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[Continued on next page]

(54) Title: IMPROVED HIP FRACTURE NAIL SYSTEM

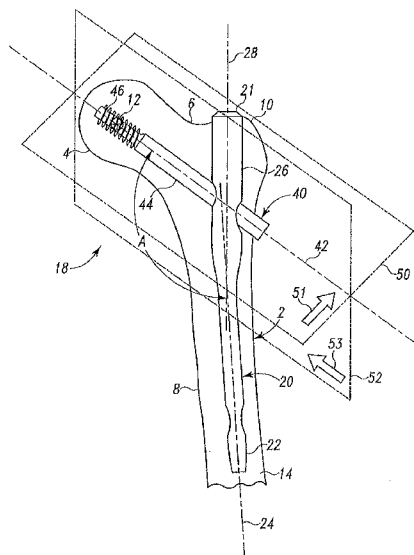


Fig. 1

(57) Abstract: An instrument system is provided for positioning an internal fixation prosthesis and guiding a cannulated bone drill during a surgical, radioscopic procedure for the repair of a fractured bone of a patient. The instrument system includes a target wire (180), a handle (106) formed from a radio translucent material having a target hole for guided passage of the target wire along a target axis. The target axis coincides with the intersection of a first plane and a second plane orthogonal to the first plane. The instrument system also includes a nose component (150) attached to an end of the handle and removably connectable to the prosthesis. The nose component includes an alignment sight formed from a radio-opaque material. When the prosthesis is connected to the nose component and the target wire is positioned through the target hole along the target axis, the image of the guide wire may be radioscopically viewed along a first line of sight contained in the first plane to bisect the image of the alignment device, thereby providing a first visual reference to the user for directing the first guide wire into the desired portion of the bone while holding the prosthesis in a desired position relative to the bone.

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SM, TR), OAPI (BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG).

Published:

Declarations under Rule 4.17:

- as to the identity of the inventor (Rule 4.17(i))
- 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))

- 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))

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

30 June 2011

INTERNATIONAL SEARCH REPORT

International application No
PCT/US2010/046476

A. CLASSIFICATION OF SUBJECT MATTER
INV. A61B17/17
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 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	WO 2009/052294 A1 (EBI LLC [US]; O'REILLY JOSEPH MICHAEL [US]; FRANK PHILIP HARRIS [US];) 23 April 2009 (2009-04-23)	1,4
Y	figures 1.2a,4 paragraphs [0067], [0069] - [0071] -----	2,7
Y	US 2006/200160 A1 (BORDER ROBERT [US] ET AL) 7 September 2006 (2006-09-07) paragraphs [0050] - [0052]; figures 1,12-14 -----	2,7
X	WO 2009/087214 A1 (STRYKER LEIBINGER GMBH & CO KG [DE]; BLAU ARNO [CH]) 16 July 2009 (2009-07-16) figures 16a-16h ----- -/--	1,4

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 22 November 2010	Date of mailing of the international search report 11/05/2011
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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 Louka, Maria
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INTERNATIONAL SEARCH REPORT

International application No
PCT/US2010/046476

C(Continuation). DOCUMENTS CONSIDERED TO BE RELEVANT		
Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
A	WO 03/063682 A2 (DEPUY PRODUCTS INC [US]) 7 August 2003 (2003-08-07) page 29, line 15 - page 30, line 3 figure 13 -----	2
A	WO 2008/017501 A1 (STRYKER TRAUMA GMBH [DE]; GIERSCH HELGE [DE]; DORAWA KLAUS [DE]; SIMON) 14 February 2008 (2008-02-14) figures 21-25 paragraphs [0084] - [0088] -----	1,2,4,5
A	US 3 704 707 A (HALLORAN WILLIAM X) 5 December 1972 (1972-12-05) figures 3,4,6,11 column 2, line 50 - column 6, line 7 -----	1,4

INTERNATIONAL SEARCH REPORT

International application No.
PCT/US2010/046476

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.: 9-14
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 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.:

1-8, 15

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/US2010/046476

Patent document cited in search report	Publication date	Patent family member(s)	Publication date
WO 2009052294	A1	23-04-2009	CN 101827560 A 08-09-2010
			EP 2219537 A1 25-08-2010
			JP 2011500215 T 06-01-2011
			US 2010152740 A1 17-06-2010

US 2006200160	A1	07-09-2006	NONE

WO 2009087214	A1	16-07-2009	EP 2173269 A1 14-04-2010
			EP 2191783 A1 02-06-2010
			US 2009209851 A1 20-08-2009
			US 2011019884 A1 27-01-2011

WO 03063682	A2	07-08-2003	AU 2003205311 A1 02-09-2003
			US 2004015173 A1 22-01-2004
			US 2006235420 A1 19-10-2006

WO 2008017501	A1	14-02-2008	AU 2007283050 A1 14-02-2008
			CA 2659419 A1 14-02-2008
			EP 2049025 A1 22-04-2009
			JP 2010500061 T 07-01-2010
			US 2008039857 A1 14-02-2008
			US 2008058829 A1 06-03-2008

US 3704707	A	05-12-1972	CA 964149 A1 11-03-1975

FURTHER INFORMATION CONTINUED FROM PCT/ISA/ 210

This International Searching Authority found multiple (groups of) inventions in this international application, as follows:

1. claims: 1-8, 15

Target jig instrument and system of implantable prosthesis and jig with a nose component connectable to the prosthesis, said nose having a pair of spaced- apart opposing arms forming a U-shaped gap therebetween.

2. claims: 16-20

Hip fracture nail set with two nails and two jigs with each having a nose specific to the type of nail with which it is to be connected.
