



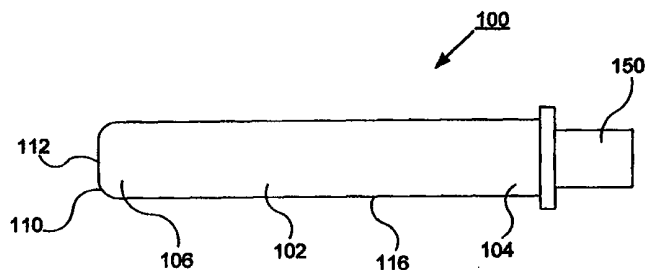
INTERNATIONAL APPLICATION PUBLISHED UNDER THE PATENT COOPERATION TREATY (PCT)

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(71) Applicant: UNIVERSITY OF FLORIDA [US/US]; 223 Grinter Hall, Gainesville, FL 32611 (US).		Published <i>With international search report.</i> <i>Before the expiration of the time limit for amending the claims and to be republished in the event of the receipt of amendments.</i>	
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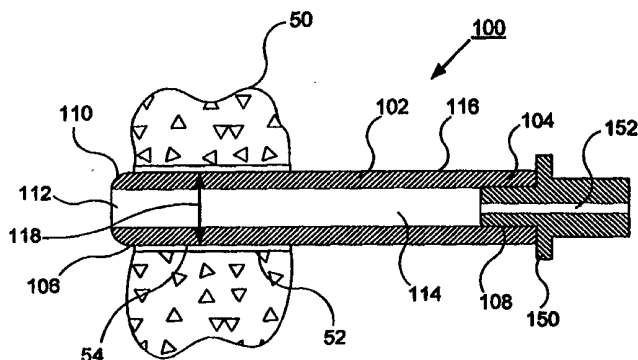
(54) Title: MEDICAL DEVICE UTILIZING HYDROGEL MATERIALS

(57) Abstract

The subject invention pertains to novel medical devices having highly advantageous physical characteristics which can reduce potential injury to patients. The excellent characteristics of the medical devices of the subject invention result, in part, from the use of hydrogel materials. Tubes for endotracheal devices can be formed entirely or partially of a swellable hydrogel material. The hydrogel material swells in the presence of water to form a seal within a tracheal lumen. In one embodiment, the endotracheal device is made fully of hydrogel. In another embodiment, the endotracheal device includes a hollow, pliable tube and a hydrogel sleeve attached to the tube. In another embodiment, the endotracheal device comprises a hollow, pliable tube, an inflatable cuff, and a hydrogel sleeve located over the cuff. In yet another embodiment, the endotracheal device comprises a hollow, pliable tube, and a hydrogel sleeve which acts as a true "gel-cuff". A further aspect of the subject invention concerns novel manufacturing processes used to produce novel hydrogel materials and the corresponding hydrogel materials. In addition, the subject invention relates to a method for delivery of treatments and chemicals substances to a patient.



A



B

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INTERNATIONAL SEARCH REPORT

International Application No

PCT/US 99/04313

A. CLASSIFICATION OF SUBJECT MATTER

IPC 6 A61M16/04 A61L29/00

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 A61L

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.
X	US 5 103 816 A (KIRSCHBAUM WARREN ET AL) 14 April 1992 (1992-04-14)	1,2,4, 12-14, 22-27, 29,30, 32,33, 35, 43-49, 72-74,91
Y	column 3, line 19 - column 6, line 7 column 7, line 35 - column 8, line 7; figures --- -/--	28,34, 37-41,75

☒ Further documents are listed in the continuation of box C.☒ Patent family members are listed in annex.

* Special categories of cited documents :

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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

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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.

Z document member of the same patent family

Date of the actual completion of the international search

3 June 1999

Date of mailing of the international search report

14. 09. 1999

Name and mailing address of the ISA

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INTERNATIONAL SEARCH REPORT

International Application No

PCT/US 99/04313

C.(Continuation) DOCUMENTS CONSIDERED TO BE RELEVANT

Category *	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	US 5 674 242 A (FROIX MICHAEL ET AL) 7 October 1997 (1997-10-07)	1-11,35, 72,73
Y	column 3, line 53 - line 55; figures column 5, line 19 - column 7, line 5 column 9, line 15 - column 11, line 4; example 6 ---	28
X	WO 92 11895 A (BOSTON SCIENT CORP) 23 July 1992 (1992-07-23)	1,2,4-6, 72,73
Y	page 4, line 17 - page 6, line 31; figures ---	34
X	WO 94 05361 A (CORTRAK MEDICAL INC) 17 March 1994 (1994-03-17)	1-6,10, 11,72,73
	page 4, line 36 - page 6, line 23; figures page 8, line 16 - page 9, line 4 page 10, line 35 - page 13, line 2 page 15, line 30 - page 16, line 35 page 18, line 24 - page 19, line 8 ---	
X	WO 95 03083 A (BOSTON SCIENT CORP) 2 February 1995 (1995-02-02)	1-6,10, 11,72,73
	page 1, line 4 - line 5; figures page 2, line 4 - page 5, line 28 page 6, line 4 - line 35 page 9, line 13 - line 27 page 10, line 23 - line 35 page 13, line 16 - page 14, line 12; examples 1,2 ---	
Y	WO 96 40082 A (GEL SCIENCES INC) 19 December 1996 (1996-12-19)	37-39,75
	page 7, line 26 - page 8, line 17 page 12, line 1 - line 15; figures ---	
Y	US 4 808 353 A (NAMBU MASAO ET AL) 28 February 1989 (1989-02-28)	40,41
	column 3, line 9 - column 4, line 29 column 5, line 3 - line 57 -----	

INTERNATIONAL SEARCH REPORT

In. ational application No.
PCT/US 99/04313

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.: 50-56
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 therapy
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.:
1-49, 75-75, 91

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

International Application No. PCT/US 99/04313

FURTHER INFORMATION CONTINUED FROM PCT/ISA/ 210

1. Claims: 1,2-49;72,73-75;91

Medical device

2. Claims: 57,58-60

Process for producing a PVA hydrogel by freezing

3. Claims: 61,62-67

Method for modifying the surface of a polymer object

4. Claims: 68,69-71

Process for bonding a hydrogel object

5. Claims: 76,77-82

Method for producing a hydrogel article using a mixed solvent

6. Claims: 83,84-90

Method for producing a hydrogel article using a monomer and an initiator

INTERNATIONAL SEARCH REPORT

Information on patent family members

International Application No

PCT/US 99/04313

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