



- (51) International Patent Classification:
A61M 25/00 (2006.01)
- (21) International Application Number:
PCT/US2014/010752
- (22) International Filing Date:
8 January 2014 (08.01.2014)
- (25) Filing Language: English
- (26) Publication Language: English
- (30) Priority Data:
61/752,649 15 January 2013 (15.01.2013) US
- (71) Applicant: **A.V. MEDICAL TECHNOLOGIES, LTD.**
[IL/IL]; 21 Harbarzel Street, Building B, 6971029 Tel Aviv (IL).
- (71) Applicant (for BW, GH, GM, KE, LR, LS, MW, MZ, NA, RW, SD, SL, SZ, TZ, UG, ZM, ZW only): **ARNO, Thomas, R.** [US/US]; 2040 Mainstreet, 14th Floor, Irvine, CA 92614 (US).
- (72) Inventors: **CARMEL, Ilan**; 19 Haduchifat St., 40600 Tel Mond (IL). **TAL, Michael, Gabriel**; 17 Hahoresht Street,

56525 Savyon (IL). **SHAHUR, Josef**; 55 Ha' Shoftim Street, 3707024 Pardes Hanna-karkur (IL).

- (74) Agent: **ARNO, Thomas, R.**; Knobbe Martens Olson & Bear LLP, 2040 Main Street, 14th Floor, Irvine, CA 92614 (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, DO, DZ, EC, EE, EG, ES, FI, GB, GD, GE, GH, GM, GT, HN, HR, HU, ID, IL, IN, IR, IS, JP, KE, KG, 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, PA, PE, PG, PH, PL, PT, QA, RO, RS, RU, RW, SA, 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, 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,

[Continued on next page]

(54) Title: INFUSION CATHETER WITH GUIDEWIRE VALVING

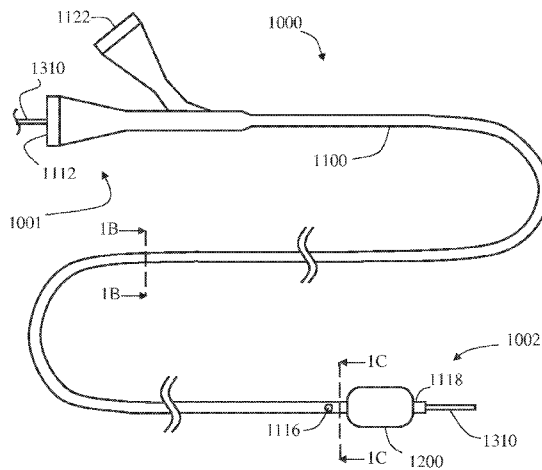


FIG 1A

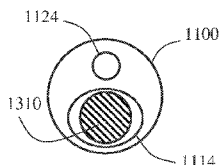


FIG 1B

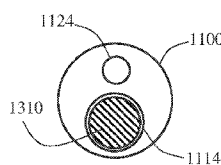


FIG 1C

(57) Abstract: The present disclosure relates to a PTA (percutaneous transluminal angioplasty) balloon catheter (1000), preferably high pressure type, optionally introducible as an over the wire catheter. The catheter possess the attribute of injecting fluid to the treated site through a dedicated opening (1116) proximal to the balloon member (1200), for introduction of fluids such as contrast enhancing material and/or medication. In some embodiments, a single lumen is used, at least in part, both for fluids transfer and dispersion ("infusion") as well as for guide wire passage. In some such embodiments, a valve mechanism (1300) is used to sustain selective operability of the lumen so that fluids will disperse mostly or solely through the proximal dispersion opening rather than the guide wire distal exit opening.





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, KM, 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))*

Published:

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

(88) Date of publication of the international search report:

2 October 2014

INTERNATIONAL SEARCH REPORT

International application No
PCT/US2014/010752

A. CLASSIFICATION OF SUBJECT MATTER
INV. A61M25/00 A61M25/10
ADD.
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
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 practicable, 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.
X	WO 2012/110598 A1 (ACROSTAK CORP BVI TORTOLA [CH]; BERGER ERWIN [CH]; POPOWSKI YOURI [CH]) 23 August 2012 (2012-08-23)	1,12-14
A	page 1, line 5 - page 1, line 10 page 2, line 31 - page 34, line 21; figures 1-24	2-11
X	----- US 2006/253071 A1 (ZATTERA GIUSEPPE [IT]) 9 November 2006 (2006-11-09) page 1, paragraph 1 - page 1, paragraph 2 page 1, paragraph 21 - page 4, paragraph 83; figures 1-9	1,12-14
X	----- US 5 908 407 A (FRAZEE JOHN G [US] ET AL) 1 June 1999 (1999-06-01) column 1, line 9 column 1, line 61 - column 7, line 31; figures 1-7	1-14
	----- -/--	

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 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 22 July 2014	Date of mailing of the international search report 30/07/2014
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 Rolland, Philippe

INTERNATIONAL SEARCH REPORT

International application No
PCT/US2014/010752

C(Continuation). DOCUMENTS CONSIDERED TO BE RELEVANT		
Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	US 2010/198186 A1 (ACKERMANN SIMON [US]) 5 August 2010 (2010-08-05) page 1, paragraph 1 page 1, paragraph 10 - page 5, paragraph 61; figures 1-9 -----	1-14,20, 21, 23-31, 34-62
X	US 6 485 500 B1 (KOKISH ARKADY [US] ET AL) 26 November 2002 (2002-11-26) column 1, line 6 - column 1, line 14 column 3, line 12 - column 24, line 17; figures 1-31 -----	1-14, 20-29, 31-43, 45-62
X	US 5 267 979 A (APPLING WILLIAM M [US] ET AL) 7 December 1993 (1993-12-07) column 1, line 10 - column 7, line 68; figure 121 -----	20-26, 28,29, 31-43, 50-56, 58-62 1-14
X	US 6 017 323 A (CHEE URIEL HIRAM [US]) 25 January 2000 (2000-01-25) column 1, line 5 - column 1, line 22 column 3, line 28 - column 12, line 22; figures 1-10 -----	20-47, 50-56,58 1-14,57
A	WO 95/05862 A1 (SHIU MAN FAI [GB]) 2 March 1995 (1995-03-02) page 1, line 1 - page 13, line 4 -----	20-55

INTERNATIONAL SEARCH REPORT

International application No.
PCT/US2014/010752

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.: 15-19
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 surgery
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 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: 1-14

directed to a catheter having an inflatable member and a valving mechanism to direct the exit point of the infused fluid

2. claims: 20-62

directed to a catheter having a proximal, intermediate and distal wall segments, the intermediate wall segment having an inlet and outlet opening for infusion and being sized, shaped and/or textured to create a pressure gradient.

INTERNATIONAL SEARCH REPORT

Information on patent family members

International application No PCT/US2014/010752

Patent document cited in search report	Publication date	Patent family member(s)	Publication date	
WO 2012110598	A1	23-08-2012	CN 103402573 A	20-11-2013
			EP 2675514 A1	25-12-2013
			US 2013345628 A1	26-12-2013
			WO 2012110598 A1	23-08-2012
US 2006253071	A1	09-11-2006	AT 376441 T	15-11-2007
			AU 2003237625 A1	04-01-2005
			DE 60317112 T2	31-07-2008
			EP 1633424 A1	15-03-2006
			ES 2295597 T3	16-04-2008
			US 2006253071 A1	09-11-2006
			WO 2004110543 A1	23-12-2004
US 5908407	A	01-06-1999	US 5908407 A	01-06-1999
			WO 9904849 A1	04-02-1999
US 2010198186	A1	05-08-2010	US 2010198186 A1	05-08-2010
			WO 2010090953 A2	12-08-2010
US 6485500	B1	26-11-2002	AU 4572301 A	03-10-2001
			US 6485500 B1	26-11-2002
			WO 0170325 A2	27-09-2001
US 5267979	A	07-12-1993	NONE	
US 6017323	A	25-01-2000	AU 6891598 A	30-10-1998
			US 6017323 A	25-01-2000
			WO 9844981 A1	15-10-1998
WO 9505862	A1	02-03-1995	EP 0715529 A1	12-06-1996
			JP H09501597 A	18-02-1997
			WO 9505862 A1	02-03-1995