June 14, 1949. E. PEREMI ET AL 2,473,298

WINDOW CONSTRUCTION

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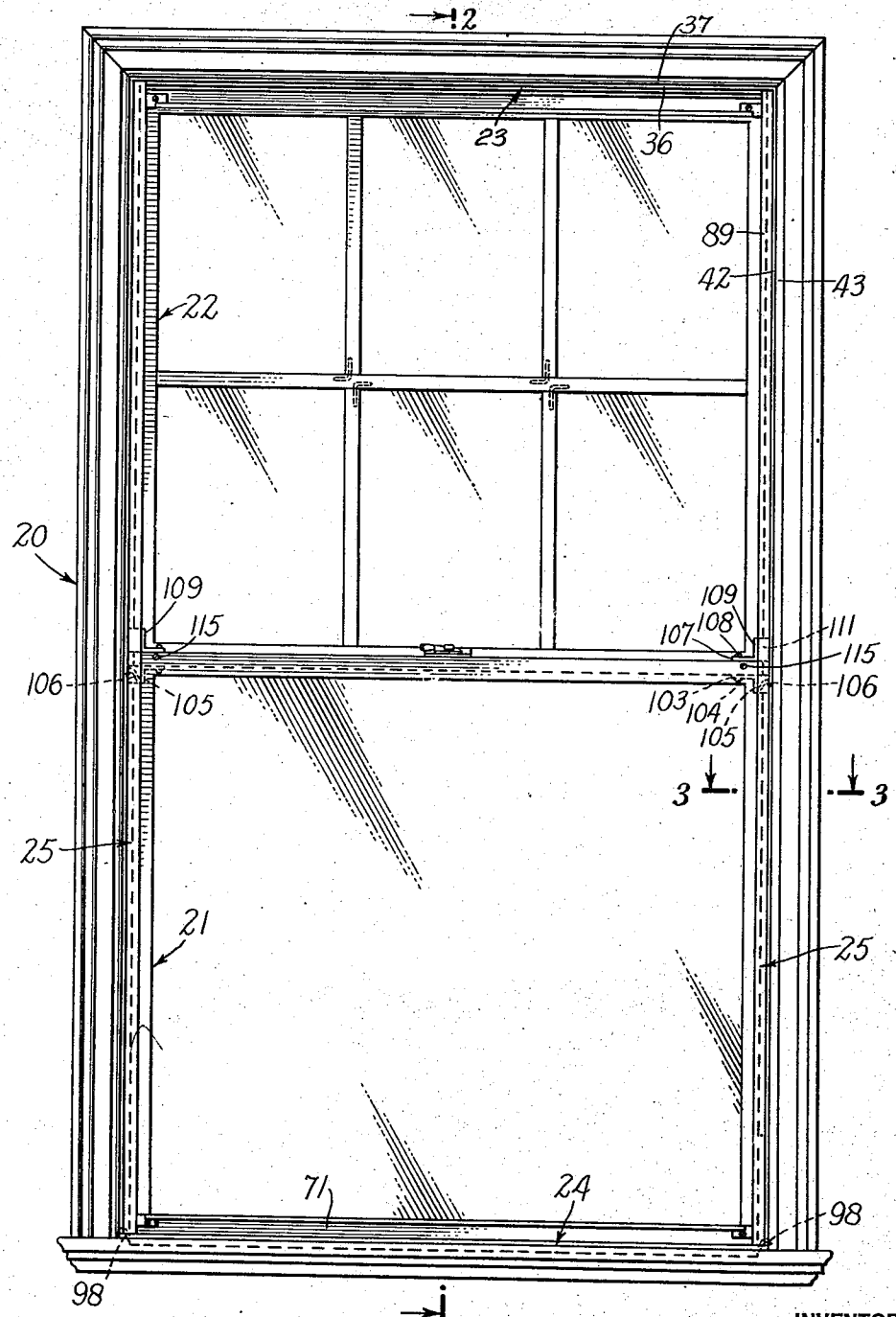


Fig. 1.

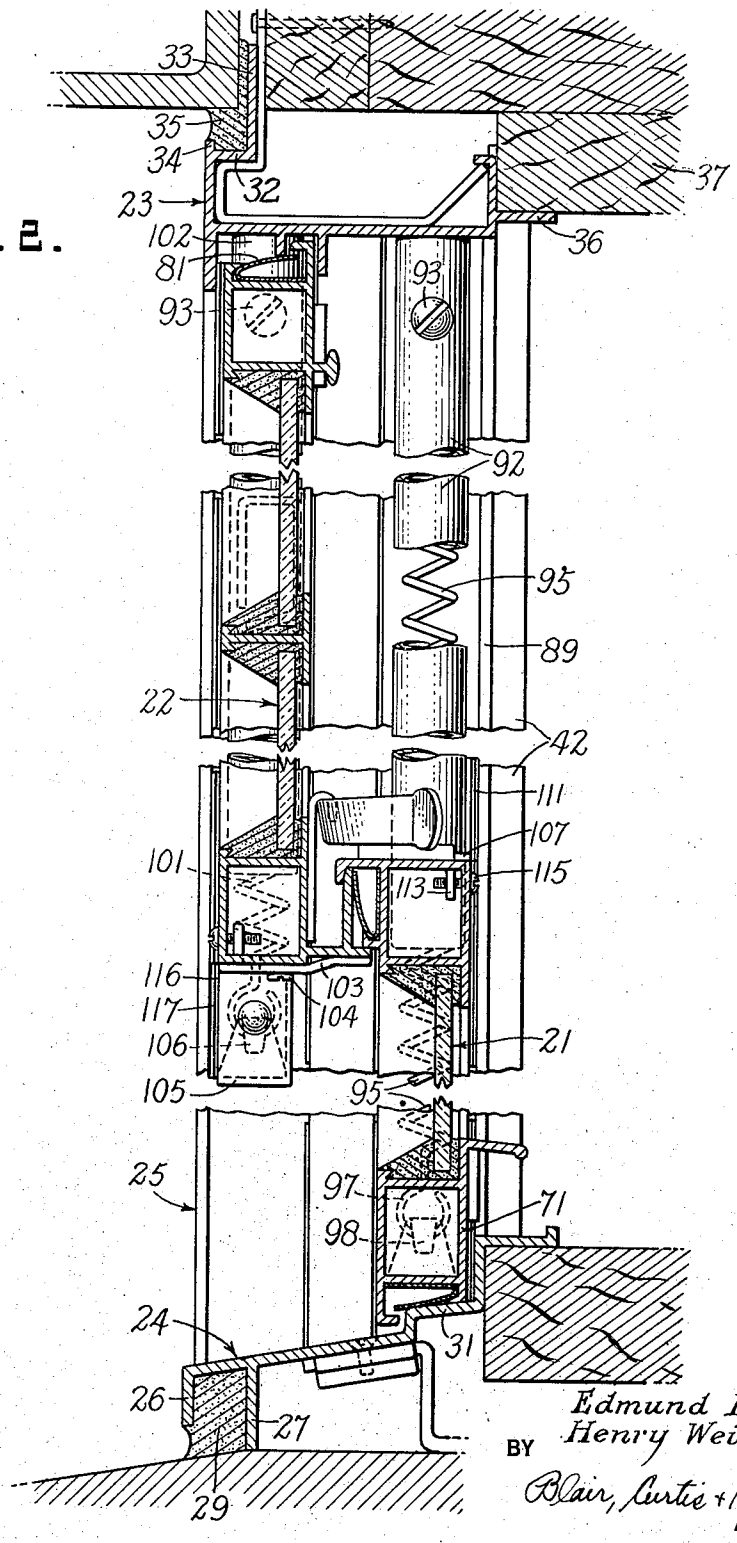
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Fig. 2.



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Fig. 3.

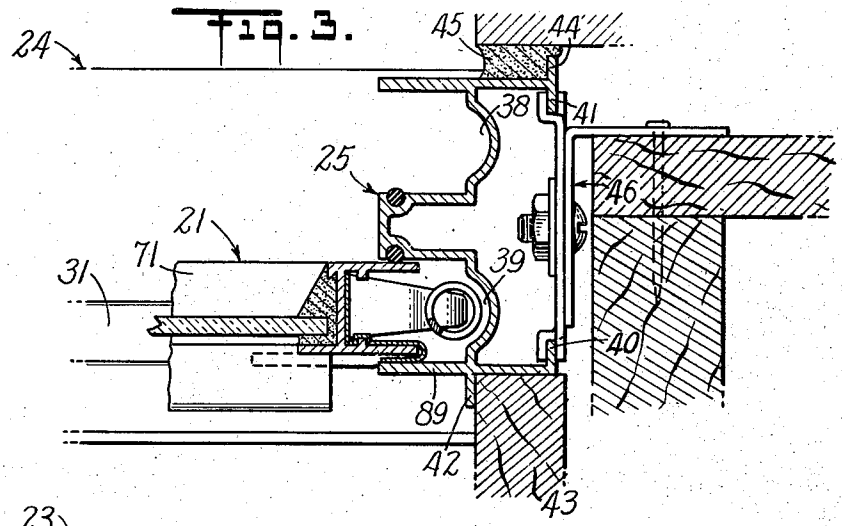


Fig. 4.

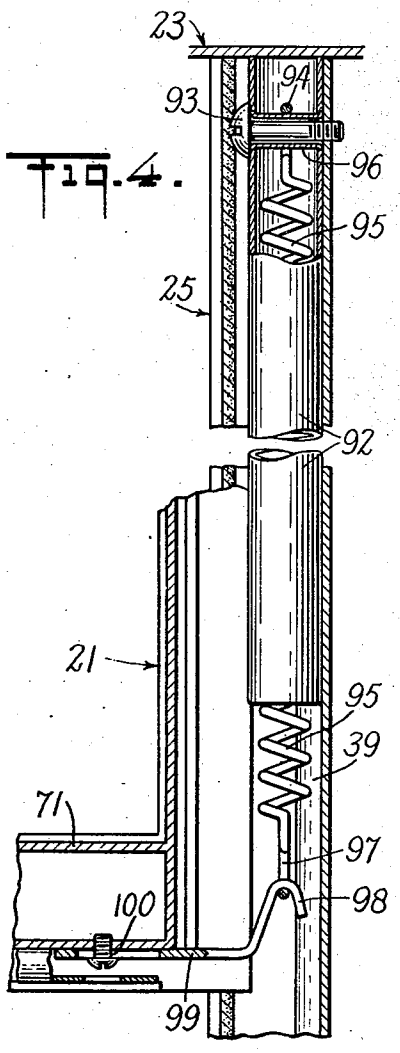
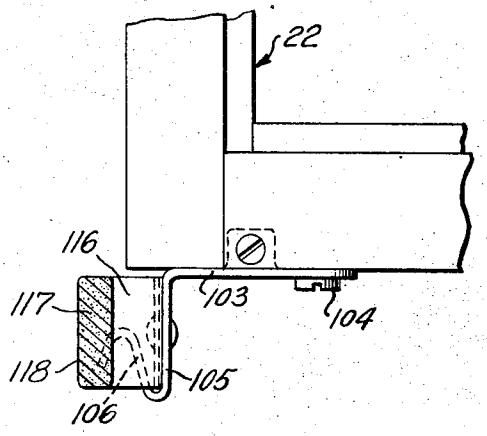


Fig. 8.



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Fig. 5.

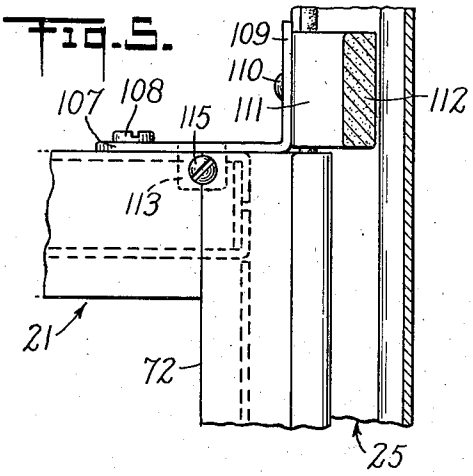


Fig. 6.

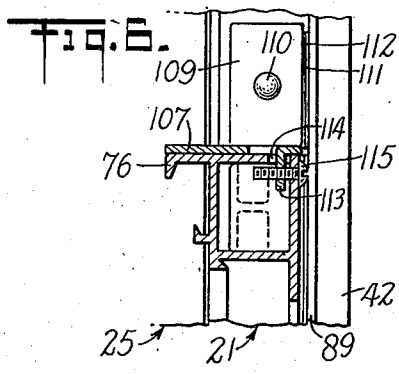
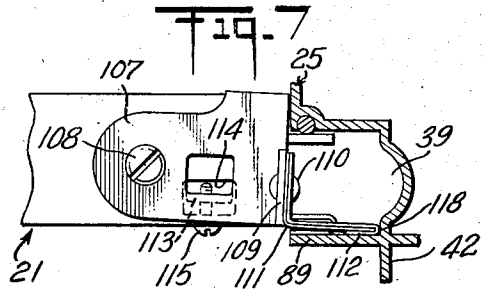


Fig. 7



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Patented June 14, 1949

2,473,298

UNITED STATES PATENT OFFICE

2,473,298

WINDOW CONSTRUCTION

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Application February 14, 1946, Serial No. 647,560

4 Claims. (Cl. 292—76)

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This invention relates to a metal window construction of the type that includes a metallic window frame having vertical sash member receiving channels in the jambs thereof, in which channels a sash member, including vertical side rails and horizontal top and bottom rails, is slidably mounted, and in which window construction spring counter balancing devices for the sash member are mounted in the channels of the frame between the side edges of said sash member and said jambs.

The invention is particularly directed to a spring equalizer which cooperates with the spring balancers to permit the sash to be easily raised and lowered and to be maintained in its various positions.

It is an object of the invention to provide a spring equalizer which will be carried by the sash and will bear against and slide freely on a surface of the window frame to exert a pressure thereon which will restrain the movements of the sash under the influence of the balancer springs and embodied in which is an adjustment device for varying the degree of pressure exerted by the equalizer against said frame, which adjustment device is so located that it is accessible for adjustment when the window sash is operatively located in the window frame and while the sash is being raised and lowered.

In the drawings:

Figure 1 is an elevation of a window construction of the type above set forth showing the location of the spring equalizer;

Figure 2 is a vertical sectional view on line 2—2 of Figure 1, illustrating the equalizer as well as the general structure of the window construction;

Figure 3 is a section on line 3—3 of Figure 1, illustrating the relationship between the window sash, the window frame and a balancer spring;

Figure 4 is a vertical sectional view illustrating the relationship between the window frame, the window sash and the spring balancer;

Figure 5 is a fragmentary view illustrating the spring equalizer as used on the upper rail of a sash;

Figure 6 is a vertical sectional view showing the spring equalizer adjustment;

Figure 7 is a plan view of the spring equalizer and its associated parts; and

Figure 8 is an elevational view showing the spring equalizer as applied to the lower portion of a sash.

Referring to Figure 1, the window construction, the sashes of which are of the double hung type,

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comprises a frame 20, a lower sash 21, and a muntined upper sash 22. As disclosed in Figures 2, 3 and 4, the window frame includes a head 23, a sill 24 and jambs 25.

Each of these frame and sash elements may be formed of an extruded aluminum section.

The sill 24 includes flanges 26 and 27, which extend downwardly from the top 28 of the sill to form a horizontal recess for the reception of the caulking 29, whereby the frame may be sealed with respect to the masonry sill 30 of the building structure.

The sill 24 also includes a ledge 31, against which the lower rail of the lower sash abuts when the latter is in its ultimate lower position. The head 23 includes an inwardly extending shoulder 32, from which an upwardly extending flange 33 projects. A second and shorter flange 34 cooperates with the flange 33 and the shoulder 32 to form a recess for the reception of the caulking 35. The inner longitudinal side of the head 23 is provided with an extension 36 for the reception of the wood trim 37.

Each jamb 25 includes channels 38 and 39 (see Figure 3) adapted, respectively, slidably to receive the upper and lower sashs and to receive the spring balancers and spring equalizers.

Each jamb 25 is also provided with inwardly directed flanges 40 and 41 for attachment to an anchor 46. It also includes an extension 42, which is adapted to cooperate with the trim 43. A caulking flange 44 is provided, against which the caulking 45 may be placed.

The head 23, the sill 24 and the opposite jambs 25 are secured together at their adjacent ends so that the frame becomes, in effect, an integral unit of standard dimensions that can be stocked in different sizes by suppliers of building material and yet that can be adapted to various building constructions.

Th head, sill and jambs are, also, each provided with adjustable anchors for securement of the window frame to the window opening.

Each of the sashes is provided with an extending flange 90 which engages a wire insert 91 formed preferably of self-lubricating metal, such as disclosed in United States Patent 2,250,723, isued to Edmund Peremi and Louis Toth on July 29, 1941, and which insert 91 is carried by the parting strip of the jamb 25.

As hereinbefore noted, the window construction includes spring balancers which cooperate with spring equalizers to permit the sashes easily to be moved and yet positively to be maintained in adjusted positions. Thus, as shown in Figures

3 and 4, jamb channel 39 has disposed therein a cylinder 92 which is attached to the jamb by suitable means, such, for instance, as follows: A screw 93 extends through a bushed opening in the cylinder 92 and is threaded into the wall of the jamb adjacent the upper end of the latter. The upper end 94 of a coil spring 95 is attached to the bushing 96. This spring extends downwardly, freely, through the cylinder 92 and is, at its lower end, attached at 97 to the hook 98 on the lower sash. This hook 98 is on the end of a strip 99 that is adjustably secured to the bottom rail 71 of the lower sash 21 by means of a screw and slot arrangement 100, which screw is reached through an opening in the weather stripping 80.

It will, of course, be understood that the opposite side of the sash 21 is provided with a similar balance spring arrangement.

Referring, now, to Figure 2, it will be seen that the upper sash is also provided, at each side, with a similar spring balancer. As illustrated in Figure 2, the upper end of this spring 101, and its tubular housing 102, are secured to the adjacent jamb adjacent the upper end of the latter in a manner similar to that described in connection with Figure 4. The lower end of each of these springs 101 is attached to the lower or meeting rail of the upper sash in the following manner: A plate 103 is secured to the lower surface of the meeting rail of the upper sash by means such as a screw 104. An extension 105 terminates in a hook 106 to which the coil spring 101 is attached. Thus both the upper and lower sashes are provided with spring window balancers.

The relation between the tension of the sash balancing springs and the weight of the sashes is such, preferably, that the sashes will be supported substantially midway between their open and closed positions.

In order that the sashes may be maintained in their closed positions and in various other open positions, we have provided sash balancer equalizers at opposite sides of the upper rail of the lower sash and at opposite sides of the lower rail of the upper sash.

Refering to Figures 5 and 7, which illustrate an equalizer on the upper or meeting rail of the lower sash, the equalizer includes a plate 107 which is secured to the upper rail of the lower sash by means of a pivot, such as a screw 108. A portion of the plate 107 is bent upwardly as at 109 and has permanently attached thereto, by suitable means such as a rivet 110, a resilient bearing member 111 that extends into the adjacent channel of the window frame and is adapted to contact with the adjacent wall of the frame as, for instance, the inner wall of the portion 89 disclosed in Figure 7. At the point of contact the bearing member is provided with a self-lubricating metal cover 112. In order that the pressure exerted by this cover 112 on the adjacent portion of the frame may be varied, we have provided the plate 107 with a downwardly extending lip 113 (see Figures 5 and 7) which projects through an opening 114 in the top of the meeting rail of the lower sash. An adjusting screw 115 passes freely through the vertical face of the meeting rail of the lower sash and is in screw-threaded engagement with the lip 113. Thus, by means of this screw 115, the position of the bearing member 111 and the force exerted by its cover 112 against the frame may be varied to increase or decrease that force and with the assistance of screw 108 will maintain the equalizer in its adjusted position. In this way the tension of the spring balancers of the lower sash may be equalized with the result that the sash may be raised and lowered with ease and yet will be maintained in its adjusted positions by means of the spring equalizers.

The lower or meeting rail of the upper sash is provided with similar equalizers, as illustrated in Figure 8, the principal difference between the two forms of equalizers being that the bearing member 116 on each upper sash equalizer and the cover 117 are carried by the extension 105 of the plate 103 which terminates in the spring engaging hook 106. It might be here noted that the edge portion 118 (see Figure 8) of the covers 112 and 117 engage the adjacent portion of the frame and assist in correctly positioning the sashes within the frame against sidewise movement.

While we have illustrated and described the particular form of our invention it is to be understood that various changes may be made within the scope of the claims, and we, therefore, do not wish to be limited to the illustrated form except insofar as limitation is made necessary by the claims.

We claim:

1. In a metallic window construction of the type comprising a frame member including vertical jambs having channels for receiving a slidable sash member, a sash member having horizontal upper and lower rails and vertical side rails which latter are slidably mounted in said channels; the improvement which includes an arm pivotally mounted on the upper horizontal rail of said sash member adjacent one side thereof and having an end portion extending into the adjacent of said channels and contacting a wall thereof, and means, uncovered by said sash member and said frame member and engageable while said sash member is mounted in said frame member, for adjusting said arm in the direction of said wall of said channel to cause said end portion of said arm to engage said wall with various degrees of pressure, said adjusting means including a screw having screw threaded engagement with said arm and extending through an exposed wall of said sash member.

2. In a window construction of the type that includes a metallic frame having vertical sash member receiving channels in the jambs thereof, a sash member including vertical side rails and horizontal top and bottom rails slidably mounted in said channels; the improvement which comprises a pressure bearing member including a resilient portion mounted on said sash member and extending into one of said channels of said window frame and slidable upon and exerting pressure against a face of said frame, an adjuster carried by said sash member and including a screw member located on a face of said top horizontal rail of said sash member and having adjustment connection with said top horizontal rail and with said pressure bearing member and having an end portion uncovered by said sash member and said window frame engageable and manually operable to cause the turning of said screw member to effectuate adjustment of said pressure bearing member with relation to said face of said window frame to cause said pressure bearing member to exert various degrees of pressure against said window frame.

3. In a window construction of the type that includes a metallic frame having vertical sash member receiving channels in the jambs thereof, a

sash member including vertical side rails and horizontal upper and lower rails slidably mounted in said channels with spaces between the edges of said vertical rails and the adjacent faces of said jambs; the improvement which comprises a pressure bearing member including a resilient portion mounted on said sash member and extending into one of said channels of said window frame and slidable upon and exerting pressure against a face of said frame, and having adjustment connection with said sash member and said pressure bearing member for varying the position of said pressure bearing member to cause the latter to exert various degrees of pressure against said face of said window frame, said adjuster being located outside of said space between the edge of one of said vertical rails and the adjacent face of said jamb of said window frame so as to be accessible for adjustment when said sash member is mounted for sliding movements in said channels of said window frame, said pressure bearing member comprising a plate mounted on said sash member and having a free end portion extending into the adjacent channel of said window frame member and engaging said face of said window frame member and movable on a vertical axis spaced from said free end portion, and said adjuster comprising a screw having adjustment connection with said sash member and said plate.

4. In a window construction of the type having a frame member including vertical jambs having channels for receiving a slidable sash member, a sash member having horizontal upper and lower rails and vertical side rails which latter are slidably mounted in said channels; the improvement which includes a plate member mounted on the upper side of the upper horizontal rail, a

screw attaching said plate member to said rail, an arm carried by said plate member and having slidable contact with a face of the adjacent jamb member, and an adjusting screw operatively associated with said plate for adjusting said arm toward and in contact with said face of said jamb, said screw including a tool-receiving head located outside of the adjacent channel in which said sash member is mounted so as to be freely accessible for engagement by a tool when said sash is mounted in said frame.

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