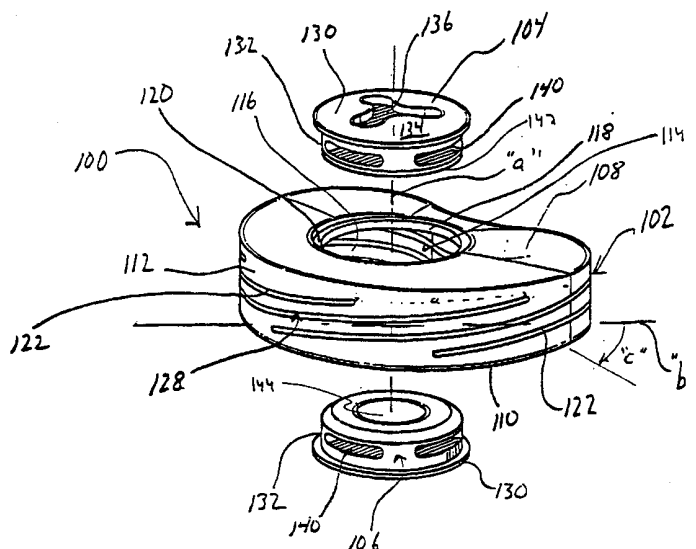




INTERNATIONAL APPLICATION PUBLISHED UNDER THE PATENT COOPERATION TREATY (PCT)

(51) International Patent Classification ⁶ : A61F 2/44	A3	(11) International Publication Number: WO 99/65425 (43) International Publication Date: 23 December 1999 (23.12.99)
(21) International Application Number: PCT/US99/13509 (22) International Filing Date: 16 June 1999 (16.06.99) (30) Priority Data: 09/098,606 17 June 1998 (17.06.98) US (71) Applicant: SURGICAL DYNAMICS, INC. [US/US]; 111 Glover Avenue, Norwalk, CT 06856 (US). (72) Inventor: MIDDLETON, Lance; 490 Booth Hill Road, Trum- bull, CT 06611 (US). (74) Agent: GERSHON, Neil, D.; United States Surgical Corpora- tion, 150 Glover Avenue, Norwalk, CT 06856 (US).	(81) Designated States: AU, CA, 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.</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> (88) Date of publication of the international search report: 10 February 2000 (10.02.00)	

(54) Title: ARTIFICIAL INTERVERTEBRAL DISC



(57) Abstract

An intervertebral prosthesis includes a disc member dimensioned for insertion within an intervertebral space between adjacent vertebrae to replace at least a portion of an intervertebral disc removed therefrom. The disc member has sufficient rigidity to support the adjacent vertebrae in spaced relation, and defines a longitudinal axis extending the height of the disc member and a lateral axis transverse to the longitudinal axis. The disc member includes an exterior wall which has a slit defined therein. The slit defines a longitudinal component of direction and a lateral component of direction. Preferably, the exterior wall includes a plurality of helical slits, adjacent slits being disposed in at least partial overlapping relation to define an overlapping region. Upon insertion of the disc member within the intervertebral space with the support surfaces in contacting engagement with respective vertebral portions of the adjacent vertebrae, forces exerted by the vertebral portions on the support surfaces are transferred along the exterior wall through the overlapping region.

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INTERNATIONAL SEARCH REPORT

International application No.
PCT/US 99/13509

A. CLASSIFICATION OF SUBJECT MATTER

IPC6: A61F 2/44
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)

IPC6: A61F

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 practicable, search terms used)

EPODOC

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	US 5645598 A (R.E. BROSNAN, III), 8 July 1997 (08.07.97), column 3, line 38 - line 57, figure 4 --	1-6,13-20, 23-28
X	US 5320644 A (W. BAUMGARTNER), 14 June 1994 (14.06.94), figures 1-5, abstract --	1-5,7,22-25, 27,28
X	US 5306310 A (W. SIEBELS), 26 April 1994 (26.04.94), column 2, line 37 - column 3, line 6, figures 1-3 --	1-4,6-10, 13-24,26-28
A	US 5458638 A (S.D. KUSLICH ET AL), 17 October 1995 (17.10.95), figures 1,2 --	1-28

Further documents are listed in the continuation of Box C. See patent family annex.

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Date of the actual completion of the international search	Date of mailing of the international search report
25 November 1999	16.12.99

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International application No.

PCT/US 99/13509

C (Continuation). DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
A	US 5702449 A (W.F. MCKAY), 30 December 1997 (30.12.97), column 6, line 10 - line 18, figures 6-11 ----- -----	1-28

INTERNATIONAL SEARCH REPORT

Information on patent family members

02/11/99

International application No.

PCT/US 99/13509

Patent document cited in search report	Publication date	Patent family member(s)	Publication date
US 5645598 A	08/07/97	AU 1748297 A WO 9725946 A US 5766253 A	11/08/97 24/07/97 16/06/98
US 5320644 A	14/06/94	AT 133555 T DE 59205228 D EP 0538183 A,B ES 2082430 T	15/02/96 00/00/00 21/04/93 16/03/96
US 5306310 A	26/04/94	CA 2075782 A DE 4128332 A DE 59201829 D EP 0529275 A,B	28/02/93 04/03/93 00/00/00 03/03/93
US 5458638 A	17/10/95	US 5489308 A US 5895427 A CA 2015507 A,C	06/02/96 20/04/99 06/01/91
US 5702449 A	30/12/97	AU 5954096 A EP 0836454 A WO 9640014 A	30/12/96 22/04/98 19/12/96