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(54) **Control and operating unit for sliding doors or windows**

(57) A control and operating unit for sliding doors or windows comprises: a mounting member (2) which can be associated with the inside of the edge profile of a sash upright (3) defined by a main groove (4) delimited by two longitudinal walls (5, 6) of the upright (3); a control box (7) associated with the mounting member (2), equipped with a housing (8) for receiving the shaft (9) of a handle (10) and with a kinematic unit which transmits the movement imparted by the handle (10) and which is connected to an operating rod (11) positioned along and parallel to the mounting member (2) and movable in both directions relative to the selfsame mounting member (2); fastening means (14) by which the mounting member (2) is joined to the sash and which are configured to fix the mounting member (2) to the inside of the main groove (4) also by abutment against a pair of opposed flanges (15, 16) protruding transversely from the walls of the upright (3) and defining a secondary, inner channel (17) together with the bottom wall (18) of the main groove (4); these fastening means (14) by which the mounting member (2) is joined to the upright (3) comprise: a spacer element (19) associated with, and protruding from, the mounting member (2); a plug (22) for positioning and centring the mounting member (2) in the main groove (4), configured to be stably coupled to the spacer element (19) before being housed in the main groove (4); the plug (22) has a pair of wings (24, 25) which are flexible so that, in use, they can be inserted by elastic deformation into the secondary groove (17) from the front and so that at least part of the plug (22) can then be stably housed in the selfsame secondary channel (17).

FIG.1

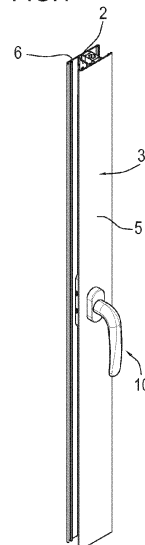
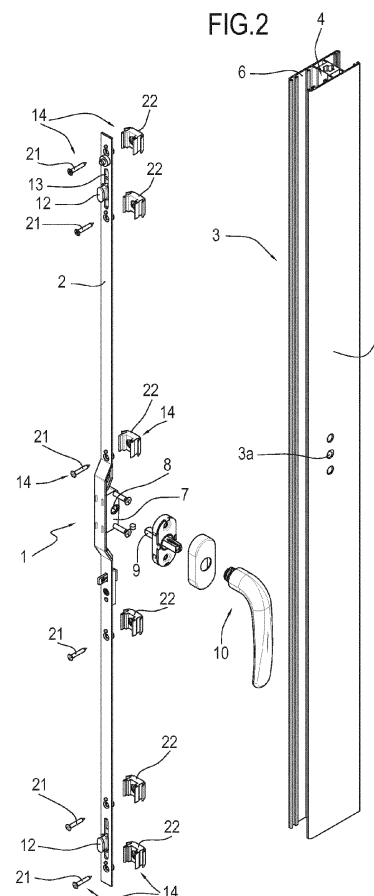


FIG.2



Description

[0001] This invention relates to a control and operating unit for sliding doors or windows.

[0002] In the technical field of sliding doors or windows with frames of aluminium or PVC, to which wooden coverings may be applied, if necessary, hardware known in the jargon of the trade as "multi-point locking hardware" is widely used.

[0003] This term denotes the control and operating unit applied to the upright of the door or window sash.

[0004] This control and operating unit essentially comprises:

- a suitably shaped rod-like mounting member which is associated, frontally, with the inside of a main groove defined by two longitudinal walls of an upright of the sash to form a sort of wall which partly closes the front of the upright;
- a control box fixed centrally to the first member and equipped with a housing for receiving the shaft of a handle and with a kinematic unit for transmitting the movement imparted by the handle to
- an operating rod positioned along and parallel to the first member, movable in both directions relative to the selfsame mounting member and connected to the kinematic unit of the control box.

[0005] Associated with the operating rod there are one or more bosses or closing members protruding from corresponding slots made in the rod-like member, to be engaged, in use, with striker elements fixed to the front of the upright of the fixed frame of the door or window (opposed to the upright of the sash).

[0006] The operating unit made in this way must be mounted inside the edge profile of the sash by housing it in the main groove formed by the side walls of the sash upright.

[0007] The main groove comprises at least two flanges projecting transversely from the side walls of the sash upright to define a pair of undercuts forming a longitudinal secondary channel.

[0008] Substantially, the main groove must contain (that is, hide) the control box and the movable operating rod thanks to the presence of the main member which, after assembly, constitutes the front wall which remains in view.

[0009] At present, the entire unit is fixed in the groove using suitably configured striker plates inserted longitudinally along the secondary channel.

[0010] After they have been housed in the secondary channel, the control and operating unit is placed in the main groove to be able to centre the corresponding perforated housings relative to the striker plates already inserted in the secondary channel.

[0011] After centring, the unit is fixed to the sash upright using screws inserted through the bottom face of the profile groove: the plates enable the unit to be held in place

transversely and partly frontally (done mainly by the screws) by abutting against the flanges which define the channel.

[0012] This type of solution for fixing the control and operating unit has some disadvantages, however.

[0013] It should be noted first of all that the control and operating unit must be centred correctly relative to two distinct reference points:

- the width calculated on the bottom face of the main groove;
- the housing in the control box relative to a transversal through hole made in a side wall of the upright and into which the handle control shaft is inserted.

[0014] The first centring reference for the unit is necessary for correct alignment relative to the striker elements located on the upright of the fixed frame. The second reference, correlated also with the first reference, is necessary for correct connection of the control box to the handle used to drive the movable rod.

[0015] Based on this, the installer must house all the striker plates in the secondary channel and must position the plates one by one along the groove, correlating them both with the position of the hole in the mounting member and with the above mentioned centring references, by pre-tightening the fixing screws.

[0016] This operation thus requires considerable time and effort and is not always precise for the final assembly of the door or window: this increases the overall cost of the door or window and makes the operation of the operating unit potentially less durable in time.

[0017] To this must be added the warehouse costs for storing separately the components needed for all the different door or window profiles currently available on the market.

[0018] Another disadvantage of this control and operating unit is the low mechanical durability of the coupling between the striker plates and the mounting member.

[0019] This invention has for an aim to provide a control and operating unit for sliding doors or windows that overcomes the above mentioned disadvantages of the prior art.

[0020] More specifically, it is an aim of this invention to provide a control and operating unit for sliding doors or windows which can be easily and precisely fitted on a sash.

[0021] A further aim of the invention is to provide a control and operating unit for sliding doors or windows which has good mechanical durability and maintains its serviceability over time.

[0022] These aims are fully achieved by the control and operating unit for sliding doors or windows which constitutes the object of this invention, as characterized in the appended claims.

[0023] More specifically, the control and operating unit for sliding doors or windows comprises: a mounting member which can be associated with the inside of the edge

profile of an upright of the sash; a control box associated with the mounting member, equipped with a housing for receiving the shaft of a handle and with a kinematic unit which transmits the movement imparted by the handle and which is connected to an operating rod positioned along and parallel to the mounting member and movable in both directions relative to the selfsame mounting member; fastening means by which the mounting member is joined to the sash and which are configured to fix the mounting member to the inside of the main groove also by abutment against a pair of opposed flanges protruding transversely from the walls of the upright and defining a secondary, inner channel together with the bottom wall of the main groove.

[0024] According to the invention, these fastening means by which the mounting member is joined to the upright comprise: a spacer element associated with, and protruding from, the mounting member.

[0025] Also according to the invention, the fastening means comprise a plug for positioning and centring the mounting member in the main groove, configured to be stably coupled to the spacer element before being housed in the main groove.

[0026] Again according to the invention, the plug has a pair of wings which are flexible so that, in use, they can be inserted by elastic deformation into the secondary channel from the front and so that at least part of the plug can then be stably housed in the selfsame secondary channel.

[0027] According to the invention, the plug has a cavity configured to be stably coupled with the spacer element.

[0028] Thanks to the spacer and plug applied to the mounting member, the control and operating unit can be applied to the mounting member quickly and easily without having to perform any other operations before fitting the sash.

[0029] The flexible wings allow the unit to be quickly fitted to the sash, while simultaneously giving the certainty that the unit is fixed securely and at the correct position inside the groove.

[0030] These possibilities also make it quicker to carry out the subsequent steps of alignment with the handle because all that needs to be done is to slide the unit along the secondary channel and fix it in place with screw means. These and other features of the invention will become more apparent from the following detailed description of a preferred, non-limiting example embodiment of it, with reference to the accompanying drawings, in which:

- Figure 1 is a perspective view of an upright of a sliding sash of a door or window to which the control and operating unit of the invention is applied;
- Figure 2 is an exploded, perspective view of the upright and control and operating unit of Figure 1;
- Figure 3 is a top plan view, with some parts cut away to better illustrate others, of the upright and control and operating unit of Figure 1;

- Figure 4 illustrates in a perspective view a detail of one end of the control and operating unit of the preceding figure, with some positioning plugs to be coupled to a mounting member;
- Figure 5 illustrates in a perspective view a detail of one end of the control and operating unit of the preceding figure, with some positioning plugs coupled to a mounting member;
- Figure 6 is a top plan view, with some parts cut away to better illustrate others, of a second embodiment of the upright and control and operating unit;
- Figures 7 to 10 illustrate the plug of Figures 1 to 5 in a front view, a top plan view, a bottom plan view and a side view, respectively;
- Figures 11 and 12 are both perspective views illustrating a variant embodiment of the plug of the preceding figures in a configuration before assembly and in a configuration after assembly;
- Figures 13 to 17 are top plan views, with some parts in cross section and others cut away, illustrating a sequence of steps in the assembling of the control unit using the plug of Figures 11 and 12.

[0031] As illustrated in the accompanying drawings, and with reference in particular to Figures 1 and 2, the control and operating unit of the invention (denoted in its entirety by the numeral 1) is applicable to sliding doors and windows which use profiles, for example, known as Euro groove, made of metallic materials such as aluminium or synthetic materials such as PVC, with which wood can be combined in the case of both of these materials.

[0032] The control and operating unit 1 comprises a mounting member 2 which can be associated, in use and frontally, with the inside of the edge profile of an upright 3 of the sash, defined by a main groove 4 delimited by two longitudinal walls 5 and 6 of the upright 3 of the sash of the door or window (not illustrated because it does not strictly form part of the invention).

[0033] It should be noted that the mounting member 2 is an elongate plate made as a single piece (to define a rod-like member) whose length is variable as a function of the type of sash it is applied to.

[0034] Further, the mounting member 2 (as will become clearer as this description continues) is suitably shaped and machined to be able to apply the other operating elements of the unit 1 to it so that it can be applied to the sash.

[0035] The control and operating unit 1 also comprises a control box 7 associated with the mounting member 2, equipped with a housing 8 for receiving the shaft 9 (usually square in section) of a handle 10 and with a kinematic unit which transmits the movement imparted by the handle 10 and which is connected to an operating rod 11.

[0036] It should be noted that the shaft 9 passes through a wall of the upright 3 by way of a through hole 3a made in one of the walls 5 or 6.

[0037] The operating rod 11 is positioned along and parallel to the mounting member 2 and is movable in both

directions relative to the selfsame mounting member 2.

[0038] It should be noted that the operating rod 11 is provided with at least one closing member 12 protruding from a corresponding slot 13 formed in the mounting member 2 to be engaged, in use, with a striker element located on the front of the upright of the fixed frame of the door or window (the striker element is not illustrated because it does not strictly form part of the invention).

[0039] The control and operating unit 1 also comprises fastening means 14 by which the mounting member 2 is joined to the sash and which are configured to fix the mounting member 2 to the inside of the main groove 4 also by abutment against a pair of opposed flanges 15, 16 protruding transversely from the walls of the upright 3 and defining a secondary, inner channel 17 together with the bottom wall 18 of the main groove 4.

[0040] According to the invention, the fastening means 14 by which the mounting member 2 is joined to the upright 3 comprise a spacer element 19 associated with, and protruding from, the mounting member 2 on the side of it opposite to that from which the closing member 12 protrudes.

[0041] Also according to the invention, the fastening means 14 comprise a plug 22 for positioning and centring the mounting member 2 in the main groove 4, configured to be stably coupled to the spacer element 19 before being housed in the main groove 4. According to the invention, the plug 22 has a pair of wings 24 and 25 which are flexible so that, in use, they can be inserted by elastic deformation into the channel 17 from the front and so that at least part of the plug 22 can then be stably housed in the selfsame secondary channel 17.

[0042] In a first constructional embodiment, the spacer element 19 has a through hole 20 for a screw element 21 for fastening the mounting member 2 to the upright 3.

[0043] Preferably, the plug 22 has a hole 23 made in it for the screw element 21.

[0044] In light of this, the coupling between the spacer 19 and the plug 22 causes the corresponding holes 20 and 23 to be positioned coaxially so that the screw element 21 can pass right through them in order to fasten the mounting member 2 to the bottom wall 18 of the main groove 4.

[0045] Also according to the invention, the plug 22 has a cavity 26 configured to be stably coupled with the spacer element 19.

[0046] Preferably, the cavity 26 is formed in it which is shaped to match the spacer element 19 in order to be stably coupled thereto.

[0047] In light of this, the cavity 26 is centrally located and is formed around the hole 23 in the plug 22.

[0048] Preferably, depending on the length of the mounting member 2, the control and operating unit 2 comprises at least two spacer elements 19 and two plugs 22 located at the corresponding ends of the mounting member 2. For example, Figure 2 shows a control and operating unit with six spacer elements 19 and six plugs 22.

[0049] Preferably (see Figures 3, 6 and from 7 to 10) one portion of the plug 22 is configured to also house a part of the mounting member 2 above the cavity 26 which houses the spacer element 19.

[0050] In light of this, that portion of the plug 22 is provided with snap fastening means 27 and 28 for engaging and retaining the mounting member 2 on both sides.

[0051] More in detail, the engagement and retaining means comprise a pair of opposed teeth 27 and 28 formed on a pair of vertical walls 29 of the plug 22: that way, the teeth 27 and 28 define flexible undercuts for stably snap fastening the mounting member 2 to the plug 22 on both sides.

[0052] In a first embodiment, shown in Figure 3, the flexible wings 24 and 25 of the plug 22 are formed at the base of the plug 22 and on two opposite, parallel sides of the selfsame plug 22.

[0053] It should be noted that the pair of flexible wings 24 and 25 is configured to form a corresponding wall extending outwards from the plug 22 (that is to say, they form a sort of "V" with the ends extending away from the plug 22) and in such a way as to vary, or reduce, the gap between them so as to allow the plug 22 to pass through to the other side of the pair of flanges 15 and 16 forming the secondary channel 17 where they then snap back to their original, stable shape and are locked inside the channel 17 (as shown in Figure 3).

[0054] In an alternative embodiment (see Figure 6), the flexible wings 24, 25 of the plug 22 are a direct extension of the vertical walls 29 of the plug 22 itself.

[0055] In light of this, the pair of flexible wings 24 and 25 is configured to form a corresponding wall extending outwards from the plug 22 in such a way as to vary, or reduce, the gap between them so as to allow the plug 22 to pass through to the other side of the pair of flanges 15 and 16 forming the secondary channel 17 where they then snap back to their original, stable shape and are locked inside the channel 17 itself.

[0056] Preferably, the flexible wings 24, 25 are configured to make an angle of inclination α with the central axis X of the plug 22 and in a static, furthest apart configuration sufficient to at least come into abutment, in use, with the inside of the flanges 15, 16 of the secondary channel 17 of the profile, and so as to hold the plug 22 within the secondary channel 17. Alternatively, the flexible wings 24, 25 are configured to make an angle of inclination β (greater than the aforementioned angle α) with the central axis X of the plug 22 and in a static, furthest apart configuration sufficient to come into abutment, in use, with the inside of the flanges 15, 16 of the secondary channel 17 at the corner where the selfsame flanges 15, 16 and the profile walls 5, 6 meet, so as to not only hold the plug 22 within the secondary channel 17 but also centre the plug 22 relative to the width of the edge profile of the upright 3 (defined by the bottom wall 18), see Figure 6.

[0057] In an alternative embodiment (see Figure 3), the bottom of the plug 22 has a base portion 30 which

protrudes downwardly and which can be coupled, in use, to a longitudinal indentation 31 formed in the bottom wall 18 of the main groove 4, in such a way as to centre the mounting member 2 relative to the width of the edge profile of the upright 3, that is, of the bottom wall 18.

[0058] Preferably (see Figures 4 and 5), the spacer element 19 has an annular shape and the central cavity 26 formed in the plug 22 has a matching shape, that is, cylindrical, to allow them to be mutually coupled stably. Preferably, the spacer element 19 comprises an elongate member 32 which is integral with the remaining annular portion.

[0059] In light of this, the elongate member 32 extends radially from the annular element to allow it to be stably associated with the mounting member 2 by plastic deformation.

[0060] In essence, the elongate member 32 is provided with a pin 33 which can be coupled in a cavity in the mounting member 2 and locked therein.

[0061] In effect, the pin 33 is riveted in place in such a way as to lock the spacer 19 at the required position.

[0062] Preferably, the plug 22 has a pair of open slots or apertures 34 formed on opposite sides of the central cavity 26.

[0063] These two apertures 34 allow housing the elongate member 32 (protruding from the mounting member 2) and the operating rod 11 (which is also free to slide) if the plug 22 is positioned in a zone where the rod 11 is present. Preferably, each plug 22 is made of a thermally insulating material.

[0064] The plug 22 of insulating material creates a thermal break between the profile and the operating and control unit 1 to improve the overall thermal insulation of the door or window.

[0065] Preferably, for the purposes of correct positioning, the spacer 19 has a predetermined depth or thickness P correlated with the depth or thickness P1 of the body of the plug 22.

[0066] The sum of these two dimensions, of spacer 19 and plug 22, is correlated with the depth P2 of the main groove 4 of the upright 3 in order for the control and operating unit 1 to be correctly positioned in height, once fitted, so that it is always at the correct height both relative to the zone where the shaft 9 of the handle 10 is coupled to the housing 8 of the control box 7, and relative to the striker elements on the fixed frame in order to obtain the correct coupling in use.

[0067] In a second constructional embodiment, the fastening means 14 comprise stabilizing means 100 by which the position adopted by the mounting member 2 on the upright 3 can be fixed.

[0068] The stabilizing means 100 are interposed between the plug 22 and the mounting member 2 and are configured to lift the plug 22 relative to the bottom wall 18 of the secondary channel 17 and to increase the transversal dimension of the plug 22, by elastic deformation, in such a way as to allow the pair of flexible wings 24, 25 to be squeezed against the transversal flanges 15 and

16 of the secondary channel 17 (see Figures 11 to 17).

[0069] Preferably, the stabilizing means 100 (alternative to the use of the screw element 21) comprise (see Figures 11 to 17):

- an opposing plate 101 provided with at least two inclined surfaces 102, 103 for abutment, in use, against matching inside surfaces of an open cavity 104 of the plug 22 and, in use, facing the bottom wall 18;
- a screw element 105 for locking the plug 22.

[0070] In light of this, the screw element 105, in use, passes through the mounting member 2 (by way of the hole 20) and through a front hole 106 of the plug 22 giving onto the cavity 104 which receives the plate 101.

[0071] It should be noted that the open cavity 104 and the front hole 106 are coaxial along the depth of the plug 22.

[0072] The screw element 105 is screwably coupled in a threaded hole 107 of the plate 101 so that the plate 101 is forced into the open cavity 104 and the two facing inside surfaces of the open cavity 104 of the plug 22 are moved apart (see Figure 16).

[0073] In light of this, the opposing plate 101 has the shape of truncated pyramid and the plug 22 has an open cavity 104 which is accordingly shaped to match the plate 101.

[0074] Preferably, the front hole 106 and the open cavity 104 are interrupted along the axial extension of the plug 22 by a pair of parallel clefts 108 located on opposite sides of an axis of longitudinal extension X22 of the plug 22 so as to allow greater elastic deformation of the plug 22 when the plate 101 is forced into it.

[0075] In other words, the plug 22 is partly separated along the middle of it in order to increase its elasticity and to allow large transverse elastic deflection such as to increase its size and the force it applies to the wings 24 and 25.

[0076] Figures 11 and 12 illustrate a further variant embodiment of the plug 22. The plug 22 has three wing sectors 24a, 24b, 24c, 25a, 25b, 25c along its longitudinal extension and two front sectors of the vertical walls 29 (formed at the ends of the plug 22) for snap fitting to the mounting member 2.

[0077] This structure of the plug 22 not only provides a large surface for stable contact with the mounting member 2 but also larger sized wings 24 and 25 allowing a greater opposing force to be applied to the flanges 15 and 16 of the secondary channel 17.

[0078] This invention also provides a method for fitting a control and operating unit 1 for sliding doors or windows.

[0079] The method comprises at least the following steps:

- preparing a control and operating unit 1 comprising at least one mounting member 2, a control box 7

associated with the mounting member 2 and connected to an operating rod 11 which is positioned along and parallel to the mounting member 2 and movable in both directions relative to the selfsame mounting member 2;

- preparing and applying to the mounting member 2 at least one spacer element 19 protruding from the mounting member 2 (Figure 4);
- stably coupling to the spacer element 19 and to the mounting member 2 a plug 22 for positioning and centring the mounting member 2 in the main groove 4; the plug 22 has a pair of flexible wings 24 and 25 (Figure 5);
- housing the control and operating unit 1 in the main groove 4 of the edge profile of the upright 3 and coupling the plug 22 to the secondary channel 17 by elastic deformation of the wings 24, 25 so that at least part of the plug 22 can then be stably housed in the selfsame secondary channel 17 (Figures 3 and 6).

[0080] Preferably, the step of coupling the plug 22, the spacer 19 and the mounting member 2 is achieved by snap fastening.

[0081] Preferably, after the step of housing in the secondary channel 17, the method comprises a step of positioning the unit 1 relative to the hole 3a in the wall 5 or 6 of the upright 3.

[0082] In light of this, the positioning step is achieved by sliding the unit 1 longitudinally in the channel 17 in order to obtain the coupling between the housing 8 of the control box 7 and the shaft 9 of the handle 10. Preferably, after the longitudinal positioning step, the method may comprise a step of fixing the unit 1 in the groove 4.

[0083] This step is achieved by housing screw means 21 in coaxial cavities or holes 2f, 20 and 23 made in the mounting member 2, in the spacer 19 and in the plug 22, respectively.

[0084] Each screw element 21 is forced to be locked in the bottom wall 18 of the groove 4 in order to fix the control and operating unit 1 definitively. Alternatively, the step of fastening the unit 1 using the plug 22 of Figures 11 to 17 comprises, after the step of longitudinal positioning, a step of:

- screwing the screw element 105 (a screw) from the outside of the mounting member 2 in such a way as to lift the plate 101 and the bottom of the plug 22 relative to the bottom wall 18 of the secondary channel 17. Lifting the plate 101 in this way also increases the transversal dimension of the plug 22 (thanks to the special shape of the plate 101 and of the open cavity 104 of the plug 22), by elastic deformation (see arrows, Figure 16) in such a way as to bring the pair of flexible wings 24, 25 into contact with, and squeezed against, the transversal flanges 15, 16 of the secondary channel 17.

[0085] Thanks to this procedure, the operating unit is locked securely in place without damaging the bottom wall of the profile section. The locking structure of this embodiment is extremely advantageous if the profile section has a central thermal break structure with rods of plastic material joining the profile sections and positioned centrally to form a portion of the bottom wall of the groove in the upright.

[0086] A control and operating unit structured in this way thus fully achieves the present aims.

[0087] The evident advantages of this structure are:

- greater ease of fitting thanks to preassembly of the plug on the mounting member before it is housed in the groove of the upright;
- fitting the plug is quick, sure and precise, thanks to the presence of the spacer element and the shape of the plug, which allows snap fastening;
- the flexible wings of the plug structure allows the plug to be quickly inserted into the channel, holding the unit securely in place transversely while at the same time allowing it to slide longitudinally along the upright to reach the required, final position;
- the flanges and bottom portion of the plug are shaped in such a way that the unit can be centred quickly relative to the groove since the plug automatically snaps into place so the unit is in its correct final position;
- the constructional architecture of the plug and spacer guarantees high mechanical durability and lasting operating precision.

Claims

1. A control and operating unit for sliding doors or windows, the control and operating unit (1) comprising at least:

- a mounting member (2) which can be associated, in use and frontally, with the inside of the edge profile of an upright (3) of the sash, defined by a main groove (4) delimited by two longitudinal walls (5, 6) of the upright (3) of the door or window sash;
- a control box (7) associated with the mounting member (2), equipped with a housing (8) for receiving the shaft (9) of a handle (10), passing through a part of the upright (3), and with a kinematic unit which transmits the movement imparted by the handle (10) and which is connected to
- an operating rod (11) positioned along and parallel to the mounting member (2) and movable in both directions relative to the selfsame mounting member (2); the operating rod (11) being provided with at least one closing member (12) pro-

truding from a corresponding slot (13) formed in the mounting member (2) to be engaged, in use, with a striker element located on the front of the upright of the fixed frame of the door or window;

- fastening means (14) by which the mounting member (2) is joined to the sash and which are configured to fix the mounting member (2) to the inside of the main groove (4) also by abutment against a pair of opposed flanges (15, 16) protruding transversely from the walls of the upright (3) and defining a secondary, inner channel (17) together with the bottom wall (18) of the main groove (4);

characterized in that the fastening means (14) by which the mounting member (2) is joined to the upright (3) comprise at least:

- a spacer element (19) associated with, and protruding from, the mounting member (2) on the side of it opposite to that from which the closing member (12) protrudes;
- a plug (22) for positioning and centring the mounting member (2) in the main groove (4), configured to be stably coupled to the spacer element (19) before being housed in the main groove (4); the plug (22) having at least one pair of flexible wings (24, 25) which are configured so that, in use, they can be inserted by elastic deformation into the secondary channel (17) from the front so that at least part of the plug (22) can then be stably housed in the selfsame secondary channel (17); the plug (22) having a cavity (26) configured to be stably coupled with the spacer element (19).

2. The operating and control unit according to claim 1, comprising stabilizing means (100) by which the position adopted by the mounting member (2) on the upright (3) can be fixed, which are interposed between the plug (22) and the mounting member (2) and which are configured to lift the plug (22) relative to the bottom wall (18) of the secondary channel (17) and to increase the transversal dimension of the plug (22), by elastic deformation, in such a way as to allow the pair of flexible wings (24, 25) to be squeezed against the transversal flanges (15, 16) of the secondary channel (17).
3. The operating and control unit according to claim 1 or 2, wherein the plug (22) has the cavity (26) formed in it which is shaped to match the spacer element (19) in order to be stably coupled thereto.
4. The control and operating unit according to any of the preceding claims, wherein a portion of the plug (22) is configured to house a part of the mounting member (2) above the cavity (26) which houses the

spacer element (19); that portion of the plug (22) being provided with snap fastening means (27, 28) for engaging and retaining the mounting member 2 on both sides.

5. The control and operating unit according to claim 4, wherein the engagement and retaining means comprise a pair of opposed teeth (27, 28) formed on a pair of vertical walls (29) in such a way as to define flexible undercuts for stably snap fastening the mounting member (2) to the plug (22) on both sides.
6. The control and operating unit according to any of the preceding claims, wherein the flexible wings (24, 25) are formed at the base of the plug (22) and on two opposite, parallel sides of the selfsame plug (22), the pair of flexible wings (24, 25) being configured to form a corresponding wall extending outwards from the plug (22) in such a way as to vary, or reduce, the gap between them so as to allow the plug (22) to pass through to the other side of the pair of flanges (15, 16) forming the secondary channel (17) where they then snap back to their original, stable shape and are locked inside the channel (17) itself.
7. The control and operating unit according to any of the claims from 1 to 5, wherein the flexible wings (24, 25) are an extension of the vertical walls (29) of the plug (22); the pair of flexible wings (24, 25) being configured to form a corresponding wall extending outwards from the plug (22) in such a way as to vary, or reduce, the gap between them so as to allow the plug (22) to pass through to the other side of the pair of flanges (15, 16) forming the secondary channel (17) where they then snap back to their original, stable shape and are locked inside the channel (17) itself.
8. The control and operating unit according to any of the preceding claims, wherein the flexible wings (24, 25) are configured to make an angle of inclination (α) with the central axis (X) of the plug (22) and in a static, furthest apart configuration sufficient to at least come into abutment, in use, with the inside of the flanges (15, 16) of the secondary channel (17) of the profile, and so as to hold the plug (22) within the secondary channel (17).
9. The control and operating unit according to any of the preceding claims, wherein the flexible wings (24, 25) are configured to make an angle of inclination (β) with the central axis (X) of the plug (22) and in a static, furthest apart configuration sufficient to come into abutment, in use, with the inside of the flanges (15, 16) of the secondary channel (17) at the corner where the selfsame flanges (15, 16) and the profile walls (5, 6) meet, so as to not only hold the plug (22) within the secondary channel (17) but also centre

the plug (22) relative to the width of the edge profile of the upright (3).

10. The control and operating unit according to any of the preceding claims, wherein the bottom of the plug (22) has a base portion (30) which protrudes downwardly and which can be coupled, in use, to a longitudinal indentation (31) formed in the bottom wall (18) of the main groove (4), in such a way as to centre the mounting member (2) relative to the width of the edge profile of the upright (3). 5 10
11. The control and operating unit according to any of the preceding claims, wherein the spacer element (19) has an annular shape and the central cavity (26) formed in the plug (22) has a matching shape, that is, cylindrical, to allow them to be mutually coupled stably. 15
12. The control and operating unit according to any of the preceding claims, wherein the spacer element (19) comprises an elongate member (32) which is integral with the remaining annular portion and which extends radially outwards from the annular element to allow it to be stably associated with the mounting member (2) by plastic deformation. 20 25
13. The control and operating unit according to any of the preceding claims, comprising at least two spacer elements (19) and two plugs (22) located at the corresponding ends of the mounting member (2). 30
14. The control and operating unit according to any of the preceding claims, wherein each plug (22) is made of a thermally insulating material. 35
15. The control and operating unit according to claim 2, wherein the stabilizing means (100) comprise:
 - an opposing plate (101) provided with at least two inclined surfaces (102, 103) for abutment, in use, against matching inside surfaces of an open cavity (104) of the plug (22) and, in use, facing the bottom wall (18); 40
 - a screw element (105) for locking the plug (22); in use, the screw element (105) passing through the mounting member (2) and through a front hole (106) of the plug (22) giving onto the cavity (104) which receives the plate (101) the screw element (105) being screwably coupled in a threaded hole (107) of the plate (101) so that the plate (101) is forced into the open cavity (104) and the two facing inside surfaces of the open cavity (104) of the plug (22) are moved apart. 45 50 55
16. The control and operating unit according to claim 15, wherein the opposing plate (101) has the shape of

truncated pyramid and the plug (22) has an open cavity (104) which is shaped to match the plate (101).

17. The control and operating unit according to claim 15 or 16, wherein the front hole (106) and the open cavity (104) of the plug (22) are interrupted along the latter's axial extension by a pair of parallel clefts (108) located on opposite sides of an axis of longitudinal extension (X22) of the plug (22) so as to allow greater elastic deformation of the plug (22) when the plate (101) is forced into it.
18. A method for fitting a control and operating unit (1) for sliding doors or windows comprising at least one sash having an edge profile of an upright (3) defined by a main groove (4) delimited by two longitudinal walls (5, 6) and a pair of opposed flanges (15, 16) protruding transversely from the walls of the upright (3) to form a secondary, inner channel (17) together with the bottom wall (18) of the main groove (4); the method comprising at least the following steps:
 - preparing a control and operating unit (1) comprising at least one mounting member (2), a control box (7) associated with the mounting member (2) and connected to an operating rod (11) which is positioned along and parallel to the mounting member (2) and movable in both directions relative to the selfsame mounting member (2); the operating rod (11) being provided with at least one closing member (12) protruding from a corresponding slot (13) formed in the mounting member (2), **characterized in that** it further comprises at least the steps of:
 - preparing and applying to the mounting member (2) at least one spacer element (19) protruding from the mounting member (2);
 - stably coupling to the spacer element (19) and to the mounting member (2) a plug (22) for positioning and centring the mounting member (2) in the main groove (4); the plug (22) having at least one pair of flexible wings (24, 25);
 - housing the control and operating unit (1) in the main groove (4) of the edge profile of the upright (3) and coupling the plug (22) to the secondary channel (17) by elastic deformation of the wings (24, 25) so that at least part of the plug (22) can then be stably housed in the selfsame secondary channel (17).

FIG. 1

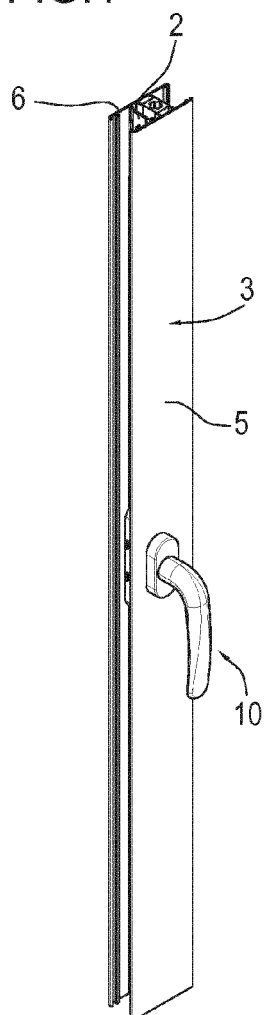


FIG.2

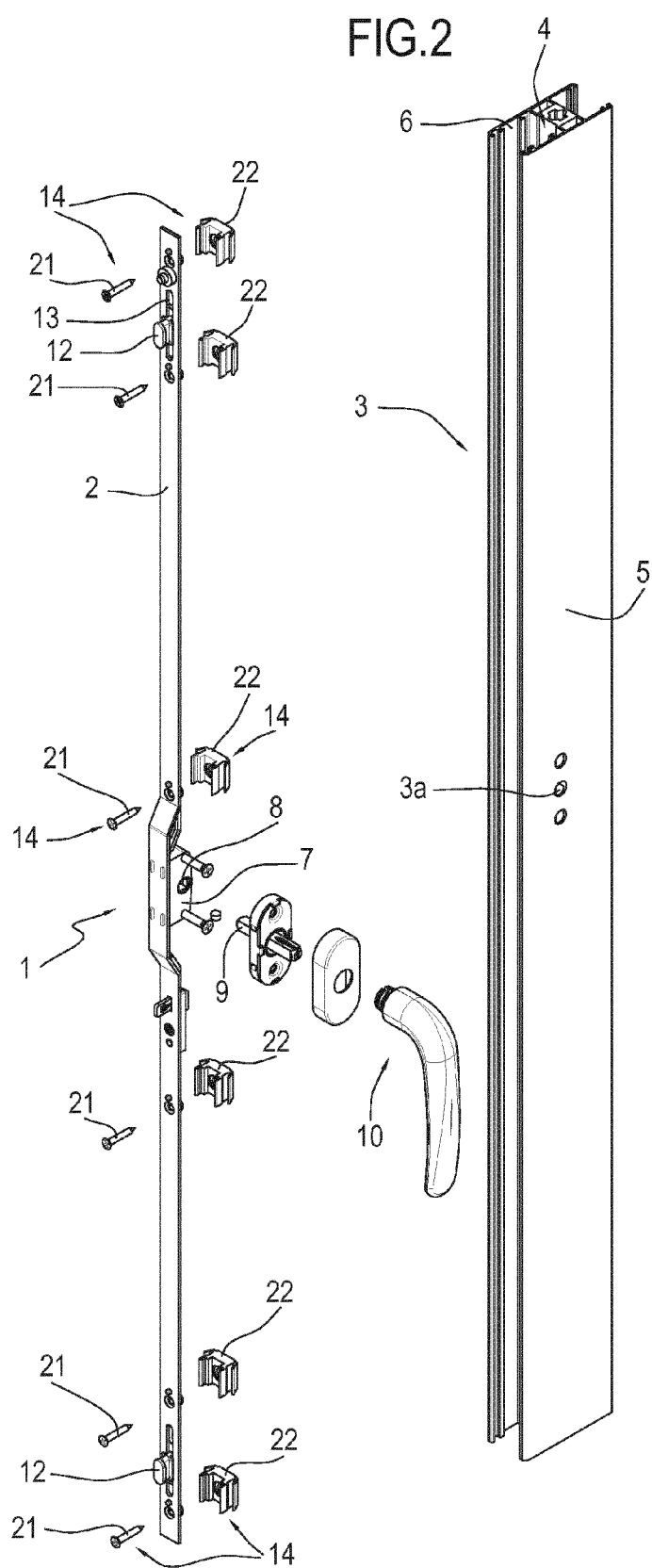


FIG.3

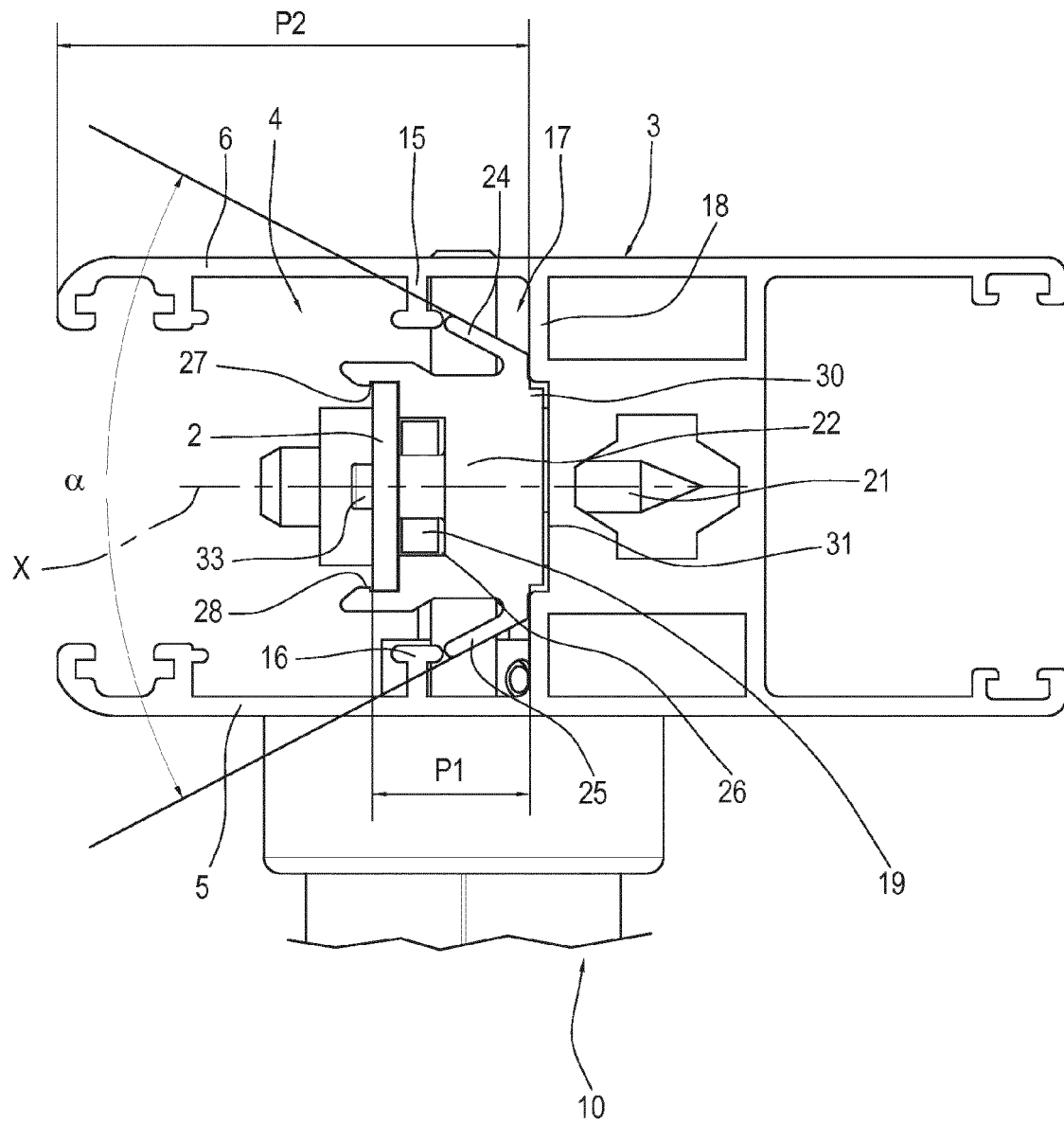


FIG.4

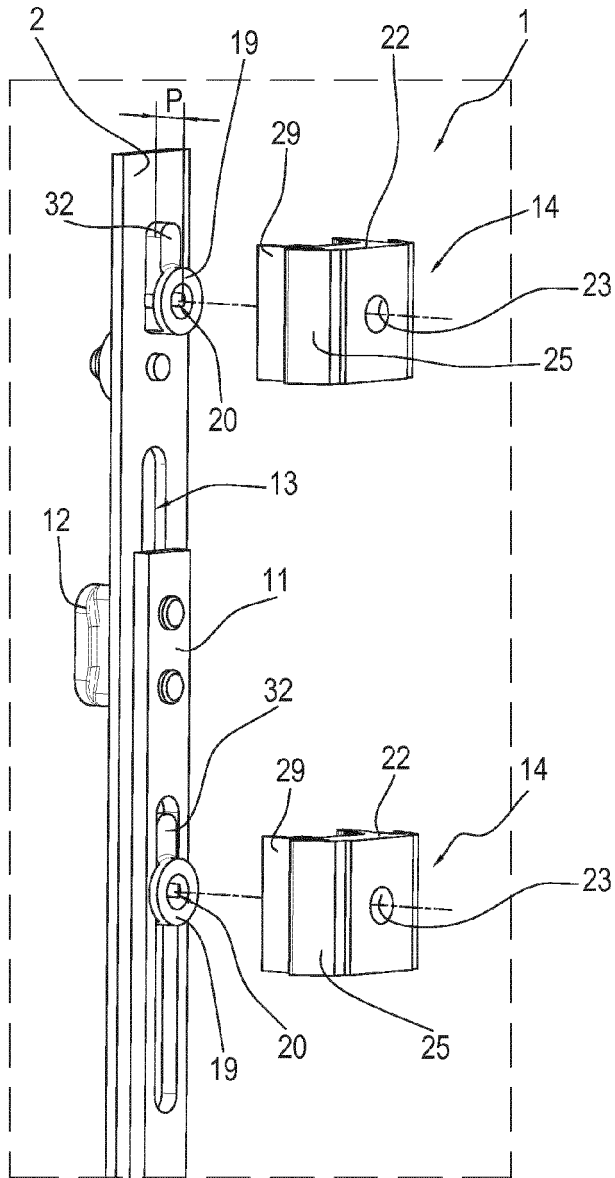
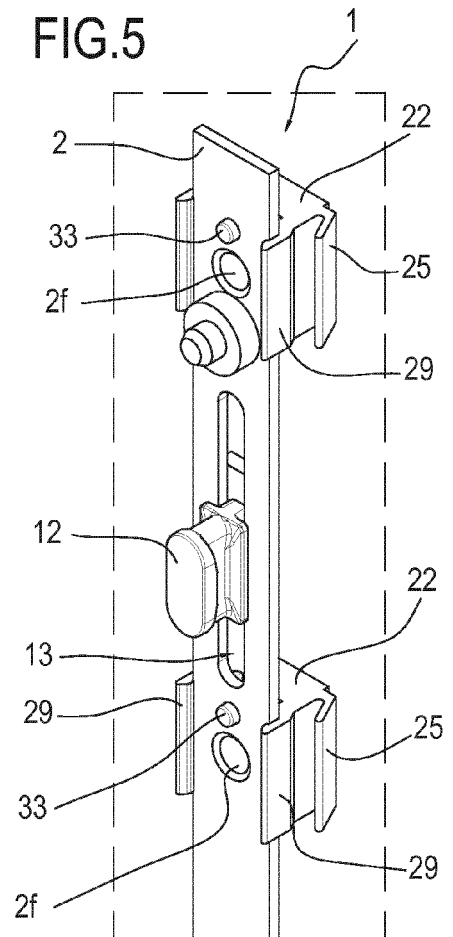


FIG.5



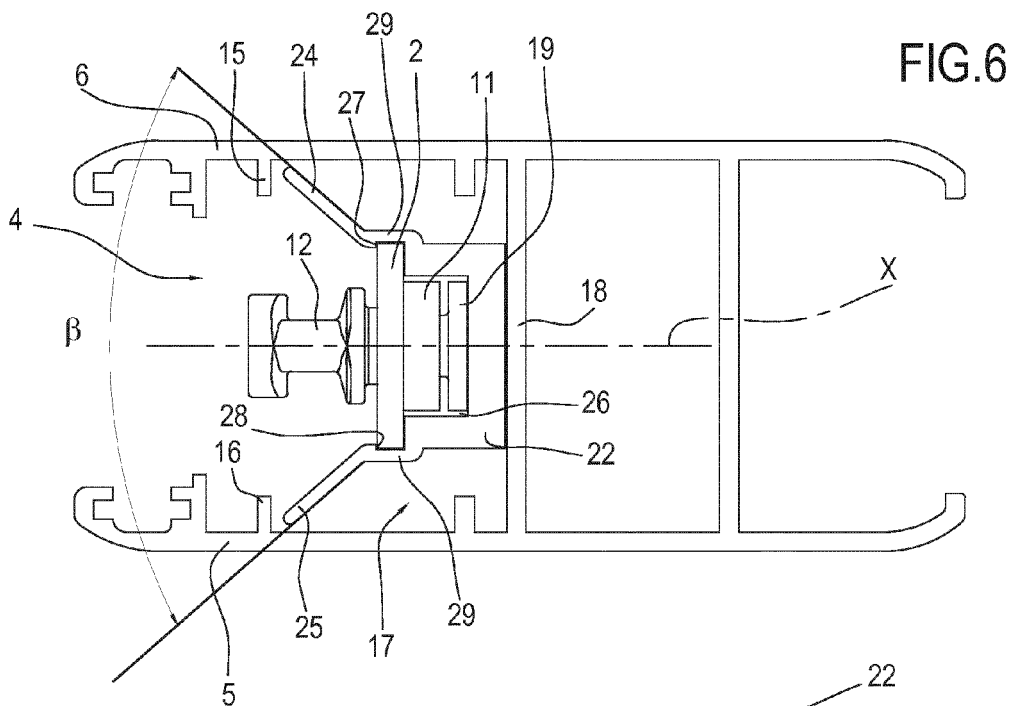


FIG.10

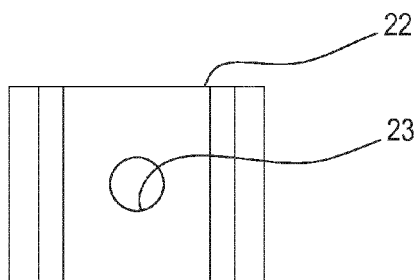


FIG.8

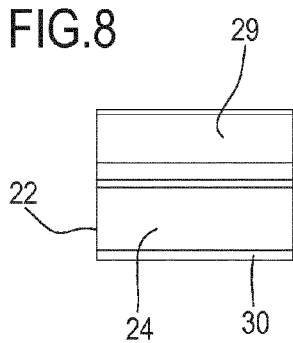


FIG.7

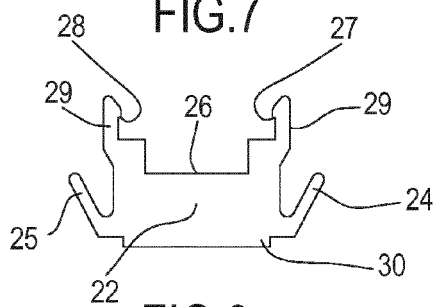


FIG.9

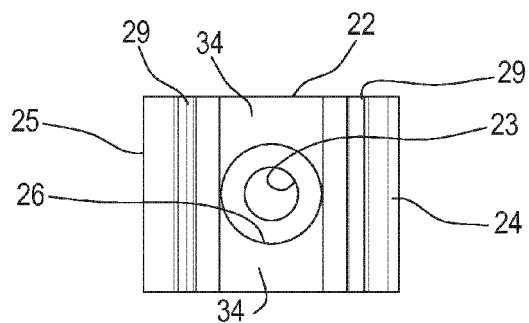


FIG.11

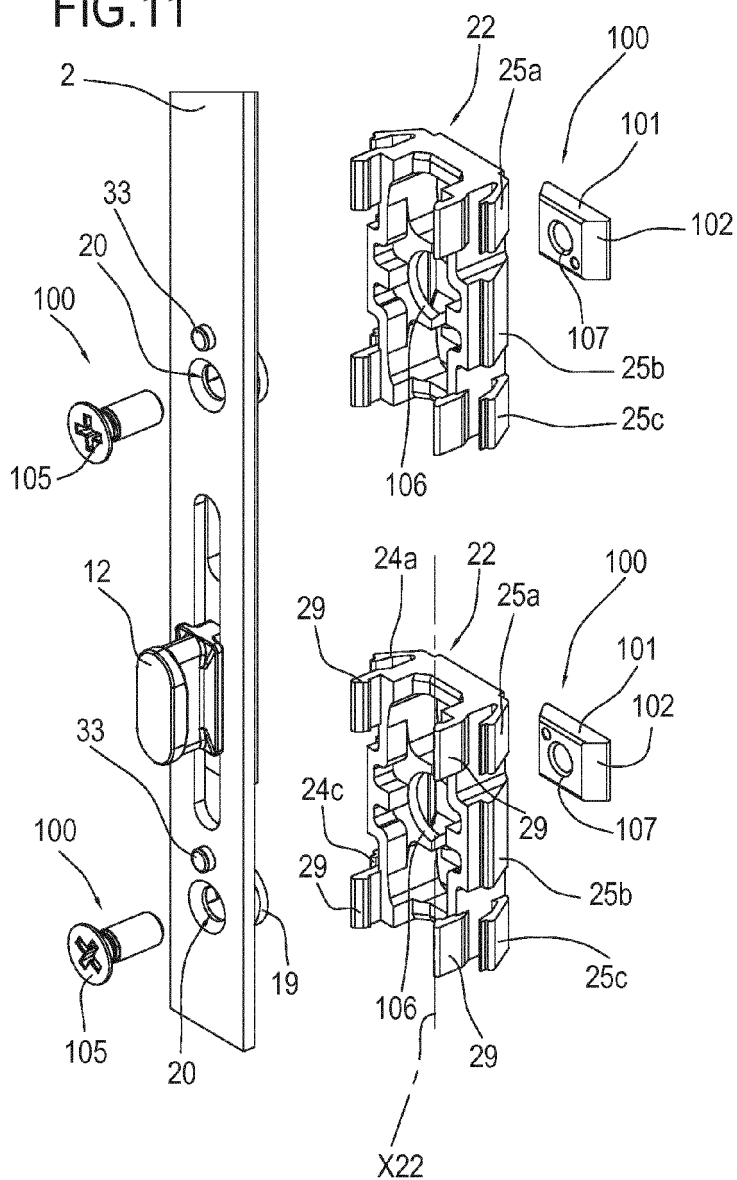


FIG.12

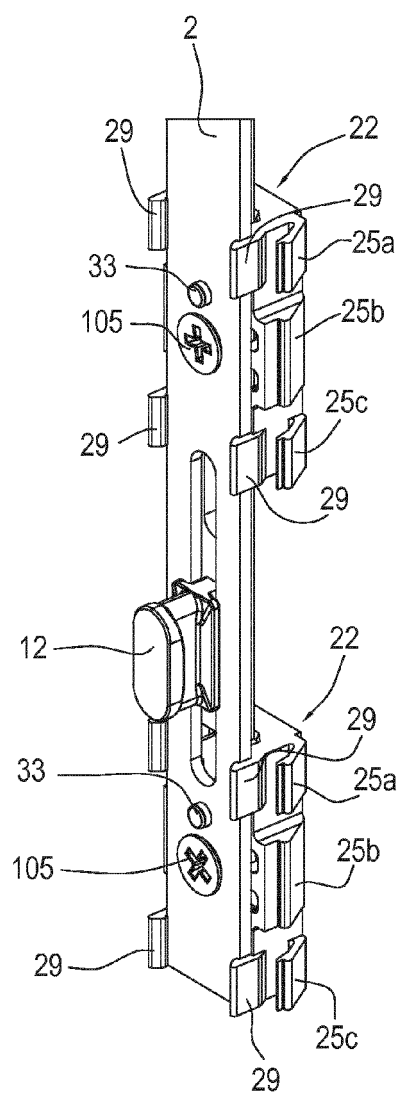


FIG.15

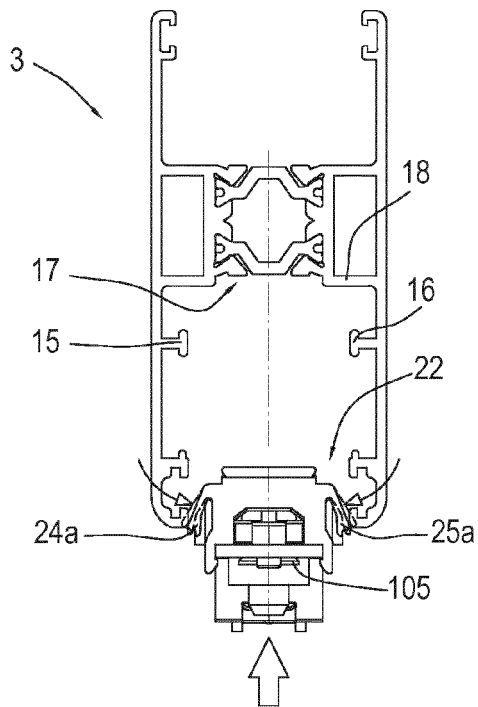


FIG.14

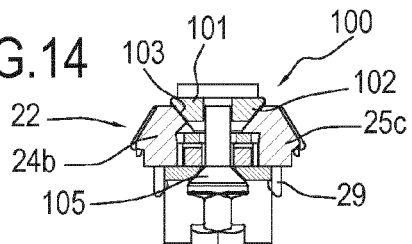


FIG.13

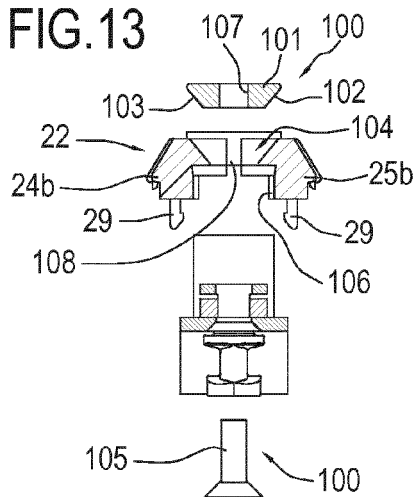


FIG.16

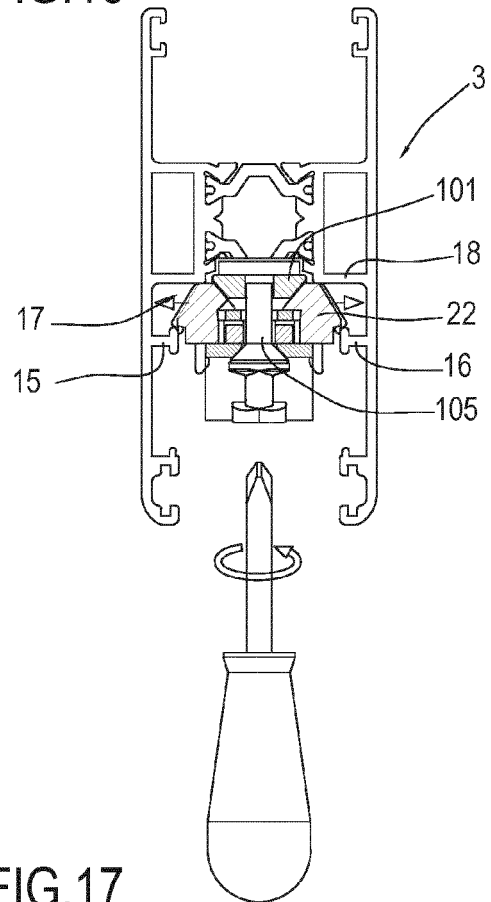
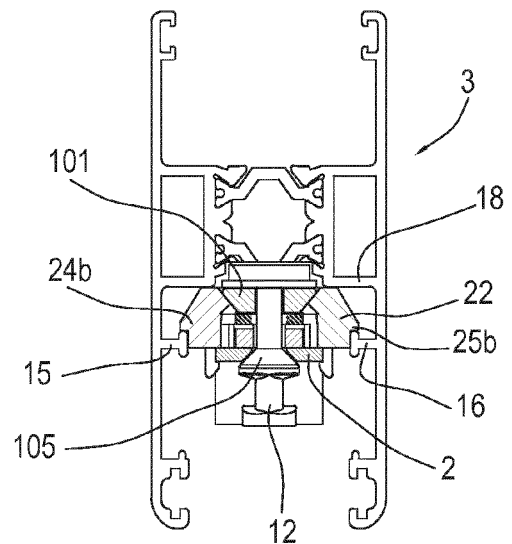


FIG.17





EUROPEAN SEARCH REPORT

Application Number
EP 14 15 0890

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Y	WO 2007/147503 A1 (MASTER SRL [IT]; LOPERFIDO MICHELE [IT]) 27 December 2007 (2007-12-27)	18	INV. E05B9/00
A	* page 4, line 28 - page 12, line 9; figures 1-3, 6 *	1-17	ADD. E05B65/08
Y	EP 0 056 484 A2 (SCHUERMANN & CO HEINZ [DE]) 28 July 1982 (1982-07-28)	18	
A	* page 3, line 27 - page 5, line 14; figure 3 *	2-4, 10-12	
A	EP 0 843 062 A2 (ROTO FRANK AG [DE]) 20 May 1998 (1998-05-20) * figures 1-4 *	1-18	
A	EP 2 317 045 A1 (FERCO INT USINE FERRURES [FR]) 4 May 2011 (2011-05-04) * the whole document *	1-18	
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			E05B
The present search report has been drawn up for all claims			
Place of search The Hague		Date of completion of the search 17 February 2014	Examiner Cruyplant, Lieve
CATEGORY OF CITED DOCUMENTS X : particularly relevant if taken alone Y : particularly relevant if combined with another document of the same category A : technological background O : non-written disclosure P : intermediate document T : theory or principle underlying the invention E : earlier patent document, but published on, or after the filing date D : document cited in the application L : document cited for other reasons & : member of the same patent family, corresponding document			

EPO FORM 1503 03/02 (P04C01)

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The members are as contained in the European Patent Office EDP file on
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17-02-2014

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