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

(11) EP 1 387 030 A1

(12) EUROPEAN PATENT APPLICATION

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

(51) Int Cl.[7]: **E05C 9/02**, E05C 9/10

(21) Application number: **03425520.8**

(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 BO20020504**

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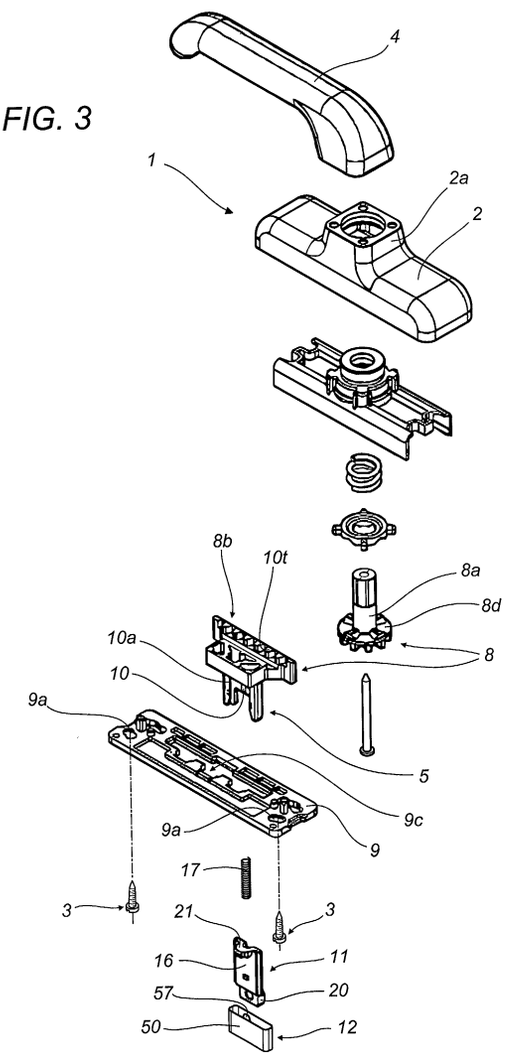
(54) A handle for turn opening and tilt and turn opening doors or windows

(57) A handle for turn opening or tilt and turn opening doors or windows comprises at least: 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); and drive elements (5) protruding from the opposite side of the handle body (2) and connectable to operating devices (6, 7) for opening and closing the door or window; the drive elements (5) comprising a slider element (10) for driving the operating devices (6, 7), and means (11) for locking the slider element (10) in the different positions corresponding to the tilt opened and turn opened configurations of the sash; the locking means (11) being housed inside the slider element (10) and being mobile between a retracted, non-operating slider element (10) drive position where the locking means (11) are inside the slider element (10), and a forward slider element (10) drive locked operating position, where the locking means (11) partly protrude from the slider element (10). The handle (1) further comprises releasable retaining means (12) acting between the slider element (10) and the locking means (11) to stably hold the locking means (11) in the retracted non-operating position.

FIG. 3



EP 1 387 030 A1

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.

[0007] 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.

[0008] 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.

[0009] 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.

[0010] In this type of door or window, the handgrip can be moved into at least three different configurations.

[0011] 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.

[0012] 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.

[0013] 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.

[0014] 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 protuberance on it to engage with one of the specially made seats in the aforementioned cover plate (preferably) and prevents the slider from moving.

[0015] Handles of the type described above have proved to be extremely valid and practical but have, over time, created a warehousing costs and management problem for manufacturers of door and window hardware.

[0016] 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.

[0017] 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.

[0018] The invention achieves this object in a handle for doors or windows comprising at least: a handle body attachable to a door or window sash; an operating handgrip protruding from one side of the handle body; and 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 slider element for driving the operating devices, and means for locking the slider element in the different positions corresponding to the tilt opened and turn opened configurations of the sash; the locking means being housed inside the slider element and being mobile between a retracted, non-operating slider element drive position where the locking means are inside the slider element, and a forward slider element drive locked operating position, where the locking means partly protrude from the slider element; the handle fur-

ther comprising releasable retaining means acting between the slider element and the locking means to stably hold the locking means in the retracted non-operating position.

[0019] 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;
- Figure 4 is a schematic top plan view of a first embodiment of the drive elements forming part of the handle shown in the drawings listed above;
- Figure 5 is a schematic top plan view of a second embodiment of the drive elements forming part of the handle shown in the drawings listed above;
- Figure 6 is a schematic top plan view of a third embodiment of the drive elements forming part of the handle shown in the drawings listed above.

[0020] With reference to the accompanying drawings, in particular Figures 1 and 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.

[0021] 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.

[0022] 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.

[0023] 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.

[0024] 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.

[0025] 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 contact element 7 in Figure 2.

[0026] 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).

[0027] 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.

[0028] 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.

[0029] 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.

[0030] 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.

[0031] Returning to the drive elements 5, the locking means 11 (still with reference to Figures 1 to 3) comprise a slide plate 16, slidably housed in the slider element 10, and spring means 17 located between the slide plate 16 itself and the slider element 10 when the slide plate 16 itself is inserted.

[0032] 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).

[0033] At a constructional level, the slide plate 16 comprises an operating end head 20 which is the part that protrudes from the slider element 10.

[0034] In practice the slide plate 16 constitutes a device known as "incorrect operation safety lock" and its end head 20 tends to remain in the protruding position 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.

[0035] As shown also in Figures 4 to 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.

[0036] The handle 1 described above further comprises releasable retaining means 12 acting between the slider element 10 and the locking means 11, that is, the slide plate 16, to stably hold the slide plate 16 in the

retracted non-operating position.

[0037] In practice the handle 1 includes both the slider element 10 and the slide plate 16, but when the latter is unnecessary because the handle 1 is fitted on plain sash that opens only by turning, it remains locked inside the slider element 10.

[0038] Alternatively, if the handle 1 is fitted on a door or window that opens either by turning or by tilting, the slide plate 16 is released and can slide into its normal working configuration along the slider element 10.

[0039] In a first embodiment, illustrated in Figure 4, the releasable retaining means 12 are made on the slider element 10 and act on the slide plate 16.

[0040] More specifically, the releasable retaining means 12 consist of two elastically compliant retaining tabs 52 and 53 made on the pair of guides 10a of the slider element 10.

[0041] The tabs 52 and 53 may be stably inserted into matching recesses 54 made in the slide plate 16 and may be lifted out using a suitable tool (not illustrated) in order to release the slide plate 16.

[0042] In practice, the slide plate 16 is held within the slider element 10 by bending the tabs 52 and 53 onto the slide plate 16 itself. It can be released, if necessary, by bending the tabs 52 and 53 back until the spring means 17 can push the slide plate 16 into the forward operating position.

[0043] In a second embodiment, illustrated in Figures 3 and 5, the releasable retaining means 12 consist of an independent element 50 applied to the free end of the slider element 10 to hold the slide plate 16 in the retracted non-operating position.

[0044] In this case, the releasable retaining means 12 may consist of a fitting 50 for closing the free end of the slider element 10 and whose profile matches the profile of the slider element 10.

[0045] This fitting 50, consisting basically of a cap, has internal protrusions 55 which fit into matching slots 56 made in the slider element 10 in such a way as to hold the slide plate 16 in the retracted non-operating position.

[0046] Preferably, the fitting 50 is equipped with gripping means 57 to enable the fitting 50 to be removed from the slider element 10. For example, the means 57 may consist of a tear tab used to pull the fitting off more easily.

[0047] In a third embodiment, illustrated in Figure 6, the releasable retaining means 12 consist of an independent element 51 passing between the slider element 10 and the slide plate 16.

[0048] Looking in more detail, the releasable retaining means 12 consist of a pin 58 passing through both the slider element 10 and the slide plate 16, which have matching through holes 59, 60 made in corresponding positions so as to keep the slide plate 16 in the non-operating position inside the slider element 10. In this embodiment, the pin 58 may be positioned either in a direction transversal to an axis 10z common to both the slider element 10 and to the slide plate 16, or in a direction perpendicular to the common axis 10z (see broken line in Figure 6).

[0049] In this case, too, releasing the slide plate 16 is a simple operation that can be done by simply pulling the pin 58 out of the holes 59 and 60 to allow the slide plate 16 to move into the operating position.

[0050] The handle made as described above achieves the aforementioned aims thanks to a simple addition to the structure of the handle drive elements which enable the slide plate to be released by a simple manual operation only when necessary to adapt the handle to doors or windows of the tilt and turn type with an incorrect operation safety lock device.

[0051] 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;
- ease and flexibility of assembly thanks to the reversible retaining means since the handle, if mounted on a plain door or window, does not need any adjustment and the slide plate can remain in the retracted non-operating position, whereas, if the handle is mounted on a tilt/turn type door or window, the slide plate can be quickly and easily released by simply bending the tabs using an ordinary tool, or pulling off the end fitting or pulling out the pin, to enable it to move into the operating position.

[0052] 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 at least:

   - 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) 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 slidably housed in the slider element (10) and mobile between a retracted, non-operating drive position of the slider element (10), where the locking means (11) are inside the slider element (10), and a forward slider element (10) locked operating position, where the locking means (11) partly protrude from the slider element (10); the handle (1) being **characterised in that** it further comprises releasable retaining means (12) acting on the slider element (10) and on the locking means (11) and designed to stably retain the locking means (11) in the retracted non-operating condition.

2. The handle according to claim 1, **characterised in that** the releasable retaining means (12) are made on the slider element (10) and act on the locking means (11).

3. The handle according to claim 1, **characterised in that** the releasable retaining means (12) consist of an independent element (50) applied to the free end of the slider element (10) and designed to retain the locking means (11).

4. The handle according to claim 1, **characterised in that** the releasable retaining means (12) consist of an independent element (51) passing between the slider element (10) and the locking means (11).

5. The handle according to claim 2, **characterised in that** the releasable retaining means (12) consist of two retaining tabs (52, 53) made on the slider element (10), which has the shape of a "C" to form a pair of guides (10a), one on each side, for slidably containing the locking means (11) consisting of a slide plate (16); the tabs (52, 53) being stably insertable in matching recesses (54) made in the slide plate (16) and able to be lifted out of the recesses (54) using a suitable tool in order to release the slide plate (16).

6. The handle according to claim 3, **characterised in that** the releasable retaining means (12) consist of a fitting (50) for closing the free end of the slider element (10) and whose profile matches the profile of the slider element (10), which has the shape of a "C" to form a pair of guides (10a), one on each side, for slidably containing the locking means (11) consisting of a slide plate (16); the end fitting (50) having internal protrusions (55) which fit into matching slots (56) made in the slider element (10) in such a way as to retain the slide plate (16).

7. The handle according to claim 6, **characterised in that** the fitting (50) is equipped with gripping means (57) to enable the fitting (50) itself to be removed from the slider element (10).

8. The handle according to claim 4, **characterised in that** the releasable retaining means (12) consist of a pin (58) passing through the slider element (10) and the locking means (11), which have matching through holes (59, 60) made in corresponding positions so as to keep the locking means (11) in the non-operating position inside the slider element (10).

9. The handle according to claim 8, **characterised in that** the pin (58) is inserted in the holes (59, 60) which extend in a direction transversal to a longitudinal axis (10z) common to the slider element (10) and to the locking means (11).

10. The handle according to claim 8, **characterised in that** the pin (58) is inserted in the holes (59, 60) which extend in a direction perpendicular to a longitudinal axis (10z) common to the slider element (10) and to the locking means (11).

FIG. 2

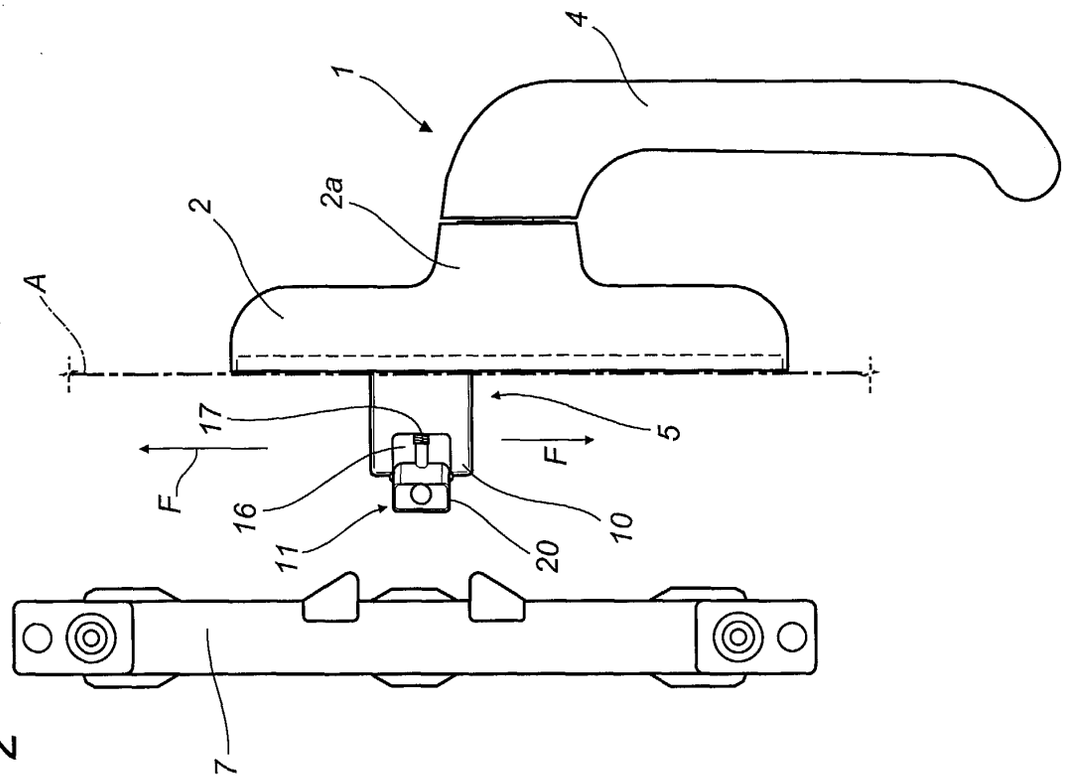


FIG. 1

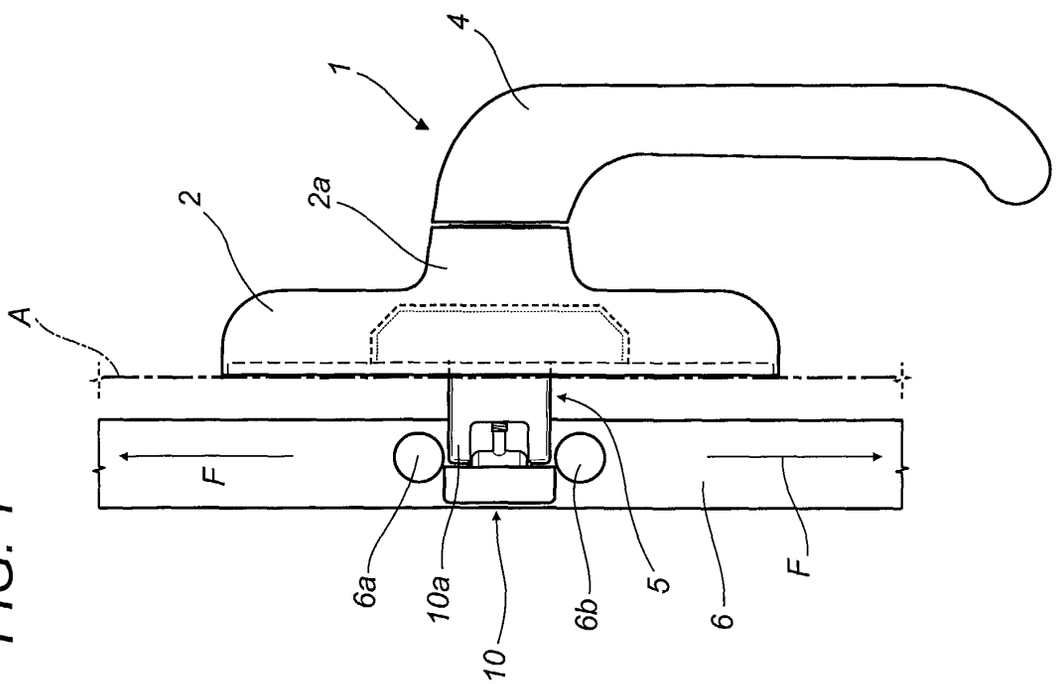
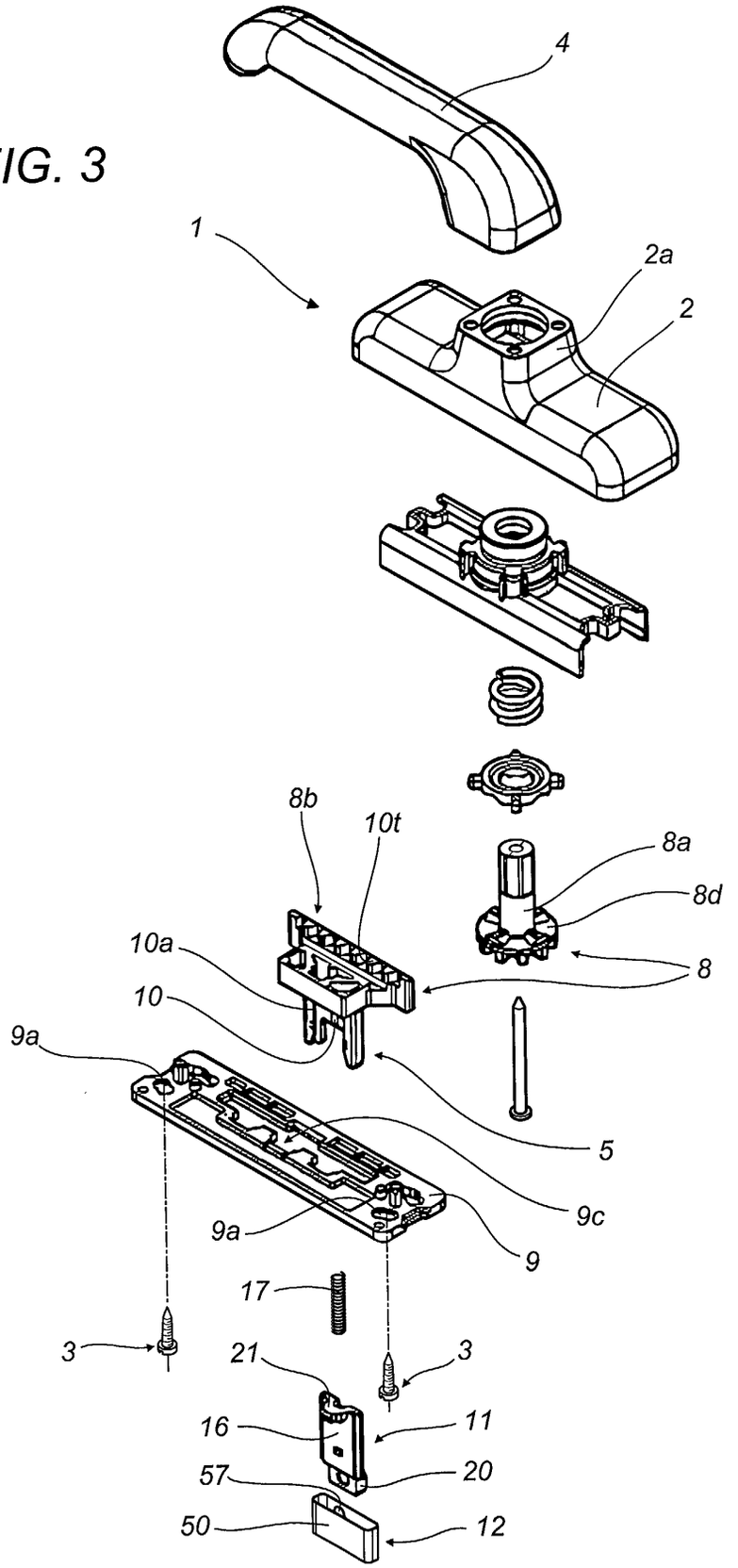


FIG. 3



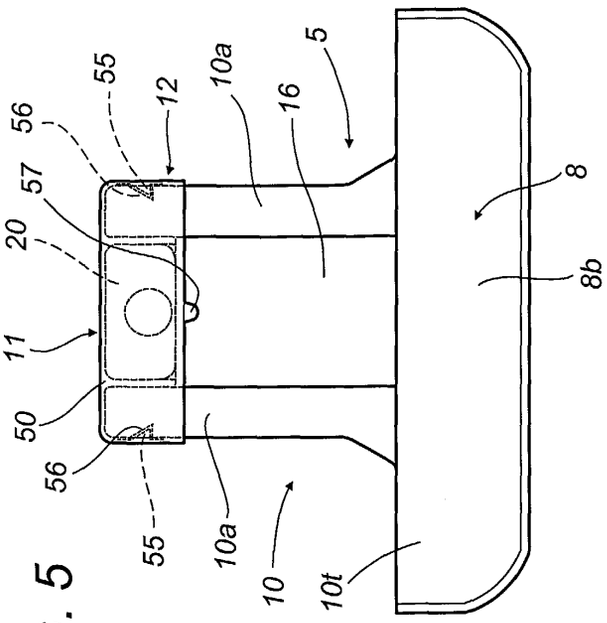


FIG. 5

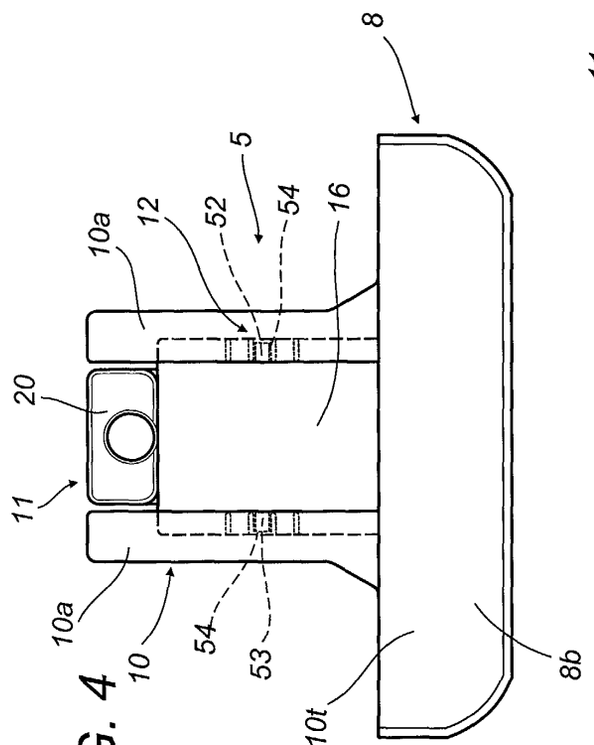


FIG. 4

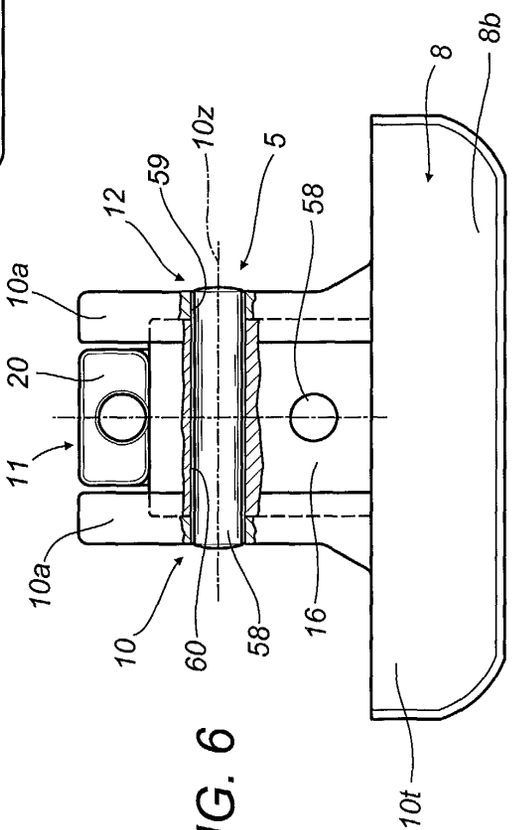


FIG. 6

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EUROPEAN SEARCH REPORT

Application Number
EP 03 42 5520

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)
A	EP 1 036 899 A (GIESSE SPA) 20 September 2000 (2000-09-20) * column 2, line 33 - column 4, line 40 * ---	1	E05C9/02 E05C9/10
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	10 November 2003	Vacca, R

CATEGORY OF CITED DOCUMENTS

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