

Jan. 2, 1923.

C. GUGINO.  
WINDOW SHUTTER.  
FILED MAR. 24, 1922.

1,440,677

2 SHEETS-SHEET 1

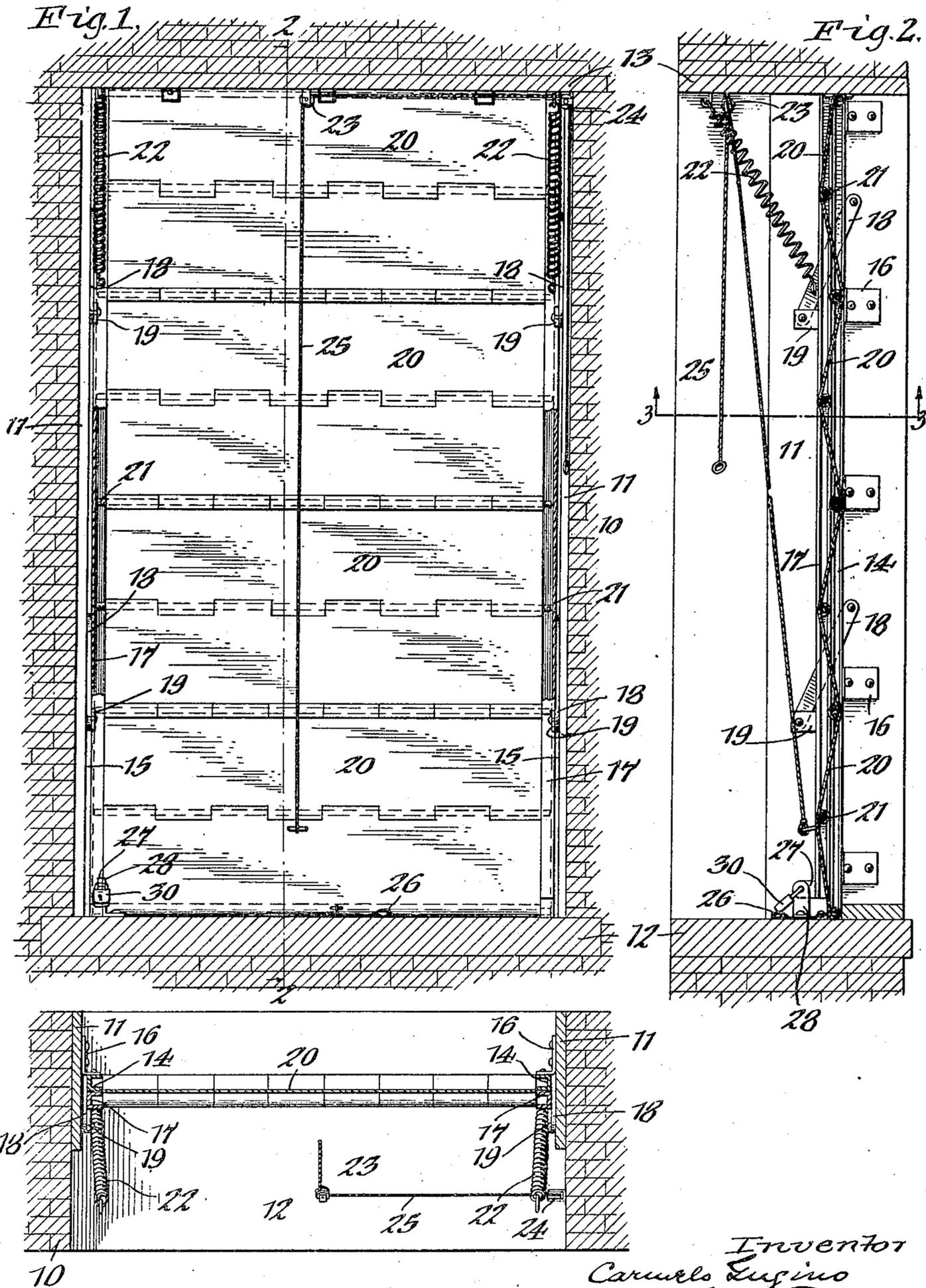


Fig. 3.

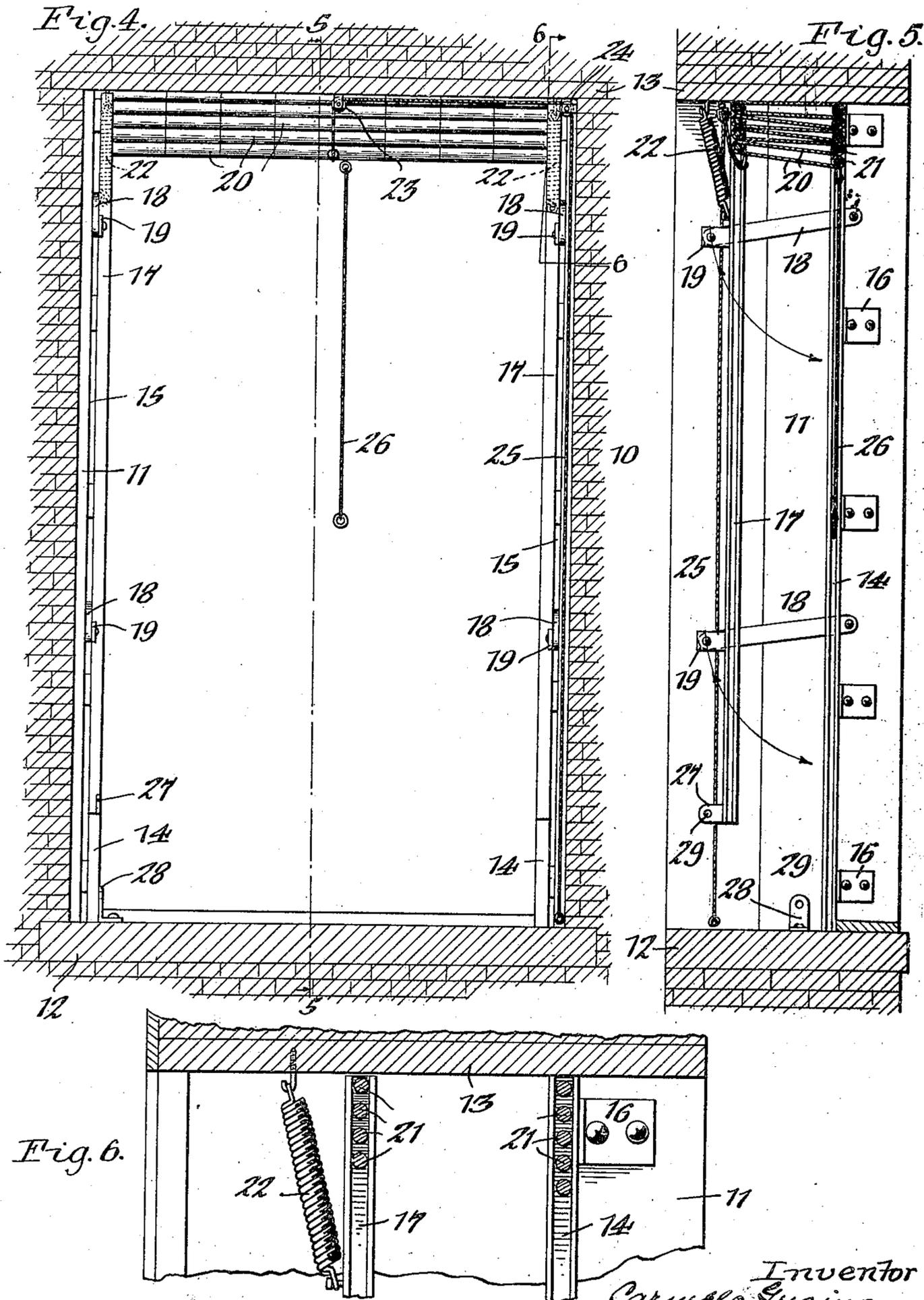
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## UNITED STATES PATENT OFFICE.

CARMELO GUGINO, OF BUFFALO, NEW YORK.

## WINDOW SHUTTER.

Application filed March 24, 1922. Serial No. 546,261.

*To all whom it may concern:*

Be it known that I, CARMELO GUGINO, a citizen of the United States, residing in 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 generally to window shutters or curtains and more particularly to the type of shutters which are both fireproof and burglar-proof.

Its object is to provide an improved foldable or collapsible shutter of this character which is simple, durable and inexpensive in construction, and which is capable of easy manipulation.

In the accompanying drawings: Figure 1 is a sectional elevation of the improved shutter applied to a window frame, 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. 2. Figure 4 is a front elevation of the shutter showing the same in its folded or open position. Figure 5 is a vertical transverse section on line 5—5, Fig. 4. Figure 6 is an enlarged fragmentary transverse section on line 6—6, Fig. 4.

Similar characters of reference refer to like parts throughout the several views.

The improvement is shown in connection with a window frame 10 of any suitable and well known construction, the frame shown in the drawings including the uprights or stiles 11, 11, the lower sill 12 and the lintel 13. Arranged vertically on the inner sides of the stiles is a pair of opposing fixed guide rails or ways 14 which may be constructed in the form of channel bars. As shown in Figs. 1, 2 and 4, each of these guide rails is suitably spaced from the inner side of the adjacent stile to provide an intervening vertical space 15 between these parts. For this purpose, the guide rails may be attached to angle brackets 16 fastened to the stiles or in any other appropriate manner.

Arranged parallel with and movable in a substantially vertical plane toward and from the fixed guide rails 14 are companion guide rails 17 which may also be constructed of channel iron. These movable guide rails are supported near their upper and lower ends on vertically swinging parallel arms or links 18, each of which is pivoted at one end to the adjacent stile 11 while its other end is

pivoted to a lug or projection 19 arranged on the corresponding guide rail. As shown in Figs. 1, 3 and 4, these links pass through the spaces 15 formed between the fixed guide rails 14 and the stiles of the window frame. The fixed guide rails preferably extend the full length of the window frame while the movable guide rails are somewhat shorter to permit them to swing from the position shown in Fig. 2 to the position shown in Fig. 5 and vice versa.

Slidable in the fixed and movable guide rails 14 and 17, respectively, is a foldable or collapsible shutter which is preferably constructed of a plurality of hinged shutter-sections or leaves 20 extending transversely of the window opening, the ends thereof terminating at or near the corresponding edges of the flanged portions of said guide rails, as shown in Figs. 1 and 3. These shutter-sections may be made of sheet metal or similar material and are adapted to be folded one upon the other in raising the shutter to its open position and to be unfolded in lowering the same to its closed position. For this purpose, the several sections are connected with one another by hinge pintles 21, the ends of which extend beyond the corresponding upright edges of said sections with alternate pintles engaging the guide rails 14 and 17. In the closed position of the shutter, the movable quick rails are located in juxtaposition to the companion fixed rails and when the shutter is raised to its open position, each pair of adjacent sections is adapted to fold inwardly, causing those pintles guided in the movable rails 17 to swing the latter away from the fixed guide rails a distance equal to that between the axes of adjacent hinge pintles. When the shutter is lowered to its closed position, the shutter sections automatically unfold, those pintles engaging the movable guide rails swinging outwardly and moving the latter with them toward the fixed guide rails.

Suspension springs 22 are preferably located at opposite sides of the shutter and are connected at their upper ends to the top of the window frame and at their lower ends to the corresponding movable guide rails 17. These springs counterbalance the weight of the shutter and serve to facilitate the easy raising of the same and also to reliably hold it in its fully open or folded position. The hinge pintles 21 are preferably in frictional contact with the movable guide rails so

that sufficient resistance is offered to the springs 22 to permit the shutter to be held in any desired position.

Any suitable means may be employed for raising the shutter to its folded or open position, but those shown in the drawings are preferred, and consist of pulleys 23, 24 supported at the upper end of the window frame and an elevating cord 25 passing around said pulleys and connected at one end to the lowermost shutter section 20 while the other end is free and normally hangs along one side of said frame, as shown in Fig. 1. To conveniently lower the shutter to its unfolded or closed position, its lowermost section may be provided with a pull cord 26.

In order to reliably lock the shutter in its unfolded or closed position shown in Figs. 1 and 2, the lower end of one of the movable guide rails 17 is provided with an inwardly-projecting ear 27, and attached to the sill 12 is a similar ear 28. These ears are provided with registering openings 29 for jointly receiving the hasp of a lock 30 when the shutter is moved to its fully closed position.

It will be understood that this improvement is equally applicable to the door openings of buildings, and aside from the advantages of a fire-proof and burglar-proof shutter, the same can be used in the capacity of an ordinary window shade.

I claim as my invention:

1. A shutter of the character described, comprising a pair of opposing fixed guideways, a pair of companion guideways movable relatively to said fixed guideways, and a plurality of hinged shutter sections connected by pintles, some of said pintles engaging the fixed guideways and others the movable guideways.

2. A shutter of the character described, comprising a pair of opposing fixed guideways, a pair of companion guideways movable toward and from said fixed guideways in a plane parallel therewith, and a plurality of hinged shutter sections connected by pintles, some of said pintles engaging the fixed guideways and others the movable guideways.

3. A shutter of the character described, comprising two sets of opposing guideways arranged side by side, one set being fixed and the other set being movable toward and from said first-named set, and a plurality of hinged shutter sections connected by pintles, alternate pintles engaging said fixed and movable guideways, respectively.

4. A shutter of the character described, comprising a pair of opposing fixed guideways, a pair of companion guideways movable toward and from said fixed guideways, a plurality of foldable shutter sections connected by hinge pintles alternately engaging

said fixed and said movable guideways, and means connected to the movable guideways for maintaining them in a plane parallel with the fixed guideways during the folding and unfolding movements of said shutter sections.

5. A shutter of the character described, comprising a pair of opposing fixed guideways, a pair of companion guideways movable toward and from said fixed guideways, a plurality of foldable shutter sections connected by hinge pintles alternately engaging said fixed and said movable guideways, and vertically-swinging links pivoted to the movable guideways for maintaining them in a plane parallel with the fixed guideways during the folding and unfolding movements of said shutter sections.

6. A shutter of the character described, comprising a pair of opposing fixed guideways, a pair of companion guideways movable relatively to said fixed guideways, a plurality of foldable shutter sections connected by hinge pintles, some of said pintles engaging the fixed guideways and others the movable guideways, and means for resisting movement of the latter in one direction.

7. A shutter of the character described, comprising a pair of opposing fixed guideways, a pair of yieldingly suspended companion guideways movable toward and from said fixed guideways, and a plurality of foldable shutter sections connected by hinge pintles, some of said pintles engaging the fixed guideways and others the movable guideways.

8. A shutter of the character described, comprising a pair of opposing fixed guideways, a pair of yieldingly suspended companion guideways movable toward and from said fixed guideways, a plurality of foldable shutter sections, connected by hinge pintles, some of said pintles engaging the fixed guideways, and vertically-swinging links pivoted to the latter near their upper and lower ends for maintaining them in a plane parallel with said fixed guideways during the folding and unfolding movements of said shutters sections.

9. A shutter of the character described, comprising a pair of opposing fixed guideways, a pair of companion guideways movable toward and from said fixed guideways, a plurality of foldable shutter sections connected by hinge pintles, some of said pintles engaging the fixed guideways and others the movable guideways, the latter being disposed in juxtaposition to said fixed guideways in the unfolded position of the shutter, and means for locking one of said movable guideways in such position, whereby said shutter is held in its closed position.

CARMELO GUGINO.