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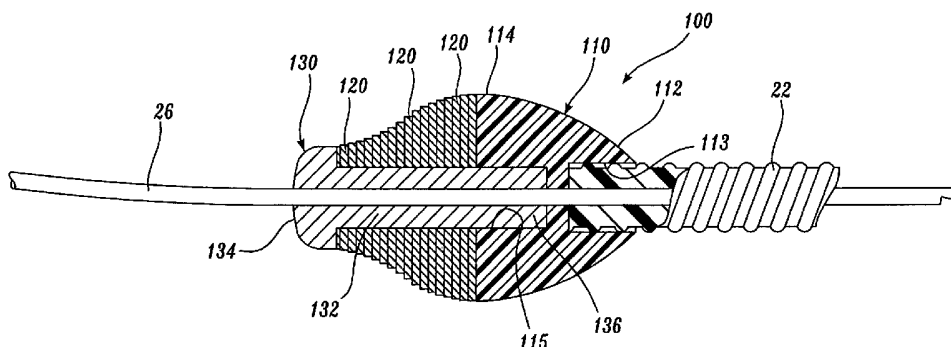
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For two-letter codes and other abbreviations, refer to the "Guid-  
ance Notes on Codes and Abbreviations" appearing at the begin-  
ning of each regular issue of the PCT Gazette.

(54) Title: **ATHERECTOMY BURR WITH MICRO-ENGINEERED CUTTING SURFACES**



(57) **Abstract:** A burr (100) for rotational ablation atherectomy devices having micro-engineered cutting features. The burr includes a plurality of stacked cutting disks (120) that are attached to a back support element (110). The back support element is rotationally coupled to a drive shaft (22) of the atherectomy device. The stacked cutting disks include a keyed center hole, and a plurality of outwardly-oriented cutting teeth. The cutting disks (120) are of varying outer diameter and are arranged to produce the desired burr shape. In one embodiment, a center mandrel (130) having a body portion slidably engages the keyed center holes of the stack of cutting disks, and connects to the back portion (110), thereby locking the cutting disks in place. In one disclosed embodiment, spacing disks are inserted between pairs of adjacent cutting disks (120). The spacing disks have a diameter less than the diameter of the adjacent cutting disks, thereby cooperatively with the adjacent cutting disks forming a circumferential channel in the burr. It is emphasized that this abstract is intended to comply with the rules requiring an abstract that will allow a searcher or other reader to quickly ascertain the subject matter of the disclosure. It is submitted with the understanding that it will not be used to interpret or limit the scope of meaning of the claims pursuant to 37 C.F.R. 1.72 (b).



WO 02/049518 A3

## INTERNATIONAL SEARCH REPORT

In International Application No

PCT/US 01/43497

**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 B27G E21B

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.
Y	US 6 015 420 A (CHANDRASEKARAN VERIVADA ET AL) 18 January 2000 (2000-01-18) abstract; figures 1-9	1
A	---	9,13
X	US 3 986 543 A (SLAYTON J RICHARD ET AL) 19 October 1976 (1976-10-19) column 3, line 17-25; figures 4,5	9,15
Y	figures 4,5	1
A	---	1,9,13, 15
	US 4 850 957 A (SUMMERS DAVID P) 25 July 1989 (1989-07-25) column 4, line 10 -column 4, line 15; figures 1,3	
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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.

\*&amp;\* document member of the same patent family

Date of the actual completion of the international search

17 July 2002

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Name and mailing address of the ISA

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## INTERNATIONAL SEARCH REPORT

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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.
A	US 5 882 329 A (WILLIAMS G RONALD ET AL) 16 March 1999 (1999-03-16) column 16, line 44, paragraph 65; figure 16 ---	1,9,13
A	EP 0 610 978 A (HERMADE SL) 17 August 1994 (1994-08-17) column 3, line 11 -column 4, line 24; figures 1-6 ---	1,9,13
A	CH 682 470 A (KARL BALIKO) 30 September 1993 (1993-09-30) ---	
A	GB 226 727 A (ROBERT EDWARD MAXIM) 1 January 1925 (1925-01-01) ---	
A	US 1 461 376 A (BARTLETT FRANCIS A) 10 July 1923 (1923-07-10) -----	

## INTERNATIONAL SEARCH REPORT

International application No.  
PCT/US 01/43497

### 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.: 20-21  
because they relate to subject matter not required to be searched by this Authority, namely:  
Subject-matter relates to methods for treatment of the human or animal body by surgery or therapy. Rule 39(iv) 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 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:

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.
- ☐ No protest accompanied the payment of additional search fees.

# INTERNATIONAL SEARCH REPORT

Information on patent family members

International Application No

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