

(19) World Intellectual Property Organization
International Bureau



(43) International Publication Date
5 October 2006 (05.10.2006)

PCT

(10) International Publication Number
WO 2006/105437 A3

- (51) International Patent Classification:
A61F 2/44 (2006.01)
- (21) International Application Number:
PCT/US2006/012060
- (22) International Filing Date: 31 March 2006 (31.03.2006)
- (25) Filing Language: English
- (26) Publication Language: English
- (30) Priority Data:
60/666,945 31 March 2005 (31.03.2005) US
- (71) Applicant (for all designated States except US): LIFE SPINE, LLC [US/US]; Suite 370, 2400 Hassell Road, Hoffman Estates, Illinois 60169 (US).
- (72) Inventors; and
- (75) Inventors/Applicants (for US only): BUTLER, Michael, S. [US/US]; 6N343 Mission Hills Drive, St. Charles, Illinois 60175 (US). MILELLA, Michael, J., Jr. [US/US]; 257 Sheffield Drive, Schaumburg, Illinois 60194 (US).
- (74) Agent: BOWMAN, Bruce, J.; BOWMAN & ASSOCIATES, Suite 205, 1016 3rd Ave.SW, Carmel, Indiana 46032 (US).

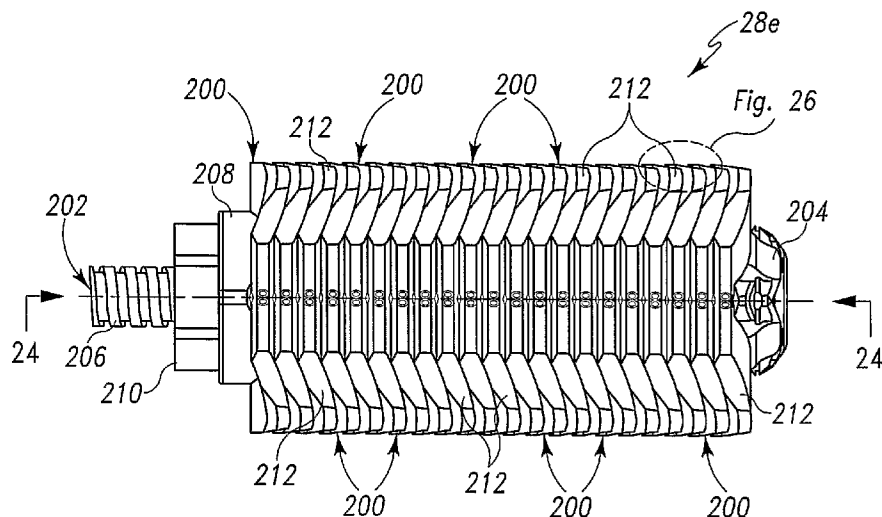
- (81) Designated States (unless otherwise indicated, for every kind of national protection available): AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BW, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, EG, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KM, KN, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, LY, MA, MD, MG, MK, MN, MW, MX, MZ, NA, NG, NI, NO, NZ, OM, PG, PH, PL, PT, RO, RU, SC, SD, SE, SG, SK, SL, SM, SY, TJ, TM, TN, TR, TT, TZ, UA, UG, US, UZ, VC, VN, YU, ZA, ZM, ZW.
- (84) Designated States (unless otherwise indicated, for every kind of regional protection available): ARIPO (BW, GH, GM, KE, LS, MW, MZ, NA, SD, SL, SZ, TZ, UG, ZM, ZW), Eurasian (AM, AZ, BY, KG, KZ, MD, RU, TJ, TM), European (AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HU, IE, IS, IT, LT, LU, LV, MC, NL, PL, PT, RO, SE, SI, SK, TR), OAPI (BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG).

Declarations under Rule 4.17:

- as to applicant's entitlement to apply for and be granted a patent (Rule 4.17(ii))
- as to the applicant's entitlement to claim the priority of the earlier application (Rule 4.17(iii))

[Continued on next page]

(54) Title: EXPANDABLE SPINAL INTERBODY AND INTRAVERTEBRAL BODY DEVICES



(57) Abstract: An expandable vertebral interbody/intravertebral (spinal) body device (28) for insertion into a spinal (intervertebral or intravertebral) space is provided. The interbody/intravertebral body (28) device is expandable from a first circumference to a second circumference through axial compression of segments of the vertebral interbody/intravertebral body device, particularly once the interbody/intravertebral body device (28) has been properly situated within a vertebral space. The interbody/intravertebral body device (28) is characterized by a plurality of axially stacked, individual segments (200) that are provided on a central insertion and deployment rod. Each segment (200) includes a central plate or body (314) to which are pivotally attached plate or leaf structures (212). Pivoting of the structures provides a collapsed or unexpanded position of the first circumference and an open or expanded position of the second circumference. The vertebral interbody/intravertebral body device (28) may be formed of a bio-compatible radiolucent material. The radial profile of an interbody/intravertebral body device is easily defined by plate or leaf structures of the segments.



WO 2006/105437 A3



— *of inventorship (Rule 4.17(iv))*

Published:

— *with international search report*

(88) Date of publication of the international search report:

28 June 2007

For two-letter codes and other abbreviations, refer to the "Guidance Notes on Codes and Abbreviations" appearing at the beginning of each regular issue of the PCT Gazette.

INTERNATIONAL SEARCH REPORT

International application No.

PCT/US06/12060

<p>A. CLASSIFICATION OF SUBJECT MATTER IPC: A61F 2/44(2006.01)</p> <p>USPC: 623/17.11 According to International Patent Classification (IPC) or to both national classification and IPC</p>														
<p>B. FIELDS SEARCHED</p> <p>Minimum documentation searched (classification system followed by classification symbols) U.S. : 623/17.11</p> <p>Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched</p> <p>Electronic data base consulted during the international search (name of data base and, where practicable, search terms used)</p>														
<p>C. DOCUMENTS CONSIDERED TO BE RELEVANT</p> <table border="1"> <thead> <tr> <th>Category *</th> <th>Citation of document, with indication, where appropriate, of the relevant passages</th> <th>Relevant to claim No.</th> </tr> </thead> <tbody> <tr> <td>X</td> <td>US 6,126,689 A (BRETT) 3 October 2000 (03.10.2000), col. 3, lines 55-67; col. 4, lines 1-67; and col. 5, lines 1-9</td> <td>1-32</td> </tr> <tr> <td>A</td> <td>US 5,658,337 A (KOHRS et al) 19 August 1997 (19.08.1997), see whole document</td> <td>1-32</td> </tr> <tr> <td>A</td> <td>US 6,537,320 B1 (MICHELSON) 25 March 2003 (25.03.2003), see whole document</td> <td>1-32</td> </tr> </tbody> </table>			Category *	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.	X	US 6,126,689 A (BRETT) 3 October 2000 (03.10.2000), col. 3, lines 55-67; col. 4, lines 1-67; and col. 5, lines 1-9	1-32	A	US 5,658,337 A (KOHRS et al) 19 August 1997 (19.08.1997), see whole document	1-32	A	US 6,537,320 B1 (MICHELSON) 25 March 2003 (25.03.2003), see whole document	1-32
Category *	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.												
X	US 6,126,689 A (BRETT) 3 October 2000 (03.10.2000), col. 3, lines 55-67; col. 4, lines 1-67; and col. 5, lines 1-9	1-32												
A	US 5,658,337 A (KOHRS et al) 19 August 1997 (19.08.1997), see whole document	1-32												
A	US 6,537,320 B1 (MICHELSON) 25 March 2003 (25.03.2003), see whole document	1-32												
<p><input type="checkbox"/> Further documents are listed in the continuation of Box C. <input type="checkbox"/> See patent family annex.</p>														
<p>* Special categories of cited documents:</p> <table border="0"> <tr> <td>"A" document defining the general state of the art which is not considered to be of particular relevance</td> <td>"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</td> </tr> <tr> <td>"E" earlier application or patent published on or after the international filing date</td> <td>"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</td> </tr> <tr> <td>"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)</td> <td>"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</td> </tr> <tr> <td>"O" document referring to an oral disclosure, use, exhibition or other means</td> <td>"&" document member of the same patent family</td> </tr> <tr> <td>"P" document published prior to the international filing date but later than the priority date claimed</td> <td></td> </tr> </table>			"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	"E" earlier application or patent published on or after the international filing date	"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	"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			
"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													
"E" earlier application or patent published on or after the international filing date	"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													
"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														
<p>Date of the actual completion of the international search 19 March 2007 (19.03.2007)</p>		<p>Date of mailing of the international search report 05 APR 2007</p>												
<p>Name and mailing address of the ISA/US Mail Stop PCT, Attn: ISA/US Commissioner for Patents P.O. Box 1450 Alexandria, Virginia 22313-1450 Facsimile No. (571) 273-3201</p>		<p>Authorized officer Eduardo Robert Telephone No. 571-272-3279</p>												