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11 July 2013

(54) Title: OCCLUSION-CROSSING DEVICES, ATHERECTOMY DEVICES, AND IMAGING

(57) Abstract: Described herein are methods for producing and identifying characteristic ("crescent shaped") regions indicative of an atherectomy plaque within a vessel, and systems and devices adapted to take advantage of this characteristic region.



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INTERNATIONAL SEARCH REPORT

International application No.
PCT/US2012/064848**A. CLASSIFICATION OF SUBJECT MATTER****A61B 17/3207(2006.01)i, A61B 17/22(2006.01)1, A61B 1/04(2006.01)1, A61M 25/01(2006.01)1**

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)

A61B 17/3207, A61B 17/22, A61B 17/32, A61F 17/32

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Korean utility models and applications for utility models

Japanese utility models and applications for utility models

Electronic data base consulted during the international search (name of data base and, where practicable, search terms used)

eKOMPASS(KIPO internal) & keywords: atherectomy, catheter, troweled distal tip, rotatable cutter, blade

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	US 2007-0276419 A1 (ROSENTHAL, M.) 29 November 2007	11,14,15
Y	See abstract; figs. 6-8; paragraphs 38-41 and 43; claims 9 and 11.	12
A		13
Y	US 2005-0187571 A1 (MASCHKE, M.) 25 August 2005	12
A	See abstract; fig. 1; paragraph 22; claim 10.	11,13-15
A	US 2007-0010840 A1 (ROSENTHAL, M. et al.) 11 January 2007	11-15
	See abstract; figs. 6-8; paragraphs 35-38; claim 20.	
A	US 2003-0125757 A1 (PATEL, H. et al.) 3 July 2003	11-15
	See abstract; fig. 4B; paragraph 86; claims 1 and 4.	
A	US 4926858 A (GIFFORD, III, H. S. et al.) 22 May 1990	11-15
	See abstract; fig. 13; column 11, lines 64-67; claim 1.	
A	US 2003-018346 A1 (FOLLMER, B. et al.) 23 January 2003	11-15
	See abstract; figs. 1 and 6; paragraph 25; claim 1.	

☐ 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 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

12 MARCH 2013 (12.03.2013)

Date of mailing of the international search report

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Name and mailing address of the ISA/KR



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INTERNATIONAL SEARCH REPORT

International application No.

PCT/US2012/064848

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.: 1-10
because they relate to subject matter not required to be searched by this Authority, namely:
Claims 1-10 pertain to methods for treatment of human body, and thus relate to a subject matter which this International Searching Authority is not required to search under Article 17(2)(a)(i) of the PCT and Rule 39.1(iv) of the Regulations under the PCT.
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:

According to International Patent Classification (IPC) or to both national classification and IPC

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 fee, this Authority did not invite payment of any additional fee.
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/US2012/064848

Patent document cited in search report	Publication date	Patent family member(s)	Publication date
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