(19) Europäisches Patentamt
European Patent Office
Office européen des brevets

(11) EP 1 167 668 A2

(12) EUROPEAN PATENT APPLICATION

(43) Date of publication:
02.01.2002 Bulletin 2002/01

(51) Int Cl.[7]: **E05C 17/18**

(21) Application number: **01830409.7**

(22) Date of filing: **20.06.2001**

(84) Designated Contracting States:
AT BE CH CY DE DK ES FI FR GB GR IE IT LI LU MC NL PT SE TR
Designated Extension States:
AL LT LV MK RO SI

(30) Priority: **22.06.2000 IT BO000089 U**
14.11.2000 IT BO000147 U

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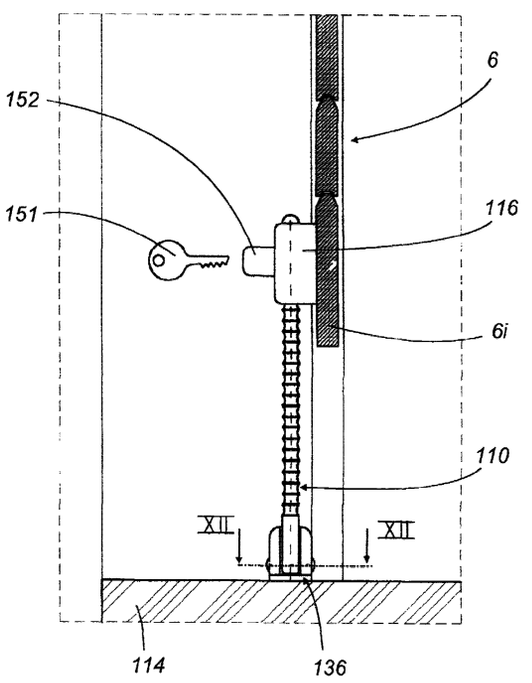
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(54) Security device for movable closing elements of windows, doors and the like

(57) A security device for movable closing elements of windows and doors comprises a first support element (12; 112) connected to a first frame or to a window or door casing (14; 114); a bar element (10; 110) connected to said first support element (12; 112); and a second element (16; 116) for supporting the bar element (10; 110), connected to a second frame (18; 118), and further comprises connecting elements (20, 22, 26; 28, 30, 32; 120, 126, 130) between the bar element (10; 110) and the second support element (16; 116) lockable in correspondence with the second support element (16; 116) or with the bar element (10; 110), at least a lock or padlock (152; 135) operated by a key (151) to lock the connection and prevent a further opening of the first frame or casing (14; 114) relative to the second frame (18; 118).

FIG.8



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Description

[0001] The present invention relates to a security device for movable closing elements of windows and doors, such as: blinds, door panels, roller shutters, rolling gates and the like.

[0002] It is well known that to keep a door or the panels of a window halfway open, without having them open completely, for instance by effect of wind, bar devices are used to distance the two panels from each other.

[0003] In the case of a door, or of a shutter or window with single panel, a ring element is generally fastened to the fixed frame or to the wall and a rigid bar, having a hook at an end, is fastened to the movable window or door. The hook, inserted in the corresponding ring, allows to keep the door or the panel at a determined constant distance from the wall or from the frame.

[0004] In the case of blinds with double panels, the closing hook of the shutters themselves is usually utilised.

[0005] In the case of windows with double panels, a device is known which comprises a planar bar, provided with holes, and hinged to a first support element connected to the movable frame of the first panel. To the movable frame of the second panel is connected a second support element bearing a pivot pin that is inserted in one of the holes of the bar, depending on the distance to be maintained between the panels.

[0006] A problem of the aforesaid devices is that the connection between the bar and the support can easily be eliminated also acting from the side of the panel opposite the one whereon the connection is achieved. In sum, these known connections have the drawback of being easily disengaged from the exterior, and therefore do not guarantee any kind of protection of the space in which they are positioned.

[0007] Devices also exist which allow to lock roller shutters when they are lowered in such a way as to close completely the space between roller shutter and lower casing of a window or of a French window, so that the roller shutters cannot be raised and do not allow access to the interior.

[0008] For instance, devices exist which exhibit hooks situated in the lower part of the shutter which are inserted in appropriate holes obtained in correspondence with the window and door casings.

[0009] Also known are metal rods exhibiting a projection at one end, which is inserted in holed plates applied in the upper part of the roller shutter: in this way, when the roller shutter is raised, the projection is blocked against the upper part of the wall or of the window or door casing, preventing any further raising of the roller shutter.

[0010] However, such devices allow to maintain the roller shutter always completely closed and do not allow to maintain it partially raised and locked in this configuration.

[0011] Therefore, the need is felt to have available a device that allows to maintain the roller shutter partially open, at any distance in proximity to the lower part of the window or door casing, preventing the roller shutter from being raised.

[0012] The aim of the present invention therefore is that of providing an enhanced security device against the undesired movement of the movable closing elements of windows and doors such as blinds, door panels, roller shutters, rolling gates and the like, when the aforesaid movable elements are in the semi-open position.

[0013] In accordance with the present invention, a security device for movable closing elements of windows, doors and the like, as specified in the independent claim is described herein. The dependent claims refer to preferred and advantageous embodiments of the invention.

[0014] Further features and advantages of the invention shall become more readily apparent from the detailed description that follows, made with reference to the accompanying drawings, which represent embodiments provided purely by way of non limiting examples, in which:

- Figure 1 shows a top schematic view of a first embodiment of the device of the present invention in open configuration;
- Figure 2 shows a cross section view of the embodiment of Figure 1;
- Figure 3 shows a longitudinal section view the embodiment of Figure 1;
- Figure 4 shows a longitudinal section of a second embodiment;
- Figures 5 and 6 show a cross section of a third and a fourth embodiment of the device according to the invention;
- Figure 7 shows a front view of a fifth embodiment of the security device according to the present invention, in use;
- Figure 8 shows a lateral view of the embodiment of Figure 7;
- Figure 9 shows a front view of the embodiment of Figure 7 of the device when not in use;
- Figure 10 shows a front view of a sixth embodiment of the security device according to the present invention, in use;
- Figure 11 shows a longitudinal section of a detail of the locking of the device in the embodiment of Figure 7; and
- Figure 12 shows a section, according to the line XII-XII of Figure 8, of a detail of the support element whereto the bar is hinged.

[0015] In accordance with the figures of the accompanying drawings, the security device according to the present invention comprises a bar element 10 connected, at its first end 10a, to a first support element 12. The support element 12 is connected to a first movable frame or to a window or door casing 14, depending on

whether the device is used to connect two panels of a same window or door or a single panel to the fixed frame or to the wall.

[0016] In Figure 1, the bar element 10 is connected to the first support 12 in a revolving manner by means of a hinge having a pivot pin or a riveted screw 34 with its axis orthogonal to the bar 10 itself.

[0017] The bar element 10 has, at its second end 10b, a pin 20 for connecting the bar 10 with a second support element 16, connected to a second movable frame 18.

[0018] In an equivalent embodiment, in the case of door or window with single panel, the second support element 16 corresponding to the second end 10b of the bar 10 bearing the pin 20 can be connected to the window or door casing (or wall) 14 and the first support element 12 to the movable panel 18.

[0019] As shown in Figure 2, the second support element 16 has a seat 22 into which the pin 20 is inserted.

[0020] The pin 20 has a contoured profile that couples with the inner profile created, as described farther on, in the corresponding seat 22 in such a way as to achieve a lockable fixed connection.

[0021] In the device according to the present invention, the seat 22 is provided with an opening 24 into which a retaining element 26 of the pin 20 can be inserted.

[0022] The retaining element 26, for instance constituted by the bolt of a lock or by a padlock, is movable from a first position of non interference with the pin 20 (Figure 1) to a second position of interference with the pin 20, in order to achieve the fixed connection.

[0023] The pin 20 is inserted in the corresponding seat when the retaining element 26 is in the non interference position, then the retaining element 26 is brought, for instance by turning the key in the lock, into the position of interference with the contoured profile of the pin 20: in this way, the pin 20 remains locked within the seat 22 guaranteeing a connection that cannot be disengaged from the exterior.

[0024] In an embodiment illustrated in Figure 5, the retaining element 26 can be of the quick-release type, for instance a padlock. The quick-release retaining element 26 is held, for example by a spring 50, in a position of interference with the pin 20, is moved when the pin is inserted following the contoured profile of the pin 20 itself and then automatically returns to the interference position by effect of the spring 50. The retaining element 26 is then unlocked acting on the spring 50 using for instance a key (Figure 5).

[0025] As shown in the figures, the support elements 12, 16 are connected to the corresponding frames or window/door casings 14, 18, by means of screws 38: to prevent the screws 38 from being visible from the exterior, and thus possibly be removable, a coating of the screws 38 can be provided.

[0026] Figure 3 shows a first embodiment of the connection of the bar 10 to the first support 12, achieved by means of the pivot pin or riveted screw 34 having its axis orthogonal to the bar 10 itself.

[0027] Similarly, the pin 20 is hinged to the bar 10 by means of a pivot pin or a riveted screw 28 having its axis orthogonal to the bar 10, to achieve a revolving connection.

[0028] Figure 4 shows a second embodiment of the connection of the bar 10 to the first support 12, in which the bar 10 is hinged by means of a ball joint 36, in such a way that it can be positioned parallel to the frame and minimise its size when not in use.

[0029] Figures 5 and 6 show a third and fourth embodiment of the device according to the present invention.

[0030] In the embodiment of Figure 5, the bar 10 has a guide 30 in which the pivot pin 28 can slide, in such a way as to allow to vary the distance to be maintained between the two panels or between the single panel and the casing or wall.

[0031] Advantageously, the guide 30 is provided with pairs of projections 32 that allow to stop the sliding of the pivot pin 28 along the bar 10 positioning the pivot pin 28 itself in correspondence with the seat 22 when the panels are at the desired distance.

[0032] In the solution of Figure 6, the pin 20 is associated to the support element 16 and is inserted in the seat 22 obtained inside an extension 11 of the bar 10. Said extension 11 can be hinged in correspondence with the second end 10b of the bar 10 itself.

[0033] Figures 7 through 12 show the security device according to present invention, especially suited for sliding closure elements, such as roller shutters, rolling gates and the like.

[0034] The security device comprises a support element 112 connected to a window or door casing 114, for instance the lower frame of a window 3, whereto a bar element 110 is connected by means of a hinge 134.

[0035] The bar 110 is movable between a substantially vertical active position, parallel to the direction of lowering of a roller shutter 6 when the device is in use (Figures 7 and 8) and a substantially horizontal inactive position, parallel to the lower frame 114 of the window 3 when it is not in use (Figure 9).

[0036] To the roller shutter 6, in correspondence with its lower portion 6i, is connected an engagement element 116 which exhibits an opening 130, for instance a through hole, inside which the bar 110 in the vertical active position can be inserted and is able to slide.

[0037] According to the present invention, the device is provided with locking means 126 associated to the engagement element 116. In a preferred embodiment, the locking means 126 are housed within the engagement element 116 and can be operated by means of a key 151 to be inserted in a lock 152 connected to the locking means 126 themselves in such a way as to fasten the bar 110 to the engagement element 116 stopping the roller shutter 6 at a determined height.

[0038] In the preferred embodiment shown in Figures 7, 8, 9 and 11, the bar 110 has circular section and ex-

hibits a plurality of annular groove 120 that enable its coupling and locking with the engagement element 116.

[0039] Figure 11 shows a detail of the locking of the bar 110 to the engagement element 116 in the fifth preferred embodiment of the present invention.

[0040] Advantageously, in this embodiment, inside the engagement element 116 are provided means 132 for positioning the bar 110 inside the hole 130, comprising a ball 132a which is kept in contact with the bar 110 by means of a spring 150. When the bar 110 slides inside the hole 130 obtained in the engagement element 116, the ball 132a is thrust inside the grooves 120 by the action of the spring 150, stopping in a determined groove when the roller shutter 6 is positioned at the desired height relative to the lower frame 114 of the window.

[0041] The locking of the bar 110 with the engagement element 116 is effected by means of the rotation of a partially hollow cylindrical element 128 which is brought from a position of non interference with the groove 120 to an interference position by means of the key 151 of the lock 152, as shown in Figure 11.

[0042] Figure 10 shows a sixth preferred embodiment of the present invention, in which the bar 110, having square or circular cross section, is provided with holes 133 into which is inserted a locking pin associated for instance to a padlock 135.

[0043] Figure 12 shows a detail of the support element 112, which has a base 136, for instance with circular cross section, in which is obtained an elongated cavity 113 able to house the bar 110 when it is not in use.

[0044] Inside the base 136 are positioned support means 111 to maintain the bar 110 in the active position, which means comprise a ball 115 connected to a spring 118 developing in substantially orthogonal direction to the cavity 113 so that the ball 115 faces the cavity 113 itself in proximity to the lower part 110i of the bar 110.

[0045] When the bar 110 is in horizontal position, the ball 115 remains inside the base 136, interposed between the bar 110 and the spring 118; raising the bar 110 in the active position, the ball 115 moves into the cavity 113 in contact with the lower part 110i of the bar 110, keeping it vertical (Figure 12).

[0046] It should be noted that the bar 110 thus obtained with the grooves 120 or the holes 133, the base 112 and the engagement element 116 can also be used for the hinged panels of the type shown in Figures 1 through 4. The engagement element 116 thus also has a hinge (not shown) to adapt itself to the different inclinations of the panel whereto it is fastened. The security device obtain in this latter way, therefore, is of the universal type, i.e. it can be applied to any movable closing element, be it hinged, such as blinds, or sliding such as rolling shutters.

[0047] The device according to the present invention, furthermore, allows to distance the panels of a door or of a window, maintaining them semi-opened in a locked position.

[0048] To unlock the position of the panels, it is necessary to turn the key in the lock, bringing the bolt back to the position of non interference with the connecting pin, which can then be extracted from the corresponding seat in order to close or fully to open the window or the door.

[0049] The connection cannot be disengaged from the exterior, because the bolt is maintained locked in the position of interference with the pin, unless the key is inserted in the lock located in the inner part of the panel. Moreover, in the sliding version the distance of the panels can be adjusted as needed.

[0050] The security device of the present invention also allows to maintain the roller shutters partially open, preventing them from being raised and thereby allowing access to the interior.

[0051] The construction of the bar with a plurality of annular grooves into which a ball is inserted allows to adjust the opening of the roller shutter in a continuous manner to any height.

Claims

1. Security device for movable closing elements of windows and doors, comprising a support element (12; 112) connected to a first frame or to a window or door casing (14; 114); a bar element (10; 110) connected to said support element (12; 112); and a second element (16; 116) for supporting said bar element (10; 110), connected to a second frame (18; 118), **characterised in that** it comprises connecting means (20, 22, 26; 28, 30, 32; 120, 126, 130) between the bar element (10; 110) and the second support element (16; 116) lockable in correspondence with the second support element (16; 116) or with the bar element (10; 110).

2. A device as claimed in claim 1, **characterised in that** the connecting means between the bar element (10; 110) and the second support element (16; 116) comprise at least a lock or padlock (152; 125) operated by a key (151) to lock the connection and prevent a further opening of the first frame or casing (14; 114) relative to the second frame (18; 118).

3. A device as claimed in claim 1 or 2, **characterised in that** said connecting means between the bar element (10; 110) and the second support element (16; 116) comprise a pin (20) that can be inserted in a seat (22) obtained in the second support element (16) or in an extension (11) of the bar element (10) and has a contoured profile in such a way as to achieve, with the corresponding seat (22), a lockable fixed connection.

4. A device as claimed in claim 1 or 2, **characterised in that** the bar element (110) has circular cross sec-

tion and has a plurality of annular grooves (120) into which are inserted locking means (126) contained in the second support element (116).

5. A device as claimed in claim 4, **characterised in that** the locking means (126) comprise a substantially cylindrical element (128) movable from a position of non interference with a groove (120) to a position of interference with the groove (120) itself by means of the lock (152).

6. A device as claimed in claim 1 or 2, **characterised in that** said bar element (10; 110) has a plurality of holes (133) into which are inserted the locking means (16; 116).

7. A device as claimed in one of the previous claims, **characterised in that** the second support element (16; 116) is hinged on said bar element (10; 110) by means of a pivot pin (28) having its axis orthogonal to the bar element (10; 110) to achieving a revolving connection.

8. A device as claimed in one of the claims from 1 to 3 and 7, **characterised in that** said bar element (10) has a guide (30) in which said pivot pin (28) is able to slide, to vary the distance between the first (14; 114) and the second frame (18; 118).

9. A device as claimed in claim 8, **characterised in that** said guide (30) is provided with projections (32) for the positioning of said pivot pin (28) in correspondence with the seat (22) into which the pin (20) is inserted.

10. A device as claimed in one of the previous claims, **characterised in that** it comprises support means (111) to maintain the bar element (10; 110) in the active position, and **in that** said support means (111) comprise a ball (132a) elastically connected to the support element (12; 112) and able to come in contact with the lower part (10; 110i) of the bar element (10; 110) to maintain it in said active position.

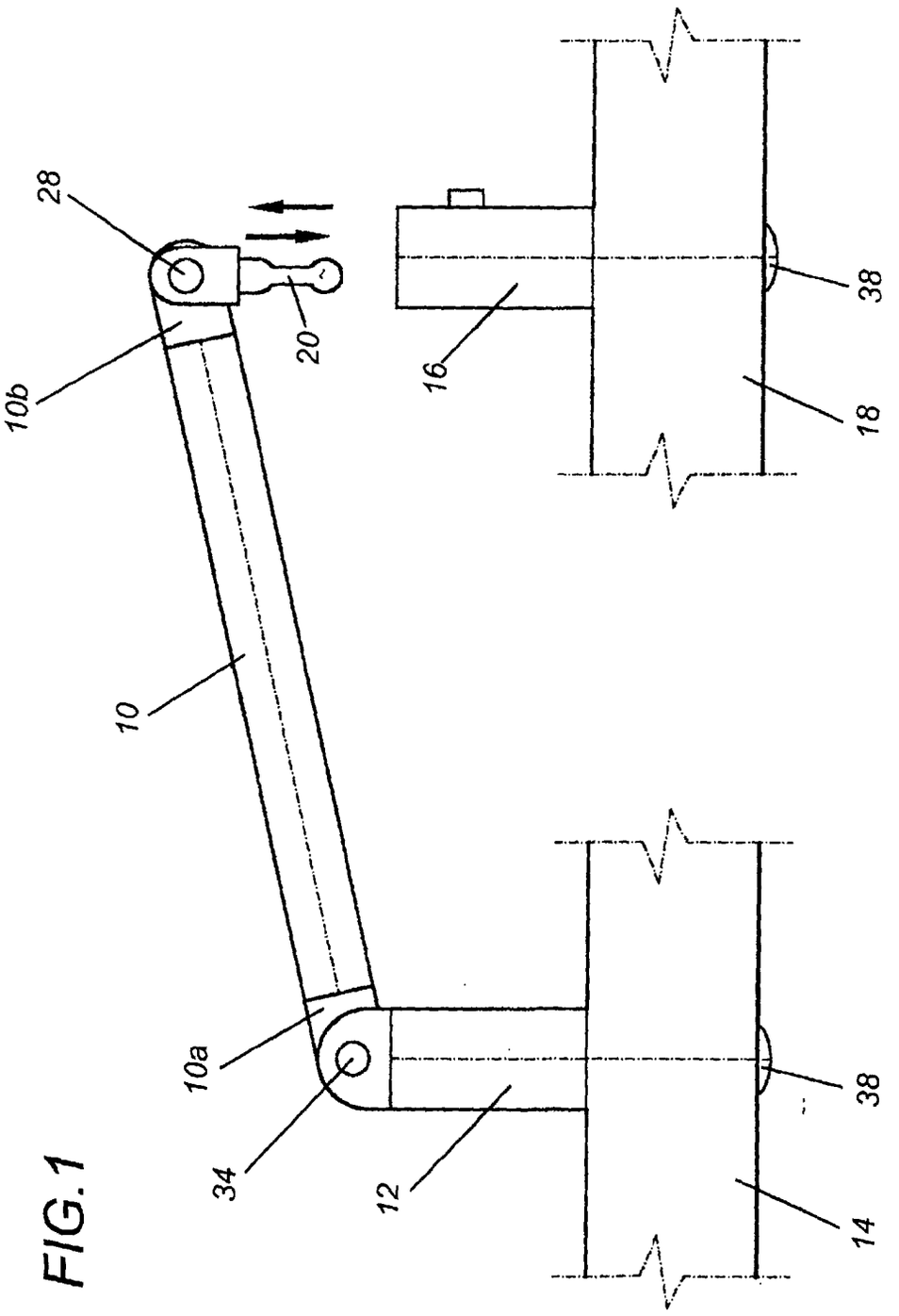


FIG.1

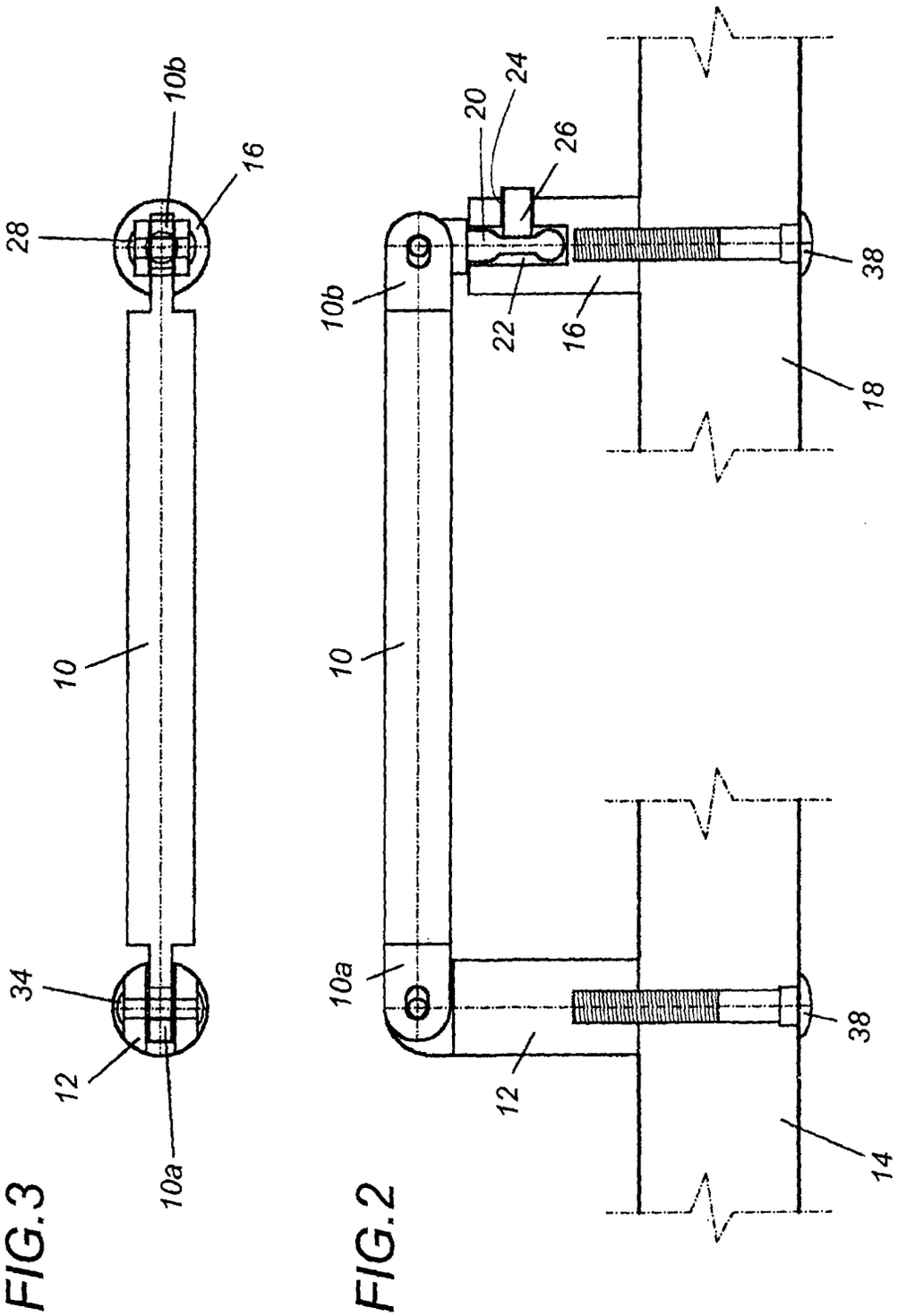


FIG.3

FIG.2

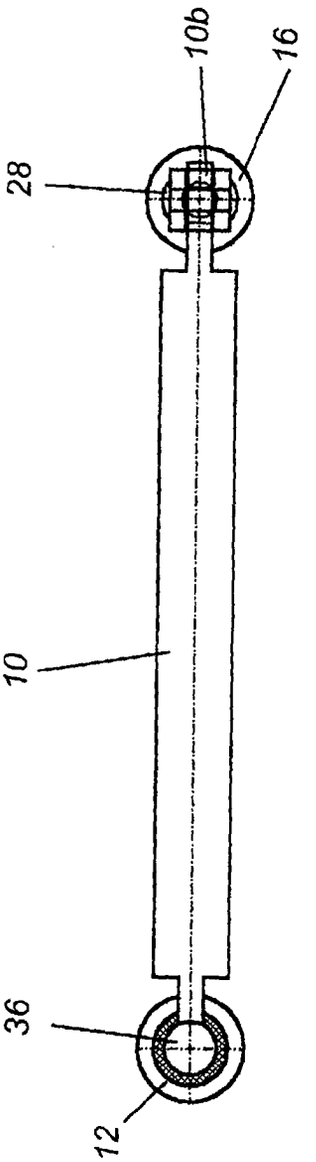


FIG.4

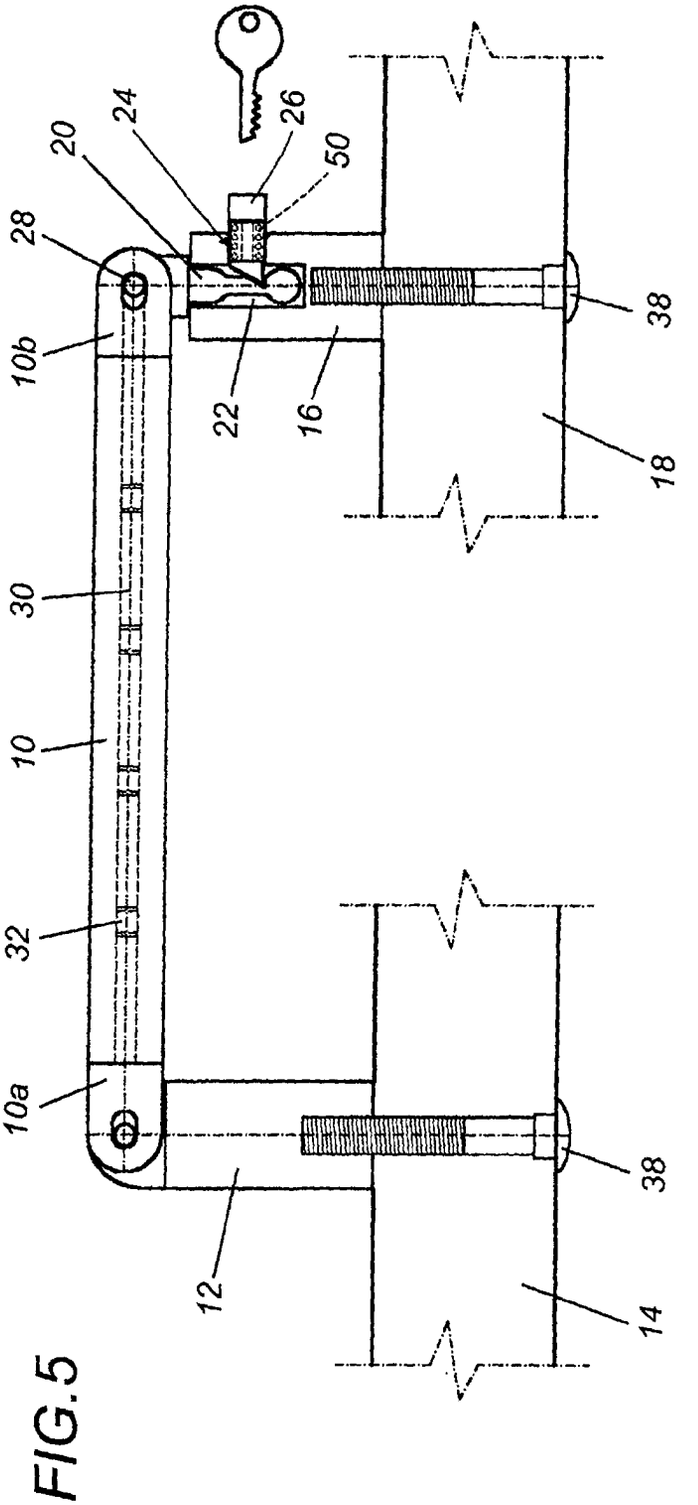


FIG.5

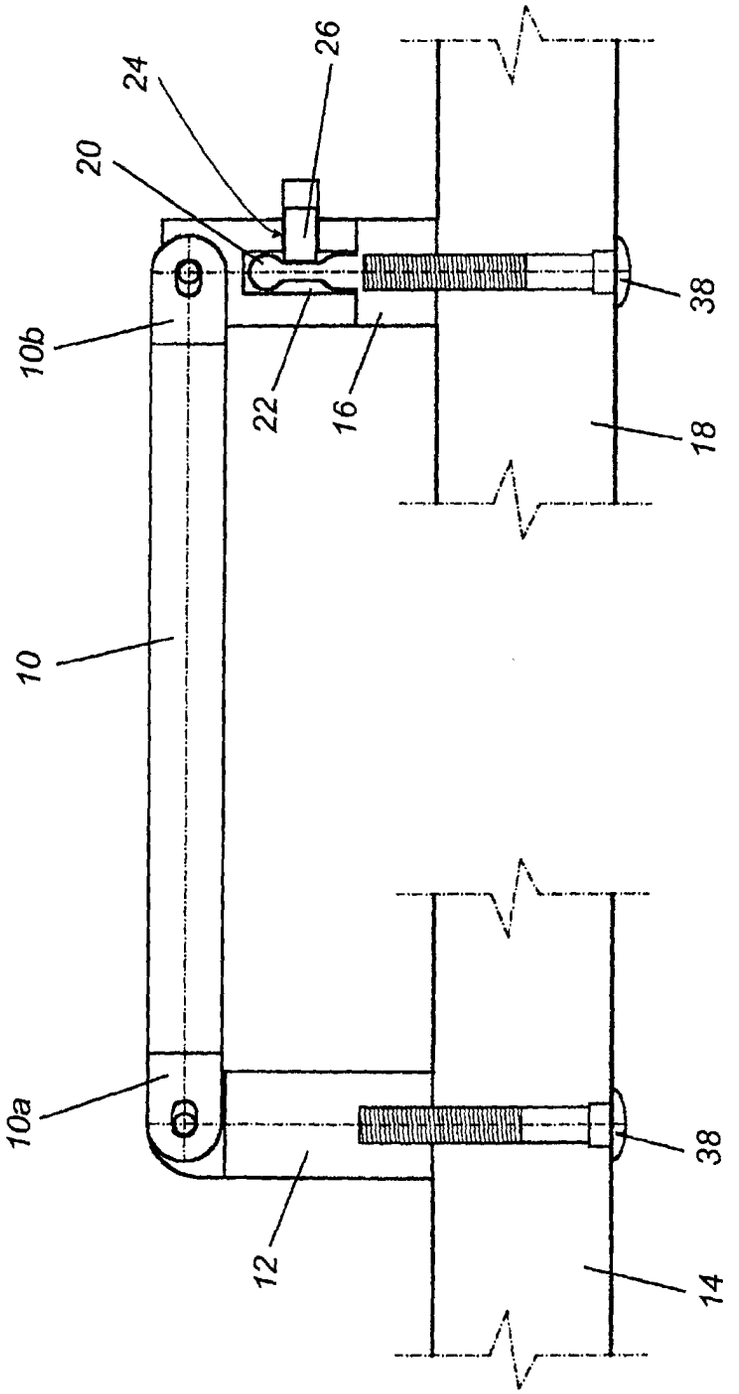


FIG.6

FIG.8

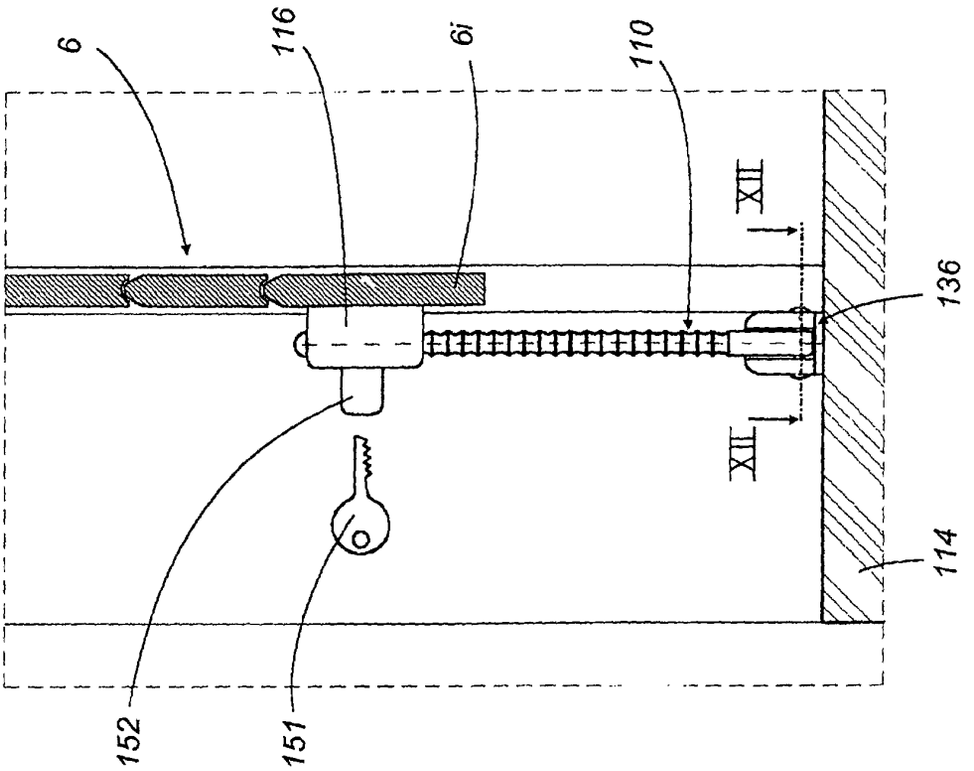

6
116
6i
110
XII
136
XII
114
152
151

FIG.7

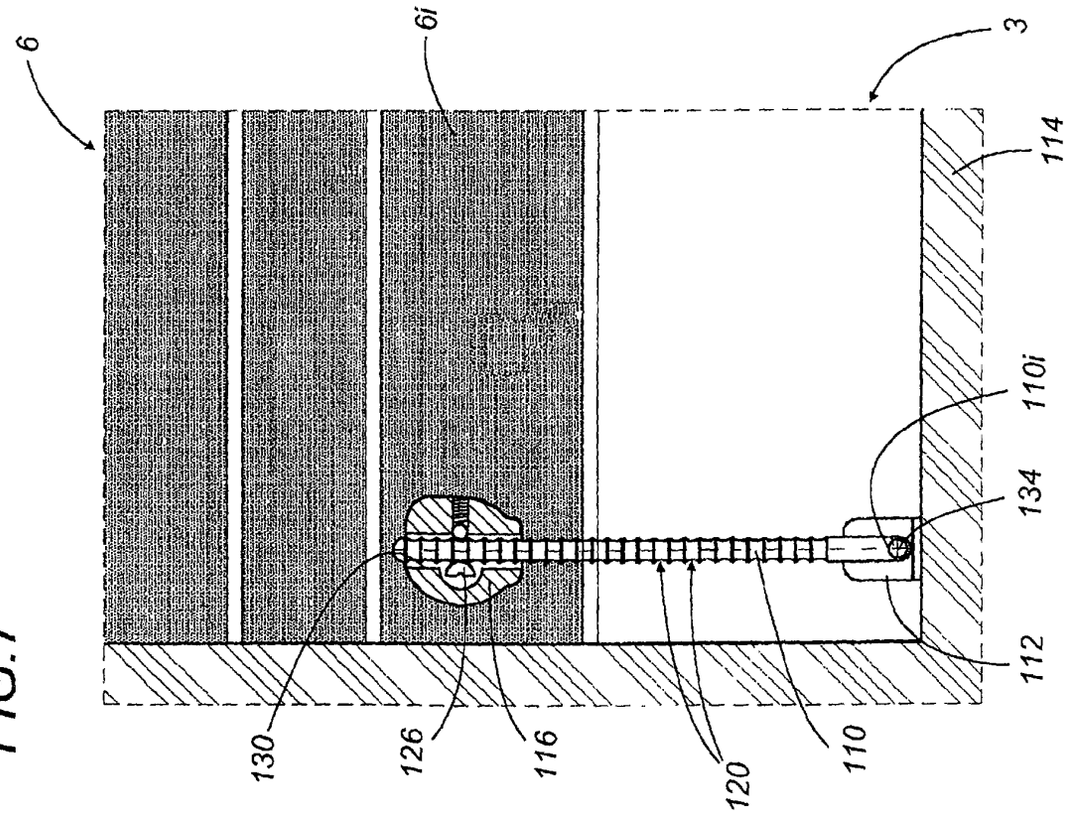

6
6i
3
114
110i
134
112
130
126
116
120
110

FIG.10

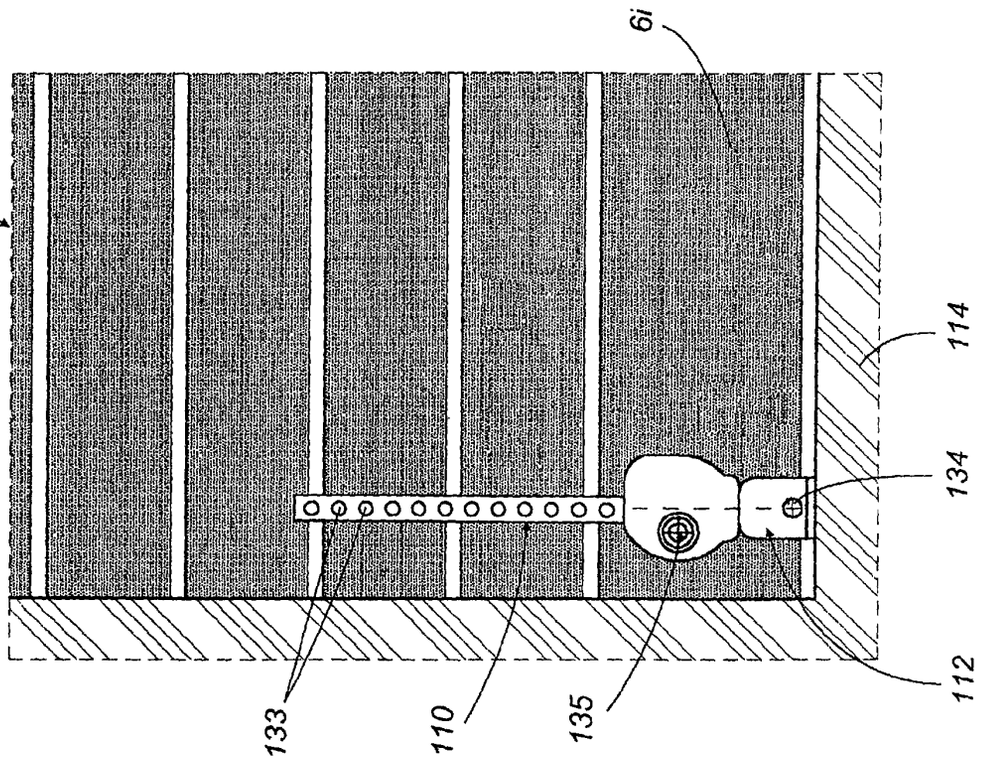


FIG.9

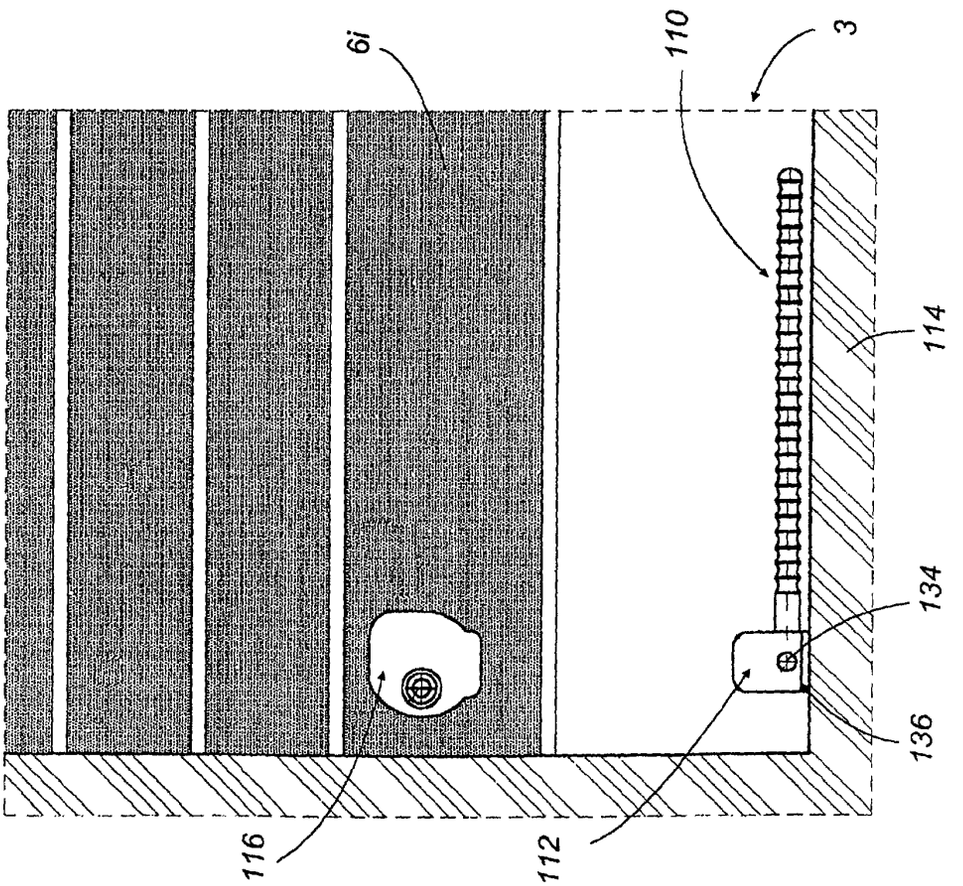


FIG.11

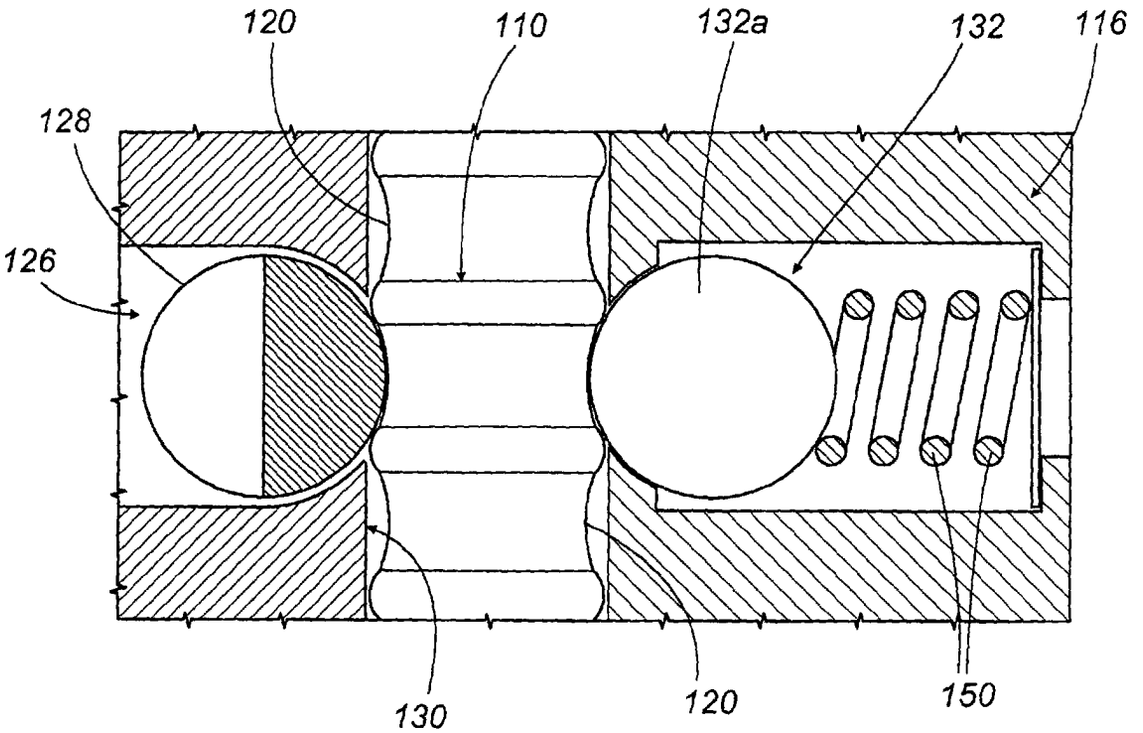
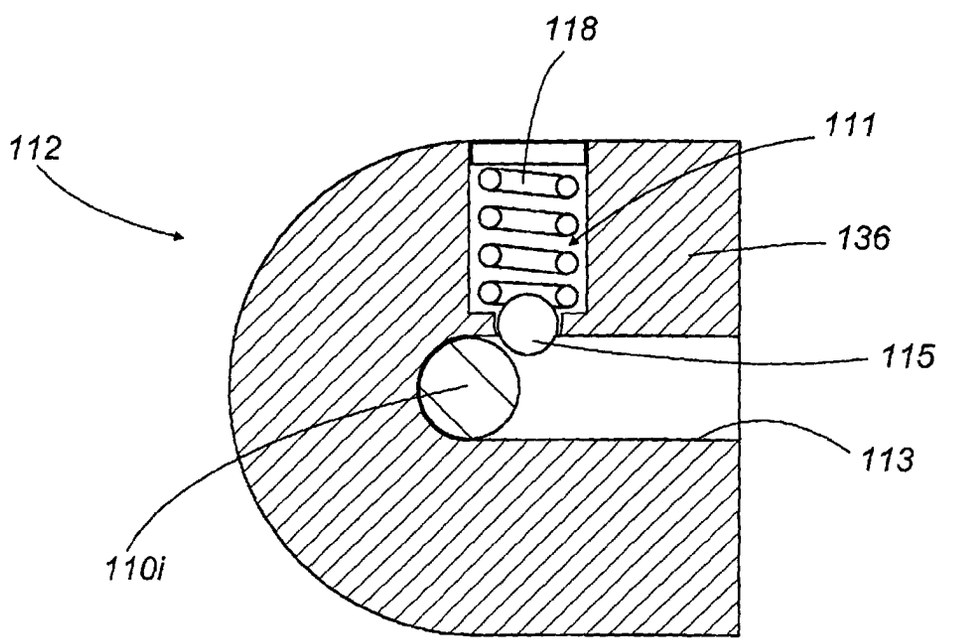

120
110
132a
132
116
128
126
130
120
150

FIG.12


118
111
112
136
115
113
110i