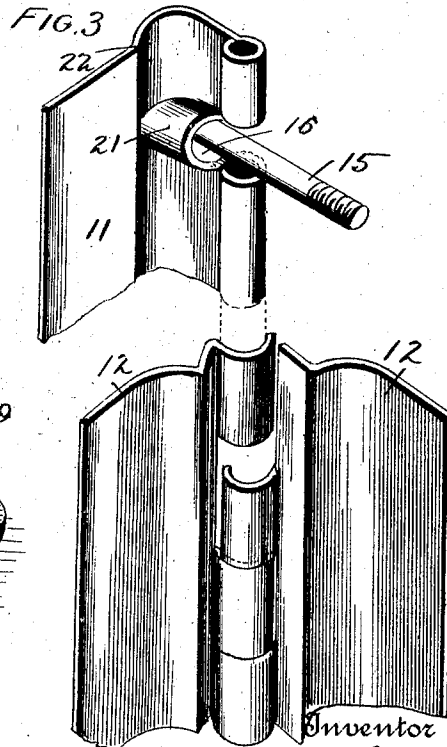
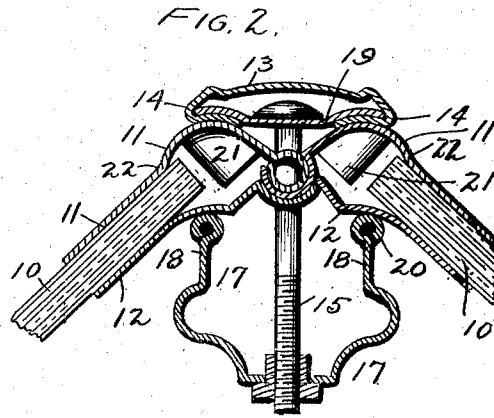
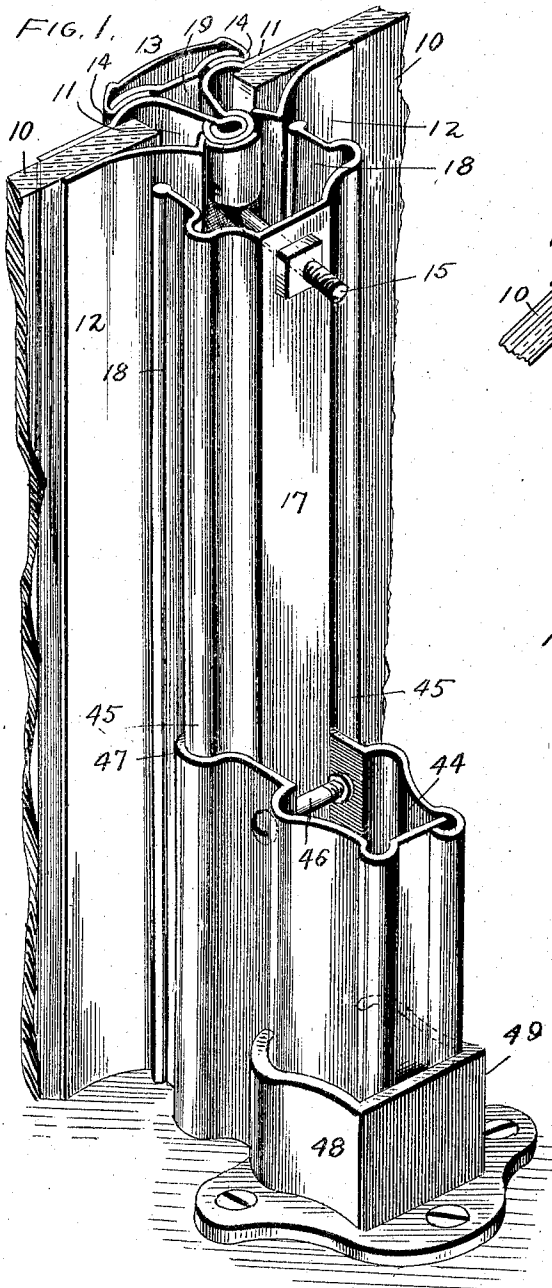


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CORNER AND DIVISION BAR.
APPLICATION FILED JUNE 17, 1916.

Patented June 24, 1919.
2 SHEETS—SHEET 1.

1,307,972.



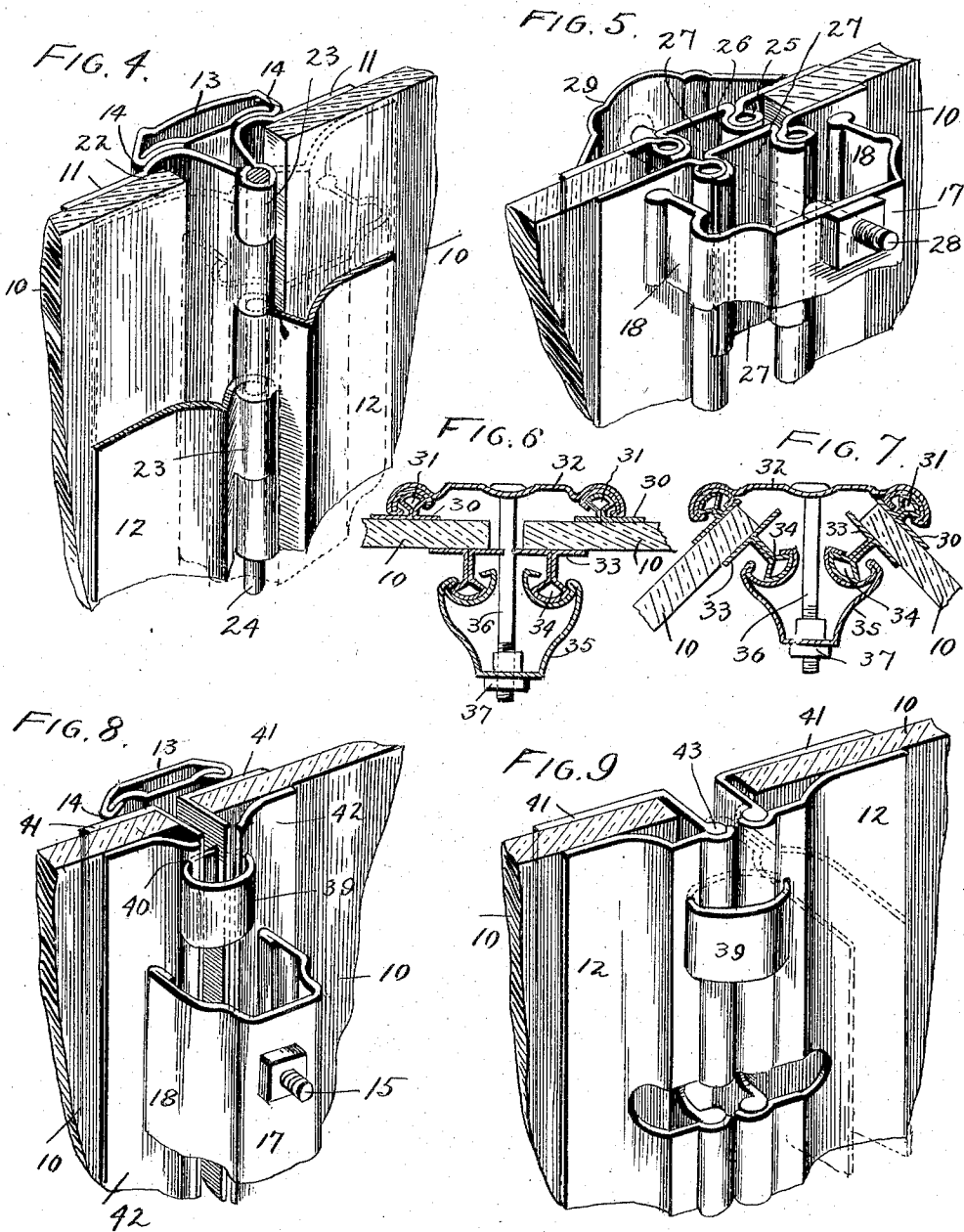
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To all whom it may concern:

Be it known that I, GEORGE C. HESTER, a citizen of the United States, and resident of Chicago, in the county of Cook, and in the State of Illinois, have invented a certain new and useful Improvement in Corner and Division Bars; and do hereby declare that the following is a full, clear, and exact description thereof.

In the now well-known plate glass store front construction, what are known in the trade as corner and division bars are employed at the vertical corners and other division points in the front between adjoining plates of glass, to secure them in position thereat. The angles of the plates of glass that form the corners, greatly vary, and while attempts have been made to provide a corner bar construction that would be adaptable to various angles, yet as far as I know to the contrary, the attempt has never succeeded, but the present practice is to provide a different corner bar for each angle. This requires a great assortment of corner bar angles, and even then difficulties arise because of failure of a particular corner bar and the glass plate as installed, to accurately agree, through error or carelessness of workman. Such lack of agreement results in failure of proper support being given the glass, and danger of breaking it by forcing an agreement. The object of my invention is to provide a bar construction which will have such flexibility or scope of adjustment that the same bar will suit any angle required, and, if desired, even to the extent of no angle, so that a great variety of corner bars and separate division bars, as such, is not necessary, but the one construction will serve all purposes and efficiently and with entire practicability meet all requirements. Other objects and advantages of my invention will be understood by those skilled in the art when the various embodiments of such invention shown in the drawings, are more fully explained in the following specification, of which said drawings form a part.

In the accompanying drawings—

Figure 1 is a perspective view of a bar embodying my invention;

Fig. 2 is a horizontal section thereof showing the position of the parts when the plates of glass are on an angle, the reinforcing bar shown in Fig. 1 being omitted;

Fig. 3 is a perspective view showing parts of the bars separated from each other;

Fig. 4 is a perspective view of a different embodiment of my invention;

Fig. 5 is a like view of still another embodiment of my invention;

Figs. 6 and 7 are respectively similar views of a different form of my invention;

Figs. 8 and 9 are, respectively perspective views of two other embodiments of my invention.

My bar, briefly described, comprises as the necessities of the case require, glass-engaging members in the form of duplicate pairs of vertical rails, between which, and the adjacent edges of adjoining plates of glass, clamping bolts or screws are passed, by which the rails of a pair, situated, respectively, on opposite sides of the same plate of glass are caused to exert the desired clamping pressure thereon. These rails are made of sheet metal, such as copper, of sufficient thinness to enable great lengths thereof readily to be bent or shaped into the desired form in cross section.

In the form of my invention shown in Figs. 1 to 3, the inner and outer members of each pair of rails are pivoted to each other on a longitudinal axis and the corresponding parts of the opposite pairs are pivotally connected on such an axis so that the two members of a cooperating pair, which for convenient designation I shall term plates, may be spaced apart a distance corresponding with the thickness of the plate of glass to be engaged thereby, one of which plates 11 is on the outer side of the plate 10, and the other plate 12 is on the inner side thereof, and their pivotal connection with each other and with the corresponding members of the other pair lies in the space between the edges of the two adjoining plates of glass and all four plates being provided with a flat glass-engaging portion which is the outer part of the plate and a concavo-convex curved portion that reaches from the flat, or plane portion to the pivotal connection between the plates which may readily be formed by a more or less complete tubular portion on the inner edge of each plate, the various tubular portions being of different diameter so that one may be applied to the other in a concentric arrangement, the inner-most one being a complete

round tube. By the pivotal connection thus formed, each pair of plates may be rocked from a position, such as that shown in Fig. 1, where the two glass plates are in the same vertical plane to the acute angle position shown in Fig. 2, and to any angle desired or necessary.

On the outside there is a vertical rail 13 whose inner face at each side is concavely curved to provide a bearing seat 14 which bears upon the outer convexly curved portion of the outer clamping plate 11, and connected to said rail at intervals are horizontal screw bolts 15 which pass therefrom between the adjoining plates of glass 10 and each through a hole, or passage 16 cut through, or provided in the hinge connection between the various plates and emerges at its free end through a hole in an inner clamping bar 17 which is substantially U-shaped in cross section, or branched so as to provide two arms 18, which at their free edges bear against the concave surface of the respective inner plates 12 so that when a nut is applied to said screw bolt 15 and caused to bear against the outer side of the member 16, the bearing edges of the latter will bear against the concave sides of the inner plates 12, and the outer rail will be pressed in the opposite direction against the convex surfaces of the outer plates 11 with the result that the plates of glass will be firmly and strongly clamped between said inner and outer clamping plates no matter what the relative position of the plates 10 be, whether one occupying the same vertical plane, or any angular position between the same and an acute angle. The connection between the screw bolts 15 and the outer rail, may, as shown in Figs. 1 and 2, be formed by a plate 19 whose opposite edges overlap the intumed concavo-convex marginal portions of the rail 13, the screw or bolt 15 having its head in the space on the outside of the middle portion of said plate 19 and passing through a hole therein so that the head pulls upon the plate 19 and the latter presses the intumed edges of the outer rail 13 against the convex portions of the outer plates 11.

Preferably the arms of the inner clamping post 17 are rounded where they bear against the concave side of the inner plates 12, as by the provision of a tubular bead 20 on said edge.

Adjacent the hole for the passage of the clamping bolts 17 in the outer plate 11 there is a boss or projection 21 and its outer edge is carried to the point where the straight portion of the plate meets the concavo-convex portion and it thus serves as a stop for the edge of the contiguous glass plate which keeps the latter from having bearing contact with any portion of the plate except the plane, or flat portion thereof, and supplementing this arrangement to limit the con-

tact of the glass with a flat surface, the flat glass-engaging portion of the plate may be offset by a slight bend 22, as clearly shown in the drawings, which will throw the flat portion to one side of the concave portion.

In the embodiment of my invention illustrated in Fig. 4 the hinge, or pivotal connection between the several plates of the two pairs is formed after the fashion of the familiar leaf-hinge where each plate has at its inner edge a completely tubular portion 23 and through the alining tubular portions a pivoting pin, or pintle 24 is passed. At the points where holes are provided for the clamping bolts, such holes are provided by a punching operation after the parts are assembled and the mashing, or offsetting effect of the punch tool upon the pintle 24 serves to secure the latter in place.

In the form of my invention shown in Fig. 5 the hinging of the clamping plates instead of being upon one axis, may, as shown in said figures be upon four axes, each of the plates having at its inner edge a tubular bead 25 and the beads of corresponding plates being pivoted in part tubular bends 26 in a bridge bar 27. The clamping bolts 28 in this case pass through alining holes in the respective bridge bars and they are fastened at their outer ends directly to a similar outer clamping rail 29, which is concavo-convex in cross section with its oppositely projecting edges lying against the outer glass-engaging plate.

In the form of my invention shown in Figs. 6 and 7, as in the case of that shown in Fig. 5, each glass-engaging plate has its own pivotal connection independently of the others, which, in the case of the outer plate 30 is in a part-tubular bend 31 at the outer edge of the outer rail 32, and which in the case of the inner plate 33 is in a part-tubular bend 34 in the edge of the inner U-shape clamping bar 35, the latter and the outer bar 32 being connected by a bolt 36 whose head engages the outer rail 32 and whose inner end projects through the clamping bar 36, where it receives the nut 37. Each plate 30 and 33 is formed by bending sheet metal into substantially T-shape with a flat surface to bear against the glass and an arc shape projection 38 fitted in the bend of the respective clamping bar, or rail.

In the form of my invention shown in Fig. 8, the construction is similar to that shown in Figs. 1 to 3, in the form and general construction of the outer vertical rail 13, the inner U-shaped clamping bar 17 and the bolt or screw connection between these inner and outer clamps and in that both pairs of inner and outer glass-engaging plates are pivotally connected to each other, and the two pairs are pivoted together by a common pivotal connection which, however, in the case of the construction shown in Fig. 8

consists of an elliptical loop or bail 39 which passes through alining slots 40 in the inner edges of the four plates constituting the two pairs of inner and outer glass-engaging plates. The form of the glass-engaging plates shown in Fig. 8 is different from the form shown in Figs. 1 to 3, in that the outer plate 41 is angular in cross section with one arm of the angle extending inward and the curved portion of the inner plate 42 differs from the curved portion of the corresponding plate shown in Figs. 1 to 3.

In the form of my invention shown in Fig. 9, the construction is essentially the same as that shown in Fig. 8, with the difference that at the inner edge of each outer plate there is a rod 43, and the inner edge of the inner plate has a part-tubular bend that conforms to said rod and the curved portion of the inner plate is similar to the curved portion of the inner plate in the construction shown in Figs. 1 to 3. The position of the inner plates indicated by dotted lines in Fig. 9, where they are swung together, is that in which they are placed when the parts are being assembled between the plates of glass, they being thus close together so that they may readily pass between the customary spaces between the edges of adjoining plates of glass. In Fig. 9 the clamping bar and bolt are omitted for the sake of clearness.

A very important consideration in corner, or division bars for store front construction is the projection of the division bars from the outer face of the glass to a minimum extent and one of the problems with which I have had to contend is the provision of a practical construction having no objectionable amount of projection of the bar, and it will be seen by reference to the drawings and especially in such constructions as shown in Figs. 1 to 3, the outer rail is very flat so that under all conditions its projection from the outer face of the glass is very slight.

An important feature of my invention is the automatic, or self-adjustment, or adaptation of the glass clamps to the respective plates of glass on opposite sides of the bar. It is not necessary with my construction to adjust the clamps to suit the angular relation of the plates of glass that are to be secured before applying the same to the glass, but the clamps automatically conform, or adapt themselves to the plates of glass, whatever their angular relationship is, in the act of applying the corner, or division bar thereto.

As shown more particularly in Figs. 1 and 3, my bar lends itself readily to the employment of a reinforcing, or stiffening post 44 made usually of steel, or copper of heavy gage, such post consisting of two opposite, but substantially similarly shaped members

which clamp and interlock with ribs 45 on the outer sides of the inner clamping bar 17, a clamping screw 46 being provided to hold two parts of the post together with the desired pressure upon the inner clamping bar 17. The edges of the post parts contiguous to the ribs 45 are given a corresponding hook-shape 47. It will be observed that the reinforcing, or stiffening post is entirely external to the corner, or division bars part proper, and, hence, all required stiffness is provided without impairing the elasticity or resiliency that is desirable in those parts of the bar which directly act upon the glass, and such external location is important also in that it enables the reinforcing or stiffening bar to be applied, wherever it is required, without any special adaptation of the parts.

As shown in Fig. 1, I provide a foot piece, or anchor 48 having a horizontal flange with screw holes for securing it in position, and it has an upstanding member 49, which, in cross section corresponds both to the configuration of the inner clamping bar 17 and the configuration of the reinforcing or stiffening post, and, hence, it may be used equally well with either clamping bar 17, or reinforcing bar; and it affords a slidable connection with the clamping bar, or reinforcing post which makes unimportant the accurate vertical dimensions of the bar, or post, as if the latter is cut too short, for example, it can be compensated for and ample bearing nevertheless provided in the anchor extension 49.

Having thus described my invention what I claim is—

1. A glass clamping device comprising two pairs of glass-engaging plates, a pair for each of two pieces of glass, the plates of a pair engaging the outer and inner sides of a piece of glass, respectively, each plate of both pairs being hinged and each movable bodily on its hinge, and means for clamping said pairs of plates upon interposed glass, in all the positions which they occupy.

2. A glass clamping device comprising two pairs of glass-engaging plates that respectively engage outer and inner sides of the plate of glass, all of said plates being pivotally connected to each other upon a common axis, and means for drawing the outer and inner glass-engaging plates of a pair toward each other to clamp the plates of glass therebetween.

3. A glass clamping device comprising two pairs of glass-engaging plates that respectively engage outer and inner sides of the plates of glass, all of said plates being pivotally connected to each other upon a common axis, a rail engaging the outer plates of both pairs, a clamping bar engaging the inner plates of both pairs, and a bolt connecting said rail and said bar and acting to draw

the same toward each other to produce clamping pressure of the plates upon the glass.

4. A glass clamping device comprising two
5 pairs of glass engaging plates that respectively engage inner and outer sides of the plates of glass, a flexible connection between said pairs of plates on which the plates have a rocking movement, and means to cause the
10 opposite plates of a pair to clamp an interposed plate of glass, said pairs of plates being self-adjusting on the flexible connection between them to conform to the angular relation of the plates of glass.

15 5. In store front construction, a hollow glass supporting post made of sheet metal, a reinforcing bar external to the post, consisting of two vertical parts applied to opposite vertical sides of the post, and projecting out-

ward therefrom, and engaging each other 20 beyond the post, and means for securing said two parts together and to the post.

6. In store front construction, a hollow glass supporting post made of sheet metal, and a reinforcing bar external to the post, 25 and secured thereto, and a foot piece, or anchor applicable to either post or bar, and slidably connected therewith, the cross-section of the portion of the post engaged by the reinforcing bar being similar to the 30 cross-section of the foot piece, and the reinforcing bar also having a cross section corresponding to that of the footpiece for engagement by the latter when applied thereto.

In testimony that I claim the foregoing I 35 have hereunto set my hand.

GEORGE C. HESTER.

Copies of this patent may be obtained for five cents each, by addressing the "Commissioner of Patents, Washington, D. C."