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(54) Opening and closing control for locks.

(57) A control device for window-bolt locks comprising the coupling of a support (1) and a small shaped block (15) that are engaged by means of a wedged horizontal mobile body (3), whose transverse, contrasted by flexible means (7), causes simultaneous rotation of the vertical bar (4) supporting the end hooks (5).

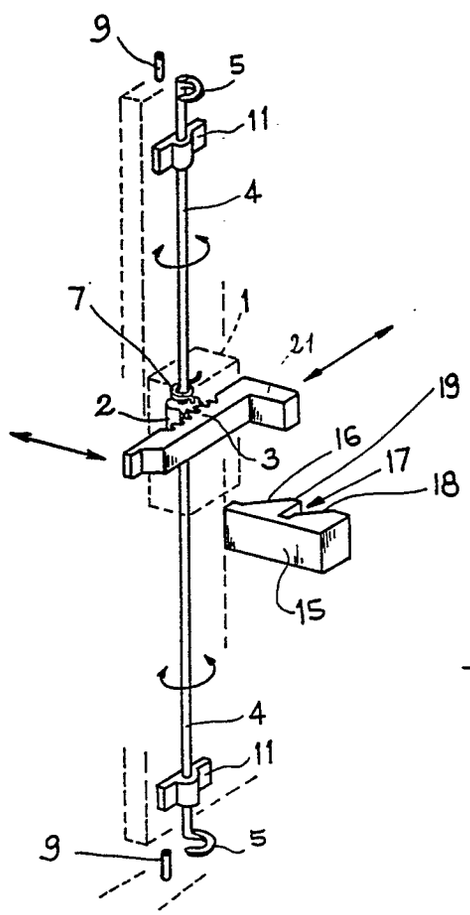


Fig.4

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OPENING AND CLOSING CONTROL FOR LOCKS

The invention concerns an opening and closing control for locks, in particular for shutters and similar, comprising at least one gearing sector, with return spring, fixed to the control bar of the dnd hooks and engaged in a rack, integral to the lock spring, fitted with handle.

At present, the opening and closing controls, known as window-bolt, comprise a handle which is driven by two separate movements in sequence.

The first movement consists in a rotation from bottom to top, or viceversa, in a substantially parallel direction to the lock, by which the handle is freed, or engated, with its stop hook.

The second movement consists in a successive rotation of the handle in horizontal direction, towards the user manoeuvring it, or in opposite direction, in such a way as to make the control bar rotate round its axis, so that the end hooks are freed, or engaged, with the corresponding fixed pins projecting from the wall structures.

This system, well known for a long time, while simple and efficient, presents some problems, i.e. it requires, for both opening and closing, the abovementioned two sequential rotating movements, and it is impossible to make the spring closure, as in standard locks with handle.

The object of this invention is to eliminate the above problems.

The invention, as characterized in that claims, solves the problem with a closing and opening control for locks, through which the following results are obtained: the control is basically of the traditional type with window-bolt, with means of command, the vertical bar and end hooks; the command consists of a piece of rack engaged with a small pinion, or portion of same, coaxial and fixed to the vertical bar; the small pinion, or portion of same, is equipped with flexible return means.

The advantages obtained with this invention mainly consist in the fact that the opening and closing control takes place with a single transversal slip manoeuvre, obtained by means of a traction produced on the rack, equipped with handle; the front end of the rack is constructed with wedge conformation, which, in closure, sliding on a correspondingly inclined fixed block, is engaged in a special seat, of said fixed block; the transversal slip of the rack causes, simultaneously, the coupling, or decoupiing, of said wedged end of the corresponding seat, and rotation of the bar fitted with end hooks.

The invention is described in greater detail below, referring to the enclosed drawings which illustrate a constructive example, in which:

fig. 1 shows a section in plan of the control device, applied to a mobile door.

fig. 2 shows a cross-section of the same control illustrated in fig. 1,

fig. 3 illustrates, in plan, an application prepared for two connectable mobile, doors and

fig. 4 illustrates the basic parts of the complete control, in perspective.

The figures illustrate an opening and closing control for locks, comprising a support (1), on which is positioned a cogged wheel or a sector of cogged wheel (2), which is engaged in a piece of rack (3).

The cogged sector (2) is stiffly keyed on the vertical bar (4) from whose upper and lower ends extend the hooks (5). Some parallel horizontal guides (6) are constructed on the support (1), on which the rack (3) is free to slide. The cogged sector (2) is equipped with at least one return spring (7), which, in normal conditions, puts the cogged sector in such a position that the wedged point (8) of the rack (3) is pushed completely outwards.

In the same position also the vertical bar (4) and hooks (5) are so rotated that the latter are closed, i.e. they are in engaged position with the fixed pins (9) projecting from the wall structures.

The support (1), with its components, is fixed to a door (10) by a block in the normal position, which usually assumes traditional control, as, similarly, the vertical bar (4) is supported and guided by stirrups (11).

In counterposition to the support (1) of the door (10), to a fixed upright (12) or a bracket (13) applied to a second wing (14), is fixed a small shaped block (15), comprising a first inclined plane (16) and a wedged seat (17), also equipped with inclined plane (18).

Said inclined planes (16) and (18) present a similar configuration to that of the wedged point (8) of the rack (3). When the door (10) is open, or completely closed, the wedge (8, as mentioned, remains projecting from the support (1), as it is pushed by the action of the return spring/s (7).

During closing, if the door (10) is simply pushed against the fixed upright (12) or against the second door (14), in the direction of the arrow (20), the wedge (8) starts sliding on the first inclined plane (16) of the small shaped block (15).

Under the action of pressure applied on the door (10), the wedge (8), sliding on the plane (16), is forced to recede, making the rack (3) move back, which then causes rotation of the sector of cogged wheel (2). In the rotation, this sector makes

the vertical bar (4) rotate and opens the end hooks (5).

Continuing in the movement, the wedge (8) reaches the upper plane (19) of the small shaped block (15), surpasses it and is engaged in the seat (17) thrust by the action of the return spring/s (7) which has been stretched during receding of the wedge (8).

At this point also the sector of cogged wheel (2) returns to its initial position and the end hooks (5) reclose around the fixed pins (9).

In the above position, the door (10) is therefore coupled and fixed to the upright (12) or to the second door (14), with the wedge (8) completely extended towards the outside of the support (10), thrust by the action of the return spring/s (7).

The the opening, it is sufficient to exercise a horizontal traction on the track (3), by means of the handle (21), until the wedge (8) is disconnected from the seat (17) and push the door (10) in opposite direction to the arrow (20). Said horizontal traction, besides receding of the wedge (8), causes rotation of the sector of cogged wheel (2), of the bar (4) and of the end hooks (5) which abandon their grip on the fixed pins (9).

Any connection of the handle (21) with the opposite surface of the door (10), can consent the opening and/or closing control on both sides.

Claims

1) Closing and olpening control for locks, known as window-bolt, characterized by the fact of comprising a support (1) and a small shaped block (15), engaged or freed from one another by a wedged horizontal mobile body (3), whose traverse causes simultaneous rotation of the vertical bar (4) supporting the end hooks (5).

2) Closing and opening control according to claim 1, characterized by the fact that the horizontal mobile body consists of a rack (3) that is engaged with a cogged wheel, or sector of cogged wheel (2), stiffly fixed to the vertical bar (4), and carries end hooks (5).

3) Closing and opening control according to claims 1 and 2, characterized by the fact that the engagement betweeen rack (3) and cogged wheel, or sector of cogged wheel (2) is held in position by a flexible return body (7), e.g. a spring, and horizontal guides (6).

4) Opening and closing control according to claims 1 to 3, characterized by the fact that the wedged horizontal mobile body (3) presents the front part (8) of wedge shape, which is engaged in a similar seat (17) present on the small shaped block (15).

15) Opening and closing control according to claims 1 to 4, characterized by the fact that the small shaped block (15) presents a first inclined plane (16), a flat intermediate plane (19), a second inclined plane (18), located inside the seat (17).

6) Opening and closing control according to claims 1 to 5, characterized by the fact that the bracket (1) is fixed to a mobile door (10) and the small shaped block (15) is fixed to either a fixed upright (12) or a second door (14), by means of a bracket (13).

7) Opening and closing control according to claims 1 to 6, characterized by the fact that the transversal opening and/or closing movement of the rack (3), with ends (8) wedgable in the similar seat (17), is simultaneous to the rotary movement which frees and/or engages the hooks (5) from the corresponding fixed pins (9) projecting from the wall structures.

8) Opening and closing control for locks according to the previous claims, characterized by the fact that the drive of the window-bolt system comprises a single movement in horizontal direction, with automatic closing, with spring.

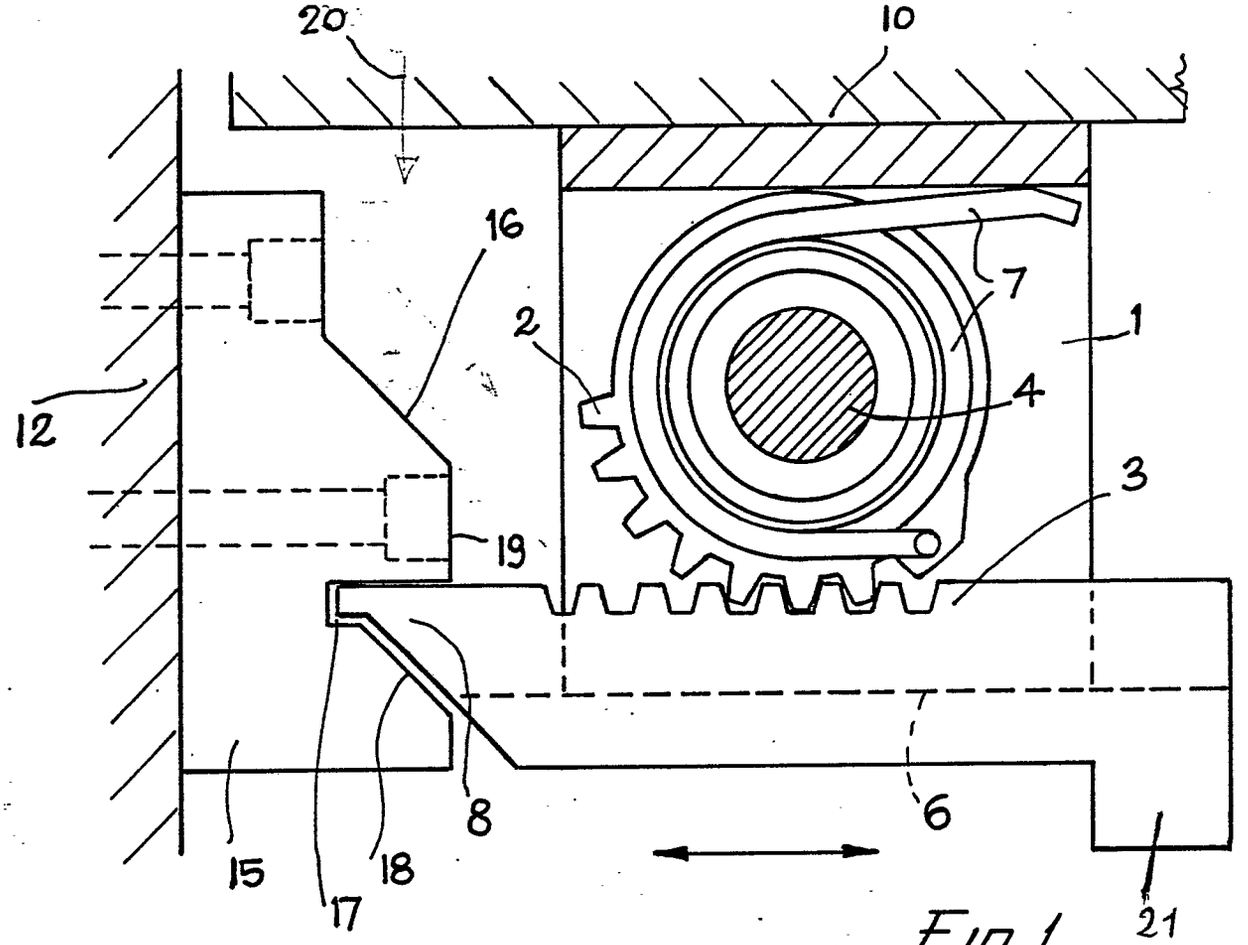


Fig. 1

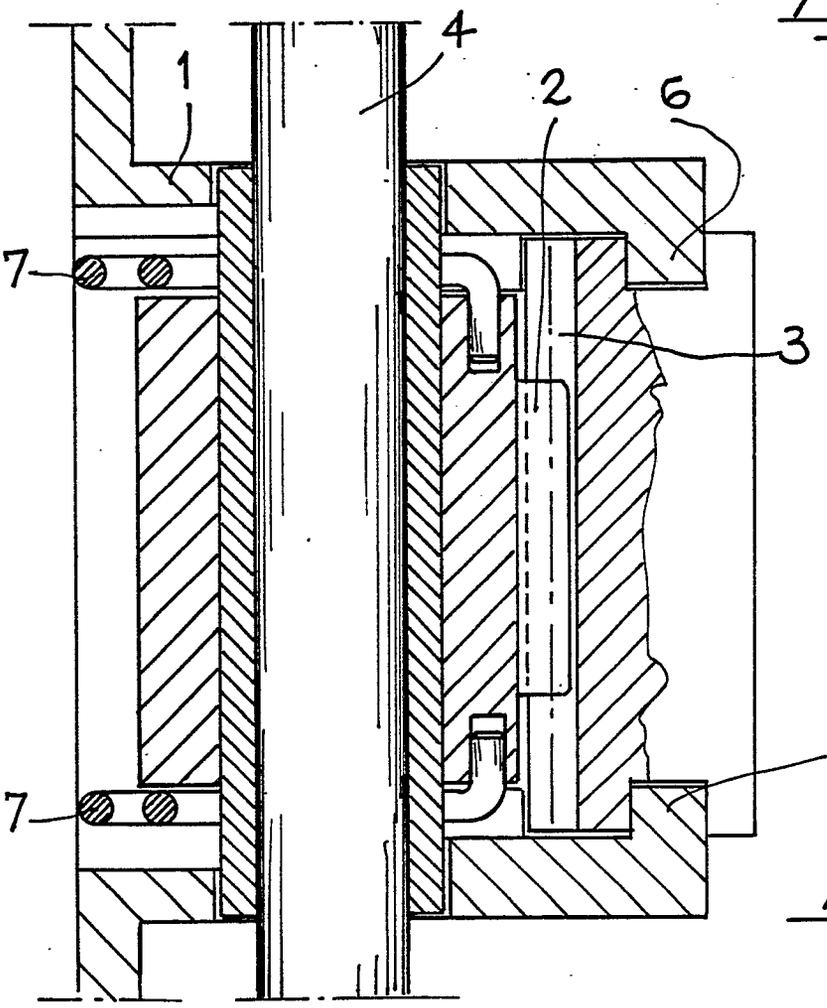


Fig. 2

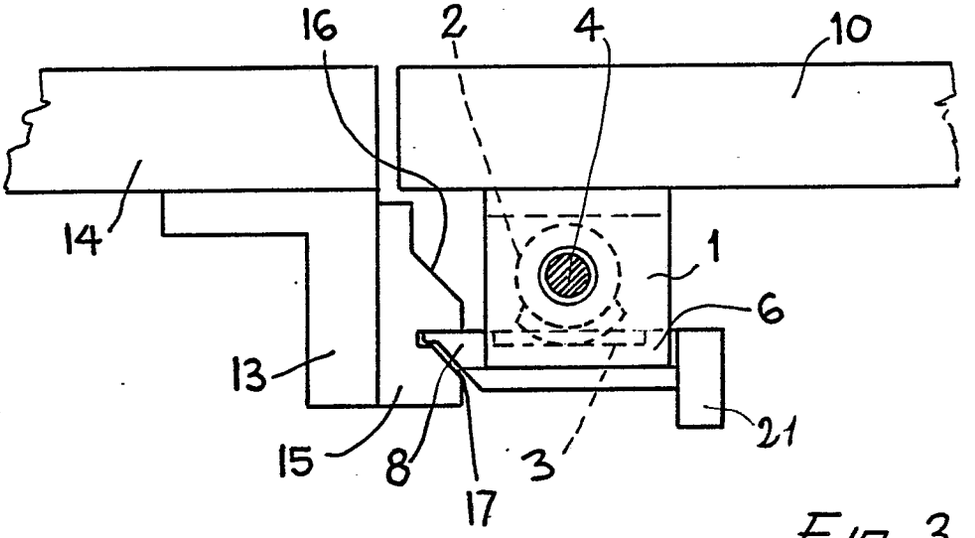


Fig. 3

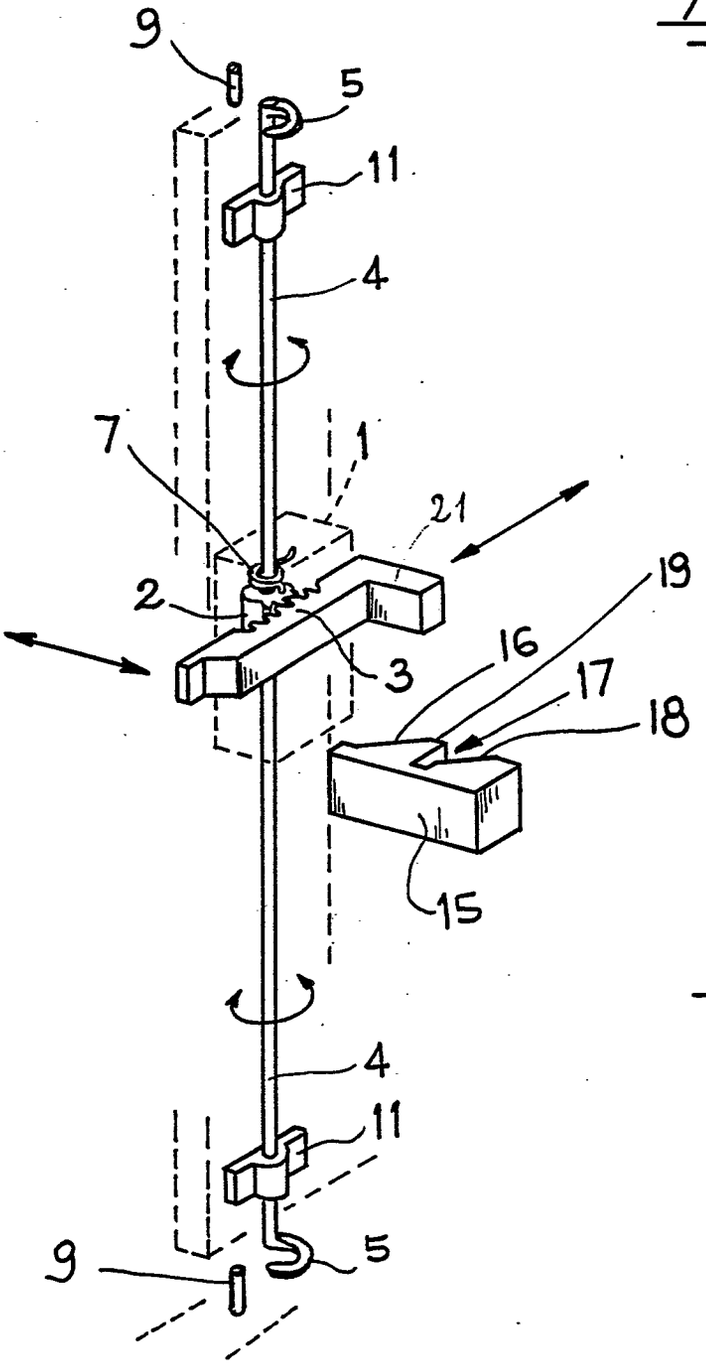


Fig. 4

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EUROPEAN SEARCH REPORT

Application Number

EP 88 83 0082

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)
X	FR-A- 588 087 (L. MARON POT) * Page 1, lines 52-64; figure 1 *	1-3,8	E 05 C 9/08
Y		4-7	
Y	GB-A- 994 594 (QUICKTHO ENGINEERING LTD) * Page 2, lines 40-48; figure 1 *	4-7	
A	FR-A-2 204 208 (E. KELLER-VOLPER) * Page 3, lines 17-23; figure 5 *	2,3	
A	US-A-1 332 874 (J.J. ADAMS) * Figure 3 *	4,5	

TECHNICAL FIELDS SEARCHED (Int. Cl.4)

E 05 C

The present search report has been drawn up for all claims

Place of search	Date of completion of the search	Examiner
THE HAGUE	05-10-1988	GERARD B.E.

CATEGORY OF CITED DOCUMENTS

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