

(19) World Intellectual Property
Organization
International Bureau



(43) International Publication Date
9 September 2005 (09.09.2005)

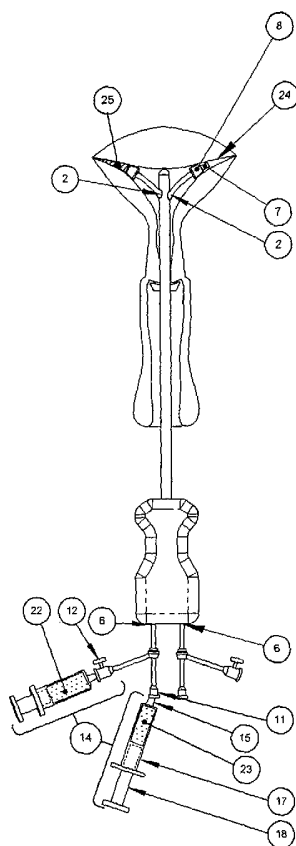
PCT

(10) International Publication Number
WO 2005/082299 A3

- (51) International Patent Classification⁷: **A61F 6/22**,
A61M 25/01, A61B 17/12
- (21) International Application Number:
PCT/US2005/006334
- (22) International Filing Date: 25 February 2005 (25.02.2005)
- (25) Filing Language: English
- (26) Publication Language: English
- (30) Priority Data:
60/547,491 25 February 2004 (25.02.2004) US
60/587,604 13 July 2004 (13.07.2004) US
11/065,886 24 February 2005 (24.02.2005) US
- (71) Applicant (for all designated States except US): **FE-MASYS INC.** [US/US]; 9070 Brixham Court, Suwanee, Georgia 30024 (US).
- (72) Inventors; and
(75) Inventors/Applicants (for US only): **LEE-SEPSICK, Kathy** [US/US]; 9070 Brixham Court, Suwanee, Georgia 30024 (US). **PAXTON, Lani L. L.** [US/US]; 2584 River Oak Drive, Decatur, Georgia 30033 (US). **MARCUS, Jeffrey A.** [US/US]; 8196 Hewlett Road, Atlanta, Georgia 30305 (US). **WILLIAMS, Stephen N.** [US/US]; 335 Connecticut Avenue, Apartment B, Atlanta, Georgia 30307 (US).
- (74) Agent: **MERCHANT, Mary Anthony**; Troutman Sanders LLP, 600 Peachtree Street NE, Suite 5200, Atlanta, GA 30308 (US).
- (81) Designated States (unless otherwise indicated, for every kind of national protection available): AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BW, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, EG, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD,

[Continued on next page]

(54) Title: METHODS AND DEVICES FOR CONDUIT OCCLUSION



(57) Abstract: The present invention comprises systems, methods and devices for the delivery of compositions for occluding or of means for opening conduits. The implantable occlusive material may be delivered pre-formed or in situ cured and, may be a resorbable material that supports tissue ingrowth that eventually replaces the material leaving little or no original material in place. The delivery system is positioned to allow for placement of the occlusive material into the body conduit. Use of delivery systems, methods and devices for re-opening an occluded body conduit are also included.



MG, MK, MN, MW, MX, MZ, NA, NI, NO, NZ, OM, PG, PH, PL, PT, RO, RU, SC, SD, SE, SG, SK, SL, SM, SY, TJ, TM, TN, TR, TT, TZ, UA, UG, US, UZ, VC, VN, YU, 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, 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, HU, IE, IS, IT, LT, LU, MC, NL, PL, PT, RO, SE, SI, SK, TR), OAPI (BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG).

Declarations under Rule 4.17:

- as to applicant's entitlement to apply for and be granted a patent (Rule 4.17(ii)) for the following designations AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BW, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, EG, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NA, NI, NO, NZ, OM, PG, PH, PL, PT, RO, RU, SC, SD, SE, SG, SK, SL, SM, SY, TJ, TM, TN, TR, TT, TZ, UA, UG, UZ, VC, VN, YU, ZA,

ZM, ZW, ARIPO patent (BW, GH, GM, KE, LS, MW, MZ, NA, SD, SL, SZ, TZ, UG, ZM, ZW), Eurasian patent (AM, AZ, BY, KG, KZ, MD, RU, TJ, TM), European patent (AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HU, IE, IS, IT, LT, LU, MC, NL, PL, PT, RO, SE, SI, SK, TR), OAPI patent (BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG)

- as to the applicant's entitlement to claim the priority of the earlier application (Rule 4.17(iii)) for all designations
- as to the applicant's entitlement to claim the priority of the earlier application (Rule 4.17(iii)) for all designations

Published:

- with international search report
- before the expiration of the time limit for amending the claims and to be republished in the event of receipt of amendments

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

24 November 2005

For two-letter codes and other abbreviations, refer to the "Guidance Notes on Codes and Abbreviations" appearing at the beginning of each regular issue of the PCT Gazette.

INTERNATIONAL SEARCH REPORT

International Application No
PCT/US2005/006334

A. CLASSIFICATION OF SUBJECT MATTER

IPC 7 A61F6/22 A61M25/01 A61B17/12

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)

IPC 7 A61F 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, INSPEC

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category *	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
A	US 2003/060800 A1 (RYAN THOMAS P) 27 March 2003 (2003-03-27) the whole document	
A	US 2002/082636 A1 (SAWHNEY A S ET AL) 27 June 2002 (2002-06-27) the whole document	
A	US 6 346 102 B1 (HARRINGTON DOUGLAS C ET AL) 12 February 2002 (2002-02-12) cited in the application	
A	US 4 245 623 A (ERB ET AL) 20 January 1981 (1981-01-20) cited in the application	
	----- -/-	

☒ Further documents are listed in the continuation of box C.

☒ Patent family members are listed in 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 document 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

14 September 2005

Date of mailing of the international search report

22/09/2005

Name and mailing address of the ISA

European Patent Office, P.B. 5818 Patentlaan 2
NL - 2280 HV Rijswijk
Tel. (+31-70) 340-2040, Tx. 31 651 epo nl,
Fax: (+31-70) 340-3016

Authorized officer

Kuehne, H-C

INTERNATIONAL SEARCH REPORT

International Application No
PCT/US2005/006334

C.(Continuation) DOCUMENTS CONSIDERED TO BE RELEVANT		
Category *	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
A	GB 1 470 571 A (POPULATION RES INC) 14 April 1977 (1977-04-14) the whole document -----	
A	US R E29 207 E (BOLDUC ET AL) 10 May 1977 (1977-05-10) -----	
A	US 4 160 446 A (BARRINGTON ET AL) 10 July 1979 (1979-07-10) cited in the application -----	
A	US 3 680 542 A (HUGO S. CIMBER) 1 August 1972 (1972-08-01) cited in the application -----	
A	DE 25 37 620 A1 (POPP,LOTHAR,DR.MED) 24 February 1977 (1977-02-24) the whole document -----	
A	FR 2 414 925 A (MEDLINE AB) 17 August 1979 (1979-08-17) the whole document -----	
A	US 5 474 089 A (WAYNANT ET AL) 12 December 1995 (1995-12-12) cited in the application -----	

INTERNATIONAL SEARCH REPORT

national application No.
PCT/US2005/006334

Box 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:

Although claims 1-24 are directed to a method of treatment of the human/animal body, the search has been carried out and based on the delivery system disclosed on page 9, line 5 - page 13, line 23 and figures 1-3c of the application.
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 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.
- ☐ No protest accompanied the payment of additional search fees.

INTERNATIONAL SEARCH REPORT

Information on patent family members

International Application No

PCT/US2005/006334

Patent document cited in search report	Publication date	Patent family member(s)	Publication date
US 2003060800	A1	27-03-2003	NONE
US 2002082636	A1	27-06-2002	NONE
US 6346102	B1	12-02-2002	NONE
US 4245623	A	20-01-1981	AR 217928 A1 30-04-1980
		AT 388102 B 10-05-1989	
		AT 394579 A 15-12-1987	
		AU 527463 B2 03-03-1983	
		AU 4777079 A 13-12-1979	
		BE 876776 A1 01-10-1979	
		CH 632152 A5 30-09-1982	
		DE 2921685 A1 17-01-1980	
		DK 234579 A 07-12-1979	
		ES 481047 A1 16-06-1980	
		FI 791786 A 07-12-1979	
		FR 2427825 A1 04-01-1980	
		GB 2021956 A 12-12-1979	
		GR 72489 A1 14-11-1983	
		IE 48344 B1 12-12-1984	
		IL 57421 A 31-07-1983	
		IN 152080 A1 15-10-1983	
		IT 1174819 B 01-07-1987	
		JP 1320304 C 29-05-1986	
		JP 55000199 A 05-01-1980	
		JP 60044933 B 07-10-1985	
		NL 7904299 A 10-12-1979	
		NO 791855 A 07-12-1979	
		NZ 190573 A 11-02-1981	
		PT 69721 A 01-07-1979	
		SE 444386 B 14-04-1986	
		SE 7904907 A 07-12-1979	
		SE 464166 B 18-03-1991	
		SE 8505643 A 29-11-1985	
		ZA 7902665 A 29-10-1980	
GB 1470571	A	14-04-1977	AR 203193 A1 22-08-1975
		AT 369269 B 27-12-1982	
		AT 191374 A 15-05-1982	
		AU 489524 A 11-09-1975	
		AU 6643974 A 11-09-1975	
		BG 23206 A3 12-07-1977	
		CA 1069791 A1 15-01-1980	
		CH 569488 A5 28-11-1975	
		CS 191226 B2 29-06-1979	
		DD 117181 A5 05-01-1976	
		DE 2411242 A1 17-10-1974	
		DK 142043 B 18-08-1980	
		ES 424097 A1 16-05-1977	
		FI 62768 B 30-11-1982	
		FR 2220286 A1 04-10-1974	
		GB 1470572 A 14-04-1977	
		GB 1470573 A 14-04-1977	
		HK 3280 A 01-02-1980	
		HK 3380 A 01-02-1980	
		HK 3480 A 01-02-1980	
		HU 180047 B 28-01-1983	

INTERNATIONAL SEARCH REPORT

Information on patent family members

International Application No

PCT/US2005/006334

Patent document cited in search report	Publication date	Patent family member(s)	Publication date
GB 1470571	A	IE 41522 B1	30-01-1980
		IL 44358 A	31-10-1977
		JP 1093610 C	27-04-1982
		JP 50026394 A	19-03-1975
		JP 56034305 B	10-08-1981
		JP 59046550 U	28-03-1984
		JP 54000494 A	05-01-1979
		KE 3015 A	15-02-1980
		KE 3016 A	15-02-1980
		KE 3017 A	15-02-1980
		MY 1181 A	31-12-1981
		MY 1281 A	31-12-1981
		MY 1381 A	31-12-1981
		NL 7403145 A	11-09-1974
		SE 408854 B	16-07-1979
		YU 54174 A1	28-02-1982
		ZM 4974 A1	21-11-1974
US RE29207	E	10-05-1977	NONE
US 4160446	A	10-07-1979	NONE
US 3680542	A	01-08-1972	NONE
DE 2537620	A1	24-02-1977	NONE
FR 2414925	A	17-08-1979	NONE
US 5474089	A	12-12-1995	NONE