



- (51) **International Patent Classification:**
A61F 2/30 (2006.01) A61L 24/00 (2006.01)
A61F 2/28 (2006.01)
- (21) **International Application Number:**
PCT/US2011/047414
- (22) **International Filing Date:**
11 August 2011 (11.08.2011)
- (25) **Filing Language:** English
- (26) **Publication Language:** English
- (30) **Priority Data:**
61/372,902 12 August 2010 (12.08.2010) US
- (71) **Applicant (for all designated States except US):** SMITH & NEPHEW, INC. [US/US]; 1450 E. Brooks Road, Memphis, TN 38116 (US).
- (72) **Inventors; and**
- (75) **Inventors/Applicants (for US only):** LENZ, Nathaniel Milton [US/US]; 1675 East Churchill Downs, Germantown, TN 38138 (US). WILKINSON, Zachary Christopher [US/US]; 7440 Neshoba Road, Germantown, TN 38138 (US).
- (74) **Agent:** SCHEPERS, Brad A.; Krieg Devault LLP, One Indiana Square, Suite 2800, Indianapolis, IN 46204 (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, SC, SD, 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, SD, SL, SZ, TZ, UG, ZM, ZW), Eurasian (AM, AZ, BY, KG, KZ, MD, 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))

[Continued on next page]

(54) **Title:** STRUCTURES FOR USE IN ORTHOPAEDIC IMPLANT FIXATION AND METHODS OF INSTALLATION ONTO A BONE

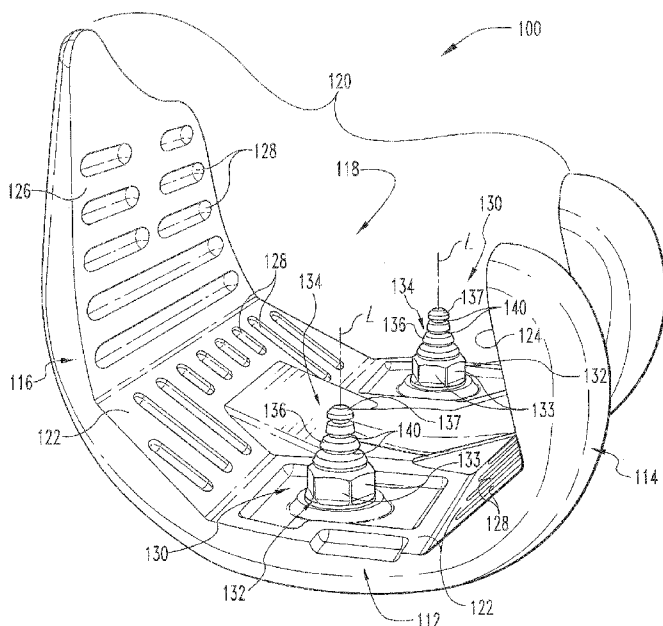


Fig. 10

(57) **Abstract:** An orthopaedic implant (10, 40, 50, 60, 100) including a base portion (12, 1 12) and first and second transverse portions (14, 16, 114, 116) extending transversely from the base portion (12, 112) to thereby define an inner region (18, 1 18) of the implant sized for receipt of an end portion of a bone (B) therein. The implant further includes at least one anchor structure (30, 130) projecting from the base portion (12, 112) and sized and configured for receipt within an opening (O, O') formed in the end portion of the bone (B). The anchor structure (30, 130) extends along a longitudinal axis (L) and includes a proximal end (30a, 130a) attached to the base portion (12, 112) and an opposite distal end (30b, 130b), and further includes a tapered outer surface (36, 136) that inwardly tapers in a proximal-to-distal direction along the longitudinal axis (L). In one embodiment, an anchor structure (130) is provided which includes one or more grooves (140) extending into the tapered outer surface (136), with a flowable material (150) positioned about at least a portion of the tapered outer surface (136) and positioned within the grooves (140), and with the flowable material (150) configured to cure to a hardened state.

WO 2012/021702 A3

(88) Date of publication of the international search report:
3 May 2012

A. CLASSIFICATION OF SUBJECT MATTER*A61F 2/30(2006.01)i, A61F 2/28(2006.01)i, A61L 24/00(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)

A61F 2/30; A61F 2/38; A61B 17/04

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)

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	EP 0349173 A1 (POLYZOIDES, JOHN et al.) 03 January 1990 See Figs. 1,3; and col.4, lines 1-21.	1,2
A	EP 1484036 A1 (NAKASHIMA PROPELLER CO., LTD. et al.) 08 December 2004 See Figs.1,4,7 and the relevant passages.	1-5
A	US 04892547A A (BROWN; DAVID R.) 09 January 1990 See Figs.1,17(a) and the relevant passages.	1-5
A	US 05571194A A (GABRIEL; STEFAN M.) 05 November 1996 See Figs.9,10 and the relevant passages.	1-5
A	US 2009-0062926 A1 (WYSS JOSEPH) 05 March 2009 See Figs.1,2 and the relevant passages.	1-5
A	US 2009-0270994 A1 (SCHAEFER ROBERTO et al.) 29 October 2009 See Fig.3 and the relevant passages.	1-5

 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

14 MARCH 2012 (14.03.2012)

Date of mailing of the international search report

15 MARCH 2012 (15.03.2012)

Name and mailing address of the ISA/KR

Korean Intellectual Property Office
Government Complex-Daejeon, 189 Cheongsa-ro,
Seo-gu, Daejeon 302-701, Republic of Korea

Facsimile No. 82-42-472-7140

Authorized officer

KIM, MYEONG HEE

Telephone No. 82-42-481-8160



INTERNATIONAL SEARCH REPORT

Information on patent family members

International application No.

PCT/US2011/047414

Patent document cited in search report	Publication date	Patent family member(s)	Publication date
EP 0349173 A1	03.01.1990	DK303489A	23.12.1989
		DK303489D0	20.06.1989
		GB 2219942 A	28.12.1989
		GB 8814863 D0	27.07.1988
		IE892016L	22.12.1989
		PT90953A	29.12.1989
EP 1484036 A1	08.12.2004	JP 2003-175062 A	24.06.2003
		JP 3781355 B2	31.05.2006
		US 2004-249468 A1	09.12.2004
US 04892547A A	09.01.1990	US 04959071A A	25.09.1990
US 05571194A A	05.11.1996	None	
US 2009-0062926 A1	05.03.2009	AT 499077 T	15.03.2011
		AU 2007-202753 A1	10.01.2008
		CN 101099697 A	09.01.2008
		DE 602007012614 D1	07.04.2011
		EP 1867301 A1	19.12.2007
		EP 1867301 B1	23.02.2011
		JP 2008-029821 A	14.02.2008
		US 2008-015691 A1	17.01.2008
US 2009-0270994 A1	29.10.2009	US 2005-0197709 A1	08.09.2005
		US 7544210 B2	09.06.2009