



(51) International Patent Classification:

A61F 2/24 (2006.01) A61F 2/82 (2006.01)
A61F 2/04 (2006.01) A61L 27/04 (2006.01)
A61L 27/28 (2006.01) A61M 25/01 (2006.01)

(21) International Application Number:

PCT/US2011/053120

(22) International Filing Date:

23 September 2011 (23.09.2011)

(25) Filing Language:

English

(26) Publication Language:

English

(30) Priority Data:

61/385,867 23 September 2010 (23.09.2010) US
13/243,980 23 September 2011 (23.09.2011) US

(71) Applicant (for all designated States except US):
COLIBRI HEART VALVE LLC [US/US]; 2150 W. 6th
Ave, Suite M, Broomfield, CO 80020 (US).

(72) Inventors; and

(75) Inventors/Applicants (for US only): **FISH, R., David**
[US/US]; 6349 Vanderbilt Street, Houston, TX 77005
(US). **PANIAGUA, David** [CR/US]; 3813 Drummond
Street, Houston, TX 77025 (US). **INDUNI, Eduardo**
[CR/CR]; Resi Alajuela H7, Alajuela, 906-4050 (CR).

(74) Agent: **YASKANIN, Mark**; Holme Roberts & Owen LLP,
1700 Lincoln Street, Suite 4100, Denver, CO 80203 (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, 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.

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

[Continued on next page]

(54) Title: PERCUTANEOUSLY DELIVERABLE HEART OR BLOOD VESSEL VALVE WITH FRAME HAVING ABLUMINALLY SITUATED TISSUE MEMBRANE

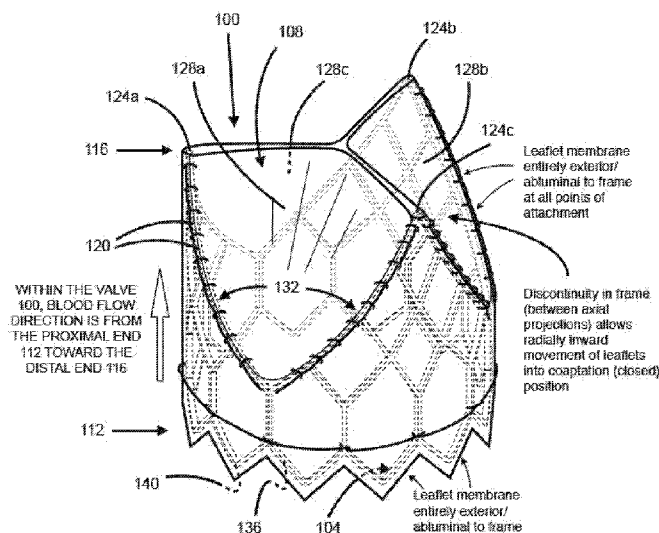


Figure 1A.

(57) Abstract: A prosthetic valve implantable by catheter without surgery includes a frame with an abluminal surface extending between a proximal end of the frame and a distal end of the frame, and a single layer of a biocompatible membrane material mounted to the abluminal surface of the frame. The single layer of biocompatible membrane is located such that an interior surface of the membrane sheet extends between the proximal end of the frame and the distal end of the frame, and resides radially exterior the abluminal surface of the frame. In at least one embodiment, the disposition of membrane sheet at all points of attachment is entirely exterior/ab lumenal to the frame, such that no part of the abluminal surface of the membrane sheet contacts the frame.



— *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:**
14 June 2012

INTERNATIONAL SEARCH REPORT

International application No.
PCT/US2011/053120**A. CLASSIFICATION OF SUBJECT MATTER****A61F 2/24(2006.01)i, A61F 2/04(2006.01)i, A61L 27/28(2006.01)i, A61F 2/82(2006.01)i, A61L 27/04(2006.01)i, A61M 25/01(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)

A61F 2/24; A61F 2/06; A61F 2/04

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: prosthetic heart valve, frame, catheter, biocompatible tissue, biocompatible membrane, metal, alloy, stent, leaflet.

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	US 7381218 B2 (STEFAN SCHRECK) 03 June 2008 See Figs. 1, 2, and 6; column 1, lines 42-45 - column 8, lines 49-64.	1-3,5,6,11-13,33 ,35
A		4,7-10,14-29,31,32 ,34
A	US 2006-0259137 A1 (JASON ARTOF et al.) 16 November 2006 See the whole document.	1-29,31-35
A	WO 99-30646 A1 (ST. JUDE MEDICAL, INC.) 24 June 1999 See the whole document.	1-29,31-35
A	US 2009-0248149 A1 (SHLOMO GABBAY) 01 October 2009 See the whole document.	1-29,31-35
A	US 2008-0154356 A1 (JOSEPH F. OBERMILLER et al.) 26 June 2008 See the whole document.	1-29,31-35

☐ 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

26 APRIL 2012 (26.04.2012)

Date of mailing of the international search report

27 APRIL 2012 (27.04.2012)

Name and mailing address of the ISA/KR

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

Facsimile No. 82-42-472-7140

Authorized officer

Heo, Joo-Hyung

Telephone No. 82-42-481-8150



INTERNATIONAL SEARCH REPORT

International application No.

PCT/US2011/053120**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.: 30
because they relate to subject matter not required to be searched by this Authority, namely:
Judging from the subject matter of claim 30 which includes a method comprising implanting the trans-catheter into a patient, said claim pertains to methods for treatment of the human body by surgery, and thus relates to a subject matter which this International Searching Authority is not required, under Article 17(2)(a)(i) of the PCT and Rule 39.1(iv) of the Regulations under the PCT, to search.
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/US2011/053120

Patent document cited in search report	Publication date	Patent family member(s)	Publication date
US 7381218 B2	03.06.2008	AU 2001-256985 B2	31.08.2006
		CA 2407062 A1	18.10.2001
		EP 1267753 B1	19.10.2005
		US 2002-0198594 A1	26.12.2002
		US 2004-0186565 A1	23.09.2004
		US 2008-0188929 A1	07.08.2008
		US 2010-0211165 A1	19.08.2010
		US 6454799 B1	24.09.2002
		US 6767362 B2	27.07.2004
		US 8092518 B2	10.01.2012
		WO 01-76510 A2	18.10.2001
US 2006-0259137 A1	16.11.2006	AU 2005-237510 B2	08.10.2009
		AU 2005-285147 B2	25.06.2009
		AU 2006-262268 B2	07.01.2010
		CA 2545874 A1	26.05.2005
		CA 2579849 A1	23.03.2006
		CA 2613461 A1	04.01.2007
		CN 1993090 A	04.07.2007
		EP 1684671 A1	02.08.2006
		EP 1755459 A2	28.02.2007
		EP 1827256 A2	05.09.2007
		EP 1895944 A2	12.03.2008
		EP 2040645 A4	25.05.2011
		JP 04755176 B2	03.06.2011
		JP 2007-534382 A	29.11.2007
		JP 2010-042280 A	25.02.2010
		US 2005-0075584 A1	07.04.2005
		US 2005-0075712 A1	07.04.2005
		US 2005-0075713 A1	07.04.2005
		US 2005-0075717 A1	07.04.2005
		US 2005-0075718 A1	07.04.2005
		US 2005-0075719 A1	07.04.2005
		US 2005-0075720 A1	07.04.2005
		US 2005-0075724 A1	07.04.2005
		US 2005-0075726 A1	07.04.2005
		US 2005-0075728 A1	07.04.2005
		US 2005-0075729 A1	07.04.2005
		US 2005-0075730 A1	07.04.2005
		US 2005-0075731 A1	07.04.2005
		US 2005-0096738 A1	05.05.2005
		US 2005-0119688 A1	02.06.2005
		US 2005-0240200 A1	27.10.2005
		US 2006-0287718 A1	21.12.2006
		US 2010-0036474 A1	11.02.2010
		US 2010-0100176 A1	22.04.2010
		US 2011-0137408 A1	09.06.2011
		US 7044966 B2	16.05.2006
		US 7101396 B2	05.09.2006

INTERNATIONAL SEARCH REPORT

Information on patent family members

International application No.

PCT/US2011/053120

Patent document cited in search report	Publication date	Patent family member(s)	Publication date
		US 7604650 B2	20.10.2009
		US 7842084 B2	30.11.2010
		WO 2005-046528 A1	26.05.2005
		WO 2005-104957 A2	10.11.2005
		WO 2006-031648 A2	23.03.2006
		WO 2007-002166 A2	04.01.2007
		WO 2008-010817 A1	24.01.2008
WO 99-30646 A1	24.06.1999	AU 1720799 A	05.07.1999
		BR 9813615 A	24.10.2000
		DE 69820300 D1	15.01.2004
		EP 1047358 B1	03.12.2003
		ES 2210852 T3	01.07.2004
		JP 2002-508211 A	19.03.2002
		US 05910170 A	08.06.1999
US 2009-0248149 A1	01.10.2009	AU 2002-330274 A1	22.04.2003
		CA 2462834 A1	17.04.2003
		EP 1441671 A2	04.08.2004
		JP 2005-505343 A	24.02.2005
		MX PA04003219 A	12.08.2004
		US 2002-0032481 A1	14.03.2002
		US 2003-0040792 A1	27.02.2003
		US 2003-0149477 A1	07.08.2003
		US 2006-0142848 A1	29.06.2006
		US 2008-0021552 A1	24.01.2008
		US 2011-238166 A1	29.09.2011
		US 7025780 B2	11.04.2006
		US 7510572 B2	31.03.2009
		US 7803185 B2	28.09.2010
		WO 02-22054 A1	21.03.2002
		WO 03-030776 A2	17.04.2003
		WO 2007-097830 A2	30.08.2007
US 2008-0154356 A1	26.06.2008	US 2004-0049262 A1	11.03.2004
		US 2005-0096736 A1	05.05.2005