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8, CH-3780 Gstaad (CH).
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[Continued on nextpage]

(54) Title: PROSTHETIC LEAFLET ASSEMBLY FOR REPAIRING A DEFECTIVE CARDIAC VALVE AND METHODS OF USING THE SAME

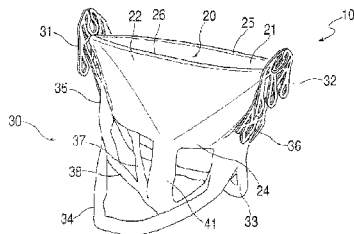


FIG. 1A

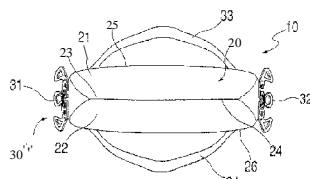


FIG. 1B

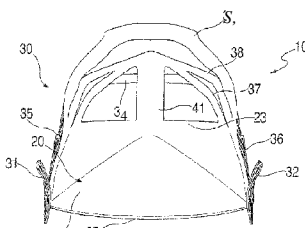


FIG. 1C

(57) Abstract: Methods and apparatus are provided for repairing or replacing a defective cardiac valve including a prosthetic leaflet assembly (10) having an expandable frame (30) with one or more anchors (31,32) configured to engage a predetermined region of the defective cardiac valve in an expanded deployed state, and at least one prosthetic leaflet (21,22) coupled to the expandable frame. The prosthetic leaflet assembly is configured such that the prosthetic leaflet is suspended within a flow path of the defective cardiac valve and coacts with, and improves functioning of, one or more native leaflets of the defective cardiac valve.



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INTERNATIONAL SEARCH REPORT

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.: **16-24**
because they relate to subject matter not required to be searched by this Authority, namely:
Rule 39.1(i v) PCT - Method for treatment of the human or animal body by surgery.
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. **5** 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.:

1-15

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

International application No
PCT/EP2012/061681

A. CLASSIFICATION OF SUBJECT MATTER INV. A61F2/24 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) A61F		
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		
C. DOCUMENTS CONSIDERED TO BE RELEVANT		
Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	wo 2004/030568 A2 (AMPLE MEDICAL INC [US]) 15 April 2004 (2004-04-15) page 12, line 1 - page 22, line 2; figures 8-20	1-15
X	----- wo 2010/106438 A2 (BIOMEDXL [IL]; NAOR GIL [IL]) 23 September 2010 (2010-09-23) page 4 - page 8 page 11 - page 19; figures 2A-13D	1-13
X	----- us 2008/033541 AI (GELBART DANIEL [CA] ET AL) 7 February 2008 (2008-02-07) the whole document	1-3,6-13
X	----- us 2006/058871 AI (ZAKAY AVRAHAM [IL] ET AL) 16 March 2006 (2006-03-16) the whole document	1,3,4, 6-13
	----- -/--	
<input checked="" type="checkbox"/>	Further documents are listed in the continuation of Box C.	<input checked="" type="checkbox"/>
		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 <p align="center">10 September 2012</p>		Date of mailing of the international search report <p align="center">22/11/2012</p>
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 <p align="center">Bronwen Steiner</p>

INTERNATIONAL SEARCH REPORT

International application No
PCT/EP2012/061681

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 2008/125860 A1 (WEBLER WILLIAM E [US] ET AL) 29 May 2008 (2008-05-29) paragraphs [0145] - [0193]; figures 11A-33 -----	1, 4, 6-9, 12, 13
A	US 2005/228495 A1 (MACOVIAK JOHN A [US]) 13 October 2005 (2005-10-13) the whole document -----	1

INTERNATIONAL SEARCH REPORT

Information on patent family members

International application No

PCT/EP2012/061681

Patent document cited in search report	Publication date	Patent family member(s)	Publication date
wo 2004030568	A2	15-04-2004	AU 2003277115 AI 23-04-2004
			US 2005010287 AI 13-01-2005
			US 2008065204 AI 13-03-2008
			wo 2004030568 A2 15-04-2004

wo 2010106438	A2	23-09-2010	CA 2759242 AI 23-09-2010
			EP 2408399 A2 25-01-2012
			JP 2012520716 A 10-09-2012
			US 2010280606 AI 04-11-2010
			wo 2010106438 A2 23-09-2010

US 2008033541	AI	07-02 -2008	NONE

US 2006058871	AI	16-03 -2006	AU 2005284739 AI 23-03-2006
			CA 2580053 AI 23-03-2006
			CN 101056596 A 17-10-2007
			EP 1796597 A2 20-06-2007
			JP 2008513060 A 01-05-2008
			US 2006058871 AI 16-03-2006
			Us 2010198347 AI 05-08-2010
			wo 2006032051 A2 23-03-2006

US 2008125860	AI	29-05 -2008	US 7404824 BI 29-07-2008
			US 2008125860 AI 29-05-2008
			US 2008125861 AI 29-05-2008
			US 2011184512 AI 28-07-2011

us 2005228495	AI	13-10-2005	US 2005228495 AI 13-10-2005
			wo 2005069850 A2 04-08-2005

FURTHER INFORMATION CONTINUED FROM PCT/ISA/ 210

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

1. claims: 1-15

Claims 1 - 15 essentially define: a prosthetic leaflet assembly with an expandable frame, one or more anchors on the frame, and one or more prosthetic leaflets coupled to the frame. The leaflets are configured to coapt with one or more native valve leaflets.

2. claims: 25-28

Claims 25 - 28, which essentially define: a catheter suitable for delivering a prosthetic leaflet assembly, the catheter having a tube with distal and proximal ends and a lumen, a stylet within the lumen and having an end cap and a suture within the lumen to engage the leaflet assembly. The end cap contacts the distal end of the tube in the delivery state.
