Title: A BONE FIXATION SYSTEM

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.
Published:
— 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/US2011/030855

**A. CLASSIFICATION OF SUBJECT MATTER**
INV. A61B17/16 A61B17/86 A61B17/88 A61B17/80 A61B18/18 A61B18/20

**ADD.**
According to International Patent Classification (IPC) onto 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**
  - A61B

- **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**

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<th>Relevant to claim No.</th>
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<td>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</td>
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<td>wo 2008/034276 A2 (WOODWELDING AG [CH] ; AESCHLIMANN MARCEL [CH] ; TORRIANI LAURENT [CH];) 27 March 2008 (2008-03-27) figure 22</td>
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</table>

See patent family annex.

**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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**Authorized officer**
Fernandez Ari llo, J

Form PCT/ISA/210 (second sheet) (April 2005)
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<td>wo 2009/117837 AI (F ECHTER MEINRAD [CH] ; MAURER SAMUEL [CH] ) 1 October 2009 (2009-10-01) figure 8</td>
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INTERNATIONAL SEARCH REPORT

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. X 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

- X The additional search fees were accompanied by the applicant's protest and, where applicable, the payment of a protest fee.

- X 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.

- X No protest accompanied the payment of additional search fees.

Form PCT/ISA/21 0 (continuation of first sheet (2)) (April 2005)
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, 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).
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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.
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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.
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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.
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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 fixing a bone plate to bone.
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