Nov. 1, 1938. L. G. JOST 2,134,790

MULLION CONSTRUCTION

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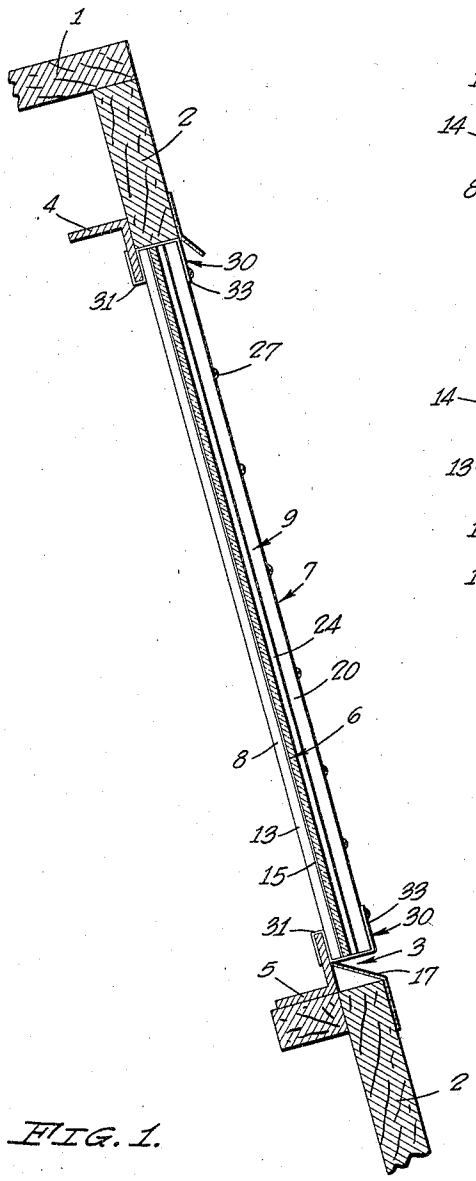

FIG. 1.

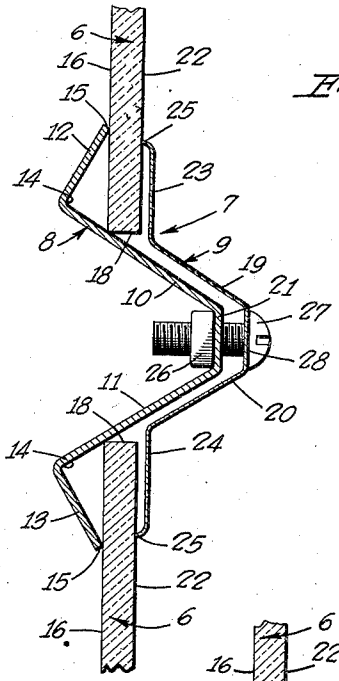

FIG. 2.

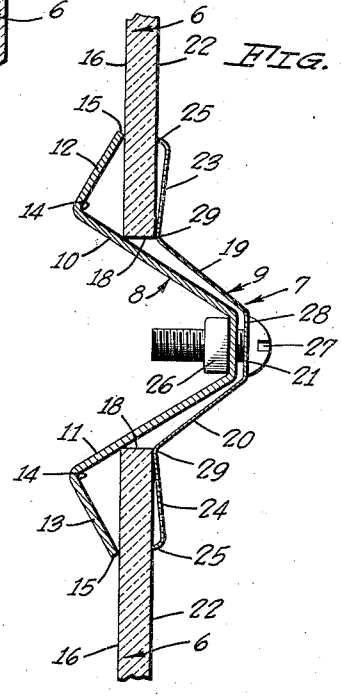

FIG. 3.

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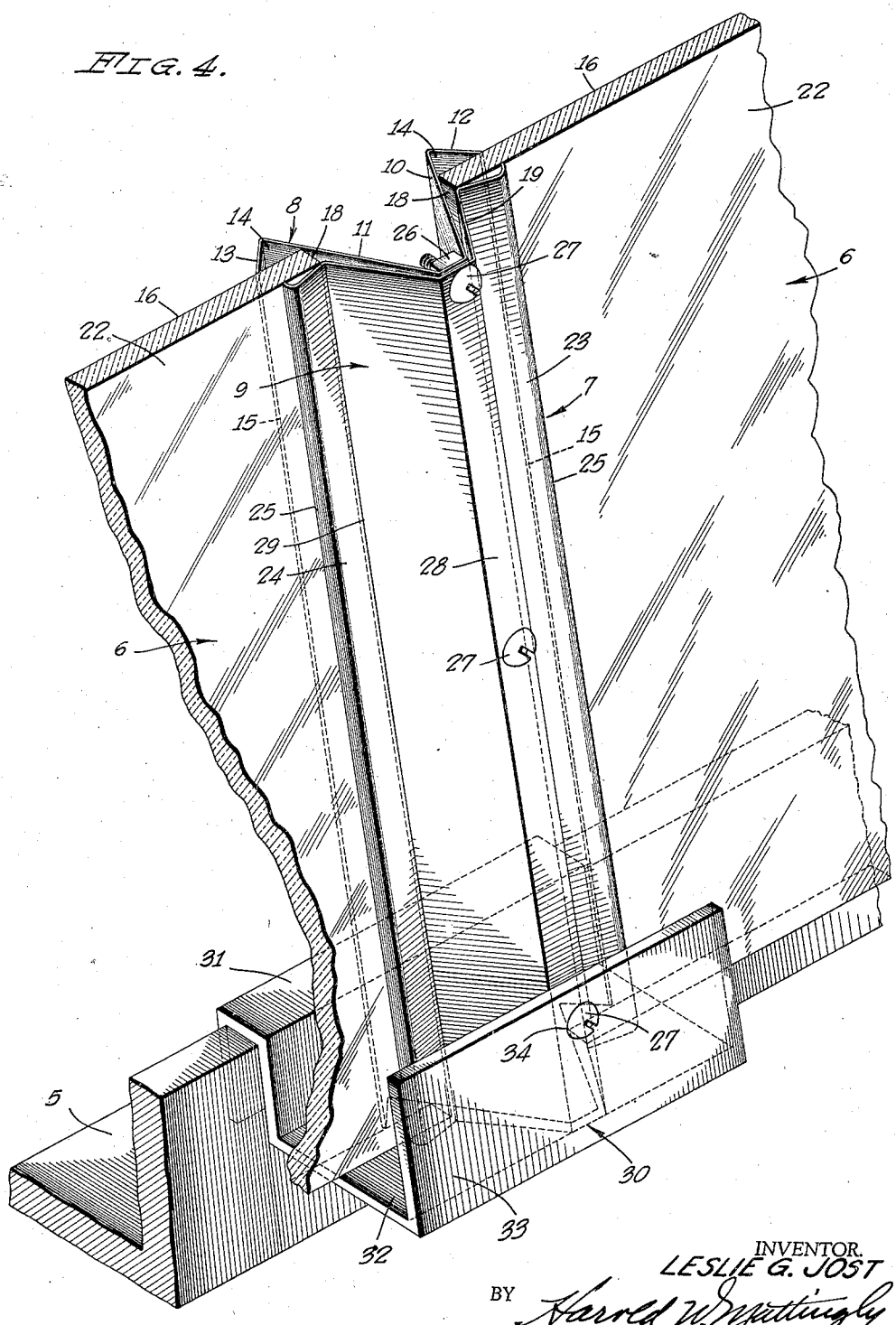
FIG. 4.



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2,134,790

MULLION CONSTRUCTION

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3 Claims. (Cl. 108—16)

My invention relates to mullion constructions and has particular reference to a mullion adapted to hold glass plates for windows, sky lights and other lighting arrangements for buildings, without necessitating the use of putty.

In building constructions it is frequently desirable to employ in side walls or in portions of a saw tooth truss roof, glass plates for admitting light into the interior of the building, the windows so formed being preferably constructed of a series of glass plates arranged adjacent each other and held either permanently fixed to the building structure or arranged upon suitable hinged or movable frames attached to the building structure to permit the windows to be opened or closed. In such constructions the mullions or uprights employed to support and space the glass plates are usually formed of permanent structural members attached to the frames or directly to the metal framing of the building, requiring the use of putty or other securing means for holding the plates in engagement with the mullions.

It is an object of my invention to provide a mullion construction which is readily adapted to be used either in a frame member or to be attached to and suspended from the metal framework of the building, and in which the mullion construction comprises a pair of simple clamping members for engaging and gripping the edges of adjacent plates.

Another object of my invention is to provide a mullion of the character set forth in the preceding paragraph wherein the mullion comprises two members, a backing member forming shelves against which one face of each of the plates may rest, and a clamping member engaging the opposite faces of the plates whereby drawing the two mullion members toward each other securely grips the plates and supports them in place.

Another object of my invention is to provide a mullion of the character set forth, in which each of the mullion members may be pressed or rolled from a strip of steel or similar material and which, by reason of its cross sectional shape, is relatively rigid in the direction of the longitudinal axis of the strip but is substantially flexible in a direction lateral of the strip to enable the mullion members to yield during the clamping or gripping of the glass by the mullion members.

Another object of my invention is to provide a mullion of the character set forth wherein the strips constituting the inner and outer mullion members are substantially W-shaped in lateral cross section, the outer legs of the W consituting the shelves or glass-engaging portions, engageable with opposed faces of the glass plates, and in which the central legs of the W extend between the adjacent edges of two adjacent plates to act as spacers between adjacent plates.

Another object of my invention is to provide a mullion of the character set forth wherein the internal angle formed between the outer legs and central legs of the W-shape constitutes a trough for draining any moisture which may seep around the edges of the glass plates.

Other objects and adavtanges of my invention will be apparent from a study of the following specifications, read in connection with the accompanying drawings, wherein

Fig. 1 is a vertical sectional view taken through a portion of a building, for example, a portion of a saw tooth truss roof, and illustrating my mullion construction employed for holding the glass plates in such location;

Fig. 2 is a lateral sectional view taken through my mullion construction and illustrating the initial assembly of the mullion members with the glass plates;

Fig. 3 is a view similar to Fig. 2 and illustrating the positions of the mullion members when they have been clamped or drawn toward each other to clamp the glass plates therebetween; and

Fig. 4 is a perspective view of a portion of a window, sky light, roof light or other similar construction, illustrating the manner in which the glass plates are held by my mullion members, and illustrating also a clip by which the plates and mullion members may be secured to the structural steel framing or truss work of the building.

Referring to the drawings, I have illustrated in Fig. 1 a portion of a saw tooth roof of a building which includes suitable framing or truss work which may be constructed either of wood or metal, including a roof portion 1 to which is joined a sloping side wall portion 2 constituting the more nearly vertical portion of the saw tooth roof. Through the side wall 2 may be formed a suitable opening 3, into which it is desired to place glass to form a window or roof light to admit light into the interior of the building. A suitable angle iron 4 may extend along the upper edge of the opening 3 while a similar angle iron 5 may be employed to define the lower edge of the opening 3, these angle irons 4 and 5 being connected to the framework of the roof construction in any suitable manner.

To construct the window, a plurality of glass

plates 6 are employed, arranged on edge and set into the opening 3 with their adjacent side edges in alignment with each other where they may be held by suitable vertical members or mullions 7. The mullions 7 may be constructed, in accordance with my invention, from a pair of complementary or nested strips of metal including a backing strip 8, preferably employed to engage the inner surfaces of the adjacent glass plates 6, and a clamping strip 9 employed to engage the outer surfaces of the glass plates. The mullion members or strips 8 and 9 are preferably cut to length sufficient to fit within the vertical dimensions of the opening 3 and may be of any desired cross sectional shape.

As shown in Figs. 2 and 3, I prefer that the cross sectional shape of the inner strip 8 be in the form of a W having central legs 10 and 11 and outer legs 12 and 13. In the preferred form, the outer legs 12 and 13 are so bent relative to the central legs 10 and 11, respectively, as to form an interior angle 14 therebetween directing the outer edge 15 of the mullion member 8 at an acute angle to the plane of the inner surface 16 of the glass plates 6; that is, the outer legs 12 and 13 constitute a shelf against which the inner surface 16 of the glass plates may rest, contacting the legs 12 and 13 only at the outer edge 15 of the strip. As will be understood by those skilled in the art, this construction provides a space at the rear of the glass plates 6 substantially V-shaped in cross section and constituting a moisture-receiving drain at 14, along which any moisture which seeps around the edges of the glass may be collected and drained from the mullions and passed outwardly of the building construction over suitable flashing 17 arranged at the bottom of the opening 3.

Also it will be noted that the central legs 10 and 11 of the W-shape may form any desired angle therebetween, preferably a relatively wide angle so that the central legs 10 and 11 constitute abutments against which the vertical edges 18 of the glass plate 6 may abut to thereby properly space adjacent glasses from each other and constitute a second point of contact between the glass plates and the mullion member 8.

While the strip constituting the mullion member 8 may be of any desired thickness, I prefer to employ a thickness of material from which the strip is made sufficient to lend rigidity to the mullion strip 8 to support the weight of the glass plates 6 without sagging, while it is preferable that the material be sufficiently thin to yield slightly in order to accurately align or engage all parts of the edges 15 of the strip with the interior surfaces of the glass plates 6.

The outer mullion strip or member 9, as shown in Figs. 2 and 3, is bent so as to have a lateral cross section of substantially W-shape, the central legs 19 and 20 of the strip 9 forming an angle therebetween substantially equal to the angle between the legs 10 and 11 on the strip 8 so that the central legs 19 and 20 of the outer strip will nest over the central legs 10 and 11 of the inner strip 8. It will also be noted that the central legs 10 and 11 extend outwardly a sufficient distance to project the junction 21 beyond the plane of the front or outer surfaces 22 of the glass plates 6 so that when the central legs 19—20 of the outer strip 9 are placed thereon the two strips will nest one upon the other.

The outer legs 23 and 24 of the outer strip 9 are preferably bent so as to normally extend substantially parallel to the outer surfaces 22 of the glass plates 6 but have their extreme outer edges 25 bent toward the surfaces 22 of the glass plates 6 to engage the glass plates 6 by the edges 25.

The junction 21 between the central legs 10 and 11 of the inner strip 8 is preferably flattened as indicated in Figs. 2, 3 and 4, to provide a flat seat against which a nut 26 may rest, the width of the flattened portion 21 being just sufficient to receive the nut 26 so that the nut 26 will be prevented from rotating when a bolt 27 is threaded therein.

Likewise the junction 28 of the central legs 19—20 of the outer strip 9 is flattened so as to permit this portion of the outer strip 9 to be pressed snugly against the flattened junction 21 on the inner strip 8.

By referring to Figs. 1 and 4, it will be noted that at suitable spaced points along the length of each of the strips 8 and 9, suitable bolt openings are provided so that when the outer strip 9 is nested upon the inner strip 8, the holes in the two strips may be aligned with each other and permit the reception therein of the bolts 27 which constitute the clamping means by which the two strips 8 and 9 may be drawn toward each other.

When the mullion and glass plates are to be assembled, the inner strips 8 may be secured in the opening 3 in any suitable manner, the glass plates 6 assembled therewith in the positions shown in Fig. 2, and then the outer strip 9 may be placed over the inner strip 8 and the bolts engaged with the nuts 26. At this time the edges 15 and 25 of the inner and outer strips will just bear against the opposed surfaces of the plates 6. After the series of mullions and series of plates have been assembled, the screws or bolts 27 may be tightened to draw the inner and outer strips 8 and 9 toward each other, causing flexing of the outer strip 9 to the position shown in Figs. 3 and 4 wherein the outer legs 23—24 engage the outer surfaces of the plates 6 at two points 25—29 and securely clamp the plates against the shelves formed by the inner strip 8.

With the strips in this position it will be apparent that a double line of contact is provided between the outer strip 9 and the outer surfaces of the glass plates 6, substantially sealing the plates and the strips 8 and 9 against ingress of moisture. However, some moisture will seep around the edges of the glass and will fall into the trough or drain at 14 on the inner strip 8 and be drained off.

The assembly of the glass plates and the mullion members described herein may be readily accomplished by providing a plurality of clips 30 (see Figs. 1 and 4), these clips being formed from a section of steel plate bent into a substantially Z-shape, as indicated in Figs. 1 and 4, the upper loop 31 of the Z-shape being preferably just wide enough to snugly engage one of the flanges 32 of the structural angle 4 or 5 which extends across the edge of the opening 3. By employing one of these clips 30 at the top and bottom of each of the mullions interposed between each adjacent pair of glass plates, a ready assembly of the mullions may be accomplished. The forward or bottom loop 32 of the clips is preferably wide enough to receive therebetween the assembled W-shapes of the mullion members 8 and 9 and the extreme outer flange 33 of the clip 30 is provided with a bolt hole 34 which may be aligned with the lowermost bolt hole in the strips 8 and 9 whereby a single bolt 27 may be employed to both clamp the strips 8 and 9 together and also to secure these strips to the clips 30. As will be understood, sheet metal screws or any similar device

may be employed in place of bolts 27, to secure the mullion strips together or to the clips.

While I have illustrated my mullion as particularly adapted to sloping window constructions, it will be apparent to those skilled in the art that the same mullion construction is adapted for vertically disposed windows or any window which is disposed at even a slight angle to the horizontal so long as there is sufficient slope to allow moisture to drain from the inner strips 8. It will also be noted that with my mullion construction no putty is required, a complete assembly of glass plates and mullions being accomplished merely by the tightening of the bolts 27.

While I have shown and described the preferred embodiment of my invention, I do not desire to be limited to any of the details of construction shown or described herein, except as defined in the appended claims.

I claim:

1. In a mullion construction for supporting glass plates, a backing strip having a substantially W-shaped cross section, the central legs of which diverge relative to each other to provide an apex extending between the edges of adjacent plates and to provide abutments for said plate edges spaced from said apex, the outer legs of which extend toward the plates, each engaging one face of a plate in spaced relation to the edge of said plate; a clamping strip having a substantially W-shaped cross section, the central legs of which diverge to nest with the central legs of the backing strip and the outer legs of which bear upon the outer surfaces of said plates, the junction of the inner and outer legs being disposed substantially in alignment with the line of contact between the plate edges and the central legs of the backing strip, the ends of said outer legs being bent inwardly toward the plane of said plates to engage said plates at the marginal edges of said clamping strip; and clamping means interengaging said strips to draw them toward each other to distort said outer legs of said clamping strip to bear upon said plates at the marginal edges of said strip and at the junction of the outer and central legs with each other.

2. In a window construction for a building having an opening adapted to receive a series of glass plates to form a window, angle irons extending along the top and bottom of said opening, a plurality of clips each having a pair of loops, a first loop to engage over one flange of said angle iron and a second loop extending over the end edges of the plates, and mullions secured to said clips to engage and bind adjacent plates in said opening, said mullions each comprising a backing strip and a clamping strip disposed with their ends in said second loops of said clips, and screw means for drawing said strips toward each other to clamp said plates therebetween, the bolts at the top and bottom of said strips engaging said clips to secure said mullions to said clips.

3. In a window construction for a building having an opening adapted to receive a series of glass plates to form a window, framing members extending along the top and bottom of said opening, a plurality of clips each having means to secure the same to one of said framing members and having a loop formed therein to extend about the end edges of the plates, and mullions secured to said clips to engage and bind adjacent plates in said opening, said mullions each comprising a backing strip and a clamping strip disposed with their ends in said loops of said clips, and screw means for drawing said strips toward each other to clamp said plates therebetween, the bolts at the top and bottom of said strips engaging said clips to secure said mullions to said clips.

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