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3,092,877 6/1963 Perilstein..... 52/399
3,276,178 10/1966 Letourneur et al..... 52/400
3,374,580 3/1968 Ruff 49/488 X

FOREIGN PATENTS

1,251,638 4/1961 France 52/403
1,457,612 9/1966 France 52/398

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[54] **REINFORCED FRAME MEMBER OF ELASTOMERIC MATERIAL**
4 Claims, 12 Drawing Figs.

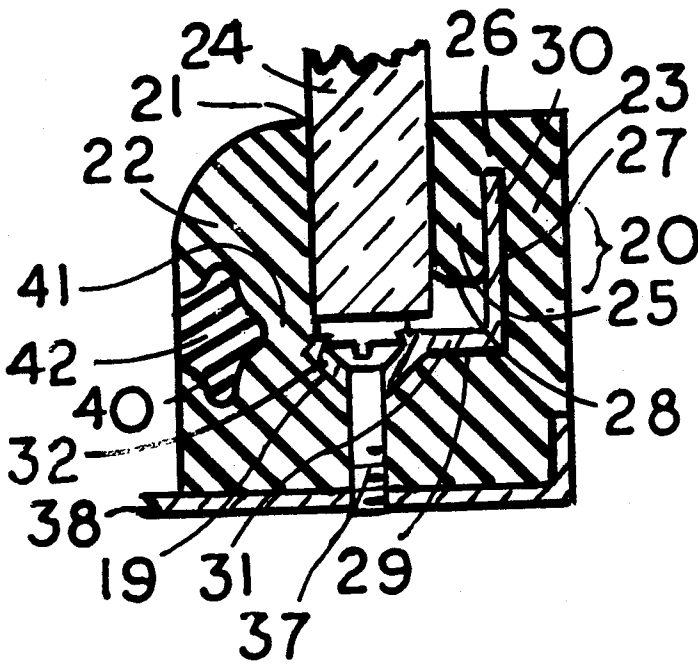
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403, 628, 727; 49/488, 494, DIG. 1

[56] **References Cited**

UNITED STATES PATENTS

2,985,263 5/1961 Maciunas..... 52/403
3,012,642 12/1961 Emmerich..... 52/400

ABSTRACT: An elastomeric strip has a trough-shaped groove extending longitudinally along one side thereof to receive an edge of a panel, such as a sheet of glass and said elastomeric strip has in it a separable reinforcing and stiffening strip of approximately angle shaped cross section. One flange of the reinforcing strip extends across the bottom of the trough-shaped groove and is provided with a V-shaped groove containing cushioning material correctly positioned to receive and serve as a cushion for a panel edge supported within the trough-shaped groove of the elastomeric strip.



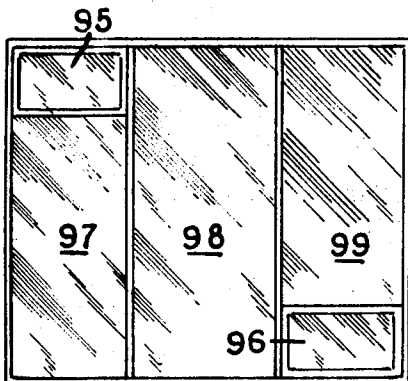
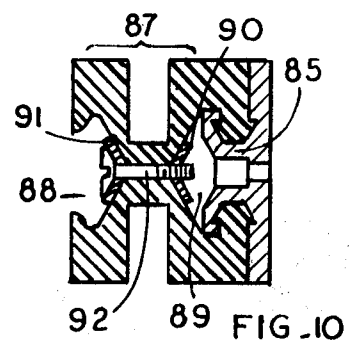
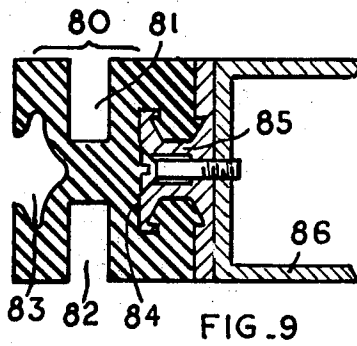
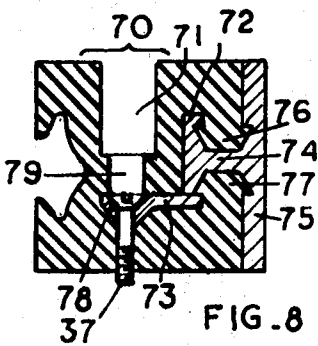
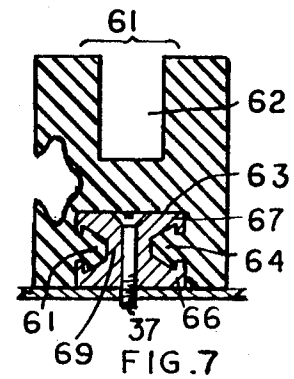
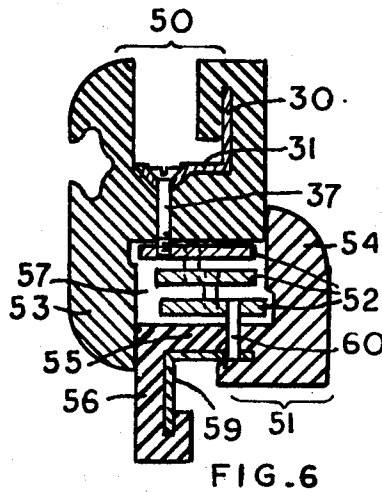
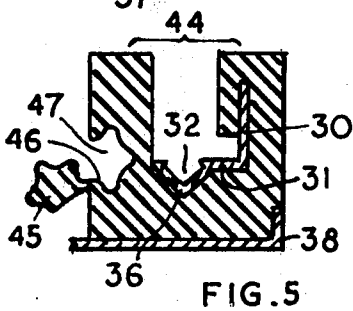
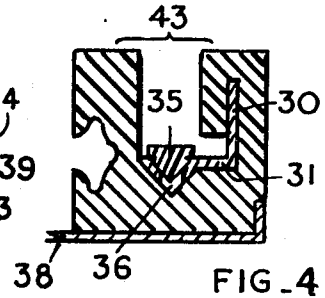
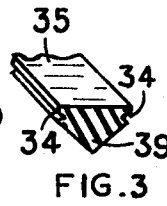
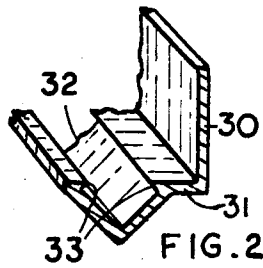
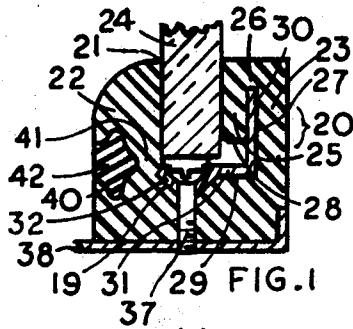


FIG. 12

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REINFORCED FRAME MEMBER OF ELASTOMERIC MATERIAL

SUMMARY OF THE INVENTION

An object of my invention is to provide an elastomeric framing structure for windows, walls and the like composed of rigid reinforcements as integral parts of elastomeric frame strips or members thereby providing a nonsagging, shock-absorbing, watertight enframement which is impervious to outdoor weathering and nonconducting as respects temperature changes and by which cost of maintenance is substantially eliminated.

Another object is to provide a construction in which a rigid element imbedded in elastomeric material makes it possible to mechanically fasten the elastomeric material to a rigid support and to other parts, such as hinge bars and the like and imparts to framing material sufficient strength to withstand wind pressure higher than the wind pressure ordinary elastomeric framing material will withstand.

Another object of my invention is to provide an elastomeric frame strip in which the elastomeric material is allowed to vibrate and cushion shocks received by the framed material it supports without creating a thermal bridge which would speed up temperature changes.

Another object is to provide a reinforced elastomeric strip in which a reinforcing member in the strip is secured by nonelastic fastening devices, such as screws, to a frame member external to the strip.

Other objects will be apparent from the following description and accompanying drawings.

BRIEF DESCRIPTION OF THE DRAWINGS

FIG. 1 is a view in cross section of an elastomeric framing strip and fragment of a glass panel supported thereby, said framing strip having in it a rigid reinforcing member provided with a V-shaped groove to receive the heads of screws and to receive cushion means against which the edge of a glass panel may rest.

FIG. 2 is a detached fragmentary perspective view of the grooved reinforcing member shown in FIG. 1.

FIG. 3 is a detached fragmentary perspective view of a panel-supporting strip of elastomeric material used in connection with the reinforcing member.

FIG. 4 is a view similar to FIG. 1 showing an elastomeric framing strip of different external shape and showing the reinforcing member and panel-supporting strip of FIG. 1 and FIG. 2 disposed therein.

FIG. 5 is a cross-sectional view showing an elastomeric member similar to the one shown in FIG. 4 except that it has an attached spline.

FIG. 6 is a cross-sectional view showing two reinforced elastomeric members connected with each other by transom or ventilator-type hinge means. FIG. 7 is a cross-sectional view showing an elastomeric strip of modified H-shape applied to a reinforcing member of modified form.

FIG. 8 is a sectional view of another elastomeric strip of modified form having therein a reinforcing member of different shape.

FIG. 9 is a sectional view of another elastomeric strip of H-shape having in it a reinforcing member of still further modified form which is connected by rigid fastening devices with an external support.

FIG. 10 is a sectional view of another H-shaped elastomeric strip having reinforcing means similar to that shown in FIG. 9 and having further modified reinforcing means therein.

FIG. 11 is a diagrammatic view in elevation showing a window having transom type ventilators at top and bottom which are hinged by means similar to that shown in FIG. 6.

FIG. 12 is a diagrammatic view in elevation showing a window having transom-type ventilators at top and bottom which are hinged by means similar to that shown in FIG. 6.

Like reference numerals refer to like parts throughout the several views.

DESCRIPTION OF THE PREFERRED EMBODIMENTS

The frame member shown in FIG. 1 is in the form of a strip 20 of elastomeric material of generally square cross-sectional shape having a longitudinally extending glass-receiving groove 21 in one side thereof. The sides of said groove 21 are formed by two wing parts 22 and 23 between which an edge portion of a nonflexible panel, such as a pane of glass 24, is received. The wing part 23 at one side of the groove 21 has an inwardly extending flap 25 which forms one wall of said groove 21. The outer edge of the flap 25 is integrally connected by a hinge portion 26 with the wing part 23. The inner side of said flap 25 is spaced from the adjacent wall 27 of the wing part 23 and the inner edge 28 of said flap 25 is spaced from the bottom wall 29 of the groove 21. The part of the bottom wall 29 directly in line with the groove 21 is recessed to form a longitudinally extending V-shaped through 19.

A metal-reinforcing member of modified angle bar shape, FIG. 2, formed of two integral flanges 30 and 31, is adapted to be inserted within the cavities provided in the elastomeric member 20. One flange 30 of said reinforcing member is plane and flat and is disposed within the space between the flap 25 and adjacent part of the wing member 23. The outer edge portion of the other flange 31 of said reinforcing member is shaped to form a longitudinally extending trough like grooved part 32. Two opposed narrow lock ribs 33 are provided along the spaced apart edges of the trough like part 32 to fit within grooves 34 in glass supporting and cushioning strips 35 of elastomeric material as more fully hereinafter explained. Suitable holes 36, FIGS. 4 and 5, are provided in the bottom of the grooved part 32 to receive fastening devices, such as screws 37 which secure the reinforced elastomeric strip to any rigid external structural member, such as a window sill cover 38.

The grooved part 32 of the reinforcing member 30, 31 stiffens and strengthens said member and provides room for the heads of the screws 37 so they are not contacted by the glass 24 and it serves as a receptacle for parts 39 of the glass support strips 35.

A longitudinally extending spline receiving groove 40 is provided in the frame member 20 in offset relation to the groove 21 and substantially at the base of the wing part 22 leaving said wing part 22 connected with the strip 20 by a fairly thin hinge portion 41 which makes it possible to incline part 22 outwardly and facilitates insertion of the reinforcing bar 30, 31 and glass 24. A filler strip or spline 42 of elastomeric material is provided for insertion into and removal from the groove 40 and serves to sealingly wedge the wing part 22 against the glass 24 when said spline is in the groove 40. Obviously this also sealingly presses the glass 24 against the flap 25 of the reinforced wing part 23.

The reinforced elastomeric strip 20 functions as a true frame member which is resistant to bending in all directions and which protects and lends strength to the glass 24 and minimizes breakage and makes the glass easier to handle.

The elastomeric frame member 43 of FIG. 4 is generally similar to the frame member 20 shown in FIG. 1 but is architecturally different in appearance in that it is provided with a square instead of a rounded corner. Said frame member 43 is internally shaped similarly to the frame member 20 to receive a similar reinforcing member 30, 31. A glass-supporting strip 35 is shown in an operative position in said frame member 43. It will be understood that the glass-supporting strip 35 may be of any desired length. The strips 35 are used in the bottom rails or parts of elastomeric frames where they are called on to support the weight of glass panels and they may be used in the side and top rails of such frames if desired.

The elastomeric frame member 44 shown in FIG. 5 is similar to the previously described frame members 20 and 43 except that it has a filler strip or spline 45 which is integrally connected with the member 44 along one edge by a hinge part 46 and is adapted to fit within a groove 47 in said member 44.

FIG. 6 shows two elastomeric frame members 50 and 51 of modified shape and construction which are connected with

each other by strap or bar type hinge means 52. This hinge means 52 is of a well-known type of construction commonly used to support transom or ventilator sections of windows for opening and closing movement. It is not a part of this invention and is not herein described in detail. The part of the frame member 50 shown uppermost in FIG. 6 is shaped similarly to the frame member 20 and has therein a reinforcing bar 30, 31 which is connected by screws 37 with a part of the hinge means 52. Said frame member 50 has an integral flange 53 protruding from one side thereof. The frame member 51, as shown in FIG. 6, comprises an upwardly extending flange 54, a horizontal flange 55, and downwardly extending flange 56. The two flanged frame members 50 and 51 cooperate in providing a receptacle 57 for the hinge means 52 and the flange 56 is of the proper shape and dimensions to fit within a glass-receiving groove, such as the groove 21 of FIG. 1. A reinforcing member 59 of angle bar cross-sectional shape is provided in the elastomeric bar 51 and can be connected by a suitable connector member 60, which may be a screw, with a bar of the hinge means 52. The frame and hinge means shown in FIG. 6 can be used to swingingly support smaller transom sections, such as upper transom section 95 and lower transom section 96, FIG. 12, for opening and closing movement, these transom sections commonly being used in windows containing larger panes of glass, such as panes 97, 98 and 99.

The modified elastomeric frame member 61 shown in FIG. 7 has a glass-receiving groove 62 in one side and a reinforcing member receiving groove 63 in an opposite side. The groove 63 has two inwardly protruding anchor ribs 64 and 65. The terminal portions of these anchor ribs are wider than the base or neck portions thereof. Said ribs 64 and 65 are adapted to fit within rib-receiving grooves of mating shape in the sides of a rigid reinforcing bar of generally H-shape in cross section which bar is formed of two spaced-apart flanges 66 and 67 connected by a medially positioned integral web 69. Fastening members, which may be screws 37, are used to secure said frame bar to any suitable support and the elastomeric member 61 is applied to the bar before said bar is secured to its support.

The modified elastomeric frame member 70 shown in FIG. 8 has a glass-receiving groove 71 in one side and is suitably recessed on another side to fit over a reinforcing member composed of two flanges 73 and 72 and a web part 74 and a wider head or outer flange 75. The wider outer flange 75 is an external member and the elastomeric part rests against it. Anchor ribs 76 and 77 of the elastomeric member 70 interlock with parts 72, 74 and 75 of the reinforcing member. An edge portion of the flange 73 is of trough shape, as indicated by 78, and corresponds to the trough shaped part 32 of the flange 31 shown in FIGS. 1 and 2 in that it is adapted to receive securing devices 37, which can be applied through holes 79 in member 70.

The elastomeric frame member 80 shown in FIG. 9 is of modified H-shape. It has two glass-receiving grooves 81 and 82 in two opposite sides thereof, a spline-receiving groove 83 in a third side and a groove 84 in a fourth side of suitable shape to receive and interlock with a reinforcing bar 85, which is shaped somewhat like an I-beam in cross section. Bar 85 can be secured to an external frame member 86 and the elastomeric member 80 applied to said bar 85.

The elastomeric frame member 87 shown in FIG. 10 is similar in shape to the member 80 shown in FIG. 9 except that a spline receiving groove 88 in one side thereof and a reinforcing member receiving groove 89 in an opposite side thereof are of sufficient depth and are shaped to receive two auxiliary trough-shaped metal reinforcing members 90 and 91. The trough-shaped reinforcing members 90 and 91 are connected with each other by rigid connector members, which may be screws 92 and these two members 90 and 91 impart increased rigidity to the elastomeric member 87 without introducing a thermal bridge and at the same time permit said member 80 to retain its shock and vibration absorbing characteristics. The

elastomeric member 87 of FIG. 10 is adapted to be applied to and engaged with a main reinforcing bar 85' of approximately the same shape as the bar shown in FIG. 9.

I claim:

1. A bend resistant frame member for a flat panel comprising a strip of elastomeric material having a longitudinally extending panel-receiving groove therein, the bottom of said groove being trough shape cross sectionally considered; an inwardly extending flap forming one side of said panel receiving groove, the outer edge of said flap being integrally connected with said strip and the inner side of said flap being spaced from an adjacent wall of said strip and the inner edge of said flap being spaced from the trough-shaped bottom of said panel-receiving groove; a longitudinally extending rigid reinforcing member of generally L-shaped cross section having one flat flange positioned under said flap and alongside of said panel-receiving groove and another flange of V-shaped cross section resting in the trough-shaped bottom of said panel-receiving groove, said flange of V-shaped cross section having perforations therein adapted to receive securing means capable of attaching said bend resistant frame member to an external support with heads of the securing means seated in the concave V-shaped part of said flange; a longitudinally extending spline-receiving groove in a side of said elastomeric strip opposite to the side thereof with which said flap is connected; and a spline insertable into and removable from said spline-receiving groove.

2. The apparatus as claimed in claim 1 in which a panel supporting and cushioning strip of generally triangular cross-sectional shape is disposed within the groove in said flange of V-shaped cross section to provide a cushioning support for the edge of a panel in the adjacent panel-receiving groove.

3. The apparatus as claimed in claim 1 in which two opposed narrow lock ribs are provided along the spaced-apart edges of the troughlike part of said flange of V-shaped cross section and extend toward each other and in which a glass supporting and cushioning strip of generally triangular cross-sectional shape having two longitudinally extending grooves in corner portions thereof adapted to fit over said narrow lock ribs is disposed within the trough like part of said flange of V-shaped cross section to receive and cushion the edge portions of an adjacent panel.

4. Elastomeric frame means to receive an edge of a flat panel comprising a reinforcing bar of approximately H-shape in cross section having two spaced-apart flanges connected by a medially positioned integral web thereby forming a longitudinal anchor rib receiving groove between the two flanges at each side of the web, each anchor rib receiving groove, cross sectionally considered, having a narrower mouth portion and a part of greater width inwardly from the mouth; a strip of elastomeric material of generally rectangular cross section having at least one longitudinally extending panel receiving groove in a side thereof and having a longitudinally extending reinforcement receiving groove in a side thereof remote from the side in which said panel-receiving groove is disposed, said reinforcement receiving groove receiving said reinforcing bar and said groove having within it two longitudinally extending anchor ribs protruding from its sidewalls inwardly toward each other and fitting within said anchor rib receiving grooves, the inner portions of said anchor ribs being of a width greater than the width of the mouths of the anchor rib receiving grooves of said reinforcing bar, whereby said anchor ribs firmly bind the elastomeric strip to the reinforcing bar; and a third flange integral with an edge part of the narrower flange of the reinforcing bar and extending approximately perpendicularly outward from the outer face of said narrower flange, said third flange being approximately parallel to and transversely offset from the web portion of said reinforcing bar and said third flange having a terminal edge portion of V-shaped cross section provided with perforations and extending longitudinally along the panel-receiving groove in spaced relation from the bottom of said panel-receiving groove when the reinforcing bar and elastomeric strip and in assembled relation.