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(54) Title: MEDICAL DEVICE WITH A REMOVABLE LINER

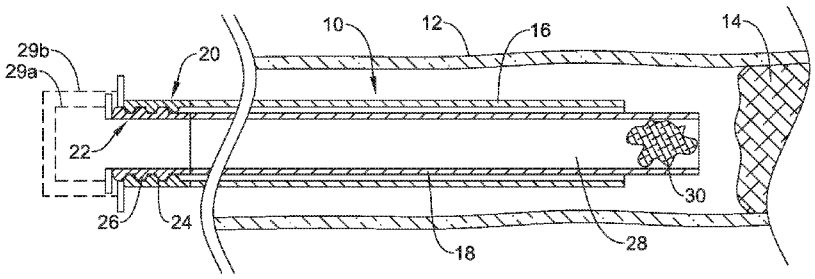

FIG. 1

(57) Abstract: Medical devices and medical device systems are disclosed. An example medical device system includes a catheter shaft having a proximal end. A removable liner extends through the catheter shaft. The removable liner may be designed to deliver a medical substance to a target region. The removable liner is designed to be removed from the catheter shaft if the removable liner becomes plugged. The system also includes a replacement liner. The replacement liner is designed to be inserted within the catheter shaft after the removal of the removable liner. A support member is disposed along the replacement liner.

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INTERNATIONAL SEARCH REPORT

International application No
PCT/US2016/012368

A. CLASSIFICATION OF SUBJECT MATTER
INV. A61M25/01 A61M25/06 A61M25/00
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)
A61M

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	US 2006/064056 A1 (COYLE JAMES [US] ET AL) 23 March 2006 (2006-03-23) paragraph [0035] figures 7-9 -----	1,4-9
X	US 2014/018773 A1 (WANG HUISUN [US] ET AL) 16 January 2014 (2014-01-16) paragraph [0040] figures 1-4 -----	1,4-9
X	US 2003/216685 A1 (PORTER STEPHEN CHRISTOPHER [US]) 20 November 2003 (2003-11-20)	10,11,14
A	paragraph [0038] - paragraph [0041] figures 1A-1D, 4E,4F -----	2,12,13, 15
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[X] Further documents are listed in the continuation of Box C.

[X] 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

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"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
20 July 2016	27/07/2016

Name and mailing address of the ISA/	Authorized officer
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International application No
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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 2012/226341 A1 (SCHRECK STEFAN [US] ET AL) 6 September 2012 (2012-09-06)	10,12
A	paragraph [0065] - paragraph [0067] figures 1-2c	11,13,14

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INTERNATIONAL SEARCH REPORT

International application No.
PCT/US2016/012368

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

Information on patent family members

International application No
PCT/US2016/012368

Patent document cited in search report	Publication date	Patent family member(s)	Publication date
US 2006064056 A1	23-03-2006	EP 1804886 A1	11-07-2007
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		US 2014358214 A1	04-12-2014
		WO 2012118901 A1	07-09-2012

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, 4-9

A medical device system, comprising:
a catheter shaft having a proximal end;
a removable liner extending through the catheter shaft;
wherein the removable liner is designed to deliver a medical substance to a target region;
wherein the removable liner is designed to be removed from the catheter shaft if the removable liner becomes plugged;
a replacement liner;
wherein the replacement liner is designed to be inserted within the catheter shaft after the removal of the removable liner; and
a support member disposed along the replacement liner.

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2. claims: 2, 3, 10-15

A medical device, comprising:
a tubular member having a proximal end region and a distal end region;
a first hub member coupled to the proximal end region;
a removable liner extending through the tubular member;
wherein the removable liner is free from attachment with the tubular member;
a second hub member coupled to the removable liner;
wherein the first hub member and the second hub member are designed to be detachably nested with one another; and
wherein the removable liner is designed to be removed from the tubular member so that a second liner may be disposed within the tubular member.