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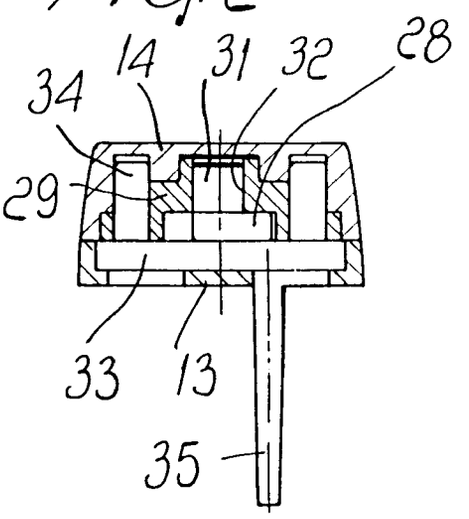
(54) Handle of the so-called cremone-bolt type

(57) The cremone-bolt handle comprises a supporting body (1) whereto the stem of a lever formed by the handle (7) itself is pivoted; the stem is adapted to engage elements (24,28) for actuating a pair of slider elements (29) adapted to be actuated in opposite directions and connected to respective rods for closing a movable leaf, the body (1) being adapted to be detachably mounted on a case (4) meant to be stably fixed to the movable leaf and forming the seat for accommodating the actuation elements (24,28) and the slider elements (29).

Fig. 2



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Description

The present invention relates to a handle of the so-called cremone-bolt type.

It is known that so-called cremone-bolt handles are in widespread use for closing movable leaves in casements and have two vertical sliding rods the ends whereof enter appropriate holes in the fixed part.

More particularly, cremone-bolt handles usually have a toothed pinion which is actuated by a lever and meshes with respective racks formed on two sliders which are guided vertically in a box-shaped supporting body fixed to the lock stile of the leaf to be opened. The sliders are connected respectively to the vertical rods, which are adapted to engage the upper and lower stringers of the leaf frame.

The supporting body of the handle forms a cavity inside which said elements for actuating the two vertical rods are accommodated; said cavity is closed by a base plate locked by the handle supporting body against the lock stile of the shutter. The body forms the seat for rotatably coupling to a stem or tang of the handle, which enters said cavity and is connected to the actuation elements.

These handles are often fitted on the corresponding leaves before they are installed. This, however, causes considerable space occupation problems, both in store and during transport, because of the considerable protrusion of the handle from the surface of the leaf. Damage to said handles, caused by impacts and the like, can also occur.

A principal aim of the present invention is to provide a cremone-bolt handle allowing great flexibility in assembly, particularly reducing the problems of space occupation during transport and the like.

Within the scope of this aim, an object of the present invention is to provide a cremone-bolt handle which is simple in concept, safely reliable in operation, and versatile in use.

This aim and this object are both achieved, according to the invention, by the present cremone-bolt handle, which comprises a supporting body whereto the stem of a lever formed by the handle is pivoted, said stem being adapted to engage means for actuating a pair of slider elements adapted to be actuated in opposite directions and connected to respective rods for closing a movable leaf, characterized in that the body is adapted to be detachably mounted on a case meant to be fixed stably to said movable leaf and forming the housing for the actuation means and the slider elements.

The details of the invention will become apparent from the following detailed description of a preferred embodiment of the cremone-bolt handle, illustrated only by way of non-limitative example in the accompanying drawings, wherein:

figure 1 is a longitudinal sectional view of the cremone-bolt handle according to the invention, wherein said body is shown separated from said case;

figure 2 is a transverse sectional view, taken along the plane II-II of figure 1;

figure 3 is a view of a portion of the longitudinal sectional view of the cremone-bolt handle in the assembly configuration;

figure 4 is a bottom view of said body;

figure 5 is a top view of said case;

figure 6 is a bottom view of said case;

figure 7 is a corresponding bottom view of said case, after removing a base plate of said case;

figure 8 is a transverse sectional view, taken along the plane VIII-VIII of figure 7;

figure 9 is a longitudinal sectional view of the body of the cremone-bolt handle according to the invention in a second embodiment.

With particular reference to the above figures, the cremone-bolt handle comprises a body 1 substantially shaped like a right-angled prism and preferably formed by casting an adapted metal alloy, for example of zinc, aluminum and magnesium.

The body 1 forms an inner cavity 2 and centrally forms an annular expansion 3 which protrudes outwards substantially in the shape of a truncated cone. The cavity 2 is adapted to accommodate a case 4 containing the elements for actuating the cremone bolt.

A collar 5 protrudes from the expansion 3 inside the cavity 2. A stem 6 of a handle 7, preferably made of metal, for example aluminum, is rotatably supported in the expansion 3.

A screw element 8 is screwed in the stem 6 to fix a flanged disk 9 which centrally forms a seat for inserting a tang 10 of the stem 6, so as to provide a side-fit coupling. The flanged disk 9 acts as shoulder for a helical spring 11 accommodated in a compartment which is peripherally delimited by the collar 5 so as to abut against the expansion 3 in an upward region.

The spring 11 acts by compression so as to keep the handle 7 pressed against an annular cam 12 accommodated in a seat formed by the collar 5 and provided with adapted raised portions which are complementary to notches formed on the opposite surface of the handle 7, so as to achieve the snap locking of said handle 7 in given angular positions corresponding in particular to the open and closed positions of the cremone bolt.

The case 4 is constituted by a base plate 13 and by a cover 14 substantially shaped like a right-angled prism; said plate and said cover are preferably provided by casting the same material as the body 1. The plate 13 and the cover 14 are rigidly coupled to each other by means of screws 15 which pass through corresponding holes; additional holes 16, formed proximate to the longitudinal ends of the case, or the hexagonal nuts 42 allow to fix the case to the movable leaf or shutter.

At said ends, the base plate 13 and the cover 14 of the case 4 cooperate so as to form two opposite compartments 17 which are open towards the outside of the case 4 and in which respective engagement elements 18 are arranged which can slide longitudinally to said case 4 in contrast with corresponding helical springs 19. The springs 19 are accommodated in adapted seats formed in the engagement elements 18 and are adapted to abut against the bottom of the corresponding compartments 17.

Each engagement element 18 forms outwards, i.e., on the opposite side with respect to the corresponding spring 19, a hook 20 which is practically saw-tooth shaped and is adapted to engage a corresponding tooth 21 formed at the rim by the body 1 and directed towards the inside of the cavity 2.

In the position in which the body 1 is assembled on the case 4, as specified hereinafter, the springs 19 operate by compression, so as to keep the hooks 20 of the engagement elements 18 engaged with the corresponding teeth 21 which protrude from the body 1.

The engagement elements 18 are retained in the respective seats 17, in the configuration in which the body 1 is disassembled, by lateral protrusions 18a which are opposite to each other and adapted to abut against corresponding shoulders of said seats 17 (see figure 7).

The flanged disk 9 has an engagement element 22 which is cross-shaped and is adapted for side-fit coupling with a complementarily shaped seat 23 formed by an actuation element 24 which is rotatably mounted about the rotation axis A of the handle in a seat which passes centrally through the cover 14 of the case 4. The actuation element 24 is retained by a perforated plate 25 fixed on top of the cover 14 by screws 26.

Four holes 27 are formed in the actuation element 24 and are arranged in a cross-like fashion with respect to the handle rotation axis A. Respective ends of two linkages 28 are articulated in two holes 27 which are diametrically opposite with respect to each other; said linkages are articulated, at their opposite ends, to respective slider elements 29. Engagement is produced by the coupling of two pins 30 and 31, formed at the ends of each linkage 28, with the holes 27 of the actuation element 24 and with corresponding holes 32 of the sliders 29.

Respective keys 33 are coupled to the sliders 29 and act as actuation elements for the leaf locking rods, as shown in detail in Italian patent application no. BO93A000325 in the name of the same Applicant. Each key 33 is constituted by a plate, from one face whereof two ribs 34 rise and engage at corresponding slots of the associated slider 29; a flap 35 protrudes from the face lying opposite to said ribs 34 and protrudes outside the case 4 through a respective slot 36 of the base plate 13.

The sliders 29 are guided inside the case 4 so that they can slide in opposite directions to actuate the closure rods. The sliders 29 form, on the longitudinal plane, a stem 37 which is adapted to abut frontally, in closed position, against a respective engagement element 18.

The operation of the cremone bolt is easily understandable from the above description.

In order to assemble the handle, the case 4 is fixed first of all to the leaf by means of screws driven through the holes 16 or the hexagonal nuts 42. This causes, in a known manner, the flaps 35 to engage the closure rods.

The body 1, whereto the handle 7 is pivoted, is then associated with the case 4, particularly after the leaf has been installed. To do this, it is sufficient to press-fit the body 1 on the case 4, which enters the cavity 2 formed by said body 1.

Engagement of the body 1 on the case 4 causes the elastic retraction of the opposite engagement elements 18 in the seats 17; said engagement elements 18, actuated by the corresponding springs 19, thus engage by snap action, by means of the hooks 20, the opposite teeth 21 formed by the body 1.

Assembly of the body 1 onto the case 4 also causes the coupling of the engagement element 22, rigidly coupled to the stem 6 of the handle 7, to the prism-shaped seat 23 of the actuation element 24, which is rotatably supported by the case 4. After assembly has been performed, therefore, the rotation of the handle 7 causes the actuation of the elements which are connected to the actuation element 24 by means of the linkages 28, i.e., the sliders 29 and the corresponding keys 33.

The body 1 can be disengaged from the case 4, if required, by acting on the engagement elements 18 which elastically retain the body 1. For this purpose, it is necessary to press on said engagement elements 18 by acting on the base portion which can be accessed from the outside, so as to cause their retraction inside the seats 17 in contrast with the elastic action of the springs 19.

In a different embodiment, illustrated in figure 9, the cremone bolt is provided with a lock element 38 adapted to lock the handle in closed position.

More specifically, a cylindrical seat is formed, along the axis A in the handle 7, for the cylinder 39 of the lock, which can be actuated by means of a key 40, said lock acting on a bolt 41 located in the stem 6 of the handle.

The lock 38 allows to lock the handle 7 in closed position, thus preventing the leaf from being opened. In this manner, the leaf cannot be opened accidentally or by unauthorized persons, for example children or other persons the safety whereof might be endangered.

It should be noted that in the configuration wherein the handle is closed, the stem 37 of the sliders 29 frontally abuts against the corresponding engagement element 18, preventing the sliding thereof in the seat 17 (see figure 7).

Accordingly, in closed position, locked by the lock 38, the body 1 also cannot be removed from the case 4; i.e., the handle cannot be disassembled.

To conclude, the cremone-bolt handle according to the invention allows great flexibility in assembly, since the supporting body 1 can be coupled to the case 4, provided with the elements for actuating the closure rods, at the most adapted time. Said case 4 has a flattened shape and protrudes to a very limited extent with respect to its mounting plane. The leaf provided with said case 4 can therefore be stored and transported without the above-mentioned bulk problems caused by the protrusion of the handle.

It is also possible to fit different handle supporting bodies, in terms of shapes, colors and the like, on the case 4, with obvious savings during production. It is in fact possible to differentiate production by replacing only an outside part of the handle, without changing the actuation elements which are stably coupled to the leaf. This replacement possibility is obviously also allowed to the user, with a saving in material and in assembly cost, since it is not necessary to remove the case 4 from the leaf.

The fact should also be noted that the body 1 is easily fitted on the case 4 without the aid of tools or connecting elements. Said assembly therefore does not require specialized personnel.

In the practical embodiment of the invention, the materials employed, as well as the shapes and the dimensions, may be any according to requirements.

Where technical features mentioned in any claim are followed by reference signs, those reference signs have been included for the sole purpose of increasing the intelligibility of the claims and accordingly, such reference signs do not have any limiting effect on the interpretation of each element identified by way of example by such reference signs.

Claims

1. A cremone-bolt handle, which comprises a supporting body whereto the stem of a lever formed by the handle is pivoted, said stem being adapted to engage means for actuating a pair of slider elements adapted to be actuated in opposite directions and connected to respective rods for closing a movable leaf, characterized in that said body is adapted to be detachably mounted on a case which is meant to be fixed stably to said movable leaf and forms the housing for the actuation means and the slider elements.

2. A handle according to claim 1, characterized in that said case has, at its opposite longitudinal ends, two compartments which are open outwards and in which respective engagement elements are arranged which are adapted to engage, under the actuation of corresponding elastic means, corresponding teeth formed by the body.

3. A handle according to claim 2, characterized in that said engagement elements form, towards the outside, a hook substantially sawtooth-shaped and adapted to engage a corresponding tooth which is formed at the rim by the body.

4. A handle according to claim 1, characterized in that an engagement element is associated with said stem and is adapted for side-fit coupling with a complementarily shaped seat formed by an actuation element which is rotatably installed about the rotation axis of the handle in a seat which is formed centrally with respect to said case.

5. A handle according to claim 4, characterized in that said engagement element is constituted by a cross-shaped portion of a flanged disk which is fixed axially to said stem.

6. A handle according to claim 1, characterized in that said case is constituted by a base plate and by a cover which is substantially shaped like a right-angled prism, said base plate and said cover being rigidly coupled to each other through screw means and having holes for fixing said case to said movable leaf.

7. A handle according to claim 6, characterized in that a seat is formed centrally in said cover, an actuation element being mounted in said seat so that it can rotate about the rotation axis of the handle, the actuation element having, towards the outside, a prism-shaped seat for coupling to an engagement element associated with a stem of said handle.

8. A handle according to claim 1, characterized in that said slider elements form a stem adapted to frontally abut, in closed position, against a respective engagement element of the body which is mounted at a corresponding end of said case.

9. A handle according to claim 1, characterized in that said body is substantially shaped like a right-angled prism and forms an internal cavity adapted to accommodate said case.

10. A handle according to claim 1, characterized in that it comprises a lock element arranged in a seat which is formed along the rotation axis of said lever and adapted to act on a bolt accommodated inside the stem to lock said handle in a closed position.

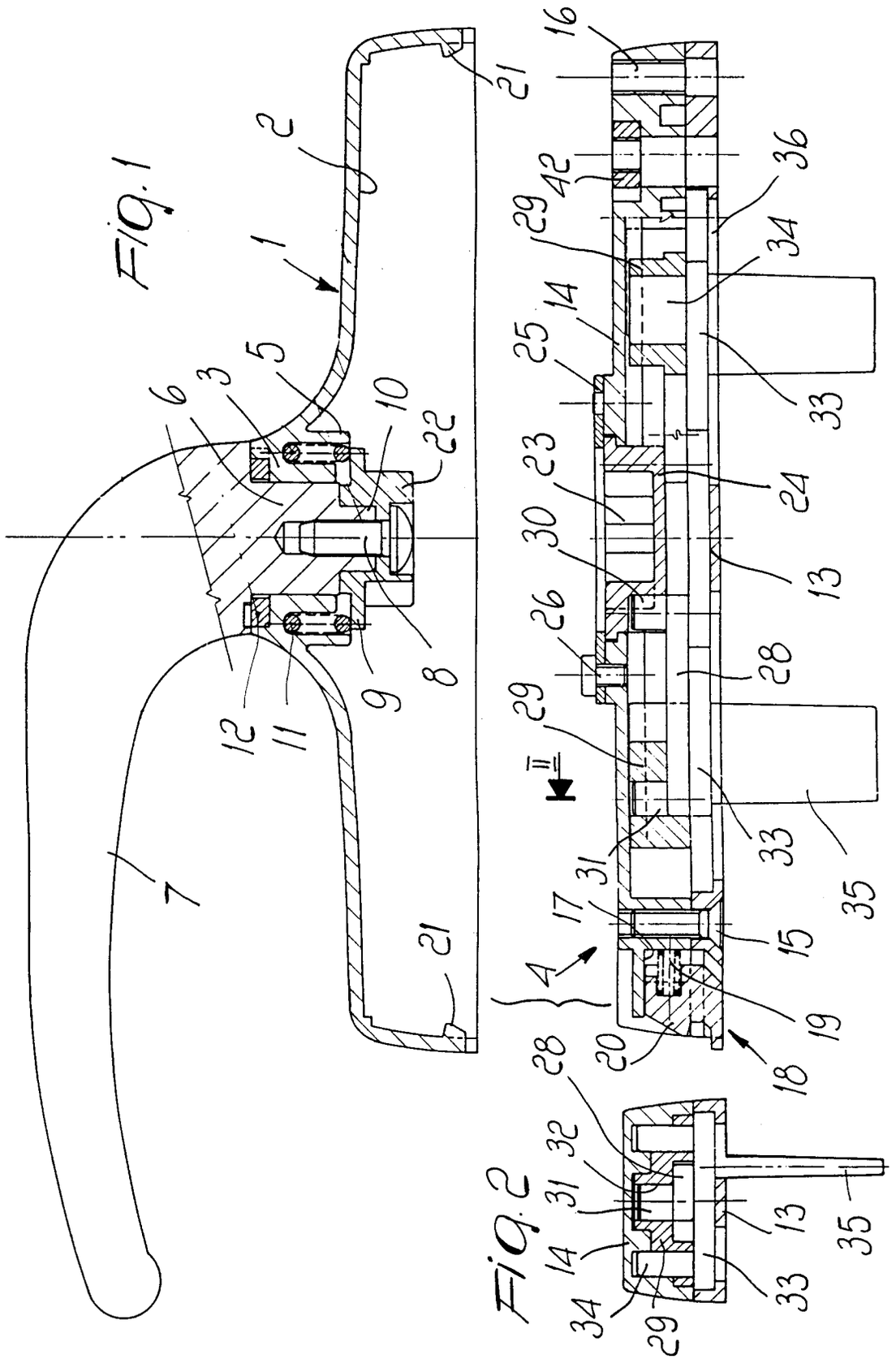
Fig. 1
Fig. 2
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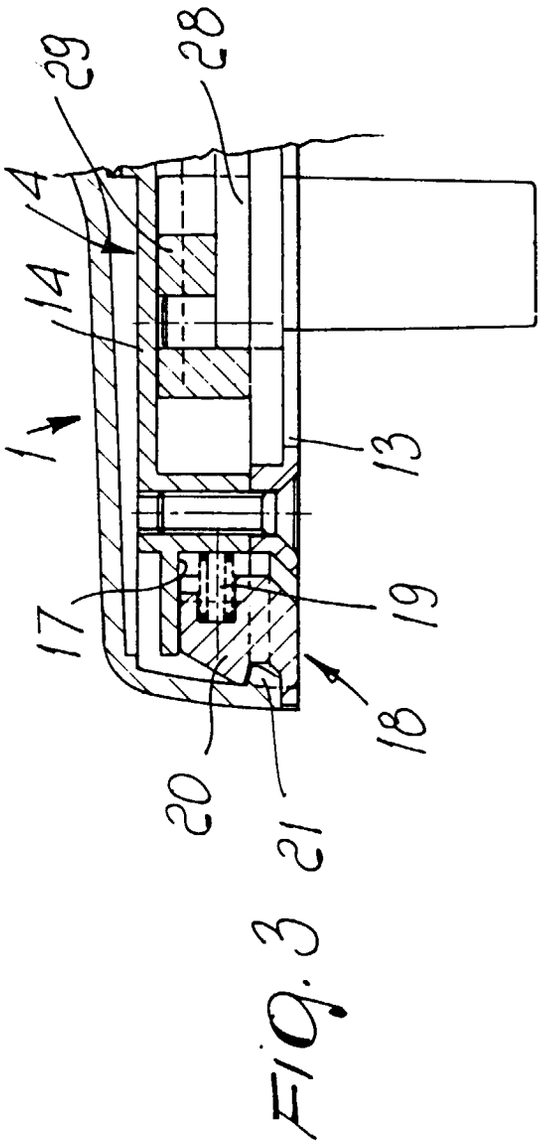

Fig. 3

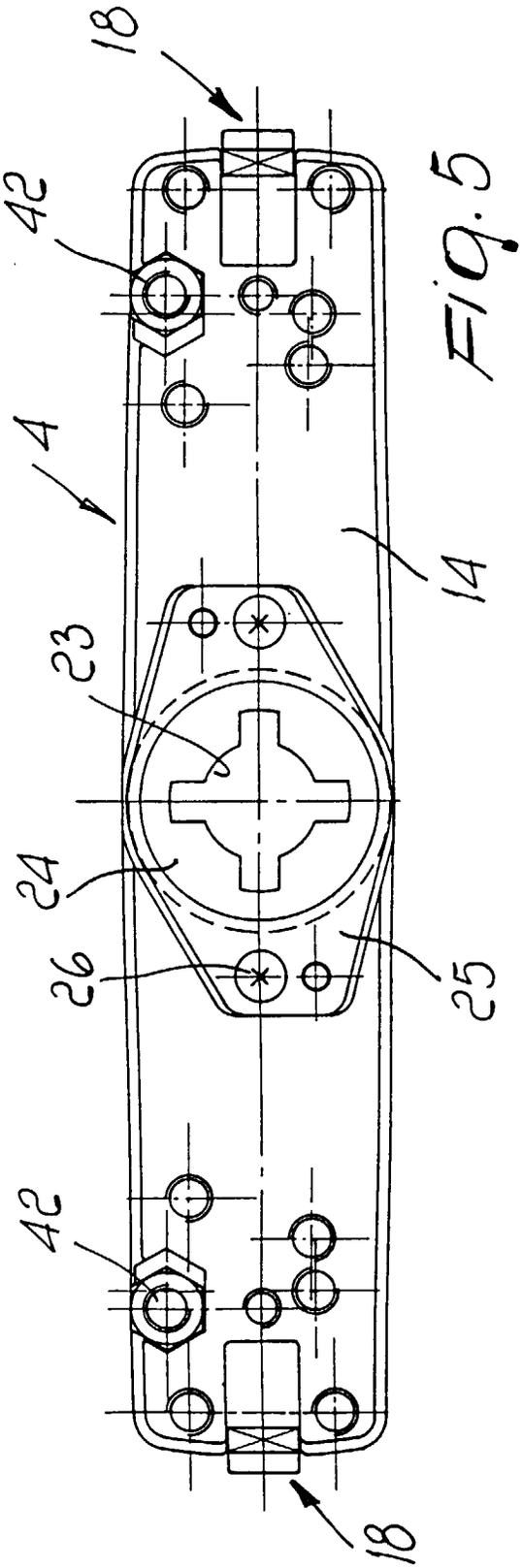

Fig. 5

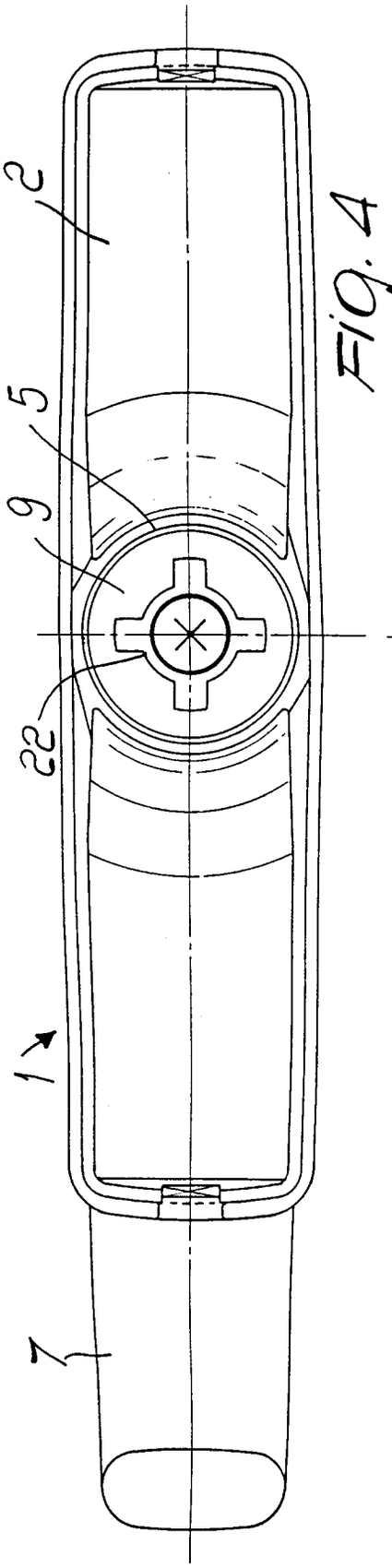

Fig. 4

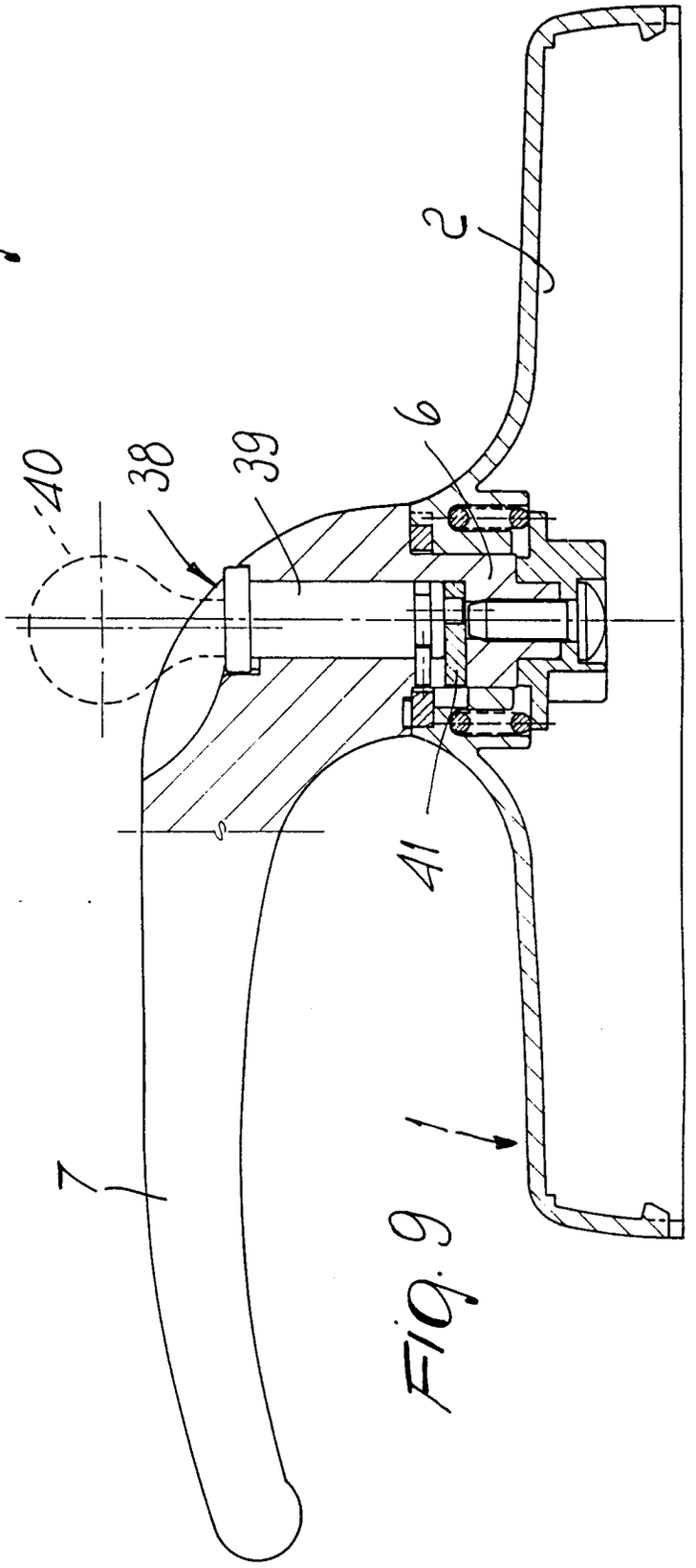

Fig. 9

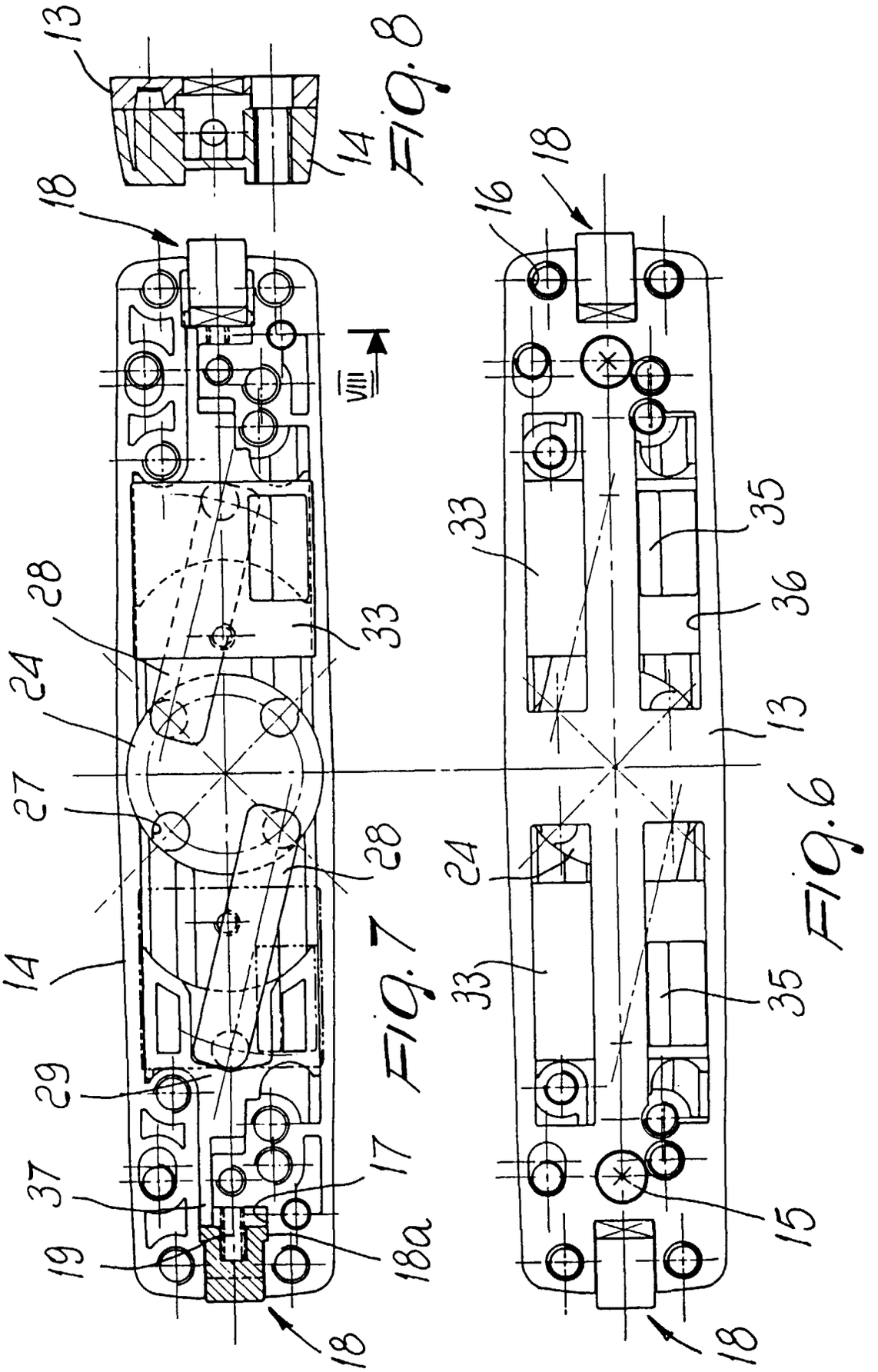

FIG. 8

FIG. 7

FIG. 6

European Patent Office

EUROPEAN SEARCH REPORT

Application Number
EP 97 10 6896

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.6)
X	FR 2 582 711 A (MASSARD JEAN ETS) 5 December 1986 * page 4, line 9 - page 6, line 31; figures *	1,4-7,9	E05C9/04 E05B9/00
A	DE 36 04 115 A (WILKE RUDOLF) 4 September 1986 * page 39, line 9 - page 60, line 9; figures *	1-3,8	
A	BE 1 008 973 A (PARYS REMI E VAN) 1 October 1996 * page 3, line 3 - page 5, line 26; figures *	1,2,4-6	
A	US 2 163 101 A (NEWTON) * page 2, left-hand column, line 27 - page 3, right-hand column, line 11; figures *	1-4	
A	EP 0 226 775 A (SCHUERMANN & CO HEINZ) 1 July 1987 * the whole document *	1-3	

TECHNICAL FIELDS SEARCHED (Int.Cl.6)

E05B
E05C

The present search report has been drawn up for all claims

Place of search	Date of completion of the search	Examiner
THE HAGUE	3 September 1997	Henkes, R

CATEGORY OF CITED DOCUMENTS

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