(12) INTERNATIONAL APPLICATION PUBLISHED UNDER THE PATENT COOPERATION TREATY (PCT)

(19) World Intellectual Property Organization
International Bureau

(43) International Publication Date
14 September 2017 (14.09.2017)

WIPO | PCT

(10) International Publication Number
WO 2017/153183 A1

(51) International Patent Classification:
F16B 12/20 (2006.01)

(21) International Application Number:
PCT/EP2017/054292

(22) International Filing Date:
24 February 2017 (24.02.2017)

(25) Filing Language: English

(26) Publication Language: English

(30) Priority Data:
102016000023329 7 March 2016 (07.03.2016) IT

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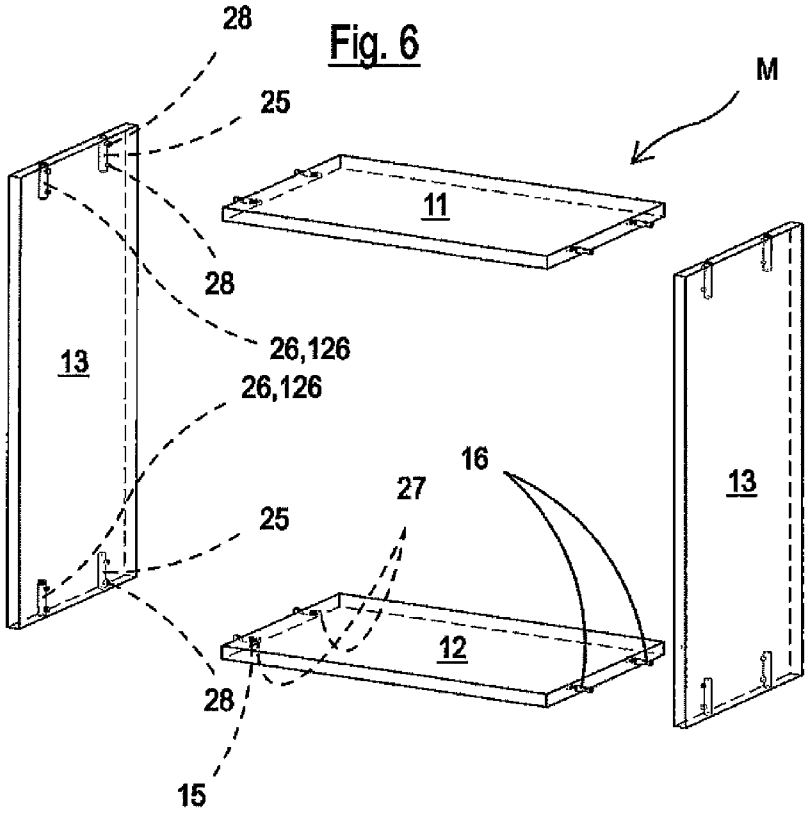
(81) Designated States *(unless otherwise indicated, for every kind of national protection available)*: AE, AG, AL, AM, AO, AT, AU, AZ, BA, BB, BG, BH, BN, BR, BW, BY, BZ, CA, CH, CL, CN, CO, CR, CU, CZ, DE, DJ, DK, DM, DO, DZ, EC, EE, EG, ES, FI, GB, GD, GE, GH, GM, GT, HN, HR, HU, ID, IL, IN, IR, IS, JP, KE, KG, KH, KN, KP, KR, KW, KZ, LA, LC, LK, LR, LS, LU, LY, MA, MD, ME, MG, MK, MN, MW, MX, MY, MZ, NA, NG, NI, NO, NZ, OM, PA, PE, PG, PH, PL, PT, QA, RO, RS, RU, RW, SA, SC, SD, SE, SG, SK, SL, SM, ST, SV, SY, TH, TJ, TM, TN, TR, TT, TZ, UA, UG, US, UZ, VC, VN, ZA, ZM, ZW.

(84) Designated States *(unless otherwise indicated, for every kind of regional protection available)*: ARIPO (BW, GH, GM, KE, LR, LS, MW, MZ, NA, RW, SD, SL, ST, SZ, TZ, UG, ZM, ZW), Eurasian (AM, AZ, BY, KG, KZ, RU, TJ, TM), European (AL, AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HR, HU, IE, IS, IT, LT, LU, LV, MC, MK, MT, NL, NO, PL, PT, RO, RS, SE, SI, SK, SM, TR), OAPI (BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, KM, ML, MR, NE, SN, TD, TG).

[Continued on next page]

(54) Title: BARREL FOR A BARREL JOINT FOR PARTS OF FURNITURE AND FURNISHING ITEMS

Fig. 6



(57) Abstract: A barrel for a barrel joint for parts of furniture and furnishing items comprising a hollow cylindrical body (32, 33; 132; 232) containing a blocking element (30; 29; 230) and at least one hole (41; 141; 241) on one of its side surfaces for the passage of a tip of a tool (21, 47) that actuates said blocking element (30; 29; 230), the hollow cylindrical body (32, 33; 132; 232) also providing at least a further hole (42; 142; 242) for receiving a pin (16; 215, 45) of the barrel joint.

WO 2017/153183 A1

Published:

— *with international search report (Art. 21(3))*

BARREL FOR A BARREL JOINT FOR PARTS OF FURNITURE AND FURNISHING ITEMS

The present invention relates to a barrel for a barrel joint for parts of furniture and furnishing items.

The joining between two panels, for example between a shoulder of a piece of furniture and a base, shelf or top, in the furniture and furnishing industry, is currently effected by positioning a pin screwed into a hole of the shoulder and a barrel inserted in a hole formed in the base, shelf or top of the furniture.

In order to position the barrel in this way, a relatively wide hole must be produced in the base, shelf or top of the furniture, which receives the barrel that houses a grub screw in its threaded portion. The hole thus produced must also be covered by a cap to restore the aesthetic appearance of the parts involved. Furthermore, the barrel must not be longer than a certain size due to the thickness of the base, shelf or top in which it is positioned.

Figures 1 to 5 show a known solution of this type designed for connecting a top 11 and/or a base 12 of a piece of furniture M and two side shoulders 13 of the same to provide the desired joint.

In the known solution illustrated, horizontal

holings 14 must be provided, having a smaller size, produced in the shoulders 13, which receive a threaded end 15 of a pin 16. Vertical holings 17 must also be provided, having a much larger size, produced in the visible part in both the base or shelf 12 and in the top 11 of the furniture M, to receive a barrel 19. Additional horizontal holings 20 must also be provided, which intersect the above-mentioned vertical holes 17, to receive the threaded end 15 of the pin 16.

It can be easily understood that the holings 17 that receive the barrel 19 must also be covered by specific caps, not shown, in order to restore the aesthetic appearance of the finished furniture.

The blockage of a joint of this type, after positioning the pins 16 in the shoulders 13 and the barrels 19 in the base 12 or top 11, is effected using a common screwdriver 21.

As shown in the figures in fact, it is necessary to act in the direction perpendicular to the joint as appears in the constraining and blocking phases illustrated in figures 3 to 5. The screwdriver 21 passes into the holing 17, which is used for positioning the barrel 19, and blocks a threaded grub screw 22, screwing according to the arrow 23. It can in fact be observed that the grub screw 22 is positioned

in an internal threading 24 of the barrel 19 which has an extremely short body and a considerable diameter. The cap (not shown) that covers the holing 17, once a stable joining between the parts has been obtained, consequently as the same large dimensions.

It should also be noted that a cap of this type is positioned on the upper surface of the base or shelf 12 thus creating an obstacle or source of disturbance for possible objects that are arranged on the same.

DE 3145825 describes a barrel for a barrel joint for parts of furniture and furnishing items according to the preamble of claim 1.

DE 2748272, LU 37757 and EP 1469206 illustrate other examples of a barrel for a barrel joint for parts of furniture and furnishing items.

The general objective of the present invention is therefore to provide a barrel for a barrel joint for parts of furniture and furnishing items, such as a shoulder, a base, a top and/or a shelf, capable of solving the drawbacks of the known art indicated above in an extremely simple, economical and particularly functional manner.

A further objective of the present invention is therefore to provide a barrel for a barrel joint which, in addition to having minimum visibility on the part of

an observer, and consequently a high aesthetical value, can be accessible from at least two sides also in the case of irremovable encumbrances positioned close to the base or shelf.

Another objective of the present invention is to provide a barrel for a joint between parts of furniture and furnishing items that allows insertion in a thickness of the single panel, without weakening it.

The structural and functional characteristics of the present invention and its advantages with respect to the known art will appear even more evident from the following description, referring to the enclosed schematic drawings, which show embodiment examples of the same invention having the same innovative concept. In the drawings:

- figures 1 and 2 are respectively an exploded perspective view and an assembled view of a piece of furniture with barrels and pins of the known art positioned between two shoulders of a piece of furniture connected by a base and by a top forming stable joints between the parts;

- figures 3 to 5 are sectional views of a barrel of the known art when it is connected to a pin forming the joints of a piece of furniture illustrated in the previous figures 1 and 2;

- figures 6 and 7 are respectively an exploded perspective view and an assembled view of a piece of furniture with barrels according to the present invention connected to pins forming stable joints between the parts of two shoulders of a piece of furniture and a base and top respectively;

- figures 8 to 10 are sectional views of a barrel according to the invention when it is connected to a pin forming the joints illustrated in the previous figures 6 and 7;

- figures 11 to 13 are sectional views of a further barrel according to the invention when it is connected to a pin forming the joints illustrated in the previous figures 6 and 7;

- figures 14a to 16b are sectional views according to two perpendicular directions of yet another barrel according to the invention when it is connected to a pin forming the joints illustrated in the previous figures 6 and 7.

With reference first of all to figures 6 and 7, these show a piece of furniture M comprising a top 11 and a base or shelf 12 suitable for being positioned between two side shoulders 13 by means of a series of four joints which provide a barrel for a barrel joint for parts of furniture and furnishing items according

to the present invention.

For the positioning of this type of barrel joint, which provides a barrel according to the present invention, vertical holings 25 are provided, formed in the thickness of the shoulders 13, which receive a barrel 26, 126 according to the invention. Horizontal holings 27 must also be provided, having a much smaller size, also formed in the thickness in both the base or shelf 12 and in the top 11 of the furniture M, for receiving a pin 15.

Additional horizontal holings 28 must also be provided in the shoulders 13, which intersect the above-mentioned vertical holes 25, which are used for acting on a blocking element of the barrel joint. A blocking element of this type can be produced by means of a simple grub screw 29 (figures 11 to 13) or by means of a blocking mechanism 30 (figures 8 to 10) or 230 (figures 14a to 16b) inside a barrel 26, 126, 226. Both the grub screw 29 and the blocking mechanism 30, 230 are engaged in a part of the same with a housing 31 present for this purpose on a pin 15, 215.

Figures 8 to 10 show a barrel 26 according to the invention in a similar barrel joint.

The barrel 26 comprises a pair of half-shells 32, 33, that can be coupled with each other, to form a

hollow cylindrical casing containing the blocking mechanism 30. In particular, a grub screw 34, internally threaded in 35 in a hole coaxial to the same, is caused to slide in part of said casing, which comprises the two half-shells 32, 33.

A bevel gear comprising a pinion 36 and a toothed crown 37 allows the translation of the grub screw 34. More specifically, the pinion 36 is rotatable inside a housing formed in the pair of half-shells 32, 33, whereas the toothed crown 37 is formed as the head of a threaded screw 38 which is engaged in the internal threading 35 of the grub screw 34. The grub screw 34, as shown for example in the figures, can be provided with blocking means against rotation which allow the translation of the same grub screw 34, preventing its rotation. The means can consist, for example, of radial protrusions 39 of the grub screw 34 which are coupled inside vertical complementary seats 40 formed in at least one of the half-shells 32, 33.

This blocking mechanism is driven from the outside by the star tip of a screwdriver 21.

It should be noted that one of the half-shells, for example that indicated with 33, provides, on the side surface, a side hole 41 for access inside the casing 32, 33. The tip of the screwdriver 21 is passed from

said side hole 41. Furthermore, the two shells 32, 33 provide two further holes 42, aligned in the two half-shells 32, 33, for receiving the pin 16.

The casing 32, 33, consequently provides at least one side hole 41 which is aligned with the respective horizontal holing 28, which, as already mentioned, is formed in the shoulder 13.

Figures 8 to 10 show both the insertion of the pin 16 into the barrel 26 and also the blockage of the pin 16 by the movement of the grub screw 54 inside the barrel by means of the blocking mechanism 30.

Figures 11 to 13 show a further example of a barrel for a barrel joint according to the present invention which applies the same innovative concept.

In the figures, a barrel 126 provides a body 132 having a cylindrical form, provided with an internal threading 135 in which the grub screw 29 is screwed. The body 132 also provides a side hole 141, from which a tip of a screwdriver 21 passes, and two further holes 142 aligned for receiving the pin 16.

The head of the grub screw 29 provides both a housing 100 for a tip of a screwdriver 21 and also a peripheral toothing 101 for collaborating with a tip of a screwdriver 21.

It can therefore be seen how, in this case, it is

possible to act on the grub screw 29 in a first way, by passing, as in the previous example, from the side hole 141 in the body 132 of the barrel 126 and acting with the tip of the screwdriver 21 on the peripheral toothing 101 of the grub screw 29.

A further possibility is provided by the presence of an upper hole 103 in the body 132 of the barrel 126 which allows a tip of a screwdriver 21 to be inserted in the housing 100 of the grub screw 29 to rotate the same.

Figures 14a to 16b show a further example of a barrel for a barrel joint according to the invention which applies the same innovative concept.

In figures 14a to 16b, a barrel 226 contains a blocking mechanism 230. The barrel 226 provides a hollow body 232 having a cylindrical form, in which a cylinder 43 is housed, which rotates in its interior. The cylinder 43 provides, in an intermediate portion, a cam 44 suitable for being engaged with a screw having an enlarged head 45 forming part of the pin 215.

The cam 44 of the cylinder 43 which, as already specified, is rotatable, is produced in the form of a curved wall which forms a toothing which extends upwards with a variable profile (figure 14b).

An upper portion of the cylinder 43 contains a

perimetric toothing 46, embedded with respect to the side surface of the cylinder 43, which can be engaged by means of a star tip of a screwdriver 47 (only partially shown).Said toothing 46 forms actuation means for the rotation of the cam 44.

It should be noted, however, that a further activation means for the rotation is present, consisting of a seat 48 formed above the cylinder 43 suitable for receiving a star tip of a screwdriver 47 (only partially shown). Furthermore, the body 232 of the barrel 226 provides a side hole 241, from which the tip of the screwdriver 47 passes, and a further hole 242 from which the screw with an enlarged head 45 forming part of the pin 215, passes.

It can therefore be seen how, in this case, it is possible to act on the barrel 226 in a first way, by passing from the side hole 241 in the body 232 of the barrel 226 and acting with the tip of the screwdriver 47 on the peripheral perimetric toothing 46 of the cylinder 43.

A further possibility is provided by the presence of an upper opening in the body 232 of the barrel 226 which allows a tip of a screwdriver 47 to be inserted in the housing 48 of the cylinder 43 to rotate the same.

The advantages and innovative features have thus been shown, of a barrel for a barrel joint for parts of furniture and furnishing items according to the present invention.

The forms and structure for the production of a barrel for a barrel joint according to the present invention, as also the materials and assembly modes, can naturally differ from those shown for purely illustrative and non-limiting purposes in the drawings.

The objectives mentioned in the preamble of the description have therefore been achieved.

The protection scope of the present invention is defined by the enclosed claims.

CLAIMS

1) A barrel for a barrel joint for parts of furniture and furnishing items comprising a hollow cylindrical body (132) containing a blocking element (29), said cylindrical body (132) providing, on one of its side surfaces, at least one hole (142) for receiving a pin (16) of the barrel joint, and being provided with an internal threading (135) in which said blocking element is screwed in the form of a grub screw (29), characterized in that said hollow cylindrical body (132) provides at least one further hole (141) on one of its side surfaces, for the passage of a tip of a tool (21) suitable for acting on a peripheral toothing (101) of the grub screw (29).

2) The barrel for a barrel joint according to claim 1, characterized in that said hollow cylindrical body (132) provides an upper hole (103) for the passage of a tip of a screwdriver (21) suitable for being inserted in a housing (100) of said grub screw (29).

3) A barrel for a barrel joint for parts of furniture and furnishing items comprising a hollow cylindrical body (32, 33) containing a blocking element (30) and at least one hole (41) on one of its side surfaces, for the passage of a tip of a tool (21) which actuates said

blocking element (30), said hollow cylindrical body (32, 33) also providing at least a further hole (42) for receiving a pin (16) of the barrel joint, characterized in that said hollow cylindrical body provides two half-shells (32, 33) that can be coupled with each other to form a hollow cylindrical casing containing said blocking element (30).

4) The barrel for a barrel joint according to claim 3, characterized in that said two half-shells (32, 33) contain a blocking mechanism (30) comprising a grub screw (34) caused to slide by means of a bevel gear (36, 37) that can be actuated from said at least one hole (41).

5) The barrel for a barrel joint according to claim 4, characterized in that said bevel gear comprises a pinion (36) and a toothed crown (37), wherein said pinion (36) is rotatable in a housing formed in said cylindrical casing (32, 33) whereas said toothed crown (37) is produced as the head of a threaded screw (38) which is engaged in a threading (35) inside the grub screw (34), wherein said grub screw (34) provides blocking means against rotation, which allow its axial translation.

6) The barrel for a barrel joint according to claim 5, characterized in that said means consist of radial protrusions (39) of the grub screw (34) that are coupled inside complementary seats (40) in said casing (32, 33).

7) A barrel for a barrel joint for parts of furniture and furnishing items comprising a hollow cylindrical body (232) containing a blocking element (230) and at least one hole (241) on one of its side surfaces, for the passage of a tip of a tool (47) which actuates said blocking element (230), said hollow cylindrical body (232) also providing at least a further hole (242) for receiving a pin (215) of the barrel joint, characterized in that said hollow cylindrical body (232) houses a cylinder (43) which is rotatable in its interior and which provides a cam (44) in an intermediate portion, which is suitable for being engaged with a screw having an enlarged head (45) forming part of the pin (215) of the barrel joint.

8) The barrel for a barrel joint according to claim 7, characterized in that said cam (44) of the rotating cylinder (43) is produced in the form of a curved wall.

9) The barrel for a barrel joint according to claim 7 or 8, characterized in that an upper portion of the

cylinder (43) contains a perimetric toothing (46), embedded with respect to the side surface of the cylinder (43), which can be engaged by means of a star tip of a screwdriver (47) forming actuation means for the rotation of the cam (44).

10) The barrel for a barrel joint according to claim 8 or 9, characterized in that it provides further actuation means for the rotation consisting of a seat (48) formed above the cylinder (43) suitable for receiving a star tip of a screwdriver (47).

Fig. 1

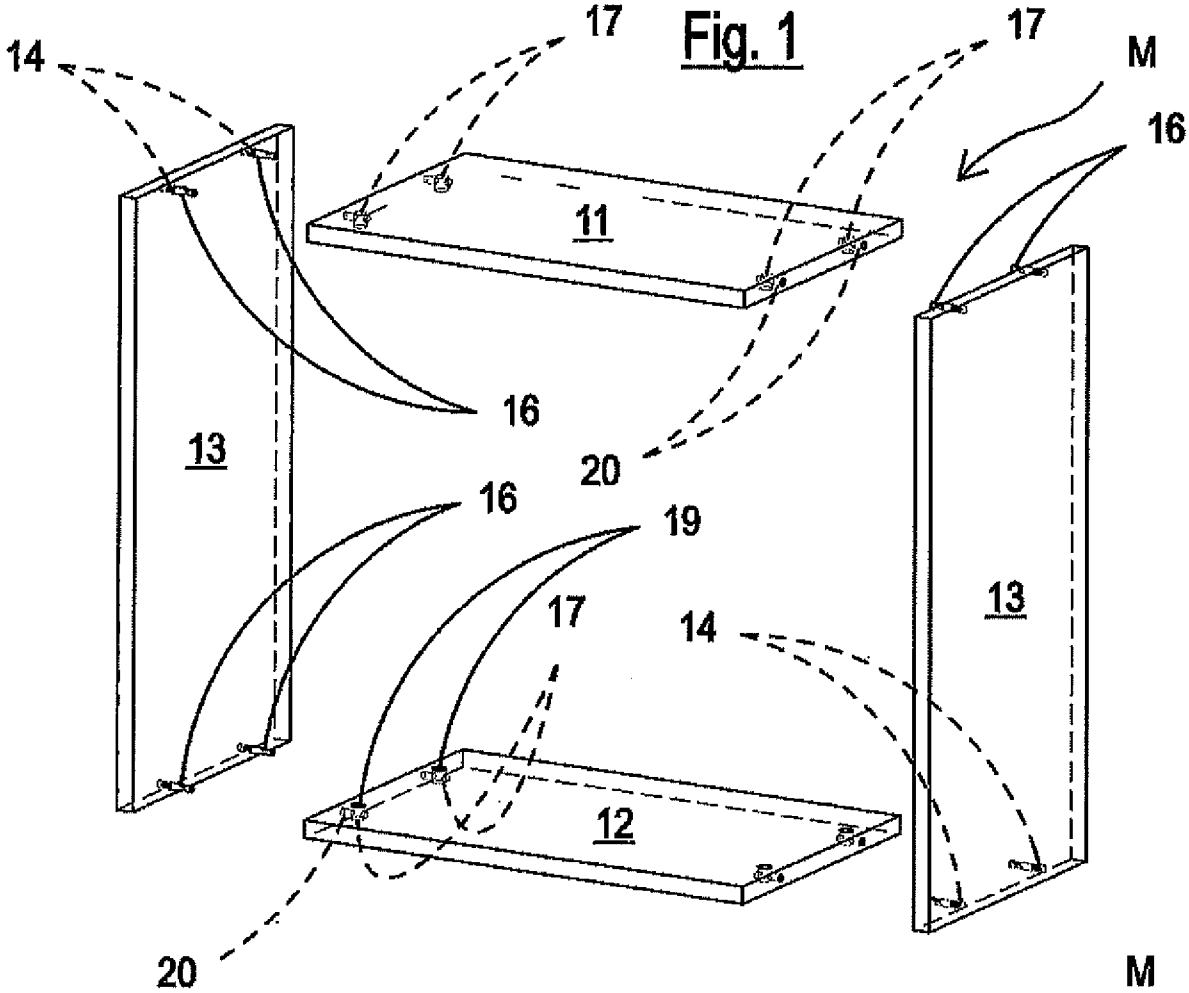


Fig. 2

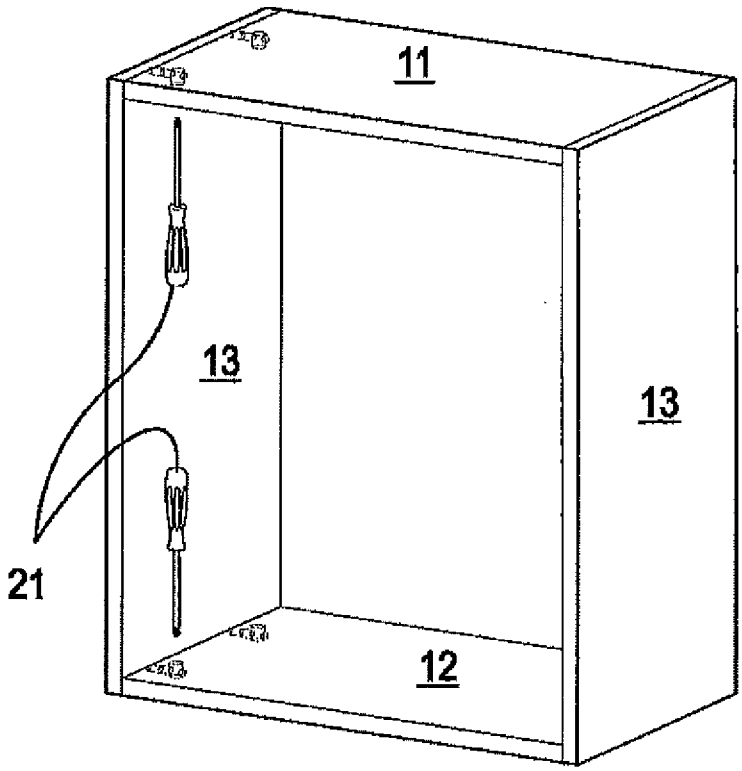


Fig. 3

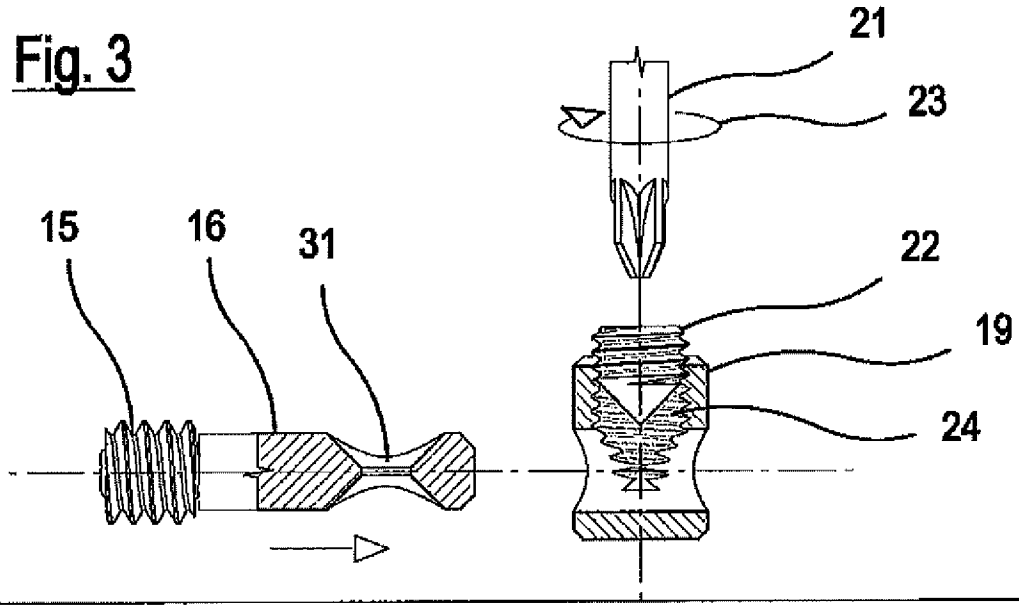


Fig. 4

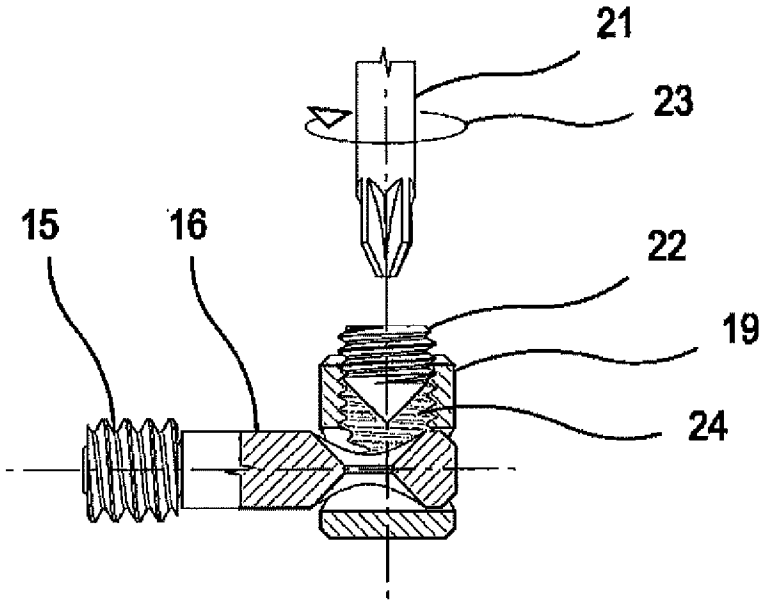


Fig. 5

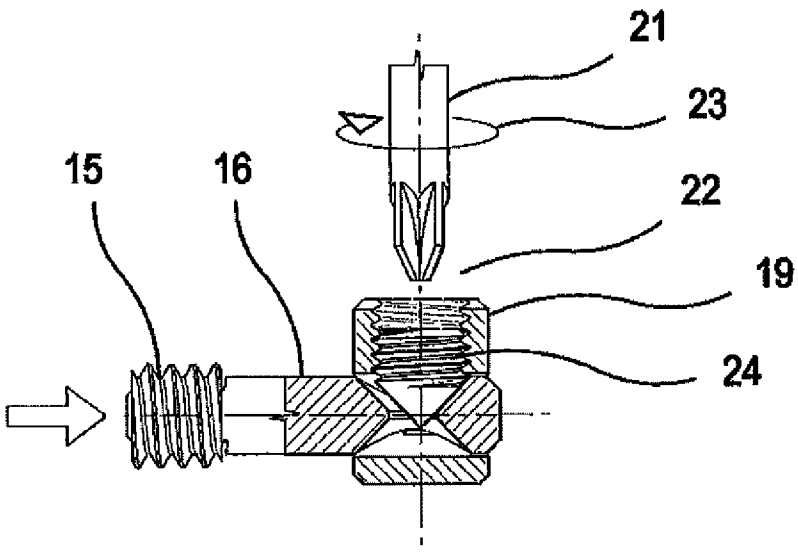


Fig. 6

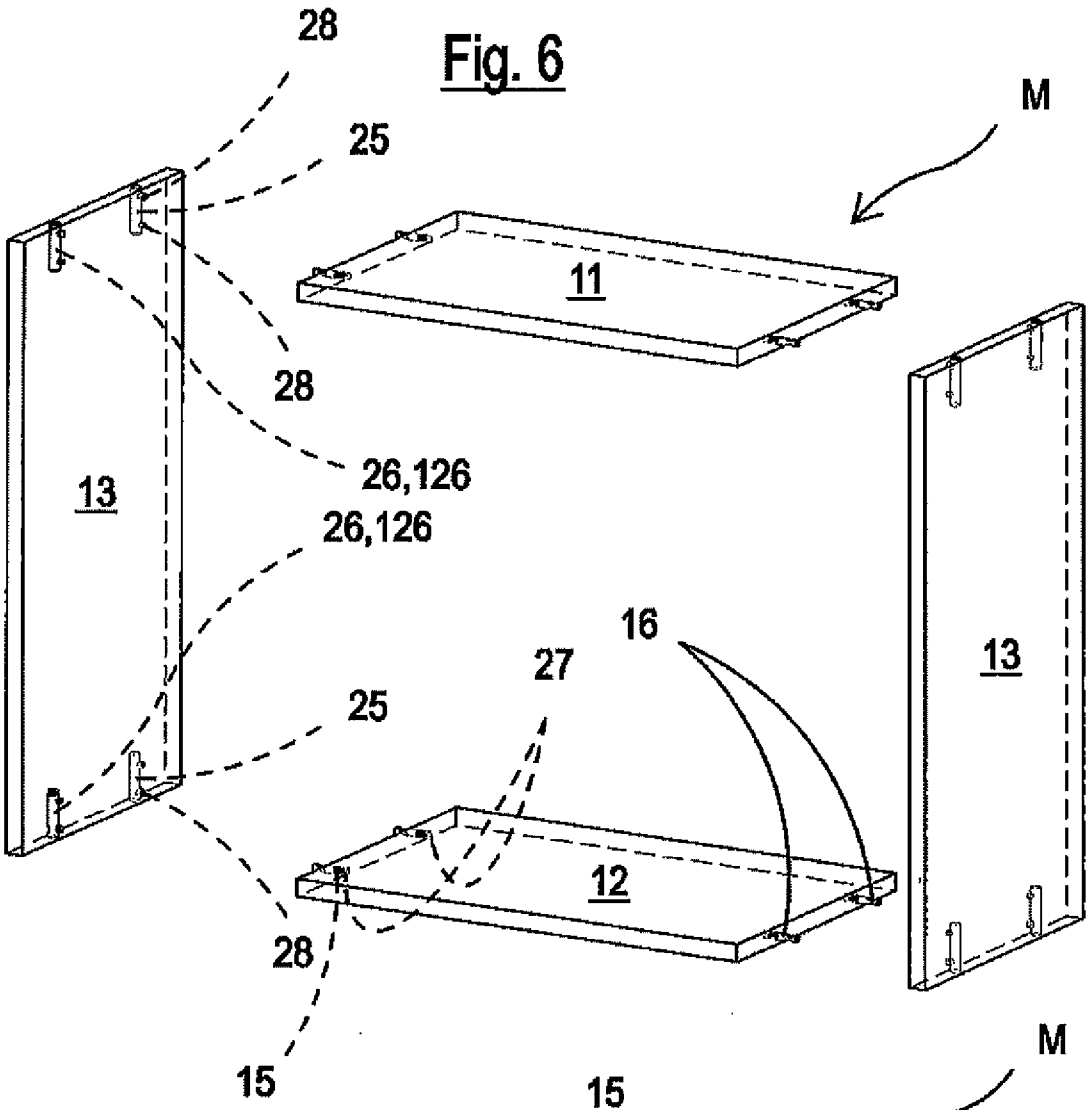

28
25
M
11
28
26,126
13
26,126
16
27
13
25
12
28
15
15
M

Fig. 7

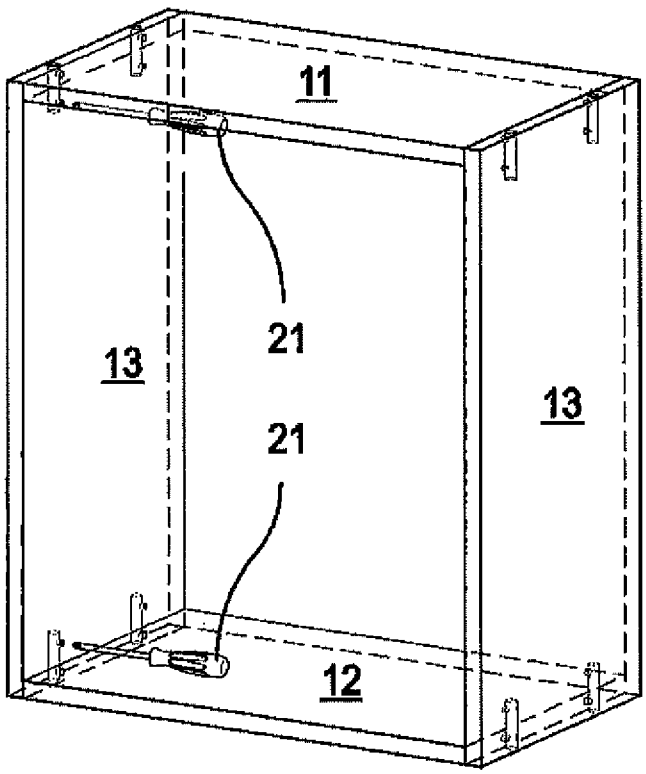

11
21
13
13
21
12

Fig. 8

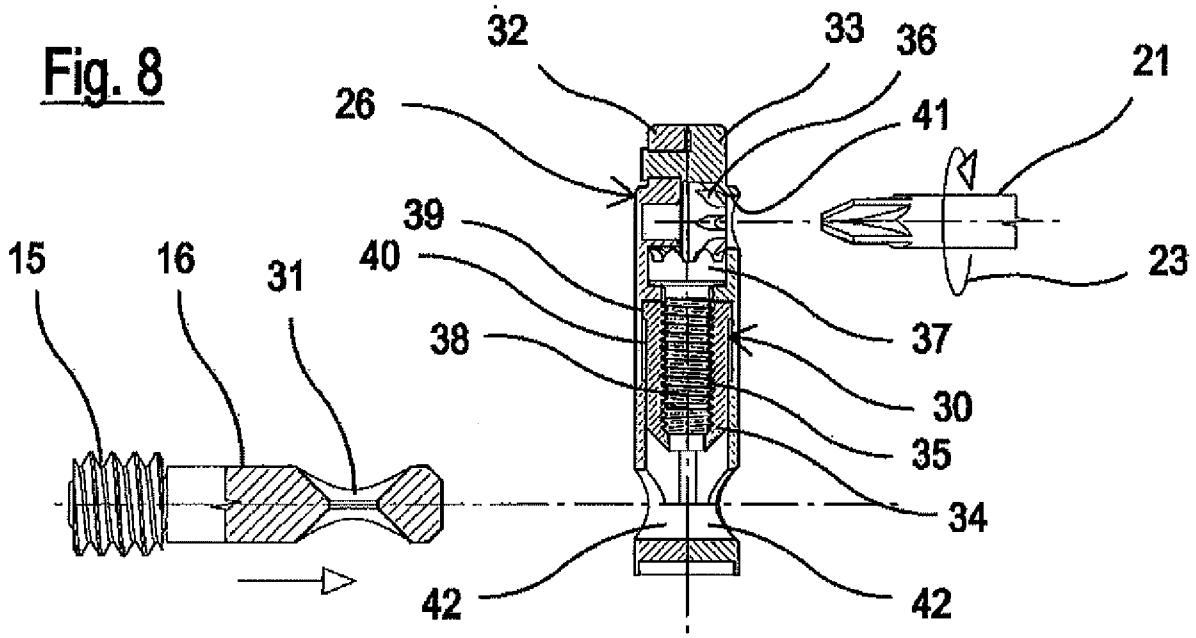


Fig. 9

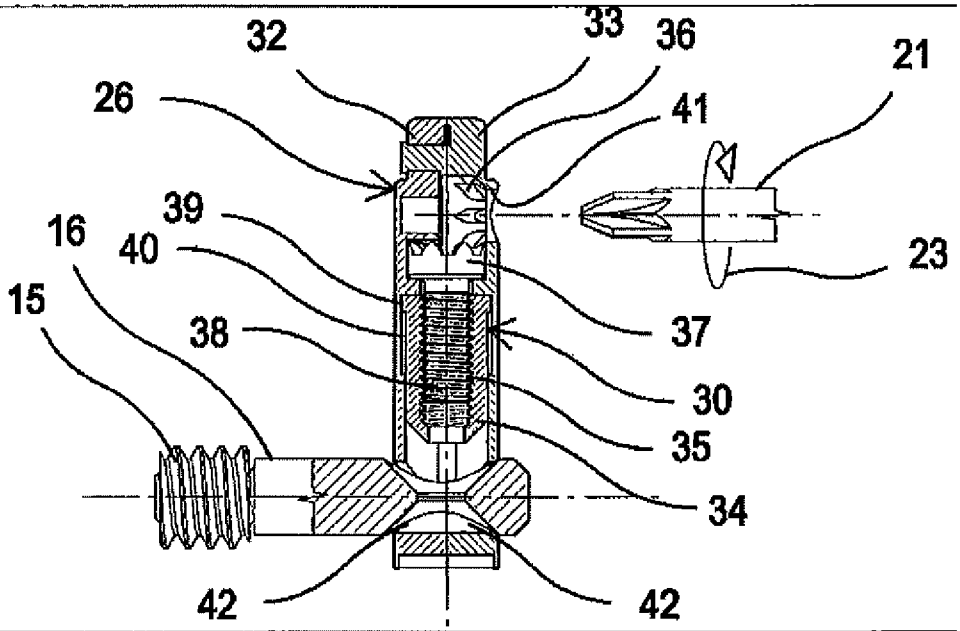


Fig. 10

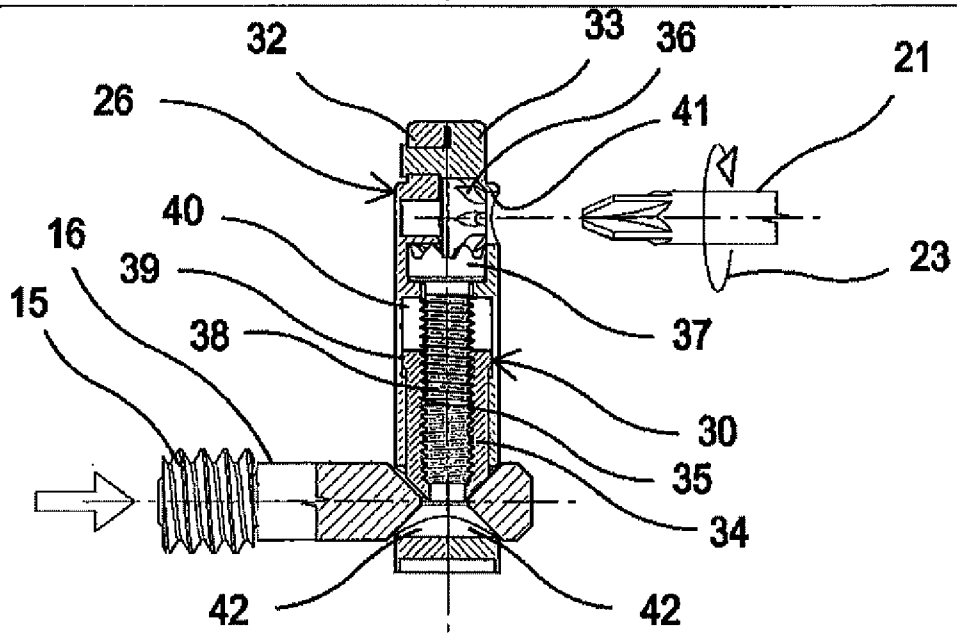


Fig. 11

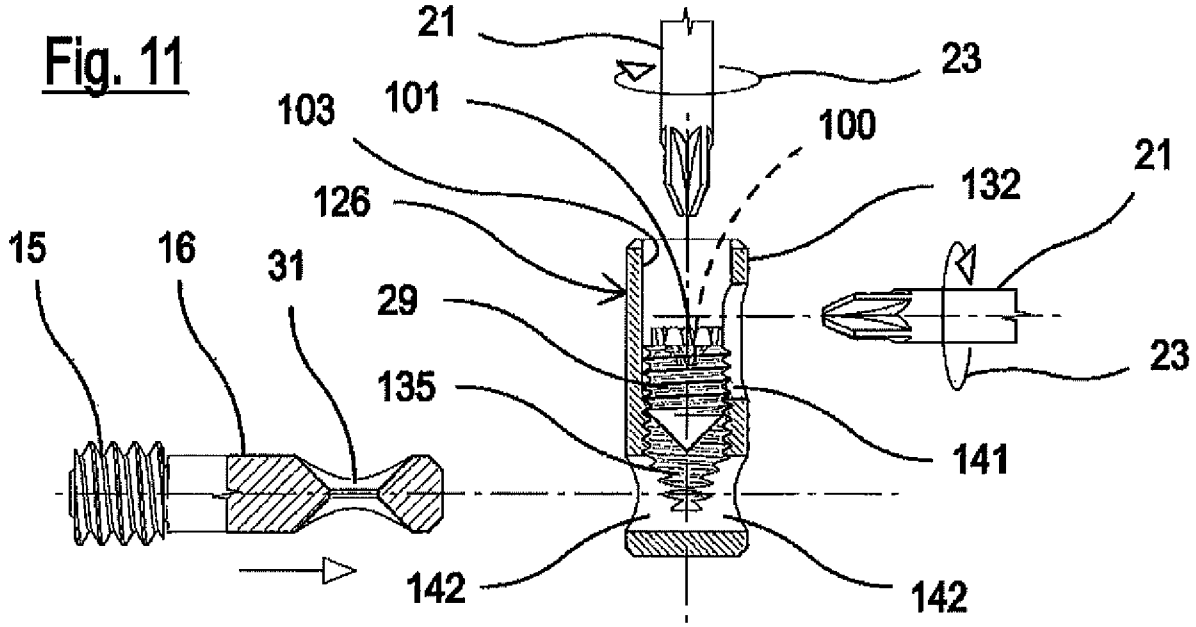


Fig. 12

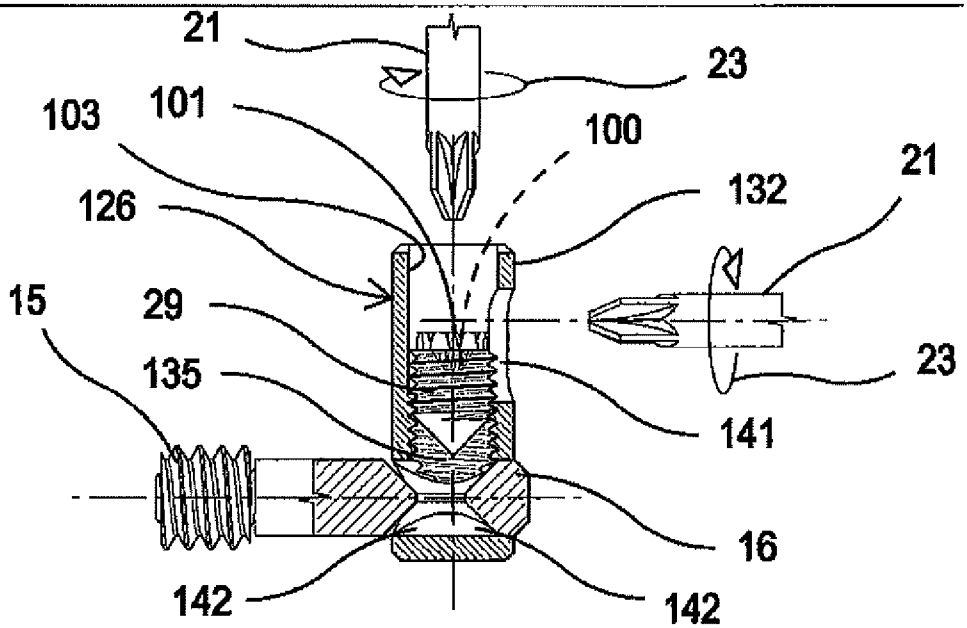


Fig. 13

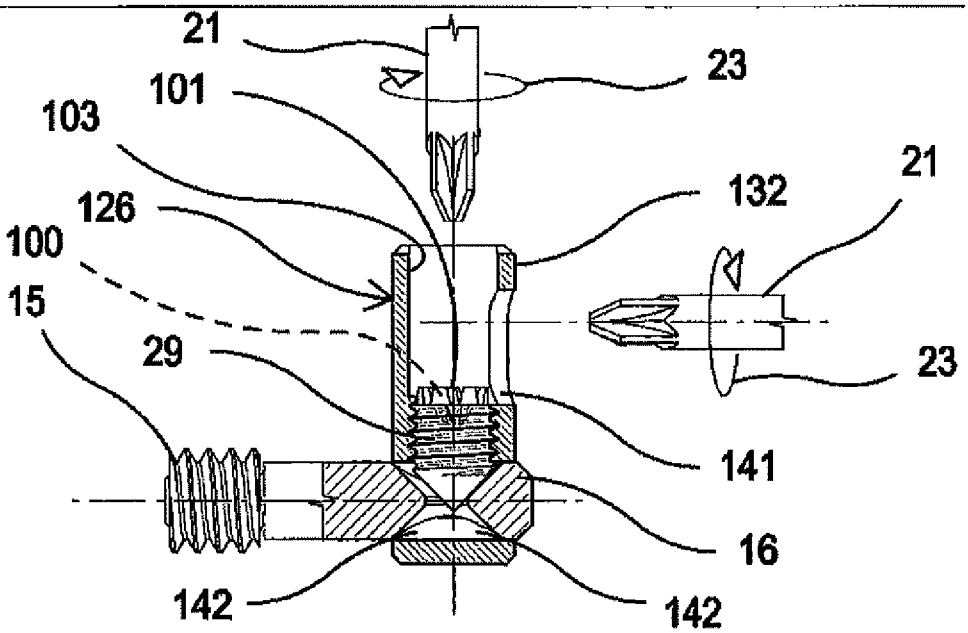


Fig. 14a

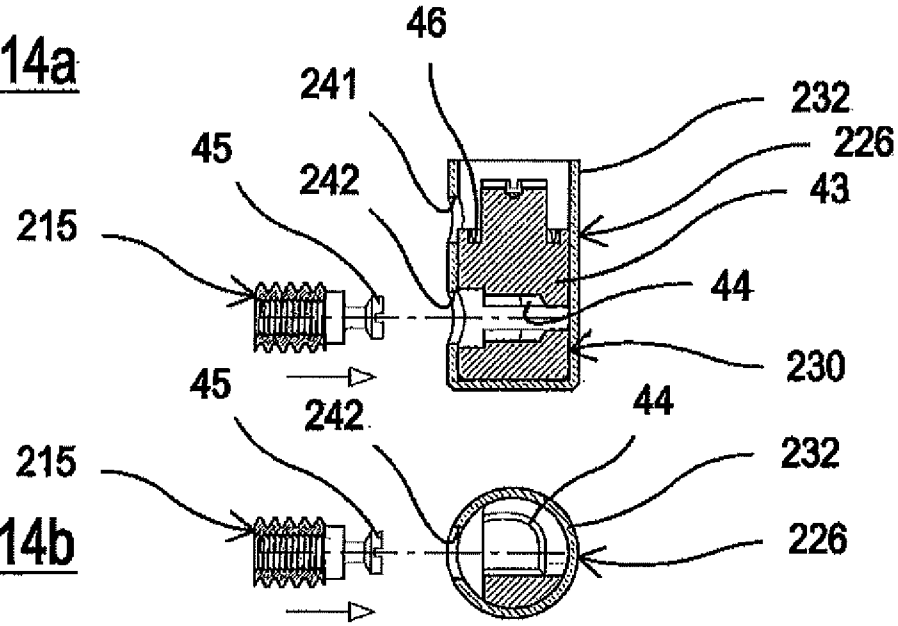


Fig. 14b

Fig. 15a

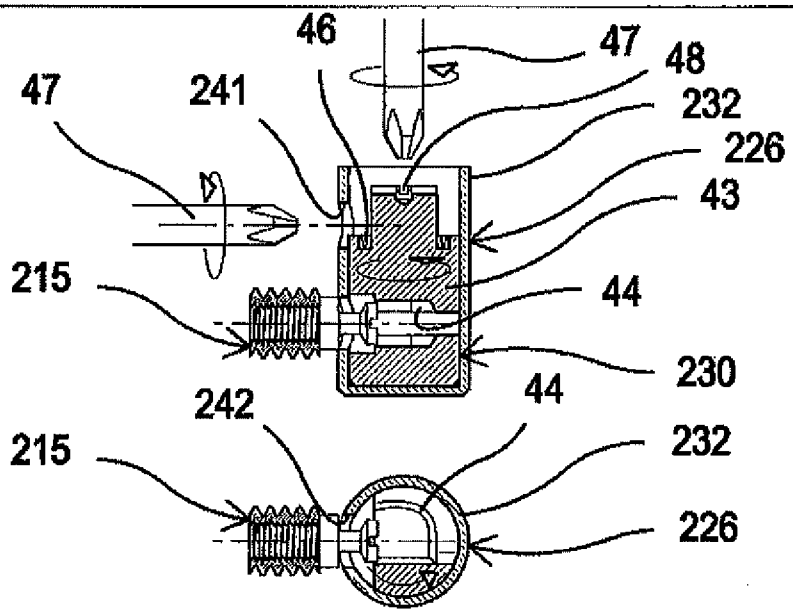


Fig. 15b

Fig. 16a

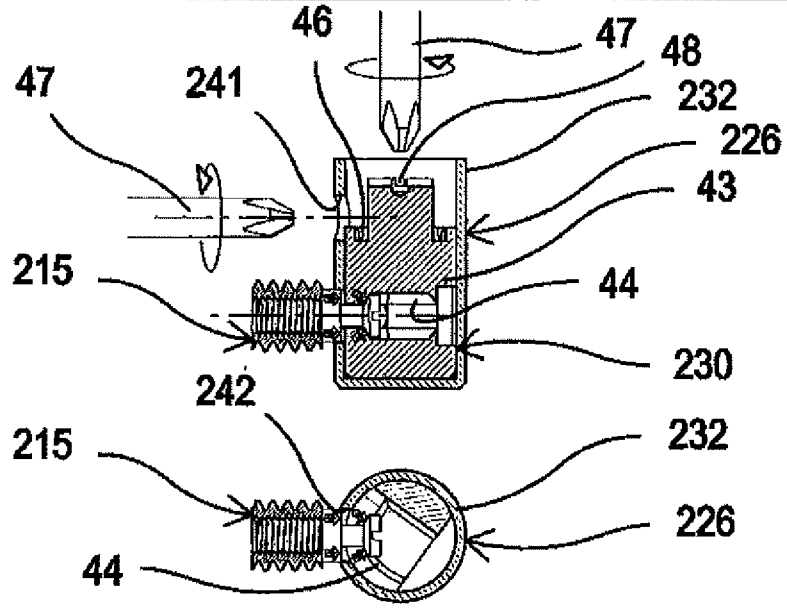


Fig. 16b

INTERNATIONAL SEARCH REPORT

International application No
PCT/EP2017/054292

A. CLASSIFICATION OF SUBJECT MATTER
INV. F16B12/20
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)
F16B A47B

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	DE 31 45 825 A1 (MAURI FLLI SNC [IT]) 24 June 1982 (1982-06-24)	3,7,8
A	page 8, line 4 - page 9, line 6 page 9, line 29 - page 10, line 3; figures 1-4	9

X	DE 27 48 272 A1 (HEINZE FA R) 3 May 1979 (1979-05-03) page 17, paragraph 2 page 18, paragraph 2 - paragraph 3; figures 1-6	7,8,10

X	LU 37 757 A (PIERETS) 7 December 1959 (1959-12-07)	1
A	the whole document	2

X	EP 1 469 206 A1 (MAURI FLLI SRL [IT]) 20 October 2004 (2004-10-20) the whole document	3

☐ 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	Date of mailing of the international search report
20 April 2017	08/05/2017

Name and mailing address of the ISA/	Authorized officer
European Patent Office, P.B. 5818 Patentlaan 2 NL - 2280 HV Rijswijk Tel. (+31-70) 340-2040, Fax: (+31-70) 340-3016	Jacquemin, Martin

INTERNATIONAL SEARCH REPORT

International application No.
PCT/EP2017/054292

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.:

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: 1-10

   Barrel with two holes for the passage of a tool

1.1. claims: 3-6

   Barrel having a hollow cylindrical body made of two half-shells

1.2. claims: 7-10

   Barrel with a cam

INTERNATIONAL SEARCH REPORT

Information on patent family members

International application No
PCT/EP2017/054292

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