

(19) World Intellectual Property Organization
International Bureau



(43) International Publication Date
23 December 2009 (23.12.2009)

(10) International Publication Number
WO 2009/154675 A3

(51) International Patent Classification:

A61M 25/06 (2006.01) A61M 37/00 (2006.01)
A61M 5/32 (2006.01)

(21) International Application Number:

PCT/US2009/002945

(22) International Filing Date:

12 May 2009 (12.05.2009)

(25) Filing Language:

English

(26) Publication Language:

English

(30) Priority Data:

12/154,935 28 May 2008 (28.05.2008) US

(71) Applicant (for all designated States except US):
MEDTRONIC MINIMED, INC. [US/US]; 18000 Devonshire Street, Northridge, CA 91325-1219 (US).

(72) Inventors; and

(75) Inventors/Applicants (for US only): **GOTTLIEB, Rebecca, K.** [US/US]; 3842 Lenawee Avenue, Culver City, CA 90232 (US). **SHAH, Rajiv** [US/US]; 28003 Lobbrook Drive, Rancho Palos Verdes, CA 90275 (US). **WOLFE,**

Katherine, T. [US/US]; 1111 17th Street, Apartment C, Santa Monica, CA 90403 (US). **LARSON, Eric, Allan** [US/US]; 2667 Tumbleweed Avenue, Simi Valley, CA 93065 (US).

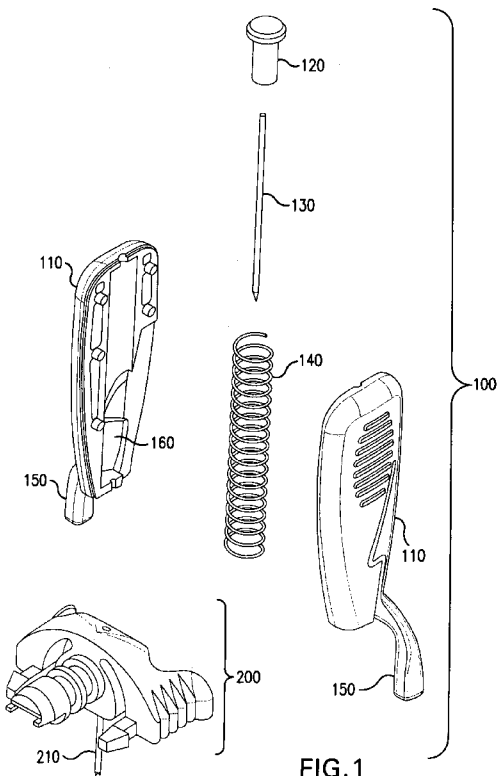
(74) Agents: **DAVOUDIAN, Keyvan** et al.; 725 South Figueroa Street, Suite 2800, Los Angeles, CA 90017-5406 (US).

(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, 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, PG, PH, PL, PT, RO, RS, RU, SC, SD, SE, SG, SK, SL, SM, ST, SV, SY, 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, GM, KE, LS, MW, MZ, NA, SD, SL, SZ, TZ, UG, ZM,

[Continued on next page]

(54) Title: NEEDLE PROTECTIVE DEVICE FOR SUBCUTANEOUS SENSORS



(57) Abstract: An introducer is provided for introducing a sensor into the body of a patient. The introducer connects to a sensor hub. When the sensor hub and introducer are connected, the introducer needle is exposed. When the sensor hub and introducer are disconnected, a needle cover and the needle move with respect to each other so that the needle cover substantially covers the needle, protecting a user from being injured by the needle.



WO 2009/154675 A3



ZW), Eurasian (AM, AZ, BY, KG, KZ, MD, RU, TJ, TM), European (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, 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:
4 March 2010

Published:

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

INTERNATIONAL SEARCH REPORT

International application No
PCT/US2009/002945

A. CLASSIFICATION OF SUBJECT MATTER
 INV. A61M5/32 A61M25/06 A61M37/00

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)
A61M A61B

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

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	EP 1 704 889 A (TOP KK [JP]) 27 September 2006 (2006-09-27)	1-21,63, 64
Y	abstract columns 20-52; figures 1-3	22-54
Y	US 2007/073129 A1 (SHAH RAJIV [US] ET AL) 29 March 2007 (2007-03-29)	22-54
A	abstract paragraphs [0032] - [0047]; figures 1-6	55
X	WO 2008/022476 A (HOFFMANN LA ROCHE [CH]; ROCHE DIAGNOSTICS GMBH [DE]; THALMANN CHRISTIA) 28 February 2008 (2008-02-28)	1-21,63, 64
A	the whole document	22-54
X	US 2007/093754 A1 (MOGENSEN LASSE W [DK] ET AL) 26 April 2007 (2007-04-26)	1-21,63, 64
A	the whole document	22-54
	-/--	

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	"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
"E" earlier document but published on or after the international filing date	"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
"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)	"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.
"O" document referring to an oral disclosure, use, exhibition or other means	"&" document member of the same patent family
"P" document published prior to the international filing date but later than the priority date claimed	

Date of the actual completion of the international search 7 January 2010	Date of mailing of the international search report 15/01/2010
--	---

Name and mailing address of the ISA/ European Patent Office, P.B. 5818 Patentlaan 2 NL - 2280 HV Rijswijk Tel. (+31-70) 340-2040, Fax: (+31-70) 340-3016	Authorized officer Nielsen, Michael
--	---

INTERNATIONAL SEARCH REPORT

International application No

PCT/US2009/002945

C(Continuation). DOCUMENTS CONSIDERED TO BE RELEVANT		
Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X A	US 2004/158207 A1 (HUNN MARCEL [CH] ET AL) 12 August 2004 (2004-08-12) the whole document	1-21,63, 64 22-54
X A	WO 2008/014791 A (UNOMEDICAL AS [DK]; GYRN STEFFEN [DK]; MATHIASSEN ORLA [DK]) 7 February 2008 (2008-02-07) the whole document	1-21,63, 64 22-54
X A	US 5 562 631 A (BOGERT DAVID L [US]) 8 October 1996 (1996-10-08) the whole document	1-21,63, 64 22-54
A	WO 2004/103170 A (NOVO NORDISK AS [DK]; PANDURO RASMUS [DK]) 2 December 2004 (2004-12-02) the whole document	55
A	US 5 390 671 A (LORD PETER C [US] ET AL) 21 February 1995 (1995-02-21) cited in the application abstract column 3, line 6 - column 4, line 65; figures 1,4,6	55,60,62
A	US 5 586 553 A (HALILI EDGARDO C [US] ET AL) 24 December 1996 (1996-12-24) cited in the application abstract column 3, line 15 - column 4, line 13; figures 1,2	55
A	WO 2006/061354 A (NOVO NORDISK AS [DK]; ETHELFEELD ERIK WINKEL [DK]; SCHMIDT NICOLAI MICH) 15 June 2006 (2006-06-15) abstract page 27, lines 15-29; figures 26A-26D	55,60,62
A	US 7 303 543 B1 (MAULE SUSIE E. [US] ET AL) 4 December 2007 (2007-12-04) cited in the application abstract column 4, line 60 - column 5, line 64; figures 1,2,4	55,60,62
A	US 6 520 938 B1 (FUNDERBURK JEFFERY V [US] ET AL) 18 February 2003 (2003-02-18) cited in the application abstract column 5, line 54 - column 7, line 35; figures 7-9,11,12	55,60,62
A	US 2003/109775 A1 (O'NEIL MICHAEL PATRICK [US] ET AL) 12 June 2003 (2003-06-12) abstract	55
	----- -/--	

INTERNATIONAL SEARCH REPORT

International application No
PCT/US2009/002945

C(Continuation). DOCUMENTS CONSIDERED TO BE RELEVANT		
Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
A	WO 2008/051920 A (ABBOTT DIABETES CARE INC [US]; STAFFORD GARY ASHLEY [US]) 2 May 2008 (2008-05-02) abstract paragraphs [0059], [0060]; figure 17 -----	60, 62

INTERNATIONAL SEARCH REPORT

International application No.
PCT/US2009/002945

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:

see additional sheet

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 fees, this Authority did not invite payment of additional fees.
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.

FURTHER INFORMATION CONTINUED FROM PCT/ISA/ 210

This International Searching Authority found multiple (groups of) inventions in this international application, as follows:

1. claims: 1-54,63,64

Introducer with needle covering.

2. claims: 55-59

Sensor set having a reusable adhesive.

3. claims: 60-62

Sensor hub wherein a sensor is extending into a carrier pocket.

INTERNATIONAL SEARCH REPORT

Information on patent family members

International application No

PCT/US2009/002945

Patent document cited in search report		Publication date	Patent family member(s)	Publication date
EP 1704889	A	27-09-2006	WO 2005068006 A1 JP 4250169 B2	28-07-2005 08-04-2009
US 2007073129	A1	29-03-2007	CA 2622526 A1 EP 1926420 A2 JP 2009508639 T WO 2007037989 A2	05-04-2007 04-06-2008 05-03-2009 05-04-2007
WO 2008022476	A	28-02-2008	CA 2660392 A1 CN 101505816 A EP 2054109 A1 US 2009216215 A1	28-02-2008 12-08-2009 06-05-2009 27-08-2009
US 2007093754	A1	26-04-2007	NONE	
US 2004158207	A1	12-08-2004	WO 02081012 A2 EP 1383560 A2 JP 2004524926 T	17-10-2002 28-01-2004 19-08-2004
WO 2008014791	A	07-02-2008	WO 2008014792 A1	07-02-2008
US 5562631	A	08-10-1996	AR 002375 A1 AU 5463396 A BR 9602674 A CA 2178249 A1 CN 1148507 A CO 4520195 A1 DE 69612425 D1 DE 69612425 T2 EP 0747084 A2 ES 2155577 T3 IL 118318 A JP 3805431 B2 JP 9099070 A NO 962379 A NZ 286626 A RU 2169585 C2 SG 47144 A1 ZA 9604783 A	11-03-1998 19-12-1996 06-10-1998 08-12-1996 30-04-1997 15-10-1997 17-05-2001 26-07-2001 11-12-1996 16-05-2001 12-05-2004 02-08-2006 15-04-1997 09-12-1996 24-10-1997 27-06-2001 20-03-1998 08-12-1997
WO 2004103170	A	02-12-2004	NONE	
US 5390671	A	21-02-1995	CA 2143172 A1 DE 69517085 D1 DE 69517085 T2 EP 0678308 A1 JP 3571100 B2 JP 7275227 A	16-09-1995 29-06-2000 02-11-2000 25-10-1995 29-09-2004 24-10-1995
US 5586553	A	24-12-1996	CA 2186886 A1 DE 69630079 D1 DE 69630079 T2 EP 0748183 A1 JP 3571727 B2 JP 9512199 T WO 9625088 A1	22-08-1996 30-10-2003 01-04-2004 18-12-1996 29-09-2004 09-12-1997 22-08-1996
WO 2006061354	A	15-06-2006	AT 440627 T	15-09-2009

INTERNATIONAL SEARCH REPORT

Information on patent family members

International application No PCT/US2009/002945

Patent document cited in search report	Publication date	Patent family member(s)	Publication date
WO 2006061354 A		CN 101072596 A	14-11-2007
		EP 1824536 A1	29-08-2007
		US 2009048563 A1	19-02-2009
<hr/>			
US 7303543 B1	04-12-2007	US 2006247574 A1	02-11-2006
		US 2008045891 A1	21-02-2008
		WO 2006062636 A1	15-06-2006
<hr/>			
US 6520938 B1	18-02-2003	AU 3068599 A	20-09-1999
		DK 1223997 T3	30-03-2009
		EP 1223997 A2	24-07-2002
		US 6056718 A	02-05-2000
		WO 9944655 A2	10-09-1999
<hr/>			
US 2003109775 A1	12-06-2003	US 2004199063 A1	07-10-2004
<hr/>			
WO 2008051920 A	02-05-2008	AU 2007309066 A1	02-05-2008
		CA 2667491 A1	02-05-2008
		CN 101553176 A	07-10-2009
		EP 2086428 A2	12-08-2009
		US 2008114280 A1	15-05-2008
<hr/>			