

KEYLESS ROLLER SHUTTER✓TECHNICAL FIELD

5 The present invention is concerned with a keyless rolling shutter and, more particularly, with a keyless rolling shutter which is suitable for installation, as a security measure, over or in place of residential windows.

10 BACKGROUND ART

 The windows of most residences are made of steel or aluminium frames with glass panes secured therein. Thus, irrespective of the nature of the window locks, 15 access to the premises can be gained by breaking the pane of glass. In view of this many home owners install additional fixed steel or aluminium grilles to windows.

 Although the addition of a fixed steel or 20 aluminium grille makes it difficult for a thief to break in to the residence, it may be equally difficult for the residents of the house to escape in the event of a fire. Indeed, there has been increasing loss of life in recent years due to residents being trapped in their homes by 25 security grilles. Although most security grilles come with a key lock, the keys for the security grilles are often mislaid and can not be accessed in an emergency situation. In view of this, the present invention provides a rolling shutter suitable for installation over or in place of the 30 windows of residences, which does not require a key to open the shutter from the inside.

SUMMARY OF THE INVENTION

35 According to the present invention there is provided a locking arrangement for a roller shutter of the type where a shutter curtain moves between open and closed

positions under the guidance of at least one guide bar,
comprising:

5 a locking bar adapted at one end to engage said
guide bar so as to lock said roller shutter in the closed
position; and

actuator means for locking and unlocking said
roller shutter;

10 characterised in that said actuator means
comprises:

coupling means for coupling said actuator means
to said locking bar;

15 biasing means for urging said composite actuator
means and locking bar into a disposition wherein said
locking bar locks said roller shutter in the closed
position; and

handle means which, when operated, act on said
coupling means to overcome the urging of the biasing means
so as to unlock said roller shutter.

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In a particular preferred embodiment of the
invention, said coupling means comprises a link bar and a
nib formed on the end of said link bar. Typically the nib
formed on the end of the link bar interlocks with a nib
25 formed on said locking bar. The nib formed on the end of
said locking bar is typically at the other end to that
which is adapted to engage said guide bar.

30 Typically said biasing means comprises a spring
which acts on a portion of said link bar. Advantageously,
said link bar includes a projection on which one end of the
spring acts.

35 Advantageously, said actuator means further
comprises a stop member against one side of which the other
end of the spring rests.



Preferably, said link bar includes a collar which abuts the other side of said member.

Typically said handle means is connected to said
5 link bar.

A convenient way of connecting said handle means to said link bar is for said handle means to comprise an extension of said link bar. This extension is typically
10 turned at an angle to said link bar to allow for convenient operation.

In a further aspect of the present invention there is provided a roller shutter suitable for use to
15 secure a window, comprising:

a shutter curtain moveable between open and closed positions;

at least one guide bar for guiding said shutter curtain; and

20 a locking arrangement as described above fixed to the inside of said shutter curtain.

BRIEF DESCRIPTION OF THE DRAWINGS

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

Figure 1 is a front elevation of a roller shutter
30 in accordance with the present invention, when the shutter is in the closed position;

Figure 2 is a front elevation of a roller shutter
in accordance with the present invention, when the shutter
35 is the open position;

Figure 3 is plan view of a locking arrangement in

accordance with the present invention; and

Figure 4 is front elevation of a locking arrangement in accordance with the present invention.

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DETAILED DESCRIPTION OF THE PREFERRED EMBODIMENTS

The roller shutter shown in Figures 1 and 2 comprises a housing box 1 made of a steel frame and steel sheets for housing the roller assembly (not shown), a window shutter curtain 2, comprising a plurality of slats made of a suitable material such as aluminium, guide rails, 3A and 3B, to either side of the window shutter curtain 2 and a keyless locking device 6 mounted to the inside of the shutter curtain 2 just above the bottom bar 5. It will be noted that, since the shutter is in the closed position, the bottom bar 5 is received in bottom bar receiver 7. Each of the guide rails 3A, 3B includes a locking cap 4A and 4B. The locking caps 4A and 4B are triangular in shape and their interaction with the keyless locking device 6 will be described below.

The keyless locking device 6 will now be described with reference to Figures 3 and 4. The keyless locking device comprises two locking arrangements 8, 9 in accordance with the present invention. Each of these has a locking bar 10, 11 with a cut-out portion 12, 13 adapted to engage the locking cap 4A and 4B on guide bars 3A and 3B, respectively. When the roller shutter is locked the surface of the cut-out portion 12, 13 abuts the underside of the triangular locking cap 4A, 4B and cannot pass it, hence the shutter curtain 2 can not be raised when the locking arrangements 8, 9 are in locked disposition.

Each of the locking arrangements 8, 9 further comprises actuator means 14, 15. The actuator means comprise a nib 16, 17 formed on the end of link bar 18, 19.

The nib 16, 17 engages a similar nib 19, 20 on the locking bar 10, 11. The nibs 16 and 20 interlock, as do the nibs 17 and 21, and act as coupling means coupling the locking bars 10, 11 to the actuator means 14, 15. The link bars 18, 19 also include a downwardly-depending projection 22, 23 against which one end of a spring 24, 25 rests. The other end of the spring 24, 25 abuts a stop member 26, 27 fixed to either the shutter curtain 2 or to the casing 31 which encloses the keyless locking device 6. The link bar 18, 19 also includes a collar 28, 29 disposed to the other side of the stop member to the spring 24, 25. In each case, the spring 24, 25 is disposed to the side of the stop member closer to the adjacent guide bar 3A or 3B, as appropriate, and the collar 28, 29 closer to the center of the shutter curtain 2. At the end of the link bar 18, 19 closer to the center of the shutter curtain 2, as best seen in Figure 3, there is a right angle turn in the bar, and the portion of the bar extending normal to most of its length constitutes handle 32, 33 for unlocking the roller shutter. It will be appreciated that the cover 31 covering the keyless locking device 6 is attached to the shutter curtain 2 through adaptor 30, and that the cover 31 holds the locking arrangements 8, 9 in operative configuration. The cover 31 includes slots through which the handles extend.

In use, the handles 32, 33 are moved simultaneously toward each other by the operator. The resistance to this motion provided by springs 24, 25 is easily overcome, even when it is a child operating the handles 32, 33. It will be appreciated that this motion causes compression of springs 24, 25 since it draws link rods 18, 19 towards each other against the urging of the springs. In resting disposition the collars 28, 29 lie against the stop member 26, 27 but once the handles are operated the collars move away from the stop members. The handles 32, 33 may be drawn together until they abut but

generally the locking mechanism will be released before the handles have been withdrawn this far.

Since link bar 18, 19 is coupled, in the manner
5 described above, to locking bar 10, 11 the motion of the
link bar towards the center of the roller curtain 2 is
transferred to the locking bar. Thus, locking bar 10 moves
towards the left hand side of the roller curtain 2 and
locking bar 11 moves towards the right hand side of the
10 roller curtain 2. Whilst this motion occurs the cut-out
portion 12 slides along the underside of locking cap 4A and
the cut out portion 13 slides along the underside of lock
cap 4B until they reach a point where the two surfaces no
longer abut. When this happens the roller shutter has been
15 unlocked and will immediately lift up under the urging of a
counter balance spring installed inside the housing box 1.
Thus, the roller shutter moves from the configuration shown
in Figure 1 to the configuration in Figure 2 immediately
upon it being unlocked. Moreover, once the handles 32, 33
20 are released the urging of the springs 24, 25 will return
the handles to their resting positions with the collars 28,
29 abutting the stop members 26, 27. In order to lock the
roller shutter once again, one must operate handles 32, 33
in the manner described above to withdraw the locking bars
25 10, 11 from their extended position. This allows them to
pass the locking caps 4A and 4B as the roller shutter is
closed. Once the roller shutter is in the closed
disposition, the handles 32, 33 may be released and the
roller shutter will be locked.



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CLAIMS

1. A locking arrangement (8, 9) for a roller shutter of the type where a shutter curtain (2) moves between open and closed positions under the guidance of at least one guide bar (3A, 3B), comprising:
- 5 a locking bar (10, 11) adapted at one end to engage said guide bar (3A, 3B) so as to lock said roller shutter (2) in the closed position; and
- 10 actuator means (14, 15) for locking and unlocking said roller shutter;
- characterised in that said actuator means (14, 15) comprises:
- 15 coupling means for coupling said actuator means (14, 15) to said locking bar (10, 11);
- biasing means for urging said composite actuator means (14, 15) and locking bar (10, 11) into a disposition wherein said locking bar (10, 11) locks said roller shutter
- 20 (2) in the closed position; and
- handle means (32, 33) which, when operated, act on said coupling means to overcome the urging of the biasing means, so as to unlock said roller shutter (2).
- 25 2. A locking arrangement as claimed in claim 1 wherein said couplings means comprises a link bar (18, 19) and a nib (16, 17) formed in the end of said link bar (18, 19).
- 30 3. A locking arrangement as claimed in claim 2, wherein said nib (16, 17) formed on said end of said link bar (18, 19) interlocks with a nib (20, 21) formed on said locking bar (10, 11).
- 35 4. A locking arrangement as claimed in claim 3, wherein said nib (20, 21) formed on said locking bar (10, 11) is at its other end.

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5. A locking arrangement as claimed in any one of claims 2 to 4, wherein said biasing means comprises a spring (24, 25) which acts on a portion of said link bar (18, 19).
- 5 6. A locking arrangement as claimed in claim 5, wherein said link bar (18, 19) includes a projection (22, 23) on which one end of the spring (24, 25) acts.
- 10 7. A locking arrangement as claimed in claim 6, wherein said actuator means (14, 15) further comprises a stop member (26, 27) against one side of which the other end of the spring (24, 25) rests.
- 15 8. A locking arrangement as claimed in claim 7, wherein said link bar (18, 19) includes a collar (28, 29) which abuts the other side of said stop member (26, 27).
9. A locking arrangement as claimed in any one of
- 20 claims 2 to 8, wherein said handle means (32, 33) is connected to said link bar (18, 19).
10. A locking arrangement as claimed in claim 9, wherein said handle means (32, 33) is an extension of said
- 25 link bar (18, 19) turned at an angle to said link bar (18, 19) for convenient operation.
11. A roller shutter suitable for use to secure a window, comprising:
- 30 a shutter curtain (2) moveable between open and closed positions;
- at least one guide bar (3A, 3B) for guiding said shutter curtain (2); and
- a locking arrangement (8, 9) in accordance with
- 35 one of claims 1 to 10 fixed to the inside of said shutter curtain (2).

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