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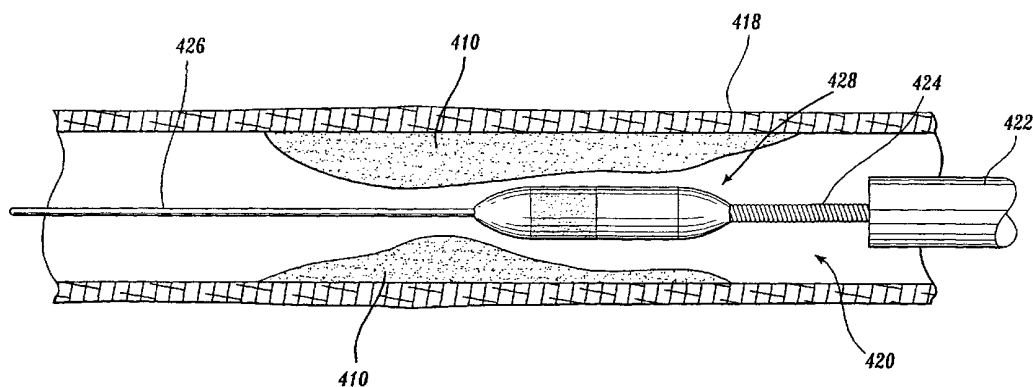
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Published:

- with international search report
- before the expiration of the time limit for amending the claims and to be republished in the event of receipt of amendments

[Continued on next page]

(54) Title: EXPANDABLE ATHERECTOMY BURR



(57) Abstract: An atherectomy burr (428) has an operating diameter that is larger than the diameter of a catheter in which the burr is routed. The burr may include a polymeric balloon (440) that is coated with an abrasive (436) and expands when the burr (428) is rotated. When the burr (428) is rotated, the polymeric tube expands by centrifugal force. The maximum expansion of the burr (428) is controlled by an expansion mechanism. Various mechanisms are disclosed for controlling the maximum diameter of the burr (428) thus preventing the burr (428) from over expanding. In addition, the present invention includes a system for preventing the loose ablated particulate from reemboilizing in the distal vasculature. The system includes an ablation burr (428) that has abrasive (436) disposed on the proximal end that is pulled back toward the guide catheter to ablate the lesion (410). The burr (428) creates a seal when expanded to block the ablated particulate so that the aspiration system can remove the particulate from the patient vessel or stent. Alternatively, the burr system may include a self expanding seal that is deployed out of the aspiration sheath so that a slight vacuum can remove the large loose particulate from the patient's vessel or stent.



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18 July 2002

For two-letter codes and other abbreviations, refer to the "Guidance Notes on Codes and Abbreviations" appearing at the beginning of each regular issue of the PCT Gazette.

INTERNATIONAL SEARCH REPORT

International Application No
PCT/US 01/22484

A. CLASSIFICATION OF SUBJECT MATTER
IPC 7 A61B17/22

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)

IPC 7 A61B

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 practical, 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	WO 99 44513 A (SCIMED LIFE SYSTEMS, INC.) 10 September 1999 (1999-09-10) the whole document ---	1,6,11
A	WO 97 14470 A (ZACCA) 24 April 1997 (1997-04-24) abstract; figures ---	1
A	WO 94 24946 A (SCIMED LIFE SYSTEMS, INC.) 10 November 1994 (1994-11-10) figures ---	1
A	US 5 681 336 A (CLEMENT ET AL.) 28 October 1997 (1997-10-28) abstract; figures ---	1
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☒ Further documents are listed in the continuation of box C.

☒ Patent family members are listed in 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 document 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

18 January 2002

Date of mailing of the international search report

22.05.02

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INTERNATIONAL SEARCH REPORT

International Application No

PCT/US 01/22484

C.(Continuation) DOCUMENTS CONSIDERED TO BE RELEVANT

Category *	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
A	<p>DE 198 11 364 A (BENKER) 23 September 1999 (1999-09-23) abstract; figures -----</p>	1

INTERNATIONAL SEARCH REPORT

International application No.
PCT/US 01/22484

Box I Observations where certain claims were found unsearchable (Continuation of item 1 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.: 19-27
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 II Observations where unity of invention is lacking (Continuation of item 2 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 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.:

1-13

Remark on Protest

- ☐ The additional search fees were accompanied by the applicant's protest.
- ☐ 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: 1-13

Ablating device having an expansion control system to control the expansion of the cutting burr to a predetermined expansion diameter.

2. Claims: 14-18

Pull-back ablating device wherein the balloon section of the ablation burr is expandable to create a seal with the vessel.

3. Claims: 28-31

Pull-back ablating device having an aspiration catheter disposed around the drive shaft to remove the ablated material from the lesion.

INTERNATIONAL SEARCH REPORT

Information on patent family members

International Application No

PCT/US 01/22484

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