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14/639,699 5 March 2015 (05.03.2015) US
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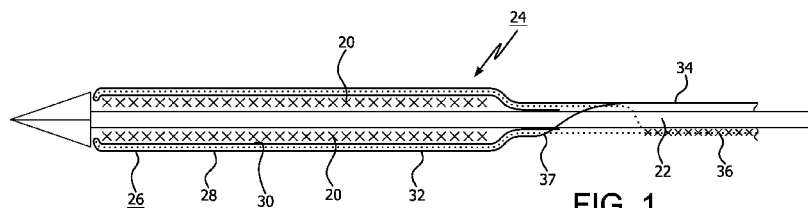
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**Published:**

- 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:**  
3 December 2015

(54) **Title:** IMPLANTABLE MEDICAL DEVICE CONSTRAINT AND DEPLOYMENT APPARATUS

**FIG. 1**

(57) **Abstract:** An implantable medical device deployment system is disclosed that employs both a sheath element (26) and a constraint member (32) to protect implantable medical devices during delivery in a body while providing simple, accurate, and reliable device deployment. The delivery system is configured so that loading and deployment forces are not directly related to device diameter, length, or design, thus allowing a more universal delivery system across various delivered device configurations and product lines. The deployment system can provide numerous benefits, include better protection for drug-coated implantable devices.

## INTERNATIONAL SEARCH REPORT

International application No

PCT/US2015/019271

## A. CLASSIFICATION OF SUBJECT MATTER

INV. A61F2/95 A61F2/962  
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.
X	EP 2 352 464 A1 (ANGIOMED AG [DE]) 10 August 2011 (2011-08-10)	1,25
Y	paragraph [0028]; claims; figures	2-12,26, 27
Y	----- WO 2013/025470 A2 (GORE & ASS [US]; CULLY EDWARD H [US]; IRWIN CRAIG W [US]; SILVERMAN JA) 21 February 2013 (2013-02-21) cited in the application claims; figures	2-12,26, 27
Y	----- US 2013/245742 A1 (NORRIS PATRICK M [US]) 19 September 2013 (2013-09-19) figure 2a ----- -/-	2-12,26, 27



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

6 October 2015

Date of mailing of the international search report

19/10/2015

Name and mailing address of the ISA/

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## INTERNATIONAL SEARCH REPORT

International application No.  
PCT/US2015/019271

### 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:
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.

## INTERNATIONAL SEARCH REPORT

International application No  
PCT/US2015/019271

C(Continuation). DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
Y	US 2007/191925 A1 (DORN JURGEN [DE]) 16 August 2007 (2007-08-16) the whole document -----	2-12, 26, 27
X	EP 2 491 894 A1 (ANGIOMED AG [DE]) 29 August 2012 (2012-08-29) paragraph [0029]; claims; figures -----	13, 28
Y	US 2011/137402 A1 (DORN JUERGEN [DE] ET AL) 9 June 2011 (2011-06-09) paragraphs [0040], [0117], [0118]; claims; figures -----	14-24, 29-31
X	US 2003/004561 A1 (BIGUS STEVE [US] ET AL) 2 January 2003 (2003-01-02) paragraph [0025]; claims; figures -----	13, 28
Y	US 2009/099638 A1 (GREWE DAVID D [US]) 16 April 2009 (2009-04-16) the whole document -----	14-24, 29-31
X	US 2009/099638 A1 (GREWE DAVID D [US]) 16 April 2009 (2009-04-16) the whole document -----	32
X	WO 2008/034793 A1 (ANGIOMED AG [DE]; DORN JUERGEN [DE]; VOGEL MICHAEL [DE]; WUEBBELING MA) 27 March 2008 (2008-03-27) the whole document -----	32
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Information on patent family members

International application No

PCT/US2015/019271

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**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, 25-27

A deployment system comprising a sheath

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2. claims: 13-24, 28-31

A deployment system comprising two sheaths

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3. claim: 32

A deployment system comprising pulleys

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