

No. 713,893.

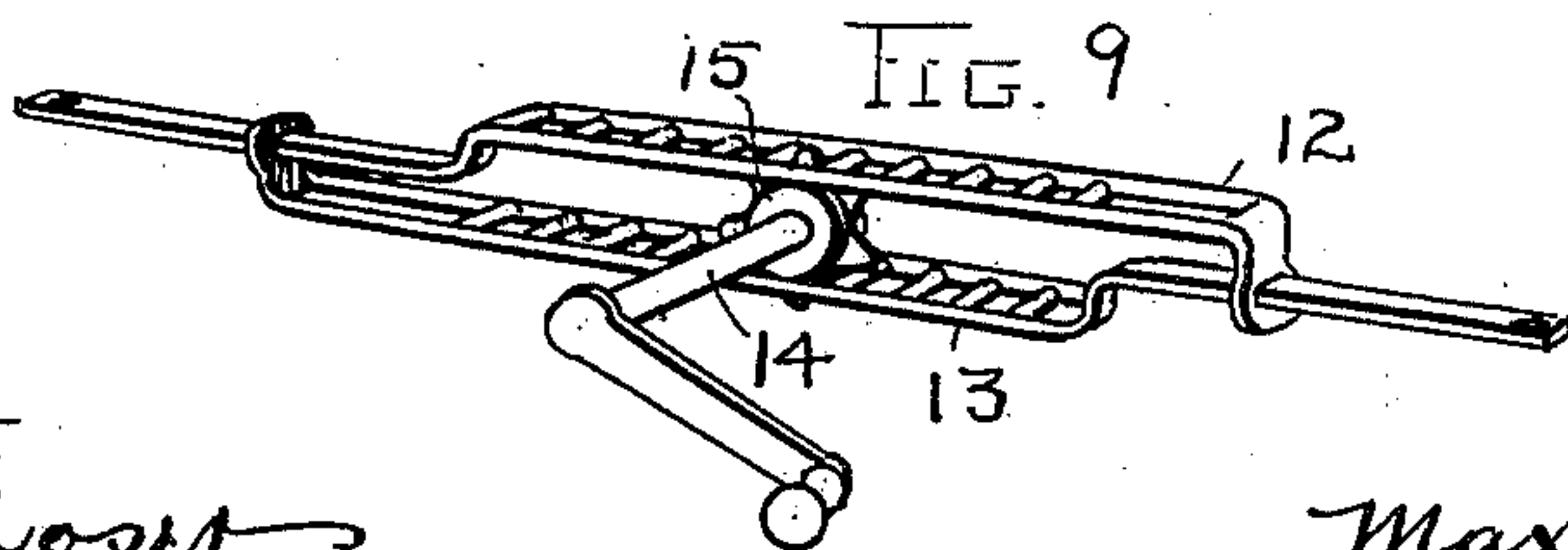
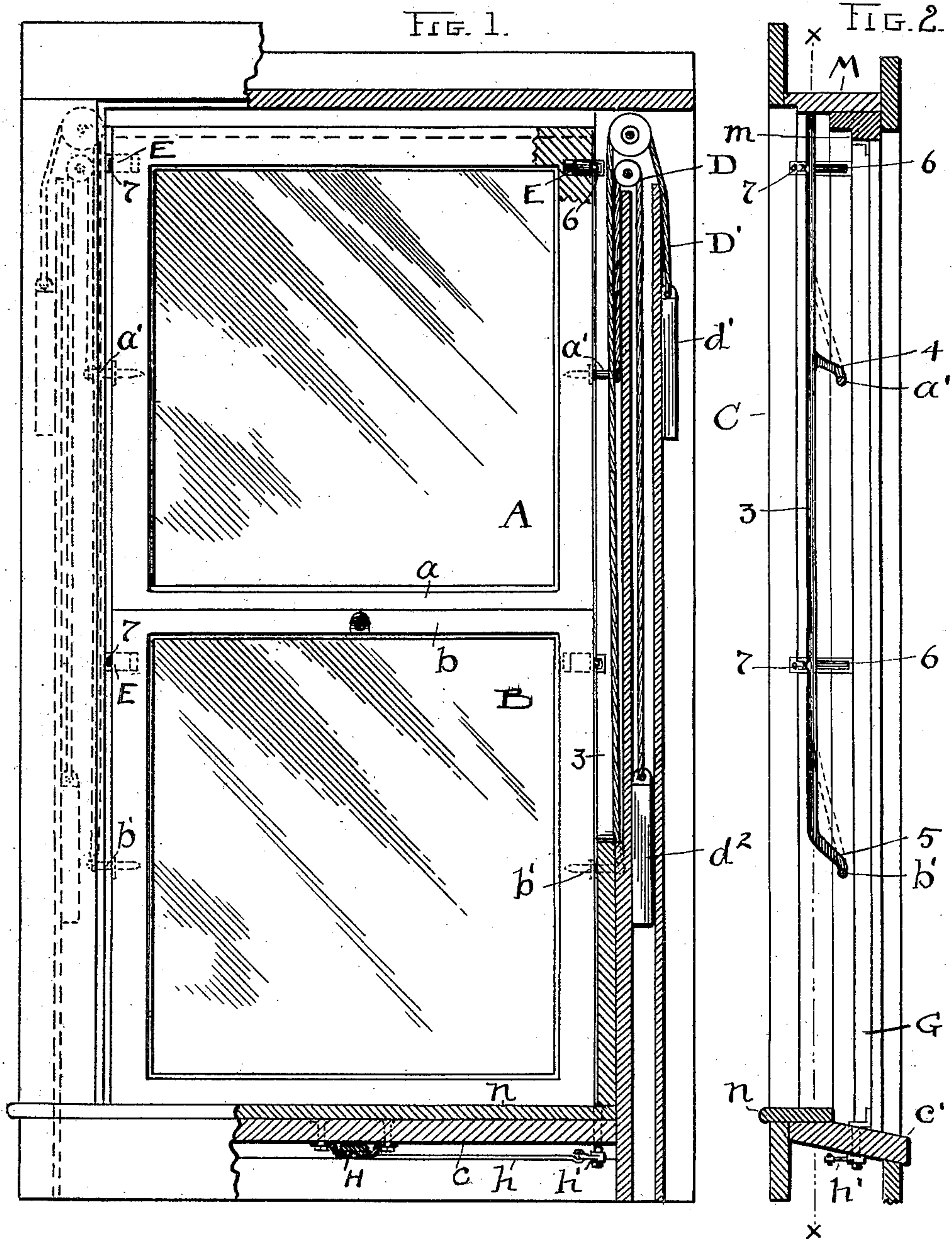
Patented Nov. 18, 1902.

M. LEZIUS.  
MEANS FOR REVERSING WINDOWS.

(Application filed Feb. 6, 1902.)

(No Model.)

2 Sheets—Sheet 1.



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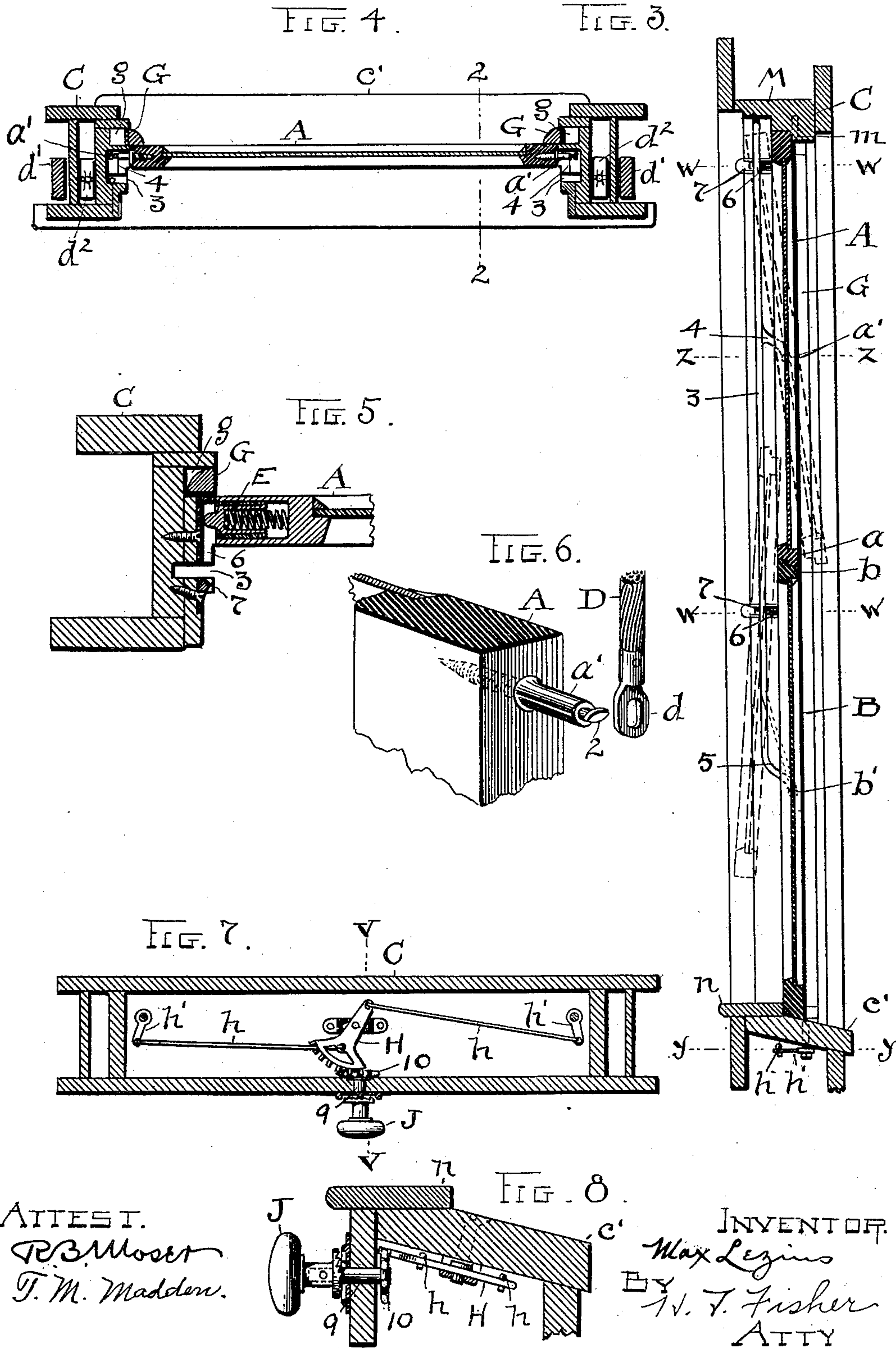
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# UNITED STATES PATENT OFFICE.

MAX LEZIUS, OF CLEVELAND, OHIO.

## MEANS FOR REVERSING WINDOWS.

SPECIFICATION forming part of Letters Patent No. 713,893, dated November 18, 1902.

Application filed February 6, 1902. Serial No. 92,872. (No model.)

*To all whom it may concern:*

Be it known that I, MAX LEZIUS, a citizen of the United States, residing at Cleveland, in the county of Cuyahoga and State of Ohio, have invented certain new and useful Improvements in Means for Reversing Windows; and I do declare that the following is a full, clear, and exact description of the invention, which will enable others skilled in the art to which it appertains to make and use the same.

My invention has reference to improvements in means for reversing windows, all substantially as shown and described, and particularly pointed out in the claims.

In the accompanying drawings, Figure 1 is a front elevation of a window embodying my invention and having the casing partly in section at one side to show internal construction. Fig 2 is a vertical elevation of the inner side of a window-casing with the sashes removed and showing the runway or channel for the sashes in the casing. Fig. 3 is an elevation of the inside of one side of the casing corresponding to Fig. 2 and a vertical sectional elevation of the window-sashes in full lines therein and corresponding substantially to line 2 2, Fig. 4. Fig. 4 is a cross-section of the window and casing on line *z z*, Fig. 3. Fig. 5 is a cross-section of casing and window on lines *W W*, Fig. 3, the rest-points of the sashes when in place. Fig. 6 is a perspective view of a section of a sash and one of the pivot studs or stems thereon for making engagement with the counterweight-cord and showing also an engaging end of such cord or cable. Fig. 7 is a view taken on line *y y*, Fig. 3, looking up. Fig. 8 is an enlarged cross-section on line *v v*, Fig. 7. Fig. 9 is a modification of the post-operating mechanism, as hereinafter fully described.

By the foregoing construction I am enabled not only to reverse both the upper sash A and the lower sash B and bring either side of each sash inside the window and in an up or down position in the window, but to do other things therewith, as we shall see, and the casing C and said sashes are so constructed that all changes can be easily and quickly made.

The features of the invention appear in the several views. Thus in Fig. 3 the sashes are shown as in the same vertical plane,

which is their normal position, and they are provided with matching rabbeted meeting edges *a* and *b*, the edge *a* of the upper sash overlapping edge *b* on the outside, so that it prevents leakage inward, and a close joint of the two sashes is effected. This abutment of the sashes has the further advantage of making it impossible to slide either sash up or down until the other is swung out of the way. An overlapping beveled construction or the like would be equivalent to the construction shown. Now it will also be noticed that each sash is provided with pivot lugs or projections *a'* and *b'*, respectively, midway at its side edges, and an example thereof is shown in Fig. 6. Buttons 2 are formed on the outer ends of these pivots, adapted to have weight-cords D or D' detachably engaged thereon, and weights or counterweights *d'* and *d''*, respectively, are secured as used to said cords. The slotted ends *d* of the cords provide for detachment, as we shall see.

The projecting pivots *a'* and *b'* are fixed parts in the sashes and are adapted to travel up and down in the corresponding runways or channels 3 in the casing, Fig. 2, one runway or channel on each side for both sashes and having each a downwardly and outwardly inclined branch 4 and 5, respectively, for resting the pivots of the respective sashes when they are in place, as in Fig. 3. The said channels and their inclined slots or branches are of a size adapted to the movements of pivots *a'* and *b'* therein, and the said pivots remain in the channels 3 or their branches in any and all changes of the sashes, except when for any reason a sash is to be wholly removed from the window. Then it is rotated to a horizontal position while its side slot and one side is raised to a tilting position, when its pivot on that side becomes disengaged from the channel and it can be bodily removed. Then the weight-cords are detached and the sash is free. The construction of casing and slot is such at this point as enables this tilting to be done, and the sashes are put in as they are taken out.

The runways or channels 3 are shown in cross-section, Fig. 5, and are formed in the casing, as clearly shown. The pivots *a'* run freely therein and serve as guides and means



of confinement for the sashes A. Further means for guiding or confining the sashes in the channels are the depressible guide-bolts E, an example of which is seen in Fig. 5 and which are fixed in the side edges and top of each sash. The said bolts are spring-pressed from behind by any suitable springs, and their points run into lateral and preferably metallic channel-plates 6, open to each channel 3 at or near the top of each sash, according to the positions of said bolts. Then as a sash is swung to open the window the bolts E thereon first of all turn out of channels 6 into channels 3, and therein they act as top guides for the sash up or down. If the sash is to be swung out of slots 3 at the top for any purpose, the said bolts will yield to pressure against stop 7 and let the sash come out past said stop, and both sashes have like stops 7, bolts E, and channels 6.

It has been observed that the sashes normally are in the same plane vertically and overlap and abut at their meeting edges *a* and *b*. The casing for said sashes is so constructed and the sashes are so supported therein that they can swing in either direction, top or bottom, and the said sashes when closed are confined by two vertically-disposed posts or stops G, pivoted at their ends in the window-casing and adapted to be axially rotated out of the way of the sashes into recesses *g*, formed in the window-casing. The said posts are shown full length in Fig. 3 and out of the said recesses in Fig. 4 and in the recesses in Fig. 5. They are out in Fig. 3, as in Fig. 4, and in that position they press firmly against the outside of both sashes and hold them firmly in place, as well as serving as weather-strips. It will be noticed that said posts extend full length of the window across both sashes, and they are controlled exclusively inside the house by a mechanism seen in Fig. 7 or its equivalent in Fig. 9.

In Fig. 7 I show a segmental lever H pivoted at its middle and connected by links *h* with levers *h'* in the ends of said posts beneath the base-board *c'* of the window-casing, Figs. 3 and 8. A rotatable handle J has a short shaft 9 with teeth 10 inside the casing in mesh with lever H and adapted to move the same laterally according as said posts are to be turned into their recesses or closed against the sashes. When closed, they bear flatwise against the sashes and when open the sashes swing past them. This makes a window practically burglar-proof and which cannot be opened without bodily removing both posts; but even if this were done the window could not be opened if the further simple and usual precaution be taken of locking the sashes together at their meeting edges *a* and *b* or by otherwise preventing the swinging of either sash on its pivot.

It will be observed that the way 6 or channels 3 are not opposite or behind the edges of sashes A and B, but parallel thereto forward of said sashes at least the thickness of a sash

and in a line in front of the inner sides of the sashes, so when either sash is moved into said channel it has room to run directly in front of the other sash and to be raised and lowered therein independently. Thus in Fig. 3 the upper sash is shown in two dotted positions. In the upper position it is swung outward at its bottom and inward at its top, and now it may be rotated inside out and run down in front of sash B, or it may be raised up out of its short channels 4 into main channel 3 and lowered to the lower inner dotted position in Fig. 3, or even lower. As seen in Fig. 3 it is down, reversed, and it can be left at any preferred elevation up or down, as the counterweights will balance it there. This obviously makes it most convenient for washing the upper window-glass on both sides. The same possibilities obtain as to the lower sash, and it can be inverted in its lowest position or be run up in front of the upper sash. Thus absolute control of the sashes is obtained for all inside work upon them, and it can all be done by an unskilled person. Either sash may also be gotten out of the way for the introduction of window-screens, and a screen can be substituted for either sash, above or below, and the posts G closed thereon.

In Fig. 9 I show a modification of the post-operating mechanism shown in Fig. 7. This comprises two straight rack-bars 12 and 13, counterparts of each other, slidably connected and adapted to engage the levers *h'* of posts G at their ends in lieu of links *h*. Said bars are parallel to each other, with a space between, and a crank-shaft 14 has a toothed wheel 15 engaging said rack-bars intermediately and adapted to operate the same and open and close posts G. Both this and construction Fig. 7 makes it impossible to operate the same and open said posts but by the hand means inside.

The rests for the sashes are determined herein by the shoulder *m* on the cross-piece M, forming the present top portion of casing C, the base-piece *c'* and board *n* at the bottom for the casing, and the short slots 4 and 5, substantially in line with stops *m* and *n* and in a parallel plane to runways or channels 3, for the sashes.

It will be noticed as a feature of this invention that the pivot projections on the sashes run directly in the vertical channels 3 without any intermediate part for supporting them therein, and the lift-cords are attached to said projections themselves and go with them into both vertical channels and the inclined slots open thereto, so that the weights or counterbalances can always be depended upon for raising and lowering the sashes, and they are never released therefrom except when the sashes are removed from the window.

I claim—

1. In windows, a casing constructed with rests in the same vertical plane for a pair of sashes, a single runway in each side of the



5 casing open to said rests, and projections on each of the sashes engaged in said rests one above the other, whereby either sash can be brought into said runways, substantially as described.

10 2. A casing for windows having a vertical channel in each side forming runways for both sashes and rests for the sashes parallel thereto, and the said casing constructed at its sides to shift either of the sashes into said runways, in combination with the sashes having each a set of projections engaged in said rests and runways, substantially as described.

15 3. In windows, a casing having a vertical runway in each side thereof, sashes having pivot projections and a set of inclined branches for each sash at different elevations, and counterweights connected with said projections, substantially as described.

20 4. The casing and a set of window-sashes therein having their inner and outer surfaces flush with each other and a runway in each side of the casing for both sashes and in a plane parallel to said sashes its entire length and having a set of inclined branches for the sashes entering each runway, whereby one sash can be run in front of the other above or below, substantially as described.

25 5. A window-casing having rests to support a pair of sashes in the same vertical plane and a vertical runway for both sashes in each side of the casing inward from said sashes and parallel thereto, in combination with said sashes and rotatable posts on the outside thereof to hold the sashes in place, substantially as described.

6. The window-casing having a runway in each side with downwardly and outwardly inclined branches in each runway, in combination with sashes having pivot projections at their center and spring-pressed guides at their top engaged in said runways, substantially as described.

7. The window-casing having vertical runways for sashes in its inner portion and locking-posts for the sashes in its outer portion, and inclined rests for each of the sashes entering said runways, substantially as described.

8. The casing constructed to support a set of sashes one over the other in the same plane, in combination with said sashes having pivot projections in their side edges, said casing having runways in its sides inward of said sashes and inclined slots open thereto serving as rests for the pivot projections on the sashes, and counterweight-cords detachably affixed to said projections, substantially as described.

9. The casing having vertical runways in its sides for the sashes and inclined slots open thereto for the sashes and lateral channels open to said runways above said slots, in combination with sashes pivoted in said slots, and spring-pressed guides on said sashes extending into said lateral channels.

Witness my hand to the foregoing specification this 27th day of January, 1902.

MAX LEZIUS.

Witnesses:

R. B. MOSER,  
T. M. MADDEN.