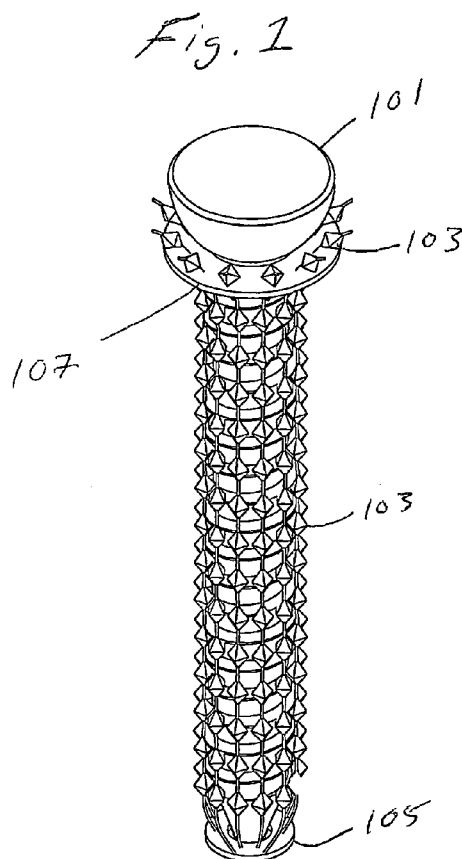




- (51) International Patent Classification:
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A61B 17/68 (2006.01) *A61B 17/70* (2006.01)
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- (71) Applicant (for all designated States except US): SPINAL VENTURES, LLC [US/US]; 7324 Whitmore Lake Rd., Brighton, MI 48116 (US).
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- (75) Inventors/Applicants (for US only): ZWIRKOSKI, Paul [US/US]; 5126 Gerard, Pinckney, MI 48169 (US). ADAMS, Joseph, T [US/US]; 3719 Black Eagle Dr., Howell, MI 48843 (US). AGARWAL, Anand [GB/US]; College of Engineering and Medicine, 5037 NI MS303, Toledo, OH 43606 (US).
- (74) Common Representative: ZWIRKOSKI, Paul; 7324 Whitmore Lake Rd., Brighton, MI 48116 (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, CL, 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, PE, PG, PH, PL, PT, QA, RO, RS, RU, RW, SC, SD,

[Continued on next page]

(54) Title: IMPLANT AND FASTENER FIXATION DEVICES AND DELIVERY INSTRUMENTATION



(57) Abstract: Described here are delivery or fastener device fixation implant devices, delivery instrumentation, and methods for using them. In particular, the description relates to implants having a having a strength sufficient to support, anchor, secure, maintain, or to otherwise repair an elongated delivery or fastener device anywhere such a device, such as, for example, a bone screw, may need further securing within a substrate it is inserted into, such as, for example, within human or animal tissue, such as bone tissue.



SE, SG, SK, SL, SM, ST, SV, SY, TH, 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, LR, LS, MW, MZ, NA, RW, SD, SL, SZ, TZ, UG, ZM, ZW), Eurasian (AM, AZ, BY, KG, KZ, RU, TJ, TM), European (AL, AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HR, HU, IE, IS, IT, LT, LU, LV, MC, MK, MT, NL, NO, PL, PT, RO, RS, SE, SI, SK, SM, TR), OAPI (BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG).

Published:

- with international search report (Art. 21(3))
- 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))

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A. CLASSIFICATION OF SUBJECT MATTER**A61F 2/44(2006.01)i, A61B 17/68(2006.01)i, A61B 17/76(2006.01)i, A61B 17/70(2006.01)i**

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)

A61F2/44; A61F2/08; A61B17/86; A61B17/34; A61B17/56

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Korean utility models and applications for utility models

Japanese utility models and applications for utility models

Electronic data base consulted during the international search (name of data base and, where practicable, search terms used)

eKOMPASS(KIPO internal) & Keywords: delivery device, fastener, bone screw, guide rings, implant, array, flexibly connected segments, cavity.

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	US 2010-0076497 A1 (ZWIRKOSKI, PAUL A.) 25 March 2010 See abstract; paragraph [0163]; claims 51-58, 63, 64, 66 & 71; Figures 7C, 20A & 21.	1, 7-9, 12, 14-15
A		2, 13, 16-17
A	US 6746483 B1 (BOJARSKI, RAY et al.) 08 June 2004 See abstract; claims 1, 2 & 22; Figures 2A-2C, 7A & 7B.	1-2, 7-9, 12-17
A	US 2006-0235410 A1 (RALPH, JAMES D. et al.) 19 October 2006 See abstract; claims 1 & 13; and figures 1A-1D & 2-3.	1-2, 7-9, 12-17
A	US 5984926 A (JONES, A. ALEXANDER M.) 16 November 1999 See abstract; claim 1; Figures 2 & 6-7.	1-2, 7-9, 12-17
A	US 5084050 A (DRAENERT, KLAUS) 28 January 1992 See abstract; claim 1; Figures 1-9.	1-2, 7-9, 12-17



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

"E" earlier application or patent 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 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

31 JANUARY 2013 (31.01.2013)

Date of mailing of the international search report

31 JANUARY 2013 (31.01.2013)

Name and mailing address of the ISA/KR



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Telephone No. 82-42-481-8647



INTERNATIONAL SEARCH REPORT

International application No.

PCT/US2012/000239**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.: 3-6, 10-11
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:

Claims 3 & 10 appear twice, claims 4-6 depend on claim 3, and the latter claims 3 & 11 refer to themselves. Thus, it is impossible to define the subject matter for which protection is sought for claims 3-6 & 10-11.
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:

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.:

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.

INTERNATIONAL SEARCH REPORT

Information on patent family members

International application No.

PCT/US2012/000239

Patent document cited in search report	Publication date	Patent family member(s)	Publication date
US 2010-0076497 A1	25.03.2010	EP 1768616 A2 US 2005-0278023 A1 US 2006-0184246 A1 US 7682400 B2 WO 2005-122956 A2 WO 2005-122956 A3	04.04.2007 15.12.2005 17.08.2006 23.03.2010 29.12.2005 01.06.2006
US 6746483 B1	08.06.2004	AT 508691 T AU 2001-243646 B2 AU 2001-43646 A1 AU 2004-208846 A1 AU 2004-208846 B2 AU 4364601 A CA 2400630 A1 DE 60125916 D1 DE 60125916 T2 EP 1263329 A2 EP 1263329 B1 EP 1263329 B9 EP 1589905 A2 EP 1589905 B1 EP 1752102 A1 EP 1752102 B1 EP 2298182 A1 JP 2003-527193 A JP 2006-518257 A JP 2011-251139 A JP 4563376 B2 JP 4931317 B2 US 2004-0024456 A1 US 2004-0225359 A1 US 2008-0027445 A1 US 2008-0109079 A1 US 2008-0319546 A1 US 2010-0222826 A1 US 2011-282362 A1 US 7279008 B2 US 7407512 B2 US 7731750 B2 US 7740657 B2 US 7758642 B2 US 7988732 B2 WO 01-70135 A2 WO 01-70135 A3 WO 2004-069100 A2 WO 2004-069100 A3	15.05.2011 16.03.2006 03.10.2001 19.08.2004 03.12.2009 03.10.2001 27.09.2001 22.02.2007 06.09.2007 11.12.2002 10.01.2007 27.06.2007 02.11.2005 29.07.2009 14.02.2007 11.05.2011 23.03.2011 16.09.2003 10.08.2006 15.12.2011 06.08.2010 24.02.2012 05.02.2004 11.11.2004 31.01.2008 08.05.2008 25.12.2008 02.09.2010 17.11.2011 09.10.2007 05.08.2008 08.06.2010 22.06.2010 20.07.2010 02.08.2011 27.09.2001 10.01.2002 19.08.2004 31.03.2005
US 2006-0235410 A1	19.10.2006	AU 2006-237638 A1 EP 1868516 A2	26.10.2006 26.12.2007

INTERNATIONAL SEARCH REPORT

Information on patent family members

International application No.

PCT/US2012/000239

Patent document cited in search report	Publication date	Patent family member(s)	Publication date
		EP 1868516 A4	25.06.2008
		US 8128670 B2	06.03.2012
		WO 2006-112955 A2	26.10.2006
		WO 2006-112955 A3	02.08.2007
		WO 2006-112955 B1	07.09.2007
US 5984926 A	16.11.1999	None	
US 5084050 A	28.01.1992	None	