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[Continued on next page]

(54) Title: MEANS FOR CONTROLLED SEALING OF ENDOVASCULAR DEVICES

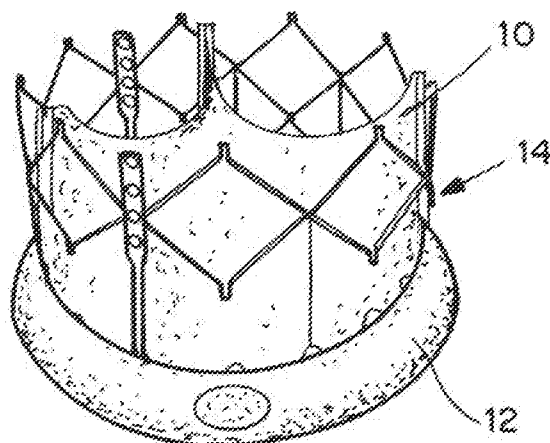


FIG. 1C

(57) Abstract: Expandable sealing means for endoluminal devices have been developed for controlled activation. The devices have the benefits of a low profile mechanism (for both self-expanding and balloon-expanding prostheses), contained, not open, release of the material, active conformation to the "leak sites" such that leakage areas are filled without disrupting the physical and functional integrity of the prosthesis, and on-demand, controlled activation, that may not be pressure activated.

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- *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))*

INTERNATIONAL SEARCH REPORT

 International application No.
PCT/US2014/030355

A. CLASSIFICATION OF SUBJECT MATTER

A61F 2/24 (2006.01) A61L 27/52 (2006.01) A61F 2/82 (2013.01) A61J 1/00 (2006.01) B65D 81/32 (2006.01)

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)

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)

EPODOC, WPI, TXTE: IPC: A61F2/24/LOW, A61F2/06/LOW, A61F2/82/LOW, A61L27/52/LOW, B65D81/32/LOW, A61J1; CPC: A61F2210/0061, A61F2250/0069/LOW, A61L31/145, A61L31/146, A61L24/0031, A61F2002/823, B65D51/2857/LOW, A61F2/0095; Keywords: stent, valve, expand, inflat, seal, hydrate, swell, hydrogel, foam, fluid, polymeric, and like terms; applicant/inventors search.

ESPACENET, ADVANCED GOOGLE PATENTS: Keywords: expand, seal, stent, graft, valve, hydrogel, foam, hydrate, swell, fluid, blood, self-seal, package, o-rings, storage, and like terms; applicant/inventors search.

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
	Documents are listed in the continuation of Box C	



Further documents are listed in the continuation of Box C



See patent family annex

* "A"	Special categories of cited documents: document defining the general state of the art which is not considered to be of particular relevance	"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
"E"	earlier application or patent but published on or after the international filing date	"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
"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)	"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
"O"	document referring to an oral disclosure, use, exhibition or other means	"&"	document member of the same patent family
"P"	document published prior to the international filing date but later than the priority date claimed		

Date of the actual completion of the international search 1 October 2014	Date of mailing of the international search report 01 October 2014
Name and mailing address of the ISA/AU AUSTRALIAN PATENT OFFICE PO BOX 200, WODEN ACT 2606, AUSTRALIA Email address: pct@ipaustalia.gov.au	Authorised officer Dr Vivian Cheung AUSTRALIAN PATENT OFFICE (ISO 9001 Quality Certified Service) Telephone No. 0262832414

INTERNATIONAL SEARCH REPORT		International application No.
C (Continuation). DOCUMENTS CONSIDERED TO BE RELEVANT		PCT/US2014/030355
Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	WO 2013/033791 A1 (ENDOLUMINAL SCIENCES PTY LTD) 14 March 2013 Fig. 2A-2C, 3, 4A-4C, 7A-7D, 8; page 10, lines 8-12; page 15, lines 3-5, 15-27; page 20, lines 12-27; page 21, lines 15-28; page 30, lines 12-23; page 31, line 24 - page 32, line 4; page 35, lines 1-12; page 38, lines 4-8; page 45, lines 10-14, 26-28; page 46, lines 8-24	1-3, 14-17, 22, 23
Y	page 20, lines 12-27; page 21, lines 15-28	5, 18-21, 24-27
X	GB 2476649 A (CLIFFORD MURCH) 06 July 2011 Fig. 5a, 6a; page 8, lines 18-23; page 11, lines 2-4; page 12, lines 14-20; page 13, lines 4-8	4, 6
Y	Fig. 5a, 6a; page 8, lines 18-23; page 11, lines 2-4; page 12, lines 14-20; page 13, lines 4-8	5
Y	US 7712606 B2 (SALAHIEH et al.) 11 May 2010 abstract; column 1, lines 12-16; column 4, lines 28-46; column 5, line 16 - column 6, line 66; column 8, line 38 - column 9, line 18	18-21, 24-27

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.:
because they relate to subject matter not required to be searched by this Authority, namely:
the subject matter listed in Rule 39 on which, under Article 17(2)(a)(i), an international search is not required to be carried out, including
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 Supplemental Box for Details

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 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.:
1-6 and 14-27

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.

Supplemental Box**Continuation of: Box III**

This International Application does not comply with the requirements of unity of invention because it does not relate to one invention or to a group of inventions so linked as to form a single general inventive concept.

This Authority has found that there are different inventions based on the following features that separate the claims into distinct groups:

- Claims 1-6 and 14-27 are directed to a fluid isolatable expandable endoluminal seal for a vascular device/endoluminal implant. The feature of having a seal that will expand upon exposure to a fluid is specific to this group of claims.
- Claims 7-10 are directed to a fluid isolatable expandable seal for a vascular device. The feature of a polymeric film molded to form a "D" balloon over a porous mesh which is heat or laser welded to seal a hydrogel strip between the film and the mesh is specific to this group of claims.
- Claims 11-12 are directed to a stent-balloon-vascular device with a seal. The feature of a seal that is able to flip out and over the end edge of the vascular device as the device expand is specific to this group of claims.
- Claim 13 is directed to a removable casing formed of a metal or polymer for fluidic isolation of an expandable seal on the exterior of a vascular device. The feature of the casing having a "U" shape cavity with O-rings and a locking mechanism is specific to this group of claims.
- Claim 28 is directed to a fluid absorbant material for placement within a vascular device. The feature of only keeping the tissue portion of the vascular device hydrated with the fluid absorbant material is specific to this group of claims.

PCT Rule 13.2, first sentence, states that unity of invention is only fulfilled when there is a technical relationship among the claimed inventions involving one or more of the same or corresponding special technical features. PCT Rule 13.2, second sentence, defines a special technical feature as a feature which makes a contribution over the prior art.

When there is no special technical feature common to all the claimed inventions there is no unity of invention.

In the above groups of claims, the identified features may have the potential to make a contribution over the prior art but are not common to all the claimed inventions and therefore cannot provide the required technical relationship. Therefore there is no special technical feature common to all the claimed inventions and the requirements for unity of invention are consequently not satisfied *a priori*.

INTERNATIONAL SEARCH REPORT		International application No.	
Information on patent family members		PCT/US2014/030355	
This Annex lists known patent family members relating to the patent documents cited in the above-mentioned international search report. The Australian Patent Office is in no way liable for these particulars which are merely given for the purpose of information.			
Patent Document/s Cited in Search Report		Patent Family Member/s	
Publication Number	Publication Date	Publication Number	Publication Date
WO 2013/033791 A1	14 March 2013	AU 2012307020 A1	13 Mar 2014
		CA 2847687 A1	14 Mar 2013
		CN 103889472 A	25 Jun 2014
		EP 2753372 A1	16 Jul 2014
		US 2013190857 A1	25 Jul 2013
		US 2013197622 A1	01 Aug 2013
		US 2013331929 A1	12 Dec 2013
		WO 2014145564 A2	18 Sep 2014
GB 2476649 A	06 July 2011	None	
US 7712606 B2	11 May 2010	US 7712606 B2	11 May 2010
		AU 2006291144 A1	22 Mar 2007
		CA 2622430 A1	22 Mar 2007
		EP 1924221 A2	28 May 2008
		EP 1924221 B1	12 Dec 2012
		EP 2561830 A1	27 Feb 2013
		JP 2009514561 A	09 Apr 2009
		JP 4927847 B2	09 May 2012
		US 2010219092 A1	02 Sep 2010
		US 8136659 B2	20 Mar 2012
		US 2012132547 A1	31 May 2012
		WO 2007033093 A2	22 Mar 2007
End of Annex			