

(19) World Intellectual Property Organization
International Bureau



(43) International Publication Date
29 May 2008 (29.05.2008)

PCT

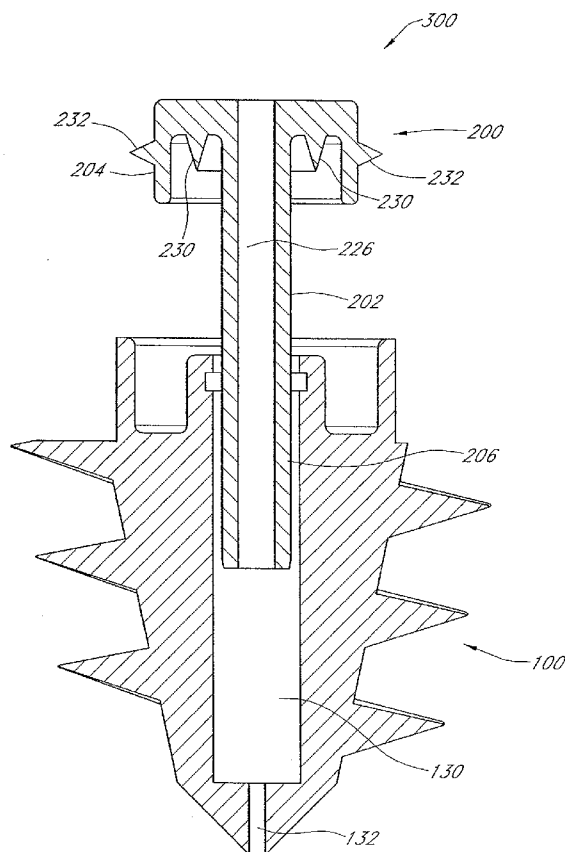
(10) International Publication Number
WO 2008/063915 A3

- (51) International Patent Classification:
A61B 17/04 (2006.01)
- (21) International Application Number:
PCT/US2007/084180
- (22) International Filing Date:
8 November 2007 (08.11.2007)
- (25) Filing Language: English
- (26) Publication Language: English
- (30) Priority Data:
60/858,622 13 November 2006 (13.11.2006) US
- (71) Applicant (for all designated States except US): **KFX MEDICAL CORPORATION** [US/US]; 5845 Avenida Encinas, Suite 128, Carlsbad, CA 92008 (US).
- (72) Inventors; and
- (75) Inventors/Applicants (for US only): **HEAVEN, Malcolm** [US/US]; 33132 Ocean Ridge, Dana Point, CA 92629 (US).

- KO, Michael** [US/US]; 27392 Capricho, Mission Viejo, CA 92692 (US).
- (74) Agent: **HART, Daniel**; Knobbe Martens Olson & Bear Llp, 2040 Main Street, 14th Floor, Irvine, CA 92614 (US).
- (81) Designated States (unless otherwise indicated, for every kind of national protection available): AE, AG, AL, AM, 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, 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,

[Continued on next page]

(54) Title: SYSTEM AND METHOD FOR ATTACHING SOFT TISSUE TO BONE



(57) Abstract: Disclosed herein are methods and devices for securing soft tissue to a rigid material such as bone. A non-metallic bone anchor is described that comprises a base and a top such that suture material may be compressed between surfaces on the base and top to secure the suture to the anchor by ultrasonically welding the surfaces. Also described is an inserter/welder that can be used to insert the bone anchor into bone and move the anchor top relative to the anchor base to clamp suture material there between and to weld the suture material within the clamping area.

WO 2008/063915 A3



FR, GB, GR, HU, IE, IS, IT, LT, LU, LV, MC, MT, 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).

— *before the expiration of the time limit for amending the
claims and to be republished in the event of receipt of
amendments*

Published:

— *with international search report*

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

7 August 2008

INTERNATIONAL SEARCH REPORT

International application No
PCT/US2007/084180

A. CLASSIFICATION OF SUBJECT MATTER
INV. A61B17/04

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)
A61B

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	US 2005/245932 A1 (FANTON ET AL.) 3 November 2005 (2005-11-03) paragraph [0163]; figures 15a,15b	1-3,7, 15-23
Y	-----	4-6,8-14
Y	US 2006/161159 A1 (DREYFUSS ET AL) 20 July 2006 (2006-07-20) abstract paragraphs [0006], [0007]	4-6
Y	WO 2006/060035 A (3I MEDICAL CORPORATION) 8 June 2006 (2006-06-08) paragraphs [0036] - [0044], [0048] - [0052]; figures 4a-6a,9a-9e	8-14
A	US 2004/044366 A1 (BONUTTI ET AL.) 4 March 2004 (2004-03-04) abstract; figures	1
	----- -/--	

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 document 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 another 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

10 April 2008

Date of mailing of the international search report

20/06/2008

Name and mailing address of the ISA/

European Patent Office, P.B. 5818 Patentlaan 2
NL - 2280 HV Rijswijk
Tel. (+31-70) 340-2040, Tx. 31 651 epo nl,
Fax: (+31-70) 340-3016

Authorized officer

Giménez Burgos, R

INTERNATIONAL SEARCH REPORT

International application No
PCT/US2007/084180

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 7 001 411 B1 (DEAN) 21 February 2006 (2006-02-21) abstract; figures column 3, line 9 - column 4, line 30 column 4, line 49 - column 5, line 15 column 5, lines 39-57 column 6, lines 35-42 -----	1-3, 15-23
A	US 2004/098050 A1 (FOERSTER ET AL.) 20 May 2004 (2004-05-20) abstract; figures 2,3,27 paragraphs [0067], [0068], [0088] -----	1
A	WO 99/52478 A (AXYA MEDICAL, INC.) 21 October 1999 (1999-10-21) abstract; figures -----	1

INTERNATIONAL SEARCH REPORT

International application No.
PCT/US2007/084180

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.: 24-33
because they relate to subject matter not required to be searched by this Authority, namely:
Rule 39.1(iv) PCT - Method for treatment of the human or animal body by surgery
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.:

1- 23

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- 23

An anchor comprising a welding feature for securing a suture to bone.

2. claims: 34- 36 and 54- 56

A device for inserting an anchor into bone comprising means for ultrasonically weld an area of the anchor.

3. claims: 37- 43

A suture anchor comprising an anchor top having a crimp-shaping mechanism and an anchor base having a crimpable extension adapted to deform upon receiving pressure from the crimp-shaping mechanism.

4. claims: 44- 53

A suture anchor comprising: an anchor top comprising a distal member having protrusions on its exterior portion and a proximal member slidably attached to the distal member; and an anchor base having a central bore for receiving the distal member.

INTERNATIONAL SEARCH REPORT

Information on patent family members

International application No

PCT/US2007/084180

Patent document cited in search report	Publication date	Patent family member(s)	Publication date
US 2005245932	A1	03-11-2005	AU 2005235305 A1 03-11-2005
			CA 2563910 A1 03-11-2005
			EP 1740103 A2 10-01-2007
			JP 2007532269 T 15-11-2007
			US 2006282081 A1 14-12-2006
			WO 2005102190 A2 03-11-2005
US 2006161159	A1	20-07-2006	EP 1031321 A1 30-08-2000
			US 6517564 B1 11-02-2003
			US 2004098045 A1 20-05-2004
			US 2007288027 A1 13-12-2007
			US 2007225764 A1 27-09-2007
WO 2006060035	A	08-06-2006	AU 2005310320 A1 08-06-2006
			CA 2568562 A1 08-06-2006
			EP 1773207 A2 18-04-2007
			JP 2008501428 T 24-01-2008
			US 2006004364 A1 05-01-2006
US 2004044366	A1	04-03-2004	US 2007032825 A1 08-02-2007
US 7001411	B1	21-02-2006	NONE
US 2004098050	A1	20-05-2004	AU 2003291404 A1 15-06-2004
			EP 1562487 A2 17-08-2005
			WO 2004045367 A2 03-06-2004
			US 2006271105 A1 30-11-2006
WO 9952478	A	21-10-1999	AU 739780 B2 18-10-2001
			AU 3492599 A 01-11-1999
			CA 2328467 A1 21-10-1999
			EP 1071386 A1 31-01-2001
			JP 2002511308 T 16-04-2002
			US 6056751 A 02-05-2000