Dec. 14, 1965 W. PUNT 3,222,734

STORM WINDOW AND SCREEN INSTALLATION FOR EXISTING STANDARD WINDOW FRAME STRUCTURE

Filed July 10, 1963 3 Sheets-Sheet 1

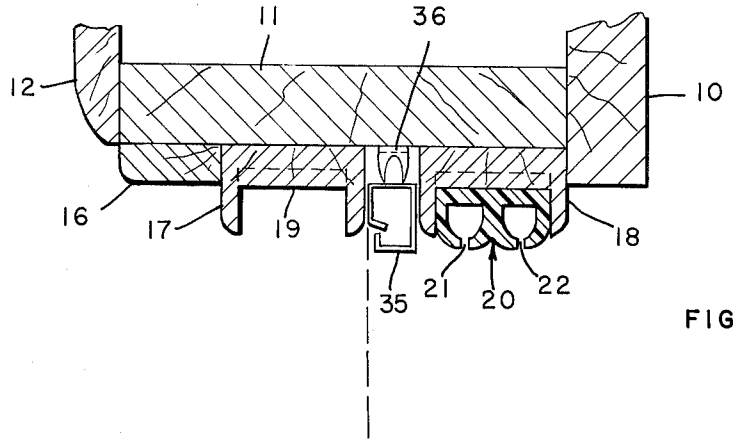


FIG. 1

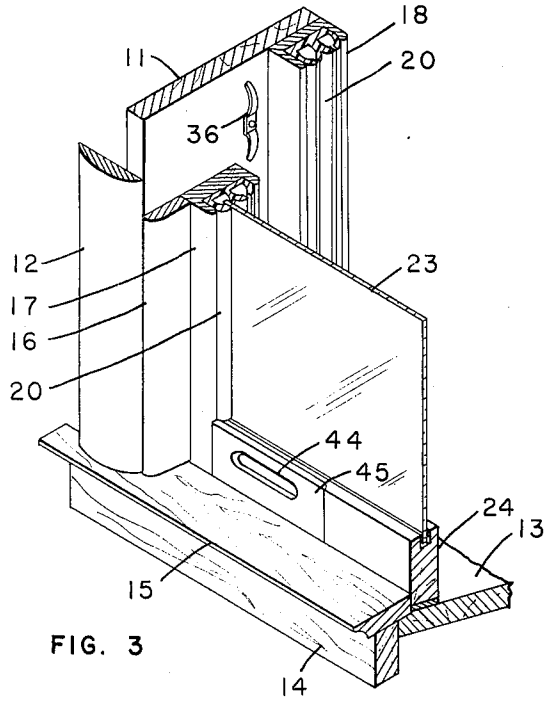
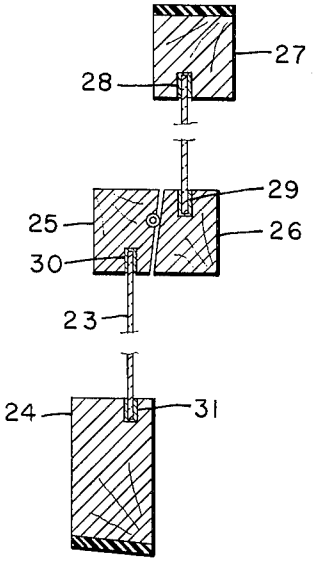


FIG. 3

FIG. 2



WILLIAM PUNT

INVENTOR.

BY Glenn B. Gilmore

atty.

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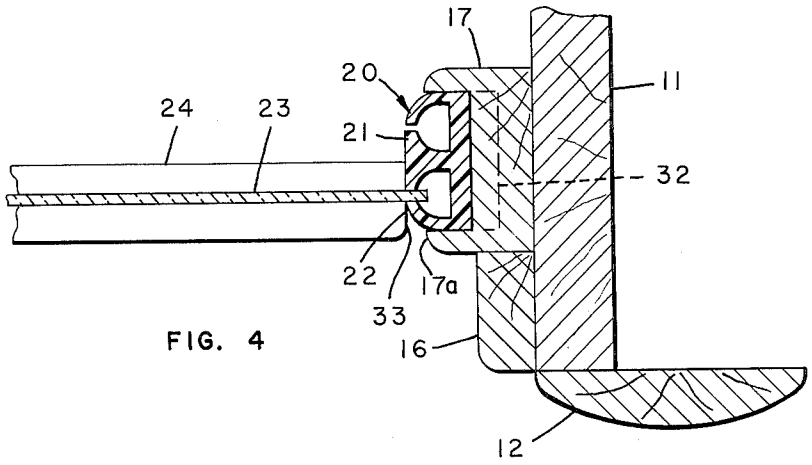


FIG. 4

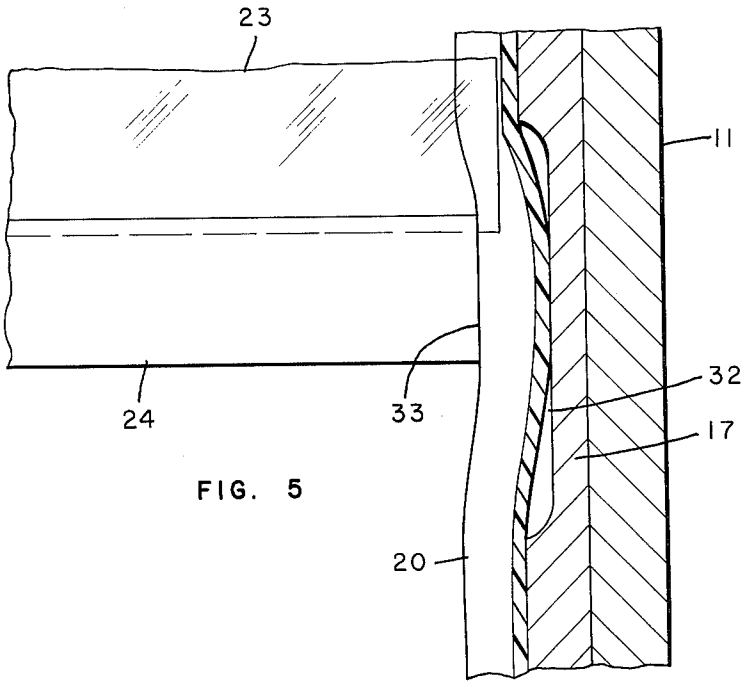


FIG. 5

WILLIAM PUNT
INVENTOR.

BY

Glenn B. Evans
atty.

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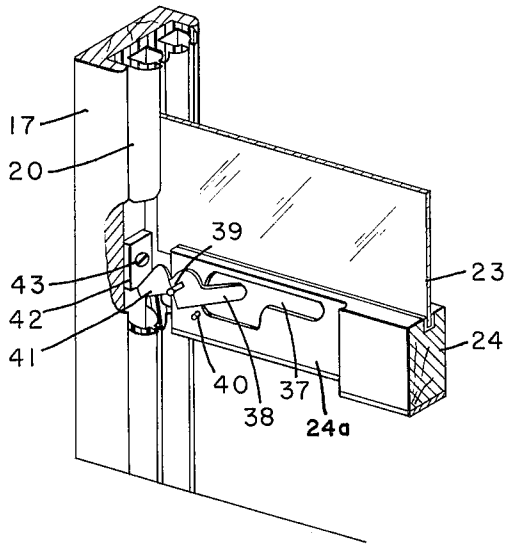


FIG. 6

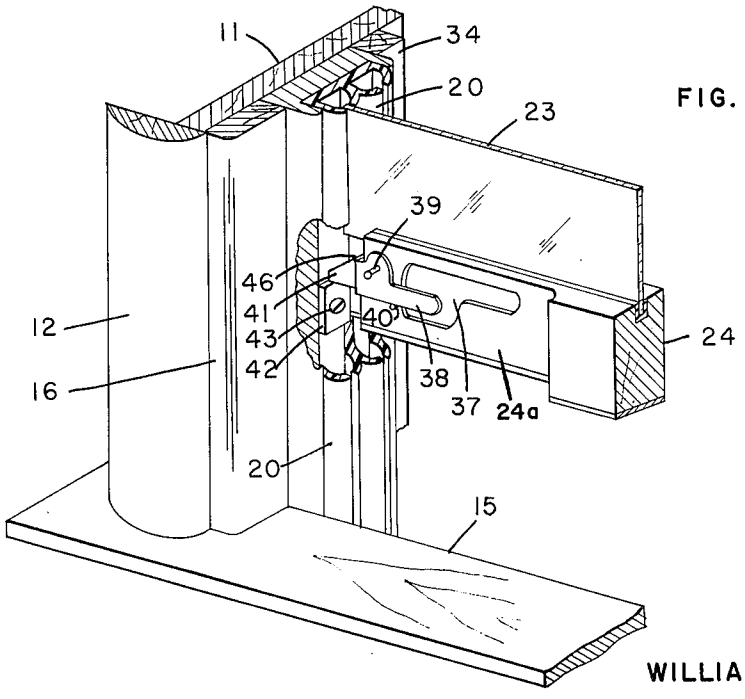


FIG. 7

WILLIAM PUNT
INVENTOR.

BY Glenn B. Morse
atty.

United States Patent Office 3,222,734
Patented Dec. 14, 1965

3,222,734

STORM WINDOW AND SCREEN INSTALLATION FOR EXISTING STANDARD WINDOW FRAME STRUCTURE

William Punt, 900 Benjamin SE., Grand Rapids, Mich.

Filed July 10, 1963, Ser. No. 294,050
3 Claims. (Cl. 20—55)

This invention provides an assembly that can be installed in a standard window frame as a storm window arrangement, with movable inner and outer components that can be adjusted for ventilation and removed for storage or replacement. The installation and adjustment of the window units is performed from the interior of the building, and no equipment is required on the outside. There is no tendency whatever to distort the appearance of the building with the obvious added-on devices normally associated with adjustable storm windows.

In summary, the preferred assembly includes two pairs of window units that slide in overlapping relationship, with the units being thin enough so that the complete pair and its guideway fit within the standard sash receptacle of a wooden window frame. With a pair installed in each of the receptacle channels, the result is a double window having both components formed by vertically-adjustable half-windows. The two pairs may be separated by a screen unit, if desired.

The features of the invention will be analyzed in detail through a discussion of the particular embodiments illustrated in the accompanying drawings. In the drawings:

FIGURE 1 presents a sectional view through a standard window frame structure, with the storm window assembly provided by this invention installed.

FIGURE 2 presents a fragmentary sectional elevation on a vertical plane perpendicular to the window panes, showing the overlapped relationship of the window units and the top and bottom rails associated therewith.

FIGURE 3 is a fragmentary perspective view in section showing the structure at the lower part of the installation shown in FIGURE 1, with the screen removed.

FIGURE 4 shows a fragmentary section of a modified form of the invention on a horizontal plane at the junction of the window units with the guideway structure.

FIGURE 5 is a fragmentary sectional view on a vertical plane showing the deflection of the guideway strips for the insertion and removal of the window units.

FIGURE 6 shows a fragmentary perspective view in section showing a latch arrangement for supporting the window in an elevated position, with the latch in the inactive position.

FIGURE 7 is similar to FIGURE 6, but shows the latch in supporting position.

The drawings illustrate the installation of the invention in a standard window-frame structure which includes the exterior board **10** normally on the outside of the building, the vertical board **11** corresponding in width to the thickness of the wall in which the window assembly is mounted, and the interior facing molding **12**. This structure is normally present on the opposite vertical sides of the window frame, with the bottom of the window opening being defined by the slanted drain board **13** and the sill pieces **14** and **15**. The top of the window frame (not shown) is defined by a horizontal member corresponding in cross-sectional dimensions to the board **11**, and also by members corresponding to the exterior board **10** and the interior finishing molding **12**. A molding strip **16** is also normally provided on the opposite sides and across the top of the window opening, with the space between this strip and the exterior board **10** providing the receptacle for the standard overlapped sliding window sash which moves vertically between open and shut positions. The present invention is installed in the space conventionally occupied by the wooden sash units.

The channel-shaped rails **17** and **18** are preferably of wood, and conform in thickness approximately to the thickness of the standard sash. Each of these is provided with a central groove as indicated at **19**, and this groove receives the flexible retainer strips **20**. These strips are preferably of rubber or a similar resilient material, and provide parallel guideways for receiving the window panes. These guideways are indicated at **21** and **22** in FIGURE 1, and the preferred arrangement provides for a relatively narrow opening to the guideways for establishing contact with the glass window panes along a predetermined line, which facilitates the vertical sliding movement of the window panes between open and closed positions. This arrangement also provides for a greater degree of resilience and accommodative ability of the retainer strips with the glass, and renders the structure much less subject to accumulations of manufacturing and installation tolerance. The edges of the glass panes **23** are received directly in these guideways along the vertical edges.

The top and bottom edges of the glass panes are engaged in rails as best shown in FIGURE 2. With respect to the lower unit, the pane **23** is bounded along its bottom edge by the lower rail **24**, and along its top edge by the upper rail **25**. Similarly, the upper of the inside units is bounded along its bottom edge by the lower rail **26** and along the top edge by the upper rail **27**. Each of these horizontal edges is preferably engaged in the respective grooves in the rails in a forced fit, preferably with a U-shaped marginal gasket as shown at **28–31**.

The structure providing for the installation and removal of the window units is best shown in FIGURE 5. The channel rails **17** are preferably cut away as shown at **32** at vertically-spaced points on the same side of the window, permitting the resilient retainer strips **20** to be deflected outwardly to allow the window panes and the associated top and bottom rails to be moved laterally enough to disengage the opposite edge of the window pane from the guideway of the retainer strip **20**. The spacing between these cut-outs corresponds to the vertical distance between the top and bottom rails **25–24** and **27–26**. In the modification shown in FIGURES 4 and 5, sufficient clearance is normally present between the ends **33** of the top and the bottom rails and the outer edge **17*a*** of the channel rail **17** to accommodate this lateral movement. Where the ends of the top and bottom rails approach closely to the channel rail, it may become necessary to cut away some of the outer edge **17*a*** opposite the cut-outs **32**. The resilience of the sides of the guideways is also useful in painting operations. A piece of cardboard can be slipped in between the sides of the grooves in the channel rails and the edges of the retainer strips to form a shield which has the effect of limiting the paint to the exposed edges of the channel rails.

In the conventional window sash construction, the inner and outer portions of the receptacle for slidably receiving the sash are separated by a strip such as is indicated in FIGURE 7 at **34**. When a screen installation is desired, this strip can be removed to provide space for a frame **35** of a screen extending substantially over the entire window opening. It is preferable that a leaf spring device as shown at **36** be applied to the members **11**, which will permit the screen frame to be shifted laterally sufficiently to permit engagement and disengagement with the window frame, and yet normally be resiliently placed in a central position. The entire assembly including the inner and outer pairs of window units and the interposed screen frame can be assembled in sequence from the inside of the building.

FIGURES 6 and 7 indicate a latch device for maintaining an elevated position of the window units. The lower rail **24** is cut away as shown at **24***a*, and a clearance recess is preferably machined out as shown at **37**. A latch **38** is pivotally connected to the rail **24** on the pin **39**, and a stop pin **40** limits the clockwise rotation of the latch **38** as shown in FIGURES 6 and 7. The extension **41** on the latch **38** is capable of engaging the stop **42**, which is secured in position within the guideway of the retainer strip **20** by the screw **43**. The resilience of the retainer strip will easily accommodate the insertion and rotation of a screw driver in this area. Upward movement of the window will result in counterclockwise rotation of the latch, as viewed in FIGURES 6 and 7; and a downward movement of the window can be blocked by manual movement of the latch through the access cut-out **44** in the cover **45**, which is applied to the cut-out area **36** after the latch **38** has been assembled in position. Suitable clearances are machined on the inner face of the cover **45** to accommodate the latch assembly. If desired, the offset **46** of the latch **38** at the extension **41** (to place the extension in position to enter in the guideway of the retainer strip **20**) can also be engaged with the end of the rail **24** to provide the stop function of the pin **40**.

The particular embodiments of the present invention which have been illustrated and discussed herein are for illustrative purposes only and are not to be considered as a limitation upon the scope of the appended claims. In these claims, it is my intent to claim the entire invention disclosed herein, except as I am limited by the prior art.

I claim:

1. In combination with a wall structure including a frame having vertical and horizontal members together defining a window opening, a window assembly, comprising:

a pair of spaced channel rails normally secured to opposite members of said frame, respectively, said rails each having a central groove on the side thereof facing the other of said channel rails,

at least one of said rails having a pair of spaced discontinuities in said groove providing increased space between the said rails at said discontinuities;

a retainer strip of flexible rubber-like material received in each of said grooves, said strips each providing a pair of guideways disposed in spaced parallel planes, respectively;

a pair of window panes having the opposite edges thereof slidably received in opposite guideways of said retainer strips, respectively; and

top and bottom rails for each of said window panes, each of said rails having grooves receiving the respective edges of said window panes,

the opposite ends of said top and bottom rails terminating adjacent said retainer strips,

said retainer strips being deflectable into the said groove discontinuities by said top and bottom rails to release said window panes from said guideways.

2. In combination with a wall structure including a frame having vertical and horizontal members together defining a window opening, a window assembly, comprising:

a pair of spaced channel rails normally secured to opposite members of said frame, respectively, said rails each having a central groove on the side thereof facing the other of said channel rails,

at least one of said rails having a pair of spaced discontinuities in said groove providing increased space between the said rails at said discontinuities;

a retainer strip of flexible rubber-like material received in each of said grooves, said strips each providing a pair of guideways disposed in spaced parallel planes, respectively;

a pair of window panes having the opposite edges thereof slidably received in opposite guideways of said retainer strips, respectively; and

top and bottom rails for each of said window panes, each of said rails having grooves receiving the respective edges of said window panes,

the opposite ends of said top and bottom rails terminating adjacent said retainer strips

and normally partially embracing the same, said retainer strips being deflectable into the said groove discontinuities by said top and bottom rails to release said window panes from said guideways.

3. In combination with a wall structure including a frame having vertical and horizontal members together defining a window opening, a window assembly, comprising:

a pair of spaced channel rails normally secured to opposite members of said frame, respectively, said rails each having a central groove on the side thereof facing the other of said channel rails,

at least one of said rails having a pair of spaced discontinuities in said groove providing increased space between the said rails at said discontinuities;

a retainer strip of flexible rubber-like material received in each of said grooves, said strips each providing a pair of guideways disposed in spaced parallel planes, respectively;

a pair of window panes having the opposite edges thereof slidably received in opposite guideways of said retainer strips, respectively;

top and bottom rails for each of said window panes, each of said rails having grooves receiving the respective edges of said window panes,

the opposite ends of said top and bottom rails terminating adjacent said retainer strips

and normally partially embracing the same, said retainer strips being deflectable into the said groove discontinuities by said top and bottom rails to release the embracing relationship of said window panes from said guideways,

stop means secured at the inside of at least one of said guideways; and

latch means movably mounted in an end of one of said bottom rails and extending into said guideway for selective engagement with said stop means to support the window pane associated with said bottom rail in an elevated position.

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HARRISON R. MOSELEY, *Primary Examiner.*