J. P. MURNANE.

GLASS SECURING DEVICE.

APPLICATION FILED SEPT. 29, 1913.

1,230,758. Patented June 19, 1917.

Fig. 1.

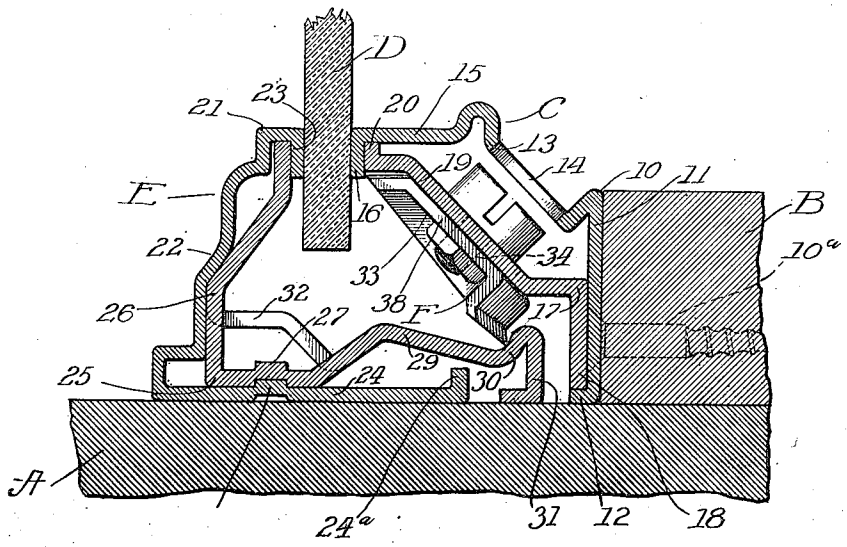


Fig. 2.

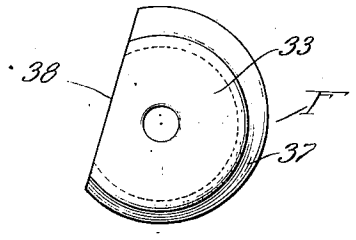
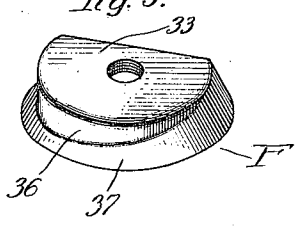


Fig. 3.



Witnesses:
Arthur W. Carlson
Charles R. Cole

James P. Murnane Inventor.
by Jones, Addington, Ames & Seibold
Attys.

UNITED STATES PATENT OFFICE.

JAMES P. MURNANE, OF ST. LOUIS, MISSOURI, ASSIGNOR TO ZOURI DRAWN METALS COMPANY, OF CHICAGO, ILLINOIS, A CORPORATION OF ILLINOIS.

GLASS-SECURING DEVICE.

1,230,758. Specification of Letters Patent. Patented June 19, 1917.

Application filed September 29, 1913. Serial No. 792,422.

To all whom it may concern:

Be it known that I, JAMES P. MURNANE, a citizen of the United States, residing at St. Louis, in the State of Missouri, have invented new and useful Improvements in Glass-Securing Devices, of which the following is a full, clear, concise, and exact description, reference being had to the accompanying drawing, forming a part of this specification.

My invention relates to glass-securing devices for store windows, show cases and the like.

In securing plate glass in place in the frames of store windows, show cases, et cetera, it is at present ordinary practice to provide an inside clamping member and an outside clamping member between which the glass is held, the outside clamping member being pressed toward the glass by means of screws passing through such member. These screws may be tightened to a greater or less extent according to the will of the person installing the glass; and, it often happens that they are tightened to such an extent as to cause the outside clamping member to grip the glass with so great a force as to result either in the breakage of the glass or the formation of latent flaws which will develop into breakage as soon as wind pressure or the like is applied to the glass. Moreover, it is possible to tighten the screws sufficiently to spring the clamping members at the points where the screws are located, the linearity of the glass-engaged edges of the clamping members being thus destroyed. This frequently results in breakage of the glass or in the formation of latent flaws the ein, and is especially dangerous where, as is usually the case in actual practice, the screws are not tightened uniformly. Owing to the fact that there is a limit, commercially, to the thickness of the material which can be used in the clamping members, it has hitherto been impossible to avoid this springing of the clamping members.

It is the principal object of my invention to obviate the drawbacks mentioned above by providing a glass-securing device in which the amount of force which can be applied to the clamping member is limited to a predetermined maximum, such maximum being less than that which would cause injury to the glass or springing of either of the clamping members. It is another object of my invention to produce a glass-securing device by the use of which glass may be installed with ease and speed, and which may be placed on the market at a reasonable cost. And it is a still further object to improve upon the existing forms of glass-securing devices as used at the sills, transoms or the like of store windows.

I have described, by way of example, in the following specification and shown in the accompanying drawing, an embodiment of my invention as employed in connection with a sill construction. My invention may be employed, however, in connection with corner bars, division bars and the like, and may take other forms than that which is described and shown, without exceeding the scope of my invention, as defined in the appended claims.

In the drawing:

Figure 1 is a vertical section through a glass-securing device constructed in accordance with my invention, as applied to a sill, transom or the like;

Fig. 2 is a plan of one of the cams; and

Fig. 3 is a perspective view of one of the cams.

Like reference characters refer to like parts throughout the following specification and the several figures of the drawing.

Referring now particularly to the drawings, A designates the sill of a store window or the like, such sill having a riser B. To the front of the riser B is secured an inside clamping member C, against which a sheet D of plate glass is clamped by means of an outside clamping member E, such outside clamping member being drawn against the glass by means of cams F which are disposed at regular intervals along the inside clamping member C.

The inside clamping member C comprises a long metallic strip 10, usually of copper, having a vertical portion 11 which rests against the front face of the riser B and is secured thereto by means of a screw 10^a, the portion 11 being provided with a forwardly extending lip 12 at its lower edge. Above the vertical portion 11, the strip 10 is bent to form an inclined portion 13 having apertures 14 spaced therealong to permit access to the cams F. Beyond the inclined portion 13, the strip 10 is bent to form a horizontal channel portion 15, having at its front edge a downwardly extending lip 16, which engages the glass D. A

plurality of short stiffening members 17, preferably formed of steel, are contained in the strip 10, each stiffening member carrying one or more of the cams F. Each of the stiffening members 17 includes a vertical portion 18 which lies against the vertical portion 11 of the strip 10, and the lower edge of which rests upon the lip 12. Above the vertical portion 18 each stiffening member is formed with an inclined portion 19 which carries the cam or cams, and the front edge of which is bent upward at 20 to engage the inside of the lip 16.

The outside clamping member E comprises a long metallic strip 21, usually of copper, having a vertical portion 22 bent into an ornamental form. The strip 21 is bent over at the upper end of the vertical portion 22 so as to produce a glass-engaging flange 23, which is disposed opposite the glass-engaging flange 16 of the inside clamping member. The strip 21 is formed with a rearwardly extending base portion 24, which lies upon the sill A and is bent upwardly at its rear edge to form a vertical flange 24^a. A plurality of short stiffening members 25, corresponding in number and location with the stiffening members 17, are contained in the strip 21, each of such stiffening members being formed with a vertically extending portion 26, the upper end of which engages the inside of the glass-engaging flange 23 of the strip 21. Each stiffening member 25 has a portion 27 thereof stamped upwardly to receive a similar upwardly stamped portion 28 of the base 24 of the strip 21, whereby the stiffening member 25 and the strip 21 are permanently and irremovably secured together. Each stiffening member 25 is formed with a rearwardly extending leg 29, which passes above the upper edge of the flange 24^a and is provided at its end with a curved abutment 30. Beyond the abutment 30, the metal of the stiffening member is bent to form a foot 31 which rests upon the sill A. Each of the stiffening members 25 is formed with one or more portions 32 stamped out between the vertical portion 26 and the leg 29. The portions 32 form braces, preventing springing of the vertical portion 26 in one direction or the other.

The stiffening members 17 are disposed at regular intervals along the inner clamping member C; and, as has been said, each of these members is provided with one or more cams F. Each of the cams F consists of a disk 33 to which is riveted, or otherwise permanently secured, a stem 34 which passes through the portion 19 of the stiffening member 17. The stem 34 is provided with a screw head 35 disposed so as to create a considerable amount of friction between the disk 33 and the portion 17 of the stiffening member, when the cam is rotated by means of the screw head. The stiffening members 17 are so disposed that the heads 35 of the cams F are opposite to the holes 14 in the strip 10, so that access can be had to the heads 35 through the holes 14.

The cams F are similar to each other and the description of one of them will suffice. The disk 33 is formed with a peripheral flange 36 extending at right angles therefrom. From the flange 36 extends a spiral flange 37 disposed so that it will extend vertically downward when the stiffening member is in position. As clearly shown in Fig. 1, the edge of the spiral flange 37 of each cam engages the curved abutment 30 of the outside clamping member. It will be seen that when a cam is rotated the edge of its spiral flange 37 will press the outer clamping member, through the corresponding leg 29, rearward. If the spiral flange 37 were of the same width throughout, the distance between its edge and the sill A would increase during the rotation of the cam in a direction to tighten the outside clamping member. It is desirable that the distance between the edge of the cam and the sill A should remain approximately constant during the rotation of the cam. To this end, the width of the spiral flange 37 is gradually inclined in the direction of rotation in which the cam is turned during the tightening of the outside clamping member, as clearly shown in the drawing. In other words the eccentricity of the cam edge is such or is so curved that as the cam is rotated the point of its contact with the curved shoulder or abutment 30 will recede horizontally or toward the riser B, but will not move downwardly or toward the sill A, to a great extent.

In the embodiment now being described, the edge of the spiral flange 37 is cut so that it will move rearwardly when the cam is rotated, but the distance between it and the sill A will not vary to any substantial extent during such movement.

Each of the cams F is cut away at 38 so that when the cams are turned into such positions that their cut-away portions are located downward the outside clamping member can be pushed into place with the bend of the leg 29 of the stiffening members 25 back of the curved portion 30 located behind the cams.

When it is desired to install a sheet of glass, the inside clamping member C is first secured to the riser B. When this has been done, the glass D is placed in position, on the usual shelves, so as to engage against the flange 16 of the inside clamping member. The outside clamping member is then placed in position with its flange 23 engaging the glass, the cut-away portions 38 of the cams F permitting this. The cams F are then successively turned in a clockwise direction. The effect of turning the cams F is to force

the outside clamping member into engagement with the glass and, at the same time, clamp it firmly down against the sill A. In this way a sheet of glass may be installed with great ease and speed.

The cams F are turned by means of a screw driver applied to the screw heads 35. By thus turning the cams, it is possible to apply a sufficient force to clamp the glass firmly in position and hold the outside clamping member firmly down on the sill A; but it is impossible to apply sufficient force to injure the glass, this being largely due to the fact that the cams are of relatively large diameter and the pitch of their spiral flanges 37 is relatively great. It is likewise impossible to apply sufficient force to spring the clamping members, especially as these members are reinforced by the stiffening members 17 and 25. As soon as the outside clamping member has been drawn into close engagement with the glass, any further effort to turn the screw head 35 greatly increases the friction between the cams F and the stiffening members 17, and between the cams and the abutments 30, thereby causing a jamming action which renders further turning of the cam impossible. This jamming action occurs before an unsafe pressure can be applied to the glass. Means is thus provided for aplying to the outside clamping member a force which is limited to a safe maximum.

By reason of the friction between the disk 32 and the inner surface of the inside clamping member, the cams F will remain in any position in which they are placed. This permits the inner clamping member to be sent out from the factory with the cams in the position in which the cut-away portions 37 are located downwardly, whereby the placing of the outer clamping member in position is facilitated and the time of the person installing the glass saved. Also, by reason of this frictional engagement, and by reason of the jamming effect between the cams, the inside clamping member and the outside clamping member, and the cams are locked and retained firmly in position after they have been tightened and cannot become accidentally loosened by vibration or the like.

Having thus described my invention, what I claim as new and desire to secure by Letters Patent is—

1. In apparatus of the class described, the combination with a supporting sill or rail at the edge of the glass, of a securing device for the glass including an inside clamping member secured to the support and having a portion against which the inner side of the glass is adapted to bear, an outside clamping member resting against the portion of the support opposite the edge of the glass and having a portion adapted to bear against the outside of the glass, and an eccentric cam mounted on one of said members and engaging the other member and arranged when operated to draw said outer member toward said inner member and clamp the glass between them and to hold said outer member against the said support.

2. The combination with a sheet of glass, of a securing device therefor including an inside clamping member, an outside clamping member, and a rotatable member having a helical cam portion of varying radius mounted on one of said members and operable from the inside side of said glass, said cam portion engaging a portion of the other clamping member for moving said outside member toward said inside member.

3. In apparatus of the class described, the combination with a support, of a securing device for plate glass carried thereby and including an inside clamping member having an inclined portion, an outside clamping member, a rotatable member mounted in an inclined position on said inclined portion of the clamping member and having a helical cam portion of varying radius, said rotatable member being operable from the inside of the glass, and said helical cam portion arranged to engage a portion on the outer clamping member for moving the same to clamping position toward the inner clamping member.

4. In apparatus of the class described, the combination with a support having a portion at the edge of the glass substantially at right angles to the plane of the glass, of a glass clamping member associated therewith, a second glass clamping member movably associated with said support, and an eccentric cam mounted on one of said members for engagement with the other to simultaneously move said second named member toward said first named member and hold it against said support, said cam being jammed into frictional engagement with the member on which it is mounted to lock it in final position.

5. In apparatus of the class described, the combination with a sheet of glass, of a support having a portion at the edge of the glass substantially at right angles to the plane thereof, an inside glass clamping member associated with said support, an outside glass clamping member movably associated with said support, and a cam mounted on one member for engagement with the other member and operable from within the glass, said cam serving to simultaneously move said outside member toward said inside member along said portion of the support at the edge of the glass, and for holding said member against said portion of said support.

6. In apparatus of the class described, the combination with a support having a portion at the edge of the glass substantially at

right angles to the plane thereof, of an inside clamping member fixedly associated with said support, an outside clamping member movably associated with said support and having a portion extending within the glass, an eccentric cam coöperating with the extended portion of said outside clamping member for moving said outside clamping member toward said inside clamping member and pressing it against said portion of said support adjacent the edge of the glass, and means for locking said cam in its final adjusted position.

7. In combination, a sheet of glass, a support, an inside clamping member fixedly associated with said support, an outside clamping member movably associated with said support and having a portion extending within the glass, and a spiral cam carried by said inside clamping member and coöperating with the extended portion of said outside clamping member, for moving said outside clamping member toward said inside clamping member, and means for causing said cam to be jammed and locked in final position.

8. In apparatus of the class described, the combination with a sheet of glass, of a support at the edge of the glass having a portion substantially at right angles to the plane thereof, an inside clamping member fixedly associated with said support, an outside clamping member movably associated with said support and having a portion extending inwardly beyond said glass, and an eccentric cam coöperating with the said extending portion of said outside clamping member, for moving said outside clamping member along said portion of said support toward said inside clamping member and simultaneously pressing said extended portion against said support.

9. In combination, a sheet of glass, a support, an inside clamping member fixedly associated with said support, an outside clamping member movably associated with said support, and having a portion extending inwardly beyond said glass, and a spiral cam coöperating with the extended portion of said outside clamping member, for moving said outside clamping member toward said inside clamping member and simultaneously holding it against said support.

10. In combination, a sheet of glass, a support, an inside clamping member fixedly associated with said support, an outside clamping member movably associated with said support and having a portion extending inwardly beyond said glass, and a spiral cam carried by said inside clamping member and coöperating with the extended portion of said outside clamping member, for moving said outside clamping member toward said inside clamping member and simultaneously holding it against said support.

11. In combination, a sheet of glass, a support, an inside clamping member fixedly associated with said support, an outside clamping member movably associated with said support, and having an upwardly extending shoulder at the lower inner part thereof, and a rotatable inclined cam having a spiral portion engaging said shoulder, for moving said outside clamping member toward said inside clamping member.

12. In apparatus of the class described, the combination with a sheet of glass, of a support, an inside clamping member fixedly associated with said support, an outside clamping member movably associated with said support, said outside member having an upwardly extending shoulder, and a rotatable inclined cam having a spiral portion engaging said shoulder for moving said outside member toward said inside member.

13. In apparatus of the class described, the combination with a sheet of glass, of a support, an inside clamping member fixedly associated with said support, an outside clamping member movably associated with said support, said outside member having an inwardly extending portion with a shoulder thereon, and a rotatable spiral cam carried by said inner member for engagement with said shoulder, said cam and shoulder serving to draw said outside and inside members toward each other when the cam is rotated.

14. In apparatus of the class described, the combination with a sheet of glass, of a support, an inside clamping member fixedly associated with said support, an outside clamping member movably associated with said support, one of said members having an inwardly projecting part provided with a shoulder, and the other member carrying a rotatable cam adapted to engage said shoulder and serving when rotated to draw said members toward each other.

15. In apparatus of the class described, the combination with a sheet of glass, of a support, an inside clamping member fixedly associated with said support, an outside clamping member movably associated with said support, and a rotatable spiral cam mounted on one of said members and engaging a part of the other member to draw said members together when the cam is rotated.

16. In apparatus of the class described, the combination with a sheet of glass, of a support, an inside clamping member fixedly associated with said support, an outside clamping member movably associated with said support, and a rotatable cam permanently mounted on one of said members and adapted to engage a portion of the other member to draw said members together.

17. In apparatus of the class described, the combination with a sheet of glass, of a

support, an inside clamping member associated with said support, an outside clamping member also associated with said support, and a rotatable disk like cam mounted on one of the members, the enlarged face of said cam frictionally engaging the corresponding surface of the member on which it is mounted and its periphery engaging a portion of the other member and adapted when rotated to draw said members together to clamp the glass.

18. In apparatus of the class described, the combination with a sheet of glass, of a support, an inside clamping member associated with said support, an outside clamping member also associated with said support, one of said members having an inclined portion and the other member a shouldered portion extending beneath the inclined portion, a disk like cam mounted with its flat face against said inclined portion, means operable from the outside of said member for rotating said cam, the periphery of the cam being formed to engage said shouldered portion of the other member to draw the two members together against the glass and to press said shouldered member against the support, the said cam being locked in its final clamping position by the pressure between the parts.

In witness whereof, I have hereunto subscribed my name in the presence of two witnesses.

JAMES P. MURNANE.

Witnesses:
CHAS. F. SCHMIDT,
DANIEL J. MURNANE.