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

(11) EP 1 387 029 A1

(12) EUROPEAN PATENT APPLICATION

(43) Date of publication:
04.02.2004 Bulletin 2004/06

(51) Int Cl.[7]: **E05C 9/02**

(21) Application number: **03425519.0**

(22) Date of filing: **31.07.2003**

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

(30) Priority: **31.07.2002 IT BO20020503**

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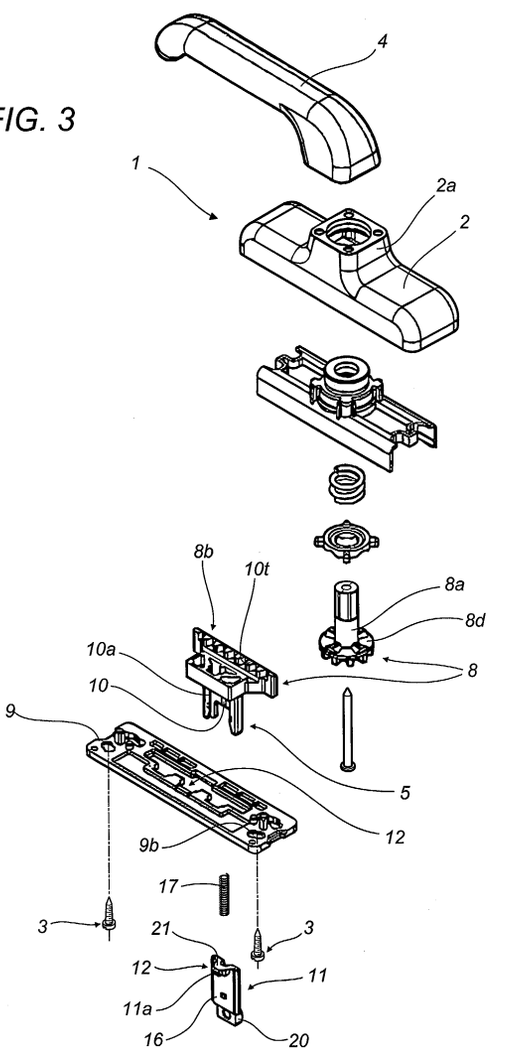
(54) A handle for turn opening and tilt and turn opening doors or windows

(57) A handle (1) for doors or windows comprises: a handle body (2) attachable to a door or window sash (A); an operating handgrip (4) protruding from one side of the handle body (2); drive elements (5) protruding from the opposite side of the handle body (2) and being connectable to operating devices (6, 7) for opening and closing the door or window; the drive elements (5) comprising a slider element (10) connected to kinematic means (8) and constituting the element that drives the operating devices (6, 7), and means (11) for locking the single slider element (10) in the different positions corresponding to the tilt opened and turn opened configurations of the sash; the locking means (11) being mounted on the slider element (10) detachably, that is to say, in such a way that they can be separated.

FIG. 3



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Description

[0001] The present invention relates to a handle for both turn opening and tilt and turn opening doors and windows, in particular a Cremone bolt handle that may be equipped with an incorrect operation safety lock device.

[0002] The present specification refers in particular to Cremone bolt handles applicable to window or door sashes made of metal, for example, of aluminium, but without thereby restricting the scope of the invention.

[0003] Handles for Cremone bolts 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] 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.

[0005] In the case of doors and windows that open only by turning (the more common, traditional type of the two), the drive elements include 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) 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 opening and closing the sash 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] The slide plate can 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) and prevents 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] With this problem in mind, the Applicant now proposes a handle comprising the same essential parts that will meet the requirements of both types of doors or windows currently in demand but with enhanced accessory features that will allow the same handle to be adapted either to a traditional door or window or to a tilt/turn door or window.

[0016] The invention achieves this object in a handle for doors or windows comprising: a handle body attachable to a door or window sash; an operating handgrip protruding from one side of the handle body; drive elements protruding from the opposite side of the handle body and connectable to operating devices for opening and closing the door or window; the drive elements comprising: a single slider element connected to kinematic means and constituting the element that drives the operating devices; and means for locking the single slider element in the different positions corresponding to the tilt opened and turn opened configurations of the sash; the locking means being mounted on the slider element detachably, that is to say, in such a way that they can be separated.

[0017] 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 schematic side view, with some parts cut away in order to better illustrate others, of a handle according to the invention, in a first application;
- Figure 2 is a schematic side view, with some parts cut away in order to better illustrate others, of a handle according to the invention, in a second application;
- Figure 3 is a perspective exploded view of the handle shown in Figures 1 and 2;
- Figures 4 and 5 illustrate a first detail of the handle of Figure 3, respectively, in a plan view from above and in cross section through line V - V;
- Figure 6 illustrates a second detail of the handle of Figure 3 in a perspective view;
- Figure 7 illustrates a third detail of the handle of Figure 3 in a perspective view;
- Figures 8 and 9 are a top plan view and a cross section through line IX - IX of an alternative embodiment of the drive elements of the handle shown in the drawings listed above.

[0018] With reference to the accompanying drawings, in particular Figure 2, the handle illustrated, denoted in its entirety by the numeral 1, is used for operating door or window sashes made of any one of a variety of different materials, for example, a metal.

[0019] In particular, the handle is suitable for use with doors or windows either of the traditional type, which open by turning, or those of the type which open by tilting or turning.

[0020] Although the handle 1 referred to in the present specification is of the Cremone bolt type, the structure according to the invention may be applied to other types of handle without losing the novelty of the invention.

[0021] As illustrated in Figure 3, the handle 1 essentially comprises a handle body 2 from which there project, on the side presenting a bush 2a made in a single piece with the handle body 2, a handgrip 4 used for driving kinematic transmission means 8, and drive elements 5 on the other side of the handle body 2.

[0022] The kinematic means 8 comprise a spindle 8a housed inside the handle body 2 and a rack 8b whose teeth mesh with a pinion 8d that rotates as one with the spindle 8a.

[0023] The free ends of the drive elements 5 engage with sash closing devices 6 and 7 (incidental to the description of the invention and therefore not illustrated in detail) represented in Figure 1 as a plain rod equipped with contact elements 6a and 6b, and as a contact element 7 in Figure 2.

[0024] More specifically, rotation of the handgrip 4 causes the drive elements 5, under the action of the kinematic means 8, to move between different stable positions corresponding to the closed and open configurations of the sash A (see arrow F in Figures 1 and 2).

[0025] The drive elements 5 illustrated comprise a slider element 10, constituting the element that drives the sash opening and closing devices 6 and 7, and means 11 for locking the single slider element 10 in the different positions corresponding to the tilt opened and turn opened configurations of the sash.

[0026] The rack 8b comprises a drive portion 10t presented by the slider element 10 and enabling the latter to move between different stable positions corresponding to the closed and open configurations of the sash.

[0027] The handle body 2 also has a cover plate attached to it and designed to protect the kinematic assembly 8 and the portion of the slider element 10 connected to the assembly.

[0028] The cover plate 9 has a set of first holes 9a at each end, through which fixing means 3 (consisting of screws for example) are inserted in order to secure the handle body 2 to the sash.

[0029] In addition, as shown clearly in Figure 7, the cover plate 9 also has in it at least one guide slot 9b through which the slider element 10 protrudes.

[0030] As illustrated in Figure 3, the aforementioned locking means 11 are mounted on the slider element 10 detachably, that is to say, in such a way that they can be separated.

[0031] More specifically, the locking means 11 are slidable into the single slider element 10 from the free outer end of the slider element 10 itself after the latter has been fitted to the handle body 2.

[0032] In practice, this possibility enables the handle 1, in its plain configuration, that is to say, with only the slider element 10 present, to be fitted to sashes that open only by turning, while by simply adding the locking means 11, the handle 1 can be applied to sashes that open by tilting or turning.

[0033] For changing over rapidly from one type to the other, the invention contemplates the provision of non-reversible means 12 for fastening the locking means 11 on the handle 1 and acting on the locking means 11 when the locking means 11 themselves are inserted into the slider element 10.

[0034] Looking in more detail, the locking means 11 (see also Figures 4 and 5) comprise a slide plate 16, slidably housed in the slider element 10, and spring means 17 placed between the slide plate 16 itself and the slider element 10 when the slide plate 16 itself is inserted.

[0035] The spring means 17 enable the slide plate 16 to move between a retracted, non-operating drive position of the slider element 10, where the slide plate 16 itself is all the way inside the slider element 10 thanks to contact with a fixed door or window frame (not illustrated), and a forward slider element locked operating position, where the slide plate 16 partly protrudes from

the slider element 10 (see Figure 2).

[0036] The fastening means 12 hold the slide plate 16 securely in the slider element 10 in the locked operating position, since the non-operating position is shifted towards the inside of the handle body 2.

[0037] At a constructional level (again with reference to Figures 4 and 5), the slide plate 16 comprises an operating end head 20 and a boss 21, at the opposite end, which comes into contact with a fixed surface defined by the cover plate 9 of the handle body 2.

[0038] The slide plate 16 also has a second central groove 22 that partly contains the spring means 17 which are positioned with one end touching a second contact pin 23 also made on the slide plate 16.

[0039] In practice, when the slide plate 16 (constituting a device also known as °incorrect operation safety lock°) is fitted on the slider element 10, its end head 20 tends to protrude and, with the boss 21, engages a matching opening 9c made in the cover plate 9 and stops the slider element 10 from moving: this occurs, as is known, when the sash A is open.

[0040] As shown also in Figure 6, the slider element 10 has the shape of a "C" to form a pair of guides 10a, one on each side, for slidably containing the slide plate 16, and a first central guide groove 18 for the spring means 17 positioned with one end touching a first contact pin 19 made on the inside end of the slider element 10.

[0041] With the drive elements 5 made in this way, in a first non-restricting exemplary embodiment, the aforementioned fastening means 12 are positioned on and operate between the slide plate 16 and the cover plate 9.

[0042] More specifically, (see Figures 3 to 7), these fastening means 12 may comprise a tooth 13 made on the cover plate 9 (preferably at one of the aforementioned openings 9c).

[0043] The tooth 13 is engageable with an end projection 11a which protrudes from the boss 21 of the slide plate 16 when the slide plate 16 is slidably housed in the slider element 10.

[0044] The tooth 13 is elastically mobile (see arrow F1 in Figure 7) from a position where the projection 11a is past the cover plate 9 and the tooth 13 is inside the cover plate 9 through engagement with the projection 11a, to a position where the projection 11a is locked inside the cover plate 9, the tooth 13 lies in the same plane as the cover plate 9 and the projection 11a is stopped against the tooth 13 itself.

[0045] This slide plate 16 locked configuration is stabilised during assembly with the tooth 13 resting on the surface of the sash A.

[0046] In a second exemplary embodiment (see Figures 8 and 9), the aforementioned fastening means 12 are positioned on and operate between the slide plate 16 and the slider element 10.

[0047] In this embodiment, the fastening means 12 comprise at least one elastically compliant appendage 14 made on the slider element 10, the appendage 14 protruding from the plane in which the slide plate 16 slides in the slider element 10.

[0048] In addition to this, there is a lug 15 which is made at the lower end of the slide plate 16 and which, once the slider element 10 is inserted (see arrow F2 in Figure 9), comes into contact with and moves past the appendage 14, and then holds the slide plate 16 within the slider element 10 when the appendage 14 returns to its protruding state in such a way as to stop the lug 15 (see arrows F3 in Figure 9).

[0049] In the first embodiment described above, the slide plate 16 can be slidably inserted into the slider element 10 after the latter has been stably attached to the handle body 2 but before the handle 1 is fitted to the sash A.

[0050] In the second embodiment described above, the slide plate 16 can be slidably inserted into the slider element 10 after the latter has been stably attached to the handle body 2 and after the handle 1 has been fitted to the sash A.

[0051] The handle made as described above achieves the aforementioned aims thanks to a simple variation in the structure of the handle drive elements which enable the slide plate to be inserted into the slider element by a simple manual operation only when necessary to adapt the handle to doors or windows of the tilt and turn type.

[0052] The invention has the following advantages:

- reduced stock of handles since the basic design is identical for doors or windows that open only by turning and for those that open by tilting and turning;
- reduction in the number of preassembly operations required for tilt and turn handles;
- a single incorrect operation safety lock device, the slide plate, is the same for all the handles and, if necessary, can be applied to the Cremone bolt even on the spot quickly and easily and without using any tools.

[0053] Both the tooth and the flexible appendage are exemplary embodiments of the means for fastening the slide plate to the handle and it is obvious that equivalent fastening means may be adopted without diminishing the effectiveness of the invention.

[0054] It will be understood that the invention can 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 sash (A) of the door or window by means of suitable fastening means (3);
- an operating handgrip (4) protruding from one side of the handle body (2);
- drive elements (5) protruding from the side of the handle body (2) opposite the side with the handgrip (4) and connectable to operating devices (6, 7) for opening and closing the door or window; the drive elements (5) being controlled by kinematic means (8) for transmitting motion from the handgrip (4) to the drive elements (5) in such a way as to move the drive elements (5) themselves into the different positions corresponding to the tilt opened and turn opened configurations of the sash (A); the drive elements (5) comprising a slider element (10) connected to the kinematic means (8) and constituting the element that drives the operating devices (6, 7), and means (11) for locking the single slider element (10) in the different positions corresponding to the tilt opened and turn opened configurations of the sash;
- a plate (9) for covering at least the kinematic means (8) and being attachable to the handle body (2) on the side from which the drive elements (5) protrude, the handle (1) being **characterised in that** the locking means (11) are mounted on the slider element (10) detachably, that is to say, in such a way that they can be separated.

2. The handle according to claim 1, **characterised in that** the locking means (11) are slidable into the single slider element (10) from the free outer end of the slider element (10) itself after the latter has been fitted to the handle body (2).

3. The handle according to claim 1, **characterised in that** it comprises non-reversible means (12) for fastening the locking means (11) on the handle (1) and acting on the locking means (11) when the locking means (11) themselves are inserted into the slider element (10).

4. The handle according to claim 1, **characterised in that** it comprises:

- the locking means (11) slidable into the single slider element (10) from the free outer end of the slider element (10) itself after the latter has been fitted to the handle body; and
- non-reversible means (12) for fastening the locking means (11) on the handle (1) and acting on the locking means (11) when the locking means (11) themselves are inserted into the slider element (10).

5. The handle according to claim 4, **characterised in that** the fastening means (12) are positioned on and operate between the locking means (11) and a plate (9) for covering at least the kinematic means (8).

6. The handle according to claim 4, **characterised in that** the fastening means (12) are positioned on and operate between the locking means (11) and the slider element (10).

7. The handle according to claims 1 and 4, **characterised in that** the fastening means (12) comprise a tooth (13) made on the cover plate (9) and engageable with an end projection (11a) of the locking means (11) when the locking means (11) are inserted into the slider element (10), the tooth (13) being elastically mobile from a position where the projection (11a) of the locking means (11) is past the cover plate (9) and the tooth (13) is inside the cover plate (9) through engagement with the projection (11a), to a position where the projection (11a) is locked inside the cover plate (9), the tooth (13) lies in the same plane as the cover plate (9) and the projection (11a) is stopped against the tooth (13) itself.

8. The handle according to claims 1 and 4, **characterised in that** the fastening means (12) comprise; at least one elastically compliant appendage (14) made on the slider element (10) and protruding from the plane in which the locking means (11) slide in the slider element (10); and a lug (15) made at one end of the locking means (11) and designed to come into contact with and move past the appendage (14) when the locking means (11) are inserted into the slider element (10), in such a way as to hold the locking means (11) within the slider element (10).

9. The handle according to claim 1, **characterised in that** the locking means (11) comprise a slide plate (16) slidably housed in the slider (10) and spring means (17) which are placed between the slide plate (16) itself and the slider element (10) when the slide plate (16) is inserted, and which enable the slide plate (16) to move between a retracted, non-operating drive position of the slider element (10), where the slide plate (16) itself is all the way inside the slider element (10) thanks to contact with a fixed door or window frame, and a forward slider element (10) locked operating position, where the slide plate (16) partly protrudes from the slider element (10); it being possible to secure the slide plate (16) inside the slider element (10) in the locked operating position.

10. The handle according to claim 9, **characterised in that** the slider element (10) has the shape of a "C" to form a pair of guides (10a), one on each side, for

slidably containing the slide plate (16), and a first central guide groove (18) for the spring means (17) positioned with one end touching a first contact pin (19) made on the inside end of the slider element (10).

11. The handle according to claim 9, **characterised in that** the slide plate (16) comprises an operating end head (20) and a boss (21), at the opposite end which comes into contact with a fixed surface defined by a cover plate (9) of the handle body (2); the slide plate (16) having a second central groove (22) for partly containing the spring means (17) positioned with one end touching a second contact pin (19) made on the slide plate (16).

12. The handle according to claim 1, **characterised in that** the locking means (11) can be slidably inserted into the slider element (10) after the latter has been stably fitted to the handle body (2).

13. The handle according to claim 1, **characterised in that** the locking means (11) can be slidably inserted into the slider element (10) after the latter has been stably fitted to the handle body (2) and after the handle body has been fitted to the sash (A).

FIG. 2

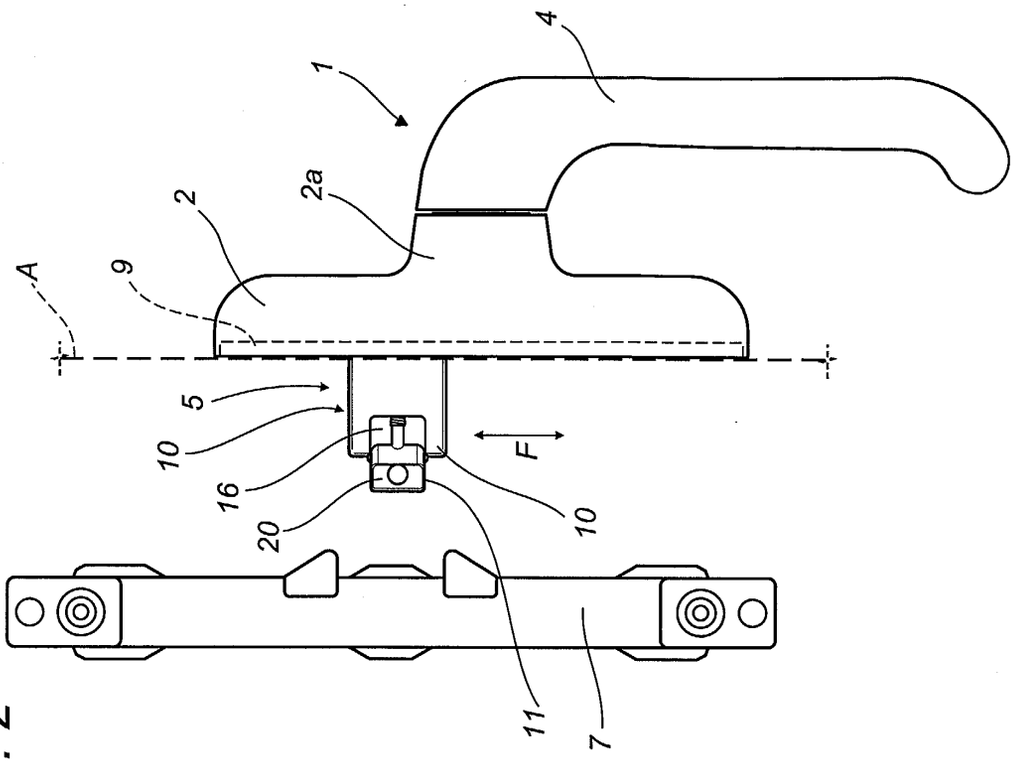


FIG. 1

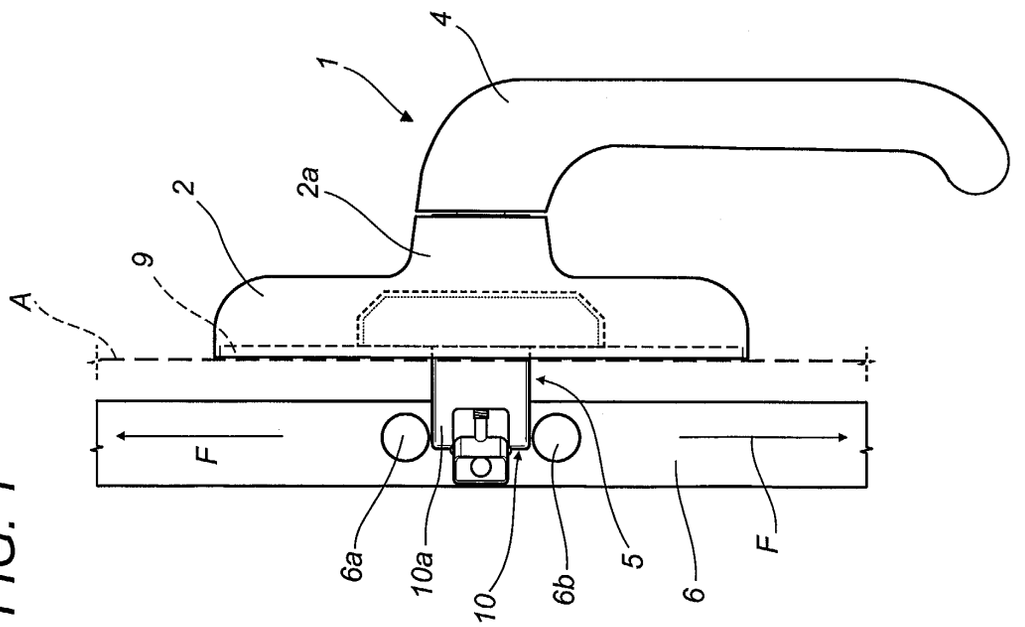


FIG. 3

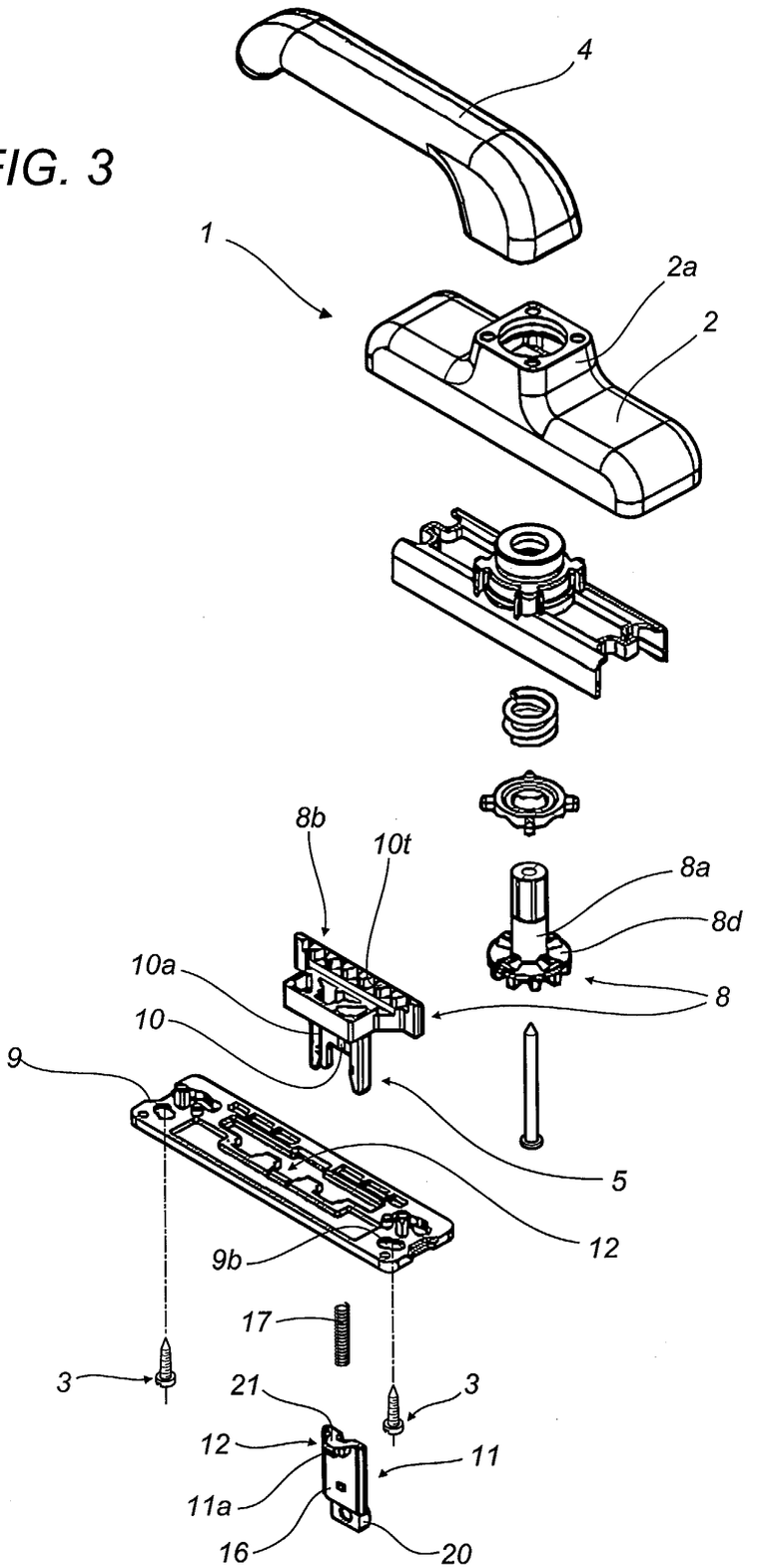


FIG. 4

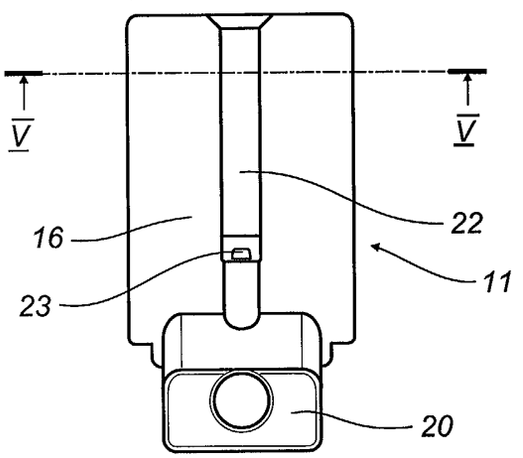


FIG. 5

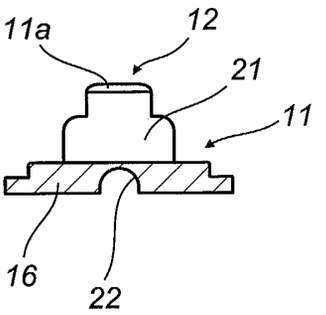


FIG. 6

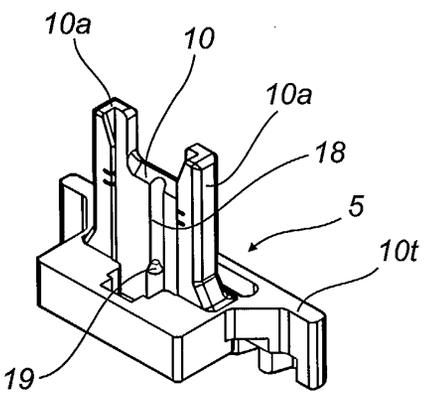


FIG. 7

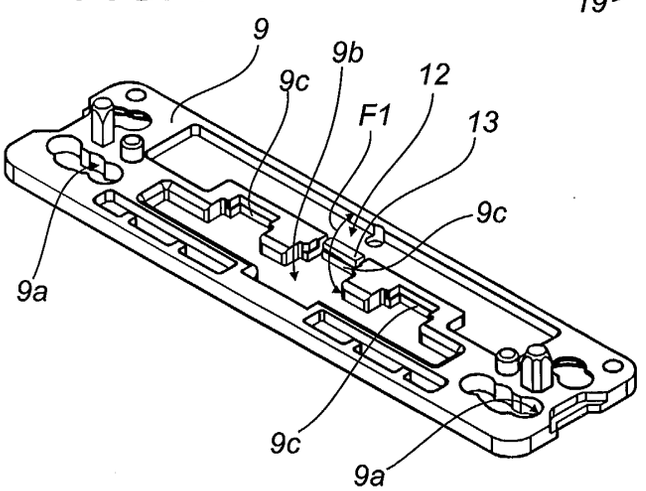


FIG. 9

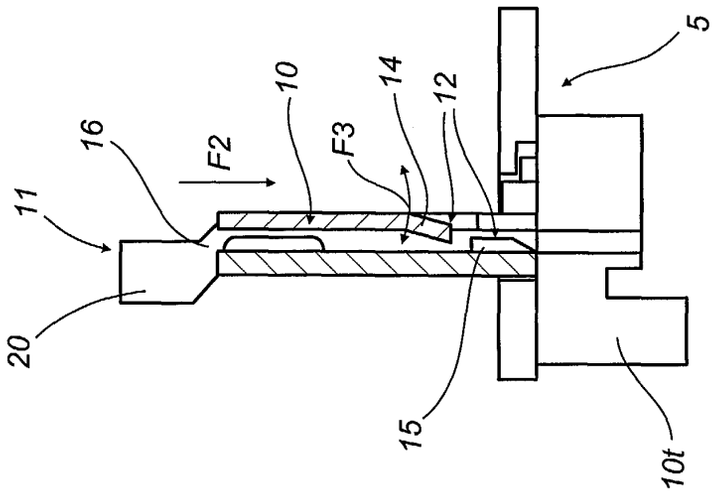
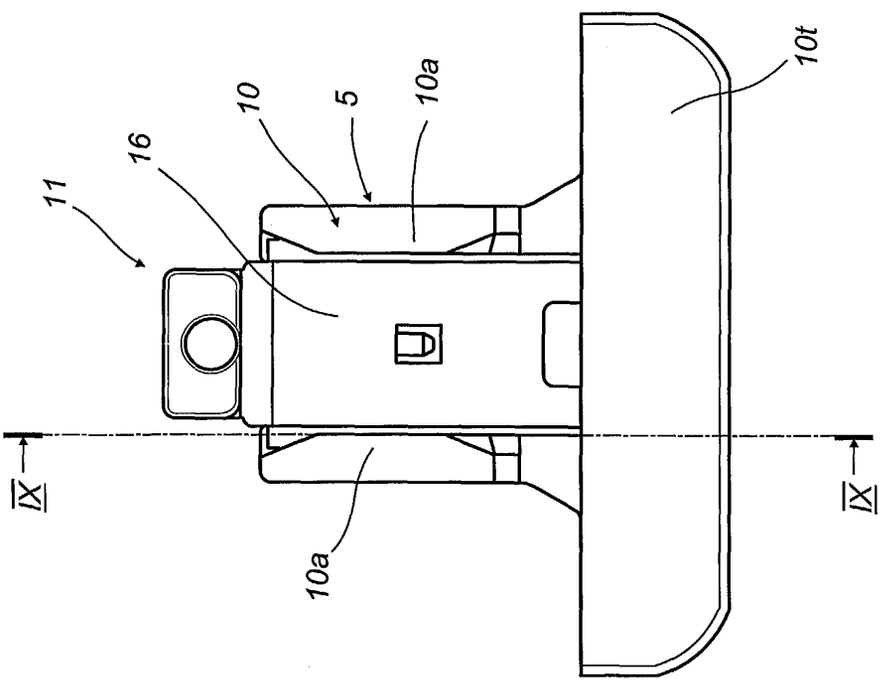


FIG. 8



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EUROPEAN SEARCH REPORT

Application Number
EP 03 42 5519

DOCUMENTS CONSIDERED TO BE RELEVANT

Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	CLASSIFICATION OF THE APPLICATION (Int.Cl.7)
X	EP 1 036 899 A (GIESSE SPA) 20 September 2000 (2000-09-20) * column 2, line 33 - column 4, line 40; figures *	1-13	E05C9/02
A	EP 0 801 195 A (ALUMINIO TECNOLOGIA Y PRODUCTO) 15 October 1997 (1997-10-15) * abstract; figures *	1	
A	DE 199 41 371 A (NOTTER EUGEN GMBH) 17 August 2000 (2000-08-17) * column 5, line 23 - column 5, line 45; figures *	1	

TECHNICAL FIELDS SEARCHED (Int.Cl.7)

E05C

The present search report has been drawn up for all claims

Place of search	Date of completion of the search	Examiner
MUNICH	28 October 2003	Vacca, R

CATEGORY OF CITED DOCUMENTS

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28-10-2003

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