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(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, 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.

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[Continued on next page]

(54) Title: DOUBLE ACTION EXTERNAL FIXATION CLAMP

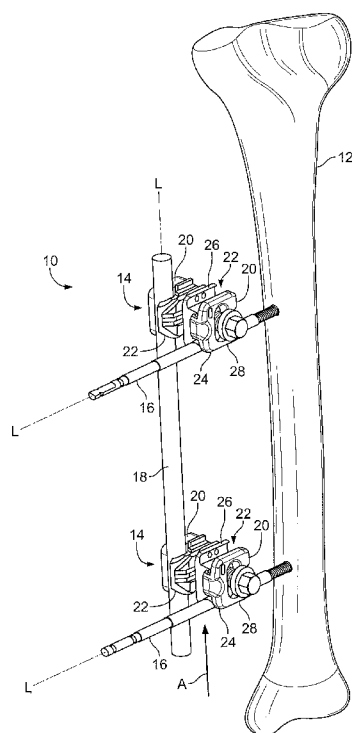


FIG. 1

(57) Abstract: An external fixation component includes a capture member defining opposing grooves on opposite lateral sides of the capture member for capture of an element of an orthopedic fixation system. The capture member includes a base and a head coupled to the base to define a component axis that extends through the base and through the head. The base and the head are coupled for relative lateral translation in opposing directions such that the element can be captured by the capture member in either of the opposing grooves.

**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))*
- *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))*

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

18 May 2012

Published:

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

A. CLASSIFICATION OF SUBJECT MATTER*A61B 17/60(2006.01)i, A61B 17/64(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)

A61B 17/60; A61F 2/00; A61F 4/00; A61B 17/00; A61B 17/58; A61B 17/56

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

Chinese 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)

KOMPASS(KIPO internal) & keywords: orthopedic, external fixation, capture member, groove, and lateral side

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
A	US 2005-0119656 A1 (FERRANTE, JOSEPH et al.) 2 June 2005 See paragraph [42] - paragraph [81]; Figures. 1-19.	1-3
A	US 7048735 B2 (FERRANTE, JOSEPH et al.) 23 May 2006 See column 4 line 38 - column 7 line 63; Figures. 1-11.	1-3
A	US 7758582 B2 (FERRANTE, JOSEPH et al.) 20 July 2010 See column 5 line 65 - column 13 line 46; Figures. 1-16.	1-3
A	US 7004943 B2 (FERRANTE, JOSEPH et al.) 28 February 2006 See column 5 line 21 - column 12 line 14; Figures. 1-13.	1-3
A	US 6080153 A (MATA, JACQUES et al.) 27 June 2000 See column 2 line 60 - column 5 line 42; Figures. 1-4.	1-3
A	US 7708736 B2 (MULLANEY, MICHAEL W.) 4 May 2010 See column 4 line 56 - column 6 line 33; Figures. 1-8.	1-3
PX	US 2011-0066151 A1 (MURNER, BEAT et al.) 17 March 2011 See paragraph [26] - paragraph [49]; Figures. 1-12.	1-3



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

26 MARCH 2012 (26.03.2012)

Date of mailing of the international search report

27 MARCH 2012 (27.03.2012)

Name and mailing address of the ISA/KR

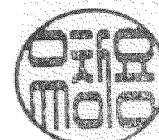
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INTERNATIONAL SEARCH REPORT

International application No.

PCT/US2011/045723**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.: 14-15
because they relate to subject matter not required to be searched by this Authority, namely:
Claims 14-15 pertain to methods for treatment of the human body by surgery, and thus relate to a subject matter which this International Searching Authority is not required, under Article 17(2)(a)(i) of the PCT and Rule 39.1(iv) of the Regulations under the PCT, to search.
2. ☒ Claims Nos.: 6,11
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 6 and 11 are not to make meaningful search, because the claims refer multiple dependent claim.
3. ☒ Claims Nos.: 4-5, 7-10, 12-13
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/US2011/045723

Patent document cited in search report	Publication date	Patent family member(s)	Publication date
US 2005-0119656 A1	02.06.2005	AT 391459 T	15.04.2008
		AU 2003-207741 A1	02.09.2003
		AU 2003-207741 B2	08.05.2008
		AU 2003-237487 A1	31.12.2003
		CA 2474388 A1	14.08.2003
		CA 2474388 C	09.08.2011
		DE 60320217 D1	21.05.2008
		EP 1471842 A1	03.11.2004
		EP 1471842 B1	09.04.2008
		JP 04323959 B2	12.06.2009
		JP 2005-516664 A	09.06.2005
		JP 2005-516664 T	09.06.2005
		JP 4323959 B2	02.09.2009
		US 2003-0149429 A1	07.08.2003
		US 2003-0149430 A1	07.08.2003
		US 2005-0245939 A1	03.11.2005
		US 7004943 B2	28.02.2006
		US 7048735 B2	23.05.2006
		US 7758582 B2	20.07.2010
		US 7887537 B2	15.02.2011
		WO 03-065911 A1	14.08.2003
		WO 03-105704 A1	24.12.2003
US 7048735 B2	23.05.2006	AU 2003-207741 A1	02.09.2003
		AU 2003-207741 B2	08.05.2008
		AU 2003-237487 A1	31.12.2003
		CA 2474388 A1	14.08.2003
		CA 2474388 C	09.08.2011
		DE 60320217 T2	14.05.2009
		EP 1471842 A1	03.11.2004
		EP 1471842 B1	09.04.2008
		ES 2302914 T3	01.08.2008
		JP 04323959 B2	12.06.2009
		JP 2005-516664 A	09.06.2005
		US 2003-0149429 A1	07.08.2003
		US 2003-0149430 A1	07.08.2003
		US 2005-0119656 A1	02.06.2005
		US 2005-0245939 A1	03.11.2005
		US 7004943 B2	28.02.2006
		US 7758582 B2	20.07.2010
		US 7887537 B2	15.02.2011
		WO 03-065911 A1	14.08.2003
		WO 03-105704 A1	24.12.2003
US 7758582 B2	20.07.2010	AU 2003-207741 A1	02.09.2003
		AU 2003-207741 B2	08.05.2008
		AU 2003-237487 A1	31.12.2003
		CA 2474388 A1	14.08.2003
		CA 2474388 C	09.08.2011

INTERNATIONAL SEARCH REPORT

Information on patent family members

International application No.

PCT/US2011/045723

Patent document cited in search report	Publication date	Patent family member(s)	Publication date
US 7004943 B2	28.02.2006	EP 1471842 A1	03.11.2004
		EP 1471842 B1	09.04.2008
		JP 04323959 B2	12.06.2009
		JP 2005-516664 A	09.06.2005
		US 2003-0149429 A1	07.08.2003
		US 2003-0149430 A1	07.08.2003
		US 2005-0119656 A1	02.06.2005
		US 2005-0245939 A1	03.11.2005
		US 7004943 B2	28.02.2006
		US 7048735 B2	23.05.2006
		US 7887537 B2	15.02.2011
		WO 03-065911 A1	14.08.2003
		WO 03-105704 A1	24.12.2003
US 6080153 A	27.06.2000	AU 2003-207741 A1	02.09.2003
		AU 2003-207741 B2	08.05.2008
		AU 2003-237487 A1	31.12.2003
		CA 2474388 A1	14.08.2003
		CA 2474388 C	09.08.2011
		DE 60320217 T2	14.05.2009
		EP 1471842 A1	03.11.2004
		EP 1471842 B1	09.04.2008
		ES 2302914 T3	01.08.2008
		JP 04323959 B2	12.06.2009
		JP 2005-516664 A	09.06.2005
		US 2003-0149429 A1	07.08.2003
		US 2003-0149430 A1	07.08.2003
		US 2005-0119656 A1	02.06.2005
		US 2005-0245939 A1	03.11.2005
		US 7048735 B2	23.05.2006
		US 7758582 B2	20.07.2010
		US 7887537 B2	15.02.2011
		WO 03-065911 A1	14.08.2003
		WO 03-105704 A1	24.12.2003
US 7708736 B2	04.05.2010	CA 2157536 C	18.01.2000
		EP 0700664 A1	13.03.1996
		EP 0700664 B1	29.09.1999
		JP 02609442 B2	13.02.1997
		JP 08-071084 A	19.03.1996
		JP 2609442 B2	14.05.1997
		KR 10-0166622 B1	15.01.1999
		US 5752954 A	19.05.1998
US 2011-0066151 A1	17.03.2011	US 2007-0231059 A1	04.10.2007
		US 2010-0234845 A1	16.09.2010
		US 2011-0172663 A1	14.07.2011
		US 7938829 B2	10.05.2011
US 2011-0066151 A1	17.03.2011	AU 2010-203309 A1	31.03.2011

INTERNATIONAL SEARCH REPORT

Information on patent family members

International application No.

PCT/US2011/045723Patent document
cited in search reportPublication
datePatent family
member(s)Publication
date

CA 2710738 A1	11.03.2011
CN 102018556 A	20.04.2011
EP 2294994 A1	16.03.2011
JP 2011-056261 A	24.03.2011