



- (51) International Patent Classification:
A61B 17/64 (2006.01)
- (21) International Application Number:
PCT/US2016/037228
- (22) International Filing Date:
13 June 2016 (13.06.2016)
- (25) Filing Language:
English
- (26) Publication Language:
English
- (30) Priority Data:
62/180,758 17 June 2015 (17.06.2015) US
- (72) Inventors; and
- (71) Applicants : ERICKSON, Nathan [US/US]; 13985 N. Willow Creek Drive, Beaver Dam, Utah 84306 (US). PLOWMAN, Nathan [US/US]; 1800 W. Center Street, Warsaw, Indiana 46580 (US). ETHERINGTON, Neil [US/US]; 1800 W. Center Street, Warsaw, Indiana 46580 (US). FAUTH, Andrew R. [US/US]; 775 Green Field Circle, River Heights, Utah 84321 (US). NASCONE, Jason W. [US/US]; 13517 Paternal Gift Drive, Highland, Maryland 20777 (US). O'TOOLE, Robert [US/US]; 1116 Fairbanks Drive, Lutherville, Maryland 21093 (US). MEYERS, Thomas [US/US]; 1800 W. Center Street,

Warsaw, Indiana 46580 (US). PARROTT, Russell M. [US/US]; 847 Lydia Drive, Warsaw, Indiana 46580 (US).

(74) Agents: ARORA, Suneel et al.; Schwegman, Lundberg & Woessner, P.A., P.O. Box 2938, Minneapolis, Minnesota 55402 (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, BN, 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, IR, IS, JP, KE, KG, KN, KP, KR, KZ, LA, LC, LK, LR, LS, LU, LY, MA, MD, ME, MG, MK, MN, MW, MX, MY, MZ, NA, NG, NI, NO, NZ, OM, PA, PE, PG, PH, PL, PT, QA, RO, RS, RU, RW, SA, 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, RW, SD, SL, ST, 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, KM, ML, MR, NE, SN, TD, TG).

[Continued on next page]

(54) Title: ANKLE FIXATION SYSTEM

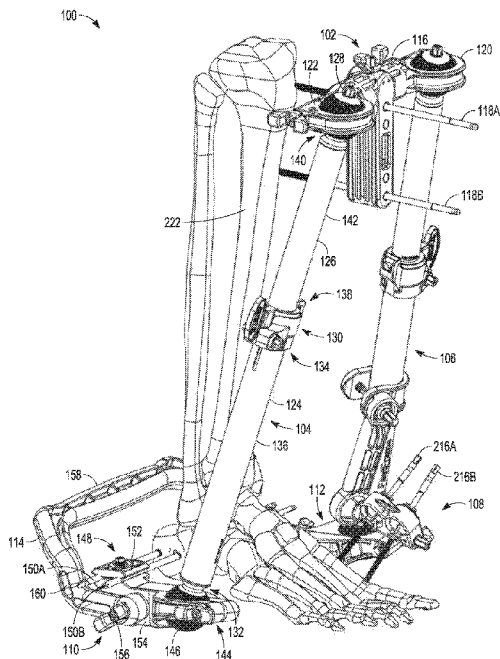


FIG. 1

(57) Abstract: A clamping assembly (108) includes a longitudinal member (162) having a first end (164) and a second end (166), the second end defining a first clamp (168), a second clamp (170) configured to attach to the first end of the longitudinal member and connect to a rod assembly (106), a clamping member (176) including a first end (178), a second end (180) defining a spherical portion (190) which can be configured to expand, and a third clamp (182), where the first clamp of the longitudinal member is configured to receive the spherical portion of the second end of the clamping member to form a polyaxial joint. The clamping assembly can be a metatarsal bone pin clamping assembly of an external fixation system, for example for immobilizing an ankle joint.





Published:

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

30 March 2017

- *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))*

INTERNATIONAL SEARCH REPORT

International application No.
PCT/US2016/037228

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.: 21
because they relate to subject matter not required to be searched by this Authority, namely:
see FURTHER INFORMATION sheet PCT/ISA/210
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:

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 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.:

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

International application No
PCT/US2016/037228

A. CLASSIFICATION OF SUBJECT MATTER
INV. A61B17/64
ADD.
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 practicable, search terms used)
EPO-Internal, WPI Data

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	US 2014/088649 A1 (REFAI DANIEL [US]) 27 March 2014 (2014-03-27)	1,2
Y	paragraphs [0035], [0036]; figure 1	6-9, 11-13, 15,16
Y	----- US 2014/350558 A1 (TRIPLETT DANIEL J [US] ET AL) 27 November 2014 (2014-11-27) cited in the application	6-9, 11-13, 15,16
A	paragraphs [0128], [0129]; figures 12, 13, 14, 18A,18B, 19, 20	20
A	----- US 2012/253410 A1 (TAYLOR KYLE [US] ET AL) 4 October 2012 (2012-10-04) paragraph [0290]; figures 13-25	3-5, 17-19
A	----- US 2015/100089 A1 (RICHELSOPH MARC EVAN [US] ET AL) 9 April 2015 (2015-04-09) paragraph [0281]; figure 91	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 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 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

26 January 2017

Date of mailing of the international search report

14/02/2017

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

Hagberg, Åsa

INTERNATIONAL SEARCH REPORT

Information on patent family members

International application No PCT/US2016/037228

Patent document cited in search report	Publication date	Patent family member(s)	Publication date
US 2014088649 A1	27-03-2014	US 2014088649 A1 US 2016106470 A1	27-03-2014 21-04-2016

US 2014350558 A1	27-11-2014	NONE	

US 2012253410 A1	04-10-2012	AU 2012225496 A1 AU 2016277681 A1 CA 2866359 A1 CN 103517677 A EP 2526196 A2 JP 6040172 B2 JP 2014514024 A JP 2016179268 A US 2012253410 A1 US 2016175012 A1 WO 2012122317 A2	24-10-2013 19-01-2017 13-09-2012 15-01-2014 28-11-2012 07-12-2016 19-06-2014 13-10-2016 04-10-2012 23-06-2016 13-09-2012

US 2015100089 A1	09-04-2015	AU 2014332118 A1 CA 2926347 A1 EP 3054876 A1 JP 2016536100 A US 2015100089 A1 US 2015282846 A1 US 2016361097 A1 WO 2015054237 A1	21-04-2016 16-04-2015 17-08-2016 24-11-2016 09-04-2015 08-10-2015 15-12-2016 16-04-2015

FURTHER INFORMATION CONTINUED FROM PCT/ISA/ 210

Continuation of Box II.1

Claims Nos.: 21

No search has been performed and no opinion has been established with regard to claim 21, because under Rules 39.1(iv) and 67.1(iv) PCT, no international search or international preliminary examination is required for subject-matter which is methods for treatment of the human or animal body by surgery or therapy.

Continuation of Box II.2

No search has been performed and no opinion has been established with regard to claim 21, because under Rules 39.1(iv) and 67.1(iv) PCT, no international search or international preliminary examination is required for subject-matter which is methods for treatment of the human or animal body by surgery or therapy.