



(12) **EUROPEAN PATENT APPLICATION**

(43) Date of publication:
17.01.2007 Bulletin 2007/03

(51) Int Cl.:
E05C 9/20 (2006.01) *E05C 9/02 (2006.01)*
E05C 9/04 (2006.01)

(21) Application number: **06117216.9**

(22) Date of filing: **14.07.2006**

(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

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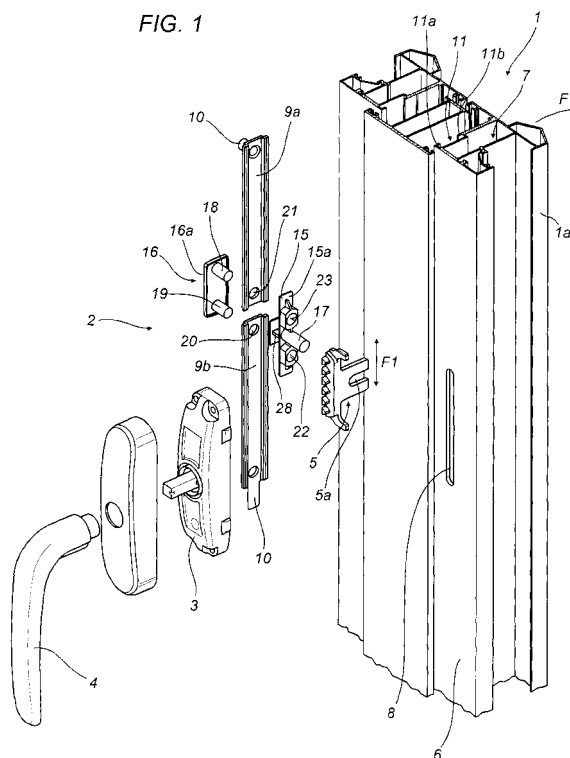
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(30) Priority: **15.07.2005 IT BO20050473**

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(54) **Operating unit for doors or windows**

(57) An operating unit for outward opening doors or windows comprises: a handle body (3), from one side of which there protrudes a handgrip (4) designed to operate drive components (5) that protrude from the opposite side of the handle body (3); the latter is applicable to a first door or window sash (1a) surface (6) forming a wall of a tubular groove (7) of the profile and having a first slot (8) through which the drive components (5) can be inserted into the tubular groove (7); means (9a, 9b) designed to operate door or window (1) latching devices (10) and slidably engaged in a channel (11) made in a second surface (12) of the door or window sash (1a) and having a second slot (13) through which the operating means (9a, 9b) can be connected to the drive components (5) inside the tubular groove (7) so as to enable the door or window (1) to be opened and closed; an independent connecting element (15) slidably positioned in the channel (11) at the second slot (13) in such a way as to securely fasten at least one rod segment (9a, 9b), constituting the operating means, to the drive components (5).



Description

[0001] The present invention relates to an operating unit for doors or windows, in particular doors or windows with frames made of metal, PVC or wood and PVC or the like.

[0002] It is widely known that these door or window frames are formed from tubular profiles, one of which is a profile that has come to be known as "Euro groove". These profiles form the load-bearing structure of windows, doors, French windows and have a plurality of drive and operating accessories applied to them for opening and closing the door or window (including a handle that is connected by one or more protruding elements to drive rods that slide in a channel in the profile and mount strikers and latching elements that interact with matching elements on the fixed frame of the door or window). Over time, these accessories have undergone frequent changes in order to improve efficiency, appearance and useful life and to optimise stocks of door or window hardware.

[0003] This research and development has principally addressed the accessories for inward opening doors or windows.

[0004] On the other hand, if the door or window with the same type of tubular profile is mounted so that it opens outwards, the profile is mounted with the stop wing, which is normally used for fitting the handle, facing the outside of the room.

[0005] This makes it impossible to fit the above mentioned accessories since the handle would have to be installed on the surface opposite the stop wing and which forms a wall of the tubular groove, which means that the traditional connections between the handle and the operating elements located in the usual profile channel cannot be made.

[0006] In other words, this structure, as mentioned above, has the disadvantage that drive and operating units (such as the standard operating rods) designed for inward opening doors or windows cannot be used.

[0007] This aim of the present invention is to overcome the above mentioned disadvantages by providing an operating unit for doors or windows made in such a way that "standard" accessories used also on inward opening doors or windows can be applied to outward opening doors or windows without altering the structures of the existing profile and of the accessories.

[0008] According to the invention, the above aim is achieved by an operating unit for outward opening doors or windows comprising: a handle body, from one side of which there protrudes a handgrip designed to operate drive components that protrude from the opposite side of the handle body; the latter is applicable to a first door or window sash surface forming a wall of a tubular groove of the profile and having a first slot through which the drive components can be inserted into the tubular groove; means designed to operate door or window latching devices and slidably engaged in a channel made in a second surface of the door or window sash and having a

second slot through which the operating means can be connected to the drive components inside the tubular groove so as to enable the door or window to be opened and closed; an independent connecting element slidably positioned in the channel at the second slot in such a way as to securely fasten at least one rod segment, constituting the operating means, to the drive components.

[0009] The technical features of the invention, with reference to the above aims, are clearly described in the claims below and its advantages are more apparent from the detailed description which follows, with reference to the accompanying drawings which illustrate a preferred embodiment of the invention provided merely by way of example without restricting the scope of the inventive concept, and in which:

- Figure 1 is an exploded perspective view, with some parts cut away in order to better illustrate others, of the operating unit for doors or windows according to the present invention;
- Figure 2 is a front view, with some parts in cross section and others cut away, of the operating unit from Figure 1 applied to an outward opening door or window;
- Figure 3 is an exploded side view, with some parts cut away, of a part of the operating unit from the previous Figures;
- Figure 4 is an assembled side view, with some parts cut away, of a part of the operating unit from the previous Figures;
- Figures 5, 6 and 7 are schematic front views, with some parts cut away, illustrating different positions in which the part of the operating unit from Figures 3 and 4 can be fitted to the channel of the door or window profile;
- Figures 8 and 9 are, respectively, a front detail view and a side detail view showing the locking means forming part of the operating unit;
- Figure 10 illustrates all the components of the operating unit according to the invention fitted together, in a perspective view, with some parts cut away in order to better illustrate others;
- Figure 11 is an exploded perspective view, with some parts cut away in order to better illustrate others, of an alternative embodiment of the operating unit for doors or windows according to the present invention.

[0010] With reference to the accompanying drawings, in particular Figures 1 and 2, the operating unit for doors or windows according to the invention can be applied in particular to doors or windows 1 that open outwards (see arrow F in Figures 1 and 2).

[0011] An operating unit 2 applied to a door or window 1 of this type essentially comprises: a handle body 3 including drive components 5, means 9a, 9b for operating latching devices 10 and an independent connecting element 15 for joining the operating means 9a, 9b to the

drive components 5.

[0012] More specifically, a handgrip 4 protrudes from one side of the handle body 3 and operates drive components 5 that protrude from the opposite side of the handle body 3.

[0013] The handle body 3 can be fitted (by customary means that are not illustrated) to a sash 1a of a door or window 1 on a first surface 6 forming a wall of a tubular groove 7 in the profile of the door or window 1 and having at least one first slot 8 through which the drive components 5 can be inserted into the tubular groove 7.

[0014] The above mentioned means 9a and 9b for operating the latching devices 10 of the door or window 1 are slidably engaged in a channel 11 made in a second surface 12 of the door or window sash 1a, contiguous with and at an angle to the first surface 6, and having a second slot 13 through which the operating means 9a, 9b can be connected to the drive components 5 inside the tubular groove 7 so as to enable the door or window 1 to be opened and closed by moving the handgrip 4.

[0015] The above mentioned independent connecting element 15 is slidably positioned in the channel 11 at the second slot 13 (see also Figure 5) in such a way as to securely fasten at least one rod segment 9a, 9b, constituting the operating means, to the drive components 5.

[0016] Obviously, according to the type door or window closing system, the independent element 15 may have securely fastened to it two separate and opposite rod segments 9a and 9b (as illustrated in Figures 1 to 7).

[0017] In addition to the above, the operating unit 2 comprises reciprocal locking means 16 acting between each of the segments 9a and 9b and the independent element 15 in order to enable the segments 9a and 9b to be securely coupled to the independent element 15 (see Figures 3, 4, 8 and 9). Obviously, certain parts of the handle body 3 and of the handgrip 4, as well as the means for fastening the handle body 3 to the first surface 6 are not described or illustrated since they are of known type and do not strictly fall within the scope of the invention. Similarly, the latching devices 10 located on the rod segments 9a, 9b (namely bolt tips and/or striker pins) are not illustrated in detail since they are of the known type.

[0018] Looking more closely at the construction details of the other parts, the above mentioned independent element consists of a flat main part 15 designed to be slidably positioned in the channel 11 and having at least one upper abutting surface 15a for slidably positioning a portion of each of the rod segments 9a, 9b.

[0019] The locking means 16 are designed to be applied to the upper surface 15a of the main part 15 and to the portion of each rod segment 9a and 9b.

[0020] As clearly illustrated in Figures 3 and 4, the independent element 15 is equipped with means 17 for connecting the rod segments 9a, 9b to the drive components 5.

[0021] These connecting means may consist of a cylindrical pin 17 made as one on a bottom surface of the main part 15 and, during use, protruding into the tubular

groove 7.

[0022] The pin 17 engages the drive components comprising a bar 5 protruding from the handle body 3 and having an open-ended slot 5a at the free end of it to form a fork that engages the pin 17: in this way, moving the handgrip 4 causes the bar 5 to slide (in known manner in the direction indicated by the arrow F1) which in turn causes the pin 17 - part 15 and rod segments 9a and 9b to slide also and the door or window to change to the open or closed configuration.

[0023] The main part 15 also has, on its upper surface 15a, a central wall 28, extending in a direction perpendicular to the upper surface 15a and defining a stop for positioning the respective opposite ends of the rod segments 9a and 9b in the channel 11.

[0024] The central wall 28 has in turn a second upper wall 29 extending transversally to the central wall 28 and abutting, during use, against the L-shaped tabs 11a and 11b of the profile defining the walls of the channel 11, thus forming the support for the rest of the main part 15 suspended on the second slot 13 in the channel 11.

[0025] As illustrated in Figure 3, the second wall 29 extends in a direction parallel with the main part 15 (forming, with the central wall 28, a sort of T) and is located at a distance D from the part 15 that is at least equal to the thickness S of the rod segments 9a, 9b in such a way as to form a partial seat for securely and bilaterally accommodating the ends of the rod segments 9a, 9b.

[0026] The above mentioned locking means 16 may comprise a secondary part 16a defining a plug that has, at the bottom of it, a pair of locking pins 18, 19 which, during use, engage respective holes 20, 21, 22, 23 made in the rod segments 9a, 9b and in the main part 15 positioned over each other in pairs in such a way as to join the rod segments 9a, 9b to the main part 15.

[0027] When these holes are engaged, the secondary part 16a abuts slidably against the above mentioned tabs 11a, 11b.

[0028] As illustrated in Figures 8 and 9, each pin 18 and 19 has, at the free end, a central slot 24 forming two semi-cylindrical, elastically deformable tabs 24a, 24b and two radial protrusions 25, 26 on the tabs 24a, 24b: this structure enables the pins 18 and 19 to slide in the holes 20, 21, 22, 23 and permits relative locking, by interference, in the holes 22, 23 in the main part 15.

[0029] The holes 22, 23 in the main part 15 are made partly also on two bottom extensions 27 on the main part 15 and protruding into the tubular groove 7.

[0030] As shown also in Figure 4, the second wall 29 forms, with its upper surface, a limit stop against which the secondary part 16a abuts when the part 15 and the rods 9a, 9b are locked relative to each other.

[0031] Therefore, basically, this operating unit is fitted, after the two slots 8 and 13 have been made, by positioning the main part 15 at the second slot 13 and with the pin 17 housed inside the tubular groove 7. In the meantime, one or both the rod segments 9a, 9b, with the latching devices 10 adapted on them on the spot by the

installer can be slid into the channel 11 (see Figure 5).

[0032] Next, the rod segments 9a, 9b can be slid towards each other so that they abut against the central wall 28 of the part 15 (arrow F2, Figure 6) in such a way as to position the holes 20, 21, 22, 23 over each other.

[0033] Lastly, the secondary part 16a is applied in order to securely fasten the main part 15 and the rod segments 9a, 9b (see Figures 3 and 7 and arrow F3). The handle can then be applied to the first surface 6 of the door or window 1 in such a way as to connect the bar 5 to the pin 17 (see Figures 2 and 10).

[0034] Confirming the validity and versatility of the solution described above, Figure 11 shows an operating unit with the characteristics described above, but in which the drive components 5 comprise at least two bars 200 and 201, protruding from the handle body 3, and acting on the respective rod segments 9a and 9b in such a way as to allow their independent movement towards and away from one another (see arrows F200 and F201), and to achieve several door or window 1 configurations (for example turning opening, closed, tilting opening).

[0035] In this solution, there are two rod segments 9a and 9b, opposite and separate from one another, and each connected to a relative independent element 150, 151 which can be connected to a corresponding operating component 200, 201 on the handle body 3.

[0036] In addition there are the reciprocal locking means, in this in case two, labelled 160 and 161, acting between each of the segments 9a and 9b and the relative independent element 150, 151 to allow stable coupling of the segments 9a and 9b to the corresponding independent element 150, 151.

[0037] These independent elements each consist of a flat main part 150, 151 designed to be slidably positioned in the channel 11 and having at least one upper abutting surface 150a, 151a for slidably positioning a portion of the relative rod segment 9a, 9b.

[0038] The locking means 160, 161 are designed to be applied to the upper surface 150a, 151a of each main part 150, 151 and to the portion of each rod segment 9a, 9b.

[0039] Each main part 150, 151 has a second surface 150b, 151b or protrusion free of the relative segment 9a, 9b, extending outwards in a tapered fashion and able to match and engage in the free space formed by the corresponding tapered second surface 150a, 151b of the other main part 150, 151 when the two rod segments 9a, 9b are as close as possible to one another.

[0040] In other words, a neutral portion of each of the main parts 150, 151 is shaped to allow the other to move as close as possible during the stroke in which the rod segments 9a, 9b move towards one another: in this way the rod segment 9a, 9b movements are not limited by the elements connecting the segments to the operating components 200, 201, but secure stability is maintained relative to sliding along the channel 11.

[0041] In addition, each independent element 150, 151 is equipped with means 170, 171 for connecting the rod

segments 9a, 9b to the drive components 200, 201.

[0042] Each of these connecting means consists of a cylindrical pin 170, 171 made as one on a lower surface of the corresponding main part 150, 151 forming the independent element and during use protruding into the tubular groove 7, in such a way as to engage the drive components which, as in the solution with a single component, consist of a pair of bars 200, 201 protruding from the handle body 3 (illustrated with a dashed line), and each having a open-ended slot 200a, 201a at the free end of it forming a fork which engages the relative pin 170, 171.

[0043] The above mentioned locking means 160, 161 comprise a pair of secondary parts 160a, 161a defining a clip or plug, each having at the bottom of it, a locking pin 180, 190 (similar to those previously illustrated) which, during use, engage in respective holes 210, 220 made in each of the rod segments 9a, 9b and in the relative main part 150, 151 positioned over each other in pairs in such a way as to join each rod segment 9a, 9b to the relative main part 150, 160.

[0044] Again, when each of the parts and the rods are engaged, each secondary part 160a, 161a abuts slidably against the above mentioned tabs 11a, 11b forming the channel 11.

[0045] The operating unit made as described above thus achieves the above mentioned aims thanks to an extremely simple and effective set of components which makes it possible to use traditional accessories to operate the opening and closing systems of outward opening doors or windows.

[0046] This is accomplished by a simple, practical and extremely reliable structure for connecting the drive components to the operating components without increasing the number of parts and without requiring excessive processes on the door or window: this in turn permits economic savings on the production of the doors or windows and on the management of the stocks of accessories required.

[0047] The invention described is suitable for many industrial applications and may be modified and adapted in several ways without thereby departing from the scope of the inventive concept. Moreover, all the details of the invention may be substituted by technically equivalent elements.

Claims

1. An operating unit for doors or windows, especially outward opening doors or windows (1); the operating unit (2) on the doors or windows (1) being **characterised in that** it comprises at least:

- a handle body (3), from one side of which there protrudes a handgrip (4) designed to operate drive components (5) that protrude from the opposite side of the handle body (3); the handle

- body (3) being applicable to a first door or window (1) sash (1a) surface (6) forming a wall of a tubular groove (7) of the frame profile of the door or window (1) and having at least a first slot (8) through which the drive components (5) can be inserted into the tubular groove (7);
- means (9a, 9b) designed to operate door or window (1) latching devices (10) and slidably engaged in a channel (11) made in a second surface (12) of the door or window sash (1a), contiguous with and at an angle to the first surface (6), and having a second slot (13) through which the operating means (9a, 9b) can be connected to the drive components (5) inside the tubular groove (7) so as to enable the door or window (1) to be at least opened and closed by moving the handgrip (4);
 - an independent connecting element (15) slidably positioned in the channel (11) at the second slot (13) in such a way as to securely fasten at least one rod segment (9a, 9b), constituting the operating means, to the drive components (5).
2. The operating unit according to claim 1, **characterised in that** the independent element (15) has securely fastened to it two separate and opposite rod segments (9a, 9b).
 3. The operating unit according to claims 1 and 2, **characterised in that** it comprises reciprocal locking means (16) acting between each of the segments (9a, 9b) and the independent element (15) in order to enable the segments (9a, 9b) to be securely coupled to the independent element (15).
 4. The operating unit according to claims 1 to 3, **characterised in that** the independent element consists of a flat main part (15) designed to be slidably positioned in the channel (11) and having at least one upper abutting surface (15a) for slidably positioning a portion of each of the rod segments (9a, 9b); the locking means (16) being designed to be applied to the upper surface (15a) of the main part (15) and to the portion of each rod segment (9a, 9b).
 5. The operating unit according to claims 1 to 3, **characterised in that** the independent element (15) is equipped with means (17) for connecting the operating means (9a, 9b) to the drive components (5); these connecting means consisting of a cylindrical pin (17) made as one on a bottom surface of a main part (15) forming the independent element and, during use, protruding into the tubular groove (7) in such a way as to engage the drive components comprising a bar (5) protruding from the handle body (3) and having an open-ended slot (5a) at the free end of it to form a fork that engages the pin (17).
 6. The operating unit according to claims 1 to 4, **characterised in that** the locking means (16) comprise a secondary part (16a) defining a plug that has, at the bottom of it, a pair of locking pins (18, 19) which, during use, engage respective holes (20, 21, 22, 23) made in the rod segments (9a, 9b) and in the main part (15) positioned over each other in pairs in such a way as to join the rod segments (9a, 9b) to the main part (15); the secondary part (16a) abutting slidably against the channel (11) tabs (11a, 11b) when said pins and holes are engaged.
 7. The operating unit according to claim 6, **characterised in that** each pin (18, 19) has, at the free end, a central slot (24) forming two semi-cylindrical, elastically deformable tabs (24a, 24b) and two radial protrusions (25, 26) on the tabs (24a, 24b) in such a way as to enable sliding in the holes (20, 21, 22, 23) and relative locking, by interference, in the holes (20, 21, 22, 23) in the main part (15).
 8. The operating unit according to claims 6 and 7, **characterised in that** the holes (22, 23) in the main part (15) are made in two extensions (27) at the bottom of the main part (15) and protruding into a tubular groove (7).
 9. The operating unit according to claims 1 to 4, **characterised in that** the main part (15) has, on its upper surface (15a), a central wall (28), extending in a direction perpendicular to the upper surface (15a) and defining a stop for positioning the respective opposite ends of the rod segments (9a, 9b) in the channel (11).
 10. The operating unit according to claim 9, **characterised in that** the central wall (28) has a second upper wall (29) extending transversally to the central wall (28) and abutting, during use, against the L-shaped tabs (11a, 11b) of the profile defining the walls of the channel (11), thus forming the support for the rest of the main part (15) suspended on a second slot (13) in the channel (11).
 11. The operating unit according to claim 10, **characterised in that** the second wall (29) extends in a direction parallel with the main part (15) and is located at a distance (D) from the part (15) that is at least equal to the thickness (S) of the rod segments (9a, 9b) in such a way as to form a partial seat for securely and bilaterally accommodating the ends of the rod segments (9a, 9b).
 12. The operating unit according to claims 9 to 11, **characterised in that** the second wall (29) forms, with its upper surface, a limit stop against which a secondary part (16a) that forms means (16) for locking the main part (15) to the rod segments (9a, 9b) abuts

when these parts are locked relative to each other.

13. The operating unit according to claim 1, wherein the drive components (5) comprise at least two bars (200, 201) protruding from the handle body (3) and acting on respective rod segments (9a, 9b) in such a way as to allow their independent movement towards and away from one another, enabling several door or window (1) configurations, the unit comprising at least two rod segments (9a, 9b), opposite and separate from one another, and each connected to a relative independent element (150, 151) which can be connected to a corresponding operating component (200, 201) on the handle body (3). 5
14. The operating unit according to claim 13, **characterised in that** it comprises reciprocal locking means (160, 161) acting between each of the segments (9a, 9b) and the relative independent element (150, 151) to enable the segments (9a, 9b) to be securely coupled to the corresponding independent element (150, 151). 10
15. The operating unit according to claim 13, **characterised in that** each independent element consists of a flat main part (150, 151) designed to be slidably positioned in the channel (11) and having at least an upper abutting surface (150a, 151a) for slidably positioning a portion of the relative rod segment (9a, 9b); the locking means (160, 161) being designed to be applied to the upper surface (150a, 151a) of each main part (150, 151) and to the portion of each rod segment (9a, 9b). 15
16. The operating unit according to claim 15, **characterised in that** each main part (150, 151) has a second surface (150b, 151b) or protrusion free of the relative segment (9a, 9b) and extending outwards in a tapered fashion and able to match and engage in the free space formed by the corresponding tapered second surface (150a, 151b) of the other main part (150, 151) when the two rod segments (9a, 9b) are as close as possible to one another. 20
17. The operating unit according to claims 13, **characterised in that** each independent element (150, 151) is equipped with means (170, 171) for connecting the relative rod segments (9a, 9b) to the drive components (200, 201); these connecting means consisting of a cylindrical pin (170, 171) made as one on a bottom surface of the main part (150, 151) forming the independent element and, during use, protruding into a tubular groove (7) in such a way as to engage the drive components comprising a pair of bars (200, 201) protruding from the handle body (3) and each having an open-ended slot (200a, 201a) at the free end of it to form a fork that engages the relative pin (170, 171). 25
18. The operating unit according to claims 13 and 14, **characterised in that** the locking means (160, 161) comprise a pair of secondary parts (160a, 161a) defining a clip or plug, each having at the bottom of it, a locking pin (180, 190) which, during use, engages respective holes (210, 220) made in each of the rod segments (9a, 9b) and in the relative main part (150, 151) positioned over each other in pairs in such a way as to join each rod segment (9a, 9b) to the relative main part (150, 160); each secondary part (160a; 161a) abutting slidably against the channel (11) tabs (11a, 11b) when said pins and holes are engaged. 30

FIG. 1

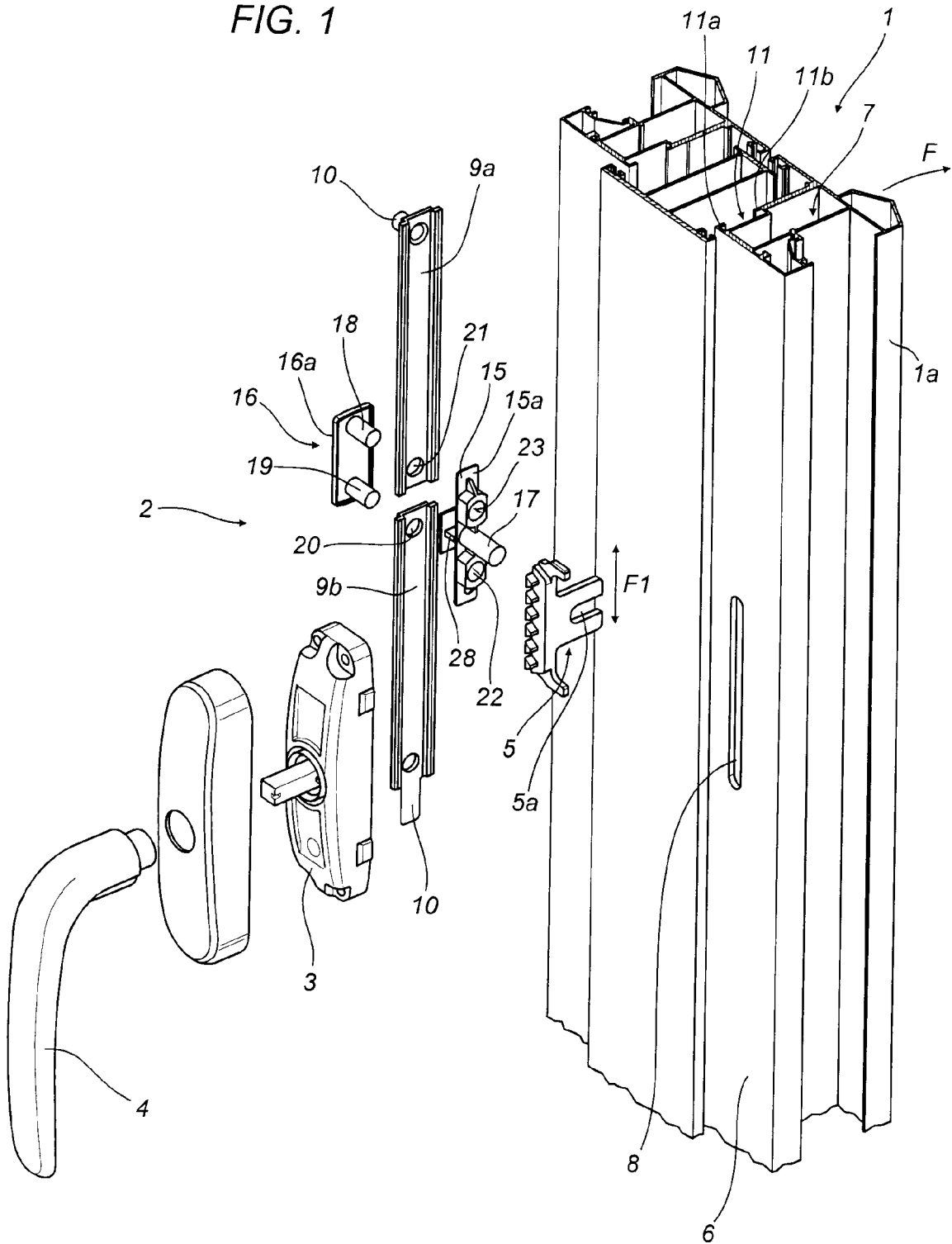


FIG. 2

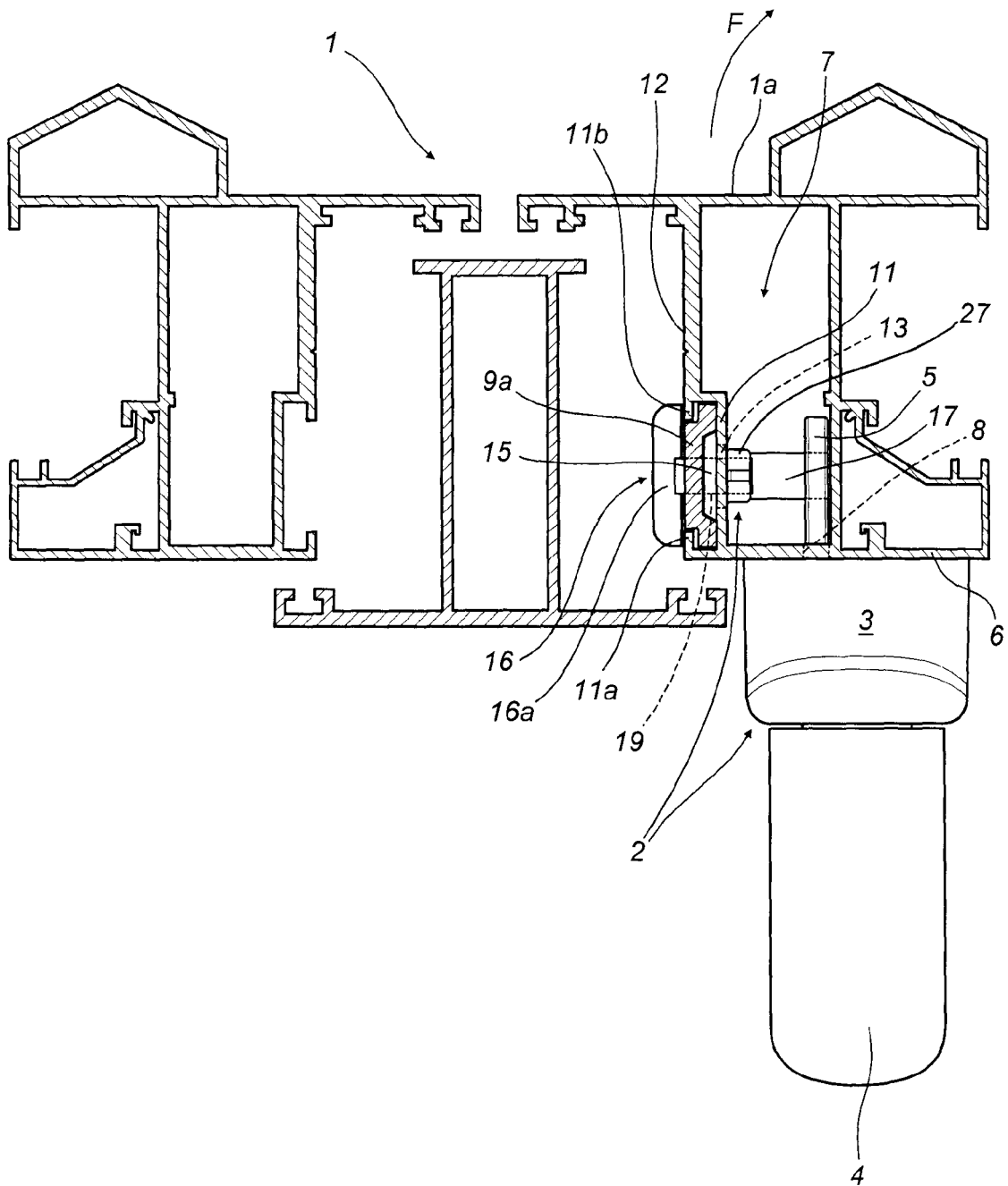


FIG. 3

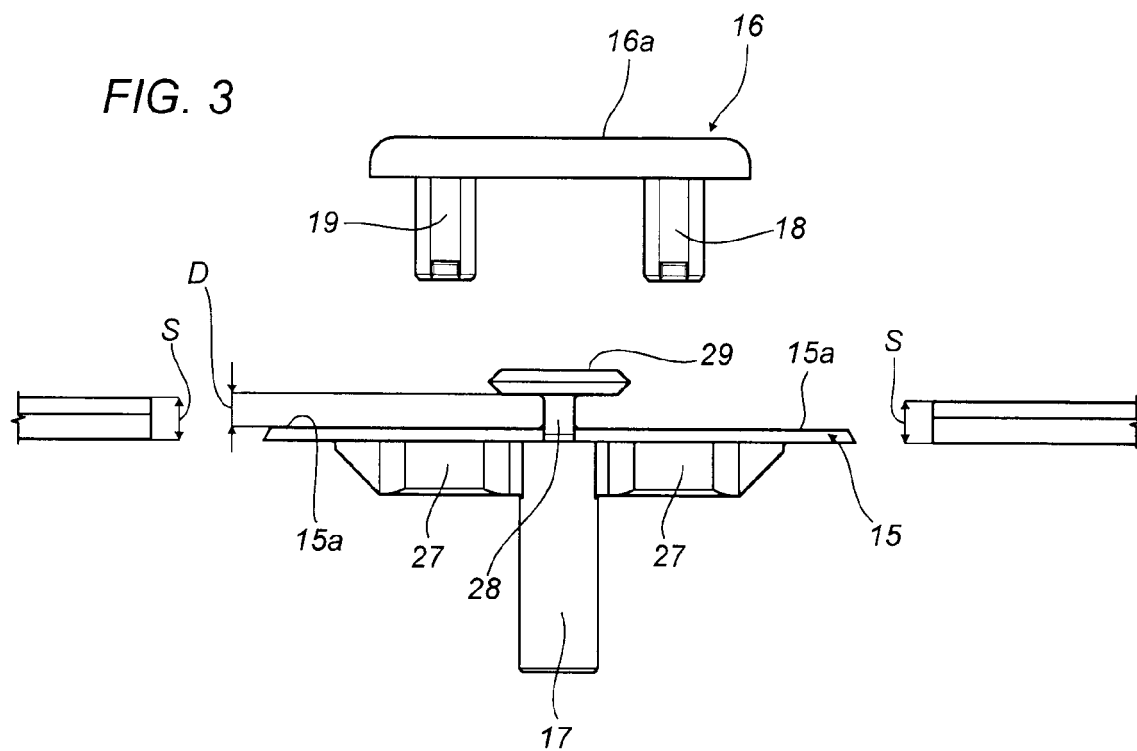


FIG. 4

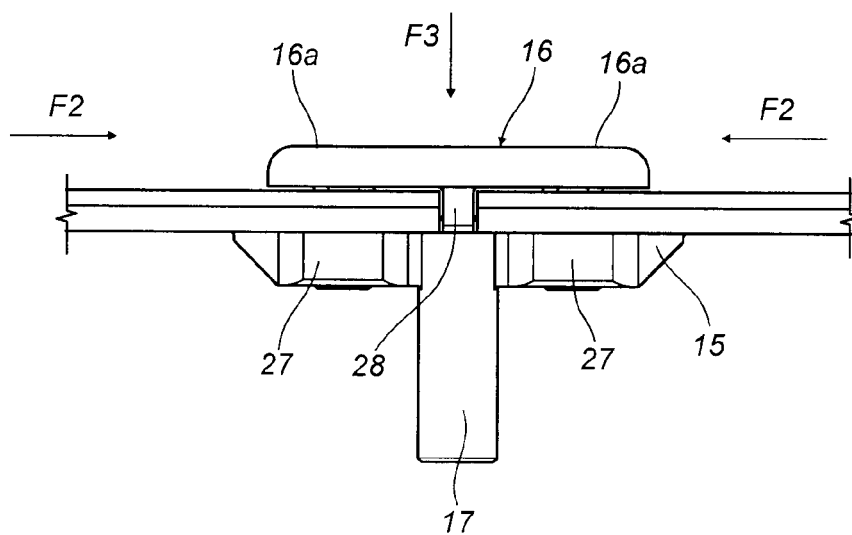


FIG. 5

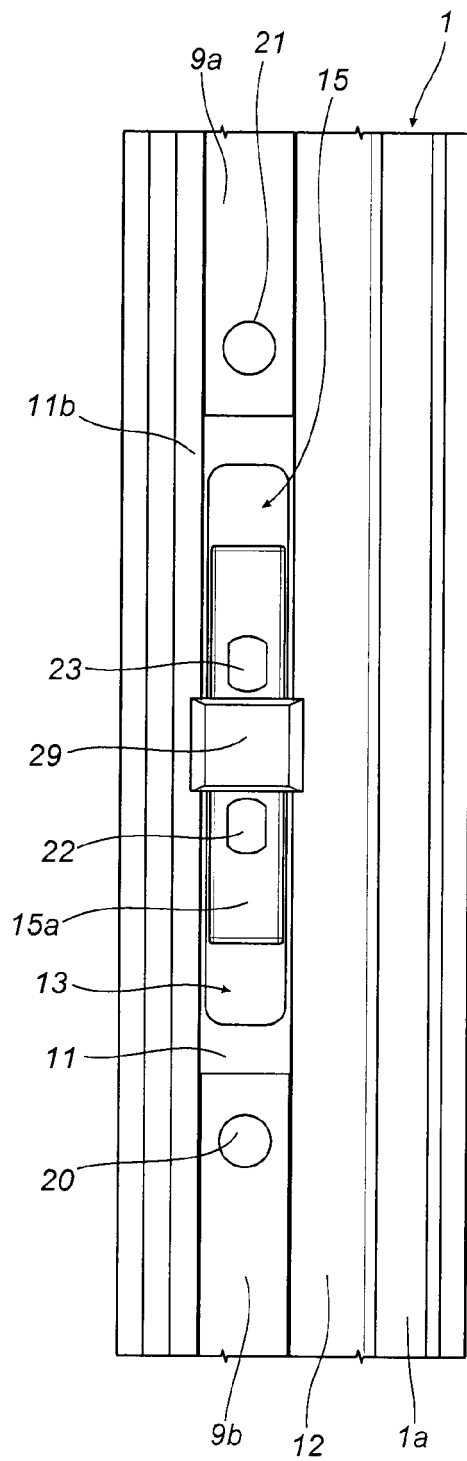


FIG. 6

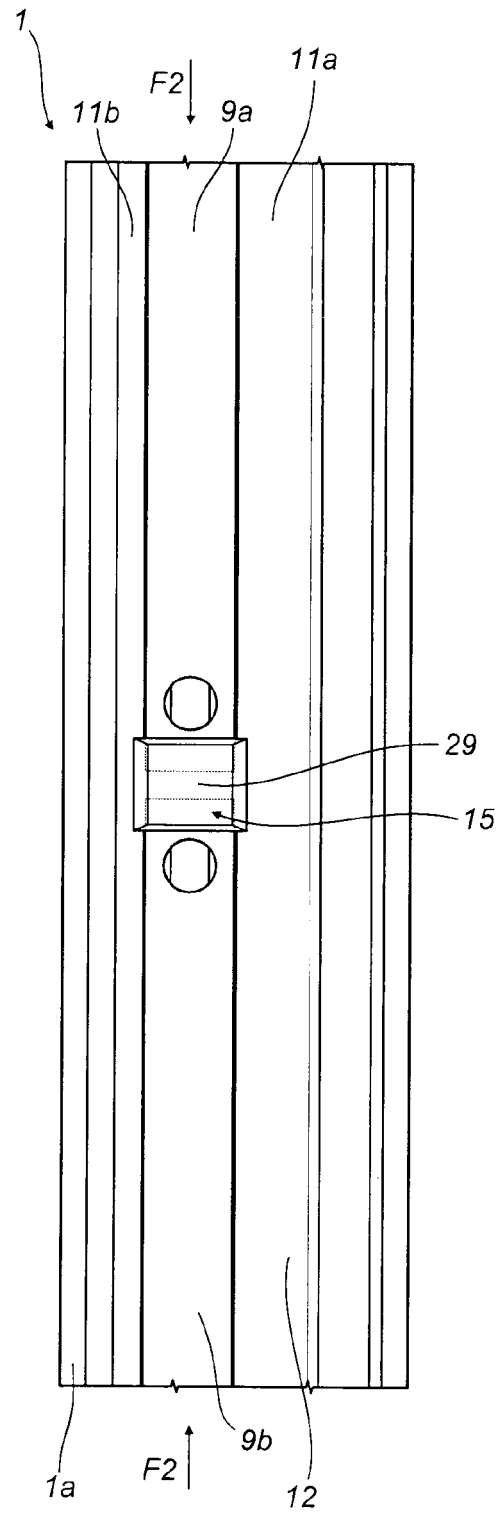


FIG. 7

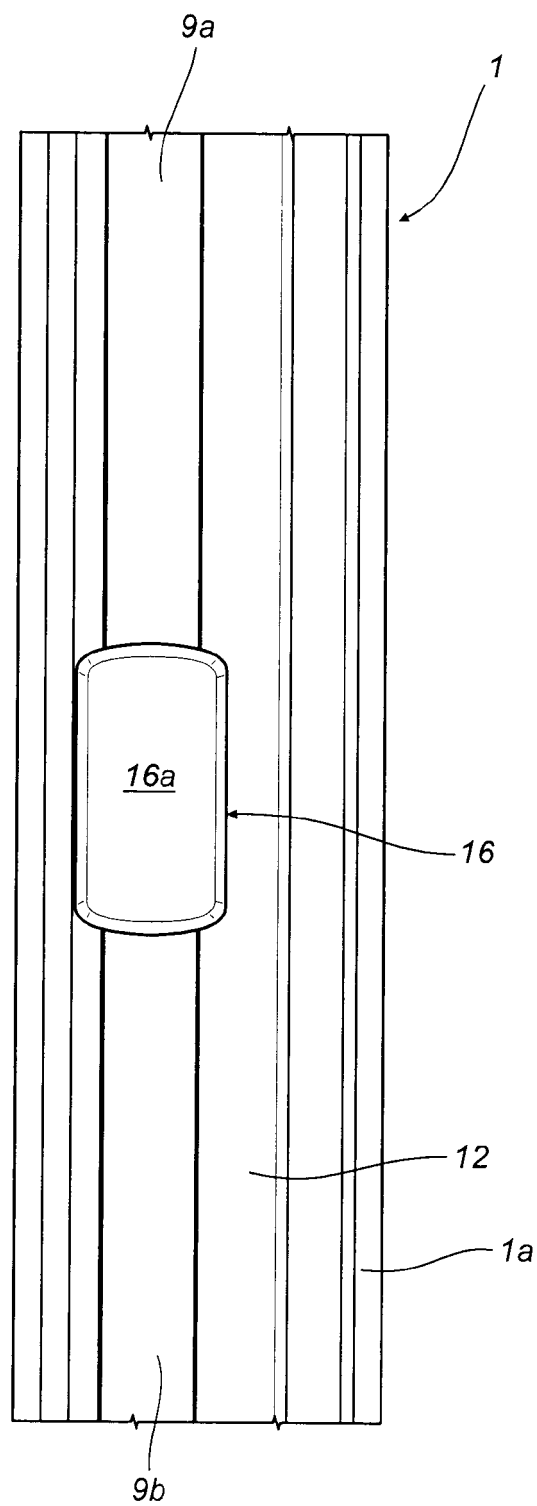


FIG. 8

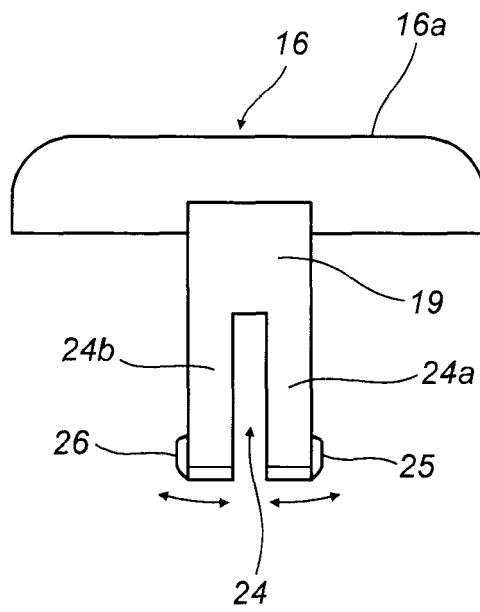


FIG. 9

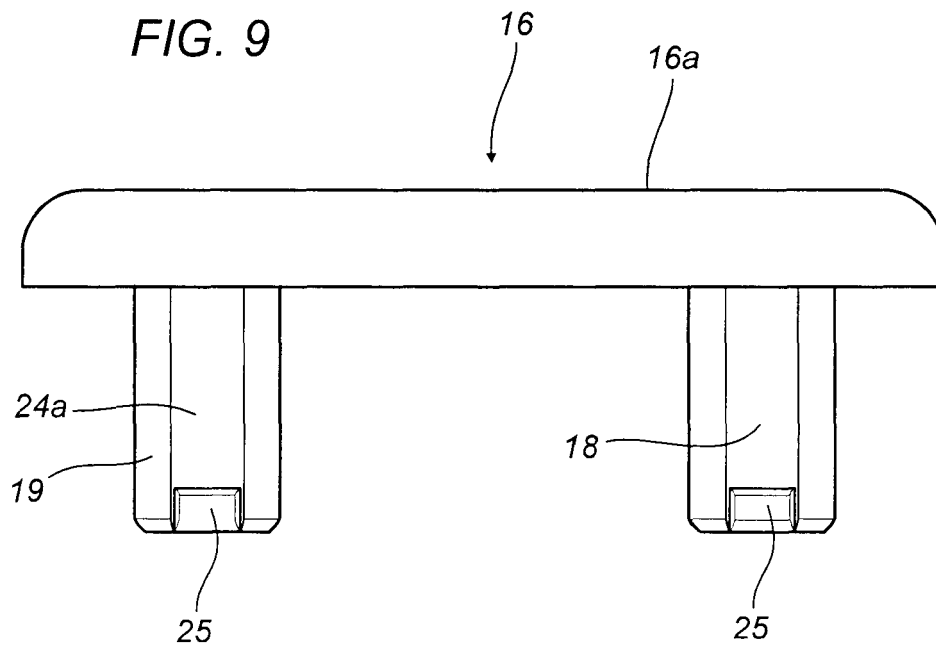


FIG. 10

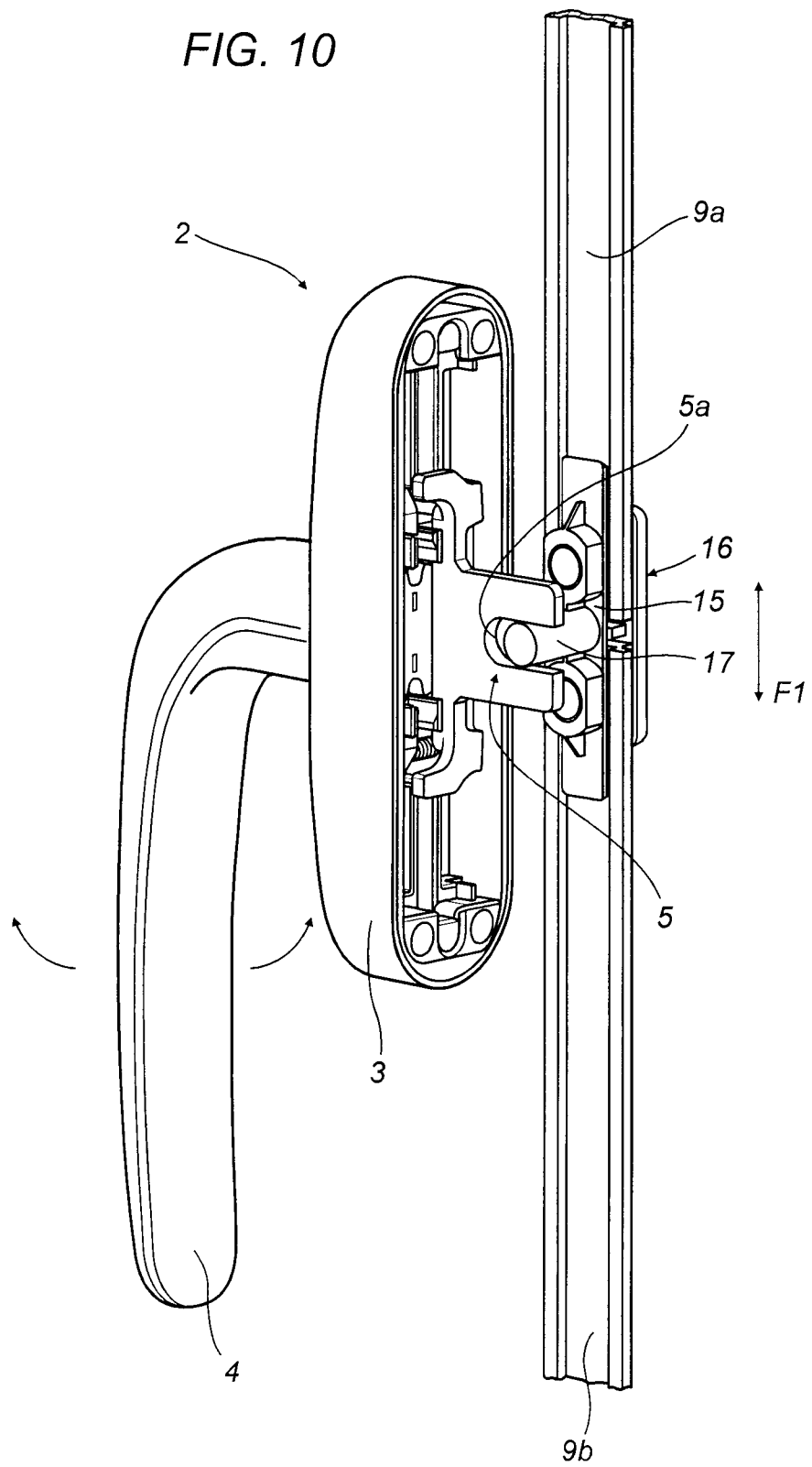


FIG. 11

