Sept. 8, 1953 J. V. RYLANDER 2,651,082

WINDOW STRUCTURE

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Fig. 1.

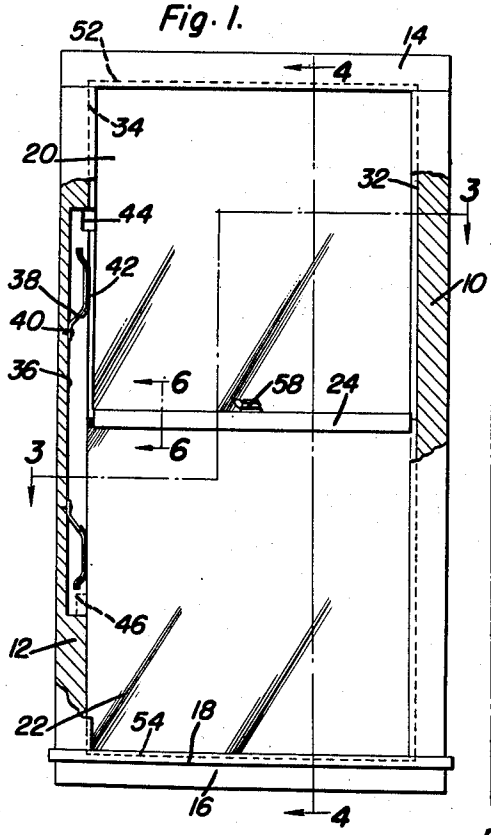


Fig. 2.

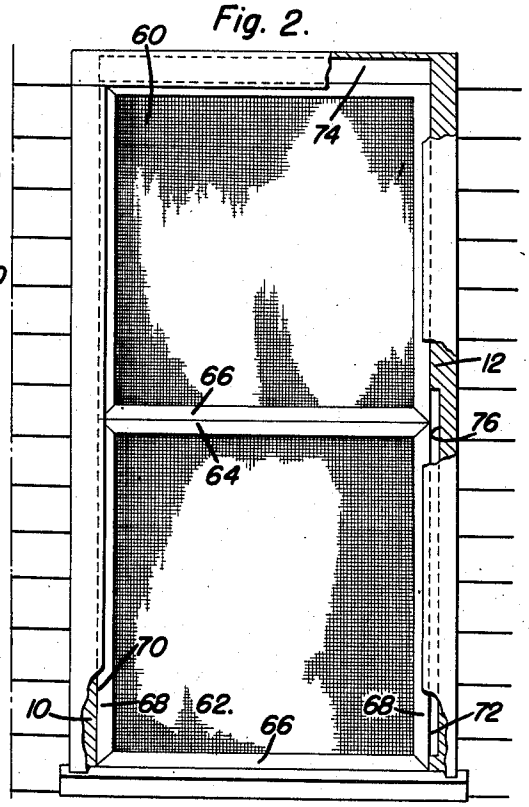
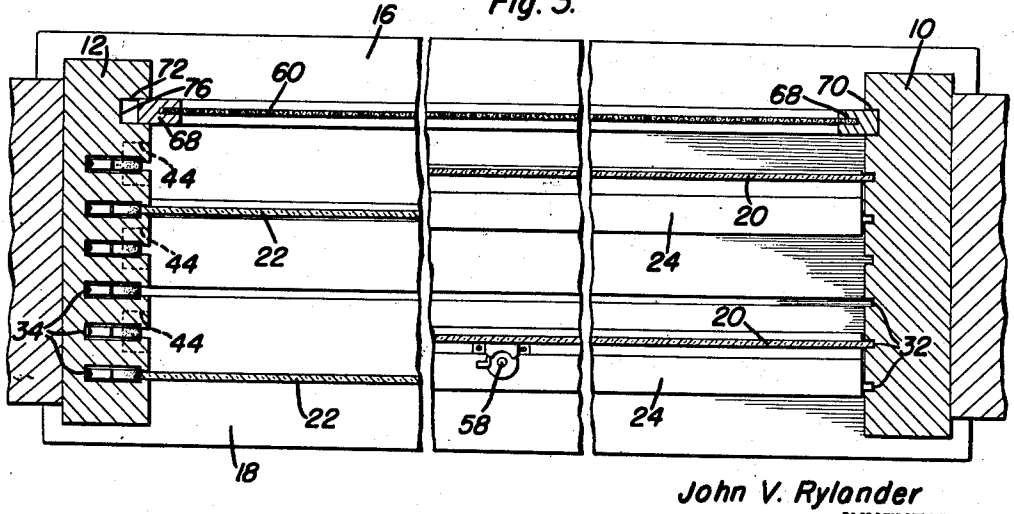


Fig. 3.



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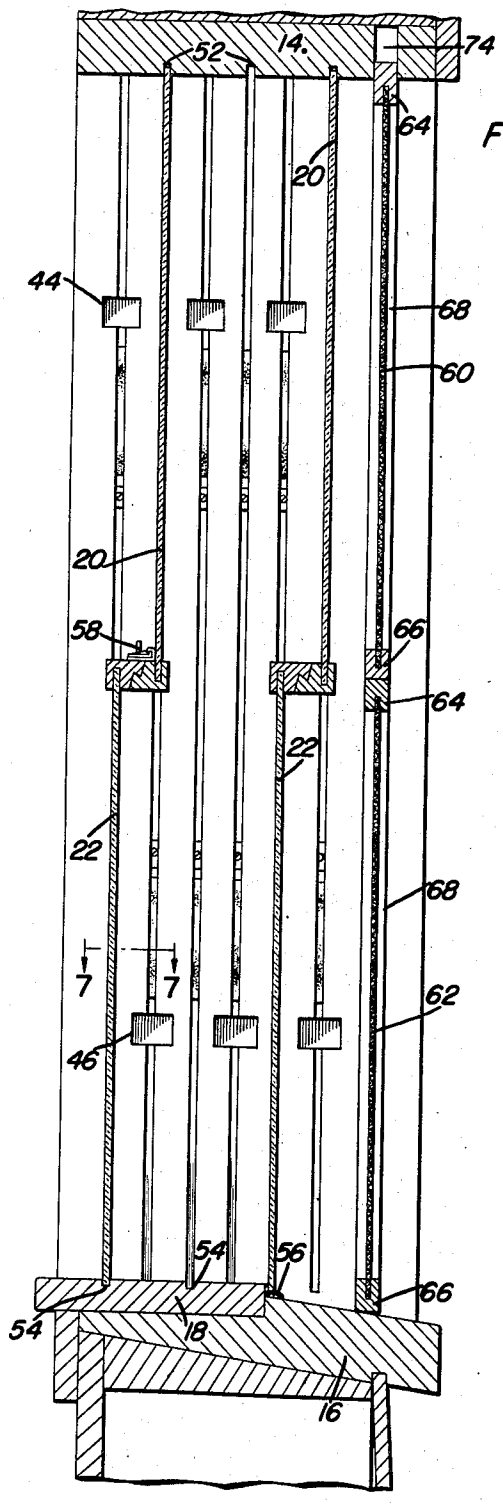


Fig. 4.

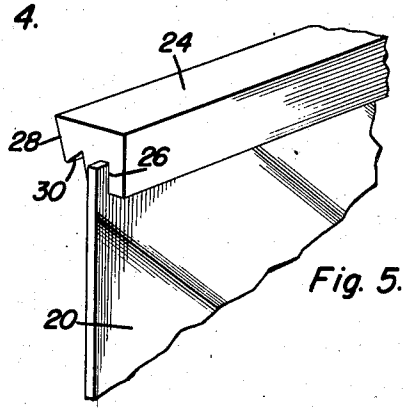


Fig. 5.

Fig. 6.

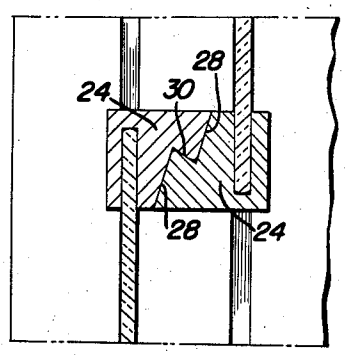
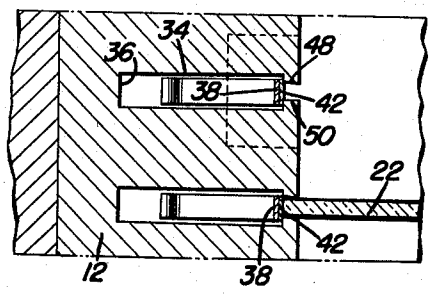


Fig. 7.



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Patented Sept. 8, 1953

2,651,082

UNITED STATES PATENT OFFICE

2,651,082

WINDOW STRUCTURE

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Application February 2, 1950, Serial No. 141,986

3 Claims. (Cl. 20—52.2)

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This invention comprises novel and useful improvements in a sashless window and more specifically pertains to a novel and advantageous construction of a sashless double-hung window, of either the vertical or horizontal type, and which shall combine the advantages of easy removability, weather-tight construction, and economical and endurable character.

The primary object of this invention is to provide an improved window construction employing sashless panes.

Yet another object of the invention is to provide an improved window construction in conformity with the foregoing object in which is embodied ease of removability for insertion of the panes in the window frame.

A still further important object of the invention is to provide an improved sashless window construction in conformity with the foregoing objects wherein a plurality of sets of double-hung sashless window panes may be removably inserted in a window frame as desired.

Yet another important object of the invention resides in the provision of a window construction embodying sashless window frames of the double-hung type together with provision for easy insertion of and removal of screen sash from the window frame.

These, together with various ancillary objects and features of the invention which will later become apparent as the following description proceeds, are attained by the present invention, a preferred embodiment of which has been illustrated, by way of example only, in the accompanying drawings, wherein:

Figure 1 is an elevational view of a window frame construction embodying the principle of this invention, the view being taken from the interior side of the window frame, parts being broken away;

Figure 2 is an elevational view of the embodiment illustrated in Figure 1 but taken from the exterior side of the window construction and showing a screen installed therein, parts being broken away;

Figure 3 is a horizontal sectional view taken substantially upon the plane indicated by the broken section line 3—3 of Figure 1 and illustrating in particular the guide channel constructions of the improved window assembly forming the subject of this invention;

Figure 4 is a vertical sectional view taken substantially upon the plane indicated by the section line 4—4 of Figure 1 and showing the window frame construction for receiving three sets of double-hung sashless window panes, two such sets being shown installed, together with upper and lower screen sash;

Figure 5 is a perspective fragmentary detail view showing a portion of a sashless pane together with a cross-bar constituting the only element attached thereto;

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Figure 6 is a fragmentary vertical transverse sectional view taken substantially upon the plane indicated by the section line 6—6 of Figure 1 and showing the locking engagement of the two cross-bars of the upper and lower sashless panes forming one set of double-hung panes in accordance with this invention; and

Figure 7 is a horizontal sectional detail view taken substantially upon the plane indicated by the section line 7—7 of Figure 4 and illustrating more particularly the laterally enlarged recessed portions of the guide channels in one of the window jambs.

In the accompanying drawings, there has been illustrated an exemplification of the principles of this invention as applied to double-hung windows of the vertical type. It will be readily appreciated that the invention is likewise applicable to double-hung windows of the horizontal type, the principles of operation and construction being identical.

Illustrated in the drawings, is a portion of a building construction consisting of a wall or the like, which is provided with a window opening. The window framing inserted in this window opening consists of a pair of vertical, parallel jambs 10 and 12, see Figure 3, to which are secured the customary header 14 and window sill 16 having a window stool 18, see Figure 4.

The principles of this invention are applicable to any desired construction of the window jambs, header, sill and stools, whether of wood, metal, or combinations of the same, and whether the window framing is employed in wood, brick, brick veneer, or any other type of building construction.

In accordance with this invention, the window frame construction is provided with one or more sets of double-hung sashless window panes, the number of these sets being varied as desired to fit the particular climatic or other conditions encountered, and as deemed to be necessary or desirable. Each of the sets of double-hung panes comprises a transparent upper glass pane 20, and a lower transparent glass pane 22, the upper glass panes being provided at their lower edges and the lower glass panes being provided at their upper edges with an identical construction of cross-bar 24. As shown in Figure 5, the cross-bar 24 has its ends terminating inwardly of the side edges of the glass panes, whereby, as will be apparent from Figure 1, and Figure 3, the ends of the cross-bar will slidably engage the inner surfaces of the two jambs 10 and 12, while the side edges of the panes 20 and 22 extend beyond the ends of the cross-bar and are slidably received in guide channels in the jambs as set forth hereinafter.

The cross bars 24, for the upper and lower panes, are of identical construction and each consists of a suitable form or body of any desired material and character which is provided with

a longitudinally extending groove 26 for receiving the adjacent edge of the pane 20 or 22, and the cross-bars of the upper and lower panes 20 and 22 of each set of sashless panes are provided with the customary inclined side edges 28 together with a V-shaped notch 30, which mutually cooperate and engage with each other as shown in Figure 6 and in Figure 4 in the conventional manner of double-hung windows.

The cross-bar 24 constitutes the only member attached to the sashless glass panes 20 and 22, so that the entire area of the pane is unobstructed for the passage of light. Further, this construction greatly simplifies the forming of the movable elements of a double-hung window, rendering easier the insertion of the sashless panes, or their removal, as well as the replacement of a broken pane and the like.

Referring now again to Figures 1, 3 and 4, it will be seen that each of the jambs 10 and 12 is provided with guide channels for the sashless panes of each of the double-hung windows. While it is apparent that these guide channels may conveniently consist of separate elements attached to the jambs, they are preferably formed by the provision of grooves in the adjacent surfaces of the jambs, as illustrated. Obviously, the guide channels in the two jambs are disposed in parallel relation, and extend vertically throughout substantially the entire vertical extent of the window opening of the window frame. In one of these jambs, such as the jamb 10, each of the guide channels 32 is of sufficient depth and width to snugly and slidably receive and retain the wide edges of the sashless pane which is to be inserted in and removable therefrom, and is vertically slidable therein. However, the other jamb, such as that at 12, has its guide channels 34 of relatively greater depth by the provision of laterally enlarged portions 36, see Figures 1 and 7, these enlarged portions being positioned intermediate the upper and lower ends of the channels 34, and being of sufficient vertical extent to conveniently receive the entire side edge of the corresponding sashless pane 20 or 22.

The depth of the enlarged portion 36 is sufficiently greater than the depth of the guide channels 32 in the jamb 10 as to permit the entire sashless panes, 20 or 22, to be moved laterally into the enlarged portions 36, whereby the other side edge of the sashless pane will be completely withdrawn from the guide channel 32, the pane may be tilted in the enlarged portion 36, and withdrawn therefrom as desired.

It will now be apparent that a sashless pane, either 20 or 22 may be only inserted or withdrawn from its guide channels by positioning the pane intermediate its ends of travel, to cause the same to register with the enlarged portion 36, so that the pane may be laterally displaced into said enlarged portion to permit the above mentioned swinging or tilting action whereby the pane may be removed from or inserted into the window frame.

In order to retain the sashless panes pressed against the guide channels 32 and the jamb 10, and thus prevent their unintentional removal from the window frame, and also to frictionally hold or retain the sashless panes in the desired vertically adjusted position, there are provided resilient means received in the enlarged portion. These resilient means may obviously be of any desired character, and may conveniently consist of flexible metallic strips or springs 38, suitably attached as by screws 40 to the bottom of the enlarged portions 36, and are provided with felts or pads 42 on their sides which engage the edges of the glass panes 20 or 22. It will thus be seen that the resilient means yieldingly urge the panes against the other jamb, but permit the panes to be forced into the enlarged portion and thus withdrawn from the guide channels of the other jamb.

As will be further apparent from Figures 4 and 7, each of the guide channels 34 of the jamb 12 is provided intermediate its ends with a laterally enlarged pocket 44 for the guide channel which receives the lower pane, and 46 for the channel which receives the upper pane 20. These pockets, while shown as of square shape, may obviously be of any desired shape, such as of circular configuration if desired. The purpose of these pockets is to permit the associated window pane to be properly positioned so that the cross-bar 24 of the same may be displaced into this pocket when the edge of the pane is being moved into the enlarged lateral recess 36.

The pockets 44 and 46 are thus disposed as shown in Figure 4 in proper position to receive the cross-bars 24 when the lower sash is partly raised and the upper sash is partly lowered. Thus, when the window panes are closed, as shown in Figure 4, the cross-bars are out of registry with the pockets 44 and 46, while the edges of the panes 20 and 22 are likewise out of registry with the enlarged portions 36.

Attention is now directed more particularly to Figure 7, wherein it will be seen that each of the enlarged portions 36 has its parallel lips or edges 48 and 50 disposed in non-parallel relation. Thus, the edge 50 can be disposed in parallel relation to the sides of the guide channel 34, while the edge 48 tapers backwardly and away from the edge 50 as shown. Moreover, the spacing between the edges 48 and 50 is slightly greater than the spacing between the corresponding edges of the guide channels 32 in the jamb 10. This construction is for the purpose of permitting the corresponding sashless pane 20 or 22 to be forced into the enlarged portion 36, against the action of the resilient means, and then be tilted or swung laterally so as to cause its opposite edge to clear the channels 32 in the jamb 10 and then withdrawn from the enlarged portion 36 and through the lips 48 and 50 thereof.

As shown in Figures 1 and 4, the header 14 is preferably provided with grooves or channels 52 for the reception of the upper edges of the upper sash 20 in their raised position. This establishes a weather-tight seal with these upper edges, as will be readily understood. Similarly, the stool 18 is provided with corresponding channels 54 for the reception of the lower edges of the lower sash for the same purpose.

Where the stool 18 does not extend across the sill 16 a sufficient distance to receive and support all of the lower sashless panes 22, as shown in Figure 4, there may be provided a weather strip 56 of any conventional type for receiving the lower edge of the outermost lower sash 22 and weather stripping the same.

As shown in Figures 1, 3 and 4, any suitable form of lock 58 may be provided for securing together the cross-bars 24 of the upper and lower sashless panes and thus lock the panes in their closed positions.

There is further disclosed in the drawings the manner in which a screen or storm window may be secured to the improved window construction forming this invention. For this purpose, there

are provided upper and lower screen sashes, each consisting of a piece of wire screening 60 for the upper screen sash, and 62 for the lower one. The screens 60 and 62 are mounted in any suitable frame or sash, the same having an upper horizontal head member 64 and a lower horizontal foot member 66, together with vertical side members 68. One of the jambs, such as that at 10, is provided with a screen guide channel 70, while the other jamb 12 is provided with a complementary guide channel 72 which, however, is of greater depth than the channel 70. The header 14 is likewise provided with a vertically extending pocket 74 adapted to slidably receive the upper frame member 64 of the upper sash.

Intermediate its ends, the guide channel 72 is provided with a laterally recessed portion 76 which is positioned adjacent but above the lower end of the guide channel 72.

As will now be apparent, the guide channels 70 and 72 receive each of the upper and lower screen sashes for sliding movement. When a sash has been aligned with the laterally enlarged portion 76, the same may be displaced laterally therein to cause its opposite vertical sash member 68 to be removed from the guide channel 70, whereby the sash may be tilted and withdrawn from the framing. However, when both of the sashes are installed as shown in Figures 2 and 4, neither sash will register with the enlarged portion 76, so that the sashes are retained in the guide channels and prevented from withdrawal therefrom. In this position, the upper member 64 of the upper sash is still received within the pocket 74 so that a weather-tight seal is established at this point.

In order to remove the sash, it is merely necessary to raise both sashes so that the upper sash is received within the upper portion of the pocket 74, and the lower sash will register with the enlargement 76, and may then be withdrawn therefrom, as above mentioned. The upper sash will then in turn be lowered to registry with the pocket 76 and also withdrawn. In installing the sash, the reverse procedure will be followed.

Obviously, in place of the screen sash there may be employed storm sash which will be manipulated in the same manner.

From the foregoing, the construction and operation of the invention together with its many advantages will be readily apparent, and further explanation is believed to be unnecessary. However, since numerous modifications and changes will readily occur to those skilled in the art after a consideration of the foregoing specification and accompanying drawings, it is not desired to limit the invention to the exact construction shown and described, but all suitable modifications and equivalents may be resorted to, falling within the scope of the appended claims.

Having thus disclosed and described the invention, what is claimed as new is as follows:

1. A window construction comprising a frame having parallel jambs, a header and a stool, guide channels in said jambs, lateral recesses in a selected jamb, the guide channels of said selected jamb opening into said lateral recesses, said selected jamb having enlarged pockets, each of said pockets comprising a transverse recess intersecting a guide channel and opening into a lateral recess, upper and lower sashless panes slidably received in said channels, a crossbar on the lower edge of said upper pane and on the upper edge of said lower pane, said lateral recesses providing lateral clearance permitting lateral insertion and removal of said panes and said pockets permitting lateral insertion and removal of said crossbars of said panes, resilient means in said lateral recesses urging said panes against the other jamb, and channels in said header and stool for receiving the upper and lower edges of said upper and lower panes respectively.

2. A window construction comprising a frame having parallel jambs, a header and a stool, guide channels in said jambs, lateral recesses in a selected jamb, the guide channels of said selected jamb opening into said lateral recesses, said selected jamb having enlarged pockets, each of said pockets comprising a transverse recess intersecting a guide channel and opening into a lateral recess, upper and lower sashless panes slidably received in said channels, a crossbar on the lower edge of said upper pane and on the upper edge of said lower pane, said lateral recesses providing lateral clearance permitting lateral insertion and removal of said panes and said pockets permitting lateral insertion and removal of said crossbars of said panes, resilient means in said lateral recesses urging said panes against the other jamb, and channels in said header and stool for receiving the upper and lower edges of said upper and lower panes respectively, said frame being thus provided with an unbroken inner peripheral edge on either side of said frame.

3. A window construction comprising a frame having parallel jambs, a header and a stool, guide channels in said jambs, lateral recesses in a selected jamb, the guide channels of said selected jamb opening into said lateral recesses, said selected jamb having enlarged pockets, each of said pockets comprising a transverse recess intersecting a guide channel and opening into a lateral recess, upper and lower sashless panes slidably received in said channels, a crossbar on the lower edge of said upper pane and on the upper edge of said lower pane, said lateral recesses providing lateral clearance permitting lateral insertion and removal of said panes and said pockets permitting lateral insertion and removal of said crossbars of said panes, resilient means in said lateral recesses urging said panes against the other jamb, and channels in said header and stool for receiving the upper and lower edges of said upper and lower panes respectively, said frame being thus provided with an unbroken inner peripheral edge on either side of said frame, said laterally recessed portions forming lips on either side of said selected jamb, said lips being non-parallel to each other to permit tilting of said panes therein while said lips remain in engagement with said panes.

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