



 **EUROPÄISCHE PATENTANMELDUNG**

 Anmeldenummer: **94810106.8**

 Int. Cl.⁸: **A63C 9/08**


 Anmeldetag: **21.02.94**

 Veröffentlichungstag der Anmeldung:
20.09.95 Patentblatt 95/38


 Anmelder: **FRITSCHI AG, APPARATEBAU**
Faltschenstrasse
CH-3713 Reichenbach im Kandertal (CH)

 Benannte Vertragsstaaten:
AT BE CH DE DK ES FR GB GR IE IT LI LU MC
NL PT SE

 Erfinder: **Fritschi, Andreas, Brodhüsiweg**
CH-3752 Wimmis (CH)
Thomke, Roland,
CH-3112 Allmendingen (CH)

 Vertreter: **Tschudi, Lorenz et al**
Bovard AG
Patentanwälte VSP
Optingenstrasse 16
CH-3000 Bern 25 (CH)

 **Einrichtung für eine Bindung für Gleitbretter, insbesondere Snowboards.**

 Ein Spannbügel (8) einer Bindung (1) für Gleitbretter, insbesondere Snowboards, der um eine Achse (7) eines vorderen Haltebügels (2) schwenkbar ist, weist einen integrierten Trittsporn (11) auf, der um eine weitere Achse (10) verschwenkbar ist. Dieser Trittsporn (11) steht über einen Halteteil (8) des Spannbügels (6) vor, mit welchem ein Schuh (5) in

der Bindung (1) gehalten wird. Mit Hilfe dieses Trittsorns (11) wird ein automatischer Einstieg und Festspannen des Schuhs in der Bindung ermöglicht. Der vordere Haltebügel (2) wird hierzu durch einen Endanschlag (21) in einer vorgegebenen Stellung gehalten.

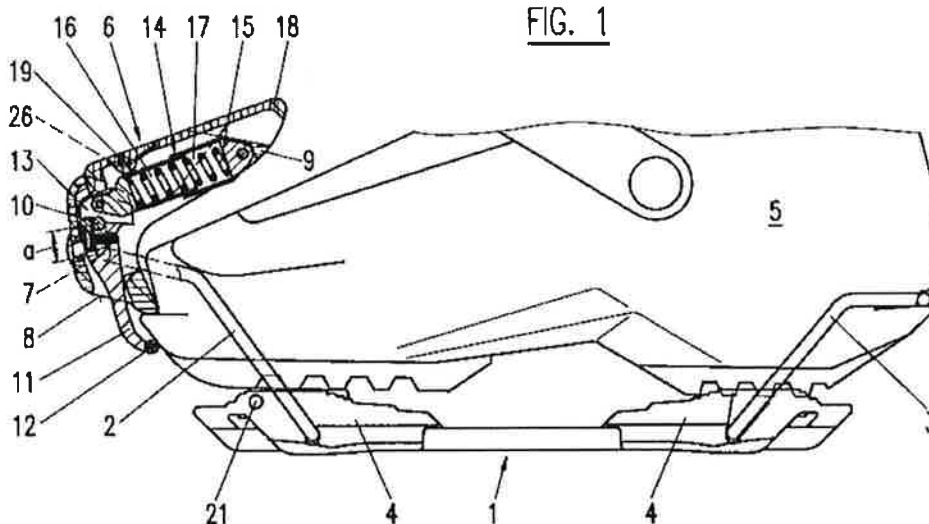


FIG. 1

EP 0 672 438 A1

(19)



Europäisches Patentamt
European Patent Office
Office européen des brevets



(11)

EP 0 857 498 B1

(12)

EUROPÄISCHE PATENTSCHRIFT

(45) Veröffentlichungstag und Bekanntmachung des Hinweises auf die Patenterteilung:
22.08.2001 Patentblatt 2001/34

(51) Int Cl.7: **A63C 5/03**

(21) Anmeldenummer: **98890026.2**

(22) Anmeldetag: **02.02.1998**

(54) **Bindungseinrichtung**

Binding system

Dispositif de fixation

(84) Benannte Vertragsstaaten:
AT CH DE FR IT LI

(30) Priorität: **03.02.1997 AT 16797**

(43) Veröffentlichungstag der Anmeldung:
12.08.1998 Patentblatt 1998/33

(73) Patentinhaber: **ATOMIC Austria GmbH**
5541 Altenmarkt Im Pongau (AT)

(72) Erfinder: **Thomke, Roland**
3112 Almendingen (CH)

(74) Vertreter: **Secklehner, Günter, Dr. et al**
Rechtsanwalt,
Pyhrnstrasse 1
8940 Liezen (AT)

(56) Entgegenhaltungen:
WO-A-92/09339 **WO-A-96/14123**
DE-A- 3 733 104

EP 0 857 498 B1

Anmerkung: Innerhalb von neun Monaten nach der Bekanntmachung des Hinweises auf die Erteilung des europäischen Patents kann jedermann beim Europäischen Patentamt gegen das erteilte europäische Patent Einspruch einlegen. Der Einspruch ist schriftlich einzureichen und zu begründen. Er gilt erst als eingelegt, wenn die Einspruchsgebühr entrichtet worden ist. (Art. 99(1) Europäisches Patentübereinkommen).



(12) **EUROPÄISCHE PATENTANMELDUNG**

(43) Veröffentlichungstag:
29.09.2004 Patentblatt 2004/40

(51) Int Cl.7: **B26D 3/26**

(21) Anmeldenummer: **03405205.0**

(22) Anmeldetag: **26.03.2003**

(84) Benannte Vertragsstaaten:
**AT BE BG CH CY CZ DE DK EE ES FI FR GB GR
 HU IE IT LI LU MC NL PT RO SE SI SK TR**
 Benannte Erstreckungsstaaten:
AL LT LV MK

(72) Erfinder:
 • **Thomke, Roland**
3074 Muri b. Bern (CH)
 • **Weibel, Hans**
3054 Schüpfen (CH)

(71) Anmelder: **Zyliss AG**
CH-3250 Lyss (CH)

(74) Vertreter: **BOVARD AG - Patentanwälte**
Opfingenstrasse 16
3000 Bern 25 (CH)

(54) **Hacker zum Zerkleinern von Lebensmitteln**

(57) Der Hacker weist einen Stößel (6) auf, an dessen unterem Ende (19) ein Messer befestigt ist. Um zu verhindern, dass das Messer bei jedem Hub des Stößels (6) auf die selbe Stelle des Hackgutes trifft, ist ein Drehmechanismus (10, 13) vorhanden, der den Stößel (6) schrittweise dreht. Der Erfindung liegt die Aufgabe zugrunde, einen Hacker vorzuschlagen, bei dem zuverlässig verhindert wird, dass sich das Messer beim Arbeitshub und beim Rückhub in jeweils entgegengesetzter Richtung dreht und dadurch immer auf die selbe Stelle des Hackgutes trifft. Dazu ist ein Betätigungskopf (8) unter Zwischenschaltung einer Rückdreh Sperre (20, 21, 22, 24) drehbar mit dem Stößel (6) verbunden. Dadurch wird sichergestellt, dass sich das Messer bei jedem Rückhub um einen Schritt weiter dreht.

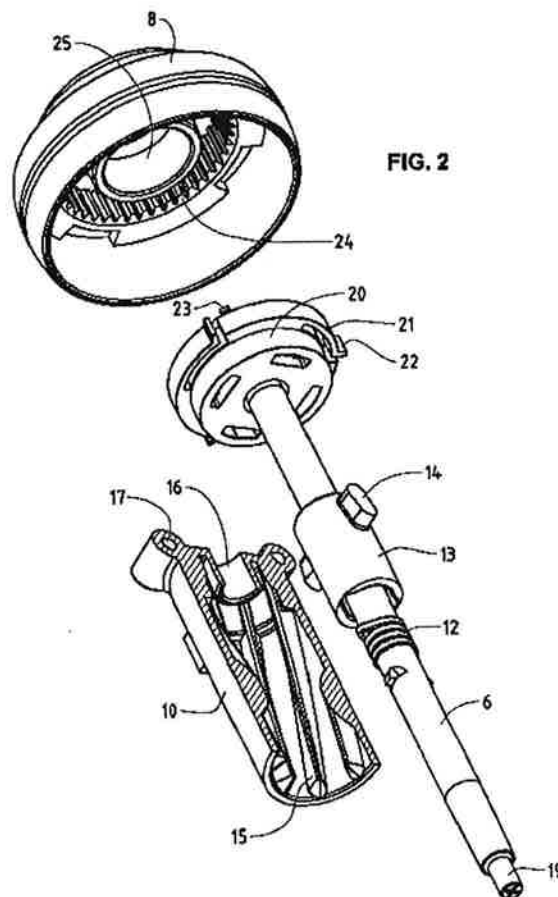


FIG. 2



US007241074B2

(12) **United States Patent**
Thomke et al.

(10) **Patent No.:** US 7,241,074 B2
(45) **Date of Patent:** Jul. 10, 2007

(54) **CLAMPING AND ARTICULATION ELEMENT**

(75) **Inventors:** Roland Thomke, Bellach (CH);
Vinzenz Burgherr, Bern (CH);
Christian Lutz, Solothurn (CH);
Damian Fankhauser, Bern (CH);
Clemens Dransfeld, Niederlenz (CH);
René Fischer, Zurich (CH)

5,938,663 A * 8/1999 Petreto 606/61
5,947,965 A * 9/1999 Bryan 606/61
6,022,348 A 2/2000 Spitzer
6,080,153 A * 6/2000 Mata et al. 606/54
6,277,069 B1 8/2001 Gray

(Continued)

FOREIGN PATENT DOCUMENTS

(73) Assignee: **Stryker Trauma S.A.** (CH)

DE 19854347 6/1999

(*) Notice: Subject to any disclaimer, the term of this patent is extended or adjusted under 35 U.S.C. 154(b) by 0 days.

(Continued)

OTHER PUBLICATIONS

(21) Appl. No.: 11/202,690

(22) Filed: **Aug. 12, 2005**

Search Report from EP 1 627 608 A1 dated Jan. 27, 2005.

(65) **Prior Publication Data**
US 2006/0039750 A1 Feb. 23, 2006

Primary Examiner—Daniel P. Stodola
Assistant Examiner—Nahid Amiri
(74) *Attorney, Agent, or Firm*—Lerner, David, Littenberg, Krumholz & Mentlik, LLP

(30) **Foreign Application Priority Data**
Aug. 20, 2004 (EP) 04405521

(57) **ABSTRACT**

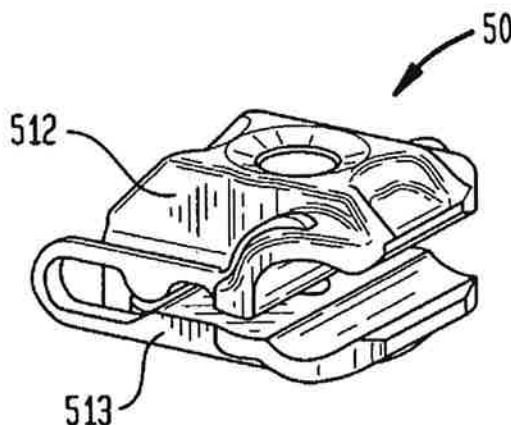
(51) **Int. Cl.**
B25G 3/36 (2006.01)
E04G 7/00 (2006.01)
E04G 7/14 (2006.01)

A one-piece clamping element has two opposing clamping jaws forming a laterally open cavity to receive a rod-shaped element. A hinge is located between the jaws, arranged opposite the cavity, and connecting the clamping jaws with one another and thus allowing them to be movable with respect to one another. Each clamping jaw has one bore, aligned flush with one another. One clamping jaw has a receptacle for an anti-rotation device. The receptacle makes it preferable—with the exception of an immediate tightening of the screw in this or another place of an external fixator clamping element used for the same patient—to use the clamping element only once and discarding it after use. Two identical clamping elements, with the possible exception of the size of the rod receptacle, can be placed on top of one another to form an articulation element.

(52) **U.S. Cl.** 403/385; 606/57; 24/545
(58) **Field of Classification Search** 403/385, 403/384, 395, 289; 606/54-61, 63, 72-73; 24/514, 545, 569, 525
See application file for complete search history.

(56) **References Cited**
U.S. PATENT DOCUMENTS
4,483,334 A 11/1984 Murray
4,620,533 A * 11/1986 Mears 606/54
4,648,388 A * 3/1987 Steffee 606/61
5,285,556 A * 2/1994 Shorin et al. 24/487
5,752,954 A 5/1998 Mata et al.

20 Claims, 13 Drawing Sheets





US007491008B2

(12) **United States Patent**
Thomke et al.

(10) **Patent No.:** **US 7,491,008 B2**

(45) **Date of Patent:** **Feb. 17, 2009**

- (54) **EXTERNAL FIXATION CLAMP**
- (75) **Inventors:** **Roland Thomke, Bellach (CH); Vinzenz Burgherr, Bern (CH); Damian Fankhauser, Bern (CH)**
- (73) **Assignee:** **Stryker Trauma S.A. (CH)**
- (*) **Notice:** Subject to any disclaimer, the term of this patent is extended or adjusted under 35 U.S.C. 154(b) by 0 days.

5,358,350	A *	10/1994	Oertle	.....	403/373
5,727,899	A *	3/1998	Dobrovolny	.....	403/DIG. 9
5,741,252	A	4/1998	Mazzio et al.		
5,752,954	A	5/1998	Mata et al.		
5,888,221	A	3/1999	Gelbard		
6,080,153	A	6/2000	Mata et al.		
6,340,361	B1	1/2002	Kraus et al.		
6,342,054	B1	1/2002	Mata		
6,616,664	B2	9/2003	Walulik et al.		
6,692,177	B2 *	2/2004	Crudele et al.	.....	403/12

(21) **Appl. No.:** **11/120,775**

(22) **Filed:** **May 3, 2005**

(65) **Prior Publication Data**
US 2006/0177263 A1 Aug. 10, 2006

(30) **Foreign Application Priority Data**
Feb. 9, 2005 (EP) 05100926

- (51) **Int. Cl.**
A61B 17/70 (2006.01)
- (52) **U.S. Cl.** **403/373; 403/316; 403/391; 606/54; 606/57**
- (58) **Field of Classification Search** **403/316, 403/373, 389, 391, 396, DIG. 9, 237; 24/335, 24/535; 248/68.1; 606/61, 54, 57, 277, 324; 439/781; 600/226, 230**
See application file for complete search history.

(56) **References Cited**
U.S. PATENT DOCUMENTS

1,785,870	A *	12/1930	Marles	.....	403/313
2,856,214	A *	10/1958	Schrimshaw	.....	403/373
3,023,989	A *	3/1962	White	.....	248/68.1
3,466,712	A *	9/1969	Behney	.....	403/283
4,043,688	A *	8/1977	Humlong	.....	403/237
4,310,209	A *	1/1982	Fleming et al.	.....	439/781
4,707,051	A *	11/1987	Hall	.....	439/781
4,772,153	A *	9/1988	Huang	.....	403/373
5,030,220	A *	7/1991	Howland		

(Continued)

FOREIGN PATENT DOCUMENTS

DE 38 23 746 A1 1/1990

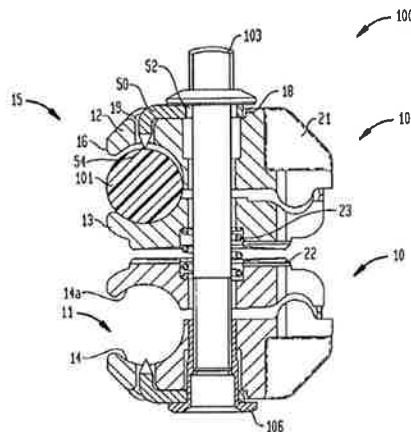
(Continued)

Primary Examiner—Daniel P Stodola
Assistant Examiner—Ernesto Garcia
(74) *Attorney, Agent, or Firm*—Lerner, David, Littenberg, Krumholz & Mentlik, LLP

(57) **ABSTRACT**

An insert for an external fixation has two jaws for clamping a rod-shaped element. The insert includes a locking element and is an angled piece having two free ends, with at least one engagement edge for engagement into the rod-shaped element being provided at its one free end. The insert has a recess or bore for engagement with a locking shaft of the clamp provided at the free end thereof that lies opposite to the free end having the rod engagement edge. The insert is angled so that it may extend through a passageway in one of the jaws and into a cavity formed in the jaw for receiving the rod. The insert rod engaging edges are tapered to bite into the rod to prevent its movement.

11 Claims, 15 Drawing Sheets





US007618417B2

(12) **United States Patent**
Thomke et al.

(10) **Patent No.:** **US 7,618,417 B2**

(45) **Date of Patent:** **Nov. 17, 2009**

(54) **CLAMP FOR MULTIPLE ROD SHAPED ELEMENTS**

(75) **Inventors:** **Roland Thomke, Bellach (CH);
Vinzenz Burgherr, Bern (CH);
Christian Lutz, Solothurn (CH);
Damian Fankhauser, Bern (CH);
Clemens Dransfeld, Niederlenz (CH);
René Fischer, Zurich (CH)**

(73) **Assignee:** **Stryker Trauma S.A. (CH)**

(*) **Notice:** Subject to any disclaimer, the term of this patent is extended or adjusted under 35 U.S.C. 154(b) by 648 days.

(21) **Appl. No.:** **11/108,492**

(22) **Filed:** **Apr. 18, 2005**

(65) **Prior Publication Data**
US 2006/0052781 A1 Mar. 9, 2006

(30) **Foreign Application Priority Data**
Aug. 20, 2004 (EP) 04405522

(51) **Int. Cl.**
A61F 5/04 (2006.01)
(52) **U.S. Cl.** 606/59; 606/324; 606/54;
403/329
(58) **Field of Classification Search** 606/59,
606/53, 57, 54, 55, 56, 58; 403/385, 397,
403/329, 781, 782, 783, 776, 761, 803
See application file for complete search history.

(56) **References Cited**
U.S. PATENT DOCUMENTS
1,729,613 A * 10/1929 Gross 439/761
4,135,505 A * 1/1979 Day 606/59
4,169,652 A * 10/1979 Hockele et al. 439/781

4,293,176 A 10/1981 Lindlöf
4,469,367 A * 9/1984 Kuttler et al. 296/97.9
4,496,263 A * 1/1985 Laarhoven 403/402
5,160,335 A 11/1992 Wagenknecht
5,376,090 A * 12/1994 Pennig 606/54
5,728,096 A 3/1998 Faccioli et al.
5,752,954 A 5/1998 Mata et al.
5,891,144 A 4/1999 Mata et al.
6,342,054 B1 * 1/2002 Mata 606/59
6,423,061 B1 * 7/2002 Bryant 606/57
6,565,564 B2 5/2003 Hoffman et al.
2002/0142674 A1 * 10/2002 Chadbourne et al. 439/783
2003/0191467 A1 * 10/2003 Hoffmann-Clair et al. 606/59
2006/0167453 A1 * 7/2006 Hoffmann-Clair et al. 606/59

FOREIGN PATENT DOCUMENTS

DE 197 53 010 6/1999
EP 0 700 664 A 3/1996
WO WO-97/35527 10/1997

OTHER PUBLICATIONS

KZ V Kurganskogo Nauchnogo Tse; Abbildungen 1-3; Feb. 15, 1991
SU 1 627 161 A.
European Search Report dated Jan. 18, 2005.

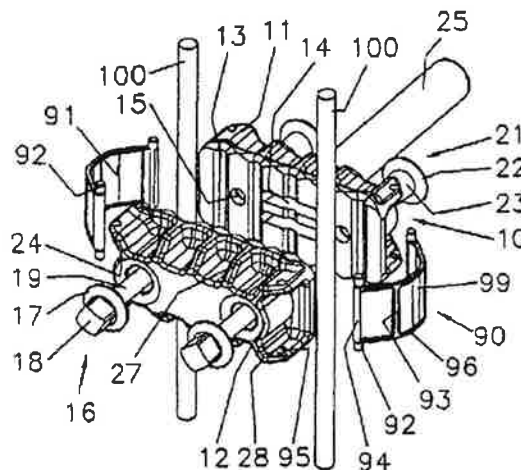
* cited by examiner

Primary Examiner—Eduardo C Robert
Assistant Examiner—Jan Christopher Merene
(74) *Attorney, Agent, or Firm*—Lerner, David, Littenberg,
Krumholz & Mentlik, LLP

(57) **ABSTRACT**

A clamping element for the clamping of multiple rod-shaped elements has two opposing jaws, which have a number of corresponding grooves for the acceptance of a corresponding number of rod-shaped elements such as bone pins. Spring elements are provided, with which in the resting position the closed jaws are tensed, to hold the rod-shaped elements in position.

14 Claims, 9 Drawing Sheets



(19)



(11)

EP 1 661 527 B1

(12)

EUROPEAN PATENT SPECIFICATION

(45) Date of publication and mention of the grant of the patent:
19.03.2008 Bulletin 2008/12

(51) Int Cl.:
A61B 17/88^(2006.01) A61B 17/92^(2006.01)

(21) Application number: **04405741.2**

(22) Date of filing: **29.11.2004**

(54) Extractor device for an insert for a bone connection element and insert

Extraktionsvorrichtung für den Einsatz eines Knochenverbindungselementes und Einsatz

Dispositif d'extraction pour un insert d'un élément de connection osseux et un insert

(84) Designated Contracting States:
AT BE BG CH CY CZ DE DK EE ES FI FR GB GR HU IE IS IT LI LU MC NL PL PT RO SE SI SK TR

- **Lutz, Christian**
4500 Solothurn (CH)

(43) Date of publication of application:
31.05.2006 Bulletin 2006/22

(74) Representative: **Liebetanz, Michael et al**
Isler & Pedrazzini AG
Gotthardstrasse 53
Postfach 1772
8027 Zürich (CH)

(73) Proprietor: **Stryker Trauma SA**
2545 Selzach (CH)

(56) References cited:
DE-A1- 19 841 252 US-A- 6 112 623
US-A1- 2002 099 386

(72) **Inventors:**

- **Kugler, Stefan**
3013 Bern (CH)
- **Thomke, Roland**
4512 Bellach (CH)
- **Gasser, André**
4513 Langendorf (CH)

- **DATABASE WPI Section PQ, Week 200367**
Derwent Publications Ltd., London, GB; Class P31, AN 2003-704635 XP002330457 & JP 2003 265492 A (REED SHOKAI KK ROBERT) 24 September 2003 (2003-09-24)

Note: Within nine months from the publication of the mention of the grant of the European patent, any person may give notice to the European Patent Office of opposition to the European patent granted. Notice of opposition shall be filed in a written reasoned statement. It shall not be deemed to have been filed until the opposition fee has been paid. (Art. 99(1) European Patent Convention).

EP 1 661 527 B1

(19)



(11)

EP 1 839 605 B1

(12)

EUROPEAN PATENT SPECIFICATION

(45) Date of publication and mention of the grant of the patent:
10.12.2008 Bulletin 2008/50

(51) Int Cl.:
A61B 17/60^(2006.01) A61B 17/64^(2006.01)

(21) Application number: **06112136.4**

(22) Date of filing: **31.03.2006**

(54) External fixator element having a rough ablated surface

Externes Fixierelement mit einer rauhen, abgetragenen Oberfläche

Élément de fixateur externe à surface rugueuse traitée par érosion

(84) Designated Contracting States:
CH DE ES FR GB IT LI

• **Thomke, Roland**
4512 Bellach (CH)

(43) Date of publication of application:
03.10.2007 Bulletin 2007/40

(74) Representative: **Liebetanz, Michael**
Isler & Pedrazzini AG
Gotthardstrasse 53
Postfach 1772
8027 Zürich (CH)

(73) Proprietor: **Stryker Trauma SA**
2545 Selzach (CH)

(72) **Inventors:**
 • **Lehmann, Philippe**
2516 Lamboing (CH)

(56) References cited:
WO-A-86/07568 **US-A- 5 042 462**
US-A- 5 571 103 **US-A- 5 891 144**
US-A1- 2005 038 425

EP 1 839 605 B1

Note: Within nine months of the publication of the mention of the grant of the European patent in the European Patent Bulletin, any person may give notice to the European Patent Office of opposition to that patent, in accordance with the Implementing Regulations. Notice of opposition shall not be deemed to have been filed until the opposition fee has been paid. (Art. 99(1) European Patent Convention).



US 20080065068A1

(19) **United States**

(12) **Patent Application Publication** (10) **Pub. No.: US 2008/0065068 A1**

Thomke et al. (43) **Pub. Date: Mar. 13, 2008**

(54) **INSERT FOR A CLAMPING ELEMENT,
CLAMPING ELEMENT COMPRISING SAID
INSERT AND UNIVERSAL JOINT
PRODUCED THEREFROM**

(30) **Foreign Application Priority Data**
Nov. 30, 2004 (EP)..... 04405743.8

Publication Classification

(76) **Inventors: Roland Thomke, Bellach (CH);
Damian Fankhauser, Bern (CH)**

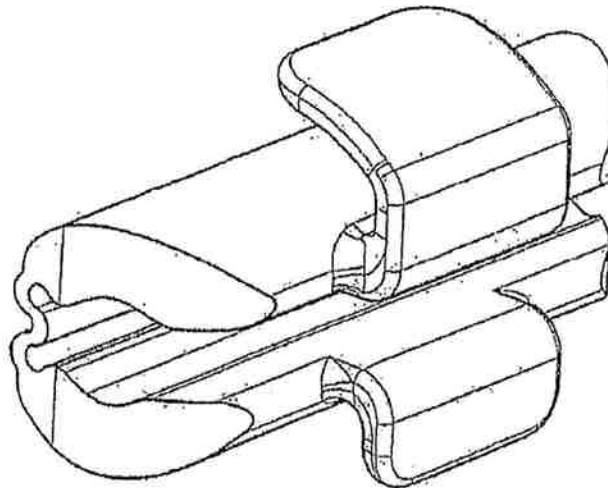
(51) **Int. Cl.**
A61B 17/64 (2006.01)
(52) **U.S. Cl.** **606/57**

Correspondence Address:
**LERNER, DAVID, LITTENBERG,
KRUMHOLZ & MENTLIK
600 SOUTH AVENUE WEST
WESTFIELD, NJ 07090 (US)**

(57) **ABSTRACT**

An insert (50) for a clamping element (10) having two jaws (12, 13) for clamping a rod-shaped element comprises at least one jacket element (51). Said jacket element can be inserted into one jaw (12, 13) each of the clamping element (10), thereby allowing to vary, especially reducing, the free space (11) available for a rod. The insert (50) also comprises at least one retaining section (53,54) which fastens at least one part of the insert (50) in or on at least one of the jaws (12,13) of the clamping element. A clamping element can be provided with two jacket elements (51), interlinked via an undulated web, or two or three juxtaposed longitudinal grooves for receiving rods having different diameters.

(21) Appl. No.: 11/632,191
(22) PCT Filed: Nov. 30, 2005
(86) PCT No.: PCT/CH05/00714
§ 371(c)(1),
(2), (4) Date: Jan. 17, 2007





US 20080215053A1

(19) **United States**

(12) **Patent Application Publication**
Thomke et al.

(10) **Pub. No.: US 2008/0215053 A1**

(43) **Pub. Date: Sep. 4, 2008**

(54) **PREVENTION OF RE-USE OF A MEDICAL DEVICE**

(75) **Inventors:** **Roland Thomke, Bellach (CH);**
Hans-Peter Bigler, Gasel (CH);
Philippe Lehmann, Lamboing (CH)

Correspondence Address:
LERNER, DAVID, LITTENBERG,
KRUMHOLZ & MENTLIK
600 SOUTH AVENUE WEST
WESTFIELD, NJ 07090 (US)

(73) **Assignee:** **Stryker Trauma SA, Selzach (CH)**

(21) **Appl. No.:** **11/974,172**

(22) **Filed:** **Oct. 11, 2007**

(30) **Foreign Application Priority Data**

Oct. 13, 2006 (EP) 06 122 309.5

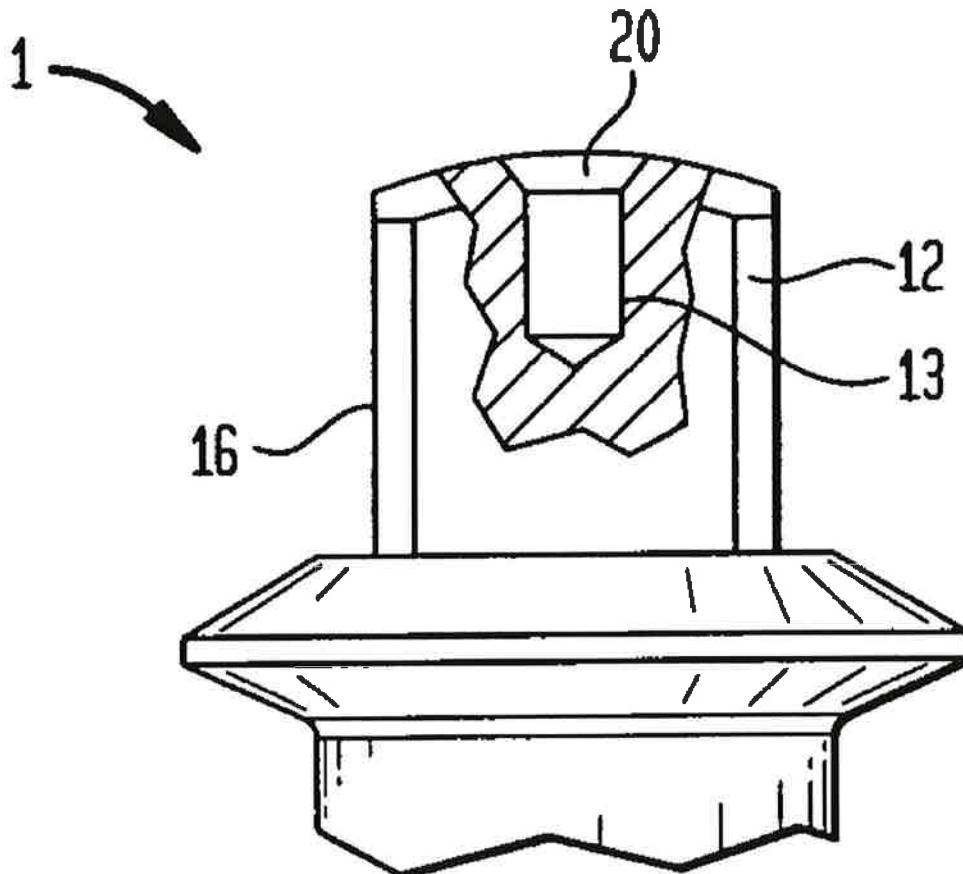
Publication Classification

(51) **Int. Cl.**
A61B 17/60 (2006.01)

(52) **U.S. Cl.** **606/59**

(57) **ABSTRACT**

A disposable medical device is especially an articulation for the relative positioning of fixation bars or of pins of an external fixator, having at least a clamping means to be introduced into the medical device, the clamping means comprises an element that alters its appearance when being heated over a threshold temperature, thus giving optical or mechanical information that the device should not be used a second time.





US 20090306661A1

(19) **United States**

(12) **Patent Application Publication**

Thomke et al.

(10) **Pub. No.: US 2009/0306661 A1**

(43) **Pub. Date: Dec. 10, 2009**

(54) **CLAMPING ELEMENT AND INSERT THEREFOR**

(75) **Inventors:** **Roland Thomke, Bellach (CH); Damian Frankhauser, Bem (CH)**

Correspondence Address:
LERNER, DAVID, LITTENBERG, KRUMHOLZ & MENTLIK
600 SOUTH AVENUE WEST
WESTFIELD, NJ 07090 (US)

(73) **Assignee:** **Stryker Trauma SA, Selzach (CH)**

(21) **Appl. No.:** **12/227,836**

(22) **PCT Filed:** **May 29, 2007**

(86) **PCT No.:** **PCT/CH2007/000270**

§ 371 (c)(1),
(2), (4) **Date:** **Apr. 15, 2009**

(30) **Foreign Application Priority Data**

May 29, 2006 (EP) 06114661.9

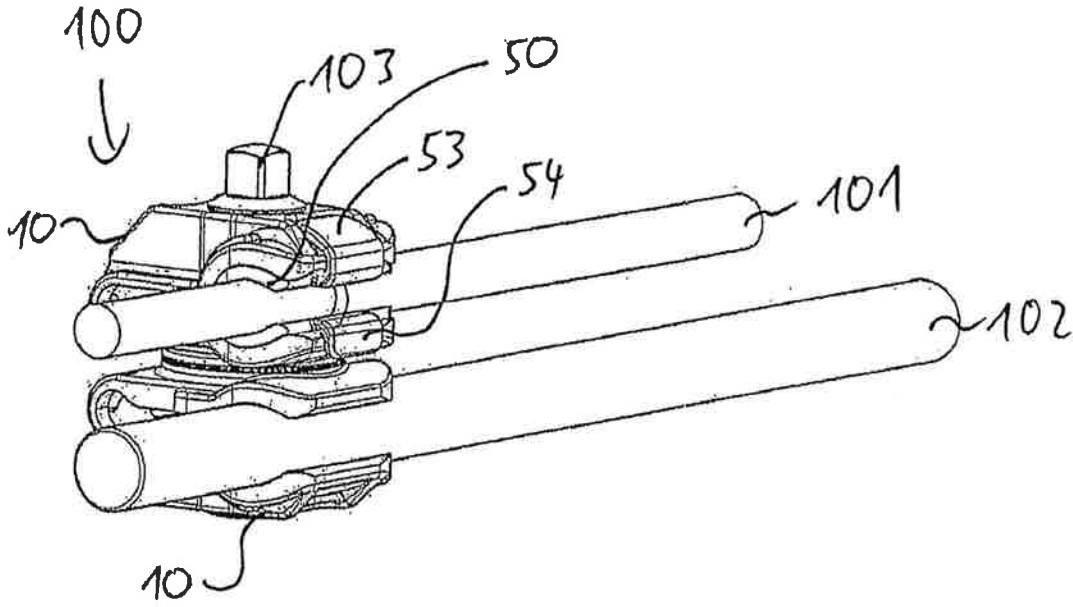
Publication Classification

(51) **Int. Cl.**
A61B 17/64 (2006.01)
F16L 3/237 (2006.01)

(52) **U.S. Cl.** 606/54; 279/43.1; 606/53

(57) **ABSTRACT**

An insert (70) for a clamping element with two jaws to clamp a rod-shaped element comprises an inner cavity (144) to accommodate a rod-shaped element and at least one flange element (153) at one longitudinal end of the insert intended to abut against the clamping element. The flange element (153) comprises clamping members (161) to reduce the available room within the inner cavity (144) for the rod-shaped element to be clamped and to clamp the flange element (153) between the rod-shaped element and an outer clamping surface of the clamping element to prohibit any longitudinal movement of the clamped insert.





US007806623B2

(12) **United States Patent**
Thomke et al.

(10) **Patent No.:** **US 7,806,623 B2**
(45) **Date of Patent:** **Oct. 5, 2010**

- (54) **EXTERNAL FIXATION CLAMP**
- (75) **Inventors:** **Roland Thomke, Bellach (CH); Vinzenz Burgherr, Bern (CH); Damian Fankhauser, Bern (CH)**
- (73) **Assignee:** **Stryker Trauma S.A. (CH)**
- (*) **Notice:** Subject to any disclaimer, the term of this patent is extended or adjusted under 35 U.S.C. 154(b) by 10 days.

- 4,310,209 A 1/1982 Fleming et al.
- 4,707,051 A 11/1987 Hall
- 4,772,153 A 9/1988 Huang et al.
- 5,030,220 A 7/1991 Howland
- 5,358,350 A 10/1994 Oertle et al.
- 5,727,899 A 3/1998 Dobrovolny
- 5,741,252 A 4/1998 Mazzio et al.
- 5,752,954 A 5/1998 Mata et al.

(21) **Appl. No.:** **12/316,217**

(Continued)

(22) **Filed:** **Dec. 10, 2008**

FOREIGN PATENT DOCUMENTS

(65) **Prior Publication Data**
US 2009/0148232 A1 Jun. 11, 2009

DE 38 23 746 A1 1/1990

Related U.S. Application Data

(Continued)

(62) Division of application No. 11/120,775, filed on May 3, 2005, now Pat. No. 7,491,008.

Primary Examiner—Victor MacArthur
(74) *Attorney, Agent, or Firm*—Lerner, David, Littenberg, Krumholz & Mentlik, LLP

(30) **Foreign Application Priority Data**
Feb. 9, 2005 (EP) 05100926

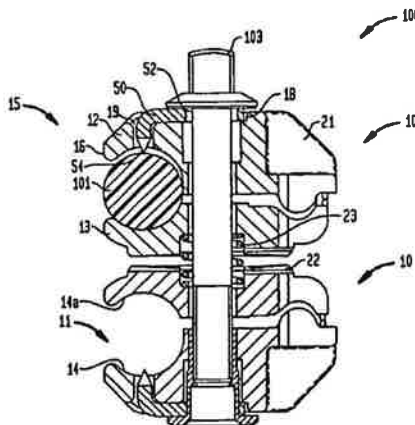
(57) **ABSTRACT**

- (51) **Int. Cl.**
E04B 1/26 (2006.01)
- (52) **U.S. Cl.** 403/385; 403/344
- (58) **Field of Classification Search** 403/188, 403/316, 344, 373, 385; 606/54, 57
See application file for complete search history.

An insert for an external fixation has two jaws for clamping a rod-shaped element. The insert includes a locking element and is an angled piece having two free ends, with at least one engagement edge for engagement into the rod-shaped element being provided at its one free end. The insert has a recess or bore for engagement with a locking shaft of the clamp provided at the free end thereof that lies opposite to the free end having the rod engagement edge. The insert is angled so that it may extend through a passageway in one of the jaws and into a cavity formed in the jaw for receiving the rod. The insert rod engaging edges are tapered to bite into the rod to prevent its movement.

- (56) **References Cited**
U.S. PATENT DOCUMENTS
978,398 A * 12/1910 Rischard 24/339
1,785,870 A 12/1930 Marles
2,856,214 A 10/1958 Schrimshaw
3,023,989 A 3/1962 White
3,268,946 A * 8/1966 Case 403/188
3,466,712 A 9/1969 Behney
3,767,235 A * 10/1973 Pitner 403/344
4,043,688 A 8/1977 Humlong

8 Claims, 15 Drawing Sheets





US 20110087226A1

(19) **United States**

(12) **Patent Application Publication**
Mürner et al.

(10) **Pub. No.: US 2011/0087226 A**

(43) **Pub. Date: Apr. 14, 2011**

(54) **EASY TO CLEAN CLAMPING DEVICE**

(52) **U.S. Cl. 606/**

(75) **Inventors:** Beat Mürner, Reichenbach (CH);
Robert Wider, Derendingen (CH);
Roland Thomke, Bellach (CH)

(57) **ABSTRACT**

(73) **Assignee:** STRYKER TRAUMA SA, Selzach (CH)

An easy to clean clamping device has at least one clamping assembly having two jaws. The jaws form at least one recess to accommodate an element to be clamped along the longitudinal axis of the recess. A locking unit is provided to allow closing of the jaws against the force of a spring element. The locking unit has a shaft extending along an axis and through bores of the jaws. The shaft has a head for operating the clamping action abutting against the uppermost jaw. A locking element is provided having a through bore and which locking element can be arranged between the head and the uppermost jaw. One portion of the locking unit has a large diameter than the bore of the second jaw and the head of the locking unit has a smaller diameter than the bore of the adjacent jaw. The locking element comprises at least one locking surface which can be brought into positive locking with a corresponding surface of the head for blocking removal of the locking element.

(21) **Appl. No.:** 12/879,382

(22) **Filed:** Sep. 10, 2010

(30) **Foreign Application Priority Data**

Sep. 11, 2009 (EP) 09 170 105.2

Publication Classification

(51) **Int. Cl.**
A61B 17/00 (2006.01)

