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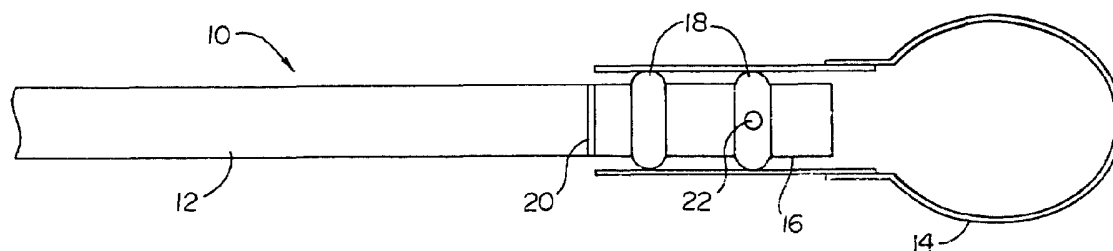
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For two-letter codes and other abbreviations, refer to the "Guidance Notes on Codes and Abbreviations" appearing at the beginning of each regular issue of the PCT Gazette.

(54) Title: INTRAVASCULAR OCCLUSION BALLOON CATHETER HAVING HAIR VENTING MEANS



(57) Abstract: An intravascular occlusion balloon catheter (10) having a removable hub (100), a profile sized to approximate a guidewire, and a means for venting air from the balloon (14). The removable hub and the small profile allow the occlusion balloon (14) catheter to be used as a guidewire. The venting means allows air to be easily and reliably removed from the balloon prior to use.

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INTERNATIONAL SEARCH REPORT

International Application No

PCT/US 01/44501

A. CLASSIFICATION OF SUBJECT MATTER

IPC 7 A61M25/10

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 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 practical, search terms used)

EP0-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 4 318 410 A (CHIN ALBERT K) 9 March 1982 (1982-03-09) column 1, line 29-51; figures 2,3 column 2, line 39 -column 3, line 4 column 3, line 39 -column 4, line 48 ---	1-4,8, 13-16
A	US 5 209 728 A (KRAUS JEFF ET AL) 11 May 1993 (1993-05-11) the whole document ---	1-22
A	US 6 017 323 A (CHEE URIEL HIRAM) 25 January 2000 (2000-01-25) the whole document -----	1-22



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 March 2002

Date of mailing of the international search report

19 JUL 2002

Name and mailing address of the ISA

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Brumme, I

INTERNATIONAL SEARCH REPORT

International application No.
PCT/US 01/44501**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.: 23-24
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.:

1-17

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: 1-17

Defining an intravascular occlusion balloon catheter having a shaft, a removable hub and inflatable occlusion balloon and means for venting air from the balloon.

1.1. Claims: 2, 14

Defining an intravascular occlusion balloon catheter having a shaft, an annular ring disposed on the shaft an intermediate tube fixedly connected to the balloon and movably disposed about the annular ring and forming a seal, and the intermediate tube having a vent hole.

1.2. Claims: 3,4,15,16

Defining an intravascular occlusion balloon catheter having a shaft, an intermediate tube the tube having an inflation lumen, a vent lumen, a vent hole a movable plug and a retainer disposed in the vent lumen.

1.3. Claims: 5,17

Defining an intravascular occlusion balloon catheter having a shaft, an intermediate tube disposed between the balloon and the shaft, the tube having an inflation lumen, a vent lumen, a vent hole and a re-sealable material is disposed in the vent lumen.

1.4. Claim : 6

Defining an intravascular occlusion balloon catheter having a shaft, an intermediate tube disposed between the balloon and the shaft, the tube comprising a side by side dual lumen.

1.5. Claim : 7

Defining an intravascular occlusion balloon catheter having a shaft, an intermediate tube disposed between the balloon and the shaft, the tube comprising an inner tube coaxially disposed in an outer tube and the vent lumen comprising an annular lumen therebetween.

1.6. Claims: 8-12

Defining an intravascular occlusion balloon catheter having a shaft, a vent lumen extending from the balloon to a vent port and having a sleeve disposed slidably and coaxially, the sleeve having a first position for occluding the vent and a second position

FURTHER INFORMATION CONTINUED FROM PCT/ISA/ 210

for allowing airflow from the vent port.

2. Claims: 18-22

Defining a distal occlusion device having a shaft, an inflatable device, two lumens extending through the shaft and a plug occluding the second shaft.

Please note that all inventions mentioned under item 1, although not necessarily linked by a common inventive concept, could be searched without effort justifying an additional fee.

INTERNATIONAL SEARCH REPORT

Information on patent family members

II Application No

PCT/US 01/44501

Patent document cited in search report	Publication date	Patent family member(s)	Publication date
US 4318410	A	09-03-1982	AT 29388 T 15-09-1987
		CA 1150130 A1	19-07-1983
		DE 3176419 D1	15-10-1987
		EP 0057689 A1	18-08-1982
		JP 57501166 T	08-07-1982
		JP 61002382 B	24-01-1986
		WO 8200408 A1	18-02-1982
US 5209728	A	11-05-1993	US 5324263 A 28-06-1994
		US 5256144 A	26-10-1993
US 6017323	A	25-01-2000	AU 6891598 A 30-10-1998
		WO 9844981 A1	15-10-1998