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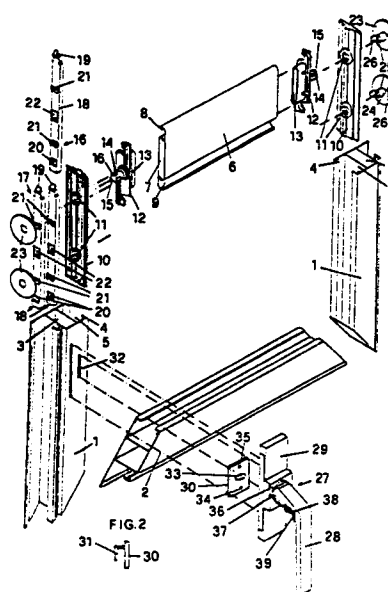
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54 **Shutter.**

57 A device that may be applied in particular to shutters and similar and that will allow, by means of the rotation of the sole handle (28), the opening of the shutter, the orientation of movable blades (6) and the determination of the blocking in a plurality of different positions by moving rods (18) with the possibility of different interposition of metal plates (55, 56, 63, 66, 66').

In variants, i.e. the case of shutters with fix blades (6), the same handle (28) may be used for the sole opening of the shutter, while in the case of fix shutters with movable blades (6) said handle (28) may be used for the sole orientation of blades.



SPECIFICATION

The present invention concerns a device that may be applied in particular to shutters and similar, that allows, by acting on only one handle, to obtain the opening and the closing of the shutter as well as the orientation and the blocking of the blades in different positions - should the same be orientable -, wherein one of said two functions may be eliminated if not requested.

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Shutters with fix and orientable blades are already known and have been realized in many different ways. Usually, they have a metal framework, in particular of aluminium, and blades, also of aluminium, linked to the window-post of the framework by means of elements of plastic material suitably shaped which, being operated by a control lever, allow to angularly adjust the blades.

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In said shutters, two separate and usually different handles are necessary, one for the opening of the shutter, and the other for orientating the blades.

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The known means for the adjusting of the blades are complicated in the realization thereof, not very sure and request long and wearisome assembly.

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Furthermore, the control lever for the adjusting of the blades usually doesn't offer a fix stop to the same so that they could easily be forced from outside.

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Handles are known that block the blades in the desired position,

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but they are rather different from those in use and rather expensive.

5 It is the aim of the present invention to eliminate all above mentioned inconveniences by means of a simple, cheap device that may be easily mounted, comprising one isngle handle that may be used for opening the shutter as well as for orientating the blades and causing the blocking thereof in a plurality of different possible positions.

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In a variant, i.e. in the case of shutters with fix blades, the same handle may be used for only opening the shutter, while in the case of fix shutter with orientable blades said handle may be used for the sole orientation of the blades.

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The device according to the present invention may be applied to shutters comprising a metal framework consisting of a couple of window-posts and a couple of beams, wherein the window-posts show respectively a vertical sliding guide and a corresponding room at the back, as well as a series of transversal adjacent blades, situated with the ends thereof in said window-posts, and is characterized in that for the adjusting of said blades, a ocuple of vertical rods is provided in one of said window-posts, said rods being kept parallel and being operable with an alternate, controversial motion, so as to transfer, through suitable dowels, a rotatory motion to the blades in one sense or in the other.

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The present invention is furthermore characterized in the pre-

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sence of a handle that may be operated in a rotatory sense and provided with means for transforming said motion in a movement of translation and for passing on said movement to a couple of plates linked to the rods for blocking the shutter in a plurality of different possible positions, as well as to a third plate placed between the first two plates and linked to the moving rod of said blades.

The present invention is completed by a plate of plastic material, suitably shaped and provided with a couple of plates, should the sole opening of the shutter or the sole orientation of the blades be requested.

The present invention will be explained more in detail hereinbelow, relating to the attached drawings showing some preferred embodiments.

Figure 1, shows an axonometric exploded view of the fundamental elements forming the device according to the present invention, for the angular adjusting of the blades of the orientable shutters, as well as the blocking of the same in more different possible positions;

figure 2, shows a lateral view of the plate provided with a hook for moving the rods that control the adjusting;

figure 3, shows an exploded view of the handle provided with the accessories for the different uses, and shows furthermore a part of the window-post of the shutter

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on which the handle may be applied;
figure 4, shows an axonometric view, in different angles, of
a detail of figure 3, and precisely of the plate
that engages the rod for moving the blades;
5 figures 5, 6 and 7 show three different angular positions of
the handle during functioning.

The figures show a device for the opening of the shutters
and/or for the orientation and the blocking of the blades of
10 shutters and similar, comprising a metal framework, preferably
of structural aluminium suitably treated, wherein 1 shows
the counterposed window-posts, 2 the beams of which only the
lower one is shown in the figure. If the shutter is provided
movable, the framework thereof is hinged to a fix framework
15 according to the known art.

The sections forming the window-posts of the shutter's window
comprise a monochamber tubular 3 and counterposed open seats
showing, nearby the respective openings, parallel tongues de-
20 termining at least one vertical sliding guide 4 in front of a
respective room 5.

Numeral 6 shows the orientable blades of the shutter, said
blades being of structural aluminium suitably treated.

25 Said blades show an inner tubular shape 7 and respective
counterposed seats 8 and 9 that will receive respective seal-
ing packings, so that when the blades get in touch no light

may pass through.

For containing blades 6 to window-posts 1 of the shutter, in the sliding guides 4 of said window-posts respective rectangular plates are placed, conveniently consisting of modular elements 10 that may be superimposed, one on the other, so as to cover the total height of the window posts. Passing-through holes 11 are provided along each plate 10, placed at a distance one from the other substantially corresponding to the interaxis between two adjacent blades 6.

Each blade 6 is mounted between counterposed couples of plates 10, by interposition of respective plugs 12, said plugs showing on one side a projection 13 that may be inserted under pressure into the corresponding end of chamber 7 of the blade, and on the other side a central pin 14, showing, at the edges, longitudinal grooves 15, and that may be inserted in a corresponding hole 11 of rectangular plate 10. The plug further has such a profile as to completely cover the transversal profile of blades 6.

In room 5 of window-post 1 that will receive the handle for operating the blades (left window-post in figure 1), a couple of parallel, vertical rods 16 and 17 are placed, extending for the whole height of the window-post and conveniently consisting in modular elements 18, each having at the ends thereof a tooth 19 and a seat 20 for allowing the reciprocal fixing of adjacent modular elements 18.

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Furthermore, on each rod 16 and 17 on the side opposite to plate 10, transversal, rectangular holes 21 are provided, placed at the same distance existing between holes 11 of plate 10 and such as to determine a position of rods 16 and 17 in which the couples of respective holes 21 are aligned one with the other and with the corresponding holes 11 of plate 10.

On each modular element 18 forming rods 16 and 17 a further hole 22 is provided placed between one couple of holes 21.

For fixing each blade to the window-post on the side of the handle, a disk 24 is provided in space 5 of said window-post on the back of rods 16 and 17, and said disk 24 shows a central tubular element 24 innerly showing longitudinal ribs 25 that will engage with said grooves 15 of the pin 14 of the corresponding plug 12, once the pin has passed the corresponding hole 11 of plate 10, so that each disk 23 may impress the rotating motion on one blade 6.

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Each disk 23 shows, furthermore, in positions being the opposite with respect to said tubular element 24, a plurality of pawls, that will engage in the couples of holes 21 in rods 16 and 17, so that disk 23 will rotate when said rods are vertically offset one to the other.

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In figure 1, disks 23 are in correspondence to the right window-post of the shutter for showing that side - in correspondence to the left window-post - not visible from the

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figure, and in particular for showing the tubular element 24 and the pawls 26. It is however evident that, in correspondence to the right window-post of the attached figure, wherein rods 16 and 17 are not provided, disks 23 have no existing reason and may be replaced, e.g., with a cap of the kind of tubular element 24 that closes the end of pin 14 projecting from plate 10.

For the moving of rods 16 and 17, and therefore for the adjusting of the orientation of blades 6, on the right window-post of figure 1 a handle body 27 is provided, the real operating handle 28 thereof being rather similar to those already known.

The base 29 of the handle will be fixed to window-post 1, e.g. by means of screws, and handle 28 may rotate in base 29.

According to a feature of the improvement, in base 29 of the handle body a plate 30 is provided that will place itself, once the assembly is performed, frontally to the front wall of the corresponding window-post 1. Plate 30 shows, at the back thereof, a hook 31, that can be seen in figure 2 and that, passing through a split 32 of window-post 1, will engage hole 22 of element 18 forming the movement rod 16 packed at the top of split 32.

The plate 30 shows a central transversal hole 33 and two holes 34, 35 performed on the vertical perpendicular to the axis of hole 33 and having the same distance from said axis.

A fix tread 36 is permanently engaged in hole 33, said tread being provided on handle 28, while a second retractable tread 37 may be engaged in hole 34, together with said hole 33, or with hole 35.

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Usually, said retractable tread 37 is engaged in one of the holes 34, 35 or in hole 33, pushed by a pressure spring 38, but it may be retracted from said position by operating control lever 39 placed below handle 28, in contrast with said
10 spring 38.

For what concerns the variant of the device shown in figures 3, 4, 5, 6 and 7, and that may block the movable framework of the shutter, two rods 41 and 42 are placed in the
15 seat 40 for respectively upwardly and downwardly blocking said framework, with a reciprocal moving away.

Blocking rods 41 and 42 are also vertically sliding in a guide 43 provided on the section of window-post 1. At the ends
20 near blocking rods 41 and 42, respective end blocks 44 and 45, preferably of plastic material, e.g. nylon, having respective lateral eyelets 46 and 47 which, passing through a fissure performed in wall 48 separating seat 40 and chamber 3, will be located inside said chamber 3, so as to get engaged
25 with suitable elements of the handle complex for the vertical motion of blocking rods 41 and 42.

In front of window-post 1 two parallel fissures 32 and 49, vertically extending, are provided, the first one being plac-

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ed in correspondence with seat 5 so as to allow the insertion of the moving element of rod 18, and the second placed in correspondence with chamber 3 so as to allow the insertion of the elements for the moving of blocking rods 41 and 42.

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In particular, the handle complex consists in a base 29 that will be fixed to window-post 1 e.g. by screws not shown in the drawings, having a handle 28 that may be rotatingly operated. In particular, handle 28 has a hub 50 housed in a cylindrical seat 50 provided in base 29.

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Peripherically to hub 50, four equidistant ribs 52 are provided that engage in correspondent grooves 53 provided in the cylindrical seat of said hub 50, so as to determine the blocking after each 90° rotation of handle 28.

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In front of hub 50 (in the inner part of base 29 of the handle) two opposed pawls 36 and 37 are projecting, pawl 37 being somewhat longer, but not projecting from the thickness of base 29. It shall be underlined that in base 29 a rectangular seat 54 is provided in which pawls 36 and 37 are housed.

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Referring to figure 3, the other elements of the handle complex will be described now which, once suitably combined, allow to obtain the desired motion of blocking rods 41 and 42 and/or of rod 18 for the orientating of the blades.

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In figure 3, A, B and C respectively show the combinations that may be obtained and that respectively allow to simulta-

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neously operate blocking rods 41 and 42 and rod 18 for the orientating of blades 6, to operate only rod 18 or to operate only blocking rods 41 and 42.

- 5 Relating to combination A, it shall be noted that in the same, two end places 26 and 27, preferably of metal, are provided, showing respective tongues 57 and 58 that, once the assembly has been performed, will get placed at the opposite ends of the same side of said plates and passing through slit 49
10 provided in window-post 1, will respectively engage eyelets 47 and 46 of end blocks 45 and 44 of blocking rods 42 and 41.

- On plate 55 a horizontal eyelet 59 and an eyelet 60 with a curve profile are provided, and the ends of said eyelets 60
15 are equidistant and placed at opposite bands with respect to said eyelet 59.

- In plate 56 a horizontal eyelet 61 is provided ending, at one end, in a rectangular opening 62. Between said plates 55 and
20 56 a third metal plate 63 is placed, also showing a horizontal eyelet 64 as well as a shaped tongue 65 that, once the assembly has been completed, will get placed at the opposite side with respect to said tongues 57 and 58, and through rectangular hole 62 provided in plate 56 it will get engaged in
25 slit 32 of window-post 1, so as to engage the bottom 21 of rod 18 and control the motion thereof.

In the assembly, the three plates 55, 56 and 63 are placed nearby so as to determine a thickness being equal to the

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depth of seat 54 performed in the base of the handle, so as not to project from said handle.

5 In combination B, that will operate only the motion of rod 18 that controls the orientation of the blades, only plate 63 is used, being connected to a plate 66 of plastic material, showing horizontal eyelet 61' ending in a rectangular hole 62', in a way equal to the one provided for plate 56 of combination A. Furthermore, plate 66 has small lateral sheareable
10 walls. Plate 66 has no function, but is only used like a thickness so that plate 63 does not move in seat 54 of base 29 of the handle.

15 In the combination shown with C for the motion of rods 41 and 42 of the shutter, the two metal plates 55 and 56 are used, and between said plates a plastic plate 66 is placed, obtained from plate 66 of combination B, shearing the small lateral walls 67. Also in this case, plate 66' is only used as a thickness, so that in placing the series of plates one near the o-
20 ther, a total thickness is obtained equal to the depth of the seat 54 provided in the base 29 of the handle.

For what concerns the functioning of the variant of the device shown in figures 1 and 2, the user causes, when acting
25 on lever 39 and at the same time rotating handle 28, by means of a fix tread 36, a vertical movement of plate 30 that, in turn, by means of hook 31, vertically removes moving rod 16, offsetting the same with respect to the other rod 17 and thus

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provoking the rotation of blades 6 by means of disks 23.

Once the desired orientation of the blades 6 has been chosen,
the same may be blocked in said position by releasing lever
5 39 and making retractable pawl 37 engage either with hole
34 or with eyelet 33 or with hole 35.

The functioning of the device according to the present inven-
tion will be described hereinbelow, relating in particular to
10 the variant of combination A of figure 3, as the functioning
of combinations B and C derive, in an obvious manner, from
what will be said for A.

Starting from the close position of figure 5, i.e. with the
15 handle turned downwards, the positions of the three plates
55, 56 and 63 will be the following: plate 63 is placed as
shown in an exploded view in figure 5, i.e. removed to the
lower end of seat 54 of the base of the handle, the pawl be-
ing inserted in eyelet 59 and the pawl 37 being placed at the
20 upper end of the curve eyelet 60.

The length of pawl 36 is such that it is able to only engage
eyelet 59 of plate 55, without projecting from the same, while
pawl 37, being longer, projects from plate 55 and will engage
25 both plates 63 and 56, passing through eyelet 64 of plate 63
and placing itself, with the free end thereof, into eyelet
61 of plate 56. The linking between plates 56 and 63 prevents
them from independently moving, but forces them to move to-
gether. Said plates , in the position shown in figure 5, will

will be placed, therefore, in the upper end of seal 54 of the base of the handle. Rotating the handle of 90° , the position shown in figure 6 will be obtained, the exact rotation of 90° being assured by the stop consisting in ribs 52 of hub 50
5 that will engage in corresponding grooves of the cylindric seat provided in base 29. For this purpose it shall be noted that at least the peripheral part of hub 50 is of elastically yielding material, so that when a suitable force is applied to handle 28 the outlet of ribs 52 from grooves 53
10 is obtained.

In the position of figure 6, pawls 36 and 37 are horizontally aligned, and particularly pawl 37 in the central part of eye-let 60 of plate 55, as it is schematically shown by the dotted
15 ed lines. In such position the three plates 55, 63 and 56 are perfectly laid one upon the other, i.e. as shown in figure 3, supposed placed one near the other.

In such position, the three plates take the whole central
20 part of seat 54; the two tongues 57 and 58, that were previously placed at the opposite ends of said seat, are now slightly placed one near the other, thus causing a reciprocal approaching of blocking rods 41 and 42; the shaped tongue
65 of plate 63 is also slightly moved downwardly causing a
25 similar downward moving of rod 18 for the moving of the blades, conferring to the same a determined opening degree.

By further moving handle 28 of 90° , i.e. upwardly moving the

same as shown in figure 7, plate 55 will be carried by pawl 36 to the upper end of seat 54, while the pawl will place to the lower end of the shaped eyelet provided in plate 55, as shown by the dotted line. During said movement, plates 63 and 56, always of one piece, are carried by the same pawl 37 to the lower end of seat 54 of the base 29 of the handle.

In the position of figure 7, the maximum approach between tongues 57 and 58 is obtained, respectively between plates 55 and 56, i.e. the maximum approach between blocking rods 41 and 42, that corresponds to the open position of the shutter. Still in the position of figure 7, shaped tongue 65 of plate 63 is further downwardly moved, causing a similar moving of rod 18 for the moving of the blades, and therefore the maximum opening degree of the same.

By rotating handle 28 in the sense contrary to the one above mentioned, the series of the three plates will undergo movements contrary to those above described, causing the closing of the shutter as well as of the blades. The motion of plates 63 and 66 of combination B, takes place in a way identical to the one of combination A, keeping in mind that in this case only plate 63 shall be moved by means of pawl 37, and for this purpose the plate 66 of plastic material shows small lateral walls 67, between which plate 63 will get engaged and kept lifted from the plane of the seat so as to avoid an interference with pawl 36.

Finally, in combination C, between plates 55 and 56 for the opening or closing control of the shutter, a plate 66' of plastic material, obtained from plate 66 of combination B, will be interposed, and from said plate 66' the lateral walls 67 have been sheared away. Plate 66' has the sole function of forming a thickness and the motion of plates 55 and 56 is identical to what has been described in combination A.

The device according to the present invention is provided with three metal plates 55, 56 and 63 and with the plastic plate 66.

The workman who will set up the shutters will, in case of need, place said plates - during the assembly - according to the different combinations A, B and C above described.

If a shutter with movable shutters and orientable blades is mounted, only metal plates 55, 56 and 63 will be used, placing them according to combination A.

If only the blades' orientation graduation is requested, metal plate 63 and plastic plate 66 will be used, according to combination B.

If, at last, the shutter is with fix blades and only the opening and closing of the shutter is to be obtained, metal plates 55 and 56 will be used, placing between the same said plate 66 after having sheared the lateral walls 67 thereof, according to combination C.

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It should be noted that the device according to the present invention may be mounted on shutters opening to the left and to the right, inwardly and outwardly, without any structural modification.

CLAIMS

1. A device for the opening of shutters and/or for the orientation and the blocking of the blades of shutters and similar; comprising a metal framework consisting in a couple
5 of window-posts (1) and in a couple of beams (2), each window-post having a vertical sliding guide (4) and a corresponding back room (5), and blades (6) interposed between said window-posts and angularly orientable, and comprising
10 a base (29) for a handle (28) that may be operated in a rotatory sense, applicable to a window-post (1) in which vertical parallel fissures (32, 49) are provided for the passage of elements that will respectively engage a rod
15 (18) for the motion of the blades and two blocking rods (41, 42) of the shutter, characterized in that respective rectangular plates are provided, consisting of modular elements (10) that may be inserted in sliding guides (4) opposed in the two window-posts so as to block each blade
20 (6) by means of a plug (12) showing on one side a projection (13) that will get inserted under pressure into an inner cavity (7) of the blade, and on the other side a pin (14) passing through a corresponding passing-through hole
25 (11) of plate (10), in said room (5) of the window-post (1) on which a handle body (27) is applied; a couple of vertical motion rods (16, 17), kept parallel by disks (23) each showing a tubular element (24) that will receive and block the part of the pin (14) of the plug (12) projecting from

said plate (10), means being provided for moving at least one of said rods (16, 17) and means being also provided for blocking said blades in a plurality of different possible angular positions, and characterized in the presence of a series of
5 three metal plates (55, 56, 63), the first two having on the same side and at the opposite ends respective tongues (57, 58) for the motion of respective blocking rods (41, 42), the third showing on the side opposite with respect to the other two a shaped tongue (65) for the motion of rod (18) for the
10 adjusting of the orientation of blades (6), said plates, that once the assembly has been performed will be placed one near the other, determining a total thickness equal to the depth of a rectangular seat (54) provided in the base (29), wherein said plates are housed, and a further plate (66 or 66') of
15 plastic material being provided for being used in combination with the third plate (63) or with the said first two plates (55, 56), for respectively obtaining the motion of the sole rod (18) or the motion of the sole blocking rods (41, 42), and means being at last provided for transforming the rota-
20 tory motion of the handle (28) into a translatory motion of said plates.

2 A device, according to claim 1, characterized in that each pin (14) peripherically shows longitudinal grooves (15) that may
25 be engaged by complementar ribs (25) provided inside of tubular elements (24) of disks (23), each disk (23) showing,

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for keeping parallel rods (16, 17), on the same side of the tubular element (24) in opposite positions, two treads (26) that engage in rectangular holes (21) provided in couples on said rods.

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3. A device according to claim 1 wherein said rods (16, 17) consist of modular elements (18) showing at the respective ends thereof means for the reciprocal engaging respectively consisting of teeth (19) and seats (20), characterized in that at least rod (16) receives a vertical alternative motion by a hook (31) inserted in central hole (22) in one of the modular elements (18) thereof, said hook (31) being carried by a plate (30) inserted in the handle body (27) and vertically removable by means of a handle (28).

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4. A device according to claim 1 characterized in that said means for blocking in a plurality of possible angular positions blades (6) consist of a fix tread (36) carried by handle (28) and permanently engaged in an eyelet (33) performed in said plate (30) and of a retractable tread (37), also connected to the handle (28) and that may be engaged alternatively in said eyelet (33) of plate (30) or in one of the two holes (34, 35) provided on the same plate (30) from opposite sides with respect to eyelet (33), said retractable tread (37) being retracted by operating a control lever (39) provided below handle (28) in contrast with a pressure spring (38).

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5. A device according to claim 1, characterized in that the handle (28) has a hub (50) housed in a cylindrical seat (51) of base (29), said means for transforming the rotatory motion of the handle (28) into a translatory motion of said plates (55, 56, 63, 66 and 66') consisting of a couple of treads (36, 37) placed in diametrically opposite positions on hub (50) and engaged in suitable eyelets provided in said plates, the length of the tread being approximately equal to the thickness of one of the three metal plates (55, 56, 63), while the length of tread (37) is approximately equal to the total thickness of said three metal plates.

6. A device according to claims 1 and 5, characterized in that in the use of the three metal plates (55, 56, 63) the last one is strongly linked to plate (56) by means of a tongue (65) passing through a rectangular hole (62) of plate (56), wherein the motion of plate (55) takes place by means of said tread (36) that engages in a horizontal eyelet (59) provided therein, while the motion of the linked plates (63, 56) takes place by means of the tread (37) passing through a curve eyelet (60) of plate (55) and engages in horizontal aligned eyelets (64, 61) respectively provided in plates (63, 56), in such a way that the rotation of handle (28) in one sense or in the other causes reciprocal removing or approaching movements between plate (55) and the linked plates (63, 56).

7. A device according to claims 1 and 5, characterized in that engaging only plate (63) together with plastic plate (66) for the motion of the sole rod (18) for the orientation of blades (6), the effect of tread (36) will be annulled by means of small lateral walls (67) provided on plate (66), between which plate (63) will be fixed and kept at distance by tread (36).
8. A device according to claim 1, characterized in that said plastic plate (66') used in combination with metal plates (55, 56) for the motion of the sole blocking rods (41, 42) has only the function of thickness, and is obtained from said plate (66) by shearing said small lateral walls (67).
9. A device according to claim 1, characterized in that the motion of said blocking rods (41, 42) is obtained by means of tongues (58, 57) of plates (56, 55), that respectively engage in eyelets (46, 47) laterally provided on end blocks (44, 45) fixed to rods (41, 42), while the motion of rod (18) for the orientation of the blades is obtained by means of a shaped tongue (65) of plate (63), that engages in a rectangular hole (21) provided on rod (18).
10. A device according to claim 1, characterized in that peripherically to said hub (50) of handle (28) ribs (52) are provided at regular distances, that engage in corresponding grooves (53) provided in the cylindrical seat (51) of base (29) for determining stops during the rotation of the handle.

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FIG.1

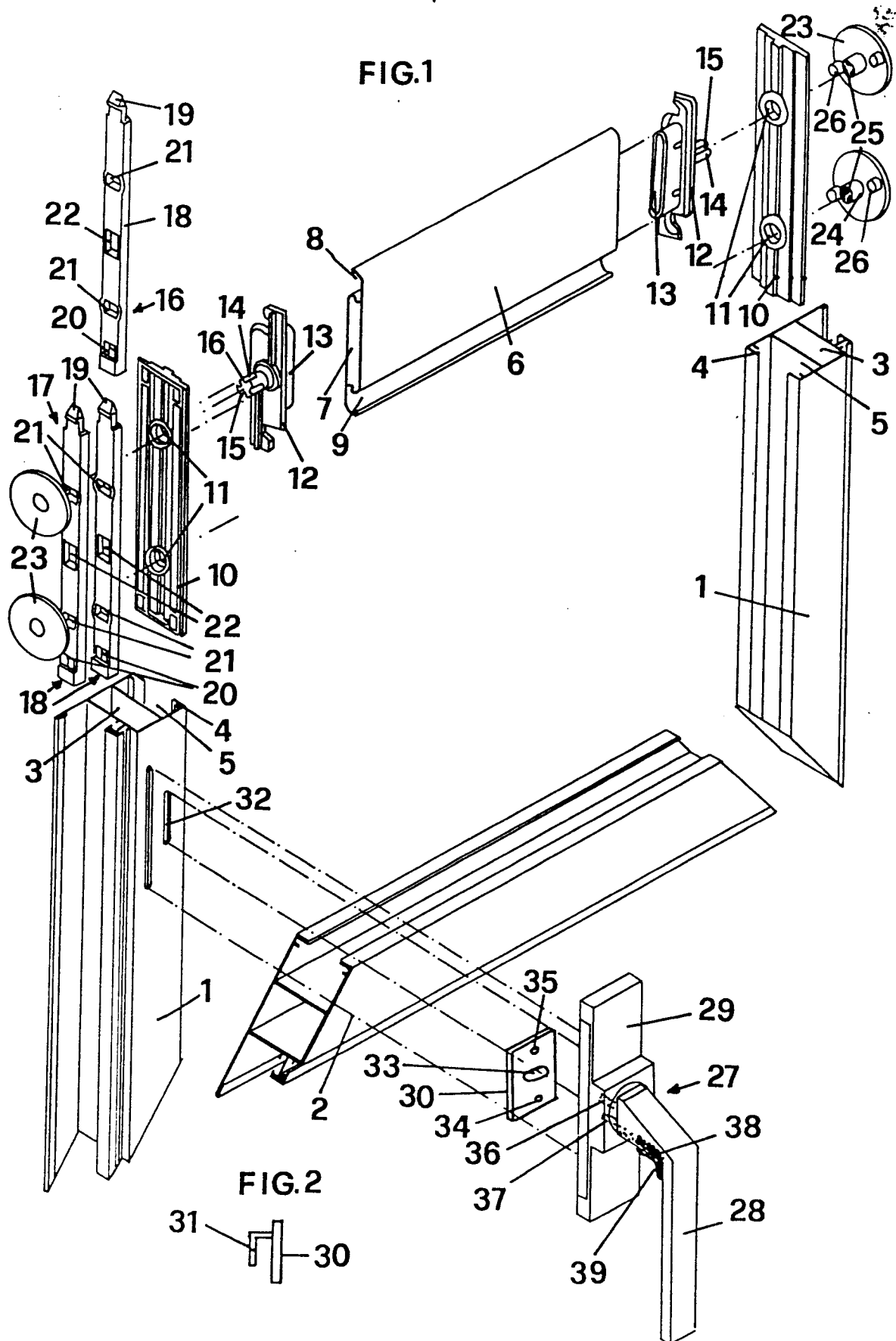
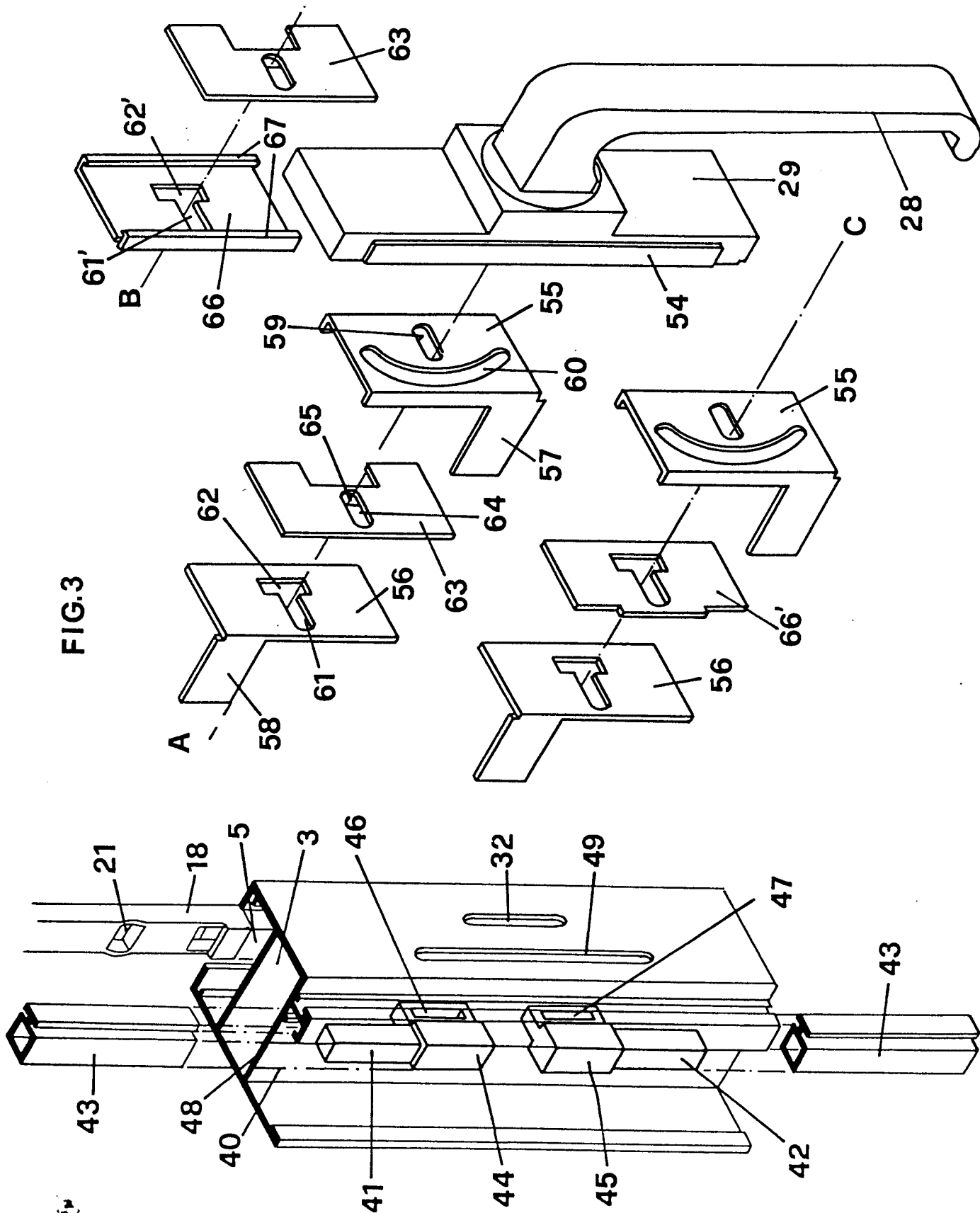
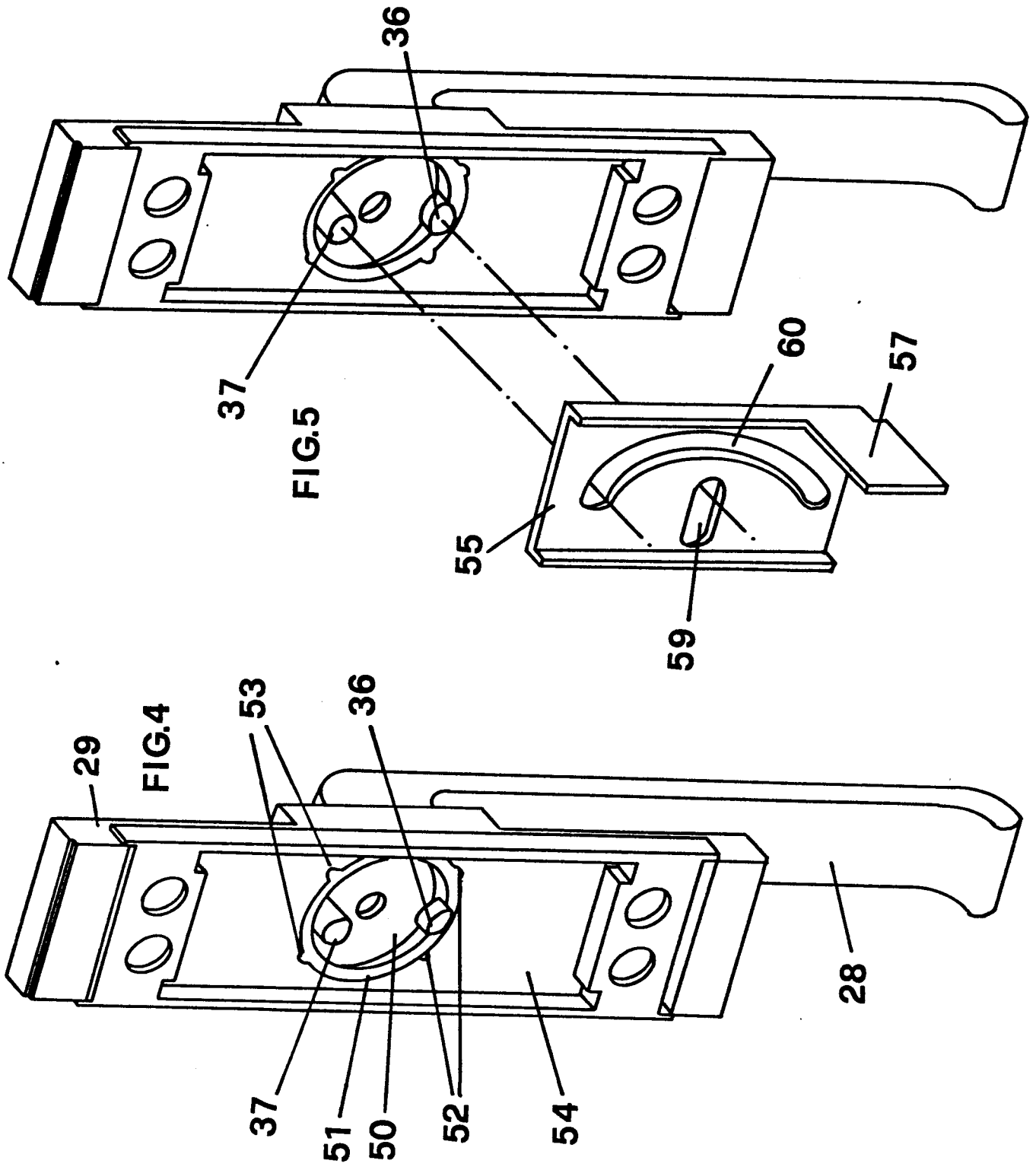


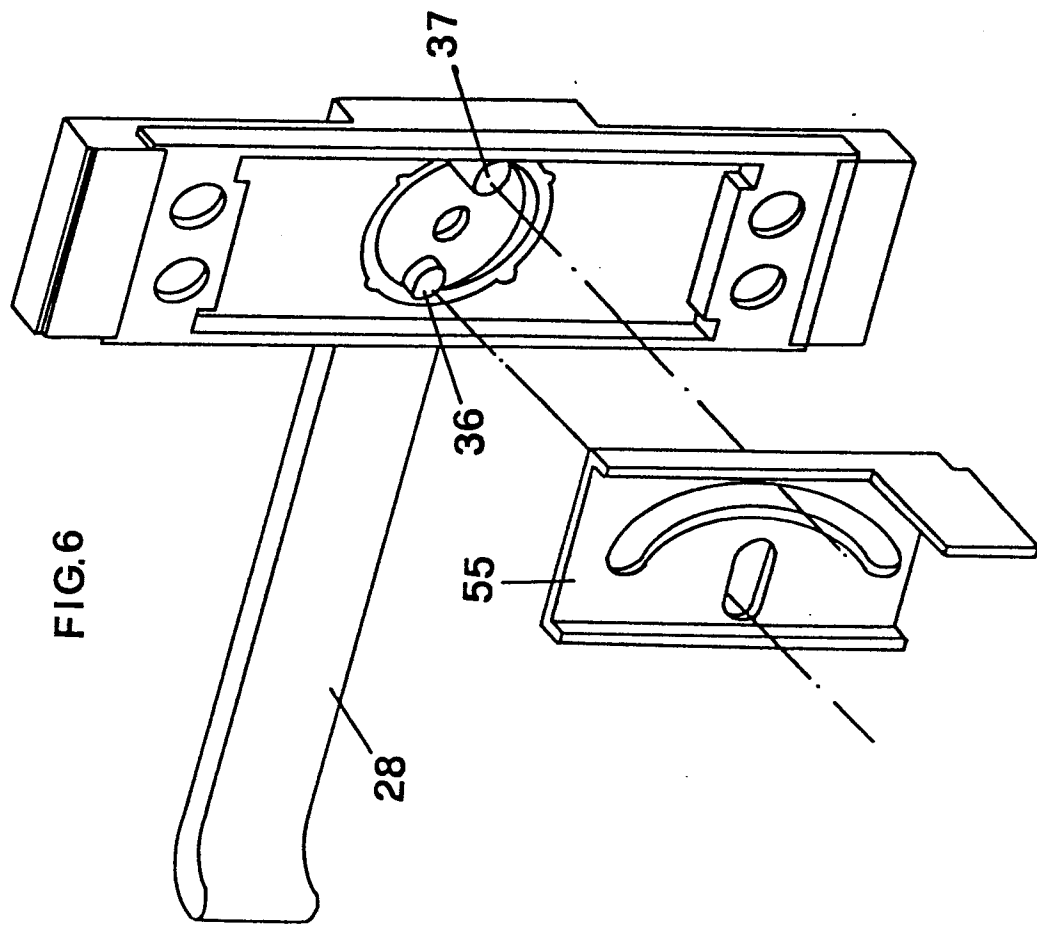
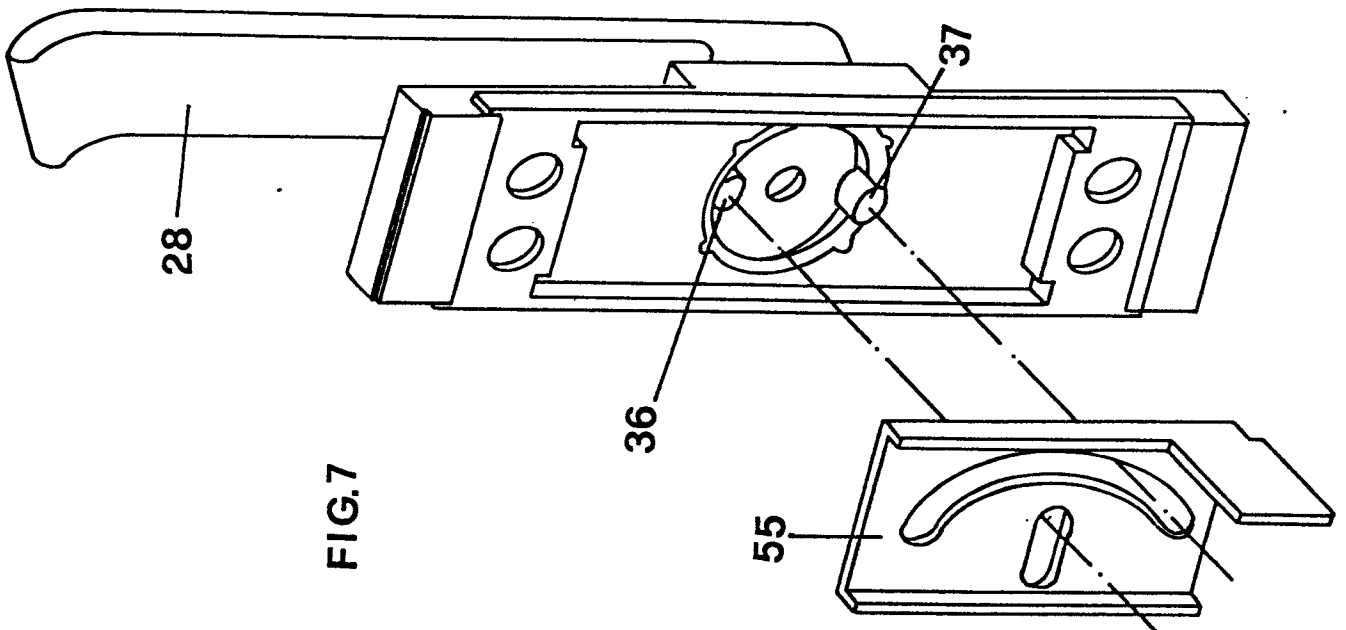
FIG.2



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European Patent
Office

EUROPEAN SEARCH REPORT

0220355

Application number

EP 85 83 0275

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.4)
A	AT-B- 275 124 (J. RUPPRECHT) * complete document * -----	1	E 06 B 7/084
			TECHNICAL FIELDS SEARCHED (Int. Cl.4)
			E 06 B 7/00 E 06 B 9/00
The present search report has been drawn up for all claims			
Place of search BERLIN		Date of completion of the search 09-05-1986	Examiner KRABEL A.W.G.
CATEGORY OF CITED DOCUMENTS			
X : particularly relevant if taken alone Y : particularly relevant if combined with another document of the same category A : technological background O : non-written disclosure P : intermediate document		T : theory or principle underlying the invention E : earlier patent document, but published on, or after the filing date D : document cited in the application L : document cited for other reasons & : member of the same patent family, corresponding document	