

July 30, 1957

E. F. TONEY
DIVISION BAR

2,800,983

Filed March 29, 1954

3 Sheets-Sheet 1

FIG. 1

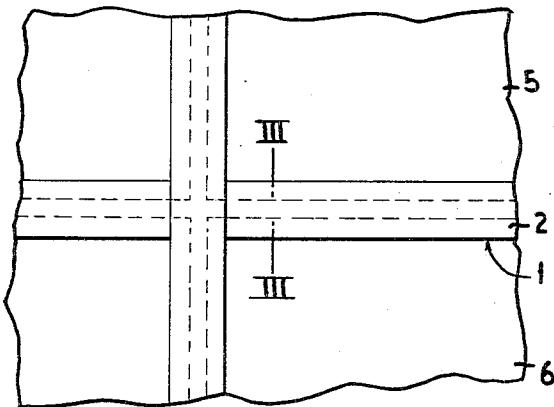


FIG. 2

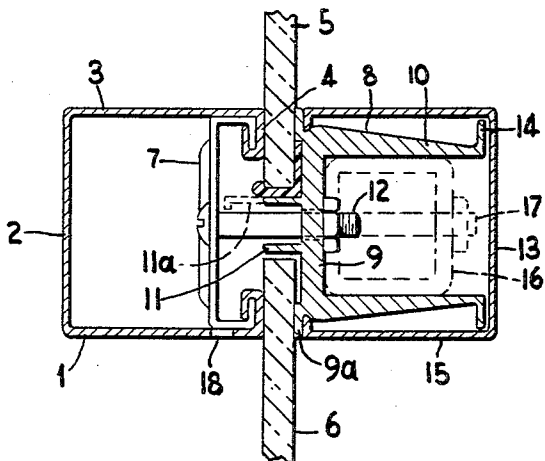
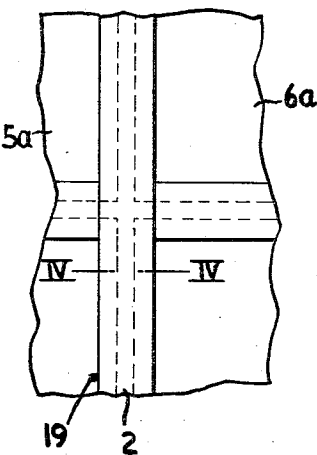
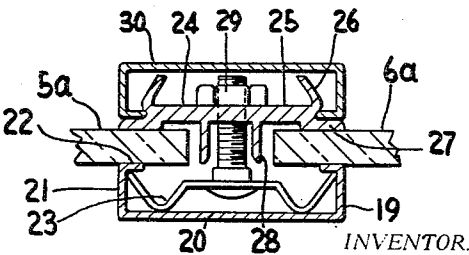


FIG. 3

FIG. 4



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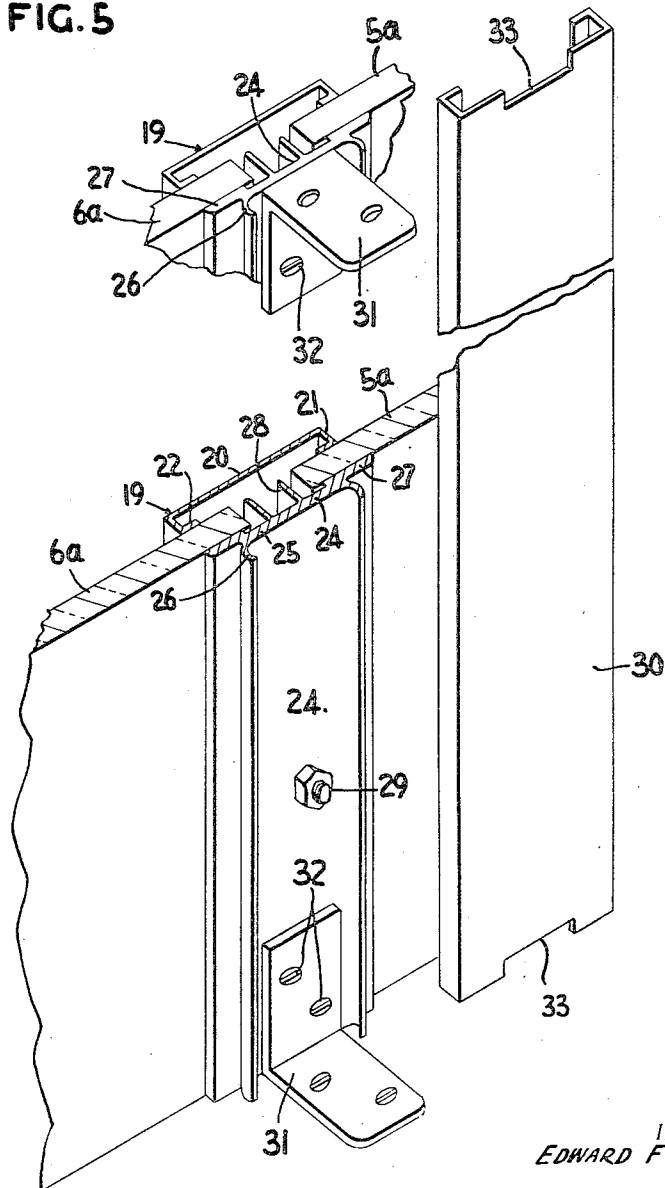
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FIG. 5



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FIG. 6

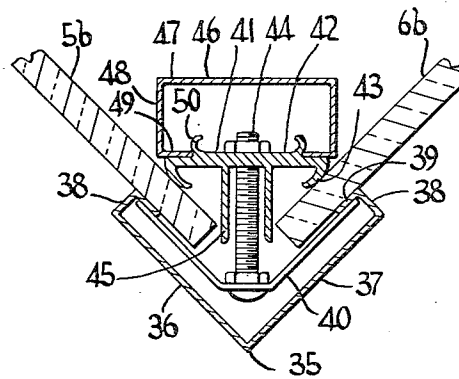
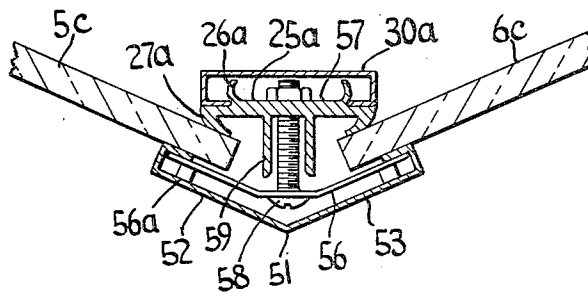


FIG. 7



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2,800,983

DIVISION BAR

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Application March 29, 1954, Serial No. 419,370

10 Claims. (Cl. 189—78)

The present invention is concerned with a novel form of division bar such as is used to connect and provide support for adjacent edges of glass plates. These bars may be disposed either horizontally or vertically depending upon the arrangement of the glass plates in any specific structure. In some types of structures the several bars may be disposed both horizontally and vertically.

One object of the invention is to provide a division bar which will provide an even bearing on opposite faces of the glass plates to prevent imposition of external stresses on the glass.

Another object is to provide a division bar of the character described permitting tensioning of the fastening members independently of pressure upon the glass plates.

A further object of the invention is to provide a horizontally disposed division bar of great strength which is self-clearing as to moisture.

In the drawings forming part of this disclosure Fig. 1 shows a fragmentary view of two vertically spaced glass plates connected by a horizontally disposed division bar; Fig. 2 shows a similar view of two horizontally spaced glass plates joined by a vertically disposed division bar; Fig. 3 shows an enlarged cross-section taken on lines 3—3 of Fig. 1; Fig. 4 shows an enlarged cross-section taken on lines 4—4 of Fig. 2; Fig. 5 is a perspective view of one form of anchor member for the division bars of Figs. 3 and 4, with a cover member in exploded position for best illustrating the details of assembly of the division bars; and Figs. 6 and 7 show enlarged cross-sectional views of modified forms of the division bars.

The horizontally disposed division bars, particularly those connecting large glass plates, are preferably of heavier construction than those connecting smaller glass plates either vertically or horizontally spaced. It is to be understood however that the division bars of both Figs. 1 and 2 may be used either horizontally or vertically according to the requirements of the particular structure of which they form a part. Horizontally disposed division bars provide vertical and transverse support for the uppermost of the two connected plates whereas vertically disposed bars carry no portion of the weight of the glass plates and provide support for the plates against a force normal to the plane of the plates.

The division bars of Figs. 1 to 4 are comprised of a face member normally disposed on the exterior faces of the glass plates, a backing member engaging the opposite faces of the glass plates, adjustable members connecting the face and backing members and a snap on cover member enclosing the backing member. Such division bars present a smooth exterior surface free of projections and of substantially the same contour on opposite faces of the plates.

Referring now to Figs. 1 and 3, the U-shaped face member 1 includes a web 2, arms 3 extending from the web 2 and re-entrant flanges 4 on the arms 3 in engagement with the front faces of the glass plates 5 and 6. Disposed within the face member 1, as shown in Fig. 3 are a plurality of longitudinally spaced lug members 7.

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These lugs 7 may be secured in place by any suitable means. As shown in Fig. 3 the flanges 4 of member 1 are returned to provide for a sliding movement of the lugs. The lug 7 may be of any suitable construction, preferably such that any load on the lug is equally distributed upon the flanges 4. The lug 7 should have some resiliency to absorb the unequal pressures applied by the screw threaded fastening member connecting lugs 7 with the backing member.

The backing member 8 is of generally U-shape having a web portion 9 and arms 10. The mid-portion of the web 9 adjacent the glass plates is offset so as to present flanges 9^A for engaging the glass in substantial alignment with the flanges 4 of the face member. A pair of spaced flanges 11 extend from the backing member web 9 to overlap the adjacent edges of the glass plates. The face lugs member 7 and backing member web 9 have aligned openings through which screw threaded members 12 are passed to secure the lugs and backing member in engagement with the glass plates. At the juncture of the backing member flanges 9^A and arms 10 suitable indentations are provided to receive the free ends of a cover member 13 providing a snap fit. For purposes of symmetry the outer contour of the cover 13 and face 1 are similar. The cover 13 is retained in position by the flanges 14 extending outwardly from backing member arms 10 and in substantial engagement with the arms 15 of the cover 13.

Where desired the backing member may be reinforced by inserting a member 16 between the arms 10 and upon the web 9. A screw threaded member 17, of suitable length, replaces the screw threaded member 12 and securely connects the face member lug 7, backing member web 9 and reinforcing member 16. Preferably, when the division bar is horizontally disposed, the backing member flange 11^A is extended beyond the lower edge of the glass plate 5 to deflect moisture passing into the face member 1. The lower arm 3 of the member 1 has suitable weep holes 18 permitting the moisture to escape.

Referring now to Figs. 2 and 4 of the drawings, the division bar therein disclosed is of lighter construction but of similar design to that shown in Figs. 1 and 3. The channel shaped face member 19 has a web 20, flanges 21 and re-entrant flanges 22 engaging the front face of glass plates 5^A and 6^A. Within the face member are a plurality of longitudinally spaced lug members 23 which preferably are of at least some resiliency. The backing member 24 has a web portion 25 and rearwardly extending arms 26. The mid-portion of web 25 being inwardly offset to provide flange portions 27 which engage the rear faces of the glass plates 5^A and 6^A in substantial alignment with the re-entrant flanges 22 of face member 1. The flanges 22 and 27 engage the faces of the glass plates inwardly of the edges of the plates. Extending outwardly of web 24 of the backing member 25 are flanges 28 which substantially overlap the edges of the plates, as shown. Extending within the aligned apertures in lug member 23 and backing member 24 are screw fastening members 29. Some resiliency in lug members 23 absorb any uneven tensioning of member 29 which may result from variations in the force exerted by the members 29 along the length of the division bar. The snap on cover member 30 attached to the backing member fully encloses the backing member and screw threaded members. This cover member 30 is preferably of substantially the same contour as the face member 20 giving a symmetrical appearance to the division bar.

Referring now to Fig. 5 of the drawings, there are times when it is desirable or necessary to fasten the division bars of both Figs. 3 and 4 to supports at each end of the bars. A suitable method of fastening the bars is shown in Fig. 5 wherein fastening members, such as angle clips 31 are secured to the backing member 24 and

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to a support such as a floor, ceiling or wall by suitable means such as screws 32. The cover member, shown in exploded relation to backing member 24, has suitable notches 33 for fitting over the angle clips 31.

The division bars of Figs. 1 to 5 disclose the invention as applied to glass plates arranged in a single vertical plane. The invention however is readily adapted to glass plates arranged in angular relation such as shown in Figs. 6 and 7, where the division bar is similar in construction to that shown on Fig. 4 excepting for the face plate.

In Fig. 6 the face plate 35 has web portions 36 and 37, flanges 38 and re-entrant flanges 39 engaging the glass plates 5b and 6b. Within the face plate 35 are a plurality of lug members 40. The backing member 41 comprises a web portion 42 and forwardly extending flanges 43 which engage the glass sheets 5b and 6b. Within the web 42 and lug 40 are aligned apertures for receiving screw fastening members 44 which secure the face plate and backing member together. Extending from the backing member web 42 are flanges 45 which lie on opposite sides of the fastening member 44 and between the ends of the plates 5b and 6b. A cover member 46 comprising a web 47 and flanges 48 ending in re-entrant flanges 49 is snapped into engagement with the backing member arms 50 as in Fig. 4.

In Fig. 7, a 120° division bar is shown having a face plate 51 comprising web portions 52 and 53 provided with flanges 54 which terminate in re-entrant flanges 55 engaging the glass plates 5c and 6c. Lug members 56 are disposed within the face plate and provided with portions 56^a for positioning the members 56 longitudinally of the face plate 51. The backing member 57 is similar to that of Fig. 4 excepting that the web 25^a terminates in flanges 27^a which are deflected forwardly to lie in the plane of and engage the glass plates 5c and 6c. The arms 26^a provide for snap engagement of a cover member 30^a as in Fig. 4. Disposed within aligned apertures of backing member web 25^a and lug member 56 are screw fastening members 58 for securing the face plate and backing member in engagement with the glass plates 5c and 6c as in Fig. 4. Lying on opposite sides of each fastening member 58 are flanges 59 extending from the backing member flange 25^a as in Fig. 4.

The materials used and methods employed to form the various members of the division bar may vary to suit design requirements. The face members and snap on covers may be of aluminum, copper, stainless steel or other suitable materials shaped on forming rolls. The backing members may be of similar materials and preferably extruded to shape. The face member lugs are preferably of tempered metal to provide rigidity with controlled resilience so as to best serve their intended function. The backing member stiffening insert, as in Fig. 3, may be of metal tubing or of other suitable forms. The screw fastening members are preferably supplied with shoulder portions swage locked into the face member lugs for ease of assembly.

The various forms of construction shown or suggested are primarily for purposes of illustration and not by way of limitation, except as made necessary by the appended claims.

I claim:

1. A division bar for connecting glass plates, comprising a channel shaped face member having re-entrant flanges engaging the front faces of the substantial abutting glass plates inwardly of each adjacent edge of said plates, lug members disposed within the face member and bearing on the re-entrant flanges thereof, a channel shaped backing member disposed behind the glass plates and having a web spanning the spaced edges of the glass plates and a pair of longitudinal flanges rearwardly extending from said web and having convex diverging outer surfaces adjacent the web and converging outer surface portions rearward and adjacent said convex outer surfaces, said web having a pair of longitudinal flanges ex-

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tending laterally and forwardly to engage the rear surfaces of the glass plates inwardly of the adjacent edges and in substantial alignment with the face member re-entrant flanges and to provide by said lateral extension in combination with said convex surfaces a pair of longitudinal grooves in the backing member adjacent the forwardly and laterally extending flanges, an adjustable member connecting each face member lug with the backing member and clamping the glass plates in position, and a channel shaped cover member having re-entrant flanges for snap on engagement with the backing member in the longitudinal grooves, said cover member having a width substantially that of the backing member.

2. A division bar for connecting substantially abutting edges of two glass plates, in combination, a channel shaped face member overlapping a front face of each glass plate and having re-entrant flanges engaging a portion of each glass plate inwardly of the edge thereof, lug members disposed entirely within the face member and engaging the re-entrant flanges, a channel shaped backing member disposed behind the glass plates and having a web spanning the spaced edges of the glass plates and a pair of longitudinal flanges rearwardly extending from said web and having convex diverging outer surfaces adjacent the web and converging outer surface portions rearward and adjacent said convex outer surfaces, said web having a pair of longitudinal flanges extending laterally and forwardly to engage the rear surfaces of the glass plates inwardly of the adjacent edges and in alignment with the face member re-entrant flanges and to provide with said convex surfaces a pair of longitudinal grooves in the backing member, a pair of spaced longitudinal flanges on the backing member disposed between the adjacent plate edges to act as spacers therefor, screw threaded fastening members disposed between the backing member flanges and connecting the backing member and face member lugs and clamping the glass plates in position, and a snap fit channel shaped cover member having re-entrant flanges for engagement with the longitudinal grooves in the backing member.

3. A division bar for connecting two vertically spaced glass plates having spaced adjacent horizontally disposed edges in substantial alignment, in combination, a channel shaped face member spanning the spaced edges and having re-entrant flanges engaging the adjacent front face portions of the plates in spaced relation to the edges thereof, lug members disposed within the face member and bearing on the re-entrant flanges thereof, a backing member spanning the spaced edges of the glass plates and engaging the adjacent rear faces thereof, the inner face of the backing member having its mid-portion offset relative to the glass so that the bearing of the backing member on the glass is in inwardly spaced relation to the edges of the glass plates, spaced flanges extending from the offset mid-portion of the backing member and overlapping the adjacent edges of the glass plates, the uppermost of said spaced flanges extending forwardly beyond the front face of the glass plates and having at its distal end a downwardly extending flange, and screw fastening members between the spaced flanges and engaging the backing member and face member lugs to clamp the plates in position.

4. A division bar as in claim 3 in which the underside of the face member is provided with weep holes.

5. The division bar of claim 1 in which a separate reinforcing member is disposed within the backing member between said pair of rearwardly extending longitudinal flanges to reinforce the web and said rearwardly extending flanges and the adjustable members connect the reinforcing member and face member lugs.

6. The division bar of claim 5, in which a pair of spaced flanges extend from the backing member and between the edges of the glass plates.

7. A division bar for connecting two vertically spaced

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glass plates having spaced adjacent horizontally disposed edges in substantial alignment, in combination, a channel shaped face member spanning the spaced edges and having re-entrant flanges engaging the adjacent front face portions of the plates in spaced relation to the edges thereof, lug members disposed within the face member and bearing on the re-entrant flanges thereof, a channel shaped backing member disposed behind the glass plates and having a web spanning the spaced edges of the glass plates and a pair of longitudinal flanges rearwardly extending from said web and having convex diverging outer surfaces adjacent the web and converging outer surface portions rearward and adjacent said convex outer surfaces, said web having a pair of longitudinal flanges extending laterally and forwardly to engage the rear surfaces of the glass plates inwardly of the adjacent edges and in substantial alignment with the face member re-entrant flanges and to provide by said lateral extension in combination with said convex surfaces a pair of longitudinal grooves in the backing member, spaced flanges extending forwardly from the backing member and overlapping the adjacent edges of the glass plates, the uppermost of said spaced flanges extending beyond the front face of the plates and having at its distal end a downwardly extending flange, and adjustable member connecting each face member lug with the backing member and clamping the glass plates in position, and a channel shaped cover member having re-entrant flanges for snap on engagement with the backing member in the longitudinal grooves, said cover member having a width substantially that of the backing member.

8. A backing member for a division bar for connecting glass plates with substantially abutting edges comprising a channel shaped member having a web adapted

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to span the spaced edges of the glass plates and a pair of longitudinal flanges rearwardly extending from said web and having convex diverging outer surfaces adjacent the web and converging outer surface portions rearward and adjacent said convex outer surfaces, said web having a pair of longitudinal flanges extending laterally and forwardly to provide front surfaces for engaging the rear surfaces of glass plates and to provide by said lateral extension in combination with said convex surfaces a pair of longitudinal grooves in the backing member adjacent the forwardly and laterally extending flanges for receiving a snap fit cover.

9. The backing member of claim 8 in which the central portion of the web is provided with apertures spaced longitudinally and in which said web has spaced longitudinal flanges in the central portion extending forwardly, said apertures being between said spaced flanges.

10. A backing member of claim 9 in which one of said spaced longitudinal flanges extends forwardly beyond the other spaced flange and at its distal end has a flange extending toward the other spaced flange.

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