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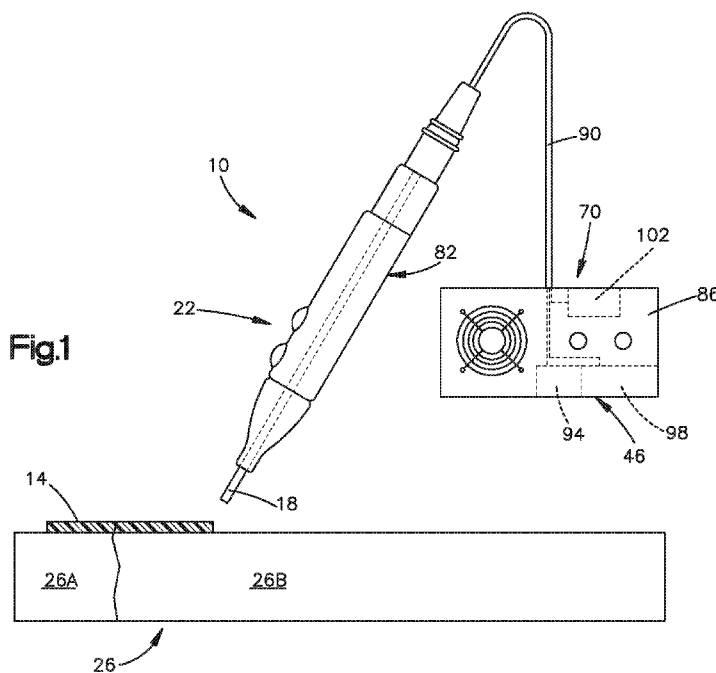
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[Continued on next page]

(54) Title: A BONE FIXATION SYSTEM



(57) Abstract: A bone fixation system is provided. The bone fixation system may include a plate, one or more fasteners configured to attach the plate to a target anatomical location such as bone, and a surgical device that facilitates the attachment of the plate and the fasteners.



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

International application No
PCT/US2011/030855

A. CLASSIFICATION OF SUBJECT MATTER
 INV. A61B17/16 A61B17/86 A61B17/88 A61B17/80 A61B18/18
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 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 2008/116203 A2 (MARCTEC LLC [US]; BONUTTI PETER M [US]; CREMENS MATTHEW J [US]; BEYERS) 25 September 2008 (2008-09-25) figure 12E -----	1-6, 9-12,16, 24
X	WO 2009/132472 A2 (WW TECHNOLOGY AG [CH]; LEHMANN MARIO [CH]; MUELLER ANDREA [CH]; WEBER) 5 November 2009 (2009-11-05) figures 1, 12-14 -----	1
X	WO 2008/034276 A2 (WOODWELDING AG [CH]; AESCHLIMANN MARCEL [CH]; TORRIANI LAURENT [CH]; M) 27 March 2008 (2008-03-27) figure 22 ----- -/--	1

Further documents are listed in the continuation of Box C.

See patent family annex.

* Special categories of cited documents :

<p>"A" document defining the general state of the art which is not considered to be of particular relevance</p> <p>"E" earlier document but published on or after the international filing date</p> <p>"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)</p> <p>"O" document referring to an oral disclosure, use, exhibition or other means</p> <p>"P" document published prior to the international filing date but later than the priority date claimed</p>	<p>"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</p> <p>"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</p> <p>"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.</p> <p>"&" document member of the same patent family</p>
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Date of the actual completion of the international search 17 June 2011	Date of mailing of the international search report 13/10/2011
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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 Fernández Arillo, J
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INTERNATIONAL SEARCH REPORT

International application No
PCT/US2011/030855

C(Continuation). DOCUMENTS CONSIDERED TO BE RELEVANT		
Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	WO 2009/117837 A1 (FIECHTER MEINRAD [CH]; MAURER SAMUEL [CH]) 1 October 2009 (2009-10-01) figure 8 -----	1,7,8
X	WO 2008/095327 A1 (WOODWELDING AG [CH]; MAYER JOERG [CH]; MUELLER ANDREA [CH]; BRUNNER PE) 14 August 2008 (2008-08-14) figure 6 -----	1

INTERNATIONAL SEARCH REPORT

Information on patent family members

International application No

PCT/US2011/030855

Patent document cited in search report	Publication date	Patent family member(s)	Publication date
WO 2008116203	A2	25-09-2008	CA 2698057 A1 EP 2197371 A1 WO 2009029908 A1
WO 2009132472	A2	05-11-2009	CN 102083379 A EP 2271273 A2 JP 2011519596 A US 2011118744 A1
WO 2008034276	A2	27-03-2008	AT 505144 T EP 2063793 A2 EP 2314239 A1 ES 2364681 T3 JP 2010504118 A US 2010023057 A1
WO 2009117837	A1	01-10-2009	NONE
WO 2008095327	A1	14-08-2008	US 2009317768 A1

INTERNATIONAL SEARCH REPORT

International application No.
PCT/US2011/030855

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.: 44-47
because they relate to subject matter not required to be searched by this Authority, namely:
Pursuant to Rule 39.1(iv) PCT, the subject-matter of claims 44-47 has not been searched, since it is directed to a method for treatment of the human body by surgery (see in particular the step of "cutting a hole in the anatomical location" of claim 44).
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.:
1-12, 16, 24

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: 1-12, 16, 24

A fastener according to claim 1, wherein the first portion is disposed proximally of the second portion (claim 7), for solving the problem of allowing the fastener to just soften and deform at the distal portion thereby improving its fixation capabilities (e.g. it can act as a rivet).

2. claims: 13-15

A fastener according to claim 1, wherein the second portion has a color sufficient to absorb electromagnetic radiation (claim 13), thereby solving the problem of providing a fastener with a more easily deformable portion.

3. claims: 17-23

A fastener according to claim 1, further comprising an irrigation channel or passage (claims 17 and 21), for solving the problem of allowing a coolant to be supplied to a distal cutting site.

4. claims: 25-34

A surgical device configured to implant a fastener, the surgical device comprising an energy source configured to heat a portion of the fastener, thereby solving the problem of allowing a thermoplastic fastener to be securely fixed to body tissue.

5. claims: 35-43

A kit comprising (i) a fastener having a first portion with a bore and a second portion with electromagnetic radiation absorbing properties, and further comprising (ii) a bone plate (claim 35), thereby solving the problem of more securely fixating a bone plate to bone.
