



INTERNATIONAL APPLICATION PUBLISHED UNDER THE PATENT COOPERATION TREATY (PCT)

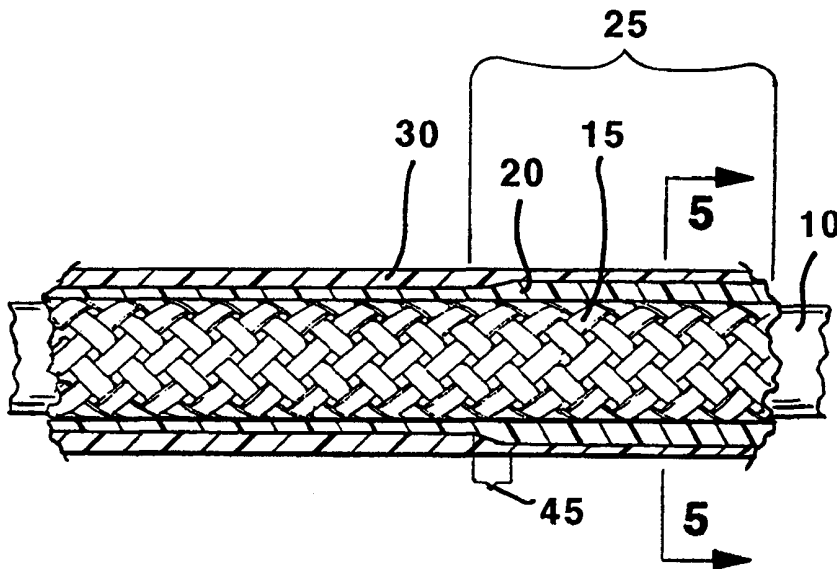
<p>(51) International Patent Classification ⁶ : A61M 25/00</p>	<p>A3</p>	<p>(11) International Publication Number: WO 99/61091 (43) International Publication Date: 2 December 1999 (02.12.99)</p>
<p>(21) International Application Number: PCT/US99/03798 (22) International Filing Date: 22 February 1999 (22.02.99) (30) Priority Data: 09/086,074 28 May 1998 (28.05.98) US (71) Applicant: MEDTRONIC, INC. [US/US]; 7000 Central Avenue N.E., Minneapolis, MN 55432 (US). (72) Inventors: LUNN, Peter, A.; 156 Hale Street, Beverly, MA 01915 (US). RAFIEE, Nasser; 39 Abbot Street, Andover, MA 01810 (US). LENTZ, David, J.; 5205 Fiore Terrace #B209, LaJolla, CA 92122 (US). STRICKLER, Peter, G.; 504 Broughton Drive, Beverly, MA 01915 (US). (74) Agents: LATHAM, Dianne, Plunkett et al.; Medtronic, Inc., 7000 Central Avenue N.E., MS301, Minneapolis, MN 55432 (US).</p>	<p>(81) Designated States: JP, European patent (AT, BE, CH, CY, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE). 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> (88) Date of publication of the international search report: 27 January 2000 (27.01.00)</p>	

(54) Title: EXTRUDED GUIDE CATHETER SHAFT WITH BUMP EXTRUSION SOFT DISTAL SEGMENT

(57) Abstract

A medical catheter comprising a continuous liner defining a guidewire lumen. The liner has a constant inner diameter and a constant outer diameter. A continuous layer is braided over the liner and encapsulated between the liner and a bump layer. The bump layer has a proximal segment, and a bump section. The bump section has a transition zone at the proximal end of the bump section. The proximal segment has a distal end affixed to the proximal end of the bump section. The proximal segment of the bump layer has an outer diameter which is less than

the outer diameter of the bump section of the bump layer. The transition zone has an outer diameter which smoothly transitions from the outer diameter of the distal end of the proximal segment of the bump layer to the larger outer diameter at the distal end of the transition zone. The bump layer is encapsulated between the outer jacket layer and the braided layer. The outer jacket layer has a constant outer diameter and an inner diameter conforming to the variable outer diameter of the bump layer. The bump layer is made of a material with a greater flexural modulus than that of the outer jacket layer, such that the flexibility of the catheter is greater at the distal end of the catheter than at the proximal end of the catheter.



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INTERNATIONAL SEARCH REPORT

International Application No
PCT/US 99/03798

A. CLASSIFICATION OF SUBJECT MATTER
IPC 6 A61M25/00

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 6 A61M B29C

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)

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category *	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
A	EP 0 643 979 A (CORDIS EUROP) 22 March 1995 (1995-03-22) the whole document ---	1-5,13
A	WO 96 26825 A (SCIMED LIFE SYSTEMS INC) 6 September 1996 (1996-09-06) column 14, line 16 -column 16, line 16; figures ---	1-5,13
A	US 5 533 985 A (WANG JAMES C) 9 July 1996 (1996-07-09) cited in the application column 6, line 35 - line 65; figures ---	1-4,10
A	US 5 702 373 A (SAMSON GENE) 30 December 1997 (1997-12-30) claim 1; figures ---	1-4
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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	*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
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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)	*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.
O document referring to an oral disclosure, use, exhibition or other means	*&* document member of the same patent family
P document published prior to the international filing date but later than the priority date claimed	

Date of the actual completion of the international search 19 August 1999	Date of mailing of the international search report 10.12.1999
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Name and mailing address of the ISA European Patent Office, P.B. 5818 Patentlaan 2 NL - 2280 HV Rijswijk Tel. (+31-70) 340-2040, Tx. 31 651 epo nl, Fax: (+31-70) 340-3016	Authorized officer KOUSOURETAS, I
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INTERNATIONAL SEARCH REPORT

International Application No

PCT/US 99/03798

C.(Continuation) DOCUMENTS CONSIDERED TO BE RELEVANT

Category *	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
A	DE 40 32 869 A (GERCKE HANS HERMANN) 23 April 1992 (1992-04-23) column 3, line 50 - line 64; figures -----	4

INTERNATIONAL SEARCH REPORT

International application No.

PCT/US 99/ 03798

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:

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.:

1-15

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

1. Claims: 1-15

A catheter comprising a continuous liner, a continuous braided layer braided over the liner, a continuous outer jacket and a bump layer being encapsulated between the outer jacket and the braided layer, the bump layer having a proximal segment and a bump section having a transition zone. A method of manufacturing such a catheter.

2. Claim : 16

A catheter comprising a continuous liner, a continuous braided layer braided over the liner, a continuous outer jacket disposed over the braided layer, the liner being selected from a group of melt processable fluoropolymers selected from a group comprising ECTFE, MFA or PFA.

INTERNATIONAL SEARCH REPORT

Information on patent family members

International Application No

PCT/US 99/03798

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