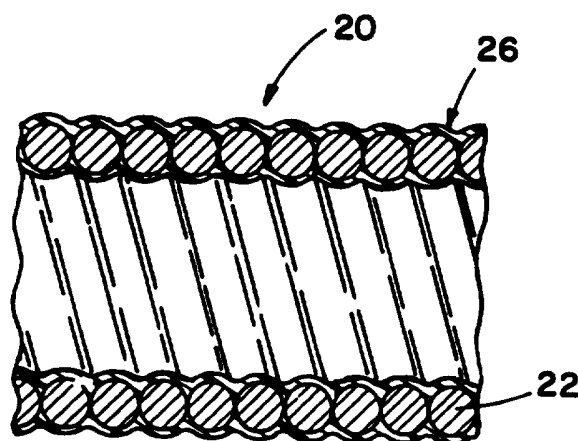




INTERNATIONAL APPLICATION PUBLISHED UNDER THE PATENT COOPERATION TREATY (PCT)

<p>(51) International Patent Classification ⁵ : A61M 25/00, B29C 47/02</p>	<p>A3</p>	<p>(11) International Publication Number: WO 93/04722 (43) International Publication Date: 18 March 1993 (18.03.93)</p>
<p>(21) International Application Number: PCT/US92/07619 (22) International Filing Date: 4 September 1992 (04.09.92)</p> <p>(30) Priority data: 755,614 5 September 1991 (05.09.91) US Not furnished 4 September 1992 (04.09.92) US</p> <p>(71) Applicant: MAYO FOUNDATION FOR MEDICAL EDUCATION AND RESEARCH[US/US]; 200 First Street Southwest, Rochester, MN 55905 (US).</p> <p>(72) Inventors: HOLMES, David, R. ; 1122 21st Street, N.E., Rochester, MN 55906 (US). SCHWARTZ, Robert, S. ; 1123 Aubaz Lane Southwest, Rochester, MN 55902 (US). HALVERSON, Frederick, S. ; 11 Charles Lake Road, North Oaks, MN 55127 (US). DONADIO, James, V., III ; 112123 Haering Lane, Chaska, MN 55318 (US). BERRY, David ; 8906 Marathon Road, Longmont, CO 80503 (US).</p>		<p>(74) Agent: SCHUMANN, Michael, D.; Merchant, Gould, Smith, Edell, Welter & Schmidt, 3100 Norwest Center, 90 South Seventh Street, Minneapolis, MN 55402 (US).</p> <p>(81) Designated States: AT, AU, BB, BG, BR, CA, CH, CS, DE, DK, ES, FI, GB, HU, JP, KP, KR, LK, LU, MG, MN, MW, NL, NO, PL, RO, RU, SD, SE, European patent (AT, BE, CH, DE, DK, ES, FR, GB, GR, IE, IT, LU, MC, NL, SE), OAPI patent (BF, BJ, CF, CG, CI, CM, GA, GN, ML, MR, SN, TD, TG).</p> <p>Published <i>With international search report. Before the expiration of the time limit for amending the claims and to be republished in the event of the receipt of amendments.</i></p> <p>(88) Date of publication of the international search report: 29 April 1993 (29.04.93)</p>

(54) Title: FLEXIBLE TUBULAR DEVICE FOR USE IN MEDICAL APPLICATIONS



(57) Abstract

An apparatus for use as a catheter, a guidewire, a catheter sheath for use with catheter introducers or a drug infusion catheter/guidewire. The apparatus (20) including a flexible metallic tubular member (22) with an encasing (26) covering the tubular member that creates a fluid-tight seal around the periphery of the tubular member. In one embodiment, the tubular member can be a coiled metallic hypotube design. This coiled design can include either a single filament or multi-filament wire wrap. In a second embodiment, the flexible tubular member can be formed by cutting a predetermined configuration of slots into a single hollow thin-walled metal tube at predetermined spacings, depth and patterns.

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INTERNATIONAL SEARCH REPORT

International Application No **PCT/US 92/07619**

I. CLASSIFICATION OF SUBJECT MATTER (if several classification symbols apply, indicate all) ⁶		
According to International Patent Classification (IPC) or to both National Classification and IPC Int.Cl.5 A 61 M 25/00 B 29 C 47/02		
II. FIELDS SEARCHED		
Minimum Documentation Searched ⁷		
Classification System	Classification Symbols	
Int.Cl.5	A 61 M	B 29 C A 61 B
Documentation Searched other than Minimum Documentation to the Extent that such Documents are Included in the Fields Searched ⁸		
III. DOCUMENTS CONSIDERED TO BE RELEVANT⁹		
Category ^o	Citation of Document, ¹¹ with indication, where appropriate, of the relevant passages ¹²	Relevant to Claim No. ¹³
X	US,A,4547193 (RYDELL) 15 October 1985 see claims; figures ---	1, 3, 6, 10
X	DE,A,4104092 (RIEGER) 14 August 1991 see abstract; figures ---	1, 3, 6, 10, 29
X	US,A,4669172 (PETRUZZI) 2 June 1987 see column 3, line 49 - column 4, line 5; figures 2-3 ---	1, 6
X	EP,A,0262735 (WAVIN B.V.) 6 April 1988 see claim 1; figures ---	1
	-/-	
<p>^o Special categories of cited documents :¹⁰</p> <p>"A" document defining the general state of the art which is not considered to be of particular relevance</p> <p>"E" earlier document but published on or after the international filing date</p> <p>"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)</p> <p>"O" document referring to an oral disclosure, use, exhibition or other means</p> <p>"P" document published prior to the international filing date but later than the priority date claimed</p> <p>"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</p> <p>"X" document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step</p> <p>"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.</p> <p>"&" document member of the same patent family</p>		
IV. CERTIFICATION		
Date of the Actual Completion of the International Search	Date of Mailing of this International Search Report	
09-12-1992	31. 03. 93	
International Searching Authority	Signature of Authorized Officer	
EUROPEAN PATENT OFFICE		

III. DOCUMENTS CONSIDERED TO BE RELEVANT (CONTINUED FROM THE SECOND SHEET)		
Category °	Citation of Document, with indication, where appropriate, of the relevant passages	Relevant to Claim No.
X	US,A,4932419 (DE TOLEDO) 12 June 1990 see abstract; figures -----	18

INTERNATIONAL SEARCH REPORT

International application No.

PCT/US 92/07619

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.:
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 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:

FOR FURTHER INFORMATION SEE FORM PCT/ISA/206 SENT ON 13.01.93.

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.

**ANNEX TO THE INTERNATIONAL SEARCH REPORT
ON INTERNATIONAL PATENT APPLICATION NO.**

US 9207619
SA 64762

This annex lists the patent family members relating to the patent documents cited in the above-mentioned international search report. The members are as contained in the European Patent Office EDP file on 16/03/93. The European Patent Office is in no way liable for these particulars which are merely given for the purpose of information.

Patent document cited in search report	Publication date	Patent family member(s)	Publication date
US-A- 4547193	15-10-85	None	
DE-A- 4104092	14-08-91	None	
US-A- 4669172	02-06-87	None	
EP-A- 0262735	06-04-88	NL-A- 8602469	18-04-88
		JP-A- 63118244	23-05-88
		US-A- 4929408	29-05-90
US-A- 4932419	12-06-90	None	