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Declarations under Rule 4.17:

— of inventorship (Rule 4.17(iv))

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13 August 2015

(54) Title: ENDOSSEOUS SCREW ASSEMBLY AND INTERNAL FIXATION SYSTEM COMPRISING SAID ENDOSSEOUS SCREW ASSEMBLY

(57) Abstract: An endosseous screw assembly (100) for an internal fixation system (SC; SP), whose connection to the rest of the system is unusually easy for the surgeon, comprising: a longitudinally extending rod (1) equipped with at least one threaded proximal portion (2); a connection sleeve (3), within which a portion of the rod (1) is slidingly guided, said connection sleeve (3) being arranged to be inserted into a connection hole of an internal fixation member by snap-connecting within said connection hole up to reach a locking position; said rod (1) and said connection sleeve (3) comprising such mutual engagement means so as to form an axial constraint to the sliding of the rod (1) into the connection sleeve (3), so as to define, when the threaded proximal portion (2) advances into a bone site of the patient, a dragging of the connection sleeve (3) into the connection hole up to reach the locking position.



# INTERNATIONAL SEARCH REPORT

International application No

PCT/IB2014/002413

## A. CLASSIFICATION OF SUBJECT MATTER

INV. A61B17/74 A61B17/80 A61B17/86 A61B17/72  
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 2008/281326 A1 (WATANABE KOHSUKE [US] ET AL) 13 November 2008 (2008-11-13) figures 45-47B -----	1,2,7,8, 16
X	WO 01/74261 A1 (SYNTHES AG [CH]; SYNTHES USA [US]; HALL HARRY THOMAS IV [US]; LITTLE D) 11 October 2001 (2001-10-11) figures 1, 2 -----	1,7,13, 14
X	US 2009/254129 A1 (TIPIRNENI KISHORE [US] ET AL) 8 October 2009 (2009-10-08) figure 11G -----	1
X	WO 2012/099944 A1 (SYNTHES USA LLC [US]; SYNTHES GMBH [CH]; BUETTLER MARKUS [CH]; STUCKI) 26 July 2012 (2012-07-26) figures 1-3 ----- -/-	1-3,7-9



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

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# INTERNATIONAL SEARCH REPORT

International application No

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C(Continuation). DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X A	US 4 617 922 A (GRIGGS CALVIN [US]) 21 October 1986 (1986-10-21) figures 1-5 -----	1-3, 7-10,12 11
X	US 2008/119856 A1 (GOTFRIED YECHIEL [IL]) 22 May 2008 (2008-05-22) cited in the application figures 1-4B -----	1,7-9

## INTERNATIONAL SEARCH REPORT

International application No.  
PCT/IB2014/002413

### 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.:  
because they relate to subject matter not required to be searched by this Authority, namely:
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.:  
1-3, 7-14, 16
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.

**FURTHER INFORMATION CONTINUED FROM PCT/ISA/ 210**

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

1. claims: 1-3, 7, 8, 16

An endosseous screw assembly according to claim 2, wherein the axial clamp cooperates in abutment with an internal conformation element of the connection sleeve (claim 3), thereby solving the problem of allowing a sleeve to be distally (distally using the application's terminology) mounted over the rod and to be axially constraint in the distal direction by the axial clamp of the rod, once the rod and the sleeve are assembled.

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2. claims: 4-6

An endosseous screw assembly according to claim 1, comprising an internal thread (claim 4), for connecting a syringe, or wherein the rod is cannulated (claim 5), thereby solving the problem of allowing in situ injection of a bone substitute or other biological substances.

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3. claims: 9-12

An endosseous screw assembly according to claim 8, wherein the clutch claw is configured to elastically move in the radial direction (claim 9), thereby solving the problem of allowing a more efficient releasable engagement of the sleeve within the connection hole.

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4. claims: 13, 14

An internal fixation system according to claim 7, wherein the connection hole has portions of different diameter and the snap-connection means are arranged in an enlarged distal collar of the connection sleeve (claim 13), thereby solving the problem of enhancing the insertion and locking of the sleeve and the rod into the connection hole.

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5. claim: 15

An internal fixation system according to claim 7, comprising at least two endosseous screw assemblies arranged to be fixed parallel to each other, thereby solving the problem of providing means to efficiently repair a femoral head fracture.

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# INTERNATIONAL SEARCH REPORT

Information on patent family members

International application No

PCT/IB2014/002413

Patent document cited in search report	Publication date	Patent family member(s)	Publication date
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