C. GUGINO.

WINDOW SHUTTER.

APPLICATION FILED DEC. 4, 1920.

1,407,856. Patented Feb. 28, 1922.

Fig. 1.

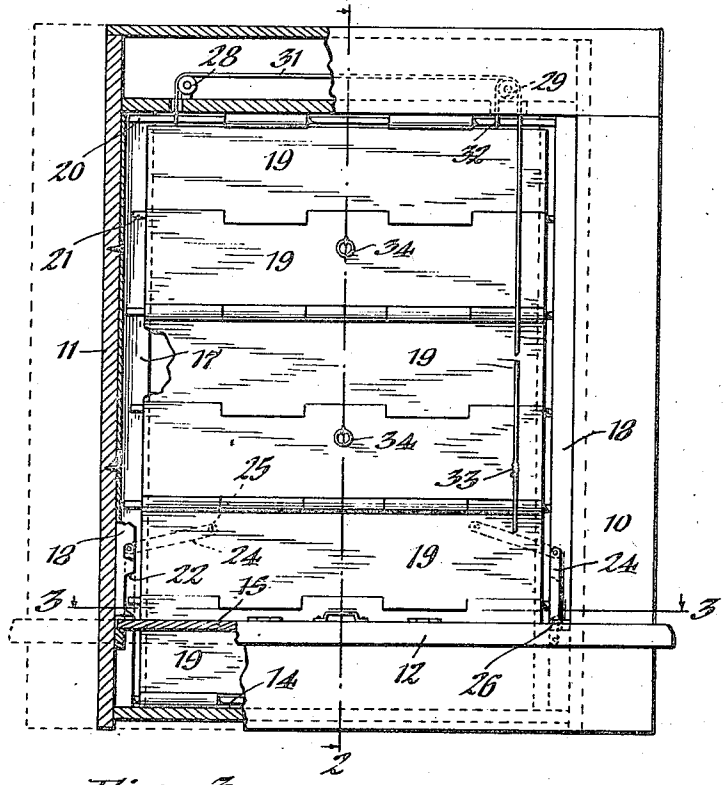


Fig. 2.

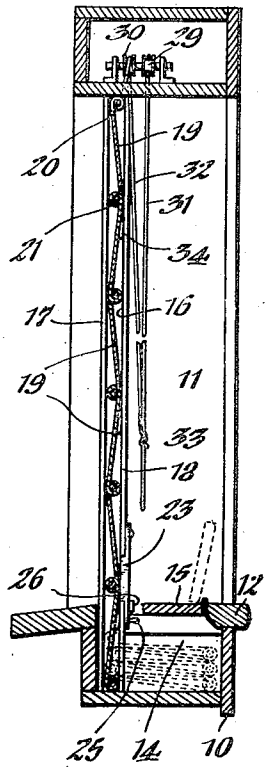


Fig. 3.

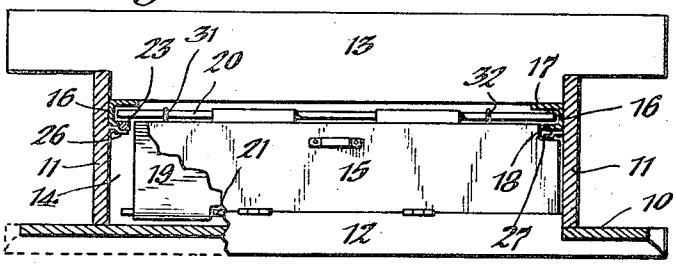


Fig. 4

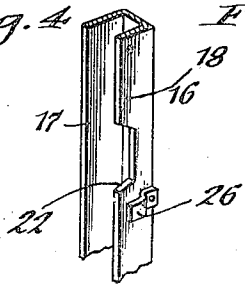


Fig. 5.

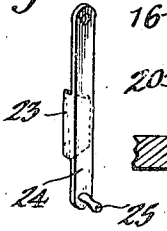
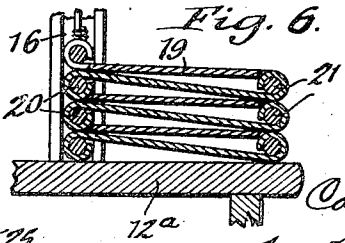


Fig. 6.



Inventon
Carmelo Gugino
by Geyer Dyer
Attorneys.

UNITED STATES PATENT OFFICE.

CARMELO GUGINO, OF BUFFALO, NEW YORK.

WINDOW SHUTTER.

1,407,856. Specification of Letters Patent. Patented Feb. 28, 1922.

Application filed December 4, 1920. Serial No. 428,193.

To all whom it may concern:

Be it known that I, CARMELO GUGINO, a citizen of the United States, residing at Buffalo, in the county of Erie and State of New York, have invented new and useful Improvements in Window Shutters, of which the following is a specification.

This invention relates to window shutters and more particularly to that type of shutters which are both fireproof and burglar-proof.

It is the principal object of this invention to provide a slidable window shutter of this character which is constructed of a plurality of hinged sections capable of being readily folded and unfolded into its open and closed positions.

A further object is to provide a shutter which is simple and durable in construction, and which is foldable into a compact form.

In the accompanying drawings:

Figure 1 is a sectional elevation of a window frame showing my improvement applied thereto, the shutter being in its unfolded or closed position. Figure 2 is a vertical transverse section on line 2—2, Fig. 1. Figure 3 is a horizontal section on line 3—3, Fig. 1, showing the shutter in its lowered and folded position. Figure 4 is a fragmentary perspective view, on an enlarged scale, of the lower portion of one of the guide rails. Figure 5 is a perspective view of one of the closures. Figure 6 is a transverse vertical section of a modified form of the improvement.

Similar characters of reference indicate corresponding parts throughout the several views.

Referring to the construction shown in Figs. 1–5, 10 represents the window frame which may be of any suitable and well known construction, the frame shown in the drawings including the uprights or stiles 11, 11, the inside sill 12 and the outside sill 13. Arranged underneath the inside sill is a compartment, pocket or housing 14 which extends substantially the full width of the window frame and is of sufficient depth and breadth to encase the shutter in its folded or collapsed position. A hinged lid or cover 15, forming part of the inside sill, normally closes the open upper end of this compartment. To each of the stiles 11 is secured a vertical guide rail or way 16 which is preferably constructed in the form of a channel bar whose rear side or flange 17 is of greater width than its front side or flange 18 for a purpose hereinafter described.

The shutter, in being raised and lowered, slides in the guide rails 16 and is preferably constructed as follows:

19 represents a plurality of hinged shutter-sections or leaves of fireproof material which extend transversely of the window opening, the ends thereof terminating short of the corresponding edges of the front sides 18 of the guide rails, as shown in Fig. 1. These shutter sections are adapted to be folded upon one another in lowering the shutter and to be unfolded in raising the shutter, and for this purpose the several sections are connected with one another by alternately long and short hinge-pintles 20 and 21. The ends of these hinge pintles extend beyond the corresponding upright edges of the shutter sections and are guided in the rails 16. In lowering the shutter, each pair of adjacent sections is adapted to be folded inwardly, and to this end the front sides 18 of the guide rails are provided with notches or exit-passages 22 adjacent their lower ends which permit the short hinge pintles to be withdrawn through said notches, while the long hinge pintles remain in their guide rails. These notches are cut only of such depth as to permit the short hinge pintles to be moved into and out of engagement with said rails, the long pintles being permanently confined within said rails during the raising and lowering movements of the shutter.

A suitable closure 23 is provided for each notch or passage 22 to normally retain the short pintles in the guide rails and prevent the shutter from accidentally lowering or collapsing while in use. These closures are preferably carried by actuating levers 24 pivoted at their upper ends to the guide rails so as to be capable of swinging transversely of the shutter, the levers being provided at their lower ends with suitable knobs 25 for actuating them. In order to hold each of these levers in its normal position, an offset lug or lip 26 is provided on the front side 18 of each guide rail, said lever being adapted to be frictionally engaged between said side and said lug. These levers normally extend downwardly into the compartment 14 through notches 27 formed in the adjacent corners of the lid 15, as shown in Figs. 2 and 3. The lid thus locks the levers in their normal

positions, making it necessary to first raise the lid in order to release the levers and permit the raising or lowering of the shutter.

Any suitable means may be employed for raising and lowering the shutters, but those shown in the drawings have been found appropriate and consist of pulleys or drums 28, 29 and 30, suitably supported in the upper end of the frame 10 and a pair of elevating cords or cables 31, 32 passing around said pulleys and each connected at one end to the long pintle 20 of the uppermost shutter section 19. As shown in Figs. 1 and 2, the cable 31 passes around the pulleys 28 and 29 while the cable 32 passes around the pulley 30, the two cables being joined at their free ends, as shown at 33, whereby they are actuated simultaneously for effecting a uniform raising and lowering movement of the shutter.

To permit of conveniently collapsing or folding each pair of adjacent shutter sections inwardly in the act of lowering the shutter, actuating devices are provided which preferably consist of rings or finger pieces 34 secured to alternate sections.

As before stated, the rear flanges 17 of the guide rails are wider than the front flanges 18, said rear flanges overlapping or extending beyond the adjacent upright edges of the several shutter sections, whereby a closed joint is provided between the exterior sides of the shutter sections and the guide rails, preventing the passage of smoke and fire through the same.

To raise the curtain from its open and folded position, shown by dotted lines in Fig. 2, to its unfolded and closed position, shown by full lines in the same figure, the lid 15 is raised to open the compartment 14, after which the levers 24 are elevated to the position shown by dotted lines in Fig. 1 to uncover or open the notches 22 in the guide rails 16. The cables are now pulled to successively unfold the shutter sections 19 until they are all elevated, after which the levers are swung back to their normal position and the lid 15 is lowered. The shutter is reliably retained in its upright position by the hinge pintles 20 and 21 engaging the guide rails and the same is held against accidental folding or displacement by the levers and the lid.

To lower and open the shutter, the lid 15 is raised, the levers are disengaged from their notches 22, and the shutter sections successively folded inwardly in pairs by grasping the corresponding rings 34 and pulling the short pintles through said notches, each pair dropping to folded position by gravity into the compartment 14. The levers may then be swung to their normal position and the lid closed, thereby concealing the shutter from view when not in use and protecting it.

In the modification of the improvement shown in Fig. 6, the shutter sections are not concealed or stored in a compartment, as in the preferred construction, but rest on the inside sill 12^a and are exposed. Otherwise the construction is identical with that previously described.

While this shutter has been shown and described in connection with windows, it is equally applicable to the door openings of buildings.

Furthermore, while affording the advantages of a fire-proof shutter, the same is burglar-proof, and in this capacity prevents unauthorized persons from gaining entrance through the same, it being only possible to operate this shutter from the interior of the building. This shutter may also be used as a shade and can be raised to any desired height.

I claim as my invention:

1. A shutter of the character described, comprising a pair of opposing guideways, and a plurality of hinged sections connected by pintles engaging said guideways, the latter being provided in their sides with pintle-inlet and exit passages for permitting movement of alternate pintles into and out of engagement with the guideways.

2. A shutter of the character described, comprising a pair of opposing guideways, and a plurality of foldable sections connected by hinge pintles engaging said guideways, some of said pintles permanently engaging said guideways and others being shorter than those just mentioned, the guideways being provided in their sides with passages for permitting movement of said short pintles into and out of engagement with the guideways.

3. A shutter of the character described comprising a pair of opposing guideways, and a plurality of foldable sections connected by alternating short and long hinge pintles engaging said guideways, the latter being provided in their sides with passages for permitting movement of said short pintles into and out of engagement with the guideways.

4. A shutter of the character described, comprising a pair of opposing guideways, a plurality of foldable sections connected by hinge pintles engaging said guideways, the latter being provided in their sides with pintle-inlet and exit passages, and means for normally closing said passages.

5. A shutter of the character described, comprising a pair of opposing guideways, a plurality of foldable sections connected by hinge pintles engaging said guideways, the latter being provided in their sides with pintle-inlet and exit passages, and laterally-swinging levers carrying closures for said passages.

6. A shutter of the character described,

comprising a pair of opposing guideways, a plurality of foldable sections connected by hinge pintles engaging said guideways, the latter being provided in their sides with passages for permitting movement of alternate pintles into and out of engagement with said guideways, means for unfolding said sections to raise said shutter, and means for folding adjacent pairs of sections to lower the shutter.

7. A shutter of the character described, comprising a pair of opposing guideways, a plurality of foldable sections connected by hinge pintles engaging said guideways, a compartment arranged at one end of said guideways and at one side thereof for receiving said sections when folded, and a cover for the open end of said compartment.

8. A shutter of the character described, comprising a pair of opposing guideways, a plurality of foldable sections connected by hinge pintles engaging said guideways, the latter being provided in their sides with pintle-inlet and exit passages, a compartment arranged at one end of said guideways for receiving said sections when folded, closures for said passages, and a cover for the open end of said compartment arranged to hold said closures in normal position.

9. A shutter of the character described, comprising a pair of opposing guideways, a plurality of foldable sections connected by hinge pintles engaging said guideways, the latter being provided in their sides with pintle-inlet and exit passages, a compartment arranged at one end of said guideways for receiving said sections when folded, closures for said passages, levers carrying said closures and extending into said compartment, and a cover for said compartment arranged to obstruct the movement of said levers out of normal position.

CARMELO GUGINO.