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# NOTICE OF ENTITLEMENT

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being the applicant(s) and nominated person(s) in respect of an application for a patent for an invention entitled OSTEOSYNTHESIS AID FOR THE FIXATION OF BONES (Application No. 43074/93), state the following:

1. The nominated person(s) has/have, for the following reasons, gained entitlement from the actual inventor(s):

   THE NOMINATED PERSON IS THE ACTUAL INVENTOR.

2. The nominated person(s) has/have, for the following reasons, gained entitlement from the applicant(s) listed in the declaration under Article 8 of the PCT:

   THE APPLICANT AND NOMINATED PERSON IS THE BASIC APPLICANT.

3. The basic application(s) listed in the declaration under Article 8 of the PCT is/are the first application(s) made in a Convention country in respect of the invention.

DATED: 23 December 1993

Dietmar PENNIG

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Patent Attorney for and
on behalf of the applicant(s)

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OSTEOSYNTHETIC AUXILIARY FOR THE FIXATION OF BONES

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(56) Prior Art Documents
AU 654908 36826/93 A61B 17/60
AU 657574 24503/92 A61B 17/60
AU 40469/78 A61B 17/60 A61F 005/04

(57) Claim

1. Osteosynthesis aid for fixing bones comprising two clamping devices which each support fixing means (4,5) and which can be connected to each other by means of a lockable double ball-and-socket joint (3) and holding rods (7,8), wherein the fixing means (4,5), can be adjusted in a lockable manner on each clamping device (1,2) and balls (9,10) of the double ball-and-socket joint (3) are connected to one another by means of a rigid spacer element (11), wherein said clamping devices (1,2) are in the form of flat plates which have bores (23) running transversely to the plane of the plate for the reception of the fixing means (4,5) and each clamping device (1,2) includes at least two plates (12,14,15) that can be moved in relation to each other by actuation means.

9. Osteosynthesis aid in accordance with claim 7, wherein said sliding wedge (22) includes a wedge body and a threaded pin (32) extending from said wedge body that passes through the frame (21), and said frame includes a sleeve shaped actuating element having an internal thread

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for engaging said threaded pin, whereby by rotating said sleeve-shaped actuating element said sliding wedge can be moved in relation to said frame to clamp said balls.

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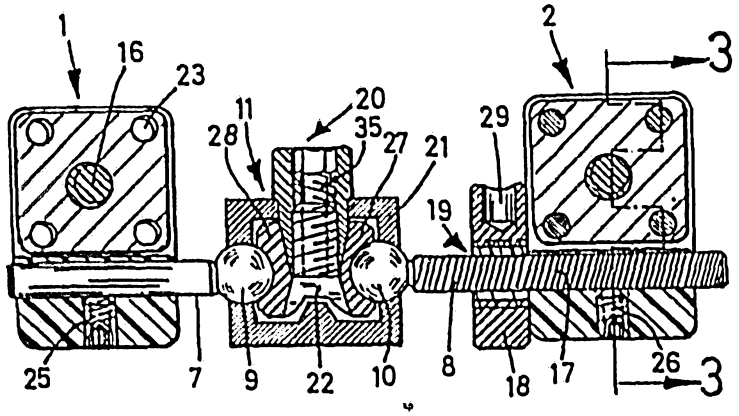
659022

(54) Title: OSTEOSYNTHETIC AUXILIARY FOR THE FIXATION OF BONES

(54) Bezeichnung: OSTEOSYNTHESEHILFSMITTEL FÜR DIE FIXATION VON KNOCHEN




(57) Abstract

The invention relates to an osteosynthetic auxiliary for the fixation of bones with clamping devices (1, 2) supporting the fixation means (4, 5), in the form of flat plates (12, 14, 15) having bores (23) running obliquely to the plane of the plates and designed to receive the fixation means (4, 5), said fixation means (4, 5) being fixed to the plates (12, 14, 15) by moving parts of the plates via an eccentric (16).

(57) Zusammenfassung

Die Erfindung bezieht sich auf ein Osteosynthesehilfsmittel zur Fixation von Knochen mit die Fixationsmittel (4, 5) tragenden Klemmeinrichtungen (1, 2), wobei diese Klemmeinrichtungen (1, 2) als flache Platten (12, 14, 15) ausgebildet sind, die quer zur Plattenebene verlaufende Bohrungen (23) zur Aufnahme der Fixationsmittel (4, 5) aufweisen, wobei die Festlegung der Fixationsmittel (4, 5) an den Platten (12, 14, 15) durch Verstellen von Plattenteilen über einen Exzenter (16) erfolgt.

# OSTEOSYNTHESIS AID FOR THE FIXATION OF BONES

The invention relates to an osteosynthesis aid for fixing bones.

A generic osteosynthesis aid, in which a large angle of horizontal swing of the two elements bearing the fixing means in relation to each other becomes possible by means of the double ball-and-socket joint and the distance piece disposed between the two ball heads, and in which the displacement of these elements themselves in all directions is possible is known from De 37 01 533 C2. Through the pivotable and height-adjustable mounting of the fixation agents on the elements bearing them, additional degrees of freedom are created for the device as a whole, so that it is possible to cope with even the most complicated bone positions and setting tasks.

When such so-called external fixation agents are used in the region of the hand and fingers, the aim is indeed on the one hand to provide just as great and extensive displacement of the individual elements as possible, but, on the other hand, the components should be so small that, for example in the region of the hand, they cause as little inconvenience as possible.

The invention is therefore based on the problem of designing the generic osteosynthesis aid so that it is as small as possible and at the same time gives, with the minimum of effort, as complete a locking of all individual components in relation to each other as is possible.

According to the present invention there is provided osteosynthesis aid for fixing bones comprising two clamping devices which each support fixing means (4,5) and which can be connected to each other by means of a lockable double ball-and-socket joint (3) and holding rods (7,8),

wherein the fixing means (4,5), can be adjusted in a lockable manner on each clamping device (1,2) and balls (9,10) of the double ball-and-socket joint (3) are connected to one another by means of a rigid spacer element (11), wherein said clamping devices (1,2) are in the form of flat plates which have bores (23) running transversely to the plane of the plate for the reception of the fixing means (4,5) and each clamping device (1,2) includes at least two plates (12,14,15) that can be moved in relation to each other by actuation means.

Each clamping device preferably comprises the plate-like component that has, in the plane of the plate, a slot into which a clamping plate is inserted, the eccentric passing through the two parts of the plate covering the clamping plate.

The boreholes to receive the fixing means are provided in the plate-shaped clamping devices, at least some of these boreholes preferably being convergent, so that through this a very close fitting together of the ends, for example of bone pins, is possible.

The actual clamping devices are mounted for free movement on the holding rods and can be fixed by corresponding screws with hexagonal recessed holes which are guided in the clamping devices.

In order also to make possible traction or compression of the parts of the bone to be joined, at least one of the holding rods is equipped with a support disc. The holding rod has an external thread and a corresponding borehole in the support disc has an internal thread, these two threads meshing with each other. Depending on the location of this support disc on one side or another of the clamping device, this clamping device may now be moved outwards or inwards with an appropriate application of

force, so that traction or compression becomes possible through this, while the other clamping device is secured to the bone by the fixation means and to the holding rod by a fixing means.

The double ball-and-socket joint known from the state of the art has, also in the case of the device in accordance with a preferred embodiment, a rigid distance piece, but this distance piece is in the form of a frame in which the two balls that are disposed on the holding rods are held.

In order now to achieve a locking of the set holding rods, the two balls are clamped in their set positions by means of a sliding wedge inside the frame. This device is also relatively small and thin in construction, so that this device also causes as little inconvenience as possible, even in the region of the hand.

The locking, moreover, is preferably effected by the frame receiving not only the sliding wedge, but also two clamping pieces which in the first place have a recess in the shape of a partial sphere for co-operation with the balls of the holding rods, and, secondly, are equipped with doubly inclined wedge surfaces which co-operate firstly with the sliding wedge and secondly with an actuating element which is guided through the frame and the outer side of which, within the space of the frame, is conically tapering, so that through the actuation of this actuating element not only is the sliding wedge raised, but the actuating element is also moved slightly downwards and the clamping of the balls is effected by this doubled pressure.

Embodiments of the invention are explained below by means of the drawings.

The drawings show in

fig. 1 a diagrammatic representation of the osteosynthesis aid,

fig. 2 a section through the osteosynthesis aid according to fig. 1 on a larger scale,

fig. 3 a section along the line 3-3 in fig. 2,

fig. 4 a modified shape of the clamping devices, and

fig. 5 the construction of the double ball-and-socket joint.

The actual osteosynthesis aid comprises the two clamping devices 1 and 2, these clamping devices 1 and 2 bearing ~~fixation~~ fixing means 4 and 5, which may be in the form of bone pins or screws. Bone pins 6 are shown

in the representation in fig. 1.

The two clamping devices 1 and 2 are disposed on holding rods 7 and 8 which bear on their ends facing each other balls 9 and 10, which thus form a double ball-and-socket joint 3. The balls 9 and 10 are mounted in a frame 21 which thus forms a rigid distance piece. The holding rods 7 and 8, with their balls 9 and 10, are obviously mounted in the frame 21 for pivoting in all directions, so that an alignment corresponding to the curvature of the bone to be splinted is possible.

The holding rods 7 and 8 may be provided with threads. In the embodiment shown, the holding rod 8 is equipped with an external thread. On the holding rod 8 a support disc 18 is mounted which has a central bore 19 that is provided with an internal thread, this internal thread meshing with the external thread 17 of the holding rod 8. Through this a displacement of the clamping device 2 mounted on the holding rod 8 is possible, even against corresponding resistance forces. In the arrangement as shown in fig. 2, on a displacement of the clamping device 2 to the right a traction of the bone is achieved, if the clamping device 1 with its ~~fixation~~ fixing means 4 is secured to the fixed part of the bone and, by a screw 25 with a recessed hexagonal hole, to the holding rod 7. If the support disc 18 is disposed on the right-hand side of the clamping device 2, a compression of the parts of the bone is possible.

The ~~fixation~~ fixing means 4 and 5 are are fixed in bores 23 in the clamping devices 1 and 2 in an extremely simple manner through the fact that the plate-shaped clamping device 1 and 2 has a central slot 24 in which a clamping plate 14 is mounted. Through this, as is clearly shown by fig. 3, three co-operating plates 12, 14 and 15 are created. In the two plates 12 and 15 an eccentric 16 is mounted, the eccentric part of which lies in the region of the clamping plate 14, so that by turning the eccentric 16, which is also in the form of a hexagonal recess, a clamping of the clamping plate 14 with the fixation means 4 and 5 passing through this clamping plate 14 and the two plates 12 and 15 is brought about. The fixation means 4, 5 are stably secured through this.

The clamping means 1 and 2 are secured on the holding rods 7 and

8 by means of screws with hexagonal recessed holes.

The locking of the clamping devices 1 and 2 that can be connected to eacn other by means of the holding rods 7 and 8, the balls 9 and 10 and the frame 21 is effected by a locking device 20 by the adjustable installation in the frame 21, transversely to the longitudinal axis of the holding rods 7 and 8, of a sliding wedge 22 which, on the movement of it, locks the balls 9 and 10 in the frame 21. In the embodiment shown in fig. 2 further clamping pieces 27 and 28 can be seen, which are provided firstly with recesses adapted to the shape of the ball and secondly with surfaces adapted to the shape of the sliding wedge 22, so that on displacement of the sliding wedge 22 there is an indirect action on the balls 9 and 10.

The actuation of the support disc 18 may be easily effected by the insertion of appropriate pins into bores 29 provided in the outer periphery of the support disc 18.

L-shaped clamping devices 1 and 2 are shown in fig. 4.

An exploded view of the construction of the double ball-and-socket joint is shown in fig. 5. It can be seen that the balls 9 and 10 are disposed in a fixed manner on the holding rods 7 and 8 and that the locking device 20 is formed essentially by a frame 21, on the inner side of which partially spherical recesses are provided which serve to receive the balls 9 and 10, as is shown in fig. 2. The holding rods 7 and 8 in this case extend through the frame. In the interior of the frame, a sliding wedge 22 which has a threaded pin 32 provided with an external thread 38 is disposed on one side. This threaded pin 32 is able to interact with an internal thread 35 of a sleeve-like actuating element 34, which is equipped on its upper side with a polygonal recess, into which a corresponding actuating key can be inserted. The actuating element 34 passes through a bore in the frame 21. The two balls 9 and 10 are coveredtowards the inner side of the frame 21 by clamping pieces 27 and 28, which in the first place have partially spherical recesses 33 for the balls 9 and 10, and secondly are formed with double wedge surfaces, the upper wedge surfaces 37 being discernible, and the lower wedge surfaces 40 and 39

co-operate with the wedge surfaces of the sliding wedge 22. The upper wedge surfaces 37 co-operate with a conical surface 36 of the actuating element 34, so that when the two components 22 and 34 move towards each other an outward pressing of the clamping pieces 27 and 28 takes place, through which the balls 9 and 10 are locked, while, vice versa, on a movement apart of the actuating element 34 and the sliding wedge 22, the clamping pieces 27 and 28 are loosened in relation to the balls 9 and 10, so that the holding rods 7 and 8 can thus be moved.

THE CLAIMS DEFINING THE INVENTION ARE AS FOLLOWS:-

1. Osteosynthesis aid for fixing bones comprising two clamping devices which each support fixing means (4,5) and which can be connected to each other by means of a lockable double ball-and-socket joint (3) and holding rods (7,8), wherein the fixing means (4,5), can be adjusted in a lockable manner on each clamping device (1,2) and balls (9,10) of the double ball-and-socket joint (3) are connected to one another by means of a rigid spacer element (11), wherein said clamping devices (1,2) are in the form of flat plates which have bores (23) running transversely to the plane of the plate for the reception of the fixing means (4,5) and each clamping device (1,2) includes at least two plates (12,14,15) that can be moved in relation to each other by actuation means.

2. Osteosynthesis aid in accordance with claim 1, wherein said actuation means is in the form of an eccentric (16).

3. Osteosynthesis aid in accordance with claim 1 or 2, wherein the axes of at least some bores (23) in each clamping device (1,2) converge.

4. Osteosynthesis aid in accordance with any one of the foregoing claims, wherein said clamping devices (1,2) are mounted on the holding rods (7,8) so as to be freely movable and lockable.

5. Osteosynthesis aid in accordance with any one of the foregoing claims, wherein at least one holding rod (7,8) is provided with an external thread (17) and bears a support disc (18) which has a bore (19) which has an internal thread that meshes with the external thread (17) of the holding rod (7,8).

6. Osteosynthesis aid in accordance with any one of the foregoing claims, wherein said rigid distance piece (11) is fitted with a locking device (20) for lockirg the balls of said double ball-and-socket joint (9,10).

7. Osteosynthesis aid in accordance with claim 6, wherein said rigid distance piece (11) comprises a frame (21) in which the balls (9,10) are held and can be clamped therein (21) by a sliding wedge (22) guided in the frame (21).

8. Osteosynthesis aid in accordance with any one of the foregoing claims, wherein each plate-like clamping device has, aligned in the plane of the plate, a slot (24) in which is disposed a clamping plate (14) that can be moved by the eccentric.

9. Osteosynthesis aid in accordance with claim 7, wherein said sliding wedge (22) includes a wedge body and a threaded pin (32) extending from said wedge body that passes through the frame (21), and said frame includes a sleeve shaped actuating element having an internal thread for engaging said threaded pin, whereby by rotating said sleeve-shaped actuating element said sliding wedge can be moved in relation to said frame to clamp said balls.

10. Osteosynthesis aid in accordance with claim 9, wherein a clamping piece is disposed between the sliding wedge (22) and each ball (9,10), each clamping piece comprising a wedge surface (39, 40) for abutment with the sliding wedge (22) and a recess (33) in the shape of a partial sphere for abutment with an adjacent ball (9,10).

11. Osteosynthesis aid according to claim 9 or 10 wherein said sleeve-shaped actuating element (34) passes through said frame (21) and includes on an outside surface, a conical taper for abutment with the clamping pieces (27

and 28), for selectively locking the clamping pieces (27,28) with the balls (9,10) or releasing the balls in relation to the clamping pieces (27,28).

12. Osteosynthesis aid according to claim 10 or 11, wherein each clamping piece (27,28) is equipped with double wedge surfaces (40,37;39,37), one of which (37) is disposed close to said conical taper (36) of the sleeve-shaped actuating element (34) and the other (40,39) disposed close to said wedge body.

13. Osteosynthesis aid substantially as herein described with reference to and as illustrated in the accompanying drawings.

Dated this 27th day of February, 1995.

DIETMAR PENNIG
By its Patent Attorneys:

GRIFFITH HACK & CO.
Fellows Institute of Patent
Attorneys of Australia.

## Abstract

The invention relates to an osteosynthesis aid for the fixation of bones with clamping devices bearing the fixation means, these clamping devices being in the form of flat plates which have bores running transversely to the plane of the plate for the reception of the fixation means, the fixation means being secured to the plates through the movement of plate parts by means of an eccentric.

FIG.1

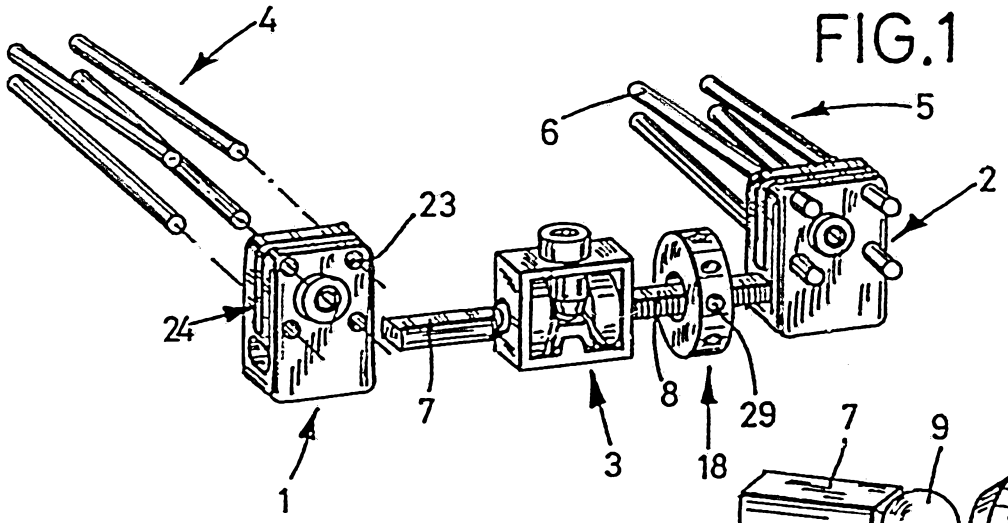



FIG.5

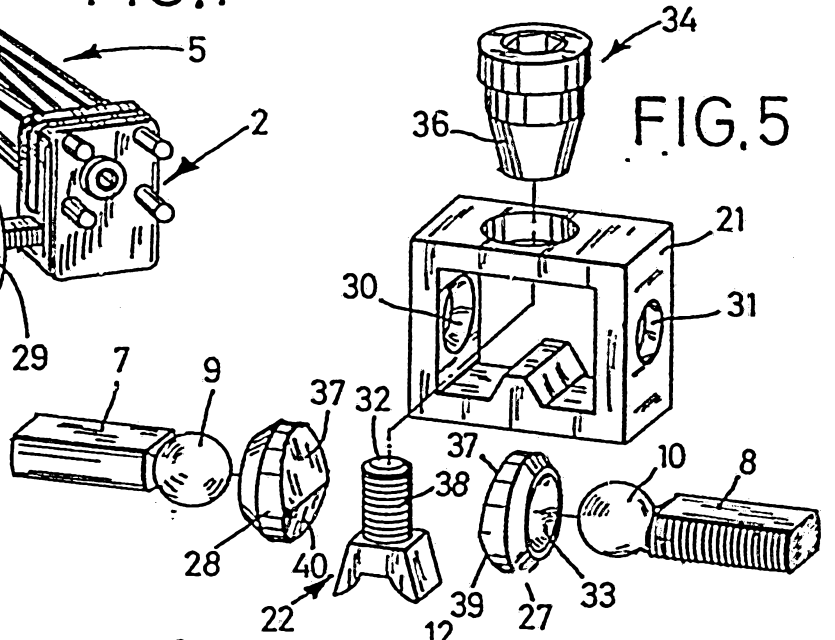



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FIG. 2

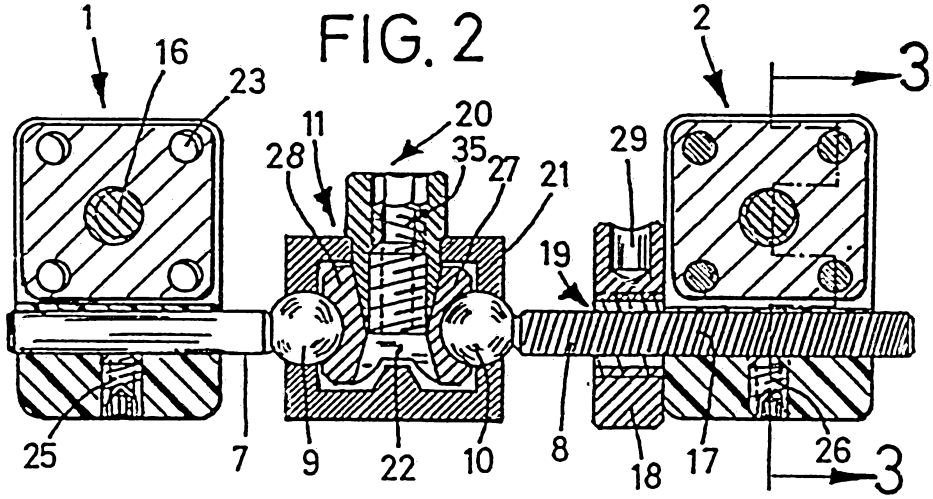


FIG.

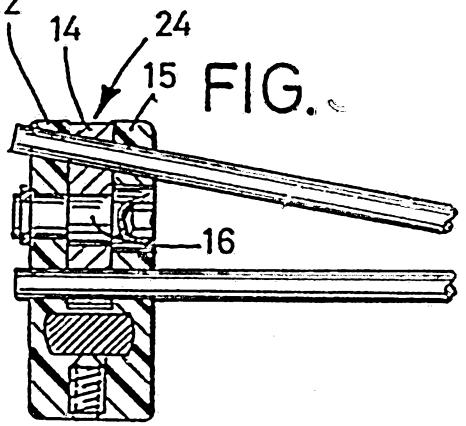


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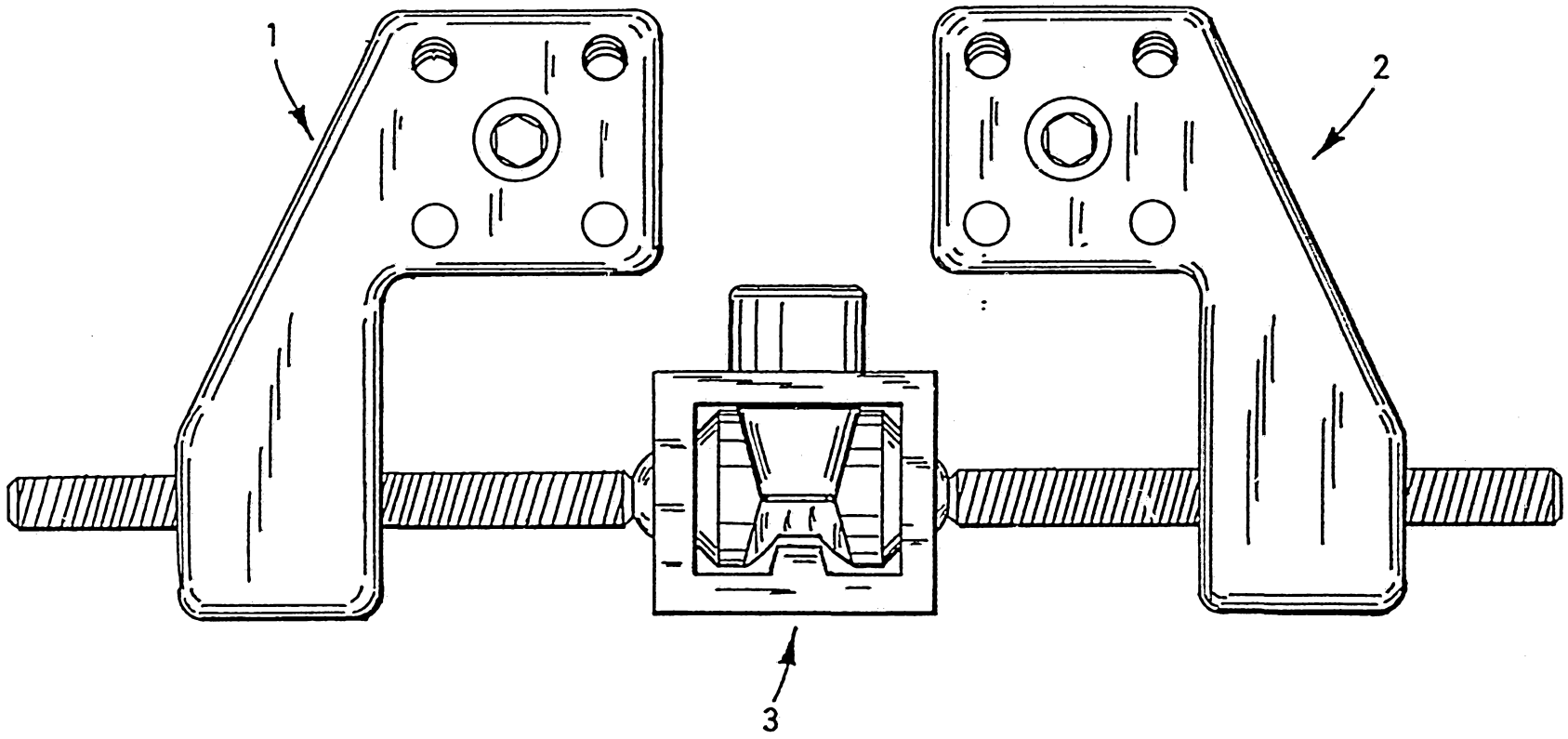
FIG.4



# INTERNATIONAL SEARCH REPORT

International application No.
PCT/DE 93/00546

A. CLASSIFICATION OF SUBJECT MATTER

Int. Cl. 5 A61B17/60

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)

Int. Cl. 5 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)

C. DOCUMENTS CONSIDERED TO BE RELEVANT

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☐ Further documents are listed in the continuation of Box C. ☐ See patent family annex.

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| Date of the actual completion of the international search | Date of mailing of the international search report |
|---|---|
| 14 October 1993 (14.10.93) | 5 November 1993 (05.11.93) |
| Name and mailing address of the ISA/ EUROPEAN PATENT OFFICE Facsimile No. | Authorized officer Telephone No. |

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International application No.
PCT/DE 93/00546

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# ANNEX TO THE INTERNATIONAL SEARCH REPORT ON INTERNATIONAL PATENT APPLICATION NO.

DE 9300546
SA 75539

This annex lists the patent family members relating to the patent documents cited in the above-mentioned international search report. The members are as contained in the European Patent Office EDP file on
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| FR-A-2531332 | 10-02-84 | None | | |

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# ANNEX TO THE INTERNATIONAL SEARCH REPORT ON INTERNATIONAL PATENT APPLICATION NO.

DE 9300546
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This annex lists the patent family members relating to the patent documents cited in the above-mentioned international search report. The members are as contained in the European Patent Office EDP file on
The European Patent Office is in no way liable for these particulars which are merely given for the purpose of information. 14/10/93

| Patent document cited in search report | Publication date | Patent family member(s) | Publication date |
|---|---|---|---|
| GB-A-2240043 | 24-07-91 | None | |
| EP-A-0517939 | 16-12-92 | None | |

# INTERNATIONALER RECHERCHENBERICHT

Internationales Aktenzeichen PCT/DE 93/00

## I. KLASSIFIKATION DES ANMELDUNGSGEGENSTANDS (bei mehreren Klassifikationssymbolen sind alle anzugeben)[6]

Nach der Internationalen Patentklassifikation (IPC) oder nach der nationalen Klassifikation und der IPC

Int.Kl. 5 A61B17/60

## II. RECHERCHIERTE SACHGEBIETE

Recherchierter Mindestprüfstoff [7]

| Klassifikationssytem | Klassifikationssymbole |
|---|---|
| Int.Kl. 5 | A61B |

Recherchierte nicht zum Mindestprüfstoff gehörende Veröffentlichungen, soweit diese unter die recherchierten Sachgebiete fallen [8]

## III. EINSCHLAGIGE VEROFFENTLICHUNGEN [9]

| Art.° | Kennzeichnung der Veröffentlichung[11], soweit erforderlich unter Angabe der maßgeblichen Teile[12] | Betr. Anspruch Nr.[13] |
|---|---|---|
| Y | EP,A,0 011 258 (ORTHOFIX) 28. Mai 1980 | 1,6 |
| A | siehe Seite 9, Zeile 14 - Zeile 16; Ansprüche 1-3; Abbildungen 1-3,10-13 | 2,9 |
| | --- | |
| Y | US,A,4 244 360 (DOHOGNE) 13. Januar 1981 | 1,6 |
| A | siehe Spalte 3, Zeile 8 - Spalte 4, Zeile 8; Abbildungen | 8 |
| | --- | |
| A | EP,A,0 490 812 (JAQUET ORTHOPÉDIE) 17. Juni 1992 siehe Spalte 5, Zeile 1 - Zeile 13; Abbildungen 2-4 | 1,8 |
| | --- | |
| | -/-- | |

° Besondere Kategorien von angegebenen Veröffentlichungen [10] :

"A" Veröffentlichung, die den allgemeinen Stand der Technik definiert, aber nicht als besonders bedeutsam anzusehen ist

"E" älteres Dokument, das jedoch erst am oder nach dem internationalen Anmeldedatum veröffentlicht worden ist

"L" Veröffentlichung, die geeignet ist, einen Prioritätsanspruch zweifelhaft erscheinen zu lassen, oder durch die das Veröffentlichungsdatum einer anderen im Recherchenbericht genannten Veröffentlichung belegt werden soll oder die aus einem anderen besonderen Grund angegeben ist (wie ausgeführt)

"O" Veröffentlichung, die sich auf eine mündliche Offenbarung, eine Benutzung, eine Ausstellung oder andere Maßnahmen bezieht

"P" Veröffentlichung, die vor dem internationalen Anmeldedatum, aber nach dem beanspruchten Prioritätsdatum veröffentlicht worden ist

"T" Spätere Veröffentlichung, die nach dem internationalen Anmeldedatum oder dem Prioritätsdatum veröffentlicht worden ist und mit der Anmeldung nicht kollidiert, sondern nur zum Verständnis des der Erfindung zugrundeliegenden Prinzips oder der ihr zugrundeliegenden Theorie angegeben ist

"X" Veröffentlichung von besonderer Bedeutung; die beanspruchte Erfindung kann nicht als neu oder auf erfinderischer Tätigkeit beruhend betrachtet werden

"Y" Veröffentlichung von besonderer Bedeutung; die beanspruchte Erfindung kann nicht als auf erfinderischer Tätigkeit beruhend betrachtet werden, wenn die Veröffentlichung mit einer oder menreren anderen Veröffentlichungen dieser Kategorie in Verbindung gebracht wird und diese Verbindung für einen Fachmann naheliegend ist

"&" Veröffentlichung, die Mitglied derselben Patentfamilie ist

## IV. BESCHEINIGUNG

| Datum des Abschlusses der internationalen Recherche | Absendedatum des internationalen Recherchenberichts |
|---|---|
| 14.OKTOBER 1993 | 05. 11. 93 |
| **Internationale Recherchenbehörde** | **Unterschrift des bevollmächtigten Bediensteten** |
| EUROPAISCHES PATENTAMT | KLEIN C. |

III. EINSCHLAGIGE VEROFFENTLICHUNGEN (Fortsetzung von Blatt 2)

| Art ° | Kennzeichnung der Veröffentlichung, soweit erforderlich unter Angabe der maßgeblichen Teile | Betr. Anspruch Nr. |
|---|---|---|
| A | FR,A,2 574 653 (SERAJEDDIN)<br>20. Juni 1986<br>siehe Seite 3, Zeile 4 - Zeile 10;<br>Abbildungen 1-4 | 2 |
| A | FR,A,2 628 627 (O.M.C.I.)<br>22. September 1989<br>siehe Seite 6, Zeile 34 - Seite 7, Zeile 4; Abbildung 2 | 3 |
| A | EP,A,0 024 256 (JF ORTHOPÉDIE)<br>25. Februar 1981<br>siehe Seite 8, Zeile 12 - Zeile 20;<br>Abbildung 2 | 5 |
| Y | WO,A,8 805 287 (PENNIG)<br>28. Juli 1988 | 9 |
| A | siehe Ansprüche; Abbildungen<br>in der Anmeldung erwähnt | 1,4-6 |
| Y | US,A,2 346 346 (ANDERSON)<br>11. April 1944 | 9 |
| A | siehe Seite 2, rechte Spalte, Zeile 19 -<br>Seite 3, linke Spalte, Zeile 39;<br>Abbildungen 1,3-5 | 3,10,11 |
| A | EP,A,0 420 813 (JAQUET ORTHOPÉDIE)<br>3. April 1991<br>siehe Zusammenfassung; Abbildungen 3,7 | 7,9 |
| A | FR,A,2 531 332 (TESMOINGT)<br>10. Februar 1984<br>siehe Zusammenfassung; Abbildung 5 | 12 |
| A | GB,A,2 240 043 (ORTHOPÄDIE)<br>24. Juli 1991<br>siehe Seite 3, Zeile 30 - Zeile 32;<br>Abbildung | 12 |
| P,A | EP,A,0 517 939 (FEHLING MEDIPRODUKT)<br>16. Dezember 1992<br>siehe Zusammenfassung; Abbildung 2 | 13 |

# ANHANG ZUM INTERNATIONALEN RECHERCHENBERICHT ÜBER DIE INTERNATIONALE PATENTANMELDUNG NR.

DE 9300546
SA 75539

In diesem Anhang sind die Mitglieder der Patentfamilien der im obengenannten internationalen Recherchenbericht angeführten Patentdokumente angegeben.
Die Angaben über die Familienmitglieder entsprechen dem Stand der Datei des Europäischen Patentamts am 14/10/9 .
Diese Angaben dienen nur zur Unterrichtung und erfolgen ohne Gewähr.

| Im Recherchenbericht angeführtes Patentdokument | Datum der Veröffentlichung | Mitglied(er) der Patentfamilie | | Datum der Veröffentlichung |
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EPO FORM P0473

Für nähere Einzelheiten zu diesem Anhang : siehe Amtsblatt des Europäischen Patentamts, Nr.12/82

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ÜBER DIE INTERNATIONALE PATENTANMELDUNG NR. DE 9300546
SA 75539

In diesem Anhang sind die Mitglieder der Patentfamilien der im obengenannten internationalen Recherchenbericht angeführten Patentdokumente angegeben.
Die Angaben über die Familienmitglieder entsprechen dem Stand der Datei des Europäischen Patentamts am 14/10/93
Diese Angaben dienen nur zur Unterrichtung und erfolgen ohne Gewähr.

| Im Recherchenbericht angeführtes Patentdokument | Datum der Veröffentlichung | Mitglied(er) der Patentfamilie | Datum der Veröffentlichung |
|---|---|---|---|
| GB-A-2240043 | 24-07-91 | Keine | |
| EP-A-0517939 | 16-12-92 | Keine | |

EPO FORM P0473

Für nähere Einzelheiten zu diesem Anhang : siehe Amtsblatt des Europäischen Patentamts, Nr.12/82