June 2, 1953 L. F. PRICE 2,640,232

STORM WINDOW CONSTRUCTION

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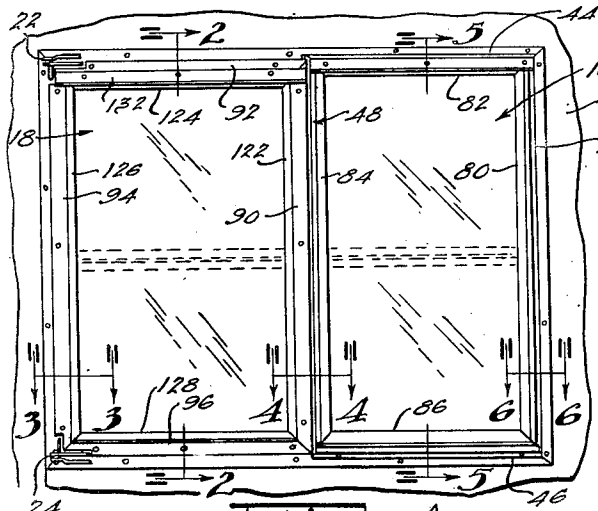

Fig. 1.

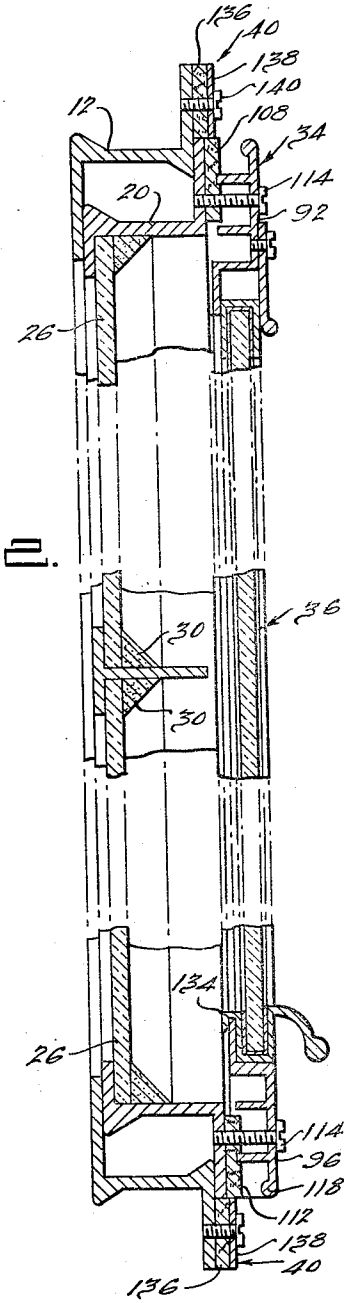

Fig. 2.

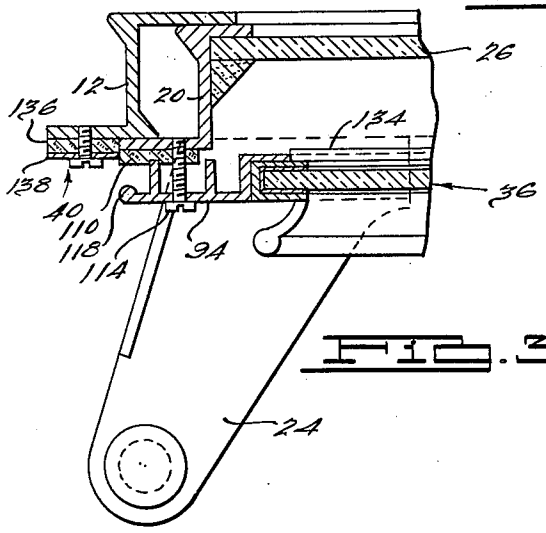

Fig. 3.

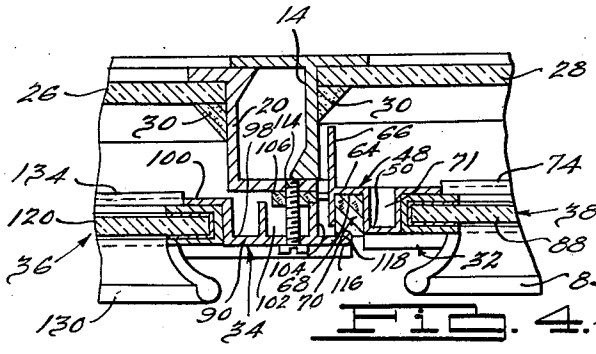

Fig. 4.

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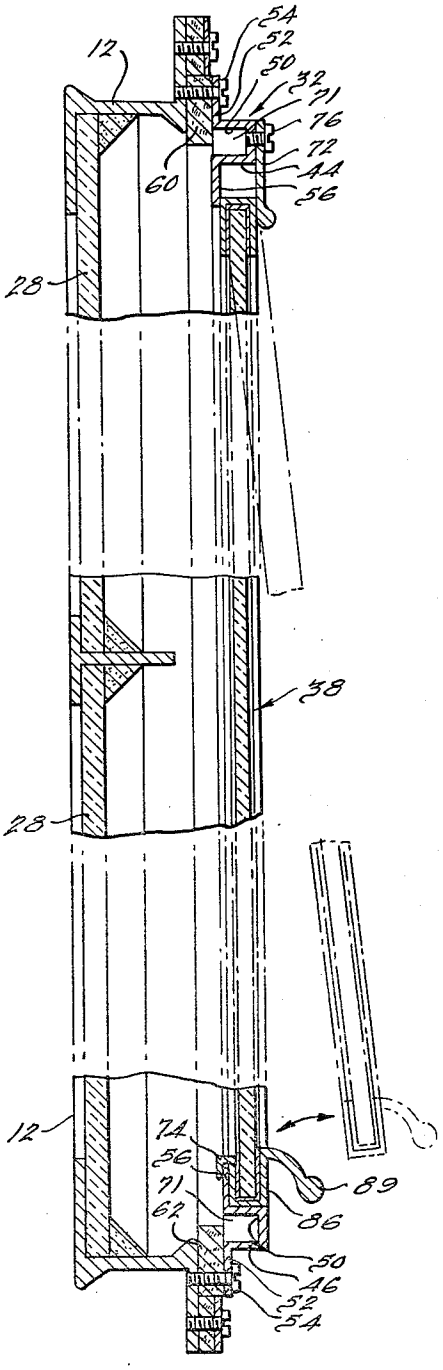
FIG. 5.



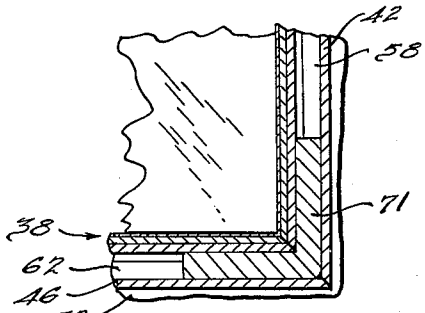


FIG. 7.

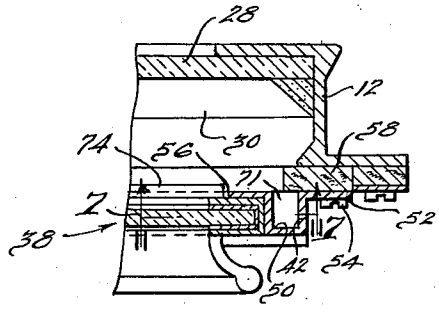


FIG. 6.

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STORM WINDOW CONSTRUCTION

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2 Claims. (Cl. 20—55)

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The present invention relates to an improved storm sash for casement windows.

It is an object of the present invention to provide an improved storm sash adapted for use on casement windows having a vertical center post and window sections at opposite sides of the center post, one of which includes a movable frame hingedly mounted on the main frame.

A further object of the invention is to provide an improved storm sash of the above mentioned type including permanent frames individual to the window sections at opposite sides of the center post and in which the permanent frame mounted on the movable window frame includes a portion adapted to overlap and be sealed to a portion of the permanent frame of the other window section.

Other and more detailed objects of the invention will become apparent from a consideration of the following specification, the appended claims and the accompanying drawings, throughout the several views of which like reference characters designate like parts and wherein:

Figure 1 is an elevational view showing a storm sash embodying the present invention mounted on a casement window supported on an associated wall structure;

Fig. 2 is an enlarged sectional view of the structure illustrated in Figure 1, taken along the line 2—2 thereof;

Fig. 3 is a broken enlarged sectional view of the structure illustrated in Figure 1, taken along the line 3—3 thereof;

Fig. 4 is a broken enlarged sectional view of the construction illustrated in Figure 1, taken along the line 4—4 thereof;

Fig. 5 is an enlarged sectional view of the structure illustrated in Figure 1, taken along the line 5—5 thereof and illustrating in broken lines an intermediate position of the removable storm window during the removal thereof;

Fig. 6 is a broken enlarged sectional view of the construction illustrated in Figure 1, taken along the line 6—6 thereof; and

Fig. 7 is a broken sectional view of the construction illustrated in Figure 6, taken along the line 7—7 thereof.

Referring to the drawings, the reference character 10 designates an associated wall structure in which is mounted in a conventional manner a casement window which is of a conventional construction, including a main frame 12 having a center post 14 (see Fig. 4) dividing the window into two window sections 16 and 18. The window section 16 is of the type commonly known

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as a deadlight, a term used to designate window sections which cannot be opened. The window section 18 includes a frame 20 hingedly supported on the main frame 12 at its upper and lower left hand corners as viewed in Figure 1, by the hinges 22 and 24. The main frame 12 and the movable frame 20 also include conventional means (not shown) for securing the movable window frame 20 in the closed position illustrated in the drawings. The movable window frame 20 and the deadlight section 16 of the main frame 12 carry window glasses 26 and 28, respectively, which are held in place in accordance with conventional practice by putty, as indicated at 30.

The applicant's improved storm sash generally comprises a permanent frame generally indicated at 32, secured to the main frame 12 surrounding the deadlight window section 16 and a second permanent frame generally indicated at 34 secured to the movable window frame 20 and surrounding the window section 18, removable storm windows 36 and 38 mounted in the permanent frames 32 and 34, respectively, and sealing and heat insulating sections generally indicated at 40, secured to the main frame 12 and surrounding the permanent frames 32 and 34.

Considering the above generally mentioned elements in greater detail, the permanent frame 32, surrounding the deadlight window section 16, comprises a plurality of extruded sections 42, 44, 46 and 48. The sections 42, 44 and 46 are of identical cross section and are disposed at the right hand side and top and bottom, respectively, of the permanent frame 32, as viewed in Figure 1. These sections 42, 44 and 46 each define a channel 50 opening toward the frame 32 and a laterally outwardly extending flange 52 through which extend screws 54 for attaching the sections to the main frame 12. The sections 42, 44 and 46 also have oppositely, or laterally inwardly extending flanges 56, the outer surfaces of which engage the removable storm window 38 as hereinafter described. Sealing strips 58, 60 and 62 are disposed between the main frame and the sections 42, 44 and 46 respectively. These sealing strips may be formed of any suitable material such, for example, as cork.

The section 48 is generally similar in cross section to the sections 42, 44 and 46, with the exception that at the periphery of the flange 56, it is provided with a longitudinally extending rib 66 extending generally at right angles to the flange 56 in opposite directions therefrom. The portion of the rib 66 extending away from the

frame 32 co-operates with the adjacent laterally outer face of the channel 50 to define an outwardly opening channel 68 in which is received a sealing strip 70 which may be of the same material as the strips 58, 60 and 62. The rib 66, as best illustrated in Fig. 4, extends along the center post 14 in spaced relation thereto and inwardly of the flange 56 extends toward the glass 28 to a point adjacent the putty 30. It will be noted that this portion of the rib 66 angles slightly away from the center post 14 to avoid interference with the putty 30. The adjacent ends of the sections 42, 44, 46 and 48 are mitered to fit together to form the rectangular frame 32. At the corners of the frame 32, L-shaped connector elements 71 are fitted into the channels 50 and are secured in place by pressing detents (not shown) in the side walls of the channels 50 and against the elements 71. These elements securely hold the sections 42, 44, 46 and 48 against relative movement. A strip 72 is mounted on the outer surface of the web portion of the channel 50 of the upper storm window section 82 and extends in spaced parallel relation to flange 56 thereof and cooperates therewith to hold the upper marginal portion of the storm window 38, as hereinafter described.

The storm window 38 comprises a rectangular frame formed of extruded channel-shaped sections 80, 82, 84 and 86, in which is mounted a storm window glass panel 88. The extruded section 86 at the bottom of the storm window 38 has an outwardly extending and downwardly curved flange portion 89, best illustrated in Fig. 5, which provides a convenient handle for the removal of the storm window 38. The section 86 also includes an inwardly extending reversely turned flange portion 74 defining a downwardly opening channel adapted to fit over the upwardly extending flange 56 of the section 46 forming the lower side of the permanent frame 32 and hold the lower edge of the storm window 38 against movement at right angles to the flange 56. The length of the sections 80 and 84, at the sides of the storm window 38, is less than the distance between the adjacent walls of the channel portions 50 of the extruded sections 44 and 46 of the permanent frame 32, but greater than the distance between the upper surface of the channel portion 59 of the section 46 and the lower edge of the strip 72 which is secured to and extends downwardly from the channel portion 50 of the strip 44. The proportions of the storm window 38 and the permanent frame 32, including the strip 72 and the section 86, are such that the upper end of the storm window 38 may be moved upwardly into the space between the outer surface of the flanges 56 and the inner surface of the strip 72 to an extent permitting the lower edge of the flange 74 of the section 86 at the bottom of the frame 38 to pass above the upper edge of the flange 56 of the section 46 and permit the extruded section 86 to be lowered into place with the flange 74 fitting over the upper portion of and supported upon the flange 56 on the permanent frame section 46 while the upper end of the storm window is held against movement outwardly by the strip 72. It will be appreciated that this construction is adapted for ready insertion and removal of the storm window 38.

Referring to Figures 1, 2, 3 and 4, the permanent frame 34, mounted on the movable window frame 20, comprises four extruded sections 90, 92, 94 and 96, which may be, and in the preferred embodiment illustrated are, all of the same

cross section. The ends of these sections are mitered and interconnected by L-shaped elements (not shown) similar to the L-shaped elements 71 of the frame 32. Each of the sections 90, 92, 94 and 96 has an inwardly opening channel portion 98 in which the just mentioned L-shaped elements are disposed. Each of these sections also has a flange 100 corresponding to the flanges 56 of the sections 42, 44, 46 and 48 of the frame 32. Each of these sections also includes a longitudinally extending rib 102 spaced laterally outwardly of the channel 98 which extends toward the movable frame 20 and engages one of the sealing strips 106, 108, 110 and 112 disposed respectively between the frame sections 90, 92, 94 and 96. These frame sections are secured to the movable window frame 20 by screws 114.

Also, each of the sections 90, 92, 94 and 96 includes a flange 116 disposed at the opposite edge of the sections from the flange 100 and having a sealing bead 118 along the edge thereof. The permanent frame 34 is secured on the movable window frame 20 so disposed that the sealing bead 118 of the frame section 90 is adapted to sealingly engage the strip 70 carried in the channel 68 of the section 48 of the frame 32. It will thus be appreciated that the flange 116, and the sealing bead 118 thereof, overlap a portion of the frame 32 and are sealed relative thereto when the movable window frame 20 is in its closed position. This is an important feature of the present invention and provides an efficient storm sash construction.

The storm window 36 is generally similar in construction to the storm window 38 and includes a glass panel 120 carried in channel sections 122, 124, 126 and 128, similar to the channel sections 80, 82, 84 and 86 respectively, the channel section 128 being provided with a handle portion 130 similar to the handle portion 89, and with a rearwardly extending flange 134 similar to the flange 74. The permanent frame 34 also includes a horizontally disposed strip 132 similar to the strip 72 of the frame 32, which is mounted on the section 92 and which extends in spaced parallel relation to the flange 100 of the section 92 to define a space adapted to receive the channel sections of the storm window 36 therebetween. The proportions of the storm window 36 and the permanent frame 34 are adapted to permit insertion and removal of and assembly of the storm window 36 in the same manner as the storm window 38.

The ease with which the above described construction permits removal and assembly of the storm windows 36 and 38 greatly facilitates the cleaning of the glass panels 88 and 120 and also renders the installation and removal of the storm windows 36 and 38 an extremely simple operation.

In the preferred construction illustrated, the permanent frame 34 covers all exposed portions of the movable window frame 20 and all of the exposed portions of the main frame 12 not covered by the permanent frame 32 are covered by the sealing and heat insulating sections generally indicated at 40. Each of these sections 40 comprises a strip 136 formed of cork or similar suitable material and an outer retaining strip 138 held in place by means of screws 140.

It will be readily appreciated that a wide variety of materials may be employed in the applicant's window sash construction. In the applicant's preferred embodiment, the material employed is aluminum.

While only one specific embodiment of the invention has been illustrated and described in detail, it will be readily appreciated by those skilled in the art that numerous changes and modifications may be made without departing from the spirit of the invention.

What is claimed is:

1. A storm sash for a casement window having a main frame, a vertical center post, and window sections at opposite sides of said center post and one of which includes a movable sash frame hingedly mounted on said main frame remote from said center post, said storm sash being adapted to be disposed externally of said window and mounted on the outer sides of said movable sash frame and said main frame, said storm sash comprising a plurality of members adapted to be secured to said movable sash frame of said one of said sections and defining a storm sash frame, a plurality of strips of insulating and sealing material adapted to be disposed between said members and said movable sash frame, a plurality of other members adapted to be secured to said main frame around said other of said sections and define a second storm sash frame, removable storm sashes mounted in said storm sash frames, one of said other members being adapted to extend along said center post and having an outwardly opening channel, another strip of sealing material mounted in said channel, one of said first named plurality of members being adapted to extend along the edge of said movable sash frame and be disposed adjacent said center post when the movable sash frame is in closed position, said one of said first named plurality of members having a longitudinally extending portion adapted to engage the one of said plurality of strips disposed between it and said movable sash frame, said one of said first named plurality of members also having another longitudinally extending portion adapted to overlap said one of said other members at the outer side thereof and engage said another strip of sealing material when said movable frame is in its closed position to provide a seal preventing the flow of air between said one of said first named plurality of members and said center post.

2. A storm sash for a casement window having a main frame, a vertical center post, and window sections at opposite sides of said center post and one of which includes a movable sash frame hingedly mounted on said main frame remote from said center post, said storm sash being adapted to be disposed externally of said window and mounted on the outer sides of said movable sash frame and said main frame, said storm sash comprising a plurality of members adapted to be secured to said movable sash frame of said one of said sections and defining a storm sash frame, a plurality of strips of insulating and sealing material adapted to be disposed between said members and said movable sash frame, a plurality of other members adapted to be secured to said main frame around said other of said sections and define a second storm sash frame, removable storm sashes mounted in said storm sash frames, one of said other members being adapted to be extend along said center post and being provided with outwardly presenting sealing means, one of said first named plurality of members being adapted to extend along the edge of said movable sash frame and be disposed adjacent said center post when the movable sash frame is in closed position, said one of said first named plurality of members having a longitudinally extending portion adapted to engage the one of said plurality of strips disposed between it and said movable sash frame, said one of said first named plurality of members also having another longitudinally extending portion adapted to overlap said one of said other members at the outer side thereof and engage said outwardly presenting sealing means when said movable frame is in its closed position to provide a seal preventing the flow of air between said one of said first named plurality of members and said center post.

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