

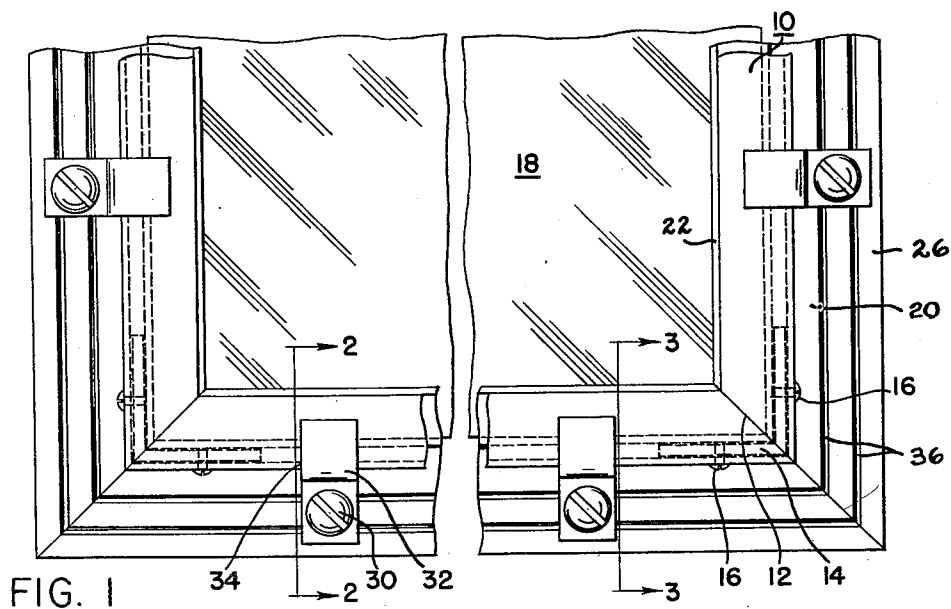
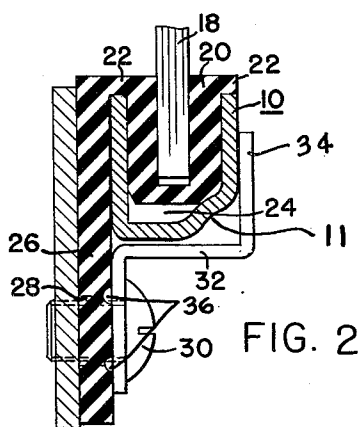
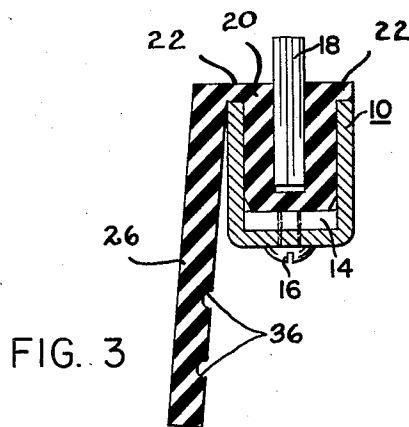
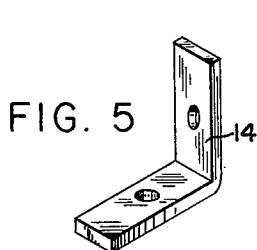
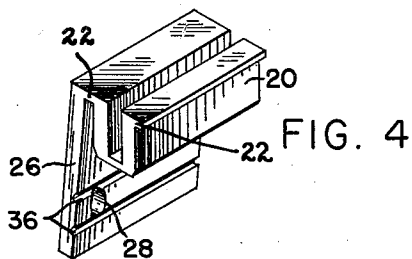
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STORM WINDOW

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STORM WINDOW

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This invention relates to improvements in storm windows.

Storm windows are well known and comprise an additional sash mounted in a window opening or on the frame of the window and providing a dead air space that is an effective insulating agent for retarding the transfer of heat between the inside and outside of a building enclosure.

Such storm windows generally adequately fulfill their purpose, but most recent building construction involves the use of metal window sash, and in connection with this particular type of sash, certain problems have been introduced into the storm window art which have not heretofore been satisfactorily overcome.

One of these problems is the fact that the best type of storm window for mounting on a metal sash also has a metal frame, and in connecting the metal frame of the storm window to the metal sash, a path is usually established along which heat can flow, thereby materially decreasing the efficiency of the storm window.

In other cases, the storm window is so constructed that either its metal frame or an auxiliary supporting metal frame forms one of the boundaries of the dead air space between the storm window and the window being sealed, and through this auxiliary member a great deal of heat is conducted, leading to condensation between the panes of glass of the storm window and the window being sealed and also contributing to inefficiency of the storm window.

The particular object of the present invention is to provide a storm window construction which is an improvement over storm windows now being built, in that it avoids the foregoing difficulties.

Another object is the provision of a storm window especially adapted for mounting on metal casement windows which is highly efficient in its heat insulating action and which is easy to install.

A particular object of this invention is the provision of a storm window in which the dead air space between the storm window and the window being sealed is completely surrounded by insulating material.

Another particular object of this invention is the provision of a storm window constructed so that it can readily be adapted to a number of different sizes of windows at the time of installation.

These and other objects and advantages will become more apparent upon reference to the following description taken in connection with the accompanying drawings, in which:

Figure 1 is a fragmentary elevational view

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showing a storm window constructed according to my invention and mounted on a steel casement frame;

Figure 2 is a vertical section indicated by line 2—2 on Figure 1;

Figure 3 is a view like Figure 2, but is taken on line 3—3 of Figure 1;

Figure 4 is a fragmentary perspective view showing a resilient member forming a part of the storm window of my invention;

Figure 5 is a perspective view showing a corner clip utilized for retaining adjacent sides of the storm window in assembled relationship.

Referring to the drawings somewhat more in detail, a storm window constructed according to my invention comprises a frame of a size to fit over the window opening to be sealed. In most cases, the frame will be, as shown, rectangular and has a groove thereabout opening inwardly. In the drawings, the frame is indicated at 10, and it will be seen to comprise a plurality of channel members which may be rolled sections having their ends mitred so as to abut, as indicated at 12. Angle clips 14 are placed in the corners where the channels abut, and screws 16 serve to secure the clips to the channel members.

In this manner, a rigid frame is provided. The material of the frame is preferably aluminum, or some other metal suitably corrosion resistant and capable of being worked to the desired shape, but it is conceivable that a suitable strong and rigid plastic member could be employed for the frame.

Mounted within the frame and having its periphery extending into the channel members of the frame is a pane of glass 18, and, as will be seen in Figures 2 and 3, the thickness of glass 18 is substantially less than the opening in the channel members. The glass is supported in the channel members by a rubber-like element 20 which has one part formed in the shape of a channel so as to be reciprocable within frame 10, as shown in Figures 2 and 3. Preferably, resilient element 20 has the ends of its legs shouldered, as at 22, to engage the ends of the legs of the channel members of the frame, thereby to support element 20 with its bottom wall spaced from the closed side of the frame. The resulting space, indicated at 24, not only permits easier assembly of the storm window, but also compensates for the different degrees of expansion and contraction of the metallic frame 10 and glass 18.

Resilient member 20 is of such thickness that when it is assembled with the pane of glass in the frame, it forms an effective seal about the glass, preventing any movement of air or moisture from one side of the glass to the other.

An advantage of the described arrangement for fabricating the frame, in addition to ease of manufacture, assembly, etc., is that the window can be reglazed readily merely by opening the corner joints of the frame, removing the resilient element 20, and then placing a new glass in the element and re-assembling it with the frame.

According to this invention, resilient member 20 has a sealing strip or flange part 26 secured to the free end of one of the legs of the channel part thereof and extending rearwardly therefrom to beyond the outer periphery of frame 10. This flange or sealing strip, as will be seen in Figure 1, overlies the casement frame of the window on which the storm window is mounted and provides an effective seal therealong.

In addition, flange or sealing strip 26 is interposed between the frame on which the storm window is mounted, and the frame 10 of the storm window, thereby providing a layer of heat insulating material through which heat cannot travel rapidly. It will be noted that resilient member 20 thus completely surrounds the dead air space between glass 18 and the window on which the storm window is mounted and prevents rapid heat transfer into or out of the said dead air space, such as would occur if the said space were bounded by a metallic frame.

At spaced points along flange or sealing strip 26 there are provided apertures 28, and these are utilized for receiving screws 30 which extend into the casement frame member and secure mounting clips 32 in position with their ends overlying frame 10, as indicated at 34. In this manner the storm window is firmly supported on the window on which it is mounted, but without providing any substantial area of heat conducting material between the two window frames. To accommodate for the crank operator of the casement windows, the frame 10 of the storm window may be recessed, as indicated at 11 in Figure 2.

The resilient member 20 is shown in perspective in Figure 4, and in this view, as well as in Figures 2 and 3, it will be noted that the flange part or sealing strip 26 is divergent with the channel part of the resilient element away from their point of connection. The forming of the flange or sealing strip in this manner insures that its outer edge will always engage and bear against the frame on which the storm window is mounted, thereby insuring a neat appearance and an effective seal around the periphery of the storm window.

Inasmuch as the size of windows on which the storm window is to be mounted will vary somewhat, I prefer that the frame member or sealing strip 26 be provided with spaced grooves therealong, as at 36, which provide a ready means of guiding a workman installing the storm window in the trimming of the sealing strip to fit it to the casement frame. It will be understood, of course, that it is preferable for sealing strip 26 completely to cover the frame of the window on which the storm window is mounted, and thereby to provide insulation against the transmission of heat directly through the metal frame of the said window.

The resilient element 20 is preferably an extruded section consisting of a good grade of synthetic rubber or an elastomeric plastic, the synthetic rubber or plastic being selected for resistance to deterioration when exposed to weather, to attic heat, to moisture, or other conditions which prevail in connection with the use of storm windows.

It is to be noted that the use of a rubber-like member about the edge of glass 18 and between the frame of the storm window and the window on which it is mounted has a distinct advantage over the use of felt which is commonly employed, because the felt has the disadvantage of soaking up condensation and rotting, whereupon it will become loose from the frame or readily tear. Felt also has a tendency to mildew and to acquire an objectionable odor and must, usually, in order for it to be effective, be glued in position on the casement frame.

Certain of the principal advantages of my invention may be summarized as follows:

1. The rigid frame of the storm window is a simply shaped section inexpensive to manufacture or purchase and easily fabricated into whatever shape or size of frame is required.

2. The entire window, apart from the retaining clips in the corner and the attaching clips that support it on the casement frame, consists of only three parts, namely, the frame 10, the glass 18, and the resilient element 20.

3. Resilient element 20, in being fabricated of a synthetic rubber or a plastic has long life and is not subject to deterioration, as is commonly encountered in connection with these elements.

4. The grooves provided in the sealing strip part of the resilient element provide ready means for trimming the strip to fit snugly on all sizes and types of metal casement frames.

5. The resilient element 20 itself has the following functions:

(a) Provides a secure anchor for the glass;

(b) Effectively insulates the glass from the frame 10 of the storm window, thereby inhibiting any transfer of heat therebetween;

(c) Overlies and covers the metal casement frame, thereby providing insulation for this part of the window, preventing heat transfer therethrough and eliminating sweating and condensation often encountered with casement windows;

(d) Provides an uninterrupted wall of insulation completely around the periphery of the dead air space between the window panes of the storm and casement windows and also provides a good seal between these window panes.

6. The assembly of the frame 10 and the resilient element 20 is permanent and fixed, and no part of the storm window assembly can pull off, shift in position, or otherwise become modified as to decrease the efficiency of the storm window.

I claim:

1. In a storm window: a rubber channel member having upwardly extending inner and outer legs and adapted to receive the edge of a pane of glass between said legs, a rubber flange integral with said inner leg and extending downwardly therealong to a point substantially below the closed end of said channel, a rigid channel-shaped frame having inner and outer legs for supporting said rubber channel, the inner leg of said frame being received between said flange and the inner leg of said rubber channel and means for securing said frame to said rubber channel comprising a clip member, said clip having a first flange frictionally engaging the outer leg of said frame and a second flange secured to said rubber flange.

2. In a storm window: a rubber channel member having upwardly extending inner and outer legs and adapted to receive the edge of a pane of glass between said legs, a rubber flange integral with said inner leg and extending downwardly

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therealong to a point substantially below the closed end of said channel, a rigid channel-shaped frame having inner and outer legs for supporting said rubber channel, the inner leg of said frame being received between said flange and the inner leg of said rubber channel, a window frame and means to secure said rubber flange and said channel frame to said window frame comprising a clip member, said clip having a first flange frictionally engaging the outer leg of said frame and a second flange secured to said window frame through said rubber flange.

3. In a storm window: a rubber channel member having upwardly extending inner and outer legs and adapted to receive the edge of a pane of glass between said legs, a rubber flange integral with said inner leg and extending downwardly therealong, a rigid channel-shaped frame having inner and outer legs for supporting said rubber channel, the inner leg of said frame being received between said flange and the inner leg of said rubber channel, a window frame and means to compress said rubber flange between said window frame and the inner leg of said channel frame in flush engagement therebetween

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and comprising a clip embracing the outer leg of said channel frame and secured to said window frame.

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