(12) INTERNATIONAL APPLICATION PUBLISHED UNDER THE PATENT COOPERATION TREATY (PCT)

(19) World Intellectual Property Organization
International Bureau

(43) International Publication Date
6 December 2012 (06.12.2012)

WIPO | PCT

(10) International Publication Number
WO 2012/163820 A3

(51) International Patent Classification:
A61F 2/24 (2006.01)

(21) International Application Number:
PCT/EP2012/059819

(22) International Filing Date:
25 May 2012 (25.05.2012)

(25) Filing Language: English

(26) Publication Language: English

(30) Priority Data:
EP11168372 1 June 2011 (01.06.2011) EP

(71) Applicant *(for all designated States except US)*: **NVT AG** [CH/CH]; Luzernerstrasse 91, CH-5630 Muri AG (CH).

(72) Inventors; and

(75) Inventors/Applicants *(for US only)*: **CENTOLA, Marcos** [BR/BR]; Rua Boa Vista, 537, CEP 15025010 S.J.Do Rio Preto (BR). **KAWA, Emilia** [DE/DE]; Silberburgstr. 32, 72379 Hechingen (DE).

(74) Agent: **WITTE, WELLER & PARTNER**; Zusammenschluss EPA Nr. 314, Postfach 10 54 62, 70047 Stuttgart (DE).

(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, 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, 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))*

— *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:
24 January 2013

(54) Title: CARDIAC VALVE PROSTHESIS DEPLOYMENT SYSTEM

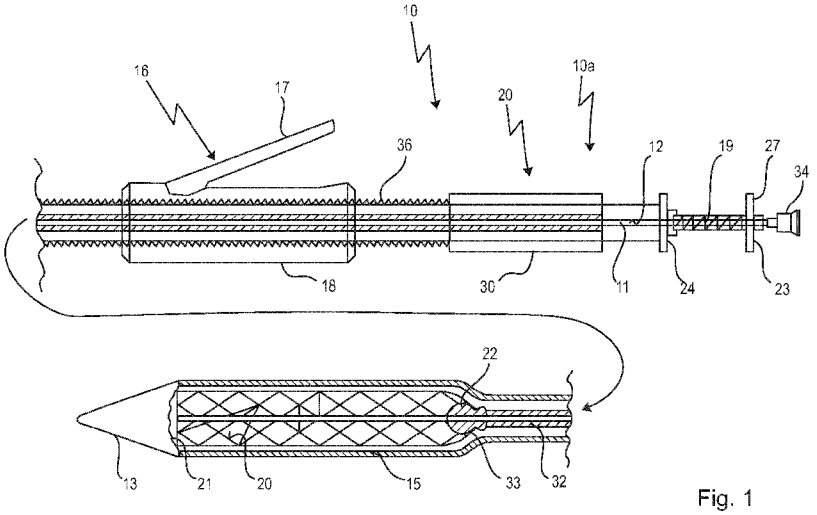


Fig. 1

(57) Abstract: The present invention relates to a deployment system (10) for deploying an expandable cardiac valve prosthesis. The deployment system comprises a first tube (11) being designed to carry an expandable cardiac valve prosthesis; further, a tip (13), being firmly connected to the first tube at a distal end of the first tube, wherein the tip is designed such, that it detachably accommodates and holds a distal end (21) of a cardiac valve prosthesis (20); a sheath (15) designed to be disposed over and holding the prosthesis (20) in a compressed state, and a first actuating mechanism (16) being linked to the sheath (15) and being slidable in a proximal direction for stepwise retracting the sheath (15). The deployment system (10) further comprises a biasing element being linked to the tip (13), and a blocking mechanism (24), wherein the blocking mechanism is being designed such, that a movement of the first actuating mechanism (16) in the proximal direction relative to the tip (13) is limitable to a maximum path of travel by the blocking mechanism (24).

WO 2012/163820 A3

INTERNATIONAL SEARCH REPORT

International application No
PCT/EP2012/059819

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.
A	WO 2008/138584 A1 (JENAVALVE TECHNOLOGY INC [US]; STRAUBINGER HELMUT [DE]; JUNG JOHANNES) 20 November 2008 (2008-11-20) page 31, line 12 - page 32, line 20 page 36, lines 6-26 figures 1,10a,10b	1-12
A	WO 2009/091509 A1 (ST JUDE MEDICAL [US]; ALKHATIB YOUSEF F [US]) 23 July 2009 (2009-07-23) paragraphs [0094], [0095]; figure 9	1-12
A	EP 1 964 532 A2 (JOTEC GMBH [DE]) 3 September 2008 (2008-09-03) paragraph [0051]; figure 1	1-12

☐ 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	Date of mailing of the international search report
16 July 2012	27/11/2012

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

INTERNATIONAL SEARCH REPORT

International application No.
PCT/EP2012/059819

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. [X] Claims Nos.: 16-18(partially)
because they relate to subject matter not required to be searched by this Authority, namely:

Rule 67.IV PCT - Method for treatment of the human or animal body by surgery. The feature "Method for deploying a cardiac valve prostheses" in claim 16 implies 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. [ ] 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. [X] 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.:

1-12

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: 1-12

   A deployment system with tube, tip sheath actuating mechanism, blocking mechanism and biasing element.

   ---

2. claims: 13-15

   A valve and a stent support with greater size of cells in the distal portion.

INTERNATIONAL SEARCH REPORT

Information on patent family members

International application No
PCT/EP2012/059819

Patent document cited in search report	Publication date	Patent family member(s)	Publication date
WO 2008138584 A1	20-11-2008	AU 2008250552 A1	20-11-2008
		CA 2683193 A1	20-11-2008
		CN 101720211 A	02-06-2010
		EP 2150210 A1	10-02-2010
		JP 2010526609 A	05-08-2010
		US 2008255660 A1	16-10-2008
		US 2008255661 A1	16-10-2008
		US 2010049303 A1	25-02-2010
		US 2010174362 A1	08-07-2010
		US 2011015616 A1	20-01-2011
		US 2011238159 A1	29-09-2011
		WO 2008138584 A1	20-11-2008
WO 2009091509 A1	23-07-2009	AU 2009205739 A1	23-07-2009
		CR 11464 A	20-08-2010
		EP 2240121 A1	20-10-2010
		JP 2011509742 A	31-03-2011
		US 2010286768 A1	11-11-2010
		WO 2009091509 A1	23-07-2009
EP 1964532 A2	03-09-2008	AT 493095 T	15-01-2011
		DE 102007010305 A1	28-08-2008
		EP 1964532 A2	03-09-2008
		JP 4560095 B2	13-10-2010
		JP 2008200498 A	04-09-2008
		US 2008208209 A1	28-08-2008