Oct. 23, 1956 R. O. JOHNSON 2,767,814

CLIP FOR STORM WINDOW INSULATING STRIP

Filed June 15, 1953

FIG.1.

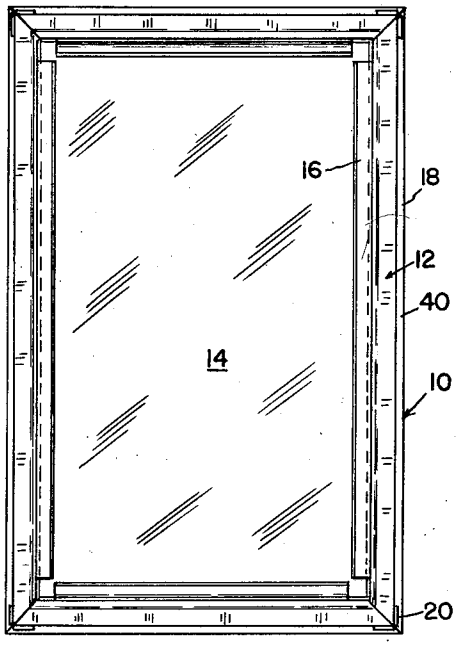
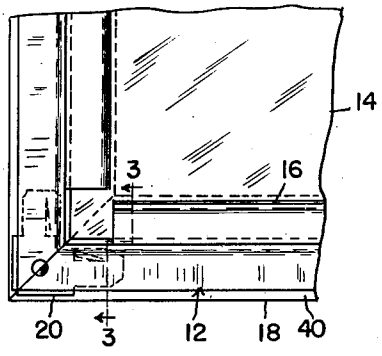


FIG.2.



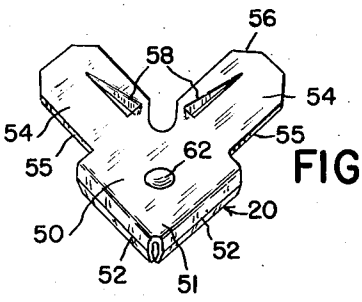


FIG.4.

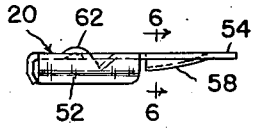


FIG.5.

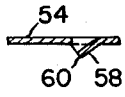


FIG.6.

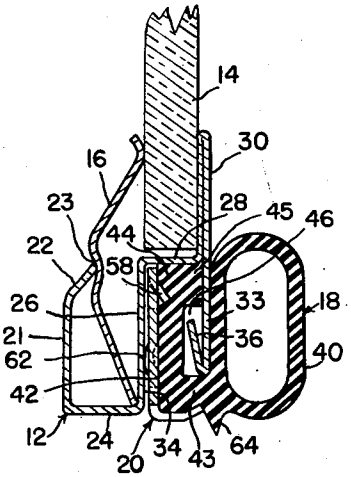


FIG.3.

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2,767,814

Patented Oct. 23, 1956

2,767,814

CLIP FOR STORM WINDOW INSULATING STRIP

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Application June 15, 1953, Serial No. 361,497

14 Claims. (Cl. 189—78)

The present invention relates to a clip for securing a resilient insulating strip in place on the frame section of a storm window.

In the installation of storm windows to prime windows, especially of the types fabricated from metal, it is desirable to use an insulating strip between the registering metallic sections of the two windows to provide a seal excluding air and dirt from the space between the two windows and to insulate against the transfer of heat from the interior to the exterior of the windows through the metallic sections. For efficient results the insulating strip is fabricated from rubber, plastic, felt or any other suitable insulating resilient material.

It is an object of the present invention to provide a clip for securely retaining an insulating strip in place on the frame section of a metallic storm window.

It is a further object of the present invention to provide a clip to retain a resilient insulating strip in place on the frame section of a storm window without the necessity of using adhesives, rivets, staples or other means that may injure the resilient material upon attachment or removal of the strip from the section.

It is still another object of the present invention to provide a clip that is easily attached or removed from its position retaining an insulating strip in place on a storm window.

Other objects and features of the invention will become apparent as the description proceeds, especially when taken in conjunction with the accompanying drawings, wherein:

Figure 1 is a plan view of a storm window with the clips in place at each of the corners.

Figure 2 is an enlarged fragmentary view of a corner of the storm window.

Figure 3 is an enlarged section taken through the line 3—3, Figure 2.

Figure 4 is a perspective view of the clip.

Figure 5 is a side view of the clip.

Figure 6 is a section on the line 6—6, Figure 5.

Referring now to the drawings, Figure 1 shows a storm window designated at 10 of the type used with metal prime windows. The window is comprised of four frame bars 12 of similar cross-section, a pane of glass 14, splines 16 to hold the glass in place, insulating strips 18, and clips 20.

Frame bar 12 has a wall 21 provided at its inner edge with an inclined lip 22 engageable in a recess or seat 23 extending along the associated spline 16. At its outer edge the wall 21 of the frame bar 12 turns laterally to form the outer wall 24. At its edge opposite to the wall 21, the wall 24 turns inwardly to form the wall 26 and thence laterally again to form the wall 28. The metal of the bar extends inwardly from the wall 28 and is then reversely bent to form the inwardly extending double thickness wall 30. Walls 28 and 30 constitute a seat for the edge portions of the glass 14. The reversely bent portion of the frame bar continues outwardly parallel to and spaced from the wall 26, as indicated at 33, providing a strip holding groove 34. The terminal edge is reversely

bent at an acute angle to form the strip retaining flange 36. The bars 12 are joined together with mitered corners to provide the groove 34 continuous around the periphery of the frame.

The insulating strip 18 is of a resilient material having a tubular portion 40 that provides a sealing surface and a flange portion 42 connected to the tubular portion 40 by a web 43 that extends substantially parallel to the tubular portion. The portion 42 has a thickened edge 44 forming a lip 45 defining a groove 46 that runs longitudinally along the strip. A strip is provided for each side of the frame with each strip being cut with a mitre at each end. The strips may be assembled to the bars by sliding them endwise with the flange portions 42 of the strip entering the groove 34 of the bars and the portion 36 of the frame interlocking in the groove 46 of the strip. The strips are cut to a length so that the mitered ends abut each other to form a continuous surface around the periphery of the frame.

To hold the strips 18 securely against each other at the corners and against longitudinal displacement the clips 20 are provided. The clip is preferably fabricated from metal stock and has a flat portion 50 including a right angled corner 51, the edge portions of which are bent laterally at right angles to the plane of the flat portion 50 to provide abutment flanges 52. Two ears 54, each coplanar with the portion 50 and disposed at right angles to each other, are provided. The outer edges 55 of ears 54 are offset inwardly from the adjacent abutment flanges 52. The outer corners of the ears 54 are cut off as indicated at 56 to eliminate sharp corners. A tab 58 is struck down from each ear to provide sharp corners 60 for a purpose to be described. In addition, an embossment 62 is provided to extend from the center of portion 50 in a direction opposite to abutment flanges 52 and tabs 58.

It will be noted that strips 18 include tapered flanges 64 which extend outwardly beyond the abutment flanges 52 to form a continuous sealing member.

After the insulating strips 18 have been assembled to the frame bars, the clips 20 are placed in position by forcing the ears 54 and portion 50 of the clip diagonally into the space between the flange 42 of the strip and the wall 26 of the frame bars. The resiliency of the strip 18 allows the points 60 to embed themselves into the material of the strips and holds the strips against displacement. The embossment 62 presses against the wall 26 of the frame bars to provide frictional resistance against relative movement between the clip and the bar.

The terms "inwardly" and "outwardly" as used herein refer to directions respectively toward and away from the center of the frame substantially in the plane thereof.

The drawings and foregoing specification constitute a description of the clip for storm window insulating strip in such full, clear, concise and exact terms as to enable any person skilled in the art to practice the invention, the scope of which is indicated by the appended claims.

What I claim as my invention is:

1. In combination, a rectangular frame having a continuous, outwardly open groove extending around its periphery, separate sealing strips having flanges received in the grooves at the sides of said frame, and a strip retainer clip at each corner of the frame, said clips comprising flat portions inserted in said grooves intermediate the flanges of said strips and a side wall of the grooves and abutment flanges engaged with the outer surfaces of said strips to retain them in said grooves.

2. Structure as defined in claim 1 in which said strips are formed of yieldable material and the flat portions of said clips include tabs struck out therefrom having sharp corners embedded in the material of said flanges.

3. Structure as defined in claim 2 in which the flat

portions of said clips include embossments extending outwardly therefrom opposite to said tabs and frictionally engaging the adjacent side walls of said grooves.

4. In combination, a rectangular frame formed of straight frame bars, each frame bar shaped to provide an outwardly open channel continuous from end to end thereof, said channel having one side wall provided with a reversely turned retainer flange extending into the channel at an acute angle to said side wall, a sealing strip formed of yieldable material mounted in the channel of each frame bar, said sealing strip comprising a tubular portion, a mounting flange parallel to said tubular portion and a web connecting said one edge of said mounting flange and said tubular portion, the other edge of said mounting flange having a lip extending toward said tubular portion, said mounting flange being received in said channel with its lip located inwardly of said channel beyond the free edge of said retainer flange, and corner clips comprising planar portions received in the ends of the channels of frame bars at the corners of said frame, said clips having mutually perpendicular abutment flanges perpendicular to said planar portions abutting the outer surfaces of the end portions of the strips received in the channels of adjacent frame bars.

5. Structure as defined in claim 4 in which said strips include continuous sealing flanges extending outwardly beyond the outermost surfaces of said clips.

6. Structure as defined in claim 4, the planar portion of said clips having ears extending at right angles to each other, said ears having projections shaped to interlock with the adjacent surface of said strips.

7. Structure as defined in claim 6, the planar portions of said strips having embossments located adjacent the corners thereof in frictional engagement with the adjacent walls of said channels.

8. A clip of the character described comprising a planar body having a right angled corner, mutually perpendicular abutment flanges extending at right angles to the plane of said body, said planar body having ears coplanar therewith and extending at right angles to each other, said flanges extending from said corner and terminating adjacent the points where said ears connect to said body, the outer edge of each ear being offset inwardly from the adjacent abutment flange.

9. A clip of the character described comprising a planar body having a right angled corner, mutually perpendicular abutment flanges extending at right angles to the plane of said body, said planar body having ears coplanar therewith and extending at right angles to each other, said flanges extending from said corner and terminating adjacent the points where said ears connect to said body, each ear being provided with a tab struck out therefrom and extending in the same direction from the plane of said planar body as said abutment flanges.

10. A clip of the character described comprising a planar body having a right angled corner, mutually perpendicular abutment flanges extending at right angles to the plane of said body, said planar body having ears coplanar therewith and extending at right angles to each other, said flanges extending from said corner and terminating adjacent the points where said ears connect to said body, each ear being provided with a tab struck out therefrom and extending in the same direction from the plane of said planar body as said abutment flanges, said tabs including ends directed toward the corner of said clip to interlock with an adjacent sealing strip so as to prevent withdrawal of said clip.

11. A clip of the character described comprising a planar body having a right angled corner, mutually perpendicular abutment flanges extending at right angles to the plane of said body, said planar body having ears coplanar therewith and extending at right angles to each other, said flanges extending from said corner and terminating adjacent the points where said ears connect to said body, said planar body being provided with an embossment located substantially intermediate said ears and extending outwardly from the plane thereof in a direction opposite to said abutment flanges.

12. A clip of the character described comprising a planar body having a right angled corner, mutually perpendicular abutment flanges extending at right angles to the plane of said body, said planar body having ears coplanar therewith and extending at right angles to each other, said flanges extending from said corner and terminating adjacent the points where said ears connect to said body, the outer edge of each ear being offset inwardly from the adjacent abutment flange, and each ear being provided with a tab struck out therefrom and extending in the same direction from said planar body as said abutment flanges.

13. A clip of the character described comprising a planar body having a right angled corner, mutually perpendicular abutment flanges extending at right angles to the plane of said body, said planar body having ears coplanar therewith and extending at right angles to each other, said flanges extending from said corner and terminating adjacent the points where said ears connect to said body, the outer edge of each ear being offset inwardly from the adjacent abutment flange, and said planar body being provided with an embossment located substantially intermediate said ears and extending outwardly from the plane thereof in a direction opposite to said abutment flanges.

14. A clip of the character described comprising a planar body having a right angled corner, mutually perpendicular abutment flanges extending at right angles to the plane of said body, said planar body having ears coplanar therewith and extending at right angles to each other, said flanges extending from said corner and terminating adjacent the points where said ears connect to said body, the outer edge of each ear being offset inwardly from the adjacent abutment flange, said planar body being provided with an embossment located substantially intermediate said ears and extending outwardly from the plane thereof in a direction opposite to said abutment flanges, and each ear being provided with a tab struck out therefrom and extending in the same direction from said planar body as said abutment flanges.

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