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STORM WINDOW AND SCREEN CONVERSION STRUCTURE

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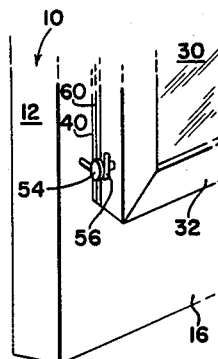
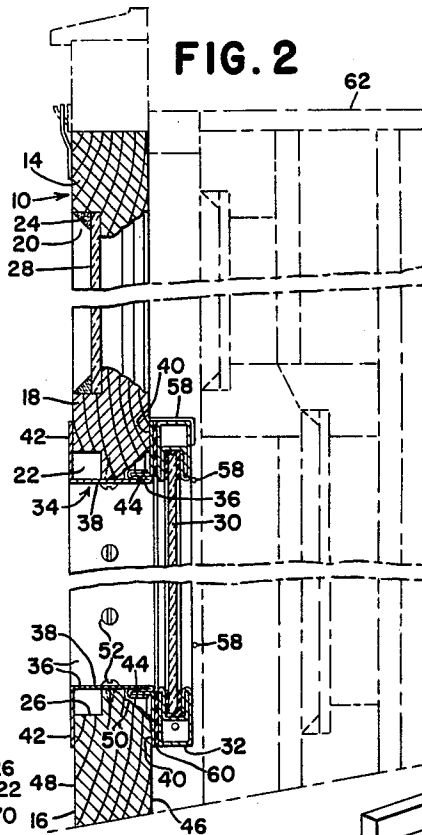
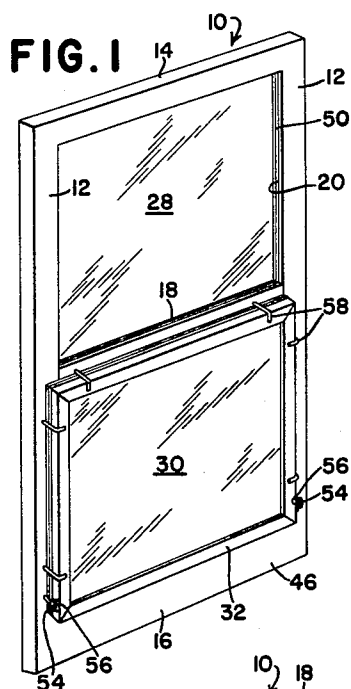


FIG. 5

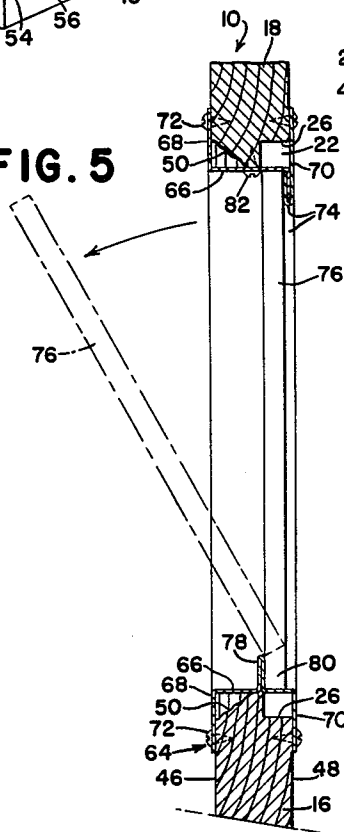


FIG. 4

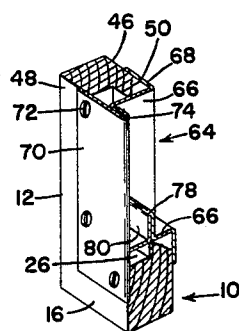
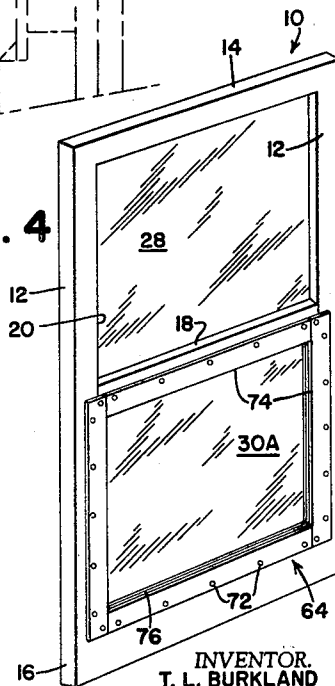


FIG. 6

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STORM WINDOW AND SCREEN CONVERSION STRUCTURE

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11 Claims. (Cl. 20—55)

This invention relates to the art of storm windows as applied to buildings and the like, and more especially to a novel conversion structure employing a simple and inexpensive modification of a conventional wooden-frame storm window.

The problems involved in the installation, removal and storage of the conventional wooden-frame storm sash and screens are so well known as to require little discussion here. Also known are the many types of metal-frame so-called self-storing storm windows and screens, which, experience has shown, are too costly and seldom afford the advantages claimed for them. As a departure from that approach, the present invention offers a novel solution which features removal of the pane from a single-pane storm window or just one pane from a conventional multi-paned wooden storm window and the modification of the pane opening by the provision of a simple and inexpensive light-weight secondary frame which interchangeably receives a glass panel insert or a screen panel insert. It is a further object of the invention to so modify the storm window that the pane removed in the first instance may be framed and used as the glass insert. A still further object resides in the provision of the secondary frame in such manner that the original window rabbet remains intact and is concealed by the secondary frame. The invention further features a construction and combination of parts and materials such that the average individual can easily and economically convert his own storm windows to the combination type.

The foregoing and other important objects and desirable features inherent in and encompassed by the invention will become apparent as two preferred embodiments of the invention are disclosed, by way of examples, in the ensuing specification and accompanying sheet of drawings, the figures of which are described below.

Figure 1 is a perspective as seen from the interior or house side of one form of converted window.

Figure 2 is a vertical section of the Figure 1 structure, on an enlarged scale, partly in phantom and with portions omitted to permit the larger scale.

Figure 3 is an enlarged fragmentary perspective of a corner portion of the Figure 1 structure.

Figure 4 is a perspective of a modified form of structure as seen from the exterior of the building.

Figure 5 is an enlarged vertical section of the Figure 4 structure.

Figure 6 is a fragmentary perspective, partly in section, of a corner portion of the Figure 4 structure.

The numeral 10 in all figures designates as a whole a typical wooden-framed double-paned storm window having side frame members 12, top and bottom rails or members 14 and 16 and an intermediate rail or member 18. These frame members define the conventional upper and lower pane openings 20 and 22, rabbeted at 24 and 26 respectively to carry upper and lower panes, the upper one of which appears at 28 and the lower one of which has been removed according to the invention to leave

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the lower rectangular opening 22 as bordered by the rabbeted frame members 12, 16 and 18. When the lower pane is removed, it is preferably saved and used as the pane or glass panel 30 in a panel frame 32 (Figures 1, 2 and 3) which may be inexpensively constructed of commercially available sections such as aluminum extensions; although, this is by no means a limitation on the invention. It will be seen, especially from Figure 1, that the pane 30 has the same dimensions as the rabbet 26 from which it has been removed. This feature provides a substantial saving in cost when measured over a large number of converted windows.

In Figures 1, 2, and 3, the panel frame 32 is mounted in place, generally congruent with the lower opening 22, via a secondary frame 34, here made up of four elongated channel members 36 respectively fitting the four sides of the opening 22, and each channel has a bight or web portion 38 and inner and outer leg portions 40 and 42 respectively. Each channel may, if desired, be made of two parts of light sheet metal or other suitable material, joined as at 44 to provide a measure of adjustability if necessary to vary the spacing between the legs 40 and 42 to accommodate window frame parts of different thicknesses. After proper adjustment, the joint may be rigidified, as by compression and/or cementing. Normally, however, this dimension will be found to be standard. As seen, the legs 40 and 42 respectively overlie the inner and outer faces 46 and 48 of the associated window frame member, and the bight portion of each channel overlies and conceals the associated rabbet 26 as well as the associated interior molding configuration 50. Hence, the frame members of the window need not be cut away, filled in with strips or in any other way modified, thus lending to the extreme simplicity of the structure. Suitable fasteners, such as wood screws 52, may be used to secure the secondary frame 34 in place. Additional or alternate fasteners may be used through the legs 40 and/or 42 if desired.

As best shown in Figures 1 and 3, each lower corner of the panel frame 32 has a laterally outwardly projecting pivot or pintle 54, and these are horizontally coaxial to be received by hooks 56 screwed into the window frame, thus affording a fulcrum parallel to the lower frame member 16 and about which the panel frame may be swung toward the window frame when installed and away from the window frame when removed. When in place, the panel frame is secured by turn members 58, which may be hooks screwed into the wooden window frame.

A peripheral gasket 60, of rubber or other suitable material, is interposed between the front or outer marginal face of the panel frame 32 and the back or interior marginal face of the secondary frame 34 as provided by the channel inner legs 40. This gasket is preferably cemented to the secondary frame 34 so that it is in place for use with a similar panel frame bearing a screen. In this respect the term "panel frame" is used generically to include glass, screen or other material, but in the sense that glass is referred to specifically, emphasis is placed on the fact that the pane removed from the lower opening 22 of the window can be used in the panel frame 32. Also, frame sections suitable for the construction of screens by home owners are commercially available.

It will be clear from the above that the storm window 10, once converted, can remain in place, as in association with conventional double-hung sash shown in phantom at 62, and all that need be done is the seasonal interchange of glass and screen panels such as 32, which are obviously easier to handle than the entire storm window, besides which the panel changes can be effected interiorly.

In the modified construction shown in Figures 4, 5 and 6, the numerals previously applied to the basic compo-

nents of the storm window 10 are again employed and therefore the window itself need not be re-described. In this case, the secondary frame, designated as a whole by the numeral 64, is of a somewhat different type, but, like the frame 32, is made up of a plurality of channel members, each of which has a bight 66 and inner and outer legs 68 and 70 related to the rabbet 26 etc. exactly like the channels of the frame 32. Retention of the secondary frame 64 may be achieved as by wood screws 72.

In this frame, the top and side members may be identical, each having a bead 74 against which the panel frame 76 abuts as it is swung forwardly about a lower horizontal fulcrum established by the combination of the lower portions of the side member beads 74 and a bead 78 on the lower frame member which is set back the thickness of the panel frame. The zones of meeting of the ends of the bead 78 and the lower ends of the side beads 74 provide horizontally aligned pockets 80 (Figure 6) which may be said to constitute opposite ends of a transverse groove into which and from which the lower edge of the panel frame is downwardly removable, respectively.

Since the secondary frame 64 mounts the panel frame 76 within an area smaller than that defined by the original window opening 22, the pane removed from the lower opening must be cut down, shown here at 30A, but nevertheless the savings in cost is still effected. In other respects, the features of the conversion structure parallel those of the structure of Figures 1-3. Suitable upper releasable or removable retainers, such as screws, are provided at 82 for holding the panel frame 76 in place.

In the description of the Figures 1-3 structure, mounting and dismounting of the storm window (or screen) panel has been covered in terms of swinging the panel about the fulcrum established at 54-56. An alternate method of mounting is required in those installations in which the lower rail of the raised lower sash would prevent complete swinging or pivoting. In such case, the mounting is achieved by inserting the panel upwardly between the storm window proper and the upper sash and then swinging the lower portion of the panel toward the storm window frame, then allowing it to descend until the pins 54 are received by the hooks 56.

A further feature of the invention enables partial opening of the panel for ventilation. In that case, the hooks 58 in the top horizontal row are removed so that the panel can be slid upwardly, say, about four inches or so. In doing so, the user shifts the panel slightly toward himself to clear the hooks 58 next above the hooks 56 and then moves the panel flat against the storm window frame so that the pins 54 rest on these next higher hooks and said hooks are turned to place their legs upright and thus duplicate the function of the hooks 56 except that the panel is slightly raised. In achieving this procedure, there will be found to be enough "give" in the gasket 60 to permit the operation outlined.

The foregoing illustrates preferred embodiments of the invention as constructions achieving the objects set forth, the presently significant ones of which have been outlined in detail. Other objects and features as well as variations in the structures disclosed will readily occur to those versed in the art, all without departure from the spirit and scope of the invention.

What is claimed is:

1. Conversion structure for use in a conventional storm window of the wooden-frame type having opposite upright side bars, upper and lower cross bars and an intermediate cross bar having coplanar inner faces and coplanar outer faces and rabbeted to provide top and bottom framed pane-carrying sections from the bottom one of which the pane has been removed to leave a bottom rectangular opening framed by the four members made up of the intact intermediate bar, the intact lower bar and the intact lower parts of the side bars in which the rabbets remain, said structure comprising: four elongated elements, each of channel section and lying respectively along the four

members and within the bottom opening to provide a secondary frame fitting said opening, each element having its channel section providing a bight portion overlying the respective rabbet and inner and outer leg portions respectively overlying the interior and exterior faces of the members whereby to conceal the rabbets and rabbet-bordering portions of said members, said inner leg portions being coplanar with each other at the interior side of the window and said outer leg portions being coplanar with each other at the exterior side of the window; a panel frame generally congruent with and received by the secondary frame from the interior side thereof; a panel in said panel frame; and means removably connecting the panel frame at the interior side of the window for installation and removal of said panel frame.

2. The invention defined in claim 1, including: bead means running lengthwise of the bight portion of each channel element and projecting into the panel opening to provide a marginal groove about said secondary frame for receiving the panel frame.

3. The invention defined in claim 2, in which: the bead means on the lower channel element is in the form of an upwardly facing channel into which the lower edge of the panel frame is downwardly insertable to serve as a fulcrum about which said panel frame is swingable into place to be received by the groove provided by the bead means on other three channel members.

4. The invention defined in claim 1, in which: the panel frame is larger than the lower pane opening so as to overlie the interior face of the secondary frame as provided by the inner legs of the channel members; and a peripheral gasket is interposed between said interior face and the proximate face of said panel frame.

5. The invention defined in claim 4, in which: the panel frame is of such size as to establish a marginal pane-receiving groove congruent with the lower pane rabbet whereby the lower pane removed from the storm window is receivable in said panel frame to serve as said panel.

6. The invention defined in claim 1, including: horizontal fulcrum means between the lower edge of the panel frame and the interior face of the storm window and paralleling the lower channel element and serving as an initial support about which said panel frame is swingable into place.

7. Conversion structure for use in a conventional wooden-frame window having rabbeted frame members for carrying a pane but from which the pane has been removed to leave a rectangular opening defined by the four frame members and bordered by the pane rabbet which is left intact in said four frame members, comprising: four elongated elements each of channel section and lying respectively along the four frame members and within the opening to provide a secondary frame fitting said opening, each element having its channel section providing a bight portion overlying the rabbet in the associated frame member and inner and outer leg portions respectively overlying the interior and exterior faces of the associated frame member whereby to conceal the rabbet and rabbet-bordering portion of said associated frame member; a panel frame generally congruent with and received by said secondary frame from the interior side thereof; a panel in said panel frame; and means removably connecting the panel frame at the interior side of the storm window for installation and removal of said panel frame.

8. The invention defined in claim 7, including: bead means running lengthwise of the bight portion of each channel element and projecting into the panel opening to provide a marginal groove about said secondary frame for receiving the panel frame.

9. The invention defined in claim 8, in which: the bead means on the lower channel element is in the form of an upwardly facing channel into which the lower edge of the panel frame is downwardly insertable to serve as a fulcrum about which said panel frame is swingable

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into place to be received by the groove provided by the bead means on other three channel members.

10. The invention defined in claim 7, in which: the panel frame is larger than the pane opening so as to overlie the interior face of the secondary frame as provided by the inner legs of the channel members; and a peripheral gasket is interposed between said interior face and the proximate face of said panel frame.

11. The invention defined in claim 10, in which: the

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panel frame is of such size as to establish a marginal pane-receiving groove congruent with the pane rabbet whereby the pane removed from the window is receivable in said panel frame to serve as said panel.

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