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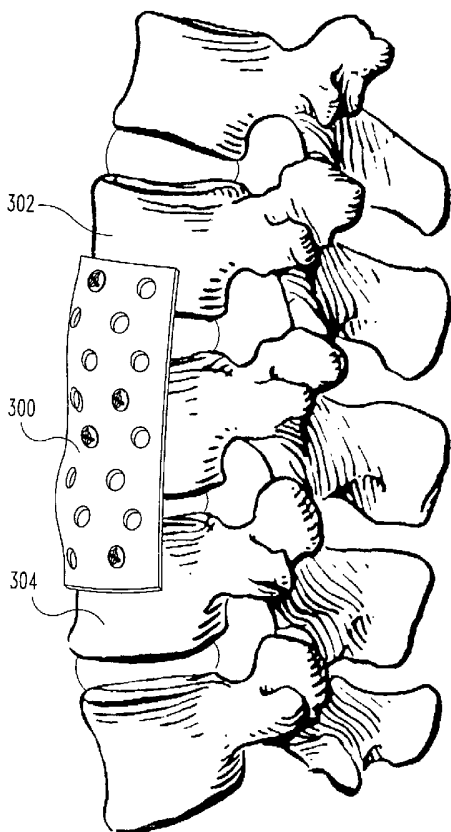
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[Continued on next page]

(54) Title: NON-METALLIC IMPLANT DEVICES AND INTRA-OPERATIVE METHODS FOR ASSEMBLY AND FIXATION



(57) Abstract: This invention relates to orthopedic implants (10, 50, 90, 100, 140, 190, 250, 280, 300, 320, 340, 360, 370, 380, 400 and 440) and to methods of treating bone defects. More specifically, but not exclusively, the present invention is directed to non-metallic implants and to methods for intra-operative assembly and fixation of orthopedic implants to facilitate medical treatment. The non-metallic implant assembly can be secured to underlying tissue by a fastener, such as a bone screw, that is capable of swelling on contact with fluid in the underlying tissue. Alternatively, the non-metallic implant assembly can be assembled intra-operatively using a fastener that is adhesively bonded to a bone plate or the bone plate can be deformed using heat, force or solvents to inhibit withdrawal of the fastener. In preferred embodiments, both the fastener and the bone plate are formed of biodegradable material.



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INTERNATIONAL SEARCH REPORT

International Application No
PCT/US 01/45608

A. CLASSIFICATION OF SUBJECT MATTER
IPC 7 A61B17/80

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)
IPC 7 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	US 6 059 817 A (BONUTTI PETER M ET AL) 9 May 2000 (2000-05-09)	1-4, 6, 7, 9-14, 24, 26, 28, 29 5
Y	abstract; figures 1, 1A, 2 column 1, line 45 -column 2, line 18 column 3, line 35 -column 4, line 59 ---	
P, X	FR 2 794 963 A (EUROSURGICAL) 22 December 2000 (2000-12-22) abstract; figures 2, 4 ---	1, 3, 5, 6, 12, 14
Y	DE 44 09 833 A (BIEDERMANN MOTECH GMBH) 5 October 1995 (1995-10-05)	5
A	abstract; figures 1, 3 ---	3
A	US 5 578 034 A (ESTES BRADLEY T) 26 November 1996 (1996-11-26) abstract; figure 1 ---	1
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Further documents are listed in the continuation of box C.

Patent family members are listed in 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

15 July 2002

Date of mailing of the international search report

23/07/2002

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INTERNATIONAL SEARCH REPORT

 International Application No
 PCT/US 01/45608

C.(Continuation) DOCUMENTS CONSIDERED TO BE RELEVANT		
Category °	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
A	FR 2 778 088 A (MATERIEL ORTHOPEDIQUE EN ABREG) 5 November 1999 (1999-11-05) abstract; figure 1 ----	5
A	WO 99 44529 A (BIONX IMPLANTS OY) 10 September 1999 (1999-09-10) abstract; figure 6J ----	9-11,17, 28
A	US 6 093 201 A (COOPER KEVIN L ET AL) 25 July 2000 (2000-07-25) abstract; figure 1 ----	9-11,17, 28
A	GB 2 305 483 A (TERRAY CORP) 9 April 1997 (1997-04-09) abstract; figure 3 ----	1,13,15, 24
A	US 5 084 050 A (DRAENERT KLAUS) 28 January 1992 (1992-01-28) abstract column 2, line 53-65 ----	15
A	US 4 836 196 A (WEINSTEIN JAMES N ET AL) 6 June 1989 (1989-06-06) abstract; figure 6 column 4, line 59 -column 5, line 10 -----	24

INTERNATIONAL SEARCH REPORT

International application No.
PCT/US 01/45608

Box I Observations where certain claims were found unsearchable (Continuation of item 1 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.: 30-38
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 II Observations where unity of invention is lacking (Continuation of item 2 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 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.
- 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: 1-14

Bone plate with a polymeric material capable of deforming to fixedly interengage the fastener to the bone plate.

2. Claims: 15-23

Bone plate with a polymeric material capable of swelling upon contact with body fluid.

3. Claims: 24-29

Bone plate with an adhesive.

INTERNATIONAL SEARCH REPORT

Information on patent family members

International Application No
PCT/US 01/45608

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