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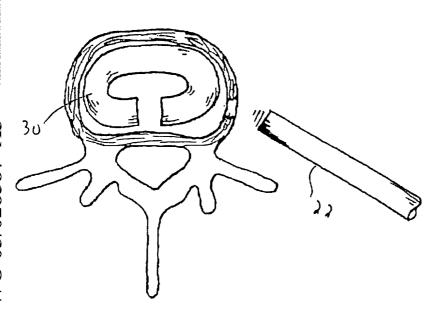
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(54) Title: SPINAL IMPLANT AND METHOD OF USE



(57) Abstract: A spinal implant having a smaller transverse cross-sectional dimension in the radially compressed configuration than in a first expanded configuration and a more linear configuration in the second delivery configuration than in the first curved configuration. The implant assumes the radially compressed configuration and second delivery configuration during delivery to the disc space and assumes the first curved configuration and first expanded configuration upon placement within the disc space. The implant further moves towards the radially compressed configuration once implanted in response to a load placed on the implant by the vertebral bodies.

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INTERNATIONAL SEARCH REPORT

International Application No PCT/US 02/30263

A. CLASSIF	ICATION OF SUBJE	CT MATTER
IPC 7	A61F2/44	A61F2/46

According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHED

 $\label{localization} \begin{array}{ll} \mbox{Minimum documentation searched (classification system followed by classification symbols)} \\ \mbox{IPC 7} & \mbox{A61F} \end{array}$

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)

EPO-Internal

Category °	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
Х	US 5 716 416 A (LIN CHIH-I) 10 February 1998 (1998-02-10) figures	1-4,6,8,
Υ	column 2, line 26 -column 3, line 66	7,9, 11-14
Υ	WO 01 06962 A (PFLEIDERER MARTIN ;SANDERS MARC (GB); BIRKBECK ALEC PAUL (GB); DEP) 1 February 2001 (2001-02-01) claims 1,2,4,6-9,14,15; figures 1-7,12	7,9, 11-14
A	Crumis 1,2,4,0 3,11,10, 11gai of 17,12	1-4,8,10
Х	US 3 867 728 A (KAHN PAUL ET AL) 25 February 1975 (1975-02-25) figures 20-24	1-3,7,12
	column 12, line 37 -column 13, line 36	
	-/	

X Further documents are listed in the continuation of box C.	χ Patent family members are listed in annex.		
"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 5 December 2002	Date of mailing of the international search report () 3. () 7. () () ()		
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 Stach, R		

INTERNATIONAL SEARCH REPORT

International Application No
PCT/US 02/30263

		FC1/03 02/30203
	ation) DOCUMENTS CONSIDERED TO BE RELEVANT	16.1
Category °	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
Х	US 6 264 695 B1 (STOY VLADIMIR A) 24 July 2001 (2001-07-24) figures 3-6,17B column 11, line 33 -column 12, line 50	1-3
X	US 5 919 235 A (BAUMGARTNER WALTER ET AL) 6 July 1999 (1999-07-06) claims 1-3; figures 1-3 column 4, line 16 - line 26 column 5, line 6 - line 35	1,2,7
P,X	WO 02 17824 A (SDGI HOLDINGS INC ;TRIEU HAI H (US)) 7 March 2002 (2002-03-07) figures 13,15A-17,22N,32	1-7, 12-14

International application No. PCT/US 02/30263

INTERNATIONAL SEARCH REPORT

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. X Claims Nos.: 19-22 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			
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			
As all required additional search fees were timely paid by the applicant, this International Search Report covers all searchable claims.			
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.: 1-14			
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: 1-14

A spinal implant having a first expanded and a first curved configuration, a second radially compressed and a second delivery configuration, the implant having a smaller transverse cross-sectional dimension in the radially compressed configuration than in the first expanded configuration and a more linear configuration in the second delivery configuration than in the first curved configuration.

(Problem: Reducing the size of an implant during insertion in the body to facilitate the surgery)

2. Claims: 15-18

A spinal implant having an outer housing composed of shape memory material, the outer housing having a memorized non-linear configuration and being radially, elastically compressible by a load transfered from the vertebral bodies (Problem: Providing an implant with the ability to return to its original shape after being compressed by loads transfered through the adjacent vertebral bodies)

INTERNATIONAL SEARCH REPORT

Information on patent family members

International Application No PCT/US 02/30263

Patent document cited in search report	Publication date	Patent family member(s)	Publication date
US 5716416 A	10-02-1998	NONE	
WO 0106962 A	01-02-2001	NL 1012719 C1 AU 6454100 A CA 2378364 A1 CN 1372449 T EP 1206227 A1 WO 0106962 A1 JP 2003505149 T	30-01-2001 13-02-2001 01-02-2001 02-10-2002 22-05-2002 01-02-2001 12-02-2003
US 3867728 A	25-02-1975	CA 992255 A1 DE 2203242 A1 FR 2124815 A5 GB 1306660 A SE 391122 B	06-07-1976 10-08-1972 22-09-1972 14-02-1973 07-02-1977
US 6264695 B1	24-07-2001	AU 7843200 A CA 2388794 A1 EP 1231868 A2 JP 2003510129 T WO 0122902 A2 US 2003055506 A1	30-04-2001 05-04-2001 21-08-2002 18-03-2003 05-04-2001 20-03-2003
US 5919235 A	06-07-1999	EP 0773008 A1 JP 9164156 A US 6165218 A US 2003018390 A1	14-05-1997 24-06-1997 26-12-2000 23-01-2003
WO 0217824 A	07-03-2002	AU 8535101 A EP 1313412 A2 WO 0217824 A2 US 2003023311 A1 US 2002026244 A1	13-03-2002 28-05-2003 07-03-2002 30-01-2003 28-02-2002