (AM, AZ, BY, KG, KZ, MD, 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, SE, SI, SK, SM, TR), OAPI (BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG).

— *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:**  
3 June 2011

**Published:**

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

**A. CLASSIFICATION OF SUBJECT MATTER***A61M 5/145(2006.01)i, A61M 5/168(2006.01)i, A61J 1/06(2006.01)i, G06F 19/00(2011.01)i, G06Q 50/00(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 5/145; F04B 1/00; A61N 1/30; A61M 31/00; A61M 37/00; F04B 23/00; A61M 5/315

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) &amp; Keywords: infusion pump, delivery, cartridge

**C. DOCUMENTS CONSIDERED TO BE RELEVANT**

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
A	US 2007-0161955 A1 (GAIL BETH BYNUM et al.) 12 July 2007 See claims 1-20, figures 1-40	1-6, 14-114, 117-147 , 151-164
A	WO 2008-103175 A1 (M2 MEDICAL A/S et al.) 28 August 2008 See claims 1-51, figures 1-30	1-6, 14-114, 117-147 , 151-164
A	US 2007-0167905 A1 (MARK C. ESTES et al.) 19 July 2007 See claims 1-20, figures 1-13	1-6, 14-114, 117-147 , 151-164
A	US 2004-0225252 A1 (GILLESPIE JOHN et al.) 11 November 2004 See claims 1-52, figures 1-31	1-6, 14-114, 117-147 , 151-164

 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

"&amp;" document member of the same patent family

Date of the actual completion of the international search

08 APRIL 2011 (08.04.2011)

Date of mailing of the international search report

**11 APRIL 2011 (11.04.2011)**

Name and mailing address of the ISA/KR

Korean Intellectual Property Office  
Government Complex-Daejeon, 189 Cheongsa-ro,  
Seo-gu, Daejeon 302-701, Republic of Korea

Facsimile No. 82-42-472-7140

Authorized officer

HAN, SANG SOO

Telephone No. 82-42-481-8648



**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.: 7-13,115-116,148-150  
because they relate to subject matter not required to be searched by this Authority, namely:  
Claims 7-13,115-116,148-150 are the methods of delivering a fluid to a patient, which fall into the category of methods for treatment of the human body by surgery or therapy as well as diagnostic methods[Article 17(2)(a)(i), Rule 39.1(iv) PCT].
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:

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/US2010/043789**

Patent document cited in search report	Publication date	Patent family member(s)	Publication date		
US 2007-0161955 A1	12.07.2007	AU 2003-217828 A1	16.09.2003		
		AU 2003-217828 B2	12.03.2009		
		CA 2477426 A1	12.09.2003		
		CN 100506301 C	01.07.2009		
		CN 1674949 A	28.09.2005		
		CN 1674949 C0	28.09.2005		
		EP 1480697 A1	01.12.2004		
		US 2003-0161744 A1	28.08.2003		
		US 2003-0163090 A1	28.08.2003		
		US 2003-161744 A1	28.08.2003		
		US 2005-0234404 A1	20.10.2005		
		US 2005-148938 A1	07.07.2005		
		US 2005-234404 A1	20.10.2005		
		US 2007-161955 A1	12.07.2007		
		US 7033338 B2	25.04.2006		
		US 7041082 B2	09.05.2006		
		US 7442186 B2	28.10.2008		
		US 7510544 B2	31.03.2009		
		US 7905859 B2	15.03.2011		
		WO 03-074110 A1	12.09.2003		
		WO 0307-4110A1	12.09.2003		
		WO 2008-103175 A1	28.08.2008	EP 2142238 A1	13.01.2010
				WO 2008-103175 A1	28.08.2008
US 2007-0167905 A1	19.07.2007	AU 2007-223700 A1	13.09.2007		
		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 2007-073235 A1	29.03.2007		
		US 2007-156092 A1	05.07.2007		
		US 2007-167905 A1	19.07.2007		
		US 2007-173762 A1	26.07.2007		
		US 2008-0045902 A1	21.02.2008		
		US 2008-0045904 A1	21.02.2008		
		US 2008-0045931 A1	21.02.2008		
US 2008-045902 A1	21.02.2008				

**INTERNATIONAL SEARCH REPORT**

Information on patent family members

International application No.

**PCT/US2010/043789**

Patent document cited in search report	Publication date	Patent family member(s)	Publication date
		US 2008-045903 A1	21.02.2008
		US 2008-045904 A1	21.02.2008
		US 2008-045931 A1	21.02.2008
		US 7534226 B2	19.05.2009
		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
		WO 2007-038059 A2	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 2007-038091 A2	05.04.2007
		WO 2007-038091 A3	18.10.2007
		WO 2007-103641 A2	13.09.2007
		WO 2007-103641 A3	13.09.2007
US 2004-0225252 A1	11.11.2004	AU 2002-343747 A1	31.12.2003
		CA 2487980 A1	24.12.2003
		US 2004-225252 A1	11.11.2004
		WO 03-105931 A1	24.12.2003
		WO 0310-5931A1	24.12.2003