

Security Fittings

The present invention relates to security fittings and particularly, though not exclusively, is concerned with locking devices for windows.

In one aspect the invention resides in a locking device for securing together two relatively movable elements, the device comprising a first part adapted to be attached to one of said elements and second part adapted to be attached to the other said element, in use the two parts of the device lying in proximity to each other when the relatively movable elements are in the position in which they are to be secured together; the first part comprising a body bearing a linearly and rotatably movable locking member for co-operation with the second part, the locking member being movable linearly between a first, inoperative position and a second position from which rotation thereof into a third position is effective to lock the second part to the first part; means for resiliently biasing the locking member in the sense to rotate said member from its second to its third position; means for preventing such rotation of the locking member while it is in its first position; and key-engageable means for transmitting rotation from a correct key to the locking member to return the locking member from its third to its second position to release the second part from the first part.

The two relatively movable elements may be e.g. the fixed and movable frames of a window, or a door and its frame. An advantage of a locking device in accordance with the invention is the ease by which it can be operated to lock the two parts together once they are aligned, this requiring only linear movement of the locking member from its first to its second position, which is preferably achieved by a push-button type action against a spring bias. Once the locking member is in its second position it moves automatically under its rotational spring bias into its third, locking position. At the same time the ease of its locking action does not prejudice the security of the device, unlocking only being possible by use of a correct key. The ease of operation of the device is in contrast, e.g. to

various types of window locks currently available, which require two parts to be screwed together with a special key each time the window is to be locked, and correspondingly unscrewed when the window is to be opened.

The invention will now be more particularly described, by way of example, and in the context of its application as a window lock, with reference to the accompanying drawings, in which:

Figure 1 is a sectional view of a preferred embodiment of a window lock in accordance with the invention, shown in its inoperative condition, the section being taken on the line I-I of Figure 4;

Figure 2 is a schematic illustration showing the lock of Figure 1 installed on a window;

Figures 3 and 4 are respectively views of the lock in the direction of the arrows III and IV in Figure 1;

Figure 5 is a view of the lock in the direction of the arrow III in Figure 1, but with the keep plate 2 removed;

Figure 6 is a view of the lock in the direction of the arrow IV in Figure 1, but with the end piece 21 removed;

Figure 7 is a side view of the spring 27 of the lock, in its relaxed state;

Figure 8 is a view of the spring in the direction of the arrow VIII in Figure 7; and

Figure 9 is a partially sectioned side view of the key to be used with the lock of Figures 1 to 8.

Referring to Figure 1, the illustrated locking device comprises a push button mechanism 1 and a keep plate 2, the two parts

being intended for mounting on a window as shown in Figure 2. That is to say the button mechanism 1 is mounted to the fixed frame 3 of a window, remote from the hinge line, by means of screws 4 passing through holes 5 (Figure 1) in the body 6 of the mechanism, while the keep plate 2 is mounted to the moving frame 7 of the window by means of screws 8 passing through holes 9 (Figure 3) in the plate. The parts are so located that the front face 10 of the keep plate comes into register with the rear face 11 of the body 6 when the window is closed. For mounting on windows with tapered fixed frames such as shown in Figure 2 a packing piece 12 is used between the side of the body 6 and the frame to ensure correct alignment, no such expedient being required when the surface of the fixed frame is normal to that of the moving frame.

Returning to Figure 1, the body 6 is recessed at 13 and accommodates a hollow sliding button 14, the recess and button being of complementary truncated cylindrical form as shown in Figure 4 so that while the button is slidable it is non-rotatable in the body 6. The rear face of the body is also recessed, at 15, and the two recesses are separated by a dividing wall 16 having a circular opening 17 through it. The mechanism further comprises a shaft assembly 18 borne between the body 6 and button 14.

The shaft assembly 18 comprises a shaft 19 of stepped diameter, the larger diameter end of which extends rotatably and slidably through the aperture 17 in the wall 16. To the rear side of the wall 16 the shaft 19 carries a cross pin 20 which, in the inoperative condition of the device illustrated in Figure 1, lies in the recess 15 of the body 6. As shown in Figure 5, the recess 15 is shaped to accommodate the pin 20 in one angular orientation, but not to permit the pin to rotate therein. At its smaller diameter end the shaft 19 is fitted with a cup-shaped end piece 21, the shaft and end piece being slotted to accommodate a rectangular driving dog 22 extending diametrically across them (see also Figure 4), and the assembly of parts 19/21/22 being

secured by a pin 23. The dog 22 lies in a recess 24 of the button 14 terminating in an inward flange 25 and, as shown in Figure 6, the recess 24 is provided with a pair of stop surfaces 26 whereby the dog 22 and shaft 19 are permitted only to rotate in the clockwise direction (in the sense of Figure 6) from the illustrated position.

Surrounding the shaft 19 is a spring 27 of the form shown (in its relaxed state) in Figures 7 and 8. The spring comprises a series of coils 28 with a longitudinally extending tail 29 at one end of the coils and a radially inwardly extending tail 30 at the other end. When assembled with the rest of the mechanism as shown in Figure 1 the spring is pre-stressed in both compression and torsion and thereby performs two functions in relation to the mechanism. Thus it is compressed longitudinally between the wall 16 of the body 6 and the flange 25 of the button 14, biasing the button 14 and shaft assembly 18 outwards from the body 6 as shown in Figure 1, the outward travel of the button from the body being limited by the abutment of the cross-pin 20 of the shaft assembly 18 behind the wall 16 of the body 6 while the button flange 25 abuts behind the driving dog 22. At the same time the tail 29 of the spring 27 is located in a hole 31 in the wall 16 of the body 6 while the tail 30 is located in a diametral slot in the shaft 19, with the shaft oriented as in Figure 1 the spring being twisted such as to apply a torsional bias to the shaft assembly tending to rotate the shaft clockwise in the sense of Figure 6 - i.e. anti-clockwise in the sense of Figures 3 and 5. While the mechanism is in the inoperative position shown in Figure 1, however, rotation of the shaft assembly is prevented by the fit of the cross pin 20 in the recess 15 of the body 6.

The keep plate 2 has an aperture 32 in its front face generally of the same form as, and aligned with, the recess 15 in the body 6. Rearwardly, however, the aperture 32 opens out into a recess 33 of the form more particularly shown in Figure 3 which permits the shaft 19 and cross pin 20, when disposed therein,

to rotate anti-clockwise (in the sense of Figure 3) through 90° into the position indicated in broken line.

Operation of the described device to lock the window in its closed condition is achieved simply by pressing, with the thumb or finger, the end piece 21 and button 14 together into the body 6 against the bias of the spring 27. In so doing the shaft assembly 18 is shifted axially to move the cross pin 20 out of the recess 15 of the body 6, through the aperture 32 in the keep plate 2 and into its recess 33. At this point the shaft assembly is freed to rotate under the torsional bias of the spring 27, which it does until the cross pin 20 reaches the position shown in broken line in Figure 3. In this condition the pin lies behind the surface 34 of the keep plate to prevent return axial movement of the shaft assembly 18 and button 14 under the influence of the spring 27, and to prevent movement of the keep plate 2 away from the body 6. The front surface of the button in this position lies substantially flush with that of the body. The only way in which the device can now be unlocked is by rotating the shaft assembly 18 back against the torsional bias of the spring 27 to re-align the cross pin 20 with the aperture 32 in the keep plate, and this can be achieved with the aid of a special key as illustrated in Figure 9.

Referring to Figure 9, the key 35 comprises a bow portion 36 and a tubular stem 37 sized to fit axially into the annular space defined between the end piece 21 of the shaft assembly 18 and the surrounding wall of the button recess 24 (Figure 1). The end of the stem 37 is adapted by the provision of slots 38 at two diametrically opposite positions, so that the end of the stem can be inserted into the aforesaid space with the slots 38 embracing respective (radial) ends of the driving dog 22. By this means turning the key can rotate the dog and with it the rest of the shaft assembly 18 back into the position in which the cross pin 20 aligns with the keep plate aperture 32, (rotation being stopped by abutment of the driving dog with the surfaces 26 shown in Figure 6 when the correct alignment has been achieved).....

At this point the shaft assembly and button 24 are freed to spring back under the influence of the spring 27 into the in-operative position illustrated in Figure 1. The keep plate 2 is thus released from the body 6 and the window can be opened.



CLAIMS

1. A locking device for securing together two relatively movable elements, the device comprising a first part adapted to be attached to one of said elements and a second part adapted to be attached to the other said element, in use the two parts of the device lying in proximity to each other when the relatively movable elements are in the position in which they are to be secured together; the first part comprising a body bearing a linearly and rotatably movable locking member for co-operation with the second part, the locking member being movable linearly between a first, inoperative position and a second position from which rotation thereof into a third position is effective to lock the second part to the first part; means for resiliently biasing the locking member in the sense to rotate said member from its second to its third position; means for preventing such rotation of the locking member while it is in its first position; and key-engageable means for transmitting rotation from a correct key to the locking member to return the locking member from its third to its second position to release the second part from the first part.
2. A locking device according to claim 1 comprising means for resiliently biasing the locking member in the sense to return that member linearly from its second to its first position.
3. A locking device according to claim 2 wherein said first and second mentioned resilient biasing means are constituted by a single spring element.
4. A locking device according to any preceding claim wherein the locking member is borne for rotation at least partially



through the agency of a button member which is itself borne slidably but non-rotatably by the body of said first part, the button member being adapted to move linearly together with the locking member when the latter moves in either direction between its first and second positions.

5. A locking device according to claim 4 when appended to claim 2 or claim 3 comprising a spring element compressed between said button member and a fixed part of said body, the button member being coupled to the locking member so as to return the locking member from its second to its first position under the bias of said spring element.
6. A locking device according to claim 5 wherein said spring element is furthermore loaded in torsion and coupled to the locking member so as to bias that member in the sense of rotation from its second to its third position.
7. A locking device according to any preceding claim wherein said locking member comprises a shaft having at one end a lateral projection which, when the locking member moves into its third position, is placed in relation to an abutment of the second part of the device so as to prevent relative linear movement of the locking member in the sense in which it moves from its second to its first position.
8. A locking device according to claim 7 wherein, when the locking member is in its first position, said lateral projection engages a fixed part of said body so as to prevent rotation of the locking member in the sense in which it moves from its second to its third position.



22

9. A locking device according to either of claims 7 and 8 when appended to any one of claims 4 to 6 wherein said shaft is borne for rotation between said button member and a fixed part of said body.
10. A locking device substantially as hereinbefore described with reference to the accompanying drawings.

The text of the specification has been reproduced by photocopying the applicants original typescript. It may contain a few amendments which are difficult to read. The original typescript containing these amendments may be inspected on the premises of the Patent Office