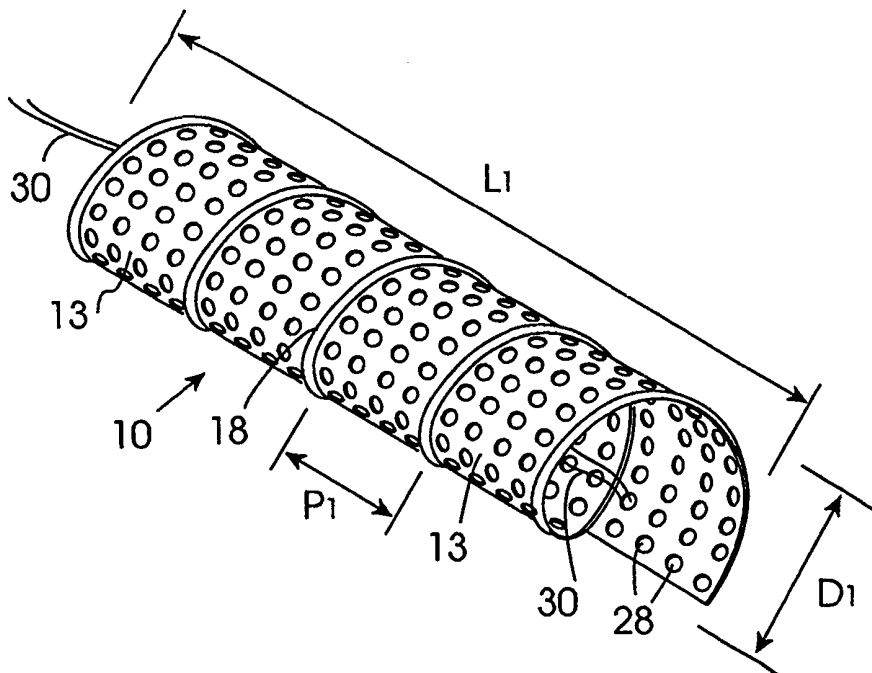




INTERNATIONAL APPLICATION PUBLISHED UNDER THE PATENT COOPERATION TREATY (PCT)

(51) International Patent Classification ⁶ : A61F 2/06	A3	(11) International Publication Number: WO 99/27870 (43) International Publication Date: 10 June 1999 (10.06.99)
(21) International Application Number: PCT/IE98/00100 (22) International Filing Date: 2 December 1998 (02.12.98) (30) Priority Data: 08/984,404 3 December 1997 (03.12.97) US (71) Applicant (for all designated States except US): AVE CON- NAUGHT [IE/IE]; Arthur Cox Building, Earlsfort Terrace, Dublin 2 (IE). (72) Inventor; and (75) Inventor/Applicant (for US only): McGUINNESS, Colm, P. [IE/IE]; 9 Tearnann Eala, Ballyloughan Road, Renmore, Galway (IE). (74) Agent: MACLACHLAN & DONALDSON; 47 Merrion Square, Dublin 2 (IE).		(81) Designated States: AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, CA, CH, CN, CU, CZ, DE, DK, EE, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MD, MG, MK, MN, MW, MX, NO, NZ, PL, PT, RO, RU, SD, SE, SG, SI, SK, SL, TJ, TM, TR, TT, UA, UG, US, UZ, VN, YU, ZW, ARIPO patent (GH, GM, KE, LS, MW, SD, SZ, UG, ZW), Eurasian patent (AM, AZ, BY, KG, KZ, MD, RU, TJ, TM), European patent (AT, BE, CH, CY, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE), OAPI patent (BF, BJ, CF, CG, CI, CM, GA, GN, GW, ML, MR, NE, SN, TD, TG). Published <i>With international search report.</i> (88) Date of publication of the international search report: 2 September 1999 (02.09.99)
(54) Title: HELICALLY WRAPPED INTERLOCKING STENT (57) Abstract <p>The present invention concerns an expandable stent (10) for supporting a body lumen formed from an elongate strip (12) of biocompatible material that is helically wrapped into a tubular shape. The strip is formed with a tongue (14) extending along one edge (15) and a groove (16) along the other (17). The tongue is slidably received in the groove as the strip is wound into helical wraps (13) that form a tube. The tongue and groove engagement interlocks the wraps to maintain the tubular shape. Sliding of the tongue within the groove permits the wraps to slide relative to each other causing the diameter of the stent to be increased or decreased. An increase in the stent diameter corresponds to a decrease in the length of the stent and vice versa. Thus the stent can be delivered to a vessel site in reduced diameter long length configuration, then deployed by compressing its length to cause expansion. Preferably, the stent is formed from a polymeric and bioabsorbable material that can be loaded with a pharmaceutical to provide localized drug delivery.</p>		



FOR THE PURPOSES OF INFORMATION ONLY

Codes used to identify States party to the PCT on the front pages of pamphlets publishing international applications under the PCT.

AL	Albania	ES	Spain	LS	Lesotho	SI	Slovenia
AM	Armenia	FI	Finland	LT	Lithuania	SK	Slovakia
AT	Austria	FR	France	LU	Luxembourg	SN	Senegal
AU	Australia	GA	Gabon	LV	Latvia	SZ	Swaziland
AZ	Azerbaijan	GB	United Kingdom	MC	Monaco	TD	Chad
BA	Bosnia and Herzegovina	GE	Georgia	MD	Republic of Moldova	TG	Togo
BB	Barbados	GH	Ghana	MG	Madagascar	TJ	Tajikistan
BE	Belgium	GN	Guinea	MK	The former Yugoslav Republic of Macedonia	TM	Turkmenistan
BF	Burkina Faso	GR	Greece	ML	Mali	TR	Turkey
BG	Bulgaria	HU	Hungary	MN	Mongolia	TT	Trinidad and Tobago
BJ	Benin	IE	Ireland	MR	Mauritania	UA	Ukraine
BR	Brazil	IL	Israel	MW	Malawi	UG	Uganda
BY	Belarus	IS	Iceland	MX	Mexico	US	United States of America
CA	Canada	IT	Italy	NE	Niger	UZ	Uzbekistan
CF	Central African Republic	JP	Japan	NL	Netherlands	VN	Viet Nam
CG	Congo	KE	Kenya	NO	Norway	YU	Yugoslavia
CH	Switzerland	KG	Kyrgyzstan	NZ	New Zealand	ZW	Zimbabwe
CI	Côte d'Ivoire	KP	Democratic People's Republic of Korea	PL	Poland		
CM	Cameroon	KR	Republic of Korea	PT	Portugal		
CN	China	KZ	Kazakstan	RO	Romania		
CU	Cuba	LC	Saint Lucia	RU	Russian Federation		
CZ	Czech Republic	LI	Liechtenstein	SD	Sudan		
DE	Germany	LK	Sri Lanka	SE	Sweden		
DK	Denmark	LR	Liberia	SG	Singapore		
EE	Estonia						

INTERNATIONAL SEARCH REPORT

International Application No

PCT/IE 98/00100

A. CLASSIFICATION OF SUBJECT MATTER

IPC 6 A61F2/06

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 A61F F16L

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	US 5 147 370 A (MCNAMARA ET AL) 15 September 1992 see abstract; figures	1,18
A	WO 83 00997 A (WALLSTEN) 31 March 1983 see abstract; figures 24,26,27	1,18
A	WO 93 07412 A (RIB LOC AUSTRALIA PTY. LTD) 15 April 1993	

☐

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.
- *Z* document member of the same patent family

Date of the actual completion of the international search

7 April 1999

Date of mailing of the international search report

30.06.1999

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

Smith, C

INTERNATIONAL SEARCH REPORT

International application No.
PCT/IE 98/00100

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.: 11-17
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.:
1-10,18

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: 1-10,18

A tubular, helical stent with interlocking edges.

2. Claims: 19-21

A stent and delivery system

INTERNATIONAL SEARCH REPORT

Information on patent family members

International Application No

PCT/IE 98/00100

Patent document cited in search report	Publication date	Patent family member(s)	Publication date
US 5147370 A	15-09-1992	AT 158161 T AU 2237792 A DE 69222305 D DE 69222305 T EP 0588959 A WO 9222263 A	15-10-1997 12-01-1993 23-10-1997 16-04-1998 30-03-1994 23-12-1992
WO 8300997 A	31-03-1983	AT 392733 B AT 907182 A AU 8954282 A BR 8208063 A CA 1204643 A CH 657521 A DE 3249027 T DE 3250058 C EP 0088118 A FR 2512678 A GB 2124908 A,B JP 3049575 B JP 58501458 T NL 8220336 T SE 8105510 A SE 444761 B SE 8202740 A US 4553545 A	27-05-1991 15-11-1990 08-04-1983 10-01-1984 20-05-1986 15-09-1986 31-10-1984 27-08-1992 14-09-1983 18-03-1983 29-02-1984 30-07-1991 01-09-1983 02-01-1984 16-03-1983 12-05-1986 17-03-1983 19-11-1985
WO 9307412 A	15-04-1993	AU 661047 B BR 9206572 A CA 2119035 A DE 69223059 D DE 69223059 T EP 0606349 A ES 2109374 T HK 1003493 A HU 69892 A JP 6511071 T MX 9205660 A NO 941118 A SG 46969 A US 5595800 A	13-07-1995 07-11-1995 15-04-1993 11-12-1997 26-03-1998 20-07-1994 16-01-1998 30-10-1998 28-09-1995 08-12-1994 01-04-1993 18-05-1994 20-03-1998 21-01-1997