

(19) World Intellectual Property Organization
International Bureau



(43) International Publication Date
16 July 2009 (16.07.2009)

PCT

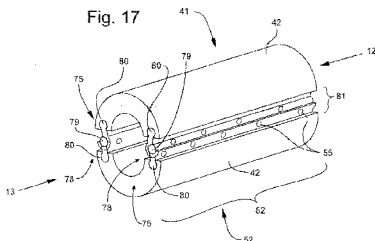
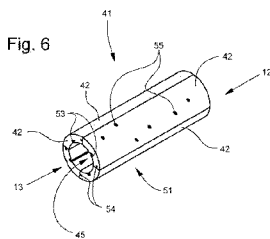
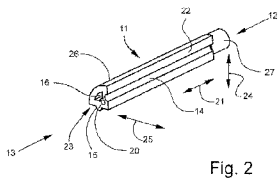
(10) International Publication Number
WO 2009/088639 A3

- (51) International Patent Classification:
A61F 2/30 (2006.01) A61F 2/46 (2006.01)
A61F 2/44 (2006.01)
- (21) International Application Number:
PCT/US2008/086425
- (22) International Filing Date:
11 December 2008 (11.12.2008)
- (25) Filing Language: English
- (26) Publication Language: English
- (30) Priority Data:
11/967,727 31 December 2007 (31.12.2007) US
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- (74) Agents: WILLIS, Thomas J., Jr. et al.; 710 Medtronic Parkway Ms LC340, Minneapolis, Minnesota 55432 (US).
- (81) Designated States (unless otherwise indicated, for every kind of national protection available): AE, AG, AL, AM, AO, AT, AU, AZ, BA, BB, BG, BH, BR, BW, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, DO, DZ, EC, EE, EG, ES, FI, GB, GD, GE, GH, GM, GT, HN, HR, HU, ID, IL, IN, IS, JP, KE, KG, KM, KN, KP, KR, KZ, LA, LC, LK, LR, LS, LT, LU, LY, MA, MD, ME, MG, MK, MN, MW, MX, MY, MZ, NA, NG, NI, NO, NZ, OM, PG, PH, PL, PT, RO, RS, RU, SC, SD, SE, SG, SK, SL, SM, ST, SV, SY, TJ, TM, TN, TR, TT, TZ, UA, UG, US, UZ, VC, VN, 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, HR, HU, IE, IS, IT, LT, LU, LV, MC, MT, NL, NO, PL, PT, RO, SE, SI, SK, TR), OAPI

[Continued on next page]

(54) Title: BONE FUSION DEVICE AND METHODS



(57) Abstract: A bone fusion device can include elongated interlockable segments (11), each having an engaging surface (22, 23) interlockable with the engaging surface of another segment. The segments can be inserted in between bones one at a time. Another device can include an outer expandable component (41) having outer expandable members (42) insertable to a location between bones in an unexpanded configuration and an inner expander including surface engaging portions interlockable with inner surface engaging portions in the outer expandable members. A device can include the inner expander having an outwardly flared proximal portion that can interlock with the proximal end of the outer expandable members. A further device can include a locking bridge (75) expandable with an expandable body, such as an inflatable balloon, and movable to a locked expanded configuration. A bone fusion system, a bone fusion device kit, and/or a method for fusing bone can include such a bone fusion device.



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(BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG).

— *before the expiration of the time limit for amending the claims and to be republished in the event of receipt of amendments (Rule 48.2(h))*

Published:

— *with international search report (Art. 21(3))*

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

3 September 2009

INTERNATIONAL SEARCH REPORT

International application No
PCT/US2008/086425

A. CLASSIFICATION OF SUBJECT MATTER
INV. A61F2/30 A61F2/44 A61F2/46

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)
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 practical, search terms used)
EPO-Internal

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	WO 2006/127849 A (VERTEBRAL TECHNOLOGIES INC [US]; FELT JEFFREY C [US]; RYHELL MARK A [U]) 30 November 2006 (2006-11-30) paragraphs [0032] - [0053], [0059]	1-5
X	EP 1 354 572 A (TSOU PAUL M [US]) 22 October 2003 (2003-10-22) paragraphs [0014] - [0028]	1-3
X	WO 02/071921 A (SPINE WAVE INC [US]; JOHNSON WESLEY D [US]; LIPSCHULTZ TYLER P [US]; W) 19 September 2002 (2002-09-19) page 15, line 4 - page 19, line 23	1-4
Y		5
Y	WO 2006/051547 A (DISC O TECH MEDICAL TECHNOLOGI [IL]; BEYAR MORDECHAY [IL]; GLOBERMAN O) 18 May 2006 (2006-05-18) page 20, lines 19,20	5
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Further documents are listed in the continuation of Box C. See patent family annex.

* Special categories of cited documents :

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 document but 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	

Date of the actual completion of the international search 6 April 2009	Date of mailing of the international search report 06/07/2009
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Name and mailing address of the ISA/ European Patent Office, P.B. 5818 Patentlaan 2 NL - 2280 HV Rijswijk Tel. (+31-70) 340-2040, Fax: (+31-70) 340-3016	Authorized officer Buchmann, Gerhard
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INTERNATIONAL SEARCH REPORT

International application No
PCT/US2008/086425

C(Continuation). DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
A	WO 2006/127848 A (VERTEBRAL TECHNOLOGIES INC [US]; FELT JEFFREY C [US]) 30 November 2006 (2006-11-30) paragraphs [0039] - [0051] -----	1-5

INTERNATIONAL SEARCH REPORT

International application No.
PCT/US2008/086425

Box No. II Observations where certain claims were found unsearchable (Continuation of item 2 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.:
because they relate to subject matter not required to be searched by this Authority, namely:

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 No. III Observations where unity of invention is lacking (Continuation of item 3 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 allsearchable claims.

2. As all searchable claims could be searched without effort justifying an additional fees, this Authority did not invite payment of additional fees.

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.:

see additional sheet(s)

Remark on Protest

- The additional search fees were accompanied by the applicant's protest and, where applicable, the payment of a protest fee.
- The additional search fees were accompanied by the applicant's protest but the applicable protest fee was not paid within the time limit specified in the invitation.
- 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: 1-5

A bone fusion device comprising a plurality of longitudinally interlockable elements.

2. claims: 6-12

A bone fusion device comprising an outer expandable component having a plurality of expandable members, and a longitudinally moving inner expander being engageable with the expandable members.

3. claims: 13-16

A bone fusion device comprising an outer expandable component having a plurality of expandable members, locking bridges between the expandable members, and an expandable body to be inserted into a lumen formed by the outer expandable members.

INTERNATIONAL SEARCH REPORT

Information on patent family members

International application No
PCT/US2008/086425

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