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(54) Title: FLEXIBLE IMPLANTS AND METHOD OF USE

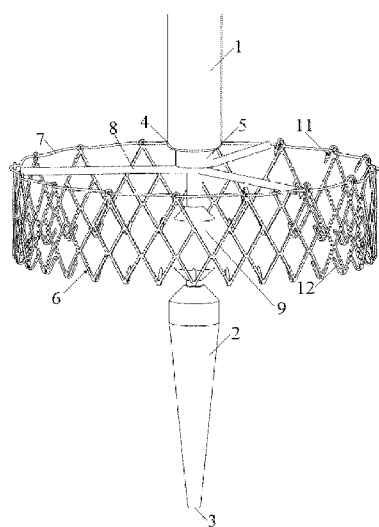


Fig 1c

(57) Abstract: The invention provides a flexible implant 6 that can be implanted endovascular with a system of catheters. The ring can shrink and/or stabilize the heart valve annulus/leaflets/atrium wall to act as a landing zone for a prosthetic valves or alone as a repair. The device comprising of: a everting stent based ring with a plurality of hooks, the hooks are mainly concealed when the ring is deployed, the ring can be everted in both directions, the eversion firmly engages the hooks with the surrounding tissue, after engagement the ring can be shrunk in size, or stabilized by introducing a suited locking mechanism on one or more adjustment wire(s) (7) that goes around the circumference of the flexible implant (6).



INTERNATIONAL SEARCH REPORT

International application No
PCT/EP2017/062259

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, WPI Data

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
Y	US 6 327 772 B1 (ZADNO-AZIZI GHOLAM-REZA [US] ET AL) 11 December 2001 (2001-12-11) cited in the application	1,4,6,8, 9,13,14
A	column 6, line 53 - column 9, line 61 column 14, line 28 - line 64 figures 1-21,31,32	2,3,5,7
Y	US 8 628 571 B1 (HACOHEN GILI [IL] ET AL) 14 January 2014 (2014-01-14) column 3, line 40 - column 5, line 63; figures 1A-D	1,4,6,8, 9,13,14
X	WO 2016/065158 A1 (CAISSON INTERVENTIONAL LLC [US]) 28 April 2016 (2016-04-28) page 13, line 22 - page 23, line 16; figures 1-7,39,40	10,11,14
Y		12
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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

21 November 2017

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12/12/2017

Name and mailing address of the ISA/

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INTERNATIONAL SEARCH REPORT

International application No
PCT/EP2017/062259

C(Continuation). DOCUMENTS CONSIDERED TO BE RELEVANT		
Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	EP 1 029 517 A2 (MEDTRONIC INC [US]) 23 August 2000 (2000-08-23)	10,14
A	paragraphs [0020] - [0025], [0034], [0035]; figures 1-11	1-9, 11-13
Y	----- WO 2013/021374 A2 (MITRALTECH LTD [IL]; GROSS YOSSI [IL]; HACHOEN GIL [IL]; MILLER ERAN []) 14 February 2013 (2013-02-14)	12
A	page 50, line 20 - page 53, line 9 page 69, line 10 - line 17 figures 27A-D -----	11

INTERNATIONAL SEARCH REPORT

International application No.
PCT/EP2017/062259

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.: 15-17
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
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: 1-9, 13(completely); 14(partially)

A flexible implant comprising a ring-shaped, eversible element

2. claims: 10-12(completely); 14(partially)

A catheter device for implanting of a flexible implant comprising an outer sheath, a deflectable sheath being arranged inside the outer sheath and an inner sheath being arranged inside the deflectable sheath

INTERNATIONAL SEARCH REPORT

Information on patent family members

International application No

PCT/EP2017/062259

Patent document cited in search report	Publication date	Patent family member(s)	Publication date
US 6327772	B1	11-12-2001	DE 69716779 D1 05-12-2002
			DE 69716779 T2 17-07-2003
			EP 1011889 A1 28-06-2000
			JP 2001502605 A 27-02-2001
			US 5907893 A 01-06-1999
			US 6327772 B1 11-12-2001
			WO 9727959 A1 07-08-1997
US 8628571	B1	14-01-2014	US 8628571 B1 14-01-2014
			US 2016213473 A1 28-07-2016
			US 2017065407 A1 09-03-2017
			WO 2014076696 A1 22-05-2014
WO 2016065158	A1	28-04-2016	US 2016113768 A1 28-04-2016
			WO 2016065158 A1 28-04-2016
EP 1029517	A2	23-08-2000	AT 342013 T 15-11-2006
			DE 60031188 T2 23-08-2007
			EP 1029517 A2 23-08-2000
			US 6355057 B1 12-03-2002
WO 2013021374	A2	14-02-2013	NONE