

LOCK

Background of the Invention

The present invention relates to a lock, and in particular manifestations, to a window latch, such as a crescent latch for sash windows.

5 Description of the Prior Art

The reference in this specification to any prior publication (or information derived from it), or to any matter which is known, is not, and should not be taken as an acknowledgment or admission or any form of suggestion that the prior publication (or information derived from it) or known matter forms part of the common general knowledge in the field of endeavour to
10 which this specification relates.

It is generally known to provide latches for windows. One type of commonly used window latch is known in the art as a crescent latch or crescent lock, most often employed with single-hung or double-hung sash windows. Crescent latches include a grooved latching member attached to a handle which, when rotated, causes the latching member to slidingly
15 engage with a corresponding tongue or projection located on the window frame (or on the upper sash, in the case of a double-hung sash window).

A problem with such crescent locks is that they are relatively easily opened from the outside by burglars. To overcome this problem, crescent lock manufacturers have provided internal locking mechanisms which, when engaged, prevent the handle being rotated.

20 One known crescent lock manufactured by the present applicant includes a locking mechanism having an actuator including a moulded plastics body which can be slid within a groove of the lock housing. When the locking mechanism is engaged, a flange connected to the shaft about which the handle rotates abuts against the body of the actuator, preventing the handle from being rotated. A potential problem with this crescent lock is that the actuator
25 may be vulnerable to breakage or malfunction, thus enabling a burglar to manipulate the lock to open the window.

It would be desirable to alleviate one or more of the above difficulties, or at least to provide a useful alternative.

Summary of the Present Invention

- 5 The present invention provides a lock, including:
- a housing;
 - a handle connected to a shaft extending from the housing, the handle being rotatable about the shaft between a latched position and an unlatched position;
 - a detent means disposed within the housing;
 - 10 a locking means connected to the shaft within the housing; and
 - an actuator for moving the detent means between a first position in which the locking means is disengaged from the detent means such that the handle is free to rotate, and a second position in which the locking means is engaged with the detent means to inhibit rotation of the handle;
 - 15 wherein the detent means is formed separately from the actuator.

A detent means which is separate from its actuator provides for greater security, since if the actuator breaks or is disengaged from the detent means, for example due to actions of a burglar, the detent means may still remain in place to prevent the handle being rotated.

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Further advantages will become apparent from the following discussion of certain embodiments of the invention.

Brief Description of the Drawings

Certain embodiments of the present invention will now be described, by way of non-limiting
25 example only, with reference to the accompanying drawings, in which: -

Figure 1 is a cross-sectional view, in schematic form, of an example of a window latch;

Figure 2 is a bottom plan view of the window latch in a first configuration; and

Figure 3 is a bottom plan view of the window latch in a second configuration.

Detailed Description of the Preferred Embodiments

Referring initially to Figure 1, there is shown a window latch 10 including a housing 20. The positions of a handle 12 of the window latch 10, and a grooved latching member 14 attached to the handle 12, are shown in dotted outline.

- 5 The grooved latching member 14 is a crescent-shaped member. When the window latch 10 is installed on a window sill or other support structure, and handle 12 is rotated about a shaft 22 extending from the housing 20, the grooved latching member 14 slidably engages with a corresponding tongue or projection located on the window frame (or on the upper sash, in the case of a double-hung sash window) so that the window remains latched shut.
- 10 The window latch 10 includes two bore holes 16 (only one of which is shown in Figure 1) to receive a fastener to attach the housing 20 to a support structure. Each bore hole may be sealed by a cover plate 40 having a latch 42 which is received in an aperture 44 of the housing to form a snap fit.

Although not shown in the Figures, the latch 10 preferably includes a biasing means in the form of a spring which has its respective ends secured to post 50 of the housing 20 and anchor point 52 of the locking means 24 (Figures 2 and 3). The spring acts as an over centre mechanism to bias the handle 12 to either the latching position (when groove 14 is engaged with the tongue or projection on the window frame or upper sash) or the unlatching position (when the window is able to be opened).

- 20 Referring now to Figures 2 and 3, the locking mechanism of the window latch 10 will be described.

Disposed within the housing 20 of the window latch 10 is a detent means in the form of a detent plate 28 which has a groove or cut-out portion 29. The groove 29 is shaped to accommodate a projection 26 of a locking means 24 having a disc-like body which is mounted coaxially with the shaft 22 and retained on the shaft 22 by a fastener 25.

As shown in Figure 1, the body of locking means 24 lies substantially parallel to the longest axis of the housing 20, while projection 26 is oriented substantially perpendicular thereto.

Detent plate 28 is retained on the housing 20 by means of a disc member 64 mounted to one end of a post 62. As shown in Figure 1, the disc 64 has a diameter which is larger than the width of an elongate groove 60 of the plate 28.

The detent plate 28 is connected to an actuator 30 by means of a projection of the actuator
5 which forms an interference fit within an aperture 80 of the plate. The tightness of the interference fit may of course be adjusted to the desired degree by methods known in the art.

The actuator 30 includes a grippable portion 32 located external of the housing 20 which may be gripped by a user to operate the actuator. Actuator 32 also includes a neck portion 31 which slides within a groove (not shown) in the housing 20 as the grippable portion is moved
10 left and right, and a resilient arm 34 having a protuberance 35 at one end thereof.

In the configuration shown in Figure 2, the detent plate 28 is in a first position in which its left edge (as depicted in the bottom plan view of Figure 2) is aligned closely with the left internal edge of the housing 20. In this first position, the handle 12 is free to rotate, because as locking means 24 rotates anti-clockwise (as depicted in the view of Figure 2), the
15 projection 26 will remain clear of plate 28.

When handle 12 is rotated such that projection 26 is aligned with groove 29 of plate 28, actuator 30 may be operated such that locking means 24 engages with plate 28. To do so, the user grips the grippable portion 32 and slides the actuator 30 from left to right (as depicted in the view of Figure 2). This also moves the plate 28 from left to right, with elongate groove 60
20 passing over post 62 as it does so. Eventually, the plate 28 will be in a second position in which the groove 29 of plate 28 is brought into alignment with protrusion 26 of locking means 24, such that the locking means is engaged with the plate 28 to inhibit rotation of the handle 12, as shown in Figure 3.

Elongate groove 60 has a length which is sufficient to allow the plate 28 to reach the position
25 shown in Figure 3, but not to travel beyond.

In order to retain the plate 28 in either the first position (Figure 2) or the second position (Figure 3), the housing 20 includes, on its internal surface, a pair of recesses 36 in which

protuberance 35 may sit. As the actuator 30 is moved left or right, resilient arm 34 deflects to allow protuberance 35 to slide over raised portion 37 and snap into one of the recesses 36.

Preferably, the detent plate 28 spans substantially across the width of the housing 20. This improves the strength of the locking mechanism, and assists in distribution of the force which is applied to the housing and to the post 62 when a person attempts to rotate the handle 12 when the locking mechanism is engaged.

Additionally, the use of the detent plate 28 ensures that even if the actuator is tampered with and even removed, the lock can remain locked, thereby ensuring security is maintained.

Due to limited space within the housing 20, and the need to provide bore holes 16 to allow the housing 20 to be fastened to a support, it may be useful to provide a second elongate groove 70 in the detent plate 28 which may then slide over the outer surface of bore 17a during operation of the actuator 30. The outer surface of bore 17a may include a flattened portion 18 to allow the plate 28 to have sufficient width in the region between the bore 17a and the housing 20.

Persons skilled in the art will appreciate that numerous variations and modifications will become apparent. All such variations and modifications which become apparent to persons skilled in the art, should be considered to fall within the scope of the invention as broadly described herein.

THE CLAIMS DEFINING THE INVENTION ARE AS FOLLOWS:

1. A lock, including:
 - a housing;
 - a handle connected to a shaft extending from the housing, the handle being rotatable
 - 5 about the shaft between a latching position and an unlatching position;
 - a detent means disposed within the housing;
 - a locking means connected to the shaft within the housing; and
 - an actuator for moving the detent means between a first position in which the locking
 - means is disengaged from the detent means such that the handle is free to rotate, and a second
 - 10 position in which the locking means is engaged with the detent means to inhibit rotation of
 - the handle;
 - wherein the detent means is formed separately from the actuator.
2. A lock according to claim 1, wherein the detent means is slidable between the first
- 15 position and the second position.
3. A lock according to claim 1 or claim 2, wherein the detent means is a detent plate shaped
- to accommodate the shape of the locking means.
- 20 4. A lock according to claim 3, wherein the detent plate spans substantially across the width
- of the housing.
5. A lock according to claim 3 or claim 4, wherein the locking means includes a projection
- shaped to fit within a groove of the detent plate.
- 25 6. A lock according to any one of claims 3 to 5, wherein the detent plate includes at least
- elongate groove shaped to slide over a post extending from an interior surface of the
- housing when the detent plate is moved between the first and second positions.
- 30 7. A lock according to claim 6, wherein the detent plate is at least partly retained within the
- housing by a fastener on the post.

8. A lock according to any one of the claims 1 to 7, wherein the lock is for a window latch.