

J. G. BUSCH.
WINDOW SHUTTER.

(Application filed Oct. 24, 1901.)

(No Model.)

2 Sheets—Sheet 1.

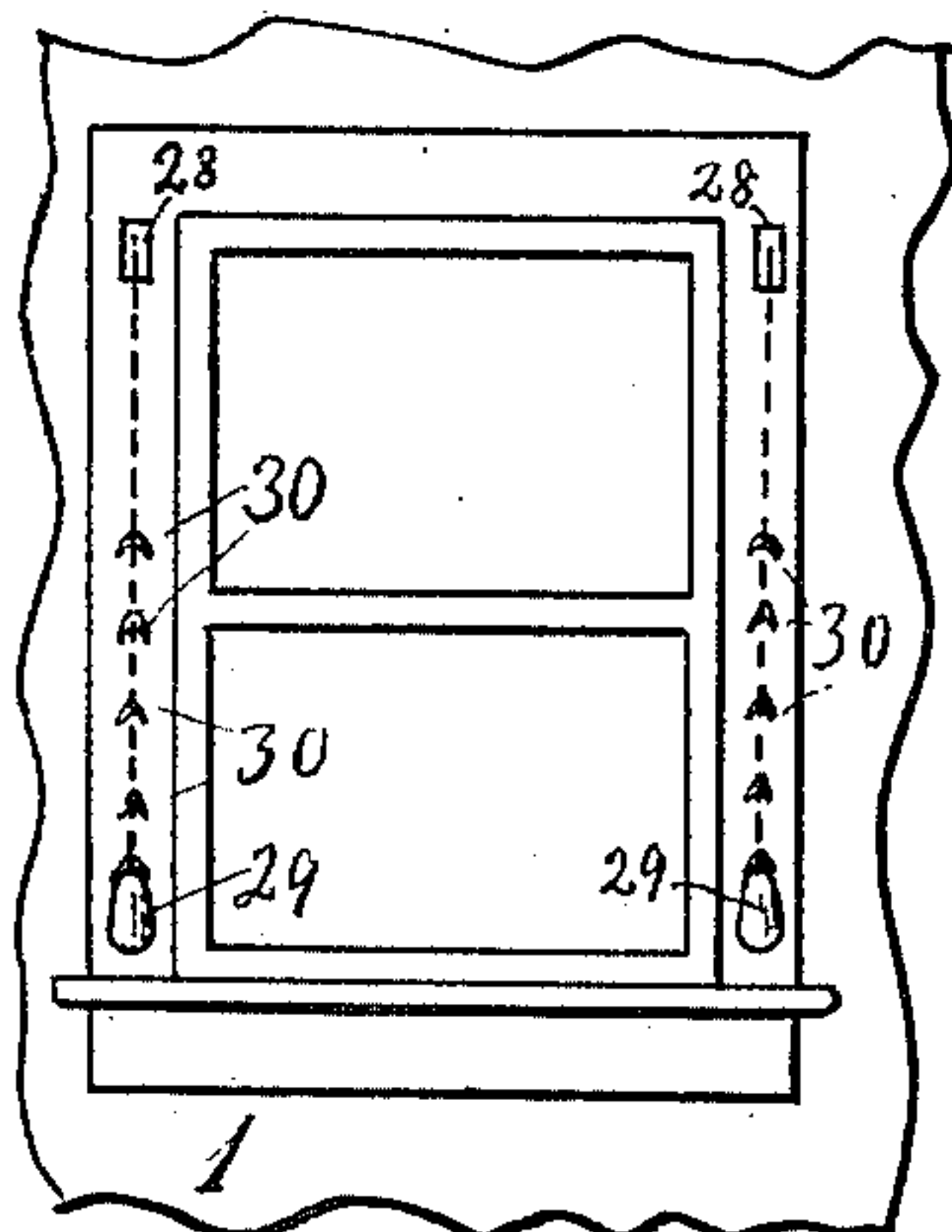
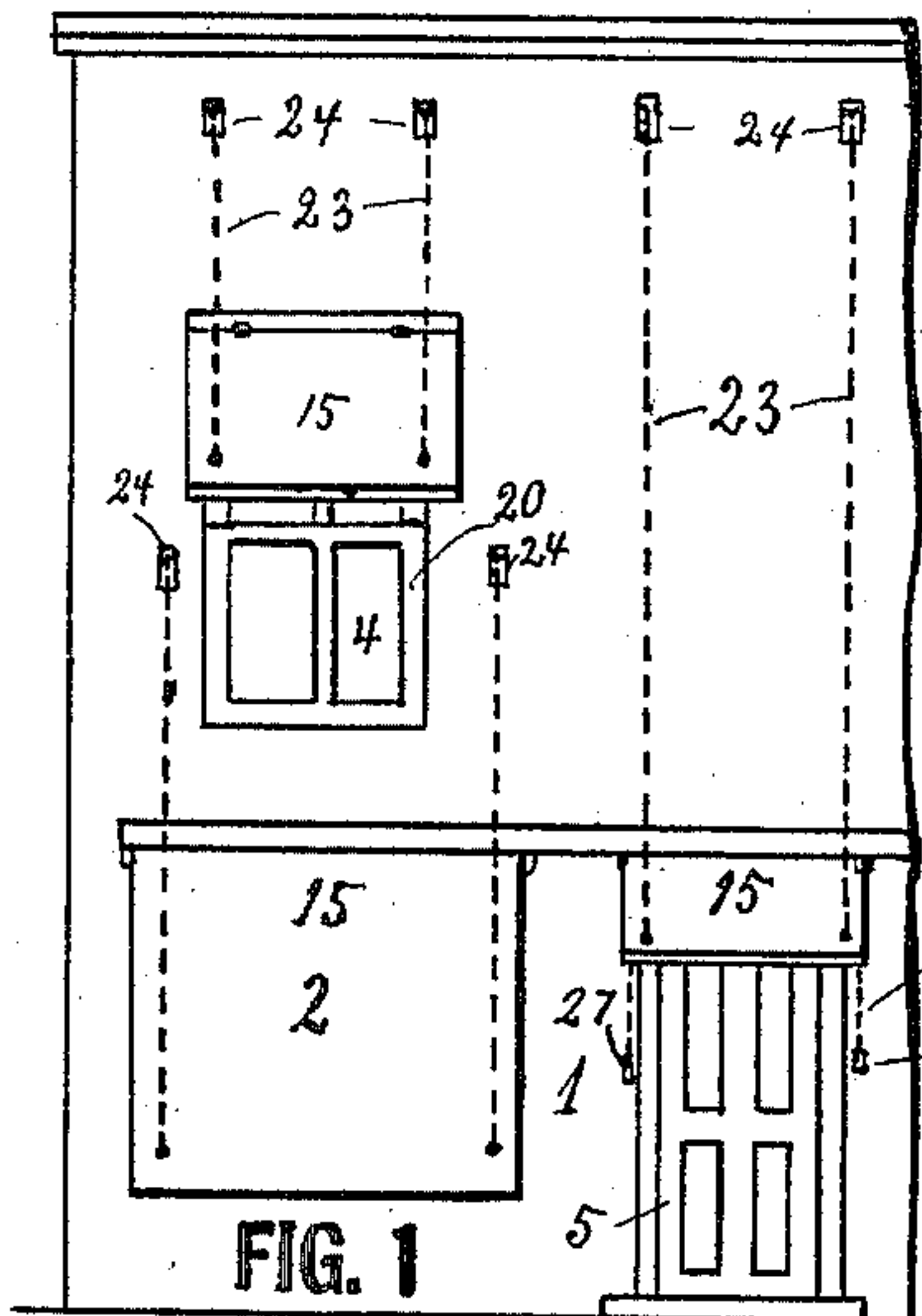


FIG. 2.

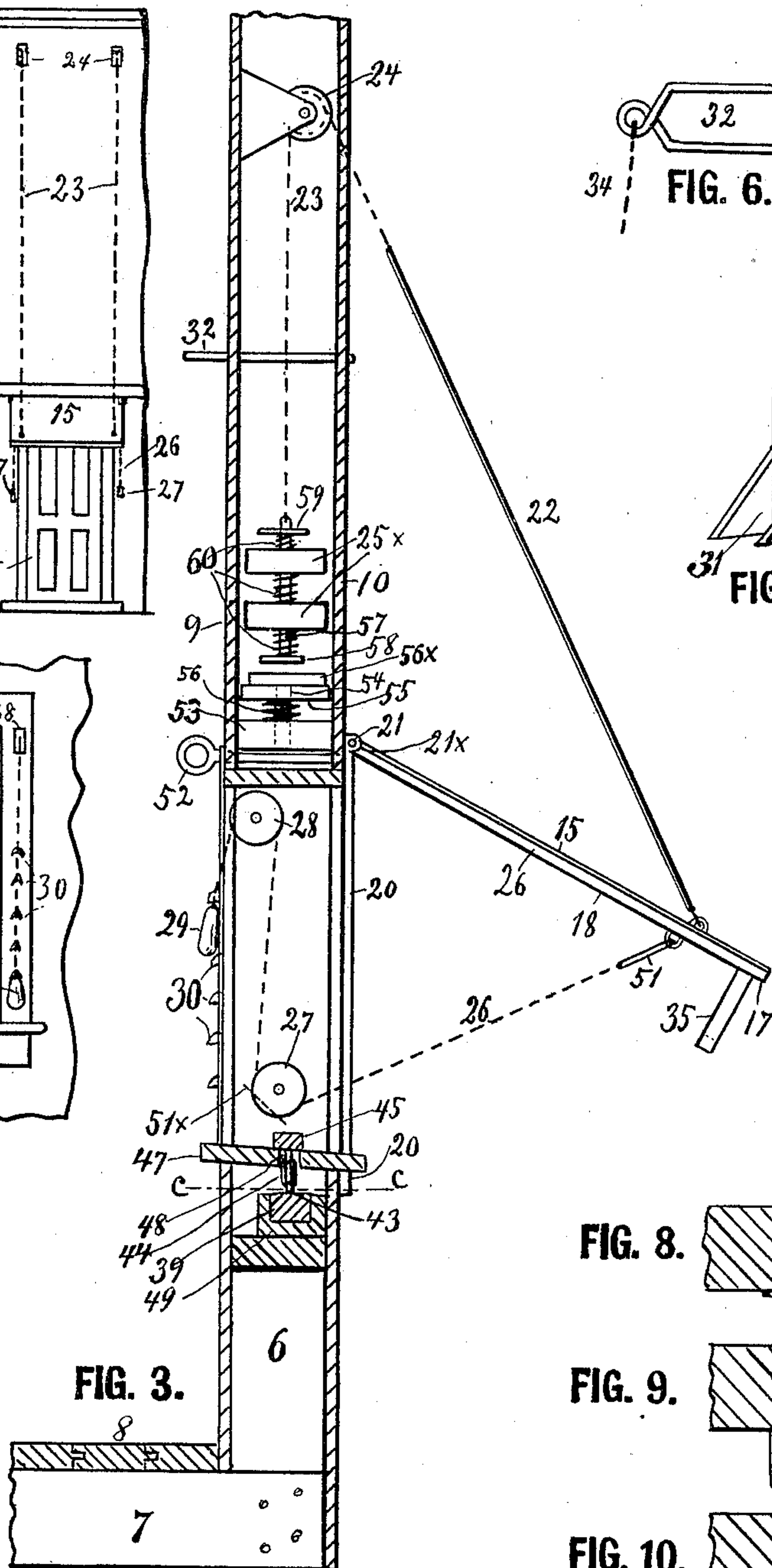


FIG. 3.

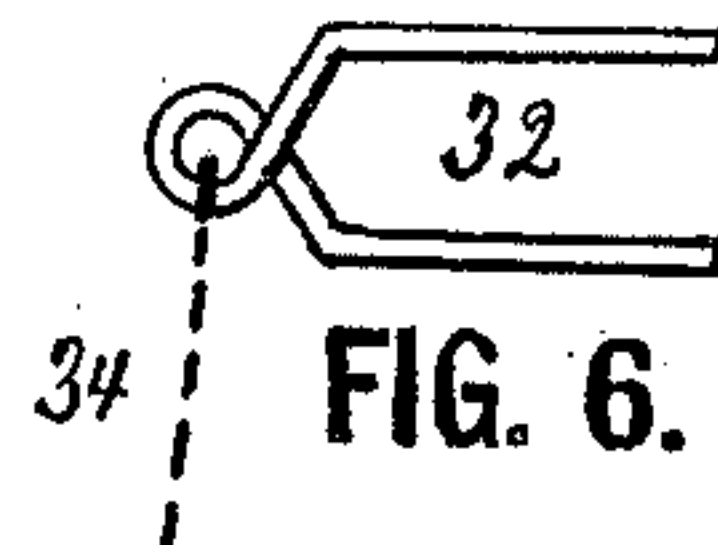


FIG. 6.

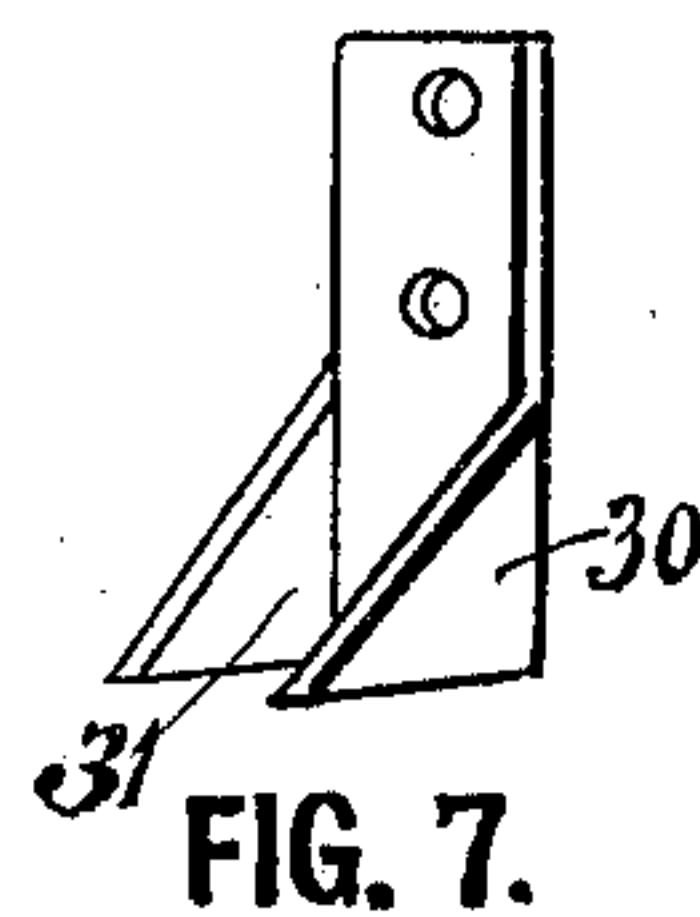


FIG. 7.

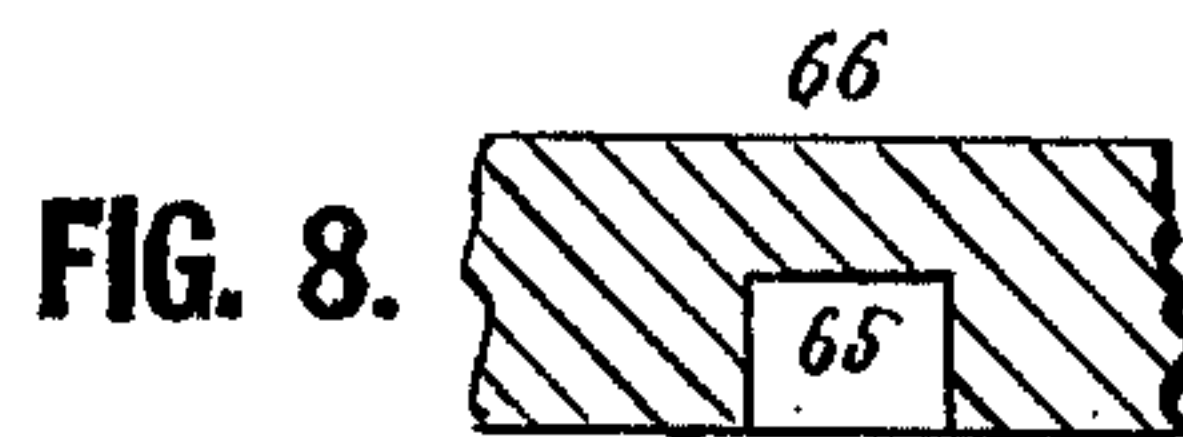


FIG. 8.

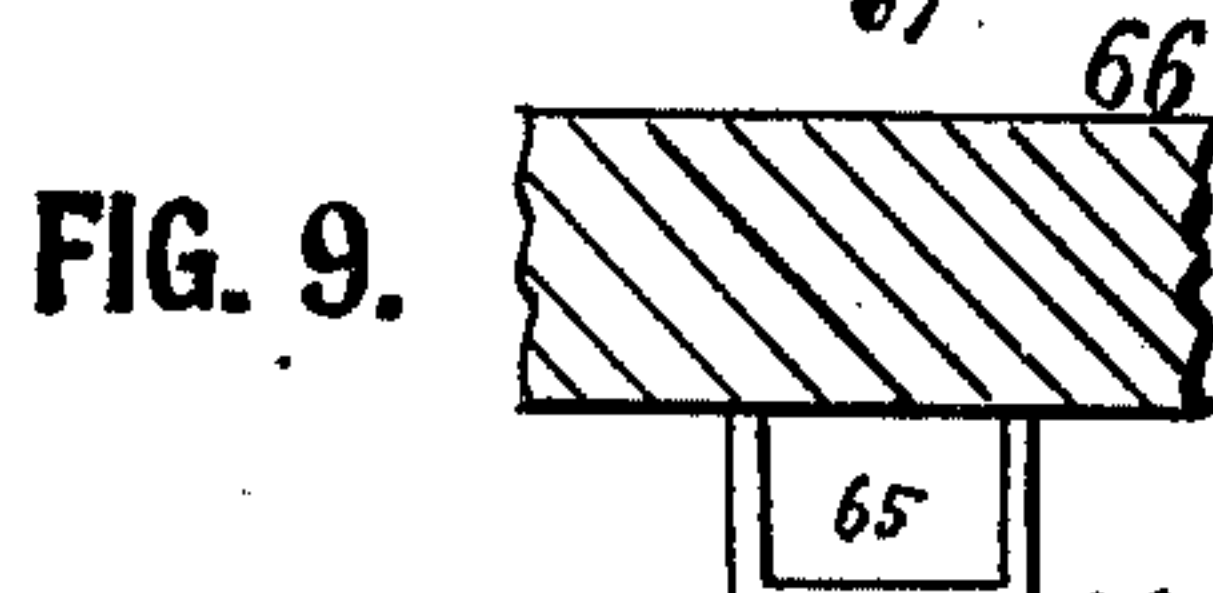


FIG. 9.



FIG. 10.

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2 Sheets—Sheet 2.

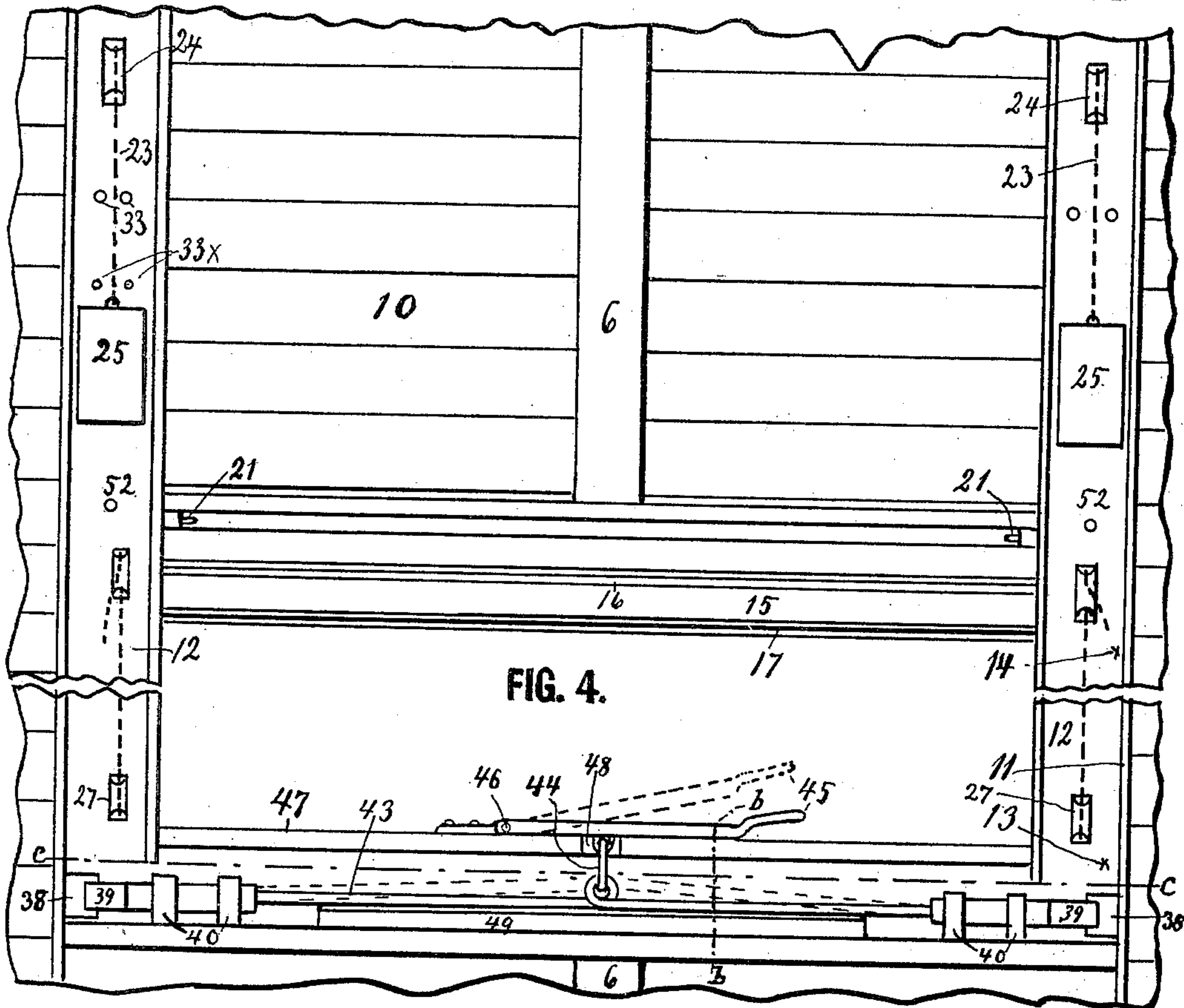


FIG. 4.

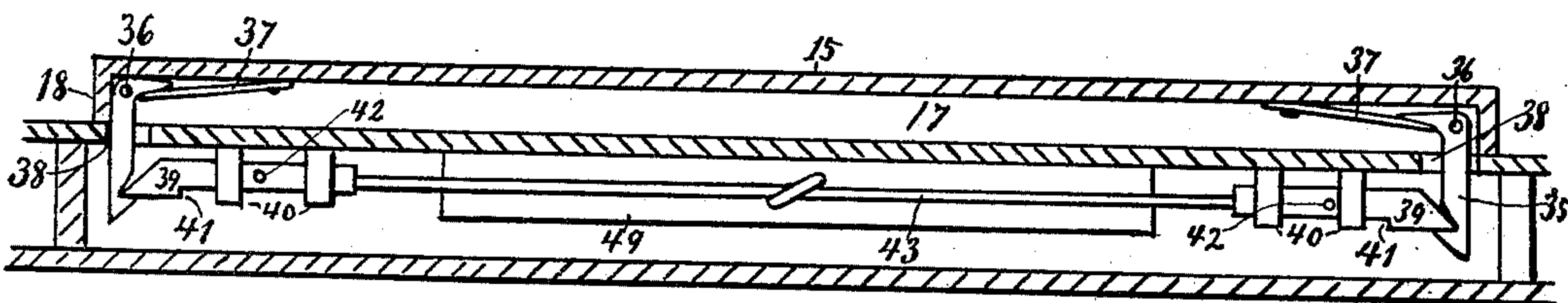


FIG. 5.

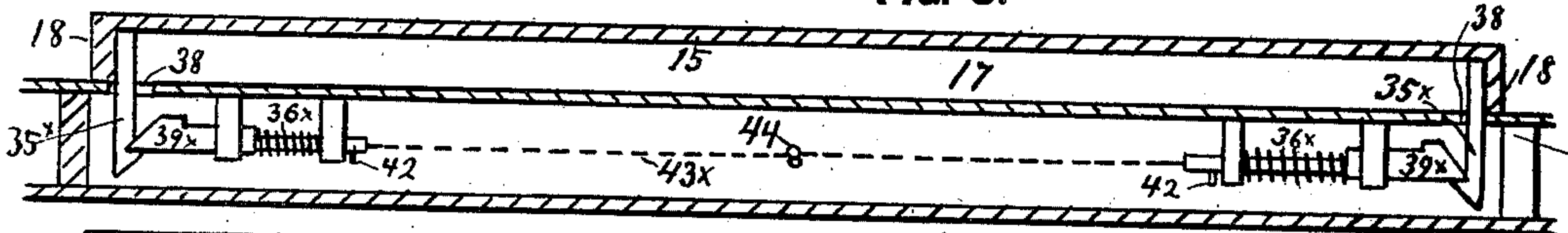


FIG. 11.

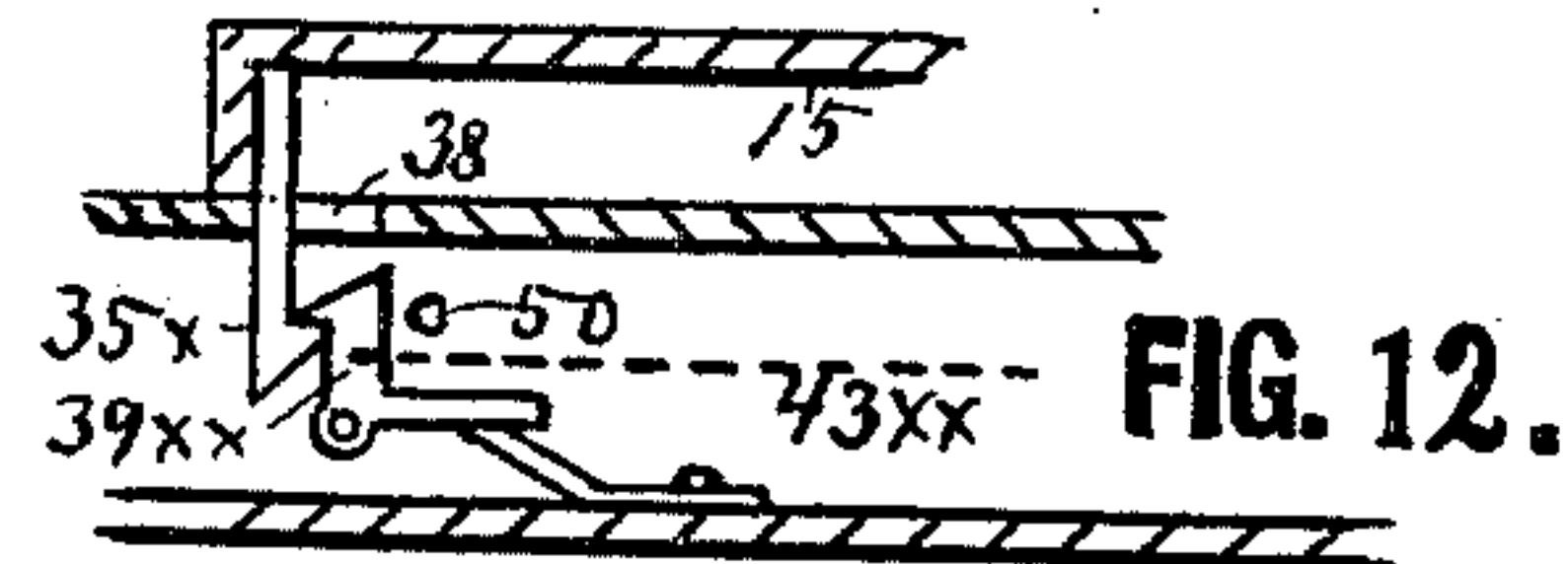


FIG. 12.

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UNITED STATES PATENT OFFICE.

JOHN G. BUSCH, OF ALMA, WISCONSIN.

WINDOW-SHUTTER.

SPECIFICATION forming part of Letters Patent No. 706,217, dated August 5, 1902.

Application filed October 24, 1901. Serial No. 79,781. (No model.)

To all whom it may concern:

Be it known that I, JOHN G. BUSCH, a citizen of the United States, residing at Alma, in the county of Buffalo and State of Wisconsin, have invented certain new and useful Improvements in Window-Shutters; and I do declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same, reference being had to the accompanying drawings, and to the figures of reference marked thereon, which form a part of this specification.

My invention relates to improvements in devices for protecting windows and doors from fire and burglars, and at the same time my device, which may best and shortest be termed a "window-shutter," serves as an awning.

My invention will be fully understood from the below description and claims and the accompanying drawings, in which—

Figure 1 designates a house with my shutters applied to its front door and windows. Fig. 2 is an inside view of a portion of a wall having a window provided with my shutter. Fig. 3 is a vertical section of a wall and window with my shutter about as on the line *a a* in Fig. 4 looking from right to left, the parts 45 47 49 intersected on the line *b b* and the sash is omitted. Fig. 4 is an inside view of a wall and window-frame having my shutter applied to it. Plastering and lath are removed and the window sash and glass omitted to expose more fully the new parts. Fig. 5 is a horizontal section on the line *c c* in Figs. 3 and 4. Fig. 6 is a detail view of the weight-stop 32 in Fig. 3. Fig. 7 is a perspective detail view of one of the catches 30 in Figs. 2 and 3. Figs. 8, 9, and 10 are sectional top views of stone or brick walls to show the various placing of the housing in which the counterbalancing-weights 25 of the shutter move up and down. Figs. 11 and 12 are modifications of Fig. 5.

Referring to the drawings by reference-numerals, 1 represents a house, on which my shutters are applied and shown in the closed position at 2 and 3, while on the window 4 and door 5 the shutters are open to let in light and serve as awnings. In Figs. 3 and 4 the wall is that of a frame building, of which 6

is the studding, 7 joist, 8 flooring, 9 plastering, and 10 represents sheeting and siding.

11 is the window-frame, in the side boxes 12 of which move the regular sash-weights, where such are used. They are not here shown, but merely mentioned in order to observe that my device does not interfere with the movement of the regular sash-weights which move between the points 13 14 in Fig. 4 especially, as on new frames the space 12 may be made extra wide.

My shutter proper consists of a sheet-metal cover 15, of steel or iron, stiffened by a frame 16 17 18 19, of which the latter four bars when the shutter is closed fall tightly against the wall, and thus protect even the outside window-casings 20, Figs. 1 and 3, against fire from the outside, so that a stone or brick building with metal roof and my shutters on and closed is practically fireproof. The shutter is suitably hinged at 21 to a bar 21^x, secured near the upper edge of the window. The shutter is counterbalanced, supported, and given an upward tendency by the rods 22, secured to the shutter, chains 23, or wire ropes, if so preferred, extended from the rods over sheaves 24, suitably mounted in the wall some distance above the window, and the weights 25, which may be plain, as in Fig. 4, or improved, as 25^x in Fig. 3, which will presently be more fully described. Against the resistance of the weights 25 the shutter may be pulled downward and closed by the cords, wire ropes, or chains 26, secured to the shutter and passed under the sheave 27, thence upward and over the sheave 28, and into the house, when an inhabitant of the house pulls on the small weight 29, secured at the inner end of the rope, and the shutter may be held at various elevations, as an awning, by placing the small weights below one of the several catches 30, secured on the casing, so that the chain near the weight drops into the bifurcation 31 of a catch. This catch may preferably be made, as in Fig. 7, of a piece of sheet metal securable by screws or nails to the inner window-casing. If the weight 29 is allowed to hang plumb down, it will pass up and down alongside the catches 30, and thus allow the shutter to tilt automatically down to rid itself of accumulating snow when the latter overcomes the force of

the weights 25 and to be drawn upward again to its normal position by the weights 25 after such dumping of snow has taken place. Inserted in two holes 33 is a bifurcated stop 32, (best shown in Fig. 6,) which straddles the chain 23 and stops the upward progress of the weight 25 when the shutter has reached the necessary inclined position to let the snow slide off in a gentle manner and not in a lump dangerous to pedestrians. Such danger may also be prevented by inserting the stop in the holes 33^x in Fig. 4 and only remove the stop, and thus dump the snow, after seeing that no people are below. Similar caution will also be well to use in closing large shutters of low store-windows coming close out to the sidewalk. 34 is a chain by which the stop 32 may be suspended near the place where it is used, so as to be always at hand.

The locking mechanism of the shutter, as shown in Figs. 4 and 5, consists of two hooks 35, pivoted at 36 to the shutter and spring-held toward each other by the springs 37. These hooks 35 when the shutter closes enter the apertures 38 in the wall and engage the outer ends of the catches 39, which slide in the guides 40 and have their motion limited both ways by the shoulders 41 and pin 42. The two catches 39 are connected by a flexible spring-rod 43, which at its middle is connected by a vertical rod or link 44 to an operating-lever 45, pivoted at 46 upon the window-sill 47, in which there is an aperture 48 for the rod 44. In closing the shutter by pulling on the small weights or handles 29 the hooks 35 yield and engage the catches 39, and in opening the shutter the operator simply pulls upward on the lever 45, as indicated in dotted line in Fig. 4. This springs the rod 43 so far upward in the middle that it withdraws from engagement the catches 39 and allows the weights 25 to open and swing the shutter upward to the desired elevation, at which it may be secured, as already above described.

As for modifications of the locking mechanism I consider that I may without diverging from the spirit of my invention fix the hooks 35 rigid on the shutter, like 35^x in Fig. 11, and have the springs, like 36^x, on the sliding catches 39^x, and the spring-rod 43 may then be used, or a chain 43^x may take its place. In either case a board or strip 49 (in Fig. 4) may be used to support the rod or chain to prevent it from pulling on the catches by its weight.

Another modification of the locking device is shown in Fig. 12, where the hooks 35^x are rigid and the spring-pressed hooks 39^{xx} spring back and receive the rigid hooks 35^x of the shutter, and the unlocking is effected by pulling the lever 45, which is connected to the middle of the chain 43^{xx}, by which the hooks 39^{xx} are disengaged and held against the pins 50 until the lever 45 is lowered down upon the window-sill, which is its normal position,

to keep it out of the way and sight as much as possible.

The chains 23 may be made long enough to take the place of the rods 22; but said rods render good service in steadying the shutter against the effect of wind.

In forcing the shutter close to the wall and obtaining safe and speedy locking of same the rods 51 at the ends of each chain 26 act as a lever with the sheave 27 as a fulcrum when the rods reach the position indicated in Fig. 3 by the dotted line 51^x.

As already stated, the common weights 25 and supports 52 (shown in Fig. 4) are good enough for cheap shutters; but for better houses and wherever it is desirable to have the shutter work with as little noise as possible I provide upon the stopping-pin 52, which takes the blow of and ordinarily supports the weight of the shutter in a level position, a block 53, in which slides the pin 54, secured in a plate 55 and encircled by a coil-spring 36^x.

Secured on the plate 55 is a rubber cushion 56, on which the weight descends. The weight itself is constructed of a rod 57, having on its lower end a plate 58, adapted to strike and rest on the rubber cushion, and on its upper end it has a plate 59, adapted to stop under the double pin 32, and between said plates are placed on the rod a series of weight-sections 25^x, with springs 60 interposed between them and between them and the plates at the ends of the rod. This weight may thus easily be increased or decreased by increasing or decreasing its number of sections, and its noise-deadening construction makes it applicable for all kinds of mechanisms in which it is desired to stop a descending weight as noiselessly as possible.

In Figs. 8, 9, and 10, respectively, is shown how the duct 65 for the weight 25 or 25^x to slide in above the window may be formed in the face of a brick wall 66 and covered by a sheet 67, or it may be a box 68, secured to the wall, or it may be formed inside the wall, as in Fig. 10.

From the above description it will be understood that my shutter when closed can be opened only from within the house and not from the outside by burglars or thieves unless they use violence apt to create noise and alarm. It will also be understood that the closed shutter protects the window from the effect of hail-storms, which often break window-glass. It also serves like a storm-window or double window to keep the house warm. It protects against heat and fire from adjacent burning buildings, and if fire breaks out in the building it is considerably hindered in its progress, if not extinguished entirely, for want of air, as the burning doors and the windows broken by the heat will neither let the smoke out nor air into the building, and without these conditions fire cannot burn very long. It further serves to regulate to any extent the light and shine of the sun

through the window. It keeps snow from falling near doors and show-windows until it has accumulated, when it may be let down and removed from near the building in a short time instead of shoveling snow every hour or so during a snow-fall often lasting several days.

Having thus described my invention and its use, what I claim as new, and desire to protect by Letters Patent, is—

1. The combination with a counterbalanced window-shutter hinged above the window and having locking-hooks near its free corners adapted to engage a locking mechanism in the wall, of a locking mechanism located in the wall or window-frame and having catches adapted to engage said hooks, said catches being connected together and to an unlocking lever or handle within easy reach upon the window-sill, and springs for throwing said hooks and catches into engagement.

2. In a shutter for doors or windows, the combination with a shutter hinged above the door or window to fold downward upon the same; sheaves in the wall above the shutter, chains or ropes extending from the shutter over the top of said sheaves, weights secured to the inner ends of said chains to raise the shutter, and stops above and below the weights, substantially as and for the purpose set forth.

3. The combination with a shutter hinged above a window or door, of weights counterbalancing and raising the shutter, sheaves arranged above the shutter, ropes or chains passed over the sheaves and secured to the weights, and to the shutter by means of rods 22 for steadying the shutter when raised.

4. The combination with a shutter for windows and doors the same being hinged at its upper edge, of ropes or a rope or chain passed over a sheave and having one end secured to the shutter to be raised, and at the other end a weight adapted to raise the shutter, a stop to take the blow of the weight, said stop being lined on its top with a cushion and consisting of two members with a spring interposed between them, and said weight consisting of a vertical rod secured to the rope, and a series of weight-sections and springs interposed between them on the rod.

5. The combination with a shutter hinged above a door or window of a counterbalancing and raising weight and a stop for same to fall upon, said weight consisting of a ver-

tical rod and a series of weight-sections and intermediate coil-springs, and a plate secured on the lower end of the rod and a spring between it and the lowest weight-section.

6. In a rising and falling window-shutter, the combination with the counterbalancing-rope 23 and its shutter-raising weight 25, of stops above and below the weight to regulate automatic tilting of the shutter when snow accumulates on it.

7. The combination with an upwardly-folding, weight-controlled shutter of the closing cord or cords 26 secured to its under side and having its inner end within the building and provided with a small weight or handhold 29, the catches 30 adapted to hold the weight at various heights; and the sheaves 27 28 guiding said rope.

8. The combination with an upwardly-folding, weight-controlled shutter of the closing cords or cord 26 secured to its under side and having its inner end within the building and provided with a small weight or handhold 29, the catches 30 adapted to hold the weight at various heights, the sheaves 27 28 guiding said rope, and the short rods 51 at the outer end of the rope.

9. The combination with the locking-hooks of a downwardly-folding window-shutter, of a locking device located in the wall below the window-sill and having catches adapted to engage the hooks, a flexible or spring rod 43 connecting said catches and adapted to retract both of them when the rod is sprung out of line, means for springing the rod out of line and stops to control the motion of the catches.

10. The combination with the locking-hooks of a downwardly-falling window-shutter of a locking device located in the wall below the window-sill, and having catches adapted to engage the hooks, a flexible or spring rod 43 connecting said catches and adapted to retract both of them when the rod is sprung out of line, means for springing the rod out of line and stops to control the motion of the catches, and the rest 49 for supporting the rod in its normal position.

In testimony whereof I affix my signature in presence of two witnesses.

JOHN G. BUSCH.

Witnesses:

A. M. CARLSEN,
D. E. CARLSEN.