Oct. 9, 1962 L. H. HEWIT 3,057,023

WINDOW UNIT

Filed March 28, 1960 2 Sheets-Sheet 1

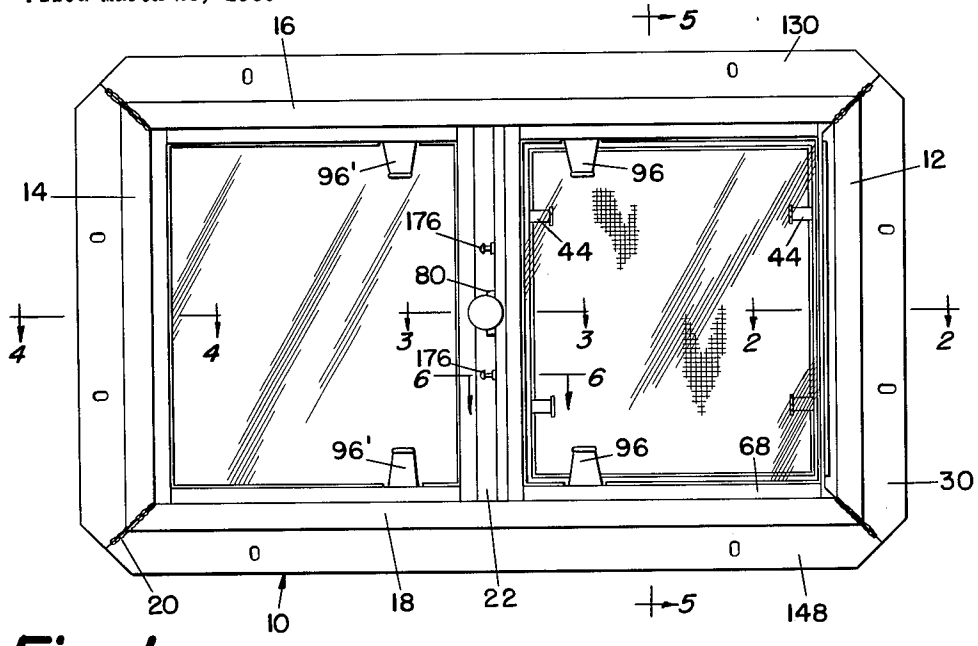


Fig. 1

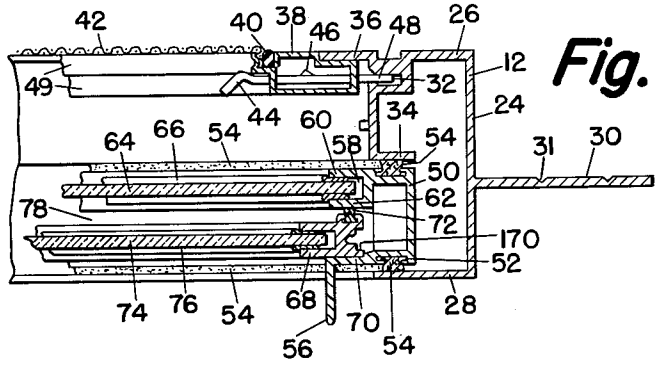


Fig. 2

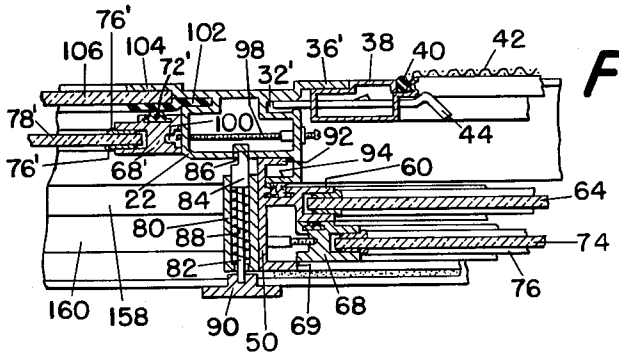


Fig. 3

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WINDOW UNIT

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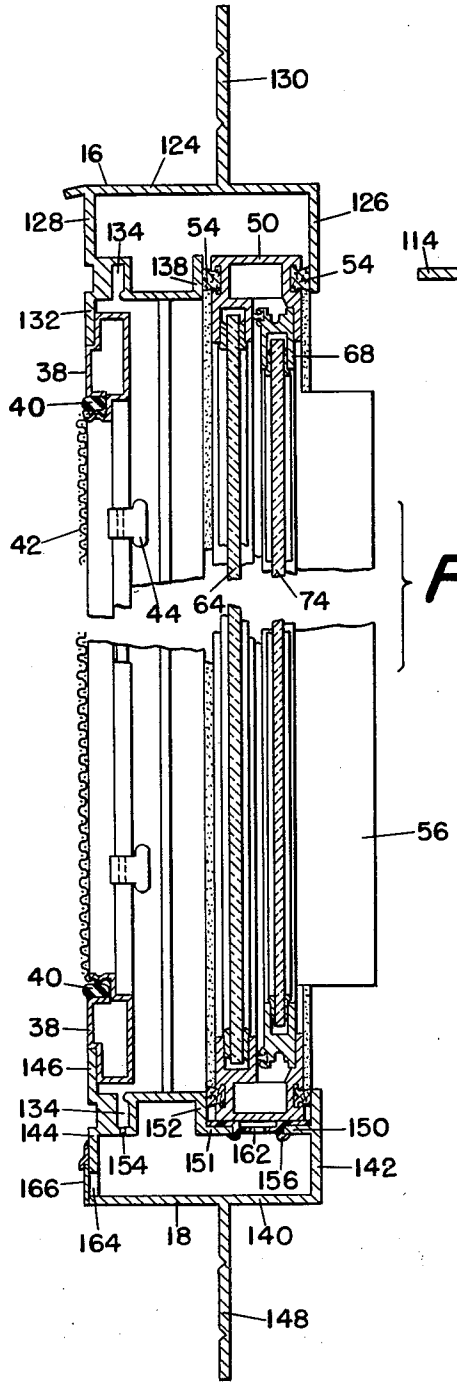


Fig. 5

Fig. 4

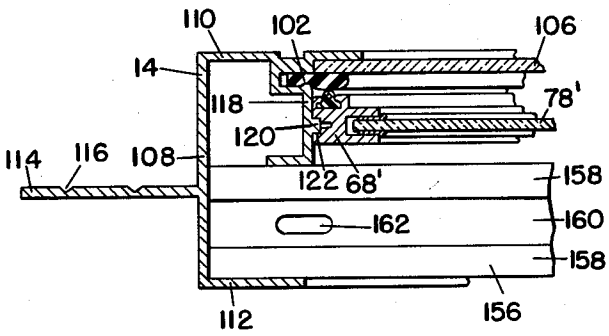
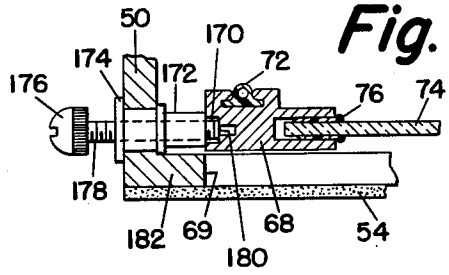


Fig. 6



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WINDOW UNIT

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This invention relates to housing structures, and more particularly to a storm window unit.

It is an object of this invention to provide a window unit which is convertible into a storm window unit.

It is another object of this invention to provide a combined storm window unit having a removable screen and removable window panels.

It is a further object of this invention to provide a window unit which is convertible into a storm window unit with a minimum of effort.

Other objects will appear hereinafter.

For the purpose of illustrating the invention there is shown in the drawings a form which is presently preferred; it being understood, however, that this invention is not limited to the precise arrangements and instrumentalities shown.

FIGURE 1 is a plan view of applicant's novel window unit.

FIGURE 2 is a cross-sectional view taken along the lines 2—2 of FIGURE 1.

FIGURE 3 is a cross-sectional view taken along the lines 3—3 of FIGURE 1.

FIGURE 4 is a cross-sectional view taken along the lines 4—4 of FIGURE 1.

FIGURE 5 is a cross-sectional view taken along the lines 5—5 in FIGURE 1.

FIGURE 6 is a partial cross-sectional view taken along the lines 6—6 of FIGURE 1, with the elements shown on an enlarged scale.

Referring to the drawing, where like numerals indicate like elements, there is shown a window unit in FIGURE 1 designated by the numeral 10.

Window unit 10 is of rectangular shape and comprises a pair of parallel side members 12 and 14, and a pair of parallel cross members 16 and 18. The side members 12 and 14, the top cross member 16 and the bottom cross member 18 are all made from extruded aluminum. Each of the members 12, 14, 16, and 18 are provided with a beveled edge on their extremities which cooperate with a bevel edge on an adjacent member to provide a miter joint. Thus, it will be seen that side member 14 and bottom cross member 18 are provided with a bevel edge which are joined together by a weld 20. The side member 12 and 14, the top cross member 16 and the bottom cross member 18 cooperate together to form the window frame. Intermediate the side members 12 and 14, there is provided a center support post 22 which is connected at its extremities to the top cross member 16 and the bottom cross member 18.

Referring to FIGURE 2, it will be seen that the side member 12 is an integral extruded member comprising an end wall 24, side walls 26 and 28, and a flange 30. The flange 30 is provided with longitudinal grooves 31 which assist in securing the flange 30 into a wall of a building. The side wall 26 includes integral flanges which form a groove 32 which extends the full length of the side member 12. Extending from the flanges on side wall 26, there is provided a wall parallel to end wall 24, and a radially extending flange 34. The purpose of radially extending flange 34 will be made clear hereinafter.

Extending from the side wall 26, there is provided an extension 36 in the same plane as side wall 26. Positioned within the extension 36, there is provided a screen frame 38 which is of rectangular configuration. The

screen frame 38 supports a screen 42. A weather stripping seal 40 is provided at the juncture of the screen frame 38 and the screen 42. The screen frame 38 is hollow and is provided with a pull tab 44. The pull tab 44 extends through the hollow screen frame 38 and is provided with an end 48 which is disposed within groove 32. The pull tab 44 is provided with a limit stop 46. The limit stop 46 is positioned on the pull tab 44 within the hollow screen frame 38. The pull tab 44 releasably secures the screen frame 38 to the side member 12. By pulling on the pull tab in a direction away from groove 32, the end 48 will be withdrawn from the groove 32. The limit stop 46 limits the extent of movement for the pull tab 44 in relation to the screen frame 38. The screen frame 38 is provided with a pair of offset shoulders 49.

A movable sash 50 is provided in the side member 12 between the flange 34 and the side wall 28. The sash 50 is provided on each side with a T-shaped groove 52. The groove 52 extends substantially along the entire height and width of the sash 50. A flexible weather stripping 54 is disposed in each groove 52. The weather stripping 54 is of T-shaped configuration. The weather stripping 54 occupies the T-shaped groove 52 on each side of the sash 50 and extends therebeyond for contact with the flange 34 or the side wall 28 on side member 12. The sash 50 is provided with a radially extending flange 56 which acts as a finger grip for moving the sash.

The sash 50 is made from extruded aluminum and is provided with a pair of spaced flanges 60 and 62 which define a channel 58 therebetween. A pane of glass 64 is fixedly secured within the channel 58 by weather stripping 66 which is positioned on each side of the pane of glass 64. The pane of glass 64 is permanently secured to the sash 50 and is movable therewith. A removable window frame of extruded aluminum 68 is disposed in the sash 50 between the wall or flange 62 and the wall 70. The window frame 68 is provided with a T-shaped groove adjacent one side thereof, and a seal 72 is provided therein. Seal 72 acts as a weather stripping between flange 62 and the window frame 68. It will be noted that the window frame 68 extends into the sash 50 with wall 70 overlapping a portion of the window frame 68. Window frame 68 is provided with a pane of glass 74. The pane of glass 74 is fixedly secured to the window frame 68 by weather stripping 76 which is disposed on each side of the pane of glass 74. As shown in FIGURE 2, the window frame 68 is generally U-shaped and is provided with the pane of glass between the arms thereof. The panes of glass 64 and 74 are spaced apart by a space 78 which is approximately one-fourth of an inch. Thus, the sash 50 may be considered a storm window. As used in this specification and the appended claims, a storm window will be interpreted as a unit comprising a pair of spaced window panes which are sealed around their perimeter so as to have an essentially dead space therebetween which acts as an insulation barrier. The seal means extending the periphery of the panes of glass 64 and 74 comprises seals 66, 72 and 76.

As shown more clearly in FIGURE 3, a latch housing 80 is fixedly secured along one side of the sash 50. The latch housing 80 is secured to the sash 50 by screws not shown. A rod 82 is disposed within a central bore of the latch housing 80. Rod 82 is provided with a latch 84 on one end thereof. Latch 84 cooperates with recess 86 in center support post 22 to releasably secure the sash 50 between the center support post 22 and the side member 12. A spring 88 encircles rod 82 and biases the latch 84 towards the center support post 22. The rod 82 is provided with a knob 90 which is pulled in a direction away from the center support post 22 so that the latch 84 will be withdrawn from the recess 86. When the latch 84 is

withdrawn from the recess 86, the sash 50 may be manually moved by applying a force on the flange 56.

As shown in FIGURE 3, the sash 50 is provided with a flange 92 which cooperates with the flange 94 on the center support post 22 to limit the movement of the sash 50 in the direction of the side member 12. The window frame 68 is provided with a plurality of flexible tabs 96 for a purpose described hereinafter.

The center support post 22 is hollow and is made from extruded aluminum. The center support post 22 is provided with a groove 32' and an extension 36' which cooperate with the screen frame and pull tab 44 in the same manner as set forth above. The center support post 22 is provided with a plurality of screws 98 extending across the center support post 22 in a radial direction. A window frame 68', identical with window frame 68, is disposed between the center support post 22 and the side member 14. The window frame 68' is provided with a weather stripping seal 72' along one side thereof and a pane of glass 78'. The pane of glass 78' is secured in the window frame 68' by weather stripping seals 76'. The window frame 68' is provided with a groove 100 extending along the entire height of the window frame 68'. The screws 98 extend through the center support post 22 and cooperate with the groove 100 to releasably secure the window frame 68' between the center support post 22 and the side member 14. An insert 102 is provided in the center support post 22 which cooperates with the extension 104 to support a pane of glass 106 therebetween. One face of the insert 102 cooperates with the seal 72' so as to provide an insulation space between the panes of glass 78' and 106. Thus, the panes of glass 78' and 106 provide a storm window. The panes of glass 78' and 106 are provided with a seal means around their extremities comprising seals 76' and 72'.

Referring to FIGURE 4, the side member 14 comprises an end wall 108 and side walls 110 and 112. A flange 114 extends radially outward from wall 108. Flange 114 is provided with grooves 116 therealong. Wall 110 is provided with a flange 118 having a key 120 which extends to full height of the wall 110. The window frame 68' is provided with a groove 122 extending the full height of the window frame 68'. The key 120 on the flange 118 extends into the groove 122 on the window frame 68'.

The extremities of the window frame 68' are shown in FIGURES 3 and 4. The window frame 68' is removable from its position between the side member 14 and the center support post 22. The window frame 68' is removed from its position between the side member 14 and the center support post 22 by unloosening the screws 98. When the extremities of the screws 98 are withdrawn from the groove 100, pull tabs 96' are pulled in a direction toward knob 90. The groove 122 is of sufficient size so as to allow the window frame 68' to pivot about the key 120 when the pull tabs are pulled in a direction towards the knob 90. Continuous pulling on the pull tabs 96' will remove the window frame 68' from its position between the side member 14 and the center support post 22. Thus, the storm window comprising window frame 68' and the pane of glass 78' has been converted to a window comprising pane of glass 106.

As shown more clearly in FIGURE 5, the top cross member 16 comprises an end wall 124 and side walls 126 and 128. A flange 130 extends radially upward from the end wall 124 and is provided with grooves therealong. The wall 128 is provided with an extension 132 which cooperates with the screen frame 38 in the same manner as extension 36. Wall 128 is provided with a groove 134 which receives the end of the pull tab 44 on the screen frame 38. Wall 128 is provided with a flange 138 which cooperates with the weather stripping 54 on the sash 50 in the same manner as flange 34. Wall 126 cooperates with weather stripping 54 on sash 50 in the same manner as wall 28.

The bottom cross member 18 comprises a bottom wall 140 and side walls 142 and 144. The side wall 144 is provided with an extension 146 which cooperates with the screen frame 38 in the same manner as extension 132. Bottom wall 140 is provided with a radially extending flange 148 having grooves therealong. Wall 142 is provided with a horizontal flange 150. Wall 144 is provided with a horizontal flange 151 which is opposed to flange 150. Wall 144 is provided with a flange 152 which cooperates with the weather stripping 54 on the sash 50 in the same manner as flange 138. Wall 144 is provided with a groove 134 for receiving the end of a pull tab on the screen frame 38. The groove 134 in the wall 144 is provided with a drain hole 154. Any water that accumulates in groove 134 passes through drain hole 154 into the bottom cross member 18.

A track 156 extends the entire length of the inner edge of the bottom cross member 18. The track 156 is preferably made from a non-corrosive, self-lubricating synthetic resin such as Teflon. The track 156 is flexible enough so as to be snapped on the opposed horizontal flanges 150 and 151. As seen in FIGURES 4 and 5, the track 156 has a center portion 160 and raised side portions 158. The sash 50 rides on the raised portions 158 of the track 156. The central portion 160 of the track 156 collects moisture condensation and drippings from the process of washing the windows. Holes 162 are provided along the length of track 156 in the center portion 160. Any water accumulated in the central portion 160, will pass through the holes 162 into the bottom cross member 18. At spaced points along the length of wall 144, ports 164 are provided. Pivoted flaps 166 are provided for controlling the ports 164. The pivoted flaps 166 are gravity biased to their closed position. As water accumulates in the bottom cross member 18, the water will overcome the gravity biased flap 166 and discharge to the atmosphere outside of a building in which the window unit is mounted.

The sash 50 is manually movable along the track 156 from a position as shown in FIGURE 1 wherein the sash is co-extensive with the screen 42 to a position where it is co-extensive with the pane of glass 106. To move the sash 50 along the track 156 from the position shown in FIGURE 1, the knob 90 is pulled towards the operator and pressure is then applied to the flange 56. When the sash 50 is in the position shown in FIGURE 1, the weather stripping seal 54 is in contact with flanges 34, 94, 138 and 152 on one side of the sash. Thus, the sash 50 is sealed to the side member 12, the top cross member 16, bottom cross member 18 and the center support post 22.

As recited above, the sash 50 is provided with a storm window. Means are provided enabling the window frame 68 to be removed from the sash 50. The window frame 68 has one side portion which is co-extensive with wall 70 as shown in FIGURE 2. The opposite side portion of window frame 68 is aligned with the leading edge 69 on the sash 50 as shown more clearly in FIGURE 3. As shown more clearly in FIGURE 6, the window frame 68 is provided with a groove 170 which extends along one edge of the window frame 68. An internally threaded bushing 172 having a flange 174 is securedly fixed to the sash 50. A screw having a knurled head 176 and a shank 178 is threaded through the bushing 172. The end 180 of the shank 178 extends into the groove 170 on the window frame 68. As shown in FIGURE 1, a plurality of screws having knurled heads 176 are provided in the sash 50.

The window frame 68 is removed from the sash 50 as follows:

The knurled screw heads 176 are rotated until the screw end 180 is withdrawn from the groove 170. Then the pull tabs 96 are grasped and pulled towards the operator pivoting the side portion of the window frame 68 shown in FIGURE 2. As the side portion of win-

dow frame **68** shown in FIGURE 2 is pivoted, the weather stripping seal **72** is deformed. After the side portion of the window frame **68** shown in FIGURE 6 has cleared the wall **182** of the sash **50**, pressure is applied to the tabs **96** so as to withdraw the side portion of the window frame **68** shown in FIGURE 2. Thus, as the window frame **68** is moved from the sash **50**, the window frame **68** is being moved at an acute angle with relation to the sash **50**.

The applicant's window unit may be used solely with the pane of glass **106**. If desired the screen **42** may be provided. If desired the sash **50** may be provided. Since the sash **50** is movable along the track **156**, it is possible to utilize the window unit with the sash **50** disposed on the left hand portion of the window frame overlying the pane of glass **106**. If desired, the window unit may be converted into a storm window by inserting the window frames **68** and **68'** into the sash **50** and the space between the center support post **22** and the side member **14**, respectively. Thus, applicant has provided a window unit which is versatile in its range of use. Except for the latch mechanism, the screws, the weather stripping and the panes of glass, all of the remaining elements can be made from extruded aluminum or plastic. The weather stripping seals are preferably made from synthetic materials which are non-corrosive. The latch mechanism and the screws are preferably made from a non-corrosive material. Thus, the entire window unit will be non-corrosive.

While the latch mechanism has been shown as being a spring biased latch which cooperates with a recess in the center post, it is contemplated that the latch mechanism may be substituted by a latch mechanism of the pivoted type. While the means for retaining the window frames **68** and **68'** are shown as being a groove on the window frames and cooperating screws, other retaining means such as releasable detents may be substituted therefor.

As used hereinafter, the term frame support will be interpreted to mean the side members **12** and **14**, the top cross member **16** and the bottom cross member **18**.

The present invention may be embodied in other specific forms without departing from the spirit or essential attributes thereof, and accordingly, reference should be made to the appended claims, rather than to the foregoing specification as indicating the scope of the invention.

I claim:

1. A window unit comprising a frame support, a center support post dividing said frame support into two rectangular sections, a first storm window fixed to said frame support and occupying one of said sections, means sealing said first storm window to said frame support, a track in said frame support extending the length of said sections, a second storm window selectively movable on said track across both of said sections, means sealing said second storm window to said frame support when said second storm window occupies said second section, a latch mechanism on one side of said second storm window, said latch mechanism selectively cooperating with said center support post to secure said second storm window in a position overlying said second section, said second storm window includes a sash, pull tabs on one of the panes of glass in said sash, said one pane of glass being mounted in a window frame having a groove extending along one side of the frame for the entire length of said one side, and adjustable means extending through said sash and cooperating with said groove to releasably secure said window frame to said sash.

2. A window unit comprising a rectangular frame support, a track made from a self-lubricating material, means adjacent a central portion of said track removably securing said track to said frame support in snap-fitted securement, said track having horizontally disposed portions extending beyond the point where said track is secured to said frame, a sash slidably mounted on said track on said portions, said sash being movable along the length of said track, said sash including a storm window, and means for releasably securing one pane of glass of said storm window to said sash, said last mentioned means including a space in said sash enabling said one pane of glass to move in the plane of said sash and pivot relative thereto.

3. The structure as set forth in claim 2 wherein said last mentioned means includes a groove on a window frame of said one pane of glass, and a threaded member extending through said sash and cooperating with said groove to releasably secure said pane of glass to said sash and selectively prevent entry of said pane of glass into said space.

4. A window unit comprising a frame support, a center support post dividing said frame support into first and second rectangular sections, a first storm window fixed to said frame support and occupying said first section, means sealing said first storm window to said frame support, a track in said frame support extending the length of said sections, a second storm window selectively movable on said track across said sections, means sealing said second storm window to said frame support when said second storm window occupies said second section, a spring biased latch on said second storm window mounted for reciprocation in a direction substantially perpendicular to the plane of said second storm window, means on said center post for cooperation with said latch when said second storm window occupies said second section, and means for removing a pane of glass from each storm window by tilting the same with respect to a sash within which said pane of glass is removably mounted.

5. A window unit in accordance with claim 4 wherein said last mentioned means includes a threaded bolt extending through said sash for cooperative engagement with a window frame of said pane of glass, said bolt releasably securing said window frame to said sash.

6. A window unit comprising a frame support, a center support post dividing said frame support into two rectangular sections, a first storm window fixed to said frame support and occupying one of said sections, a second storm window on said frame support occupying the other of said sections, means sealing each storm window to said frame support, each of said storm windows including a sash having substantially parallel spaced panes of glass, each pane of glass being mounted in a frame, a member extending between and releasably securing a side of each sash to one side of a frame for one pane of glass in each storm window, one frame in each storm window being structurally interrelated with its respective sash so that a side of each frame opposite to said one side thereon is pivotable with respect to its sash when said member is released, and finger engaging pull tabs on said one frame of each sash for exerting the force necessary to pivot and remove said one pane of glass from each sash.

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