

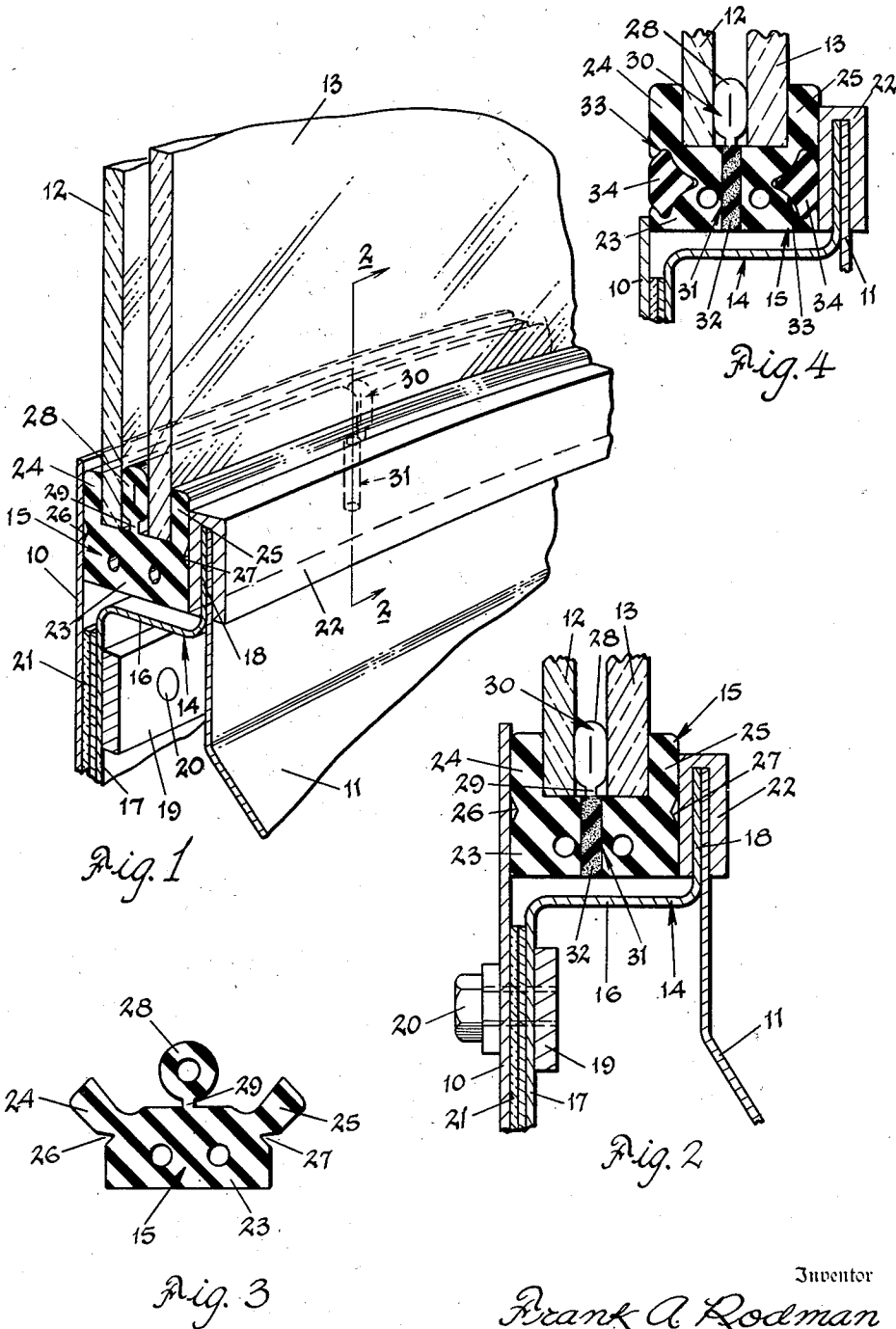
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MULTIPLE GLASS SHEET GLAZING CONSTRUCTION

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MULTIPLE GLASS SHEET GLAZING
CONSTRUCTION

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

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.

Another object of the invention is to provide a double glazing construction so designed that it will readily adapt itself to irregularities in the glass sheets or to differences in the curvature thereof whereby to reduce to a minimum the setting up of strains in the said sheets and the liability of glass breakage.

Another object of the invention is the provision of a novel mounting for the glass sheets which will eliminate excessive differences in pressure between the air in the space between the glass sheets and the surrounding atmosphere whereby to prevent breaking of the glass sheets due to pressure differences created by differences in temperature or altitude.

A further object of the invention is the provision of a novel mounting strip of resiliently compressible material which will maintain the glass sheets firmly in position and effectively seal the space between said sheets while permitting relative movement thereof.

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 section taken substantially on line 2—2 of Fig. 1;

Fig. 3 is a transverse sectional view through the mounting strip; and

Fig. 4 is a transverse sectional view showing a modified type of modified strip.

With reference now to the drawings, 10 and 11 designate the outer and inner walls or sheathing of a railway car, bus, or other structure having an opening to be glazed by the sheets or panes of glass 12 and 13. Arranged between the outer and inner walls 10 and 11 is a sash member 14 cooperating with said walls to form a frame for receiving the mounting strip 15 for the glass sheets 12 and 13.

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The sash member 14 comprises a transverse web 16 and oppositely disposed flanges 17 and 18 disposed opposite and secured to the outer and inner walls 10 and 11 respectively. The flange 17 is secured to the outer wall by a retaining strip 19 and suitable fastening means such as screws 20. A plate 21 of suitable insulating material is preferably arranged between the flange 17 and outer wall 10. The opposite flange 18 is disposed parallel with the upper end portion of the inner wall 11 and fitting thereover is a channel-shaped clamping strip 22.

The mounting strip 15 is formed of a resiliently compressible material, preferably rubber or other elastic deformable material, extruded or molded to the cross section illustrated in Fig. 3. The mounting strip comprises a substantially rectangular body portion 23 provided along opposite sides thereof with the outwardly directed wings 24 and 25 adapted, when the mounting strip is installed, to engage the outer surfaces of the glass sheets 12 and 13 as shown in Fig. 1.

In order to facilitate flexing of the wings 24 and 25 upon installation of the mounting strip 15 without undue stretching of the rubber or other elastic material, the body portion 23 is provided along its opposite sides and directly in back of the wings 24 and 25 with horizontal V-shaped grooves 26 and 27. The body portion 23 is also provided intermediate the wings 24 and 25 with a tubular spacing member 28 attached to said body portion by a narrow flexible web 29.

As pointed out above, the wings 24 and 25 of the mounting strip 15 normally extend outwardly and the spacer 28 is of tubular form as shown in Fig. 3. However, when the mounting strip is installed in the frame and the glass sheets 12 and 13 associated therewith, the wings 24 and 25 will be bent or flexed inwardly to cooperate with the spacer 28 to form substantially U-shaped channels for receiving the marginal portions of the glass sheets therein.

After the mounting strip has been installed in the frame and the glass sheets assembled therewith, the fastening means 20 are tightened to cause the clamping member 22 to compress the wings 24 and 25 against the outer surfaces of the glass sheets and the tubular spacer 28 against the inner surfaces thereof. During such clamping action, the tubular spacer will be compressed as shown in Fig. 1 to provide relatively wide flat faces contacting the glass sheets. In this way, the said sheets are properly spaced apart while the space between the sheets is effectively sealed. Thus, the spacer 28 being under compression will

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constantly tend to urge the glass sheets outwardly against the wings 24 and 25, thereby maintaining a tight seal as well as taking up any irregularities in the glass sheets or any variations in curvature between the two sheets. As seen in Fig. 2, when the mounting strip is installed and the wings 24 and 25 moved inwardly, the grooves 26 and 27 will be spread out or laterally extended so that undue stretching of the rubber or other material is avoided.

The invention also contemplates means for equalizing pressure differences between the space between the glass sheets and the atmosphere created by differences in temperature or altitude. For this purpose, the spacer 28 is transversely slotted as at 30 to provide a vent registering with an opening or aperture 31 extending through the body portion 23 of the mounting strip. Thus, assuming the air within the space between the sheets is under greater pressure than the atmosphere, it will pass outwardly through the slot 30 and opening 31, whereas if the pressures are such that air tends to flow into the space between the glass sheets, the atmospheric air can enter through opening 31. The opening 31 is preferably filled with a plug 32 of sponge rubber, cotton, or other filtering material which removes dirt and other foreign matter from the air passing into the space between the glass sheets.

In Fig. 4 is illustrated a modified type of mounting strip 15 in which the body portion 23 is provided in either side thereof with a longitudinally extending, substantially V-shaped groove 33 adapted to receive a wedging filler strip 34. The insertion of the filler strips 34 expands the grooves 33 and places the wings 24 and 25 under a compressive stress which forces them into firm clamping engagement with the marginal portions of the glass sheets received between said wings and the tubular spacer 28.

The filler strips 34 may also be formed of molded or extruded rubber but are preferably stiffer or less elastic than the material of the mounting strip. Inasmuch as they serve primarily as a wedge to hold the wings 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 sheets will be firmly clamped between the tubular spacer and the wings which hug tightly the marginal portions of the said sheets, resulting in a sealed air space between the glass sheets. When using this type of mounting strip, the outer wall 10 of the frame need not extend upwardly opposite the mounting strip. While the glass sheets 12 and 13 are shown as being of different thicknesses, it will be appreciated that they may be of equal thickness and that different kinds of glass as well as various combinations may be used.

It is to be understood that the form of the invention herewith shown and described is to be taken as the 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, a frame, a resiliently compressible mounting strip in said frame comprising a substantially rectangular body portion having wings extending upwardly and outwardly from the upper part of said body and a closed spacer of round tubular form in cross section between said wings, glass

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sheets arranged between said wings and tubular spacer, and means for compressing the wings against the outer faces of the glass sheets and the tubular spacer against the inner faces thereof.

2. In a multiple glass sheet glazing construction, a frame, a resiliently compressible mounting strip in said frame comprising a substantially rectangular body portion having wings extending upwardly and outwardly from the upper part of said body and a closed spacer of round tubular form in cross section between said wings, glass sheets arranged between said wings and tubular spacer, and means for compressing the wings against the outer faces of the glass sheets and the tubular spacer against the inner faces thereof, said mounting strip being vented to place the space between the glass sheets in communication with the atmosphere.

3. In a multiple glass sheet glazing construction, a frame, a resiliently compressible mounting strip in said frame comprising a substantially rectangular body portion having wings extending upwardly and outwardly from the upper part of said body and a closed spacer of round tubular form in cross section between said wings, glass sheets arranged between said wings and tubular spacer, and means for compressing the wings against the outer faces of the glass sheets and the tubular spacer against the inner faces thereof, said mounting strip being vented to place the space between the glass sheets in communication with the atmosphere, the tubular spacer being slotted transversely and the body portion having an opening communicating with the atmosphere and with the space between the glass sheets through said slot.

4. In a multiple glass sheet glazing construction, a frame comprising spaced inner and outer side members, a resiliently compressible mounting strip between said side members comprising a substantially rectangular body portion having wings extending upwardly and outwardly from the upper part of said body and a closed spacer of round tubular form in cross section between said wings, glass sheets arranged between said wings and tubular spacer, and means associated with the frame for clamping the side members of said frame against the mounting strip to compress the wings against the outer faces of the glass sheets and the tubular spacer against the inner faces thereof.

5. In a multiple glass sheet glazing construction, a frame comprising spaced inner and outer side members, a resiliently compressible mounting strip between said side members comprising a substantially rectangular body portion having wings extending upwardly and outwardly from the upper part of said body and a closed spacer of round tubular form in cross section between said wings, the mounting strip being also provided in its outer surfaces with substantially V-shaped grooves at the juncture of the wings and body portion and opposite the spaced inner and outer side members of the frame, glass sheets arranged between said wings and tubular spacer, and means associated with the frame for clamping the side members of said frame against the mounting strip to compress the wings against the outer faces of the glass sheets and the tubular spacer against the inner faces thereof, said grooves being laterally extended upon compressing of said wings.

6. In a multiple glass sheet glazing construction, a frame, a resiliently compressible mounting strip in said frame comprising a substantially

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rectangular body portion having wings extending upwardly and outwardly from the upper part of said body and a closed spacer of round tubular form in cross section between said wings, glass sheets arranged between said wings and tubular spacer, said body portion being also provided along its opposite sides outwardly of said wings with substantially V-shaped grooves, and wedging filler strips received in said grooves for compressing the wings against the outer faces of the glass sheets and the tubular spacer against the inner faces thereof.

7. A mounting strip for supporting two sheets of glass in spaced, substantially parallel relation, said strip being formed of resiliently compressible material comprising a substantially rectangular body portion having wings extending upwardly and outwardly from the upper part of said body for engagement with the outer faces of the glass sheets and a closed spacer of round tubular form in cross section between said wings for engaging the inner faces of said sheets.

8. A mounting strip for supporting two sheets of glass in spaced, substantially parallel relation, said strip being formed of resiliently compressible material comprising a substantially rectangular body portion having an opening projecting there-through and wings extending upwardly and outwardly from the upper part of said body for engagement with the outer faces of the glass sheets and a closed spacer of round tubular form in cross section between said wings for engaging the inner faces of said sheets, said tubular spacer being provided with a transverse notch communicating with the opening extending through said body portion.

9. A mounting strip for supporting two sheets of glass in spaced, substantially parallel relation, said strip being formed of resiliently compressible material comprising a substantially rectangular body portion having wings extending upwardly and outwardly from the upper part of said body

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for engagement with the outer faces of the glass sheets and a closed spacer of round tubular form in cross section between said wings for engaging the inner faces of said sheets, said mounting strip being also provided in its outer surfaces with longitudinally extending, substantially V-shaped grooves at the juncture of the wings and body portion in back of said wings to prevent undue stretching of the compressible material when said wings are moved inwardly to contact the outer faces of the glass sheets.

10. A mounting strip for supporting two sheets of glass in spaced, substantially parallel relation, said strip being formed of resiliently compressible material comprising a substantially rectangular body portion having wings extending upwardly and outwardly from the upper part of said body for engagement with the outer faces of the glass sheets and a closed spacer of round tubular form in cross section between said wings for engaging the inner faces of said sheets, said body portion being also provided along its opposite sides outwardly of said wings with substantially V-shaped grooves, and wedging filler strips received in said grooves for compressing the wings against the outer faces of the glass sheets and the tubular spacer against the inner faces thereof.

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