Aug. 9, 1949. F. A. RODMAN 2,478,837

MULTIPLE GLASS SHEET GLAZING CONSTRUCTION

Filed Feb. 6, 1947

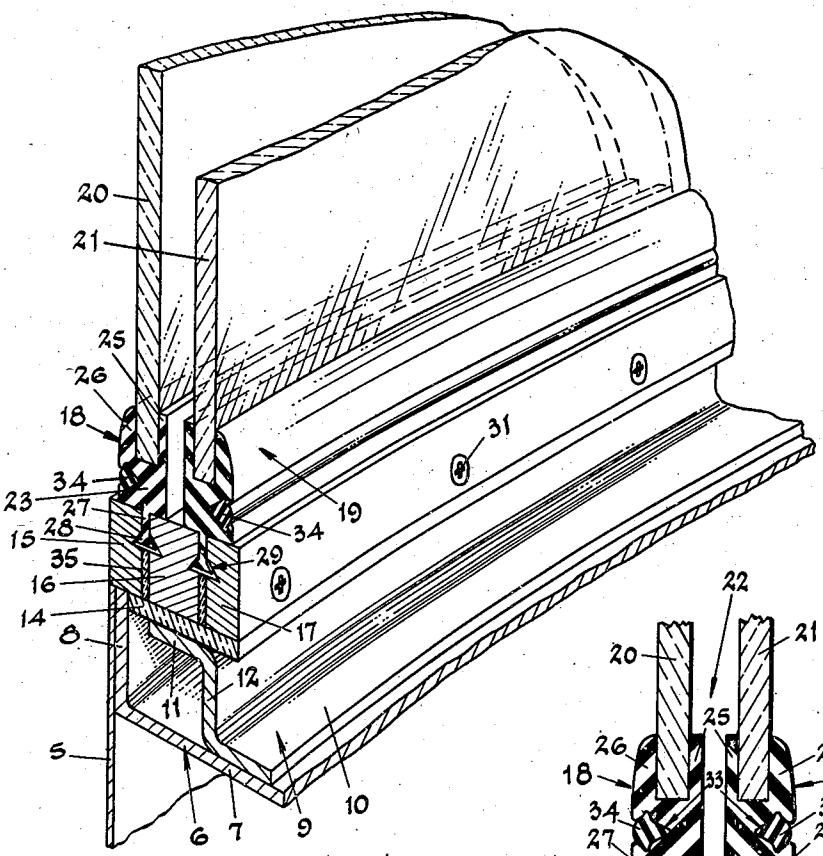


Fig 1

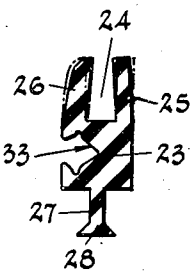


Fig 3

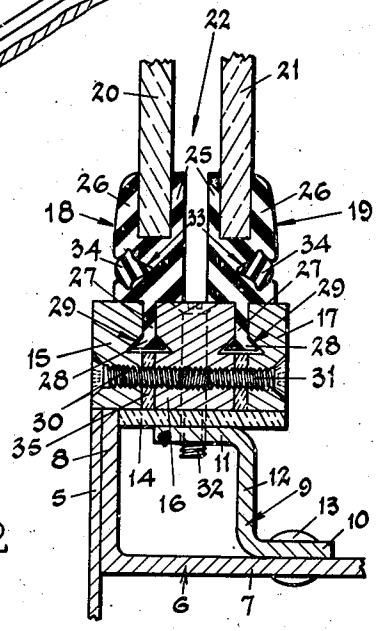


Fig 2

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Patented Aug. 9, 1949 2,478,837

UNITED STATES PATENT OFFICE

2,478,837

MULTIPLE GLASS SHEET GLAZING CONSTRUCTION

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Application February 6, 1947, Serial No. 726,789

6 Claims. (Cl. 20—56.5)

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The present invention relates broadly to the multiple glazing of window openings, and more particularly to a double glass sheet glazing construction for railway cars, busses, and other enclosures.

An object of the invention is to provide a double glazing construction especially adapted for, although not limited to, the mounting of bent or curved sheets of glass and which is designed to reduce the setting up of strains in the glass sheets and the liability of breakage thereof.

Another object of the invention is to provide a double glazing construction so designed that it will readily adapt itself to differences in the curvature of the glass sheets and variations between the curvature of the glass sheets and the rigid supporting frame in which said sheets are mounted.

Another object of the invention is the provision of an improved mounting for the glass sheets which will permit them to "float" independently of one another under varying air pressure conditions while maintaining the space between the said sheets hermetically sealed.

A further object of the invention is the provision of an improved mounting for the glass sheets which will permit ready and convenient removal of either of said sheets for cleaning or replacement without disturbing the other sheet.

Other objects and advantages of the invention will become more apparent during the course of the following description, when taken in connection with the accompanying drawings.

In the drawings, wherein like numerals are employed to designate like parts throughout the same:

Fig. 1 is a perspective sectional view of a double glass sheet glazing construction made in accordance with the invention;

Fig. 2 is a transverse sectional view therethrough; and

Fig. 3 is a transverse sectional view through one of the mounting strips.

With reference now to the drawings, 5 designates the outer wall or facing of a railway car, bus, or other enclosure having an opening to be glazed. Arranged inwardly of the wall 5 and surrounding the opening is a window frame 6 substantially hollow in cross section and including an L-shaped member having a base portion 7 and flange 8 arranged at right angle thereto. Mounted on the base portion 7 is a substantially Z-shaped member 9 including the oppositely directed legs 10 and 11 connected by a web portion 12. The leg 10 is suitably secured to the base portion 7 of the frame 6 by welding or by bolts, rivets, or the like 13, while secured to the leg 11 is a strip of suitable insulating material 14.

Carried by the strip of insulating material 14 are the three sash sections 15, 16 and 17 in the

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form of rectangular metal bars. Associated with the sash sections 15, 16 and 17 are the outer and inner mounting strips 18 and 19 for the glass sheets 20 and 21, respectively, which are arranged in spaced relation to provide an insulating air space 22 therebetween.

The mounting strips 18 and 19 are formed of a suitable resilient material, preferably rubber or other elastic deformable material, extruded or molded to the cross section illustrated in Fig. 3. Each mounting strip comprises a body portion 23 provided with a longitudinally extended groove 24 projected inwardly from the outer face of the strip to a depth sufficient to form the spaced legs 25 and 26 which serve to grip the glass sheet therebetween.

Formed integral with the body portion 23 is an inwardly directed leg 27 terminating in an enlarged foot 28. When the mounting strips 18 and 19 are assembled with the sash sections 15, 16 and 17, the legs 27 are received between the center sash section 16 and outer and inner sash sections 15 and 17 respectively, with the feet 28 fitting within correspondingly shaped recesses 29 formed by complemental grooves in the adjacent faces of adjoining sash sections. When the mounting strips 18 and 19 are associated with the sash sections, as shown in Fig. 2, the sash sections 15 and 17 are secured to the center sash section 16 by screws 30 and 31 to firmly clamp the legs and foot portions of the mounting strips in place therebetween. The center sash section 16 is secured to the leg 11 of Z-shaped member 9 by screws 32 which likewise serve to secure the strip of insulating material 14 in place. With this construction, either mounting strip and glass sheet carried thereby can be removed independently of the other mounting strip and glass sheet by removing the respective screws 30 or 31 to release the sash section 15 or 17.

In the outer face of the body portion 23 of each mounting strip 18 and 19 is located a substantially V-shaped groove 33 to receive a wedging filler strip 34, the insertion of which expands the groove and places the leg 26 under a compressive stress and forces it into firm clamping engagement with the marginal portion of the glass sheet received within the groove 24.

The filler strip 34 may also be formed of molded or extruded rubber but is preferably stiffer or less elastic than the material of the mounting strip, inasmuch as it serves primarily as a wedge to hold the strip under a compressive stress. The filler strips may be inserted and removed, as desired, by hand or through the use of special tools designed for this purpose. When inserted, the glass sheet will be firmly clamped between the legs 25 and 26 which hug tightly the marginal portions of the said sheet positioned within the

groove 24, resulting in the creation of a sealed air space 22 between the glass sheets.

The spaces between adjacent sash sections 15, 16 and 17, inwardly of the mounting strips 18 and 19, are filled with a suitable insulating material 35, and this material cooperates with the strip of insulating material 14 to form a barrier against the conduction of heat or cold from one side of the window mounting to the other.

As pointed out above, the double window mounting of this invention is of particular utility when installing sheets of glass which are bent or curved, and in such an installation it is of course necessary that the window frame 6 and sash sections 15, 16 and 17 be similarly bent or curved. As shown in Fig. 1, the window frame and sash sections are curved longitudinally to receive correspondingly curved glass sheets 20 and 21. However, the two glass sheets may not always have exactly the same curvature and likewise their curvature may not be exactly the same as that of the window frame and sash sections. To compensate for these variations, the glass sheets 20 and 21 are mounted in individual, resilient mounting strips 18 and 19 which accommodate themselves to the curvature of the said sheets. Likewise, since the mounting strips are independently carried by the sash sections, the legs 27 of said strips will accommodate themselves to the curvature of said sash sections even though the said sash sections do not have exactly the same curvature as the glass sheets. Thus, when the sash sections are secured together by the bolts 30 and 31 to clamp the mounting strips 18 and 19 in place, no strain will be placed upon the glass sheets so that the liability of breakage thereof will be greatly reduced. Since the glass sheets are independently mounted, they can be readily removed for cleaning or replacement and either may be removed without disturbing the other. Further, the provision of independent mounting strips for the glass sheets will permit the sheets to "float" relative to one another in the window opening under varying inside and outside air pressure conditions.

It is to be understood that the form of the invention herewith shown and described is to be taken as a preferred embodiment of the same, and that various changes in the shape, size and arrangement of parts may be resorted to without departing from the spirit of the invention or the scope of the subjoined claims.

I claim:

1. In a multiple glass sheet glazing construction, individual resilient mounting strips for clampingly engaging the marginal portions of glass sheets arranged in spaced relation to provide an insulating space therebetween, each mounting strip having a leg portion, a frame, sash sections carried by said frame, and means for clamping the leg portions of said mounting strips between said sash sections.

2. In a multiple glass sheet glazing construction, individual resilient mounting strips for clampingly engaging the marginal portions of glass sheets arranged in spaced relation to provide an insulating space therebetween, each mounting strip having a leg portion, a frame, sash sections carried by said frame, and means for clamping the leg portions of the mounting strips between said sash sections, said leg portions terminating in enlarged foot portions received within recesses formed by complemental grooves in the adjacent sash sections.

3. In a multiple glass sheet glazing construction, individual resilient mounting strips for clampingly engaging the marginal portions of glass sheets arranged in spaced relation to provide an insulating space therebetween, each mounting strip having a leg portion, a frame, sash sections in the form of three spaced, substantially parallel bars carried by said frame, means for securing the center sash bar to said frame, and means for securing the outer sash bars to said center sash bar independently of one another to clamp the leg portions of the mounting strips therebetween.

4. In a multiple glass sheet glazing construction, individual resilient mounting strips for clampingly engaging the marginal portions of glass sheets arranged in spaced relation to provide an insulating space therebetween, each mounting strip having a leg portion, a frame, sash sections in the form of three spaced, substantially parallel bars carried by said frame, means for securing the center sash bar to said frame, and means for securing the outer sash bars to said center sash bar independently of one another to clamp the leg portions of the mounting strips therebetween, said leg portions terminating in enlarged foot portions received within recesses formed by complemental grooves in the adjacent faces of adjoining sash bars.

5. In a multiple glass sheet glazing construction, individual resilient mounting strips having grooves for receiving the marginal portions of curved sheets of glass, said mounting strips being also provided with leg portions, a rigid frame curved longitudinally, three rigid sash bars carried by the frame and similarly curved, means for securing the center sash bar to said frame, and means for clamping the leg portions of the mounting strips between the center sash bar and outer sash bars, with the glass sheets arranged in spaced, substantially parallel relation.

6. In a multiple glass sheet glazing construction, individual resilient mounting strips having grooves for receiving the marginal portions of curved sheets of glass, said mounting strips being also provided with leg portions, a rigid frame curved longitudinally, three rigid sash bars carried by the frame and similarly curved, means for securing the center sash bar to said frame, and means for clamping the leg portions of the mounting strips between the center sash bar and outer sash bars, with the glass sheets arranged in spaced, substantially parallel relation, said leg portions terminating in enlarged foot portions received within recesses formed by complemental grooves in the adjacent faces of adjoining sash sections.

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