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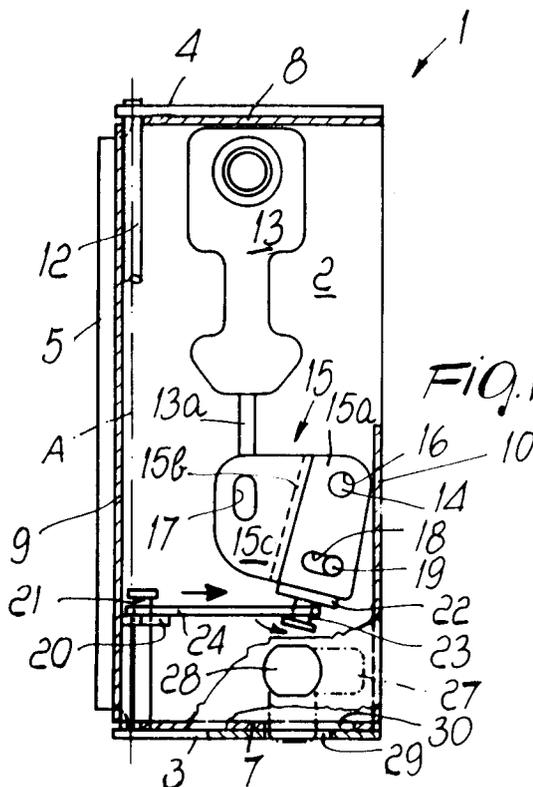
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54 **Handle for operating a bolt having parallel respective rotation and sliding axes.**

57 A handle (1) for operating a bolt having parallel respective rotation and sliding axes comprising a box-like base (2) which is vertically elongated and shallow; a box-like grip handle (6) which is shaped complementarily to the base and is articulated to the base about a vertical axis; a bolt (13) which has means for fixing to the base (2) and a vertical actuation stem (13a); a folded plate (15) which has means for being articulated to the base (2), oscillates on a plane which is parallel to the surface of the base, and has an arm that is oscillatably associated with the end of the stem (13a) of the bolt (13); and an actuation rod (24) in which one end is articulated to the second arm of the folded plate and the other end is articulated to a pin (21) that is rigidly coupled to the handle and is eccentric with respect to the axis about which the handle is articulated to the base.



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The present invention relates to a handle for operating a bolt having parallel respective rotation and sliding axes, particularly for two-leaf doors.

The handles currently used to operate a bolt whose sliding axis is substantially parallel to the handle rotation axis usually have actuation lever systems or gears that are rather complicated and/or bulky as well as prone to breakage and jamming: these problems occur mainly in the presence of narrow handles which are elongated in the direction of the pivoting axis.

A principal aim of the present invention is to obviate the described drawbacks of known devices, that is to say, to provide a handle for operating a bolt having parallel respective rotation and sliding axes that is narrow, has very simple, sturdy, and reliable actuation lever systems, can be installed easily, and is protected against the penetration of foreign matter.

Within the scope of this aim, an object of the present invention is to achieve the above aim with a structure that is simple, relatively easy to produce in practice, safe in use, reliable and effective in operation, and has a relatively low cost.

This aim and these objects are all achieved by the present handle for operating a bolt having parallel respective rotation and sliding axes, characterized in that it comprises: a box-like base which is vertically elongated and shallow; a box-like grip handle which is shaped complementarily to the base and is articulated to the base about a vertical axis; a bolt which has means for fixing to the base and a vertical actuation stem; a folded plate which has means for being articulated to the base, oscillates on a plane which is parallel to the surface of said base, and has an arm that is oscillatably associated with the end of the stem of the bolt; an actuation rod in which one end is articulated to the second arm of the folded plate and the other end is articulated to a pin that is rigidly coupled to the handle and is eccentric with respect to the axis about which the handle is articulated to the base.

Further characteristics and advantages will become apparent and evident from the following detailed description of a preferred but not exclusive embodiment of a handle for operating a bolt having parallel respective rotation and sliding axes according to the invention, illustrated only by way of non-limitative example in the accompanying drawings, wherein:

figure 1 is a front sectional view of a handle according to the invention;

figure 2 is a partially sectional bottom view of the handle of figure 1;

figure 3 is a front view of the handle according to the present invention;

figure 4 is a side view of the handle according to the present invention;

figure 5 is a view from above of the handle according to the present invention.

With particular reference to the above figures, the reference numeral 1 generally designates a handle for operating a bolt having parallel respective rotation and sliding axes according to the invention.

The handle 1 comprises a box-like base 2 which is vertically elongated and shallow; its height is substantially equal to twice its width, and the bottom 3 and the top 4 are rectangular and are folded forward, and said base has a lateral shaped ridge 5 through which holes for fixing to a two-leaf door pass.

The reference numeral 6 designates a box-like grip handle which is shaped complementarily to the base and has a bottom 7, a top 8, and sides 9 and 10 which are folded at right angles: the upper half 10a of the side 10 is cut and folded against the front face of the handle so as to constitute a thicker grip region.

The bottom 3 and the top 4 of the base and the bottom 7 and the top 8 of the grip handle are crossed, at the outer front edge that is close to the side 9, by holes 11 for a pivot 12 for articulating the handle to the base; said pivot has a vertical axis A.

A commercial-type bolt 13 is fixed to the base 2 and is provided with means for fixing it to the base and with an actuation stem 13a that is vertical and substantially parallel to the pivot 12.

A pivot 14 for the articulation of a folded plate 15 can be fixed to the base 2: the folded plate 15 is constituted by a metal plate which is folded in a zigzag shape and has a flap 15a which is crossed by a hole 16 for articulation to the pivot 14, a flap 15b which lies at right angles, and a flap 15c which is parallel to the flap 15a: the flap 15c of the plate has a slot 17 with which the stem 13a is associated, and the flap 15a has a curved slot 18 for a pin 19, and said slot and pin form a stroke limiter for the oscillation of the folded plate.

A strip 20 is welded inside the grip handle 6 and is crossed by the pivot 12; a pin 21 having a vertical axis is fixed to said strip at a certain distance from the pivot 12.

The folded plate 15 has, at its end, a lug 22 which is folded at right angles and has a hole for fixing a pin 23: the folded plate forms a first arm between the hole 16 and the slot 17 and a second arm between the hole 16 and the lug 22, said arms being arranged substantially at right angles to each other.

The reference numeral 24 designates an actuation rod which has a flattened shape; its ends are affected by fork-shaped recesses 25 and 26, and the recess 25 is articulated to the pin 23, whereas the recess 26 is articulated to the pin 21,

which is rigidly coupled to the handle and is eccentric with respect to the axis about which the handle is articulated to the base: the inlet of the recesses is slightly narrower so as to engage, in a snap-together manner, the stems of the respective pins. 5

A rotating bolt lock 27 is fixed to the grip handle: only the rotating element 28 and the bolt 27 of the lock are shown in the figure, and the bolt 27 is suitable to enter, for locking, corresponding slots 29 and 30 of the sides 3 and 7 of the base and of the handle. 10

The handle according to the invention works as follows: the rotation of the grip handle 6 about the pivot 12 causes the rotation of the pin 21 about the pivot 12; said pin 21, by rotating about the pivot 12, pushes the rod 24, which in turn pushes against the pin 23, causing the rotation of the folded plate 15 about the pivot 14, and the rotation of the folded plate 15 actuates the stem 13a; in the drawings, arrows indicate the opening directions of the various components. 15

It is thus evident that the invention achieves the intended aim and objects.

The invention thus conceived is susceptible of numerous modifications and variations, all of which are within the scope of the inventive concept. 25

All the details may furthermore be replaced with other technically equivalent ones.

In practice, the materials employed, as well as the shapes and dimensions, may be any according to the requirements without thereby abandoning the scope of the protection of the appended claims. 30

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. 35  
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**Claims**

1. Handle for operating a bolt having parallel respective rotation and sliding axes, characterized in that it comprises: a box-like base which is vertically elongated and shallow; a box-like grip handle which is shaped complementarily to the base and is articulated to the base about a vertical axis; a bolt which has means for fixing to the base and a vertical actuation stem; a folded plate which has means for being articulated to the base, oscillates on a plane which is parallel to the surface of said base, and has an arm that is oscillatably associated with the end of the stem of the bolt; and an actuation rod in which one end is articulated to the second arm of the folded plate and the 45  
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other end is articulated to a pin that is rigidly coupled to the handle and is eccentric with respect to the axis about which the handle is articulated to the base.

2. Handle according to claim 1, characterized in that said base has a lateral contoured ridge for fixing to a door stile.

3. Handle according to claim 1, characterized in that a rotating bolt lock is fixed to said handle and is suitable to enter, for locking, corresponding slots of the bottom walls of the base and of the handle. 10

4. Handle according to claim 1, characterized in that said base and said grip handle are substantially twice as high as they are wide. 15

5. Handle for operating a bolt having parallel respective rotation and sliding axes, according to one or more of the preceding claims and according to what is described and illustrated for the specified purposes. 20

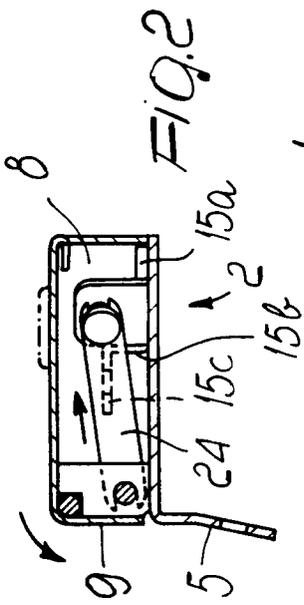


FIG. 2

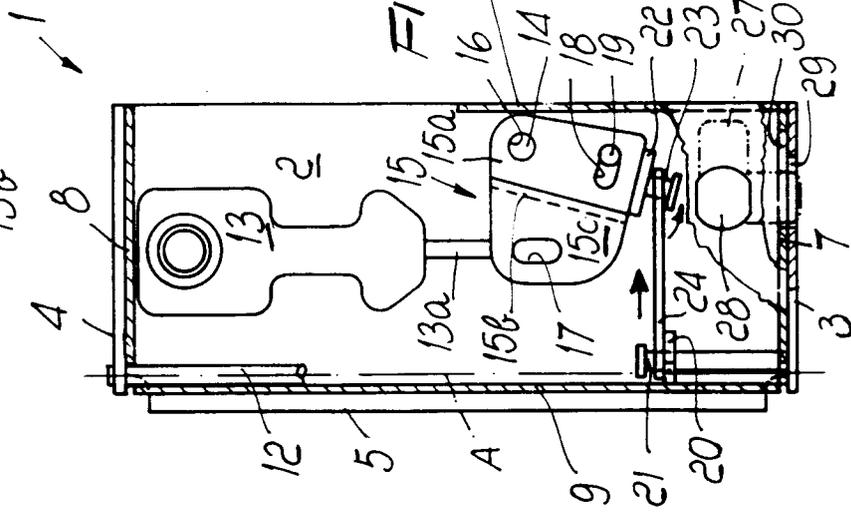


FIG. 1

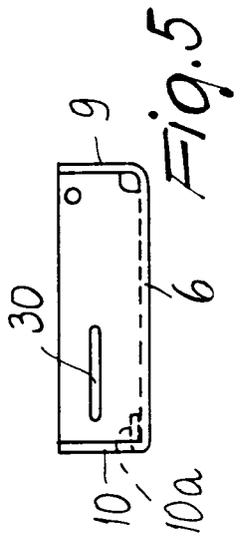


FIG. 5

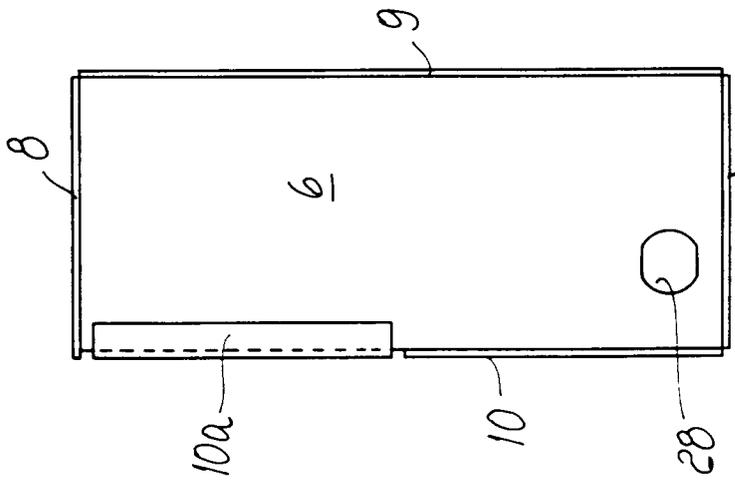


FIG. 3

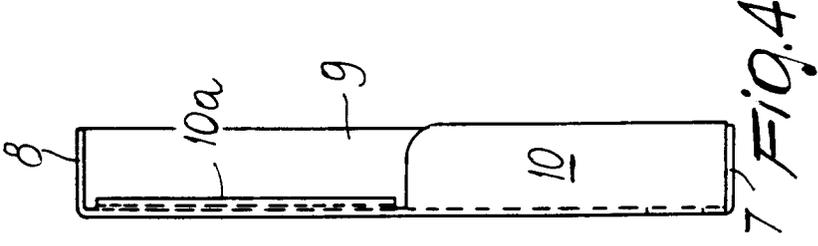


FIG. 4



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)
Y A	US-A-2 237 949 (PALMER) * figures 3-5 * * page 2, left column, line 15 - line 39 * * page 2, left column, line 53 - line 61 * ---	1 4,5	E05C1/14 E05C1/06 E05B7/00
Y A	DE-A-33 45 119 (VERHOOG'S HANDELSONDERNEMING B.V. ZAANDAM) * abstract; figures * ---	1 2,4,5	
A	US-A-2 117 192 (MC CLUNG) * page 2, left column, line 10 - line 59 * * figures 2-4 * ---	1	
A	US-A-5 004 277 (CAMPBELL ET AL.) * figures 2,3 * ---	1	
A	GB-A-1 306 368 (WILMOT-BREEDEN LTD.) * figures 2,3 * ---	1	
A	EP-A-0 171 160 (GENERAL MOTORS CORP.) * figures 1-4 * -----	1	
			TECHNICAL FIELDS SEARCHED (Int.Cl.6)
			E05C E05B
The present search report has been drawn up for all claims			
Place of search THE HAGUE		Date of completion of the search 1 June 1995	Examiner Guthmuller, J
CATEGORY OF CITED DOCUMENTS		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	
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