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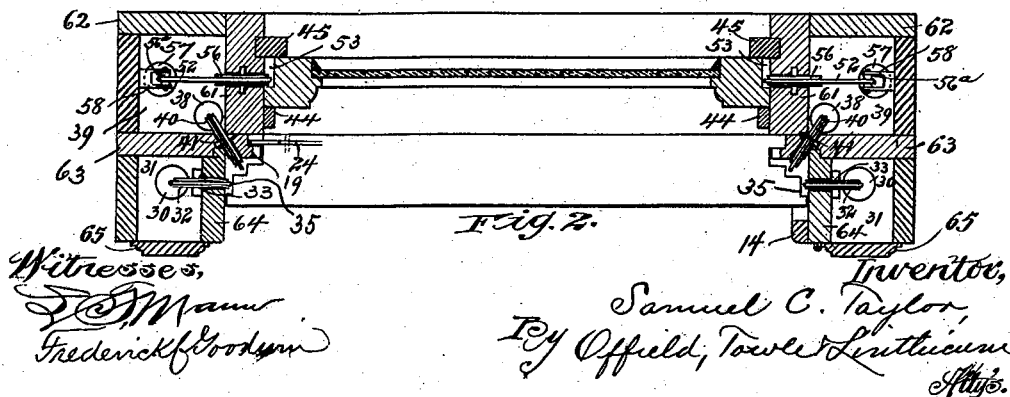
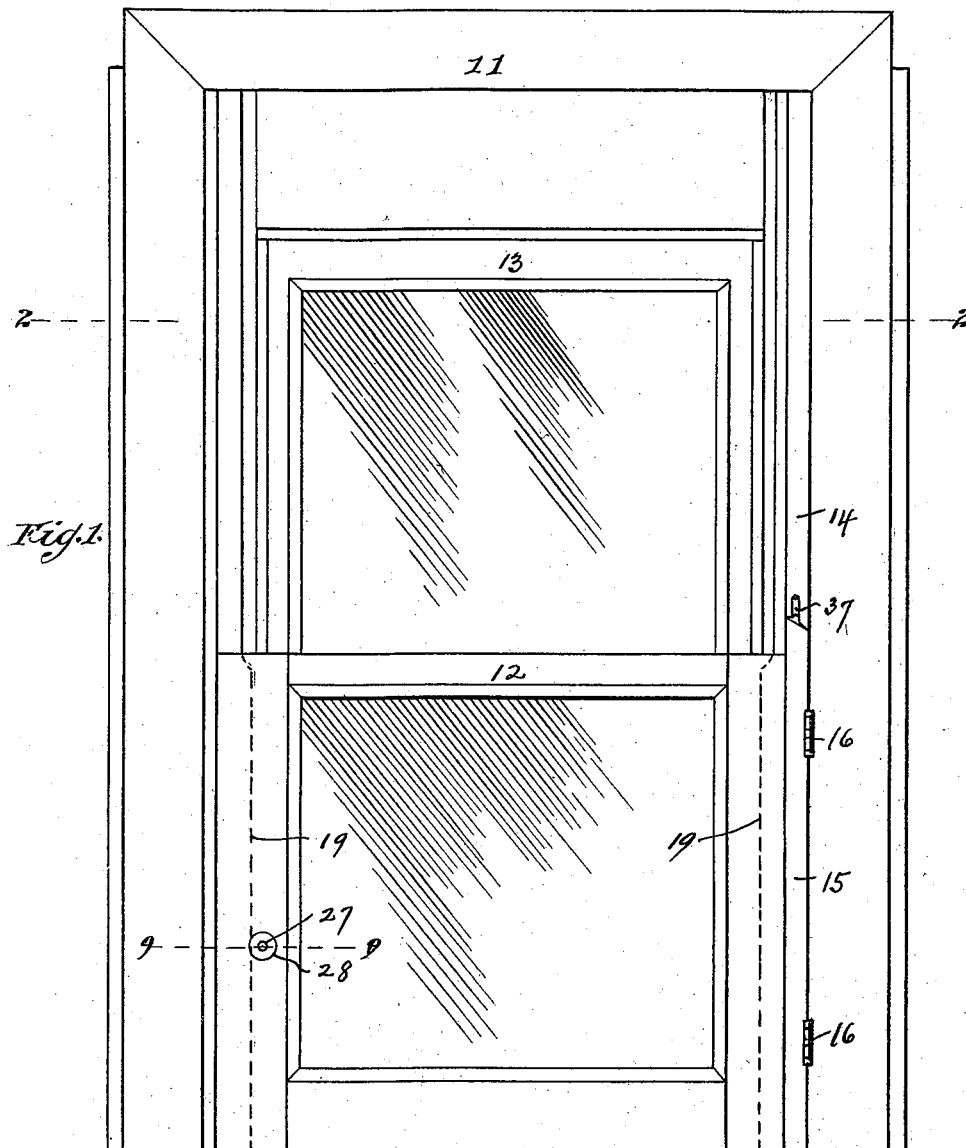
Patented May 8, 1900.

S. C. TAYLOR.  
WINDOW.

(Application filed June 5, 1899.)

(No Model.)

3 Sheets—Sheet 1.



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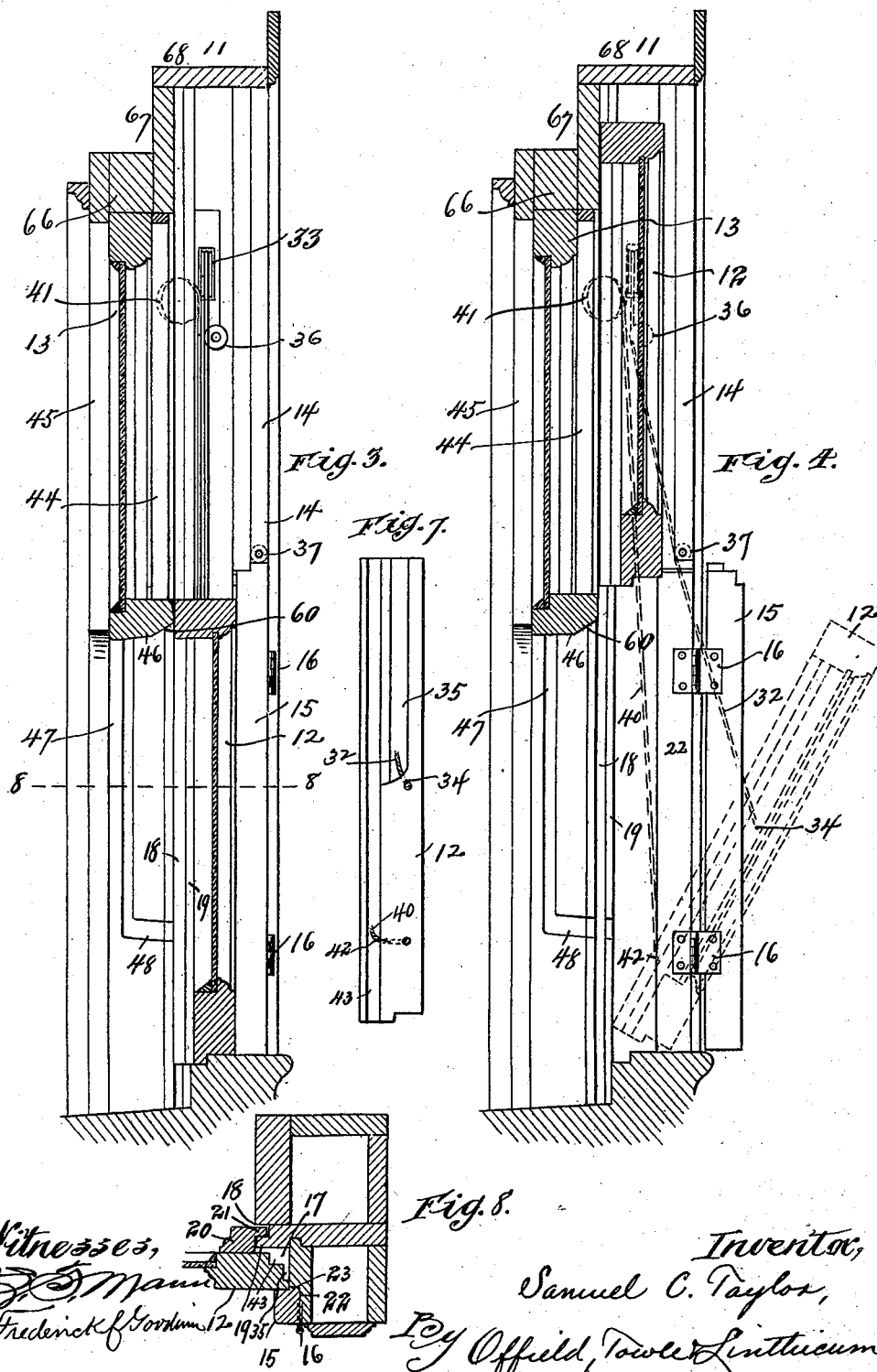
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3 Sheets—Sheet 2.



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Fig. 8.

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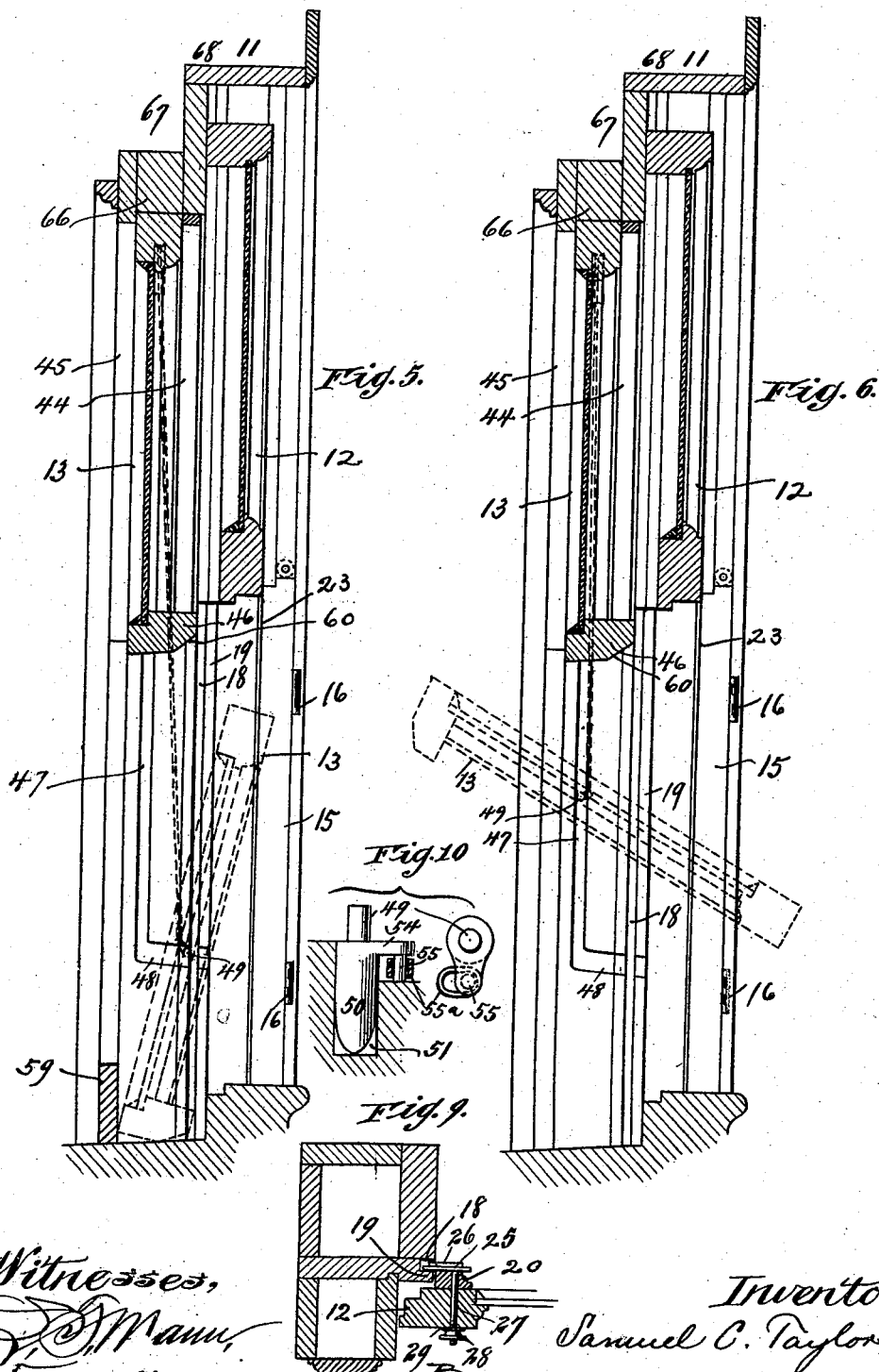
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3 Sheets—Sheet 3.



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# UNITED STATES PATENT OFFICE.

SAMUEL C. TAYLOR, OF CHICAGO, ILLINOIS.

## WINDOW.

SPECIFICATION forming part of Letters Patent No. 649,224, dated May 8, 1900.

Application filed June 5, 1899. Serial No. 719,448. (No model.)

*To all whom it may concern:*

Be it known that I, SAMUEL C. TAYLOR, of Chicago, in the county of Cook and State of Illinois, have invented certain new and useful Improvements in Windows, of which the following is a specification.

This invention relates to windows, and more particularly to that class in which the sashes slide normally in vertical guideways and are counterbalanced by suitable weights, but are capable of being released from their guideways and swung or tilted at an angle to facilitate their cleaning.

My present invention has for its object more particularly to provide a construction especially adapted for use in connection with large and heavy windows to enable them to be handled with greater facility.

A further object of my invention is the provision of means whereby the upper sash of a double-sash window may be readily tilted in the manner described for the purpose of cleaning it and to provide especial means whereby such upper sash may be so tilted without the necessity of removing the window-screen in case one is present.

To these and other ends hereinafter referred to my invention consists in certain novel features, which I will now proceed to describe and will then particularly point out in the claims.

In the accompanying drawings, Figure 1 is an elevation of a window embodying my invention. Fig. 2 is a plan section of the same, taken on the line 2 2 of Fig. 1. Fig. 3 is a vertical sectional view showing the sashes in their normal or closed position. Fig. 4 is a view similar to Fig. 3, but showing the lower sash in full lines in a raised position and in dotted lines as swung out for cleaning. Fig. 5 is a similar view showing both sashes in a raised position in full lines and also showing the upper sash as lowered and tilted for cleaning when a screen is employed. Fig. 6 is a view similar to Fig. 5, but showing the upper sash in dotted lines as tilted in the manner in which such tilting may be accomplished when no screen is present. Fig. 7 is a side elevation of the lower sash detached. Fig. 8 is a detailed sectional view through one side of the lower sash and the adjacent portion of the window-frame, taken on the line 8 8 of

Fig. 3. Fig. 9 is a similar view taken on the line 9 9 of Fig. 1 and showing the construction of the tightening device; and Fig. 10 is a detailed view of the combined cord-fastener and pivot.

In said drawings, 11 indicates the window-frame as a whole, and 12 and 13 indicate, respectively, the lower and upper sash, which are mounted in said frame. The frame 11 is provided at one side with a stop 14 for the lower sash and the lower portion 15 of this stop is not permanently connected with the frame, but is hinged thereto, as indicated at 16, so that it may be either held in line with the fixed upper portion of the stop, as shown in Figs. 3 and 8 of the drawings, or may be swung out clear of the face of the still, as shown in Fig. 4 of the drawings. The stiles of the frame are shouldered, as indicated at 17, and forward of these shoulders there is formed on each side of the frame a vertical groove 18, thus leaving a rib 19 between said groove and the face of the shoulder 17. These ribs are cut away at their upper portions for a distance at least equal to the height of the lower sash, as indicated in full and dotted lines in Fig. 1 of the drawings and as shown in Fig. 2. The lower sash 12 is provided on the forward or outer face of each of its stiles with a strip 20, which has a tongue or projection 21 fitting within the corresponding groove 18, and by its engagement with the rib 19 serving to hold the sash in place and guide it vertically. It will be seen that when the lower sash is raised to the position shown in Fig. 4, where the tongue or projection 21 lies opposite the cut-away portion of the rib 19, the sash may be moved backward toward the stop 14, so as to disengage the tongues 21 from the grooves 18. The hinged portion 15 of the stop being swung out into the position shown in Fig. 4, the lower sash may then be lowered and tilted clear of the window-casing, as indicated in dotted lines in Fig. 4.

I prefer to recess or rabbet the frame-stile, as indicated at 22, to receive the hinged portion 15 of the stop, and it will be observed that said hinged portion 15 has a shoulder 23, which extends forward, so as to lie opposite the plane of travel of the edge of the lower sash. It results from this that when the lower sash is not lifted high enough to clear said

hinged portion it serves to hold the same firmly in place, while when said lower sash is raised sufficiently high, as indicated in Fig. 4, then the hinged portion may be swung out so as to free the sash when lowered. I also prefer to provide means whereby the lower sash may be held in its guideway when raised to its fullest extent, if desired, and to this end I do not cut the ribs 19 entirely away at their upper ends, but only sufficiently to permit the projections 21 to clear them. I mount upon the top rail of the lower sash at the side thereof opposite to the one on which the stop 14 is mounted a pivoted plate 24, which may be moved into the position shown in Fig. 2, where its projecting end will lie back of and engage with the cut-away portion of the rib 19 and serve, in conjunction with the upper fixed portion of the stop 14, to keep the window in position in its guideways when raised to its uppermost limit. As there is no stop corresponding to the stop 14 on the other side of the window-frame, where the pivoted plate 24 is located, it will be seen that when said plate is so turned as to permit it to clear the rib 19 the window may be readily drawn outward clear of its guideways when said plate is so turned and the window raised. I also provide means for holding the lower sash firmly in position, and thereby prevent its rattling, and for this purpose I employ a plate 25, which is mounted in a groove 26 in the outer face of the strip 20 at one side of said sash, the end of said plate projecting into the groove 18 at that side. To this plate is attached a rod 27, extending through an aperture in the stile of the sash to and beyond the inner face thereof and having its inwardly-projecting end threaded, as shown in Fig. 9, to receive a thumb-nut 28, which fits thereon and is adapted to bear against an escutcheon 29 on the inner face of the stile. It will be seen that by turning the thumb-nut 28 in the proper direction the rod 27 and plate 25 may be drawn inward, so as to cause the plate to bear against the rib 19, and thus force the sash firmly against the front wall of the groove 18, thus making a tight joint between the sash-frame and preventing rattling. This device also acts to a certain extent as a lock, although designated primarily as a tightening device.

The lower sash is connected with and supported from its counterweights in the following manner: Two sets or pairs of counterweights are employed, one set or pair being indicated by the reference-numeral 30, which are located in boxes or casings 31 at the inner side of the window-frame. The cords or chains or other flexible connecting devices between these weights and the lower sash are indicated at 32 and extend upward over pulleys 33, mounted in apertures on the inner stiles of the frame or casing. These cords 32 extend thence to the lower sash, to which they are connected, one on each side, at points 34, which are about midway of said

sash. The stiles of the sash are rabbeted or cut away, as indicated at 35, to accommodate the cords 32, and there are provided on the inner faces of the frame-stiles, immediately below the pulleys 33, guide-pulleys 36, arranged with their axes at right angles to those of the pulleys 33. A similar guide-pulley 37 is located at the lower end of the fixed portion of the stop 14. The second pair of counterweights are indicated by the reference-numeral 38 and are mounted in the forward boxes or casings 39 of the window-frame. The cords or other flexible connections of these weights are indicated at 40 and extend over pulleys 41, which are located at the junction of the boxes or casings 31 and 39 and preferably in a diagonal position, as shown, in suitable apertures in the frame. The cords 40 extend from the pulleys 41 downward to the lower sash, to which they are connected at points 42, near the lower end thereof. The stiles of the lower sash are rabbeted or cut away, as shown at 43, to accommodate the cords 40.

Referring now more particularly to the construction of the upper sash 13 and the mode of mounting the same, it will be observed that said sash when in the upper portion of its range of movement is guided between a parting-strip 44 and a stop 45 at each side. The parting-strips 44 terminate at a point on a level with the top of the lower sash when in its lowermost position, so that they form stops, against which the bottom rail 46 of the upper sash abuts when said sash is raised. The stops 45 preferably extend a short distance below the terminations of the parting-strips. In the guideways formed between said stops and strips there is provided in the face of each of the two front stiles of the window-frame a vertical groove 47, which grooves continue downward below the termination of the stops and strips and are then extended horizontally, or approximately so, toward the inner face of the window, as indicated at 48. These horizontal portions 48 extend clear to the shoulder 17, formed at the rear or inner face of the front stiles of the window-frame, and, as clearly shown in Fig. 2 of the drawings, the front stiles are located closer together than the rear stiles. The upper sash is provided on the lateral edges of its stiles with projections 49, which extend into the grooves 47 and slide within the same, forming not only guides for the upper sash, but also pivots, upon which it may turn. I prefer to construct these parts in the manner shown in detail in Fig. 10 of the drawings in order to provide in one piece means for connecting the pins or projections to the sash and for connecting thereto at the same time the cords, chains, or other flexible connections which extend to the counterweights. In this construction the projection 49 is formed upon the end of a plug 50, which is adapted to be driven into a suitable aperture 51 in the stile of the sash. Where an ordinary

cord is used, said cord may extend into the aperture 51 and be clamped or wedged therein when the plug 50 is driven into place. Said cords are indicated at 52, and the sash-stiles are rabbeted, as indicated at 53, to accommodate said cords. The plug 50 is provided with a laterally-extending lug or flange 54, which extends into the rabbet above the bottom thereof, as indicated in detail in Fig. 10, and is provided with a pin 55, extending to the face of said aperture, which pin may be integral or may be a separate pin or screw extending through the aperture in the lug or flange 54. By this provision I am enabled to readily connect to the sash a supporting-chain as distinguished from a cord or the like, since the terminal link 55<sup>a</sup> of the chain may be located between the flange 54 and the face of the sash, and the pin 55 may be extended through the link, and thus firmly connect the chain to the sash. The flexible connections 52 of the upper sash are thus connected to said sash at a point about midway of its height and extend thence upward in the usual manner over pulleys 56, mounted in apertures in the front stiles of the window-frame, said connections extending downward into the casings 39 and there carrying the counterweights 57. I deem it desirable to employ guide-pulleys 56<sup>a</sup>, lying back of the pulleys 56, within the casing, to keep the counterweights 57 clear of the counterweights 38, which are within the same compartment of the casing.

I have represented in Fig. 5 at 59 a removable screen, the window shown in Fig. 6 being without such screen.

The operation of the window thus constructed is as follows: Referring first to the lower sash, it will be seen that under normal conditions the sash moves vertically in its guideways, formed in part by the extension of the tongues 21 into the grooves 18 and in part by the inclusion of the whole sash-stile between the stops 14 and 15 and the front stile of the frame, with plate 24 engaging with the cut-away rib 19 during the upper portion of the travel of the sash, so as to prevent the same from swinging out while said plate is in such engagement. When it is desired to swing the sash out of the frame, so as to have access to all parts of the same for cleaning or other purposes, the plate 24 is swung out of engagement with the rib 19, and the entire sash is raised to its upper limit of motion. Thereupon the movable portion of the stop 15 is swung out into the position shown in Fig. 4 of the drawings, and since the projections 21 are opposite the cut-away portions of the ribs 19 the sash may be drawn inward or rearward, disengaged from the grooves 18, and then lowered until the top rail of the sash is below the termination of the fixed portion of the stop 14. When the parts are in this position, the sash may be readily swung out into the position shown in dotted lines in Fig. 4, and may be even farther swung out than there shown, so as to place it in a horizontal

position or reverse it entirely. The handling of the sash in this manner is facilitated by the connection of the cords to its middle and lower portions, since the weight is thus counterbalanced in such a way that the sash may be freely moved about and its position changed without undue exertion. During this swinging of the sash the guide-pulleys 36 and 37 serve to guide and hold in proper position the cords 32 and prevent them from binding or scraping upon the frame. Large plate-glass windows as at present constructed are of such great weight that if supported by a single pair of cords it is not only difficult but dangerous to attempt to swing them and change their plane of position when withdrawn from their guiding-grooves. I have found by the employment of the two sets of cords and counterweights, one set connected slightly above the middle of the window and the other below the same, that the heaviest windows may be readily and safely tilted into any desired plane with a comparatively-slight exertion of strength. Moreover, the provision of two separate sets of counterweights and connecting-cords reduces to a great extent the danger of damage to the window in case of the breaking of one of the cords or the detachment therefrom of its weight. When it is desired to replace the lower sash in operative position, the said sash is raised to its uppermost position and moved forward or upward, so as to engage the projections 21 with the grooves 18, and the movable portion 15 of the stop 14 is then swung into the position shown in Figs. 3 and 5, whereupon the sash may be lowered, thus holding the movable portion 15 permanently in place, and in case the plate 24 is used it is projected so as to engage the groove 18, whereupon said sash may be freely moved vertically in its guideways as an ordinary sash.

The upper sash may be tilted in either of the two ways shown in Figs. 5 and 6. In the former figure the structure is shown as having a screen located in front of the lower portion of the window in such a position as to preclude any outward projection of the sash. In such a case the upper sash may be lowered until the projections 49 come opposite the horizontally-extended portions 48 of the grooves 47. The top rail of the sash may then be drawn inward, as indicated in dotted lines in Fig. 5, and the sash thus tilted, so as to give access to its outer face for cleaning or other purposes. If desired, the bottom rail of this sash may be beveled off, as indicated at 60, to facilitate this tilting of the sash and prevent the necessity of unduly enlarging or curving the grooves 48. The projections 49 may be withdrawn entirely from the window-frame and the sash be made to assume any desired position within reasonable limits. When, however, no screen or other obstruction is present, the extensions 48 are not essential and are not employed, as the sash may be tilted upon the projections 49 as pivots as

soon as the top rail of the sash is below the parting-strips 44, as indicated in dotted lines in Fig. 6 of the drawings.

It will be observed that the several parts 5 which inclose the boxes or casings 39 are the parts which constitute an ordinary window-frame as usually constructed—to wit, the stiles, which are indicated at 61, the outside casings 62, and the inside casings 63. The 10 uppersash is mounted and slides in this frame, while the lower sash lies inward from this frame between the jamb-linings 64, which jamb-linings, together with the finishing-pieces 65 and the inside casings 63, constitute the secondary boxes or casings 31. The 15 lower sash proper, 12, lies entirely inward from the main or ordinary casing and between the jamb-linings, and only the strips 20 extend forward of this plane between the walls of the frame proper and carry the tongues or 20 projections which enter the grooves in this latter. The lower sash is thus free to move vertically upward above the head 66 of the front frame or window-frame proper, as indicated in Fig. 4 of the drawings, a supplemental headpiece 67 being provided at the 25 top of the window-frame proper and a separate headpiece 68 being provided for the inner jamb-lining. By reason of this construction the lower sash may be raised above the 30 upward limit of motion of the upper sash, so that this latter may be readily tilted or tipped inward when lowered in the manner hereinbefore described. The employment of the 35 jamb-linings and inner finishing-pieces to form secondary boxes or casings provides for the main counterweights of the lower sash in the space thus formed, and the jamb-linings are further utilized as stiles to guide and support said lower sash inward from and clear 40 of the main or ordinary frame proper, in which the upper sash is mounted. This arrangement gives compactness and, as heretofore pointed out, permits the lower sash to be 45 raised high enough to allow the upper sash to clear the same when tilted inward or tipped.

I do not wish to be understood as limiting myself strictly to the precise details hereinbefore set forth, as it is obvious that they 50 may be varied or to some extent dispensed with without departing from the principle of my invention.

I claim—

1. In a window, the combination, with a 55 frame or casing having guiding-grooves, the ribs forming the rear walls whereof are cut away at their upper portions, and a rear stop, the lower portion whereof is hinged to swing clear of the casing when the sash is raised, of 60 a sash having tongues or projections to fit said grooves and adapted to clear the same when the sash is raised, and counterweights flexibly connected with said sash, substantially as described.

65 2. In a window, the combination, with a frame or casing having guiding-grooves, the

rear walls whereof are partially cut away at their upper portions, of a sash having ribs or projections to engage said grooves but adapted to clear the frame at the upper portion 70 thereof, said sash being provided with a plate adapted to be projected so as to engage the cut-away portion of the groove, substantially as described.

3. In a window, the combination, with a 75 frame having two weight-casings at each side thereof, of an upper sash having counterweights flexibly connected therewith and located in the front casing, and a lower sash having two sets of counterweights flexibly 80 connected therewith, one set located in the rear casings, and the other set located in the forward casings, substantially as described.

4. In a window of the character described, the combination, with a grooved frame, of a 85 sash having projections to fit said grooves and to receive the counterweight connections, each of said projections comprising a body portion adapted to be inserted in the sash, a projecting pin to fit the groove, and a 90 laterally-extending flange or tongue provided with a pin extending toward the sash, substantially as described.

5. In a window, the combination, with a 95 frame having guiding-grooves, of a sash having on its front face a projecting strip provided with a recess, a plate mounted and movable in said recess and extending into the guiding-groove, a rod connected to said 100 plate and extending through the sash beyond the inner face thereof, its projecting end being threaded, and a thumb-nut mounted on said threaded end, substantially as described.

6. A window comprising a frame or casing, an upper sash mounted therein and capable 105 of tilting or tipping when depressed, jamb-linings lying inward from said frame, extending above the same and forming the usual lining-finish for the wall-opening of the window, and a lower sash mounted between and 110 supported from the jamb-linings inward and separate from the frame or casing, substantially as described.

7. In a window, the combination, with a 115 frame proper and an upper sash mounted therein and capable of tilting or tipping when depressed, the inner faces of said frame being provided with vertical grooves immediately adjacent to their inner edges, of a 120 secondary frame lying inward from said first-mentioned frame and comprising the jamb-linings, and a lower sash mounted between and supported from the jamb-linings inward from the front frame and having on the outward faces of its stiles strips provided with 125 tongues to engage the grooves of the front frame, substantially as described.

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