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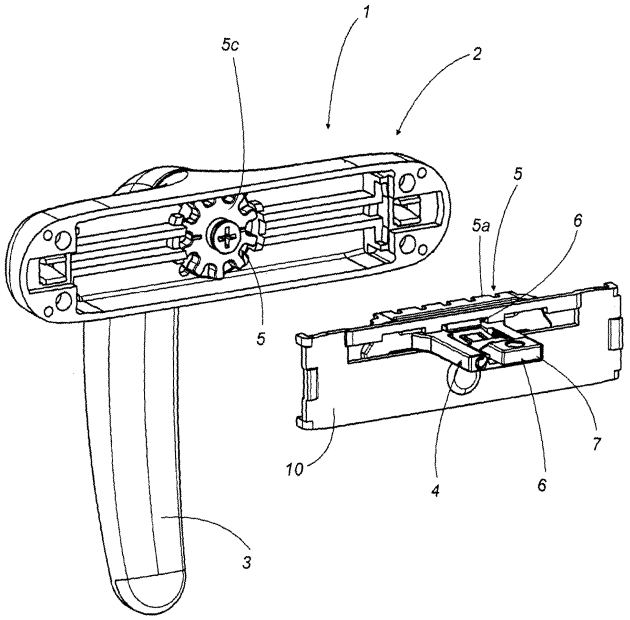
(54) A handle for turn opening or tilt and turn opening doors or windows.

(57) A handle for doors or windows comprises: a handle body (2) attachable to a door or window sash; an operating handgrip (3) protruding from one side of the handle body (2); a drive slider element (4) protruding from the side of the handle body (2) opposite the handgrip (3); the slider (4) is actuated by kinematic means (5) for transmitting motion from the handgrip (3) in such a way as to move the slider (4) between two or more stable positions defining the closed and open configurations of the sash; means (6) mounted detachably on the slider (4) and designed to lock the slider (4) in the different positions; these locking means (6) comprise a slide plate (7) engageable with the slider (4) and mobile between an advanced position where it protrudes from the slider (4) and a retracted position where it is inside the slider (4); spring means (8) interposed between the slider (4) and the slide plate (7) for keeping the slide plate (7) in the advanced position; and a rocking element (9), a first portion (9a) of which defines a part of the locking means (6), which can be associated with the slider (4) and is interposed between the latter and the slide plate (7) and which is actuated by the slide plate (7) so that it moves between a first position where it locks the slider (4) and a second position where it releases the slider (4).

FIG.1



EP 1 686 225 A2

Description

[0001] This invention relates to a handle for turn opening or tilt and turn opening doors or windows.

[0002] The present specification refers in particular to cremone handles applicable to door or window sashes made of metal, wood and metal or PVC, but without thereby restricting the scope of the invention.

[0003] Cremone handles usually comprise:

- a handle body, normally prismatic in shape;
- an operating handgrip protruding from one side of the handle body;
- drive elements protruding from the side opposite the handle body and designed to actuate the device for closing the sash;
- means for fixing the handle to the sash, the latter having holes or slots in it for the passage of the drive elements and for the fixing means themselves.

[0004] Since doors and windows currently available on the market include two basic types, one where the sash can be opened only by turning and one where the sash can be opened either by tilting or by turning, the drive elements may comprise two different solutions.

[0005] In the case of doors and windows that open only by turning (the simpler and more traditional type of the two), there may be two sliders which protrude from the handle body and which, when fitted to the sash, are coupled with the sliding rods of the opening and closing mechanism (for example, upper and lower bolts insertable in matching seats).

[0006] The two sliders (see also patent EP 446.566 to the same Applicant as the present invention) are guided in their movements towards and away from one another along the handle body by a pair of parallel racks, the teeth of which are meshed with a pinion. The pinion rotates as one with a spindle attached to the handgrip in such a way as to open and close the sash when the handgrip is rotated.

[0007] The handle body also has a cover plate attached to it and designed to hold the racks and part of the sliders together. The cover plate has a set of holes at each end, through which securing means are inserted, and at least one slot for guiding the sliders.

[0008] In the case of doors and windows that open by tilting or by turning, the handle differs from the one described above in that it has a single slider protruding from the handle body and designed to be coupled with a drive element connected to suitable means for operating the mechanisms for closing the sash and opening it in the desired configuration.

[0009] In this type of door or window, the handgrip can be moved into at least three different configurations. It must therefore be provided with an "incorrect operation safety lock" device to lock the handle in the open configuration chosen by the user (tilted or turned), thus preventing accidental operation which would otherwise create problems not only for safety but also for subsequent closure of the door or window.

[0010] The device applied to the handle according to the present invention is based on a prior constructional solution available on the market where the device is fitted directly on the operating slider.

[0011] In practice, the slider consists of a guide fork that slidably accommodates a slide plate equipped with an interposed spring between the base of the slide plate and an internal portion of the slider.

[0012] This slide can therefore move between:

- a retracted, non-operating drive position (sash closed) where the slide plate itself is all the way inside the slider thanks to contact with the fixed door or window frame; and
- a forward handle drive locked operating position (sash opened in one of its configurations), where the slide plate partly protrudes from the slider, thanks to the thrust exerted by the spring; this movement (in one of the prior solutions) causes one of the protuberances on it to engage with one of the specially made seats in the aforementioned cover plate (preferably) in order to prevent the slider from moving.

[0013] Handles of the type described above have proved to be extremely valid and practical but have, over time, created a warehousing cost and management problem for manufacturers of door and window hardware.

[0014] The reason for this is that the presence of two different solutions for the handles, one for each type of door or window (traditional and tilt/turn) makes it necessary to keep separate stocks of ready-assembled handles of the two different types, which leads to higher management costs.

[0015] The Applicant has therefore devised and constructed different handles comprising the same essential parts that will meet the requirements of both types of doors or windows currently in demand.

[0016] These handles are described in two separate patent applications, namely EP 1.387.029 and EP 1.387.030, and are based on a single drive element for doors and windows of both types (thanks to known transmission means slidably mounted on the door or window) and two separate kits for assembling the operating means.

[0017] In the first type of handle, the incorrect operation safety slide plate is mounted on the slider detachably, that is to say, in such a way that it can be separated, thanks to a boss protruding from the inside end and which comes into contact with a fixed surface defined by the cover plate of the handle body.

[0018] In the second type of handle, on the other hand, the slide plate in the kit is pre-assembled and locked by releasable retaining means, acting between the slide plate and the slider, in such a way that the slide plate can be held in a retracted non-operating position. It will then be up to the installer, depending on the type of door or

window to which the handle is to be fitted, to release the slide plate (for tilt/turn doors and windows) or leave the slide plate in the retracted non-operating position (for traditional doors and windows).

[0019] Although these handles have proved satisfactory in most respects, the Applicant has devised and constructed a handle that can be adapted to both types of doors and windows and having improved slide plate application features and enhanced handle functionality and working efficiency over time.

[0020] According to the invention, the above mentioned aim is achieved by a handle for doors and windows comprising: a handle body attachable to a door or window sash; an operating handgrip protruding from one side of the handle body; a drive slider element protruding from the side of the handle body opposite the handgrip; the slider is actuated by kinematic means for transmitting motion from the handgrip in such a way as to move the slider between two or more stable positions defining the closed and open configurations of the sash; means mounted detachably on the slider and designed to lock the slider in the different positions; these locking means comprise a slide plate engageable with the slider and mobile between an advanced position where it protrudes from the slider and a retracted position where it is inside the slider; spring means interposed between the slider and the slide plate for keeping the slide plate in the advanced position; and a rocking element, a first portion of which defines a part of the locking means, which can be associated with the slider and is interposed between the latter and the slide plate and which is actuated by the slide plate so that it moves between a first position where it locks the slider and a second position where it releases the slider.

[0021] The technical characteristics of the invention, with reference to the above aims, are clearly described in the claims below and its advantages are 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 a perspective, partially exploded view of a handle for doors and windows according to the invention;
- Figure 2 is a perspective exploded view of a part of the handle of Figure 1, namely, a detail of the slider element and of the incorrect operation safety lock means;
- Figures 3 and 4 are perspective views from above and from below, respectively, showing a component of the locking means of Figure 2;
- Figures 5 and 6 are both partial cross sections through a plane transversal to the handle and illustrating a part of the handle of Figure 1 in two different operating configurations;
- Figure 7 is a front perspective view of a covering element and of the unit consisting of the slider and the locking means;
- Figure 8 illustrates the unit of Figure 7 in a cross-sectional perspective view.

[0022] With reference to the accompanying drawings, in particular Figure 1, the handle according to the invention, labelled 1 in its entirety, is applied to doors and windows of the type that open by turning only or by tilting or turning.

[0023] The handle 1 basically comprises:

- a handle body 2 attachable to a door or window sash (not illustrated since it is of well known type);
- an operating handgrip 3 protruding from one side of the handle body 2;
- at least one drive slider element 4 protruding from the side of the handle body 2 opposite the handgrip 3 and connectable to operating devices for opening and closing the door or window (these devices not being illustrated since they are of known type and do not strictly fall within the scope of the invention);
- means 6 mounted detachably on, that is to say, in such a way that they can be separated from, the slider 4 and designed to lock the slider 4 in the positions adopted by it when the door or window is turned or tilted to the open position.

[0024] More specifically, the handle body 2 may have any of a variety of different configurations, starting from a prismatic body (without thereby restricting the scope of the invention); similarly, the handgrip 3 be of any type or shape suitable for the door or window it is fitted to, without thereby departing from the spirit of the invention.

[0025] Further, the slider 4 is actuated by kinematic means 5 for transmitting motion from the handgrip 3 in such a way as to move the slider 4 between two or more stable positions defining the closed and open configurations of the sash.

[0026] The kinematic means 5 are of known type and, in the non-restricting embodiment illustrated by way of example, consist of a pinion 5c attached to the handgrip 3 and a rack 5a made on the back of the slider 4 and meshing with the pinion 5c.

[0027] As clearly illustrated in Figure 2, the aforementioned locking means 6 comprise:

- a slide plate 7 engageable with the slider 4 and mobile between an advanced position where it protrudes from the slider 4 (see also Figure 5) and a retracted position where the slide plate 7 is inside the slider 4 (see also Figures 5 and 6 and arrows F);
- spring means 8 interposed between the slider 4 and the slide plate 7 for keeping the slide plate 7 in the advanced position;
- a rocking element 9, a first portion 9a of which defines a part of the locking means 6, which can be associated with the slider 4 and is interposed between the

latter and the slide plate 7 and which is actuated by the slide plate 7 so that it moves at least between a first position where it locks the slider 4 and a second position where it releases the slider 4.

[0028] More specifically, the rocking element 9 is pivoted to the slider 4 in such a manner as to create a rocking motion, indicated by the arrows F1 in Figures 5 and 6, between:

- the first locked position, where a first end of the element 9 itself is raised and in contact with another part of the locking means 6, when the slide plate 7 is in the above mentioned advanced position, while the second end of the element 9 defines a retaining element for keeping the slide plate 7 on the slider 4 (see Figure 5), and
- the second position in which it releases the slider 4 and where the first end of the element 9 is lowered and away from the other part of the locking means 6, when the slide plate 7 is in the above mentioned retracted position, while the second end of the slide plate 7 is raised (see Figure 6).

[0029] In other words, the rocking element 9 constitutes, on the one hand, a transmission element for locking and releasing the slider, and, on the other, an element for retaining the slide plate 7.

[0030] To be able to lock the slider 4, the handle 1 is also fitted with an element 10 (see Figures 1, 5, 7 and 8) for covering the kinematic means 5 and attached to the handle body 2 on the side from which the slider 4 protrudes.

[0031] The cover element 10 has a through guide slot 11 from which the slider 4 protrudes and featuring a plurality of alternate reference teeth 11a and protrusions 11b for positioning the slider 4 and constituting the above mentioned other part of the locking means 6.

[0032] The slot 11 may be acted upon by the first end of the rocking element 9 which has a specially shaped end section 12 which, when lifted, forms a raised surface designed to engage one of the reference openings 11b when the slider 4 is in the above mentioned locked position (see in particular Figures 5, 7 and 8).

[0033] More specifically, (see Figures 3 to 6), the end section 12 consists of two segments 12a and 12b, joined to each other uninterruptedly and one of which 12a is joined to the remaining part of the rocking element 9 and extends transversally to the element 9 itself, while the second segment 12b extends in a direction transversal to the first segment 12a, that is to say, parallel to the element 9 and in a plane above the element 9.

[0034] When the slide plate 7 is in the above mentioned retracted position, the two segments 12a and 12b of the end section 12 engage a matching curved portion 13 of the slider 4.

[0035] As illustrated also in Figures 3 and 4, the rocking element consists of a plate 9 in the shape of a closed ring and having a second portion 9b, comprising the above mentioned second end, which is at an angle to the plane in which the first portion 9a of the plate 9 lies, thus defining a kind of rocking cradle.

[0036] The plate 9, as mentioned above, includes means for pivoting it to the slider 4 and consisting of a first, internal ring-like wing 14 extending from the above mentioned first end and towards the centre of the plate 9.

[0037] The first wing 14 has an end 14a that is shaped like a hook in order to engage a slot 15 made in the flat surface 4p of the slider 4.

[0038] In practice, the coupling of the hook 14a in the slot 15 forms a point by which the plate 9 is hooked and rocked as the slide plate 7 moves between the retracted and advanced positions.

[0039] In addition to the above, the plate 9 comprises retaining means for holding the slide plate 7 on the slider 4, these retaining means being made on the plate 9 itself and acting between the latter and the slide plate 7.

[0040] The retaining means comprise a second wing 16 projecting from the second end towards the centre of the plate 9 and lying in the same plane as the first portion 9a of the plate 9, that is to say, at an angle to the second portion 9b it is integral with: the difference in angle between the second wing 16 and the second portion 9b enables the second wing 16 to strike the slide plate 7, when the latter is in the advanced position, at a wall 17 defined by a channel 18 made in the underside of the slide plate 7 itself (as clearly shown in Figure 5).

[0041] The slide plate 7 also has a through hole 19 leading out of it from the channel 18 on its underside and designed to permit the passage of an operating element or tool U (schematically drawn in dashed line style) acting on the second wing 16 in such a way as to bend the latter, thereby releasing the plate 9 from the slide plate 7 and thus from the slider 4.

[0042] In other words, the slide plate 7 can be released from the slider 4 by pushing it in a direction F2 through the hole 19 using a tool U in such a manner as to quickly disengage the slide plate 7 and the plate 9.

[0043] The above mentioned spring means 8 comprise two spiral springs 8a and 8b housed in respective seats 20 and 21 made in respective parallel sides of the slider 4.

[0044] The seats 20 and 21 are cylindrical in shape and accommodate matching sliding shoes 22 and 23 made on both sides of the slide plate 7 and designed to at least partially compress the respective spring 8a and 8b.

[0045] Each of the cylindrical seats 20 and 21 is partly open on the surface of it facing the inside of the slider 4 enabling them to be checked to ensure they are present and fitted properly and to facilitate their maintenance.

[0046] A handle made in the manner described above achieves the aforementioned aims thanks to an extremely practical and functional combination of a few components.

[0047] The single rocking element constituting a part of the locking means as well as the retaining means

makes it possible to reduce the set of components making up the incorrect operation safety lock.

[0048] Indeed, the rocking plate is extremely practical and reliable in performing the functions it is designed for and can be quickly released from the slide plate without affecting other parts of the handle.

[0049] Furthermore, the rocking system perfectly combines the need to lock the slider with the need to keep the slide plate attached to the slider.

[0050] It will be understood that the invention described may be useful in 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. A handle for turn opening or tilt and turn opening doors or windows, the handle (1) being of the type comprising:

   - a handle body (2) attachable to a door or window sash;
   - an operating handgrip (3) protruding from one side of the handle body (2);
   - at least one drive slider element (4) protruding from the side of the handle body (2) opposite the handgrip (3) and connectable to operating devices for opening and closing the door or window; the slider (4) being actuated by kinematic means (5) for transmitting motion from the handgrip (3) in such a way as to move the slider (4) between two or more stable positions defining the closed and open configurations of the sash;
   - means (6) mounted detachably on, that is to say, in such a way that they can be separated from, the slider (4) and designed to lock the slider (4) in the positions adopted by it when the door or window is turned or tilted to the open position;

   the handle (1) being **characterised in that** the locking means (6) comprise:

   - a slide plate (7) engageable with the slider (4) and mobile between an advanced position where it protrudes from the slider (4) and a retracted position where the slide plate (7) is inside the slider (4);
   - spring means (8) interposed between the slider (4) and the slide plate (7) for keeping the slide plate (7) in the advanced position;
   - a rocking element (9), a first portion (9a) of which defines a part of the locking means (6), which can be associated with the slider (4) and is interposed between the latter and the slide plate (7) and which is actuated by the slide plate (7) so that it moves at least between a first position where it locks the slider (4) and a second position where it releases the slider (4).

2. The handle according to claim 1, **characterised in that** the rocking element (9) is pivoted to the slider (4) in such a manner as to define the first locked position where a first end of the element (9) itself is raised and in contact with another part of the locking means (6), when the slide plate (7) is in the advanced position, the second end of the element (9) defining a retaining element for keeping the slide plate (7) on the slider (4), and the second, slider (4) released position where the first end is lowered and away from the other part of the locking means (6), when the slide plate (7) is in the retracted position and the second end is raised.

3. The handle according to claims 1 and 2, comprising an element (10) for at least covering the kinematic means (5) and attachable to the handle body (2) on the side from which the slider (4) protrudes; the cover element (10) having at least one through guide slot (11) from which the slider (4) protrudes and having a plurality of alternate reference teeth (11a) and protrusions (11b) for positioning the slider (4) and constituting the above mentioned other part of the locking means (6), the handle being **characterised in that** the first end of the rocking element (9) has a specially shaped end section (12) which forms a raised surface designed to engage one of the reference protrusions (11b) in the slot (11) when the slider (4) is in the first, locked position.

4. The handle according to claim 3, **characterised in that** the end section (12) consists of two segments (12a, 12b), joined to each other uninterruptedly and one of which (12a) is joined to the remaining part of the rocking element (9) and extends transversally to the element (9) itself, while the second segment (12b) extends in a direction transversal to the first segment (12a), that is to say, parallel to the element (9) and in a plane above the element (9); the two segments (12a, 12b) engaging a matching curved portion (13) of the slider (4) when the slide plate (7) is in the retracted position.

5. The handle according to claims 1 and 2, **characterised in that** the rocking element consists of a plate (9) in the shape of a closed ring and having a second portion (9b), comprising the second end, which is at an angle to the plane in which the first portion (9a) of the plate (9) lies, thus defining a kind of rocking cradle.

6. The handle according to claims 1, 2 and 5, **characterised in that** the plate (9) includes means for pivoting it to the slider (4) and consisting of a first, internal ring-like wing (14) extending from the first end and towards the centre of the plate (9); the first wing

(14) having an end (14a) that is shaped like a hook in order to engage a slot (15) made in the flat surface (4p) of the slider (4); the coupling of the hook (14a) in the slot (15) forming a point by which the plate (9) is hooked and rocked as the slide plate (7) moves between the retracted and advanced positions.

7. The handle according to claims 1, 2 and 5, **characterised in that** the plate (9) also comprises retaining means for holding the slide plate (7) on the slider (4), these retaining means being made on the plate (9) itself and acting between the latter and the slide plate (7); the retaining means comprising a second wing (16) projecting from the second end towards the centre of the plate (9) and lying in the same plane as the first portion (9a) of the plate (9), that is to say, at an angle to the second portion (9b), in such a way as to strike the slide plate (7), when the latter is in the advanced position, at a wall (17) defined by a channel (18) made in the underside of the slide plate (7) itself.

8. The handle according to claim 7, **characterised in that** the slide plate (7) has a through hole (19) leading out of it from the channel (18) on its underside and designed to permit the passage of an operating element or tool (U) acting on the second wing (16) in such a way as to bend the latter, thereby releasing the plate (9) from the slide plate (7) and thus from the slider (4).

9. The handle according to claim 1, **characterised in that** the spring means (8) comprise two spiral springs (8a, 8b) housed in respective seats (20, 21) made in respective parallel sides of the slider (4); the seats (20, 21) being cylindrical in shape and accommodating matching sliding shoes (22, 23) made on both sides of the slide plate (7) and designed to at least partially compress the respective spring (8a, 8b).

10. The handle according to claim 9, **characterised in that** each of the cylindrical seats (20, 21) is partly open on the surface of it facing the inside of the slider (4).

FIG.1

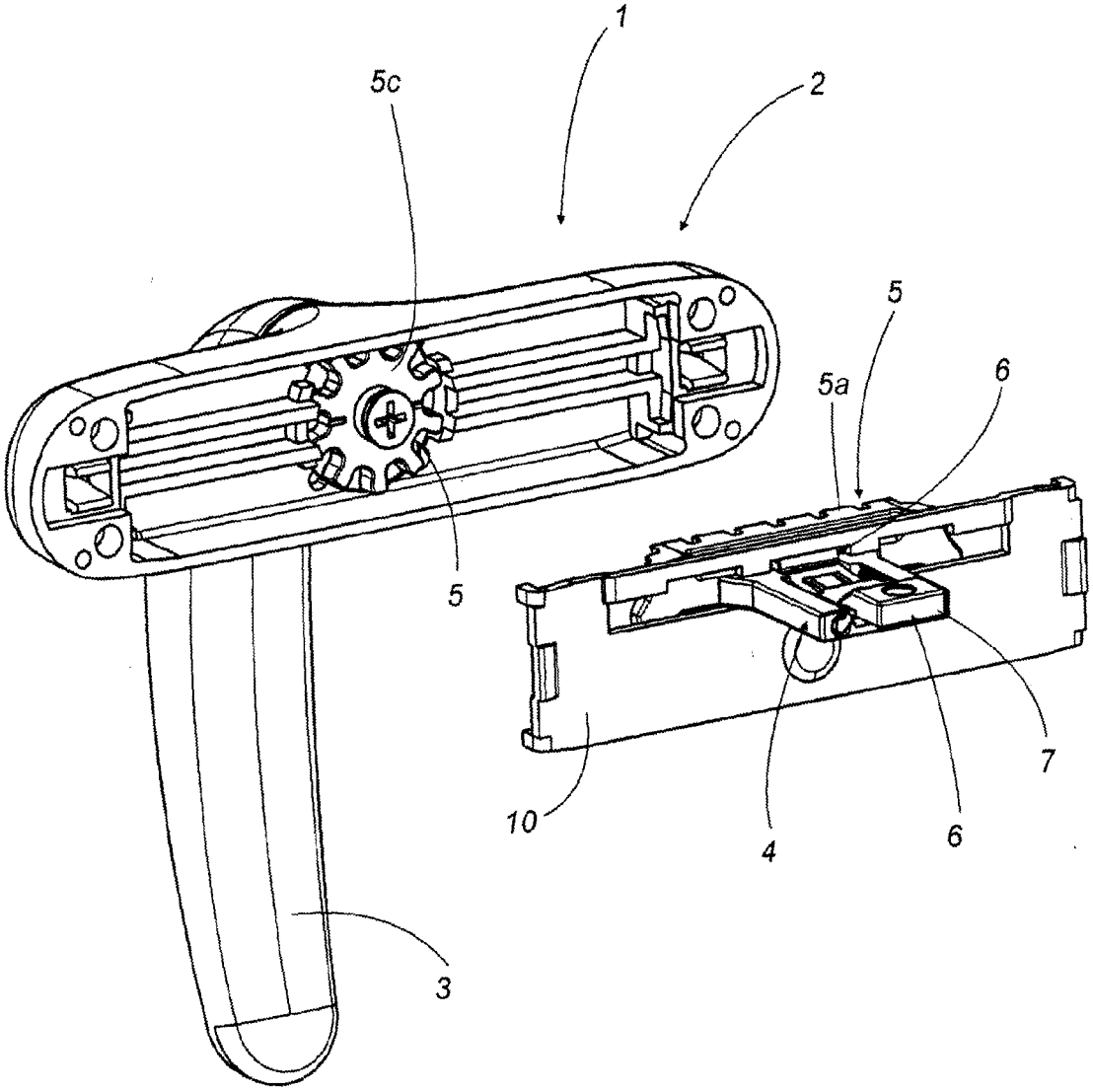


FIG.2

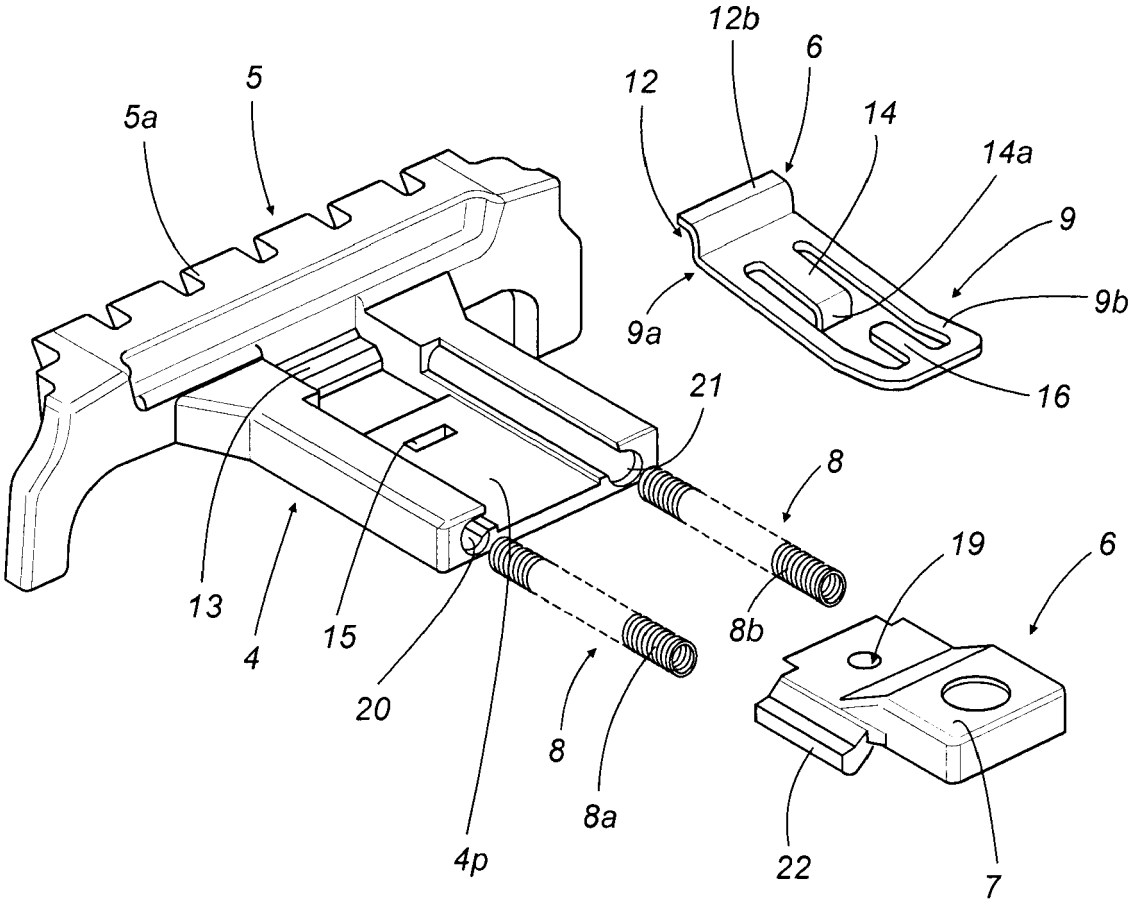


FIG.3

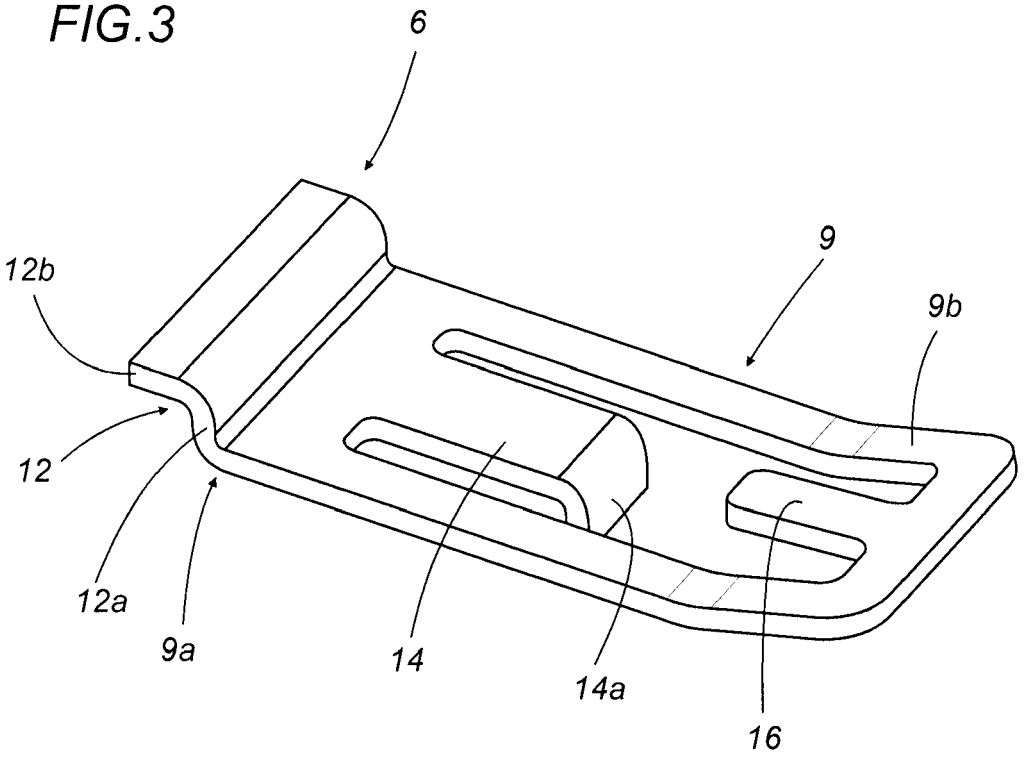


FIG.4

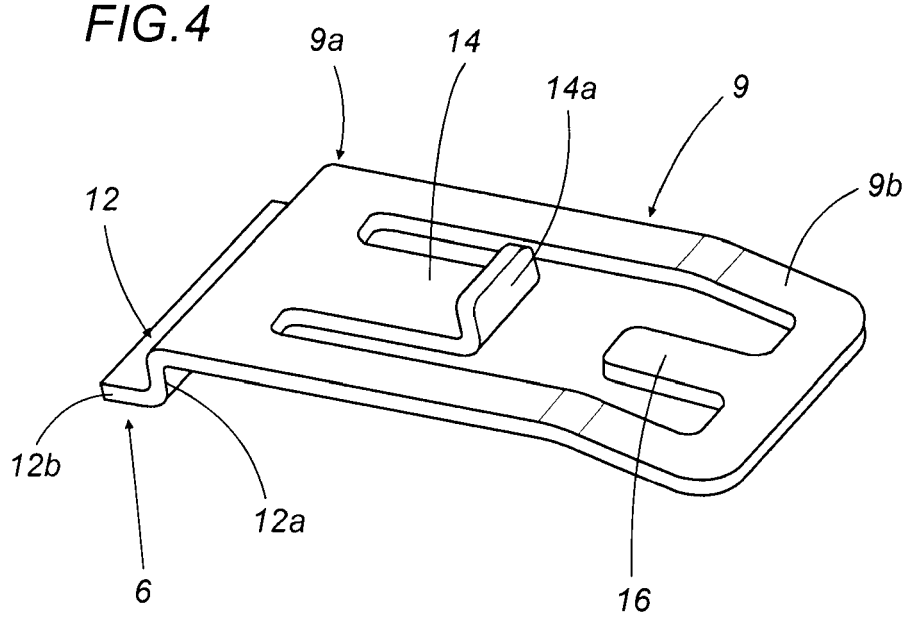


FIG.5

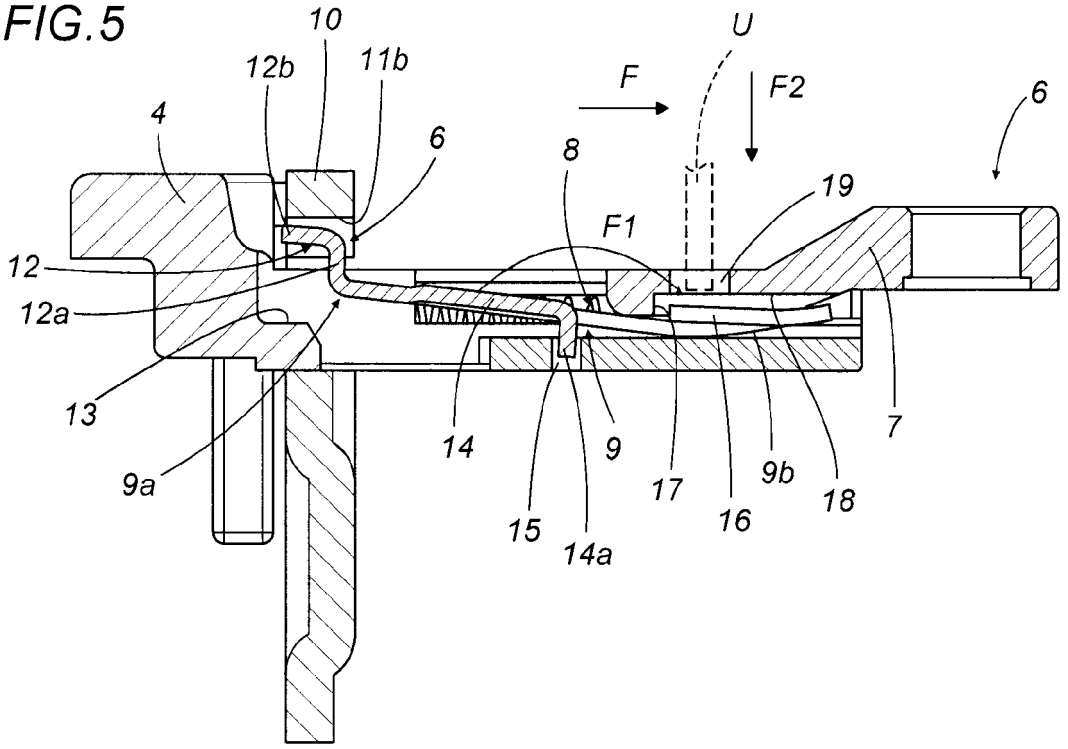

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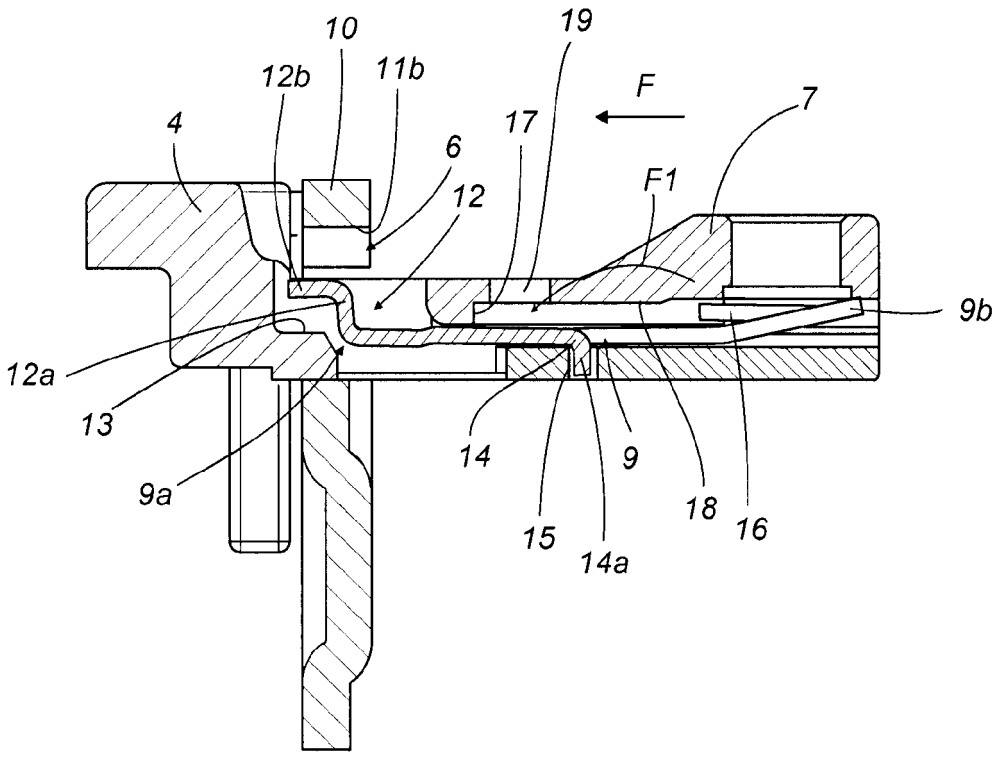
FIG.6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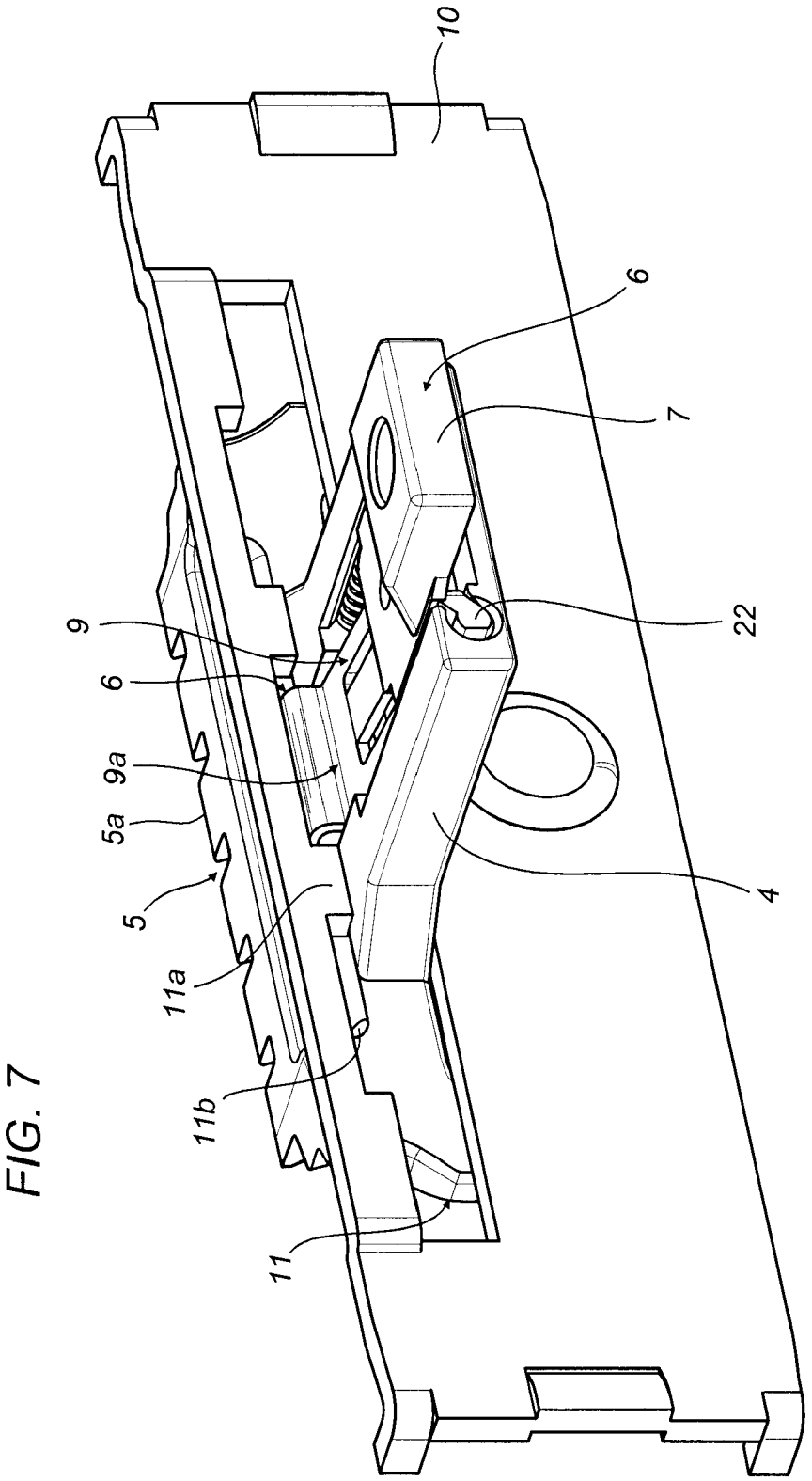

FIG. 7

FIG. 8