



(11)

**EP 1 698 253 A1**

(12)

**EUROPEAN PATENT APPLICATION**

(43) Date of publication:  
**06.09.2006 Bulletin 2006/36**

(51) Int Cl.:  
**A47B 91/02 (2006.01)**

(21) Application number: **06101409.8**

(22) Date of filing: **08.02.2006**

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

(71) Applicant: **Ferramenta Livenza S.r.l.**  
**33070 Maron di Brugnera,**  
**Pordenone (IT)**

(72) Inventor: **Ferro, Renato**  
**33170, PORDENONE (IT)**

(30) Priority: **04.03.2005 IT PN20050014**

(74) Representative: **Giugni, Valter et al**  
**PROPRIA S.r.l.,**  
**Via Mazzini 13**  
**33170 Pordenone (IT)**

(54) **Improved adjustable foot**

(57) Adjustable foot capable of being adjusted in its height by means of an adjustment mechanism of the screw-and-nut screw type, and adapted to be fitted in an accommodation provided in a portion of the cabinet, comprising an internally cylindrical, hollow outer shell (1) provided with a first threading (2), a cylindrical inner body capable (3) of displacing axially relative to said outer shell and provided with a second outer threading (4) adapted to couple with said first inner threading of said outer shell, said inner body being either directly or indirectly connected with the resting base (7) of said adjustable foot; there is provided a device for transmitting a rotary motion comprising a fluted member (8) adapted to fit into said inner body and displacing axially relative thereto, while however rotating jointly therewith, and a crown gear (9) provided on the upper end portion of said fluted member and adapted to couple with a pinion (10) provided at the free end portion of a short shaft (11), wherein said crown gear, said pinion and said shaft are rotatably housed within respective accommodations in said outer shell.

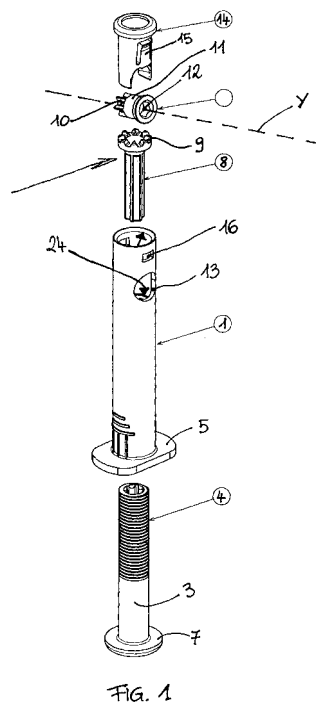


FIG. 1

## Description

**[0001]** The present invention refers to an improved kind of height-adjustable foot, in particular an adjustable foot as used to adjust the installation height of furniture pieces and similar cabinets standing on respective resting surfaces, such as of course a floor.

**[0002]** Adjustable feet are largely known as such in the art; they are generally comprised of two elongated members that are inserted into each other and are able to slide axially relative to each other with a telescopic kind of motion.

**[0003]** One of these members is firmly joined to a base that rests on the floor, whereas the other member is adapted to engage a portion of the cabinet. Most obviously, the displacement of these two members relative to each other determines a corresponding displacement of the same cabinet so as to adjust the installation height thereof.

**[0004]** The sliding motion of the two members relative to each other is generally actuated through a screw-and-nut screw mechanism that can be operated in a variety of manners.

**[0005]** Known from the Italian patent No. 01249605 to CAMAR SpA is an adjustable foot, in which said screw-and-nut screw mechanism is housed in a proper accommodation provided in a portion of the cabinet, and is operable through a kind of remote adjustment mechanism consisting of a gearbox operable with the use of a screwdriver; furthermore, said gearbox, which is comprised of two or three distinct gears, extends partially into said accommodation and partially into the inner volume of the cabinet itself.

**[0006]** This adjustable foot, although quite effective in use, is certainly quite complicated and expensive in its construction. From the illustration thereof appearing in Figure 1 accompanying the above-cited publication, it can in fact be noticed to include as many as eight distinct parts, some of which are furthermore processed or machined in a complicated and, hence, expensive manner.

**[0007]** Furthermore, it is also required that the cabinet itself be additionally machined in a corresponding manner in view of providing an accommodation adapted to receive said foot, as noted above.

**[0008]** Disclosed in the Italian patent application No. 20238 to Giovanetti is an adjustable foot that is formed by the combination of a base member, or foot, to which there is firmly joined a threaded stem, a sleeve-like actuation member provided with a terminal axial toothing and coupled to the threaded stem of the foot, and a liner-like support member for the actuation member; this patent is extensively discussed in the aforementioned Italian patent No. 01249605 to CAMAR SpA, along with the various drawbacks of the adjustable foot covered by it, so that - for obvious reasons of brevity - it shall not be discussed here any longer.

**[0009]** Known from the disclosure in the European patent EP 0 733 322 to LEONARDO Srl is an adjustable foot operated through a screw-nut screw mechanism actuated by an adjustment mechanism enclosed in a pair of elongated half-shells.

**[0010]** This adjustment mechanism is comprised of a crown gear provided at the free end portion of the screw, to which crown gear there is coupled a pinion that is operable from the outside with the help of a proper tool.

**[0011]** According to this kind of solution, the load weighing on the foot passes through the bearing function provided by a suitable collar accommodated in a corresponding annular groove in the half-shells. Since this bearing occurs between two planar, mutually sliding surfaces, the resulting friction is quite significant and, therefore, tends to generate a considerable resistance that hampers the adjustment manoeuvre.

**[0012]** Moreover, the fact that there are two half-shells that require being produced and assembled gives most obviously rise to additional manufacturing effort and costs.

**[0013]** It therefore would be desirable, and it is actually a main object of the present invention, to provide an adjustable foot that is free of the above-cited drawbacks and, in particular, is so designed as to enable the related adjustment mechanism of the screw-and-nut screw type to be brought about by an action that takes directly place between the member engaging the cabinet in the raising/lowering operation and the member that rests on the floor.

**[0014]** According to the present invention, this aim is reached in a particular kind of adjustable foot, which is described below by way of non-limiting example with reference to the accompanying drawings, in which:

- Figure 1 is an exploded view of a first embodiment of an adjustable foot according to the present invention;
- Figure 2 is a cross-sectional view of the adjustable foot shown in Figure 1;
- Figure 3 is an exploded view of a second embodiment of an adjustable foot according to the present invention;
- Figure 4 is a cross-sectional view of the adjustable foot shown in Figure 2;
- Figure 5 is an exploded view of a third embodiment of an adjustable foot according to the present invention;
- Figure 6 is a cross-sectional view of the adjustable foot shown in Figure 5;

- Figures 7, 8 and 9 are views of further variations in the embodiment of the adjustable feet shown in Figures 1, 3 and 5, respectively;
- Figures 10 and 11 are two exploded views, from two different viewing standpoints, of a further embodiment of an adjustable foot according to the present invention;
- Figure 12 is an exploded view of an improved embodiment of an adjustable foot according to the present invention;
- Figures 13 and 14 are a median vertical cross-sectional view and a median horizontal cross-sectional view, respectively, of the adjustable foot shown in Figure 12;
- Figures 15 and 16 are two different perspective cut-away views of a further improved variation in the embodiment of an adjustable foot according to the present invention; and
- Figures 15 and 16 are two cross-sectional views of the adjustable foot shown in Figures 15 and 16, as viewed at two different moments in the operation thereof.

**[0015]** With reference to Figures 1 and 2, an adjustable foot according to the present invention comprises:

- a hollow, internally cylindrical outer shell 1, which is provided with a first threading 2 on the inner surface or, at least, a part of the inner surface thereof,
- an inner cylindrical body 3, which is capable of sliding axially relative to said outer shell, and which is provided with a second threading 4 on the respective outer surface,

wherein said two threadings 2 and 4 are made and calibrated in such manner as to be able to engage each other and rotate relative to each other, so as to bring about a continuous axial motion between said two members 1 and 3.

**[0016]** Said outer shell 1 is further provided with bracket-like projections, in the form of lugs or the like, on which there is capable of resting a lower or bottom portion of the cabinet 6. In practice, with reference to Figure 1, said adjustable foot is fitted from the bottom into an appropriate elongated accommodation provided in the cabinet, while said projections move into abutting - from the bottom - against the outer portions of the cabinet surrounding said accommodation.

**[0017]** At the lower portion thereof, the inner cylindrical body 3 joins firmly with the resting base 7 of the adjustable foot.

**[0018]** To rotatably actuate said two members 1 and 3 relative to each other, there is provided a device for transmitting a rotary motion, comprising:

- a fluted member 8 adapted to fit into the inner cylindrical body 3 and capable of displacing axially therewithin; said inner cylindrical body 3 is in turn provided with an appropriate groove thereinside, the inner walls of which are given a corresponding shape and outline so that, upon insertion, said fluted member 8 cannot rotate within said inner cylindrical body 3, but rather urges it into rotating with it, while it can on the other hand slide axially in said cylindrical body.

**[0019]** Upon said fluted member 8 there is provided a crown gear 9 adapted to couple with a pinion 10 arranged thereupon; said crown gear and said pinion are provided and arranged relative to each other in such manner as to ensure that, if the crown gear rotates with the respective fluted member 8 and, hence, about a vertical axis, the pinion 10 will rotate about a horizontal or slightly inclined axis Y. Connected to said pinion 10 there is additionally a short shaft 11, within which there is provided an appropriate bore 12 for receiving a manoeuvring tool, by means of which said pinion and - via said crown gear - also said fluted member and, as a result, said inner cylindrical body can therefore be caused to rotate.

**[0020]** Said manoeuvring tool (not shown) can reach the pinion by passing through an appropriate aperture 13 provided in the outer shell.

**[0021]** On the upper mouth of said outer shell there is arranged a top locking cap 14, which is provided with an appropriately shaped lower portion adapted to cause said short shaft 11 to get engaged against the wall of said outer shell in such a manner as to keep said pinion in the correct position thereof, while allowing it to rotate by causing said pinion to correspondingly engage said crown gear 9.

**[0022]** In an advantageous manner, said locking cap 14 is provided with appropriate elastic tabs 15, so as to be able to be snap-fitted into corresponding slits 16 provided in said outer shell.

**[0023]** It can however be readily appreciated that, with an adjustable foot according to the above-described embodiment, the load of the cabinet weighs directly onto the base of the footboy also passing between said two threadings 2 and 4, thereby making the adjustment motion certainly more difficult to accomplish.

**[0024]** On the other hand, this fact has the advantage that the same load does not pass through the rotatably driving mechanism comprising the crown gear 9, the pinion 10 and the shaft 11, thereby facilitating the actuation of the same mechanism and the rotation thereof to be brought about, without affecting the proper operation of the adjustable foot.

**[0025]** It is furthermore fully apparent that adjusting the foot causes said inner cylindrical body 3 and, hence, the base 7 joined therewith to rotate. By rotating in this way relative to the floor, this base 7 therefore generates a friction resistance that is of hindrance to the adjustment motion of the foot.

**[0026]** In view of doing away with these drawbacks, and with reference to Figures 3 and 4, said inner cylindrical body is provided by combining the following three distinct elements with each other, i.e.:

- a first element that is substantially a cylindrical body 17, on which there is provided said second threading 4, and which is provided downwards with a protrusion 20,
- a second element that consists of a simple rigid sphere 18, and
- a third element comprised of a hollow cylindrical projection 19 opening upwards and so sized as to be able to accommodate said sphere 18 on the bottom thereof, as well as, upon said sphere, said protrusion 20; in addition, this third element is connected on the bottom to the resting base 7 of the foot.

**[0027]** By appropriately combining and sizing the above-described devices, the particular embodiment illustrated in Figures 3 and 4 is obtained, which practically allows the load weighing on the foot - further to still passing through the two threadings as in the previous embodiment - to also pass through said protrusion 20, which rests upon the rigid sphere 18, which in turn weighs upon the bottom of said cylindrical body 17 and - via such bottom - upon the resting base 7 of the foot. Since the contact between said protrusion 20 and said sphere 18 is a rolling, but punctiform contact, the friction resulting therefrom will most obviously be quite low and, ultimately, the base remains stable on the floor, thereby allowing the foot to be adjusted in a much more convenient manner, i.e. with a markedly smaller effort.

**[0028]** The fact should anyway be considered that the effort which the user is required to make in order to adjust the foot cannot be reduced below a certain value, owing to both the weight of the cabinet and the fact that the pitch of the two mating threadings simply cannot be smaller than a given material lower limit. Therefore, in view of further reducing this actuation effort to be made by the user in order to adjust the foot, and with reference to Figures 5 and 6, a further solution lies in providing a configuration generally similar to the above-described one with reference to Figures 3 and 4, but duly modified under

- elimination of the rigid sphere 18,
- provision of a third threading 21 on the outer surface of the lower cylindrical protrusion 20, and
- provision of a fourth threading 22 on the inner surface of said hollow cylindrical projection 19,

wherein said third and forth threadings 21 and 22 are adapted to engage each other and rotate relative to each other.

**[0029]** In addition, said third and forth threadings 21 and 22 are provided with a pitch that is smaller than the pitch of said first and second threadings 2 and 4, and are oriented so that, when said inner body moves downwards along said outer shell (due to the action of the screw-and-nut screw mechanism), said hollow cylindrical projection 19 will move upwards along said lower cylindrical protrusion 20.

**[0030]** In this connection, Figures 5 and 6 should be compared with each other.

**[0031]** The ultimate effect of such circumstance is that, when the inner body is rotated in view of adjusting the foot to the desired height, e.g. by rising said lugs, from the height-wise, i.e. upward displacement of said outer shell relative to said inner body there must be subtracted the lowering, i.e. downward displacement of said of said inner body relative to said hollow cylindrical projection firmly joined to the resting base 7, and vice versa.

**[0032]** Practically, a given rotation of the pinion and the crown gear causes the lugs to rise to a smaller extent than this would have been the case without the present improvement and, conclusively, the ultimate effect is a reduced effort in manoeuvring the tool to adjust the foot.

**[0033]** In order to get a clearer idea about the above-described concept, it should be considered that - if the two matching pairs of threadings were assumed to have the same pitch - the rotation of the pinion would not have any effect on the displacement of the lugs of the outer shell, since to an upward displacement of the latter relative to the inner body there would correspond a same extent of downward displacement of said inner body relative to the resting base.

**[0034]** Finally, in order to prevent said lower protrusion 20 from urging said hollow cylindrical projection 10 into rotating, the lower portion of said outer shell and said hollow cylindrical projection are provided with mutual engagement means, preferably axially (vertically) sliding locking keys or splines 23, as best shown in Figures 4 and 6, adapted to allow said projection and said protrusion to displace axially relative to each other, while preventing them to rotate relative to each other.

**[0035]** With reference to Figures 15 through to 18, these illustrate a variation in the construction of the embodiment illustrated in Figures 9 and 10. This variation practically consists in symmetrically inverting the geometry of the previously

described construction. That is, while in the previously described solutions there is provided the lower cylindrical protrusion 20 that fits into the hollow projection 19, wherein third and fourth threadings 21 and 22, respectively, are provided on the mutually opposing surfaces of said projection and said protrusion, the present variation consists in modifying said projection 19 by converting it into a projection 19A that is no longer hollow, but rather solid, extending with the upper portion 19B thereof into a recess 20A provided from the bottom upwards into said inner cylindrical body 3, which most obviously is in this case deprived of the respective protrusion 20, as replaced by said recess 20A.

**[0036]** Similarly to the formerly discussed case, the outer surface of the projection 19A is provided with a respective fifth threading 21A, while the inner surface of the recess 20A is in turn provided with a corresponding sixth threading 22A.

**[0037]** Again, as in the previously considered case, in view of preventing said solid projection 19A from being forced into rotating by said recess 20A, owing to the friction between the fifth and the sixth threading, said projection 19A and the lower portion of said outer shell are so shaped as to prevent said projection 19A and said recess 20A from being capable of rotating relative to each other.

**[0038]** The way in which the above-described elements therefore work is exactly the opposite, i.e. inverted as compared with the previously discussed case, as anyone skilled in the art is fully capable of readily understanding by simply having a look at Figures 17 and 18 and comparing the illustrations appearing there.

**[0039]** Therefore, any further description of this way of operation will be intentionally omitted here for reasons of brevity and greater simplicity.

**[0040]** Only the fact will be briefly mentioned here that the above-cited Figures 15 to 18 include a further improvement that shall be explained in greater detail below.

**[0041]** The afore-cited fluted member 8, which carries the crown gear 9, although capable of sliding axially relative to the inner body 3, must anyway remain at an appropriate height in order to exactly enable said crown gear 9 to keep constantly engaging the related pinion 10. To this purpose, on the inner surface of the outer shell there is provided a washer or a step-like shoulder 24, which may then constitute a support for the lower edge of the crown gear 9 to rest thereupon, and therefore prevents the fluted member 8 from moving downwards in an uncontrolled manner.

**[0042]** Finally, the fact should also be duly considered that, especially in those cases in which the size of the foot is very small, the same foot is more effectively made of a material having a higher strength, such as aluminium, zinc-aluminium-magnesium alloy (zamac), or the like.

**[0043]** However, it would in this case prove certainly quite difficult for said outer shell 1 to be processed, i.e. machined from the interior thereof after it has been formed, e.g. die-cast, for reasons that are well known to all those skilled in the art.

**[0044]** In order to overcome such serious drawback, said outer shell 1 is practically made out of a combination of two half-shells 1A and 1B, which are substantially symmetrical relative to a median vertical plane passing through the axis of the foot, and which are produced separately and independently to be then associated to each other, i.e. assembled together with the use of means that are generally known as such in the art, e.g. by means of a cotter 26 and related tapered hole 27 provided on the respective ones of said two half-shells.

**[0045]** This solution based on the use of two separate half-shells may be adopted in connection with all of the previously illustrated embodiments, and Figures 7, 8 and 9 can in fact be noticed to illustrate respective exploded views corresponding to the embodiments illustrated in Figures 1, 3 and 5, as modified accordingly.

**[0046]** On the other hand, this solution based on having the outer shell divided into two distinct half-shells 1A and 1B - although effective in solving the problem connected not only with the production of a foot of metal material, but also with the need of providing the desired threading 2, which can in fact be provided automatically, i.e. integrally during forming in the case of the two half-shells - gives however rise to a drawback in that the two half-shells are less resistant to load altogether, especially when this load is unbalanced, due to their inherent non-monolithic structure.

**[0047]** In order to do away with this drawback, and with particular reference to Figures 10 and 11, a further improved embodiment of the outer shell is provided, which is practically based on having said outer shell provided in the form of a single half-shell adapted to accommodate all afore-described devices therein, but provided with an aperture 30, resembling a window opening into the interior of the shell, in correspondence to the inner threading 2; this window must be positioned at such height as to substantially correspond to the position of said inner threading 2, and must be adequately high and wide, i.e. sized, as to allow the single shell 1 to be produced in a single die-forming operation, including forming also the portion of threading 2 that corresponds to the inner surface of the shell, except of course for the portion corresponding to said aperture 30.

**[0048]** To close said aperture 30, an appropriate cover 31 is produced separately for subsequent application on to said aperture 30 in such manner as to close it completely. This cover 31 is furthermore threaded internally so as to provide it with an inner threading 2A in a manner corresponding to the inner threading 2 of the shell 1, so that when this cover 31 is duly and correctly positioned to close the aperture 30, the two threadings 2 and 2A join with each other to form a single coherent threading.

**[0049]** It can therefore be readily appreciated that this solution enables a high-strength foot to be provided in practically a single-piece integral construction by a single die-forming operation, wherein the inner threading is again provided integrally in the same die-forming operation, thereby achieving the manufacturing-relevant advantage of having still a

single shell 1, while avoiding any additional threading operation, since the inner threads are formed integrally in the forming die.

[0050] In addition, with reference to Figures 12, 13 and 14, a further advantageous variation in the embodiment of the adjustable foot according to the present invention is illustrated. This variation consists in giving the outer shell 1 a typically rectangular cross-sectional shape R in various proportions (and hence even a square shape), while leaving all other shapes and sizes of the other afore-illustrated members and devices making up the foot unaltered. This solution applies practically to those cases in which the foot is not applied under the cabinet and operated from the interior of the same cabinet, but is rather applied under a partition wall resting on the floor. In these cases, in fact, if also the accommodation intended to receive the foot is given a corresponding rectangular cross-sectional shape externally, this can be readily appreciated to most effectively and conveniently enable a foot of the above-cited kind to be simply fitted from below into the correspondingly shaped accommodation in the cabinet or partition for such foot to readily engage said accommodation with its outer shell 1 and be retained there firmly so as to be unable to slide or displace in an undesired manner relative to the cabinet and, hence, the floor.

## Claims

1. Adjustable foot for furniture pieces and similar cabinets, comprising a foot that is adjustable in its height by means of an adjustment mechanism of the screw-and-nut screw type, which is adapted to be fitted in an accommodation provided in a portion of the cabinet and is operable from the interior of the same cabinet, **characterized in that** said foot comprises:

- an internally cylindrical, hollow outer shell (1) provided with a first threading (2) on the inner surface thereof,
- a cylindrically shaped inner body (3) capable of displacing axially relative to said outer shell and provided with a second outer threading (4) adapted to couple with said first threading (2) of said outer shell (1),
- said outer shell being provided with bracket-like projections (5) adapted to engage said cabinet,
- said inner body (3) being either directly or indirectly connected with the resting base (7) of said adjustable foot.

2. Adjustable foot according to claim 1, **characterized in that** it is provided with a device for transmitting a rotary motion comprising:

- a fluted member (8) adapted to fit into said inner body (3) and displacing axially relative thereto, while however rotating jointly therewith, and
- a crown gear (9) provided on the upper end portion of said fluted member (8), to which crown gear there is adapted to be coupled a pinion (10) provided at the free end portion of a short shaft (11), wherein said crown gear, said pinion and said shaft are rotatably housed within respective accommodations in said outer shell, and wherein said pinion is further provided with a bore (12) for an operating tool to be inserted therethrough radially relative to the axis of said foot.

3. Adjustable foot according to claim 1 or 2, **characterized in that** it comprises an upper locking cap (14) adapted to be fitted into the upper aperture of said outer shell and lock said pinion so as to cause it to couple with said crown gear, said pinion being so arranged as to ensure that said bore is permanently aligned with an appropriate aperture (13) provided in said outer shell (1).

4. Adjustable foot according to claim 3, **characterized in that** said locking cap (14) is adapted to be snap-fitted (15, 16) into said outer shell.

5. Adjustable foot according to any of the preceding claims, **characterized in that** said inner body is formed by three distinct elements, of which a first element (17) carries and comprises said outer threading (4), a second element is a rigid sphere (18), and a third element is formed by a cylindrical hollow projection (19) opening upwards, which is adapted to accommodate said sphere and the lower portion of said first element (17) and is connected with its lower portion to said resting base (7).

6. Adjustable foot according to any of the preceding claims 1 to 4, **characterized in that** said inner body has a lower cylindrical protrusion (20) that is provided externally with a third threading (21); **in that** from said base there extends upwards a hollow cylindrical projection (19) provided internally with a fourth threading (22); and **in that** said third and fourth threadings (21, 22) are adapted to engage each other and rotate relative to each other.

7. Adjustable foot according to claim 6, **characterized in that** said third and fourth threadings are provided with a pitch that is smaller than the pitch of said first and second threadings (2, 4), and are oriented so that, when said inner body (3) is raised relative to said outer shell due to the rotation of said first threading with respect to said second threading, said base and said hollow cylindrical projection (19) connected thereto are raised relative to said lower cylindrical protrusion (20).
8. Adjustable foot according to any of the preceding claims 1 to 4, **characterized in that** said inner body features a downward opening cylindrical recess (20A) provided internally with a sixth threading (22A); **in that** from said base there extends upwards a solid cylindrical projection (19A) provided externally, on the upper portion (19B) thereof, with a fifth threading (21A); and **in that** said fifth and sixth threadings are adapted to engage each other and rotate relative to each other.
9. Adjustable foot according to claim 8, **characterized in that** said fifth and sixth threadings are provided with a pitch that is smaller than the pitch of said first and second threadings (2, 4), and are oriented so that, when said inner body (3) is raised relative to said outer shell due to the rotation of said first threading with respect to said second threading, said base and said solid cylindrical projection (19A) connected thereto are raised relative to said downward opening cylindrical recess (20A).
10. Adjustable foot according to claim 7 or 9, **characterized in that** the lower portion of said outer shell and said either hollow or solid cylindrical projection (19, 19A) are provided with engagement means (23) adapted to enable them to move axially relative to each other, while preventing them to rotate relative to each other.
11. Adjustable foot according to any of the preceding claims, **characterized in that** inside said outer shell there are arranged annular retaining means, preferably a washer (24), adapted to prevent said crown gear (9) from sliding below said aperture (13) in said outer shell.
12. Adjustable foot according to any of the preceding claims, except claims 3 and 4, **characterized in that** said outer shell (1) is made up by two half-shells (1A, 1B), preferably symmetrical relative to a vertical plane passing through the axis thereof.
13. Adjustable foot according to claim 12, **characterized in that** said two half-shells (1A, 1B) are associated to each other in a stable manner by means of at least an inner cotter (26) and a corresponding tapered hole (27).
14. Adjustable foot according to any of the preceding claims 1 to 11, **characterized in that** said outer shell (1) is provided on a side thereof with an aperture (30) arranged at such height as to substantially correspond to the position and height of said first threading (2).
15. Adjustable foot according to claim 14, **characterized in that** it is provided with a cover (31) adapted to close said aperture (30); and **in that** said cover is provided with a respective threading (2A).
16. Adjustable foot according to any of the preceding claims, **characterized in that** said outer shell (1) has a rectangular cross-sectional shape externally.

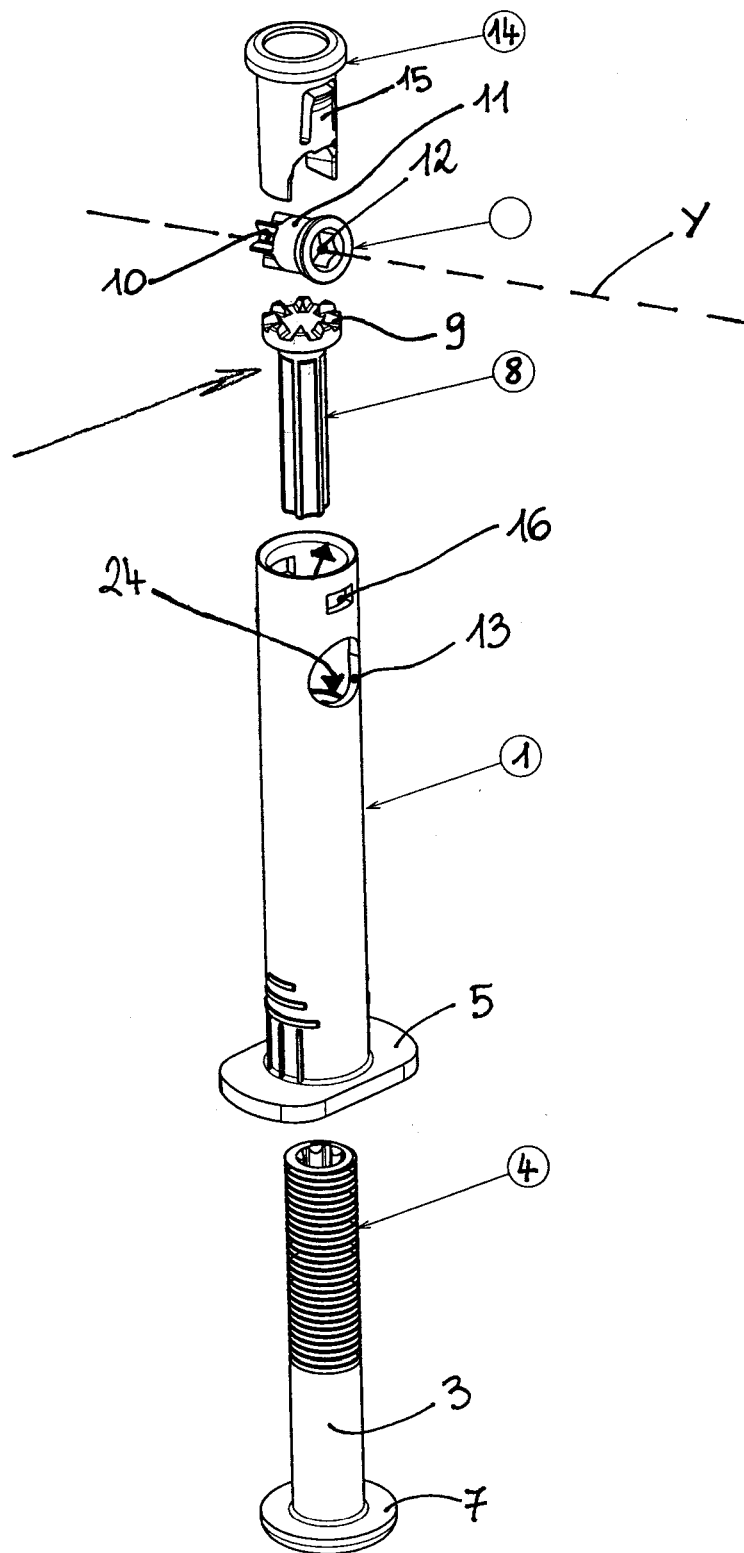


FIG. 1

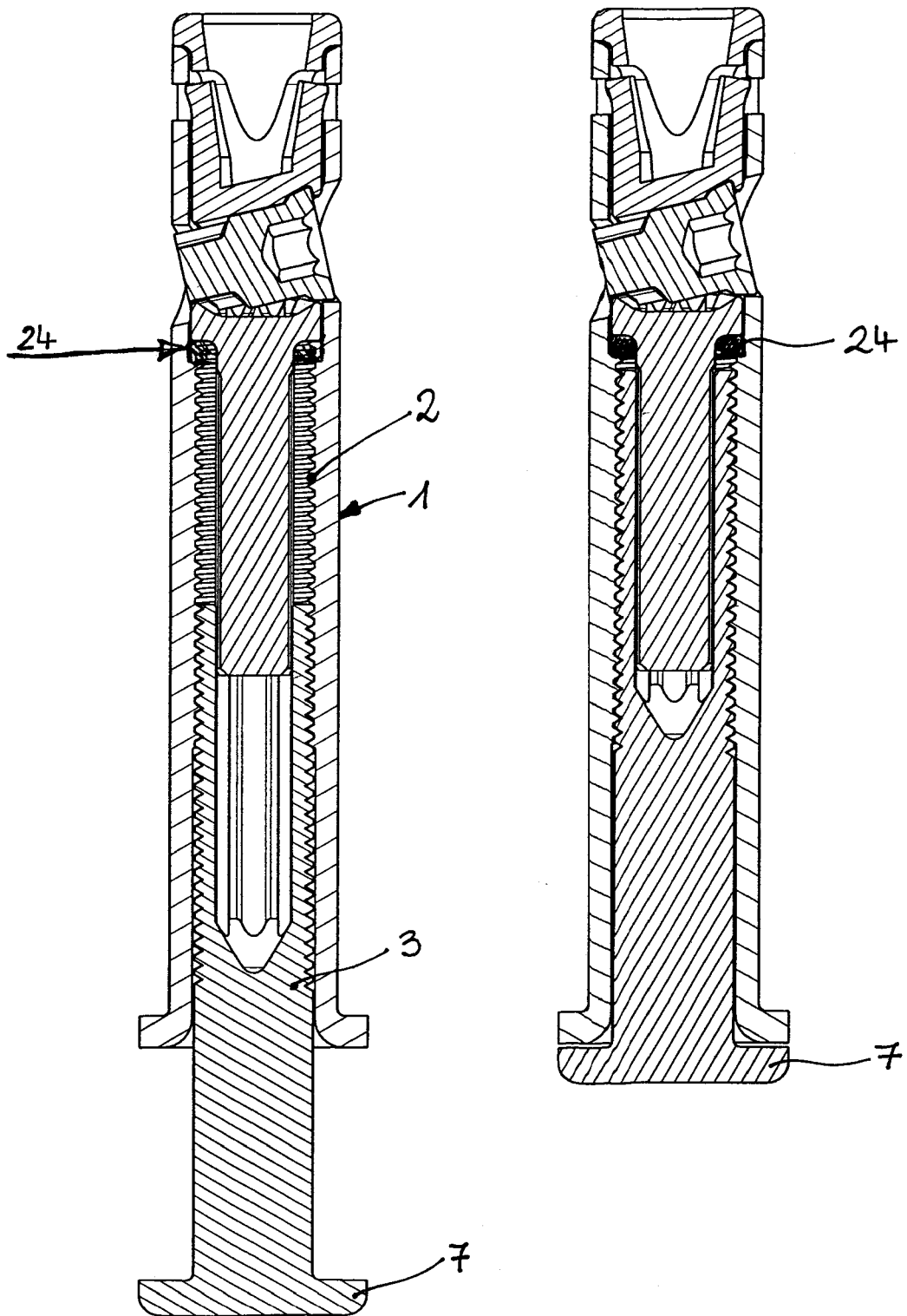


FIG. 2

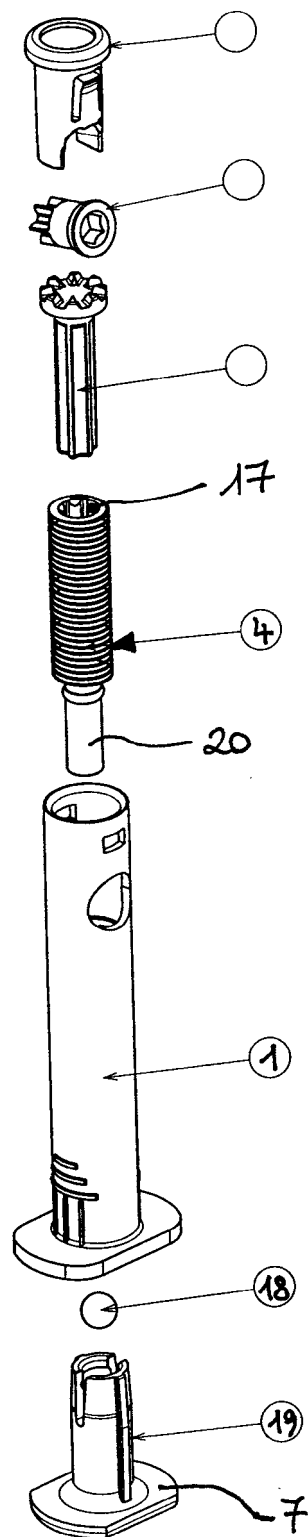


FIG. 3

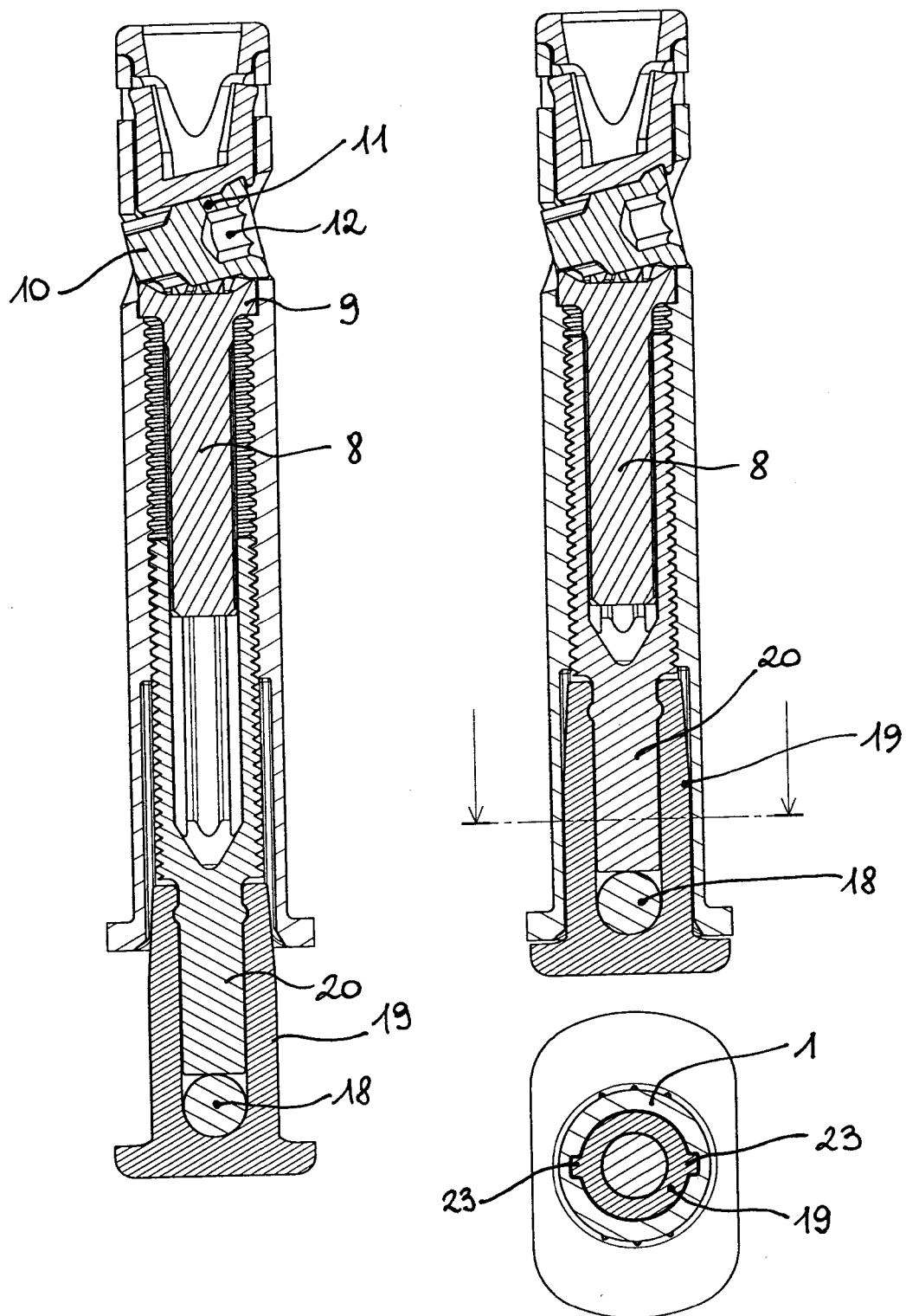


FIG. 4

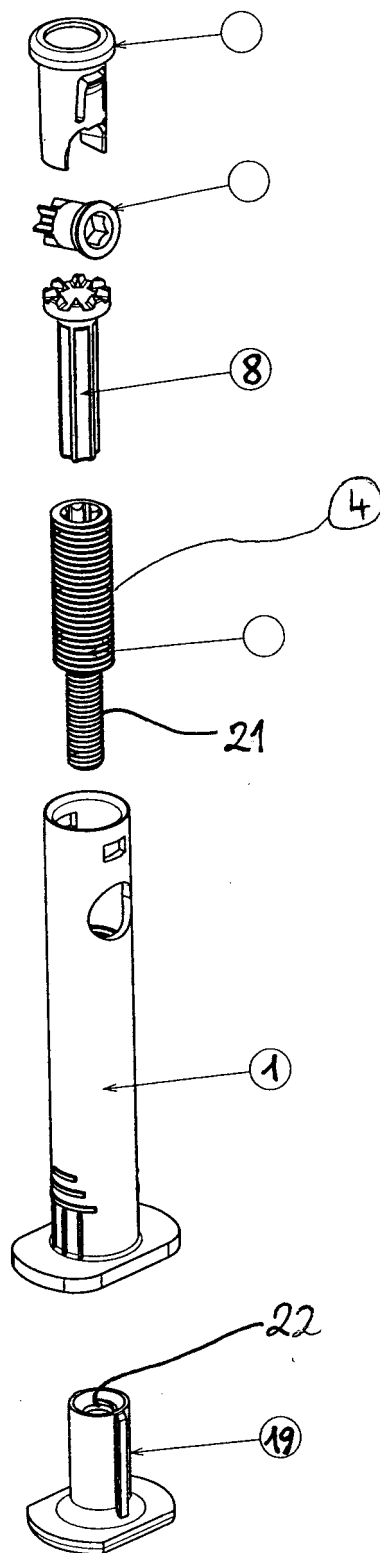


FIG. 5

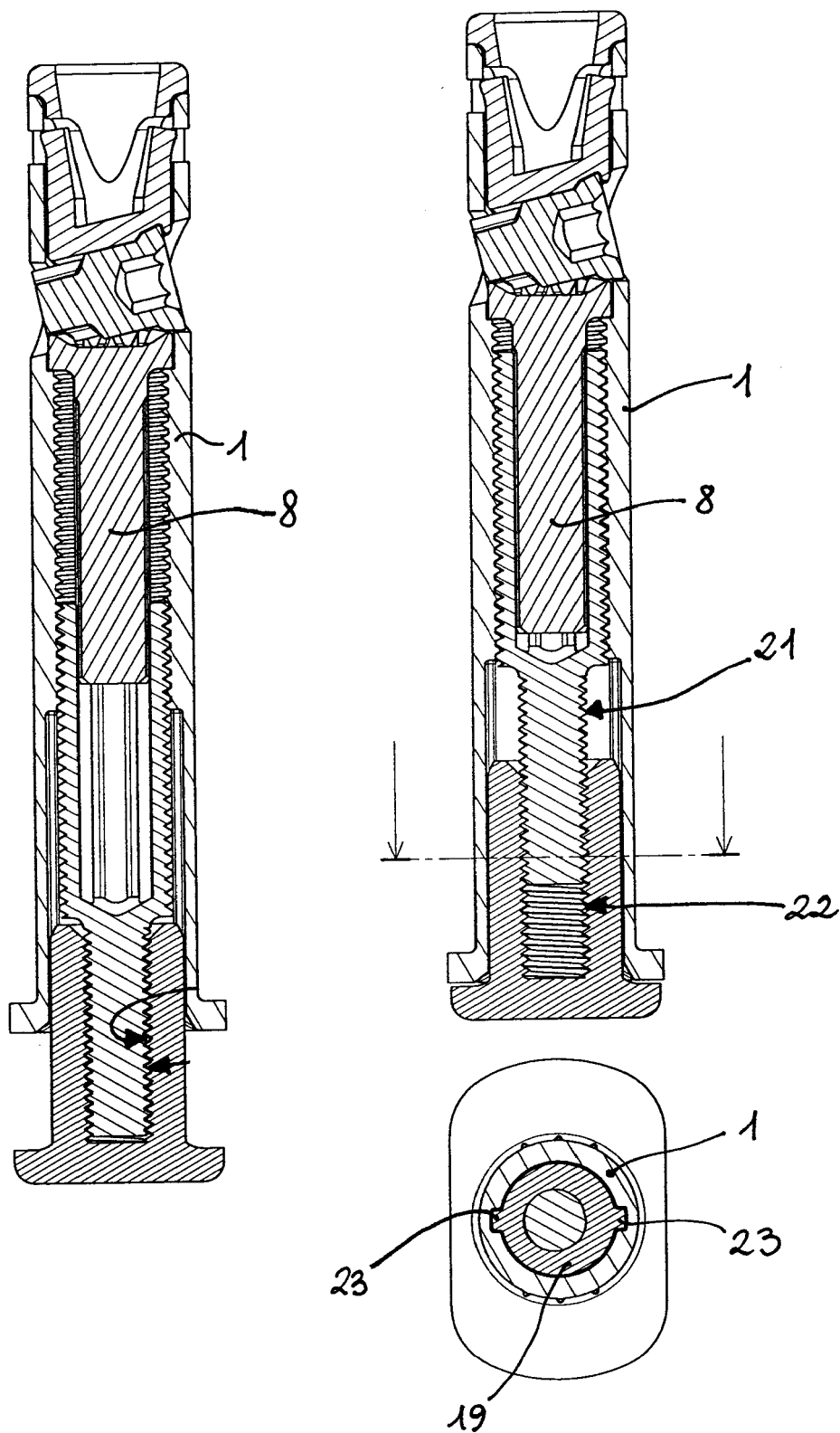


FIG. 6

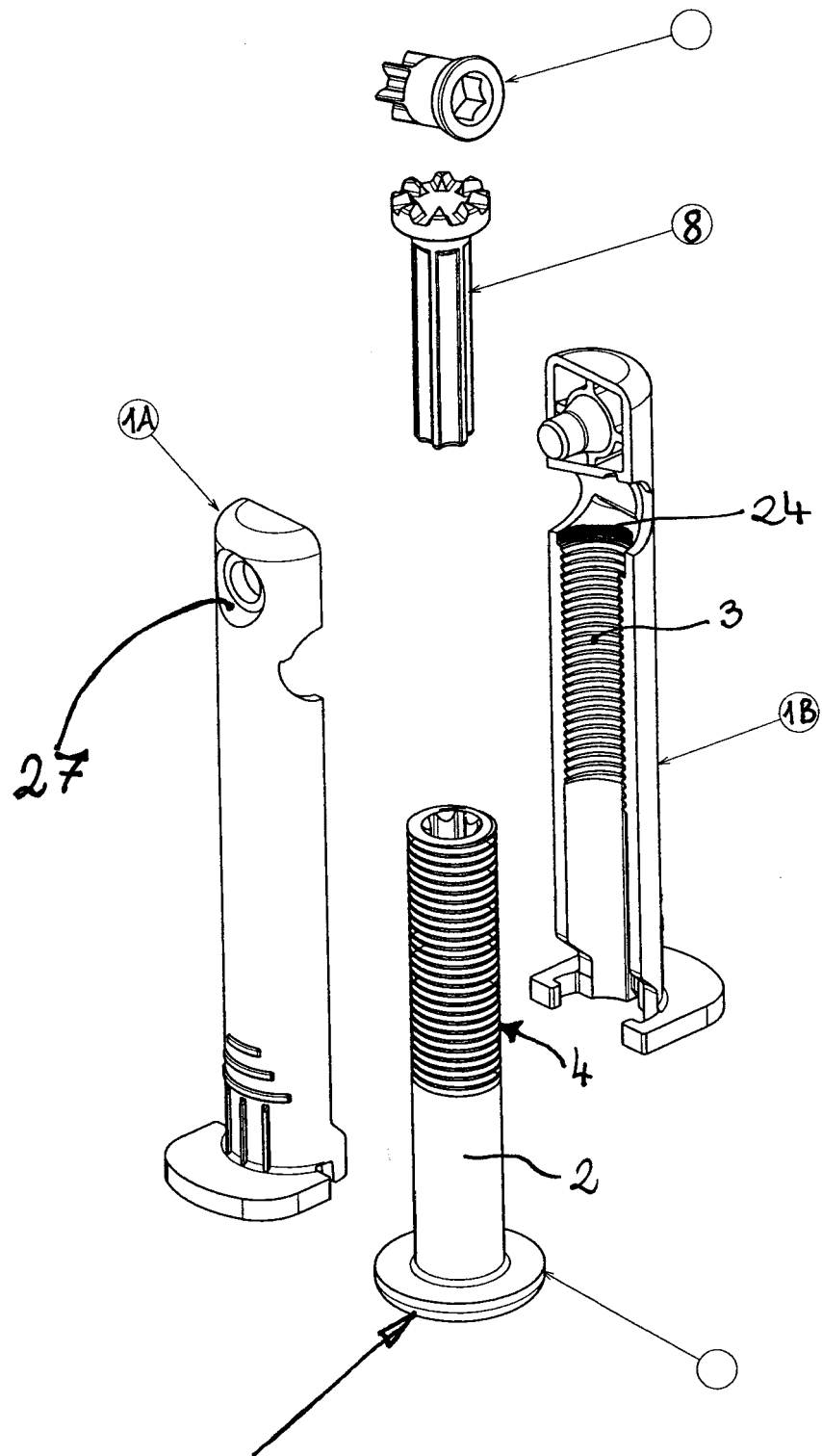


FIG. 7

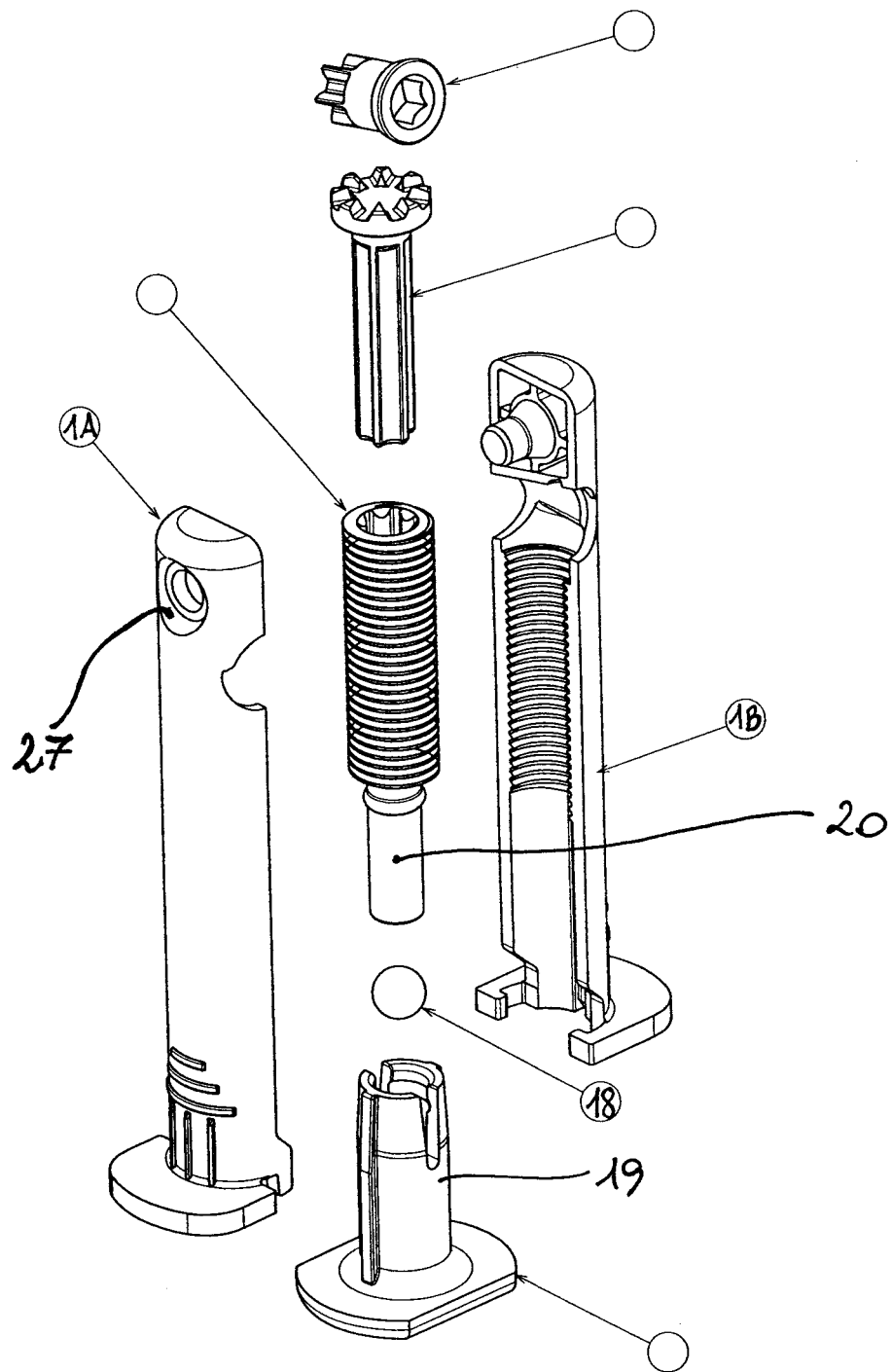


FIG. 8

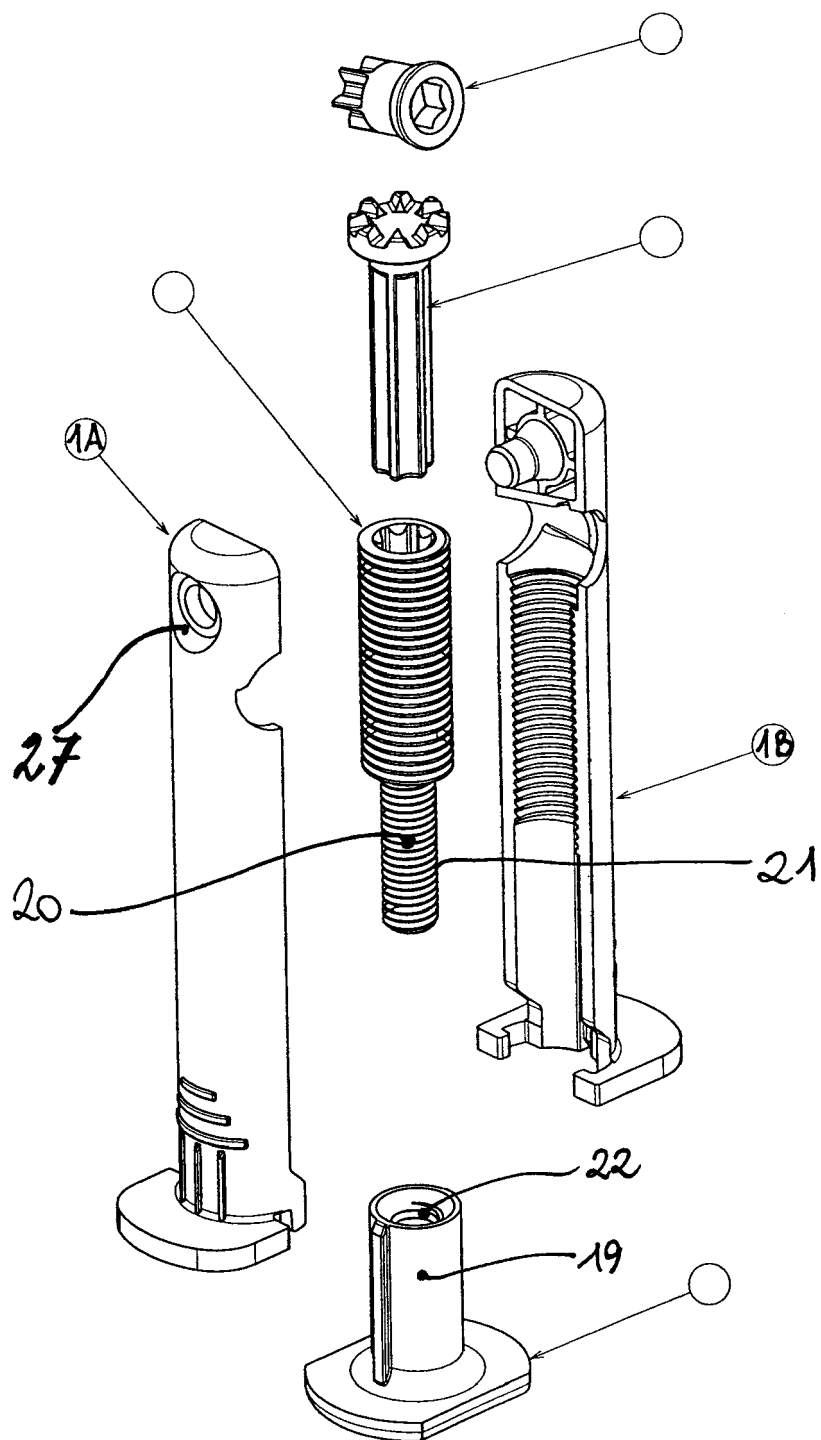


FIG. 9

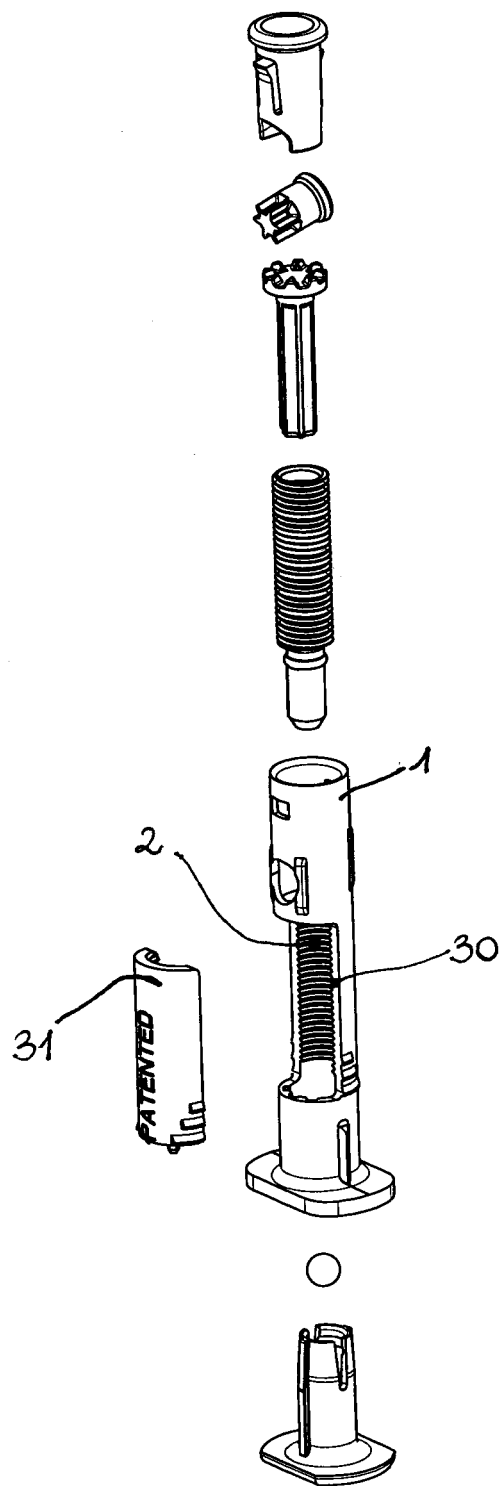


FIG. 10

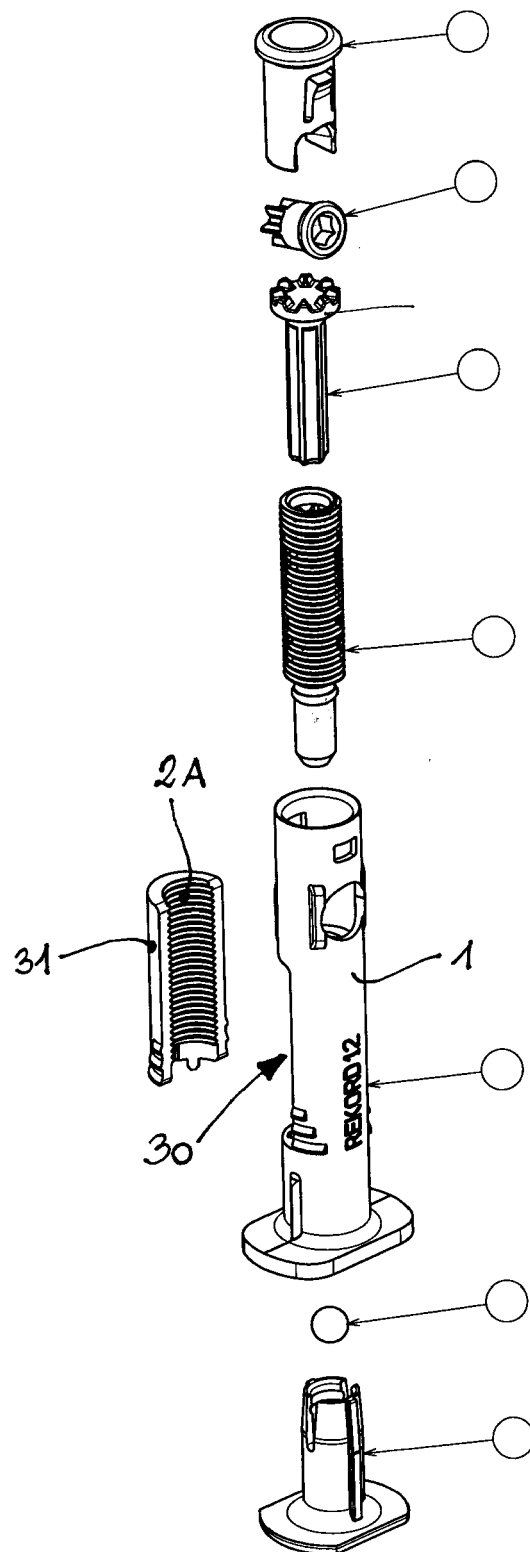


FIG. 11

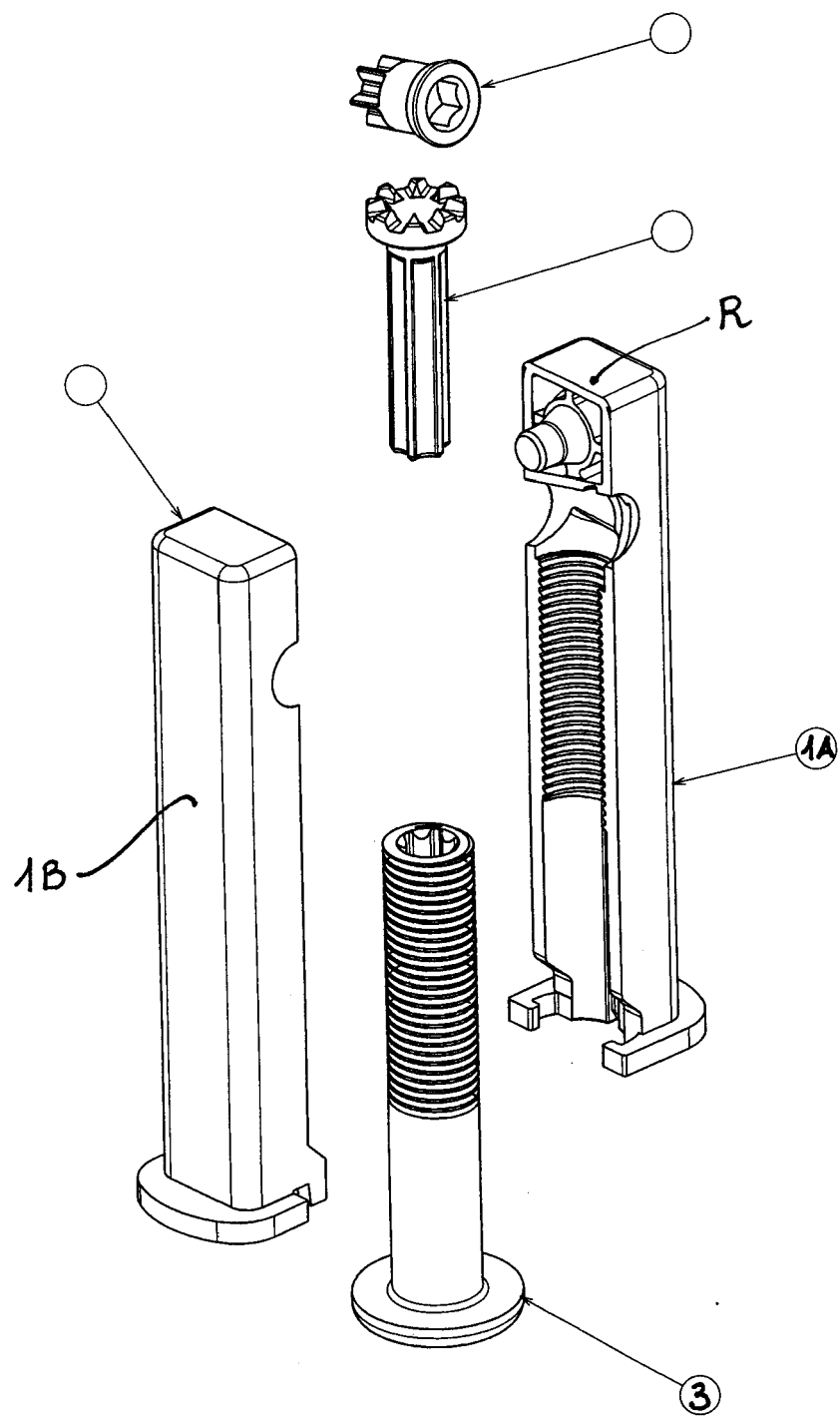


FIG. 12

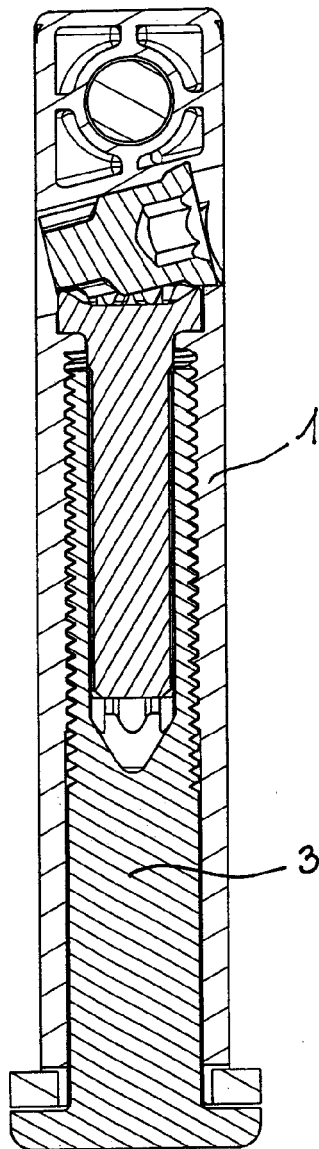


FIG. 13

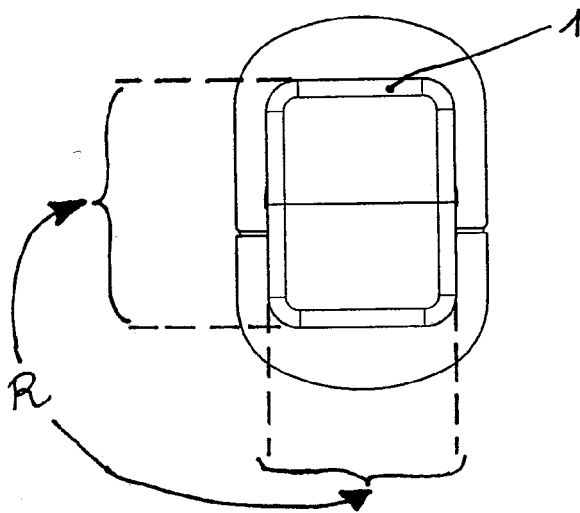


FIG. 14

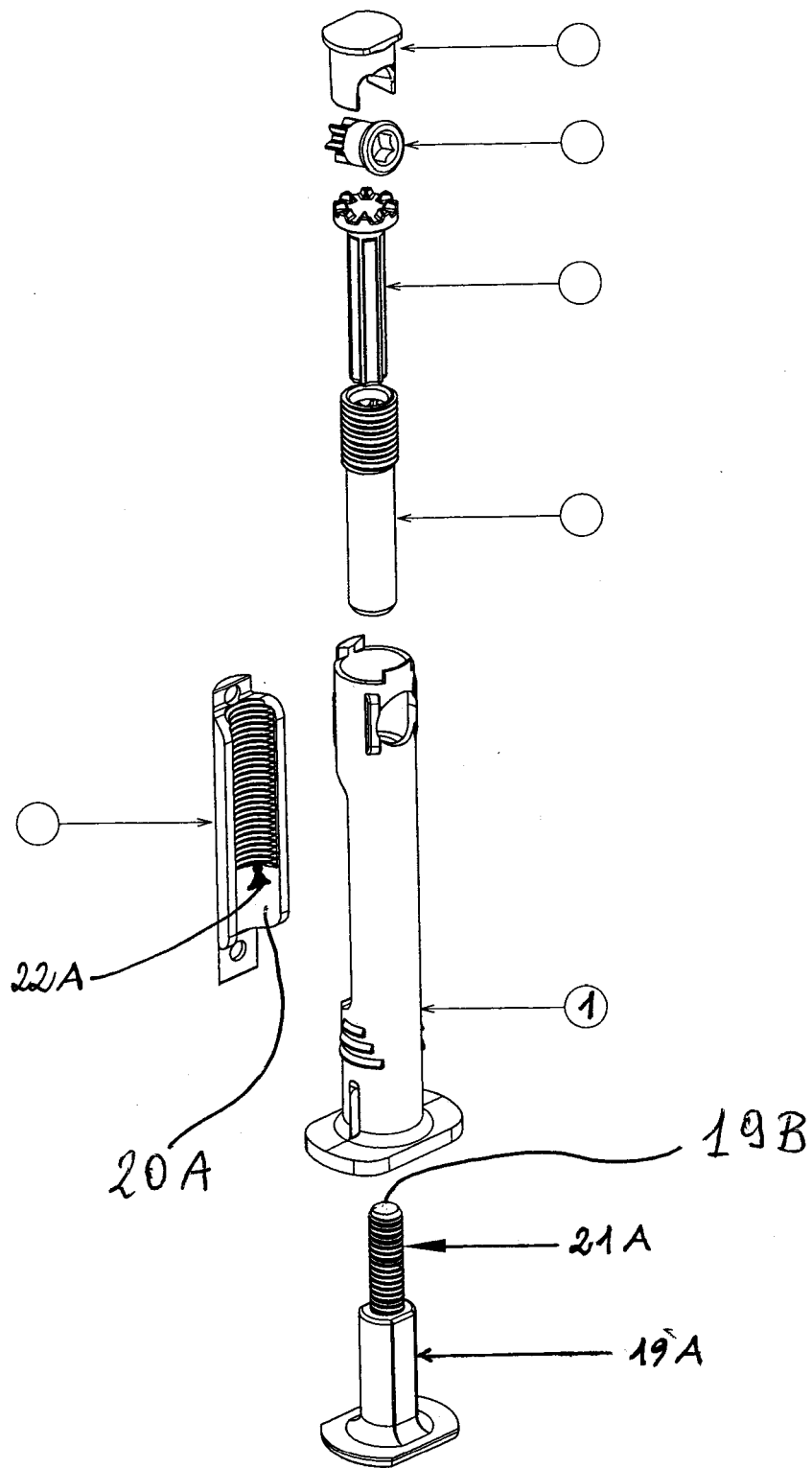


FIG. 15

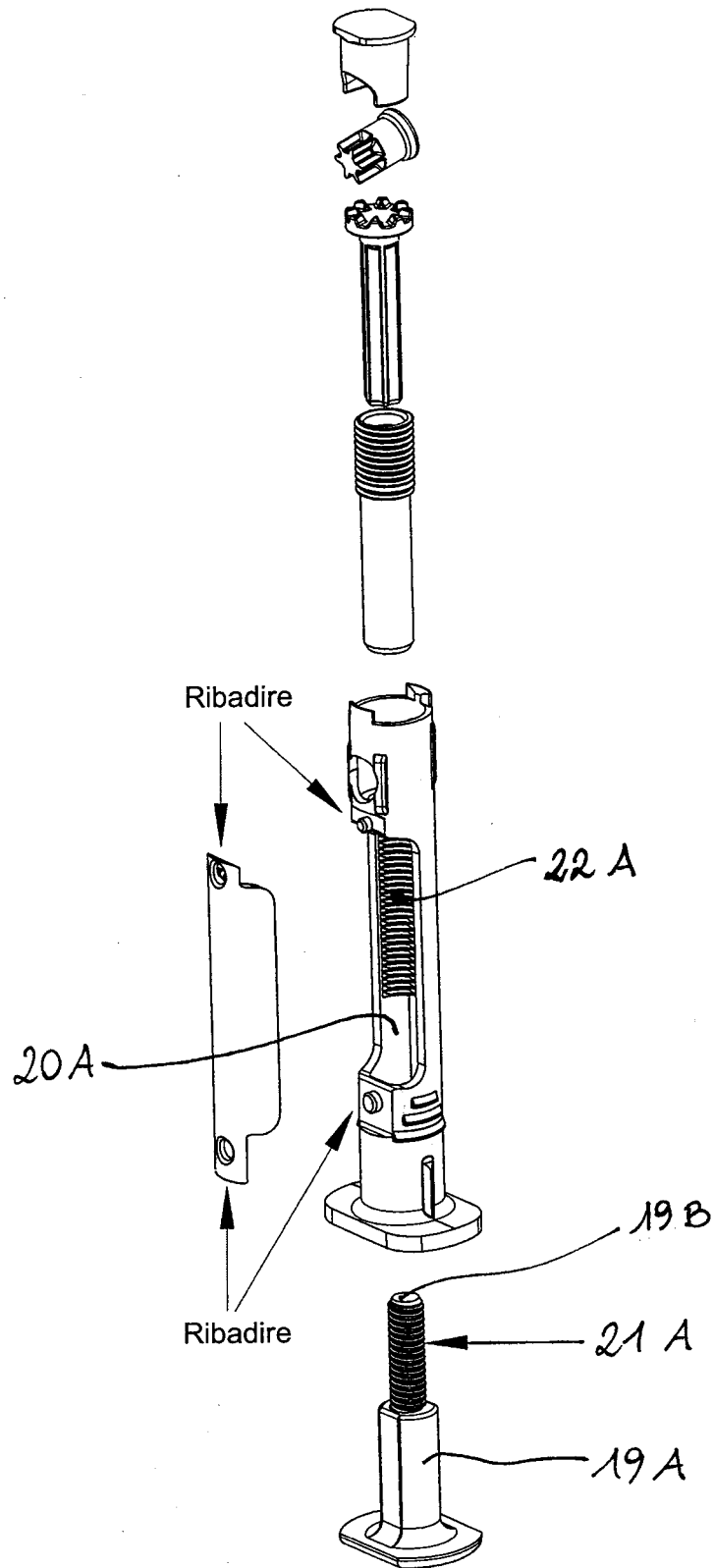


FIG. 16

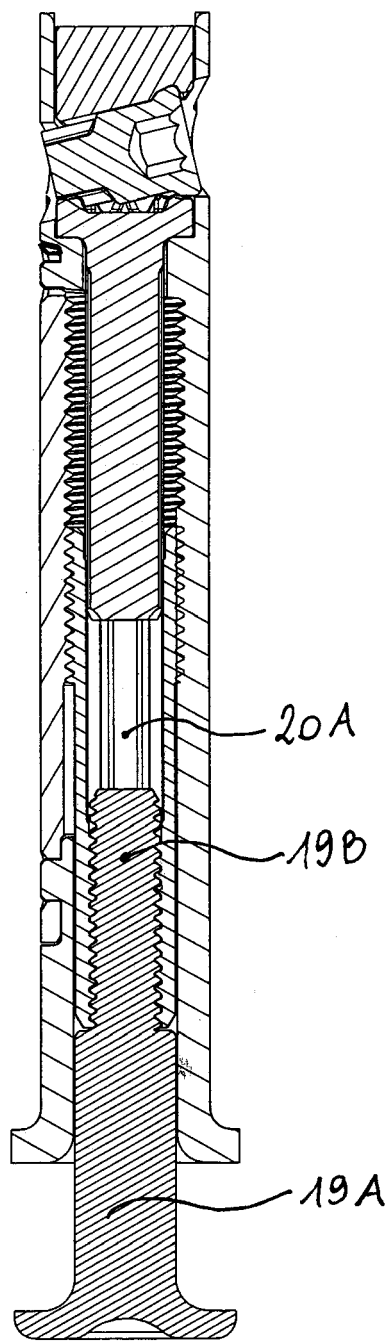


FIG. 18

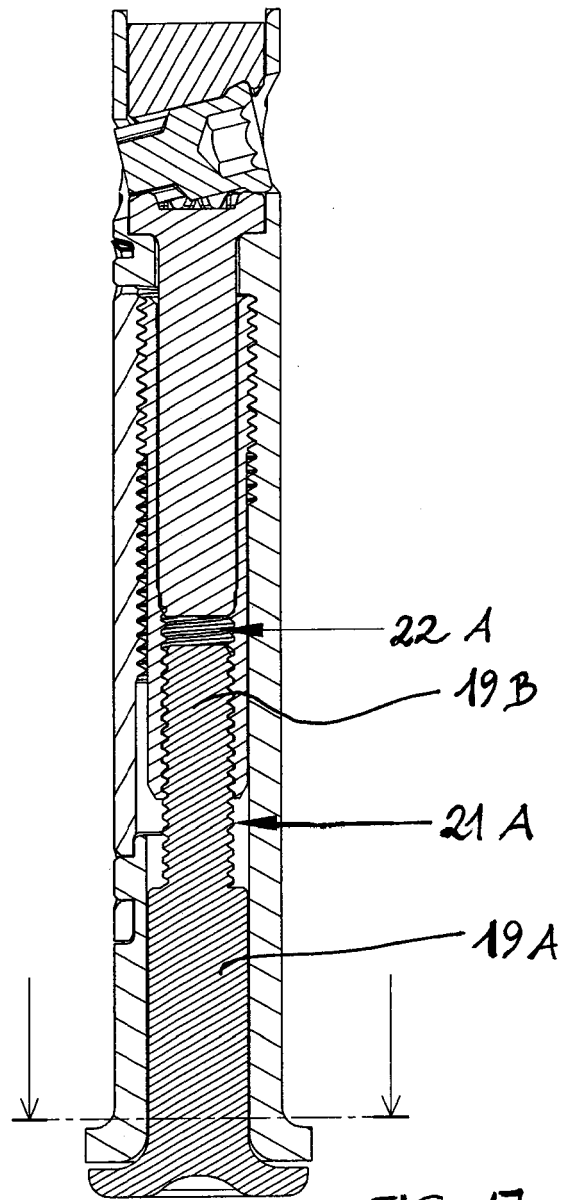
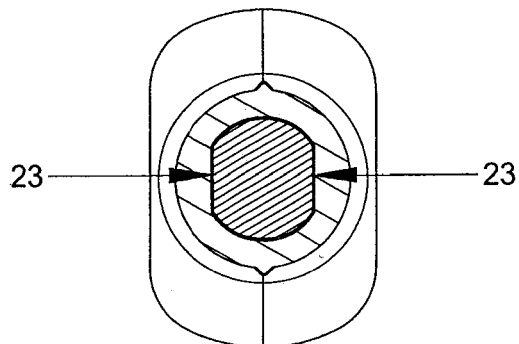


FIG. 17





European Patent  
Office

# EUROPEAN SEARCH REPORT

Application Number  
EP 06 10 1409

| DOCUMENTS CONSIDERED TO BE RELEVANT                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |                                                                                                                                                            |                                                  |                                         |
|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------|-----------------------------------------|
| Category                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          | Citation of document with indication, where appropriate, of relevant passages                                                                              | Relevant to claim                                | CLASSIFICATION OF THE APPLICATION (IPC) |
| D,X                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               | EP 0 503 701 A (CAMAR SPA)<br>16 September 1992 (1992-09-16)<br>* the whole document *                                                                     | 1                                                | INV.<br>A47B91/02                       |
| P,X                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               | EP 1 563 764 A (F.LLI MAURI SRL)<br>17 August 2005 (2005-08-17)<br>* the whole document *                                                                  | 1                                                |                                         |
| D,A                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               | EP 0 733 322 A (LEONARDO SRL)<br>25 September 1996 (1996-09-25)<br>* the whole document *                                                                  | 1,12                                             |                                         |
| X                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 | EP 0 862 875 A (TAUCHERT, JUERGEN)<br>9 September 1998 (1998-09-09)<br>* the whole document *                                                              | 1                                                |                                         |
| X                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 | DE 89 08 536 U1 (HUWIL-WERKE GMBH<br>MOEBELSCHLOSS- UND BESCHLAGFABRIKEN, 5207<br>RUPPICHTERO)<br>14 September 1989 (1989-09-14)<br>* the whole document * | 1                                                |                                         |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |                                                                                                                                                            |                                                  | TECHNICAL FIELDS<br>SEARCHED (IPC)      |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |                                                                                                                                                            |                                                  | A47B<br>D06F<br>B60S<br>B66F            |
| The present search report has been drawn up for all claims                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |                                                                                                                                                            |                                                  |                                         |
| Place of search<br>The Hague                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |                                                                                                                                                            | Date of completion of the search<br>16 June 2006 | Examiner<br>van Hoogstraten, S          |
| <p>CATEGORY OF CITED DOCUMENTS</p> <p>X : particularly relevant if taken alone<br/>Y : particularly relevant if combined with another document of the same category<br/>A : technological background<br/>O : non-written disclosure<br/>P : intermediate document</p> <p>T : theory or principle underlying the invention<br/>E : earlier patent document, but published on, or after the filing date<br/>D : document cited in the application<br/>L : document cited for other reasons<br/>&amp; : member of the same patent family, corresponding document</p> |                                                                                                                                                            |                                                  |                                         |

4  
EPO FORM 1503 03.82 (P04C01)

**ANNEX TO THE EUROPEAN SEARCH REPORT  
ON EUROPEAN PATENT APPLICATION NO.**

EP 06 10 1409

This annex lists the patent family members relating to the patent documents cited in the above-mentioned European 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.

16-06-2006

| Patent document<br>cited in search report |    | Publication<br>date | Patent family<br>member(s)                                                         | Publication<br>date                                                |
|-------------------------------------------|----|---------------------|------------------------------------------------------------------------------------|--------------------------------------------------------------------|
| EP 0503701                                | A  | 16-09-1992          | IT 1249605 B<br>US 5292095 A                                                       | 09-03-1995<br>08-03-1994                                           |
| EP 1563764                                | A  | 17-08-2005          | NONE                                                                               |                                                                    |
| EP 0733322                                | A  | 25-09-1996          | AT 191836 T<br>DE 69607780 D1<br>DE 69607780 T2<br>ES 2146351 T3<br>IT MI950211 U1 | 15-05-2000<br>25-05-2000<br>02-11-2000<br>01-08-2000<br>24-09-1996 |
| EP 0862875                                | A  | 09-09-1998          | AT 238722 T<br>DE 29703934 U1<br>ES 2195212 T3                                     | 15-05-2003<br>30-04-1997<br>01-12-2003                             |
| DE 8908536                                | U1 | 14-09-1989          | NONE                                                                               |                                                                    |