Aug. 18, 1942. J. SHIBELLI 2,293,447

WINDOW CLOSING DEVICE

Filed March 4, 1940 3 Sheets-Sheet 1

Fig. 1.

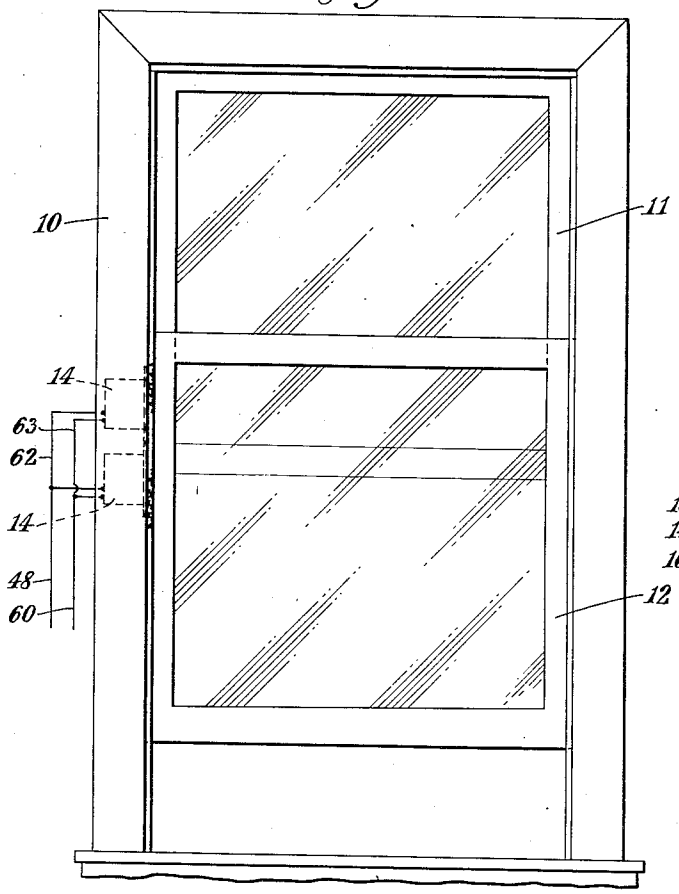


Fig. 2.

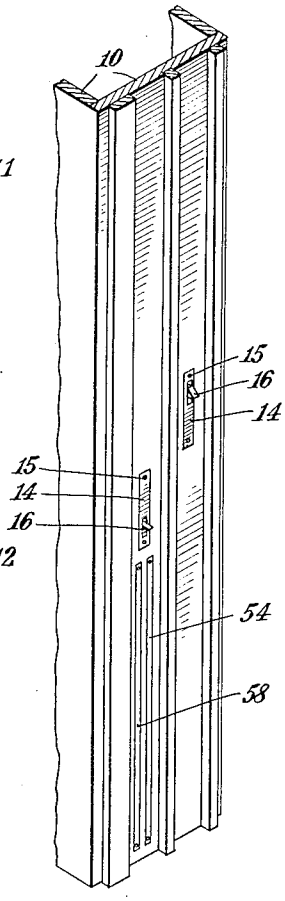


Fig. 3.

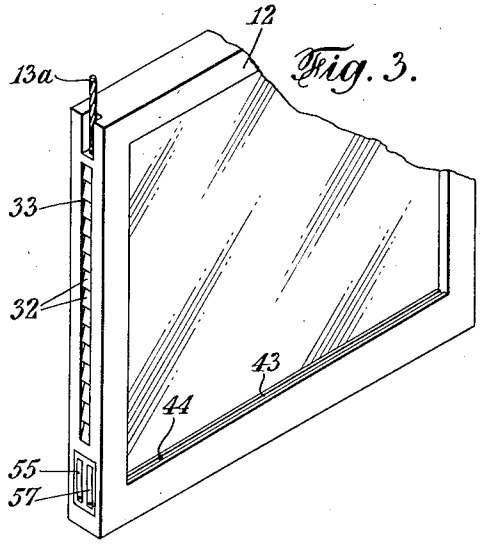
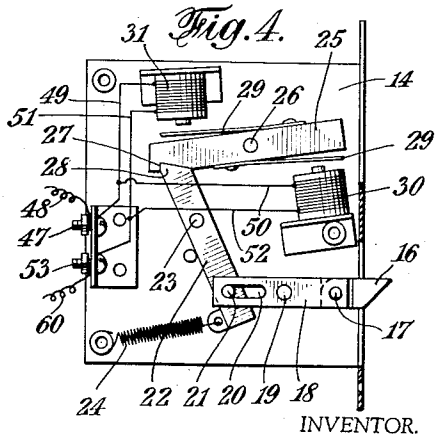


Fig. 4.



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Filed March 4, 1940 3 Sheets-Sheet 2

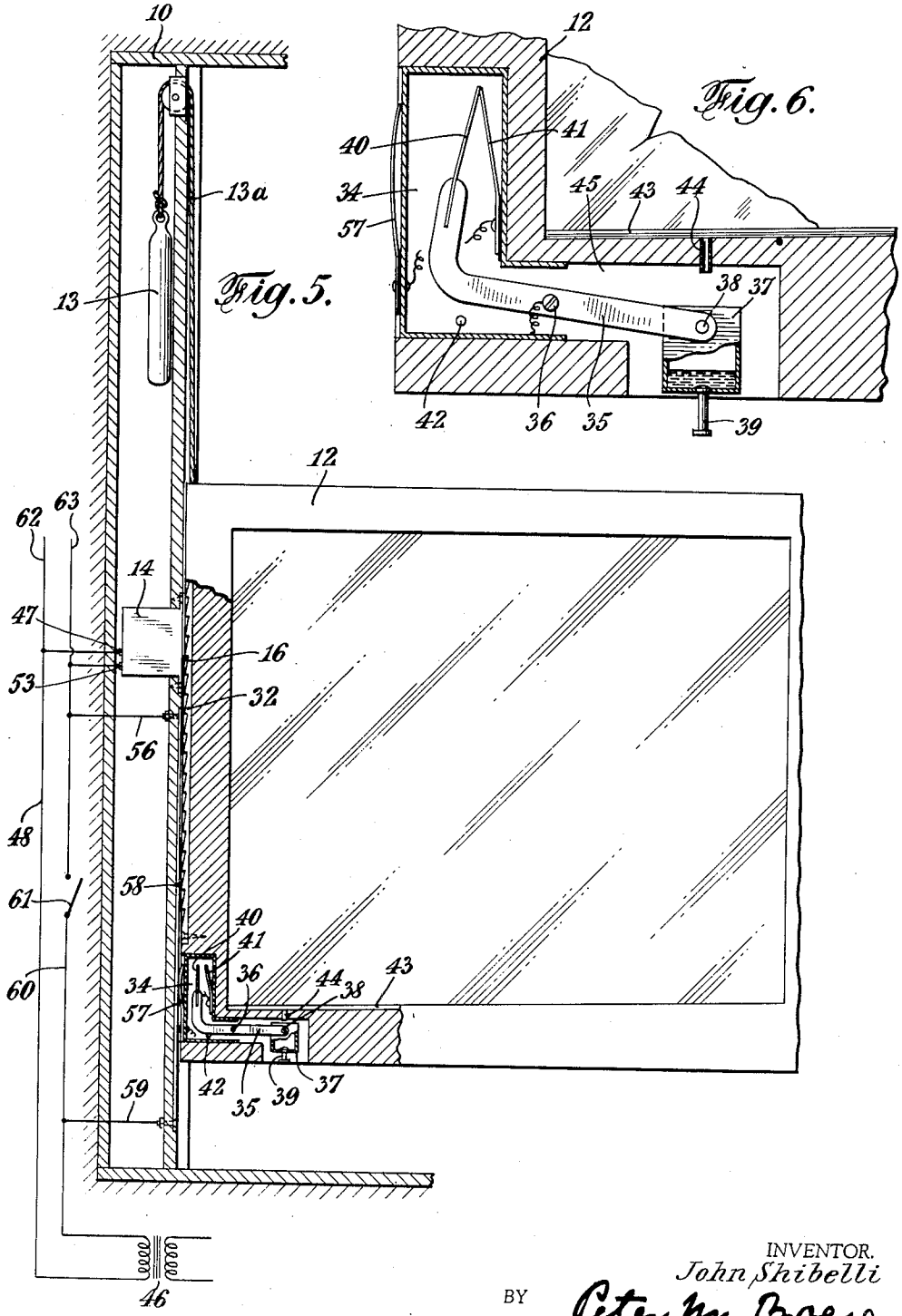


Fig. 5.

Fig. 6.

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WINDOW CLOSING DEVICE

Filed March 4, 1940 3 Sheets-Sheet 3

Fig. 7.

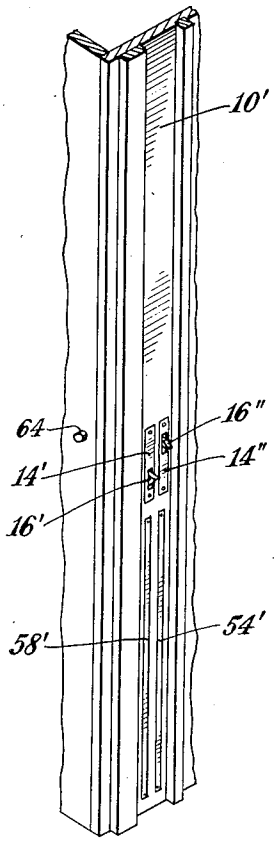
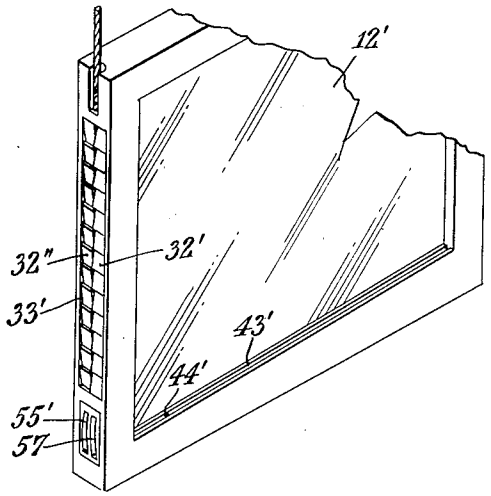


Fig. 8.



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UNITED STATES PATENT OFFICE

2,293,447

WINDOW CLOSING DEVICE

John Shibelli, Brooklyn, N. Y.

Application March 4, 1940, Serial No. 322,102

1 Claim. (Cl. 268—123)

This invention relates to new and useful improvements in window closing devices, adaptable for the lower as well as for the upper window sash, or for the lower window sash only. The locking mechanism, forming part of this invention, may be controlled by a switch installed at any suitable place; thereby providing a remote control for the closing of one or more windows.

Another object of the invention is to permit the closing of windows automatically and immediately at the beginning of a rainstorm, thereby preventing costly damage to furniture and buildings.

A further object of the invention is to provide a locking means against movement in any direction; thereby making this invention burglarproof.

With the above and other objects in view, this invention consists of the novel features of construction, combination and arrangement of parts, hereinafter fully described, claimed and illustrated in the accompanying drawings, forming part of this application, and in which similar characters of reference indicate corresponding parts in all views, and in which:

Figure 1 is a front elevational view, embodying my invention.

Figure 2 shows a perspective view, in elevation, of the side of a window-frame, with some of the parts of my device attached thereto.

Figure 3 is a perspective view, in elevation, with a section broken off, and showing a window-sash with some other parts of my invention.

Figure 4 shows a detail view of my specific lock construction, employed in the window frame.

Figure 5 is a vertical sectional view, more clearly illustrating the operation of my device.

Figure 6 shows a sectional view of a part of a sash on an enlarged scale.

Figure 7 shows a perspective view, in elevation, of part of a window frame of a modified form of my invention, similar to Figure 2, while

Figure 8 shows a perspective view, also in elevation, with a section broken off, of a window-sash adapted to engage with the parts, shown in Figure 7.

Referring more particularly to the drawings, 10 indicates a conventional window-frame, carrying an upper window-sash 11, a lower window-sash 12, sash weights 13, and sash-cords, or chains, 13a.

In one side of the frame are secured locks 14 by means of screws 15. A latch member 16 is pivoted as at 17 to a lever 18, which, in turn, is pivoted at 19 and is provided with a slot 20 to engage a pin 21 of a lever 22 fulcrumed at 23. One end of a spring 24 is connected to the lever 22, while the other end of this spring is fastened to the housing 14.

An arm 25 is pivoted at 26 and is provided with a notch 27 adapted to engage a nose 28 of the lever 22. Springs 29 are secured to the arm 25 and attracted by solenoids 30 and 31 upon energization of the latter. Although two of these solenoids have been shown, it may be understood that only one may be used, if desired.

The window-sashes 11 and 12 are provided with racks 32, set into a recess 33. The teeth of the racks 32 are engaging the latch members 16 resting upon the top surface of the latter. The weight of the sash resting on the latch member 16 exerts a pressure against the lever 22, thus forcing the nose 28 of the latter against the notch 27 of the arm 25, thereby preventing the window-sash from closing.

The latch 16 for the lower sash 12 is so arranged as to allow a free movement in an upward direction. The weight of the lower sash 12 is somewhat greater than the combined weights of the sashweights for the lower cash 12. This arrangement will insure the sliding down of the lower sash 12 upon disengagement of the member 22 from the notch 27 of the arm 25.

The latch 16 for the upper sash 11 has its bevel arranged opposite to the lower sash, while the teeth of the rack 32 for the upper sash 11 are likewise running in an opposite direction, whereby to allow a free downward movement of the upper sash. The combined weights of the sash-weights for the upper sash 11, is somewhat larger than the weight of the sash itself, thus keeping the teeth of the rack 32 in engagement with the latch member 16; and, if the latter is released from the locking position, the greater weight of the sashweights will then force the upper window-sash upward into a closed position.

The window-sash is at one corner provided with a housing 34, which latter carries an L-shaped arm 35 pivoted at 36. The latter has connected thereto at one end a receptacle 37, as at 38; this receptacle is open at the top, while an aperture in the bottom thereof is normally closed by a valve-pin 39. The other end of the arm 35 carries a spring 40 adapted to engage a contact spring 41 mounted on the housing 34. The weight of the left hand portion of the arm 35 is slightly greater than the other end of the arm 35, so that normally the arm 35 is resting against a pin 42, thereby leaving the springs 40 and 41 in non-contacting position.

A sloping groove 43 is provided at the bottom portion of the lower sash 12, from which a tube 44 leads into the open space 45; this tube 44 is placed directly above the open top of the receptacle 37.

Rainwater falling, or striking against the window pane will run down into the sloping groove 43 through the tube 44; this will cause the filling of the receptacle 37 with said rainwater, thereby increasing the weight of the right end of the arm 35, and thus bringing the latter into a contact-closing position with respect to the springs 40 and 41, as may clearly be seen in Figure 6.

One terminal of the secondary of a transformer 46 is connected to the binding post 47 by means of a wire 48. Wires 49 and 50 connect this binding post 47 to one side of the solenoids 30 and 31. The other sides of the solenoids are leading by wires 51 and 52 to the binding post 53, which, in turn, by means of the wire 56 connects to a contact strip 54 in the side of the frame 10; this contact strip is engaged by a spring 57 fastened on the housing 34, and by means of the latter connects electrically the arm 35 and spring 40.

When in contacting position, the current will flow from the spring 40 to the spring 41, the latter being electrically connected to the spring 57, which engages a contact strip 58 and supplies current to the same. The contact strip 58 is connected to the other terminal of the transformer 46 by means of the wire 59.

A wire 60 with a switch 61 may be connected between the wires 56 and 59 to provide manual operation, of the lock 14.

When the lower sash reaches its bottom position, the valve pin 39 engaging the window frame will then open and allow the accumulated rainwater to drain off, thereby bringing the arm 35 back into normal position, thus breaking the contact between the springs 40 and 41 and interrupting the current.

The lock 14 for the upper sash 11 may be connected by the wires 62 and 63 to the wires 48 and 56, respectively, to operate simultaneously with the locking device for the lower sash 12.

The wires 62 and 63 may also be connected to any other sets of windows, if simultaneous operation is desired upon.

Referring now more particularly to the Figures 7 and 8, of a modified form of my invention; similar parts will be denoted by the same numerals, as in the Figures 1 to 6, but with the distinction of an added prime.

Locks 14′ and 14″ are placed in each channel for the window sashes and are arranged in such a manner that the lock 14′ would normally allow a free upward movement, and the lock 14″ a free downward movement of the window sash. The latches 16′ and 16″, the bevels of which are reverse with respect to each other, are to engage the ratchet teeth of the racks 32′ and 32″, the teeth of the latter also being reverse to each other.

When both latches 16′ and 16″ are in engagement with the racks 32′ and 32″, the window sashes 11 and 12 are prevented from moving either upward or downward; thereby making them burglarproof.

In order to open a window, one of the locks 14′ or 14″, depending upon whether it is a lower or an upper sash, is temporarily disengaged from the racks, by means of a separate switch 64, which releases the lock mechanism, as shown in Figure 4, and allows the free movement of the window sash in one direction.

The lower sash 12′ in Figure 8 may be moved upward by temporarily releasing the locking mechanism of the latch 16″ by means of the switch 64. When opened to the desired position, the lock 14″ will then prevent any further opening in an upward direction.

When the current is closed by the switch 61, or the switch member 40 and 41 to disengage the locking mechanism of the latch 16′, the sash will then move downward against the free action of the latch member 16″ of the lock 14″.

It is obvious that changes may be made in the form, construction and arrangement of the several parts, as shown, within the scope of the appended claim, without departing from the spirit of the invention, and I do not, therefore, wish to limit myself to the exact construction and arrangement shown and described herein.

What I claim as new, and desire to secure by Letters Patent of the United States is:

In a device of the class described, a window-sash being formed with a housing at one corner thereof, an L-shaped arm pivotally arranged in said housing, a receptacle connected to said arm at one end thereof, said receptacle being open at the top and having an aperture in the bottom thereof, and a pin adapted to close said aperture, a contact spring mounted on the housing, and a second spring fixedly arranged upon the other end of the L-shaped arm and adapted to engage said contact spring, a pin disposed at the bottom of said housing, the weight of the end of the arm having the spring attached thereto being slightly greater than the other end of the arm, whereby to make said arm normally resting against the latter pin for leaving the springs in non-contacting position, substantially as and for the purpose set forth.

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