July 12, 1938. W. F. LAGEMANN 2,123,632

WINDOW CONSTRUCTION

Filed May 29, 1936 2 Sheets-Sheet 1

Fig. 1.

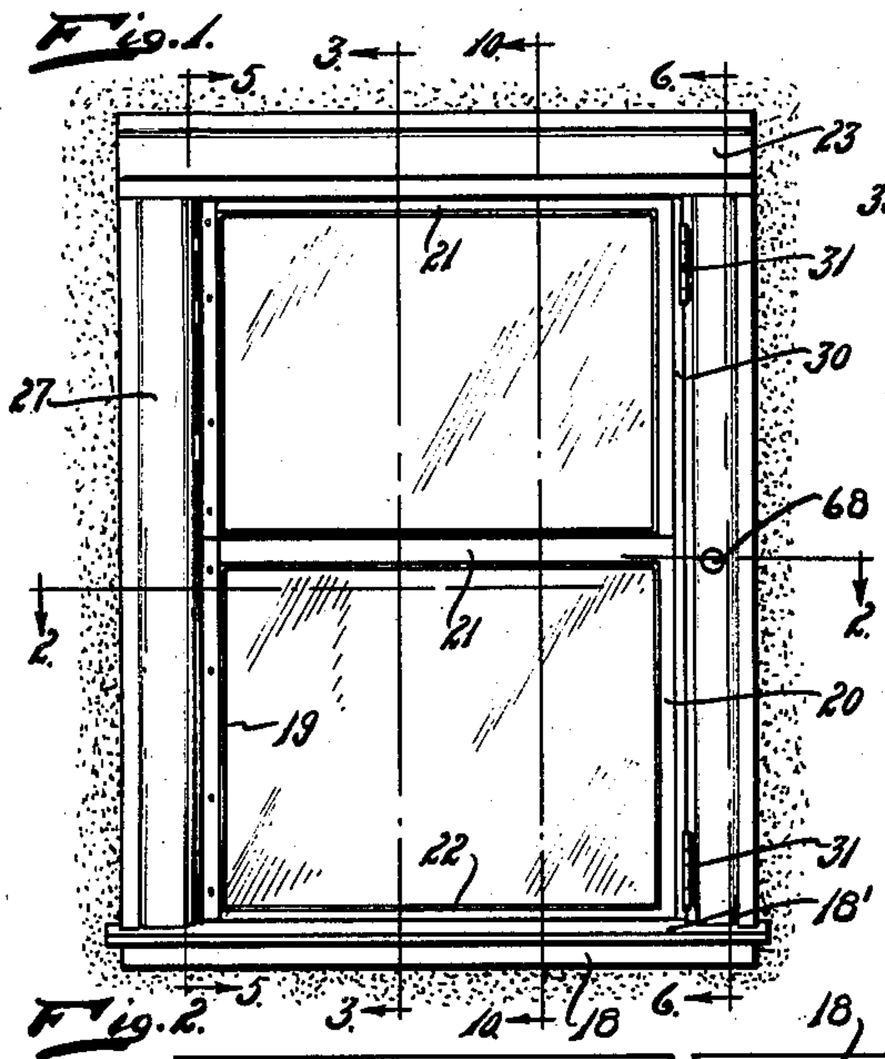

Fig. 7.

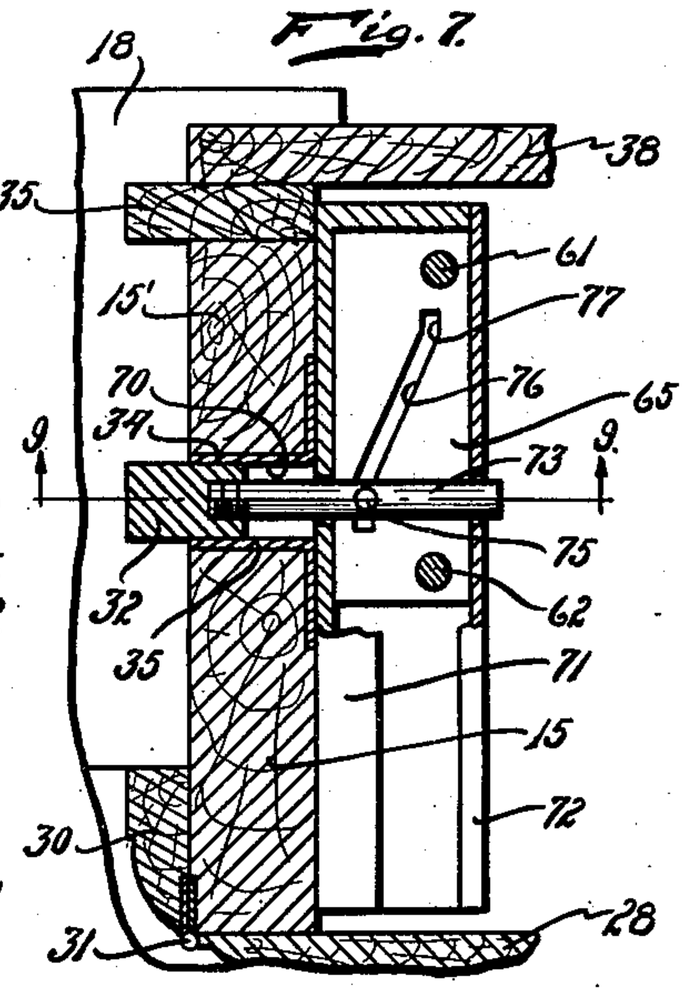

Fig. 2.

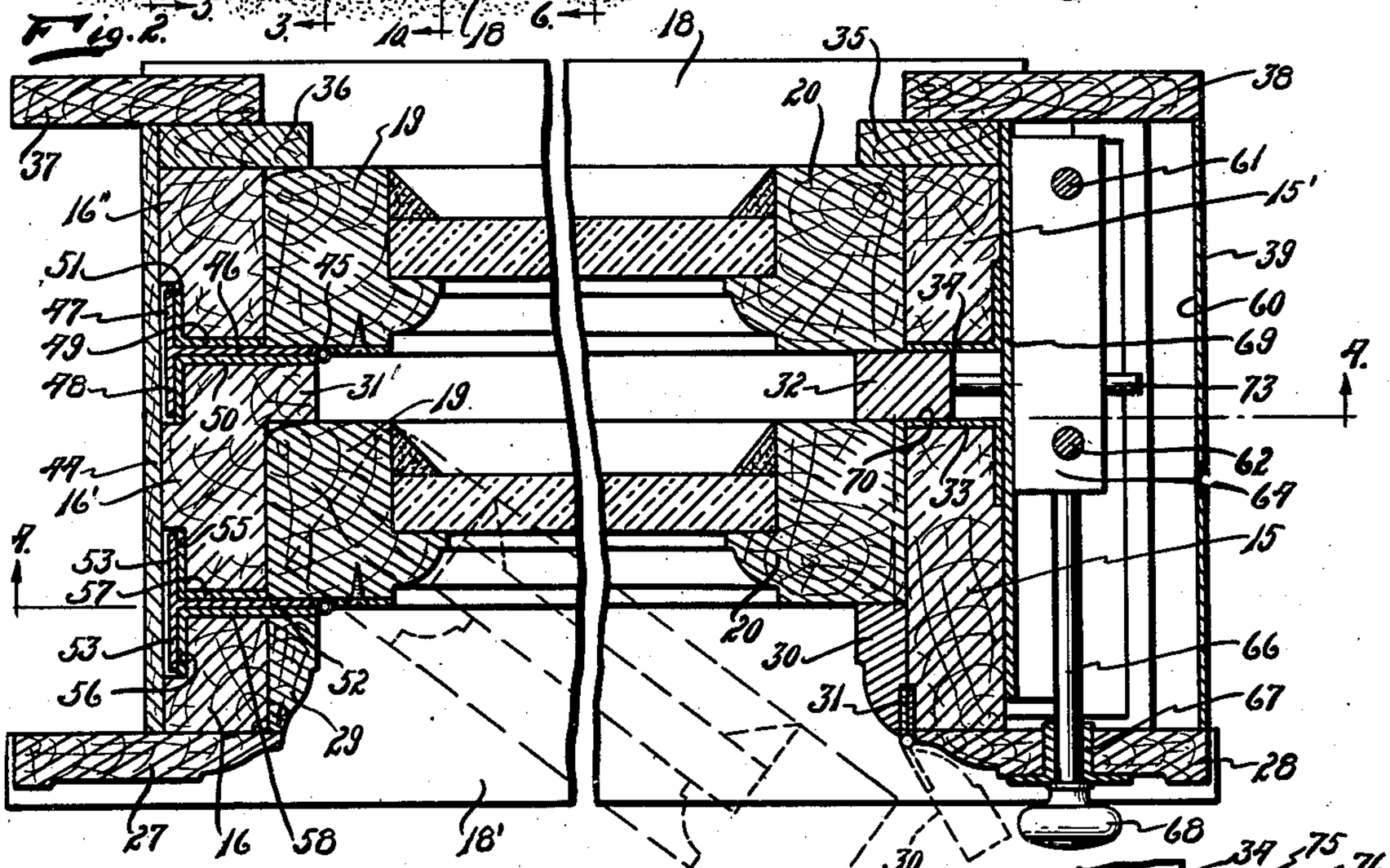

Fig. 8.

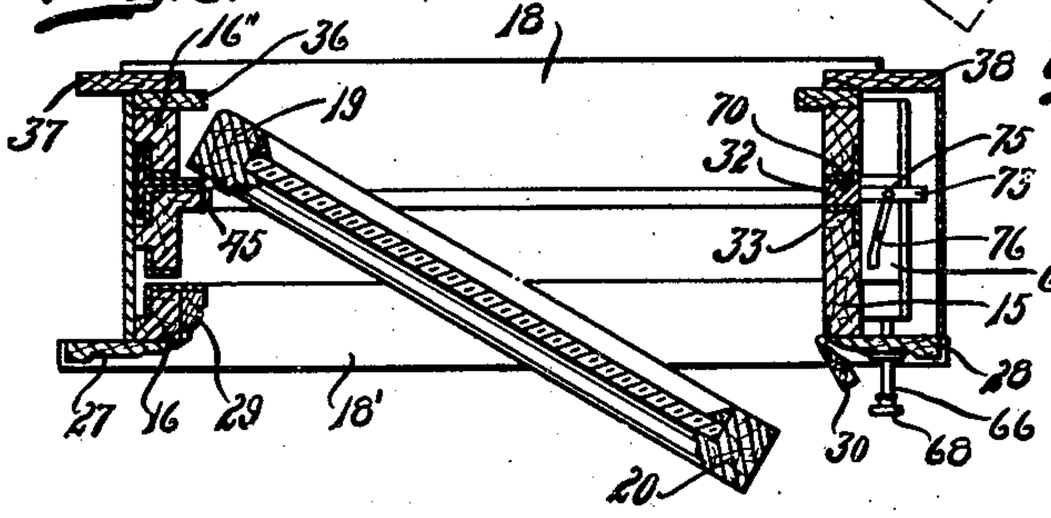

Fig. 9.

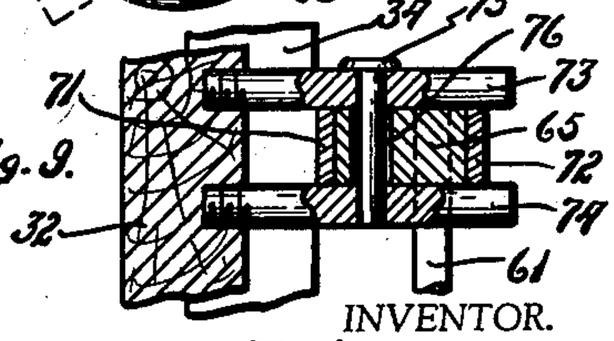

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Fig. 3.

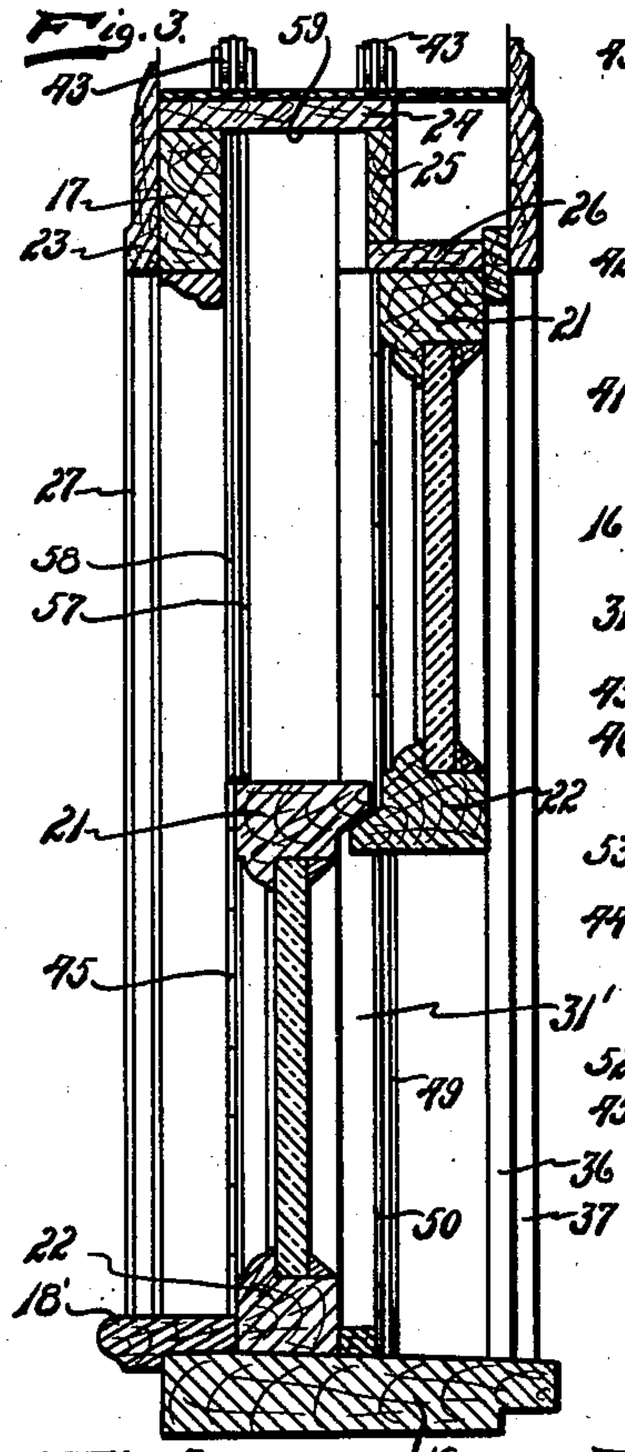


Fig. 4.

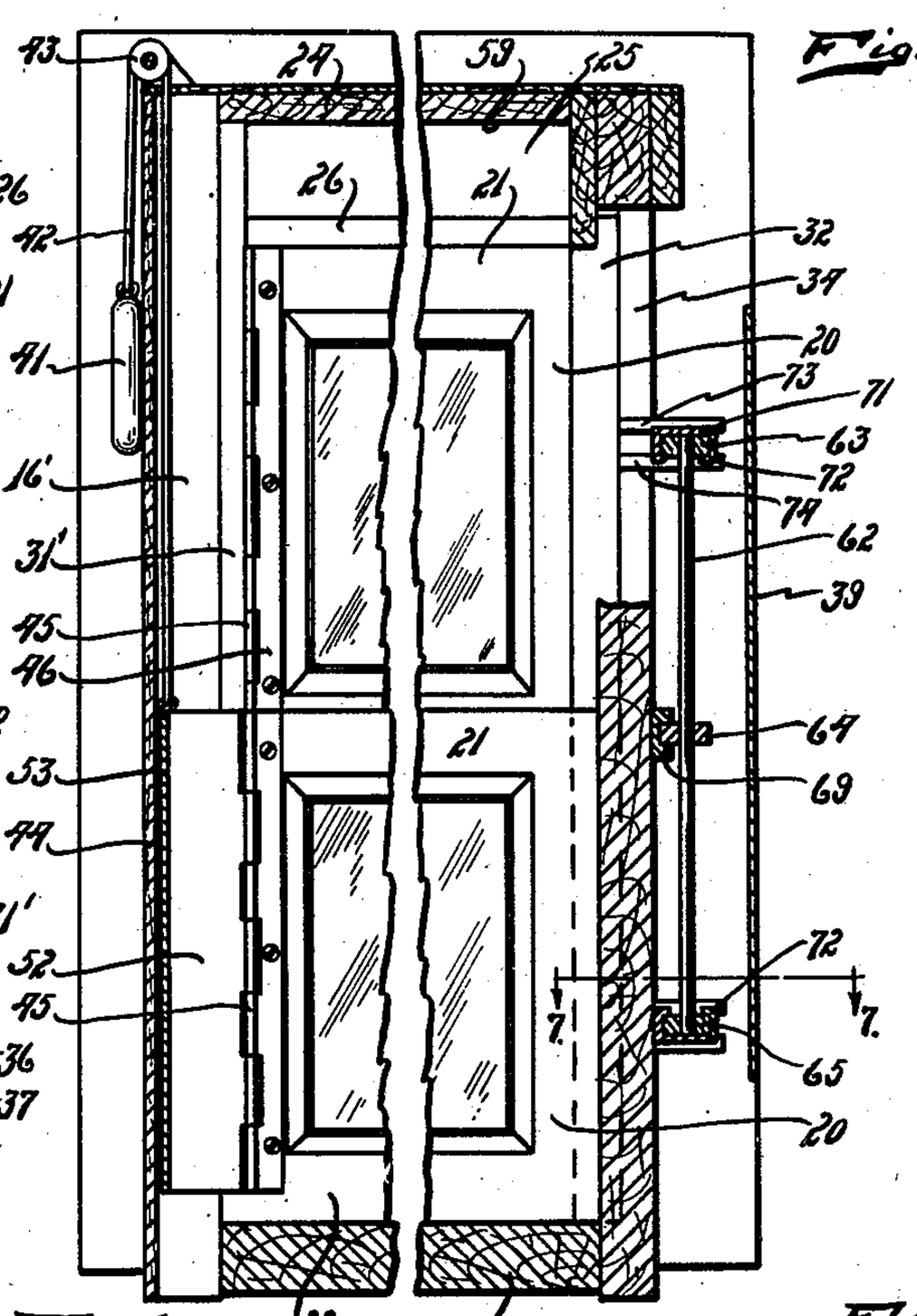


Fig. 5.

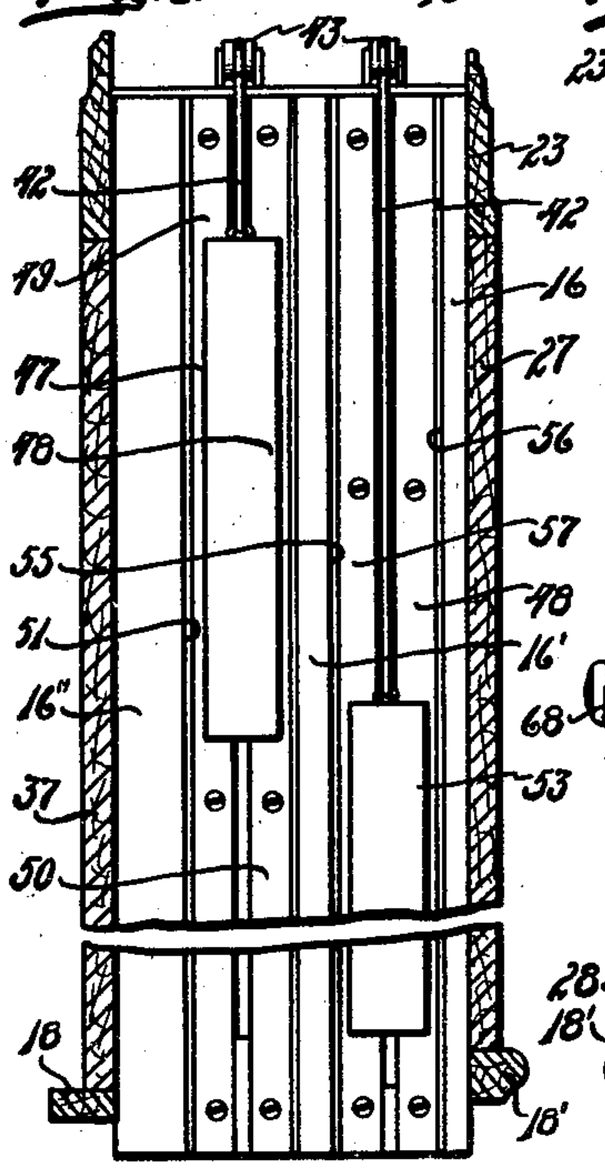


Fig. 6.

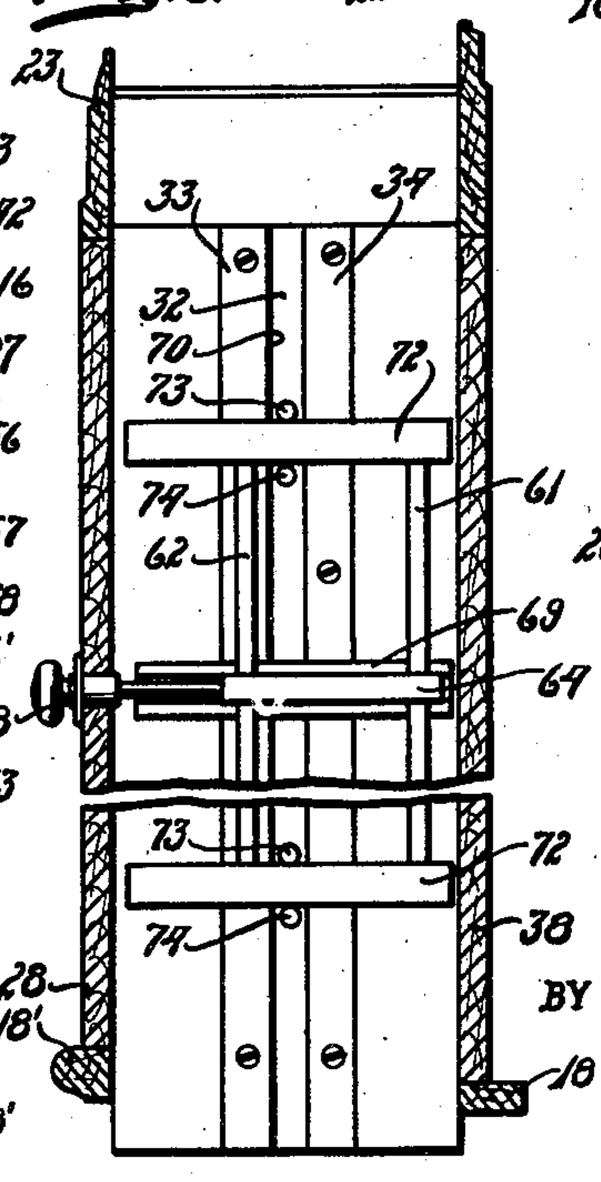
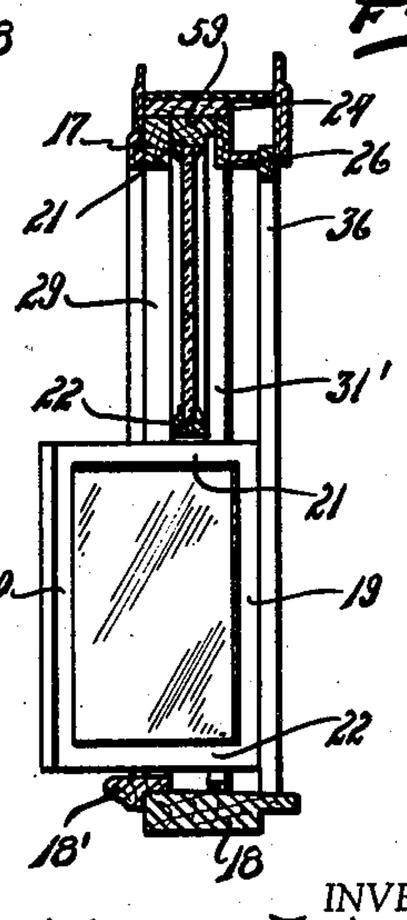


Fig. 10.



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Patented July 12, 1938

2,123,632

UNITED STATES PATENT OFFICE

2,123,632

WINDOW CONSTRUCTION

William F. Lagemann, Detroit, Mich.

Application May 29, 1936, Serial No. 82,578

5 Claims. (Cl. 20—50)

My invention relates to a new and useful improvement in a window construction and has for its object the provision of a window construction whereby windows may be slidably mounted in their frames and yet so constructed and arranged as to be swingable into open position, thus rendering the exterior of the window accessible from the interior of the room so that a washing of the outside of the window may be effected from the inside of the room.

Another object of the invention is the provision of a window construction of this class which will be simple in structure, economical of manufacture, durable, highly efficient in use, and easily and quickly operated.

Another object of the invention is the provision in a window construction of this class of window stops so arranged and constructed that they may be moved into position to perform their ordinary functions and moved out of position for permitting the swinging movement of the window to open position.

Another object of the invention is the provision of a window frame so arranged and constructed that the lower window may be slid upwardly a sufficient distance so that the upper window, when it is slid downwardly, may have sufficient clearance for swinging inwardly to open position.

Other objects will appear hereinafter.

The invention consists in the combination and arrangement of parts hereinafter described and claimed.

The invention will be best understood by a reference to the accompanying drawings, which form a part of this specification, and in which,

Fig. 1 is a front elevational view of a window showing the invention applied.

Fig. 2 is a sectional view taken on line 2—2 of Fig. 1.

Fig. 3 is a sectional view taken on line 3—3 of Fig. 1.

Fig. 4 is a view taken on line 4—4 of Fig. 2.

Fig. 5 is a sectional view taken on line 5—5 of Fig. 1.

Fig. 6 is a sectional view taken on line 6—6 of Fig. 1.

Fig. 7 is a fragmentary, sectional view taken on line 7—7 of Fig. 4.

Fig. 8 is a view taken on substantially line 2—2 of Fig. 1 showing one of the windows swung to partly open position.

Fig. 9 is a fragmentary, sectional view taken on line 9—9 of Fig. 7.

Fig. 10 is a sectional view taken on substantially line 10—10 of Fig. 1 showing the upper window swung to open position.

In the drawings I have shown the invention applied to a window which consists of the window frame embodying the side members 15 and 16, the top member 17 and the sill 18. Slidably mounted in this frame are the upper and lower window sashes, each embodying side rails 19 and 20, a top rail 21 and a bottom rail 22. A strip of molding 23 serves to cover the top member 17 which is connected by the board 24 and the board 25 to the stepped-down portion 26 of the top rail. This stepped-down portion 26 is at the rearward part of the frame. Extending vertically to form a cover for the forward end of the front section of the side member 16 is a molding strip 27. A similar molding strip 28 is mounted in front of the side member 15 and projected beyond the back thereof. Fixedly mounted on the inner surface of the side member 16 is a stop strip 29. A similar stop strip 30 is mounted on the inner surface of the side member 15 and swingable relatively thereto on the hinge 31. Formed integral with the section 16' of the side member 16 and projecting inwardly therefrom is the guide strip 31'. The side member 15 is provided with a rearwardly positioned section 15' spaced from the forward part of the side member 15, a guide strip 32 being slideably positioned between the forward part of the side member 15 and the rear section 15'. This guide strip 32 is slidable and preferably formed of metal and adapted to engage the wear plates 33 and 34 which are mounted on the side member 15 and its section 15', as clearly shown in Fig. 2. Projecting inwardly from the inner face of the section 15' is a stop strip 35, and a similar stop strip 36 projects inwardly from the inner face of the side rail section 16'', to which is fastened the securing plate 37. The molding 28, together with the securing plate 38 and the closure plate 39 forms a window box at one side of the structure. The sections 16, and 16' and 16'' of the side member are connected by the closure strip 44. Mounted on the top of the frame are pulleys 43 over which are extended the flexible cords 42 which are connected at one of their ends to a window weight 41 and at their opposite ends to one of the sashes. Connected to the side rail 19 of the upper window sash by means of the hinge 45, is the stem or trunk 46 of a T-shaped structure, having the arms 47 and 48 (see Fig. 2), this T shaped structure bears against the wear plates 49 and 50 shown in Fig. 2, the angularly turned portions of which lie in a recess 51 formed

in the section 16'' and 16' of the side member 16 of the window frame. The outer surface of the T shaped structure is a comparatively snug fit with the inner surface of the closure plate 44. (See Fig. 2.) The trunk 46 serves, in addition to guiding the window in its upward and downward movements, as an anchorage for the swinging movement of the window.

Hingedly connected to the side rail 19 of the lower sash is the trunk 52 of a T shaped structure, the arms 53 and 54 of which lie in the recesses 55 and 56 formed in the window frame side member sections 16 and 16' and bear against the wear plates 57 and 58, as shown in Fig. 2. Thus the lower window sash is slidably mounted in the window frame and when the stop 30 is swung to the dotted line position shown in Fig. 2, the lower window sash may be swung outwardly into the dotted line position shown in Fig. 2, when the lower window sash is raised above the sill plate 18'.

It will be noted from Fig. 3 that by stepping down the top plate of the window frame there is provided a space 59 positioned above the upper-most position of the top rail 21 of the upper window sash. When it is desired to swing the upper window sash inwardly into the position shown in Fig. 8, it is necessary that the lower window sash be raised upwardly until its upper rail 21 engages the upper-most part of the space 59. Thereupon, upon a lowering of the upper sash, its upper rail 21 will be positioned below so as to clear the lower rail 22 of the lower sash, and an outward swinging of the same into the position shown in Fig. 8 may be effected when the stop 32 is withdrawn from the position shown in Fig. 2 and moved into the position shown in Fig. 8. In order to accomplish this, I mount in the compartment 60 (see Fig. 2 and Fig. 4) a mechanism consisting of a pair of vertically extending rods 61 and 62 which extend through and are fixedly attached to a plurality of spaced plates 63, 64 and 65. The plate 64 is connected fixedly to the rod 66 which extends through the bushings 67 mounted in the molding 28 and which is provided with the gripping knob 68. The plate 64 rides in a guide groove formed in the guide plate 69 mounted on the side member sections 15 and 15' of the window frame so as to span the space 70 in which the stop 32 engages. The plates 63 and 65 similarly ride in guides formed from the strips 71 and 72 which are attached to the sections 15 and 15' of the side member of the window frame and span the space 70. Secured to and projecting inwardly and projecting from the rear face of the stop 32 are the spaced rods 73 and 74 which embrace the plates 63 and 65. The rods 73 and 74 in each set are connected with each other by means of a pin 75 which engages in a slot 76 formed in the plates 63 and 65. This pin and slot connection is a cam construction so that as the plates 63 and 65 are moved outwardly into the position shown in Fig. 8, the strip 32 will be drawn inwardly to lie flush with the side member sections 15 and 15' of the window frame, thus permitting the sash to swing outwardly into the position shown in Fig. 8. If the window has been swung into its closed or normal sliding position, an inward thrust on the rod 66 will effect through the cam action resulting from the pin 75 and the slot 76, an outward movement of the stop strip 32 into the position shown in Fig. 2. It will be noted that the slot 76 inclines through the major portion of its length to the direction of movement of the members 63 and 65 and terminates at each end in a portion 77 directed parallel to the direction of movement of the plates 63 and 65. This terminal portion serves as a lock for locking the strip 32 in either its operative or inoperative position, the strip 32 being in its inoperative position when moved into the position shown in Fig. 8. The windows are each provided with weights on opposite sides as clearly shown in the various views and it is not believed to designate these parts with individual reference characters is necessary, as they are of a structure well known.

One of the principal difficulties encountered with a swingable window is that it is quite impossible to render it leak proof especially when rain is driven by a heavy wind against it. In this construction it will be noted that I have provided a swingable window in which the window stops are present to perform the same function as the window stops used with an ordinary sliding window so that a swingable window is provided which is as leak proof as the ordinary slidable window. The advantages of a slidable window are present as well as the advantages of a swingable window, with the disadvantages referred to eliminated. The construction is one which lends itself to an economical manufacture and at the same time provides easy access to opposite sides of either of the window sashes.

While I have illustrated and described the preferred form of construction, I do not wish to limit myself to the precise details of structure shown, but desire to avail myself of such variations and modifications as may appear within the scope of the appended claims.

Having thus described my invention what I claim as new and desire to secure by Letter Patent is:

1. A window construction of the class described comprising: a window frame having a slot formed therein; a window stop slidably mounted in said slot; rods projecting from one face of said stop; a slidable plate; a cam slot formed in said plate; means carried by said rods and engaging in said cam slots and adapted upon slidable movement of said plate for moving said stop inwardly and outwardly of its slot; and means accessible from the exterior of said frame for sliding said plate in either direction.

2. A window construction of the class described comprising: a window frame; a pair of slots in said frame; metallic liners for said slots; a T-shaped member for each of said slots, the stem of said T-shaped member projecting through said slot and slidable therein, said frame having a recess on its outer face for reception of the arms of said T-shaped member; a window sash swingably mounted on each of said T-shaped members; and means for preventing swingable movement of said sashes.

3. A window construction of the class described, comprising: a window frame having a slot formed therein; a window stop slidably mounted in said slot and adapted for projecting outwardly from the inner surface of said frame for serving as a guide for a window sash slidably mounted therein; a plate having a cam slot formed therein and slidable longitudinally transversely of said frame; means for moving said plate longitudinally; a pin engageable in said slot in said plate; and means for connecting said pin to said window stop for effecting inward and outward movement of said window stop relatively to said frame.

4. A window construction of the class described, comprising: a window frame having a slot formed therein; a window stop slidably mounted in said

frame and slidable inwardly and outwardly thereof, and adapted on inward sliding for projecting beyond the inner surface of said frame and serving as a guide for a window sash slidably mounted therein; a pair of pairs of spaced rods secured to and projecting outwardly from said stop through said slot; a pin projecting through each rod in each pair; a cam plate slidably projected between each pair of rods, said plate having a cam slot for reception of said pin; and means accessible from the exterior of said frame for sliding said plate in either direction, for effecting inward and outward movement of said stop.

5. A window construction of the class described comprising a window frame having a slot formed therein; a pair of sashes slideably mounted in said frame in offset relation to each other, to provide one frame positioned inwardly of the other; means for mounting each of said sashes swingably on said frame for swinging inwardly thereof; a window stop slideably mounted in said slot and adapted for projecting outwardly from the inner surface of said frame for serving as a guide for one side of each of said sashes and as an abutment for preventing swinging of one of said sashes; a plate having a cam slot formed therein and slideable longitudinally transversely of said frame; means for moving said plate longitudinally; a pin engaging in said slot in said plate; and means for connecting said pin to said window stop for effecting inward and outward movement of said window stop relatively to said frame upon slideable movement of said plate.

WILLIAM F. LAGEMANN.