No. 794,447. PATENTED JULY 11, 1905.

W. R. BICKFORD.

FASTENER FOR PLATE GLASS.

APPLICATION FILED MAR. 27, 1905.

Fig. 1.

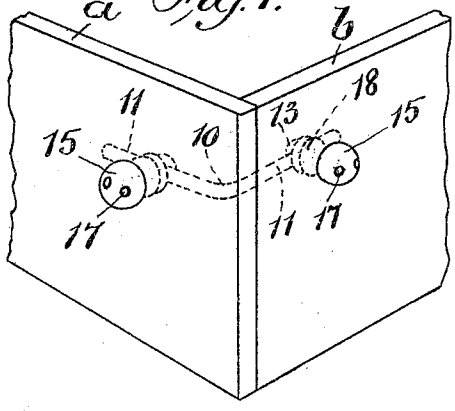


Fig. 2.

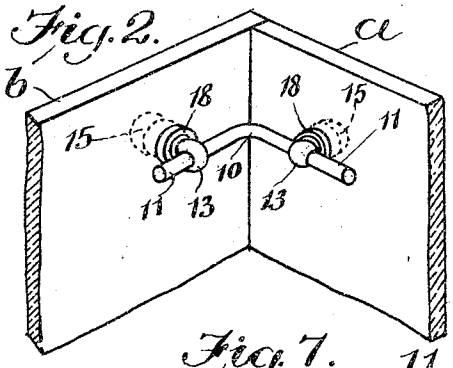


Fig. 7.

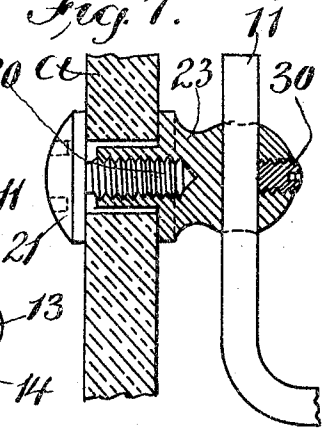


Fig. 5.

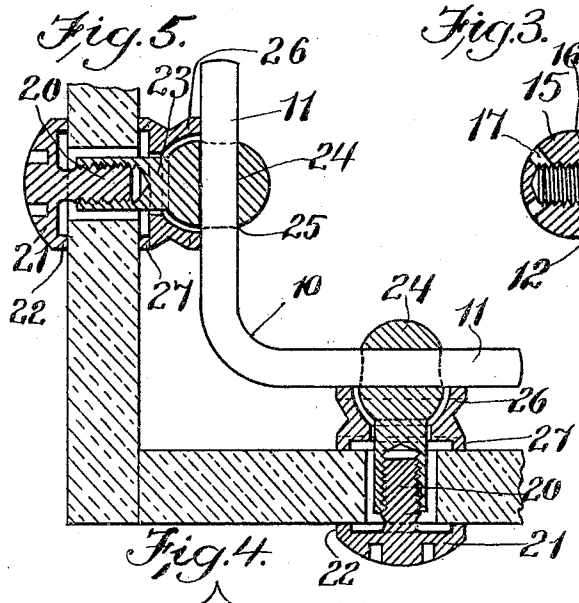


Fig. 3.

Fig. 4.

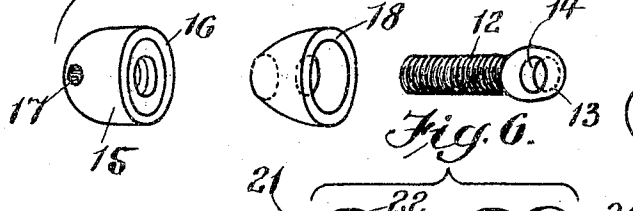
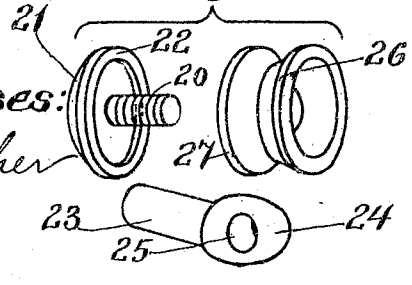


Fig. 6.



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his attys

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No. 794,447. Patented July 11, 1905.

UNITED STATES PATENT OFFICE.

WALLACE R. BICKFORD, OF NEWTON, MASSACHUSETTS, ASSIGNOR TO STANDARD PLATE GLASS COMPANY, OF BUTLER, PENNSYLVANIA, A CORPORATION OF PENNSYLVANIA.

FASTENER FOR PLATE-GLASS.

SPECIFICATION forming part of Letters Patent No. 794,447, dated July 11, 1905.

Application filed March 27, 1905. Serial No. 252,161.

To all whom it may concern:

Be it known that I, WALLACE R. BICKFORD, of Newton, in the county of Middlesex and State of Massachusetts, have invented certain new and useful Improvements in Fasteners for Plate-Glass, of which the following is a specification.

This invention has relation to those fasteners which are employed for securing together the meeting edges of two angularly-arranged plates, such as plate-glass windows or the glass walls of show-cases, aquariums, or the like.

The object of the invention is to provide certain improvements in fasteners of the character described, by which their parts may be simplified in construction and reduced in number, by which they may be made more attractive in appearance and less conspicuous than heretofore, and by which they are made more readily adjustable, so as to be more easily attached in place.

Another object of the invention is to provide certain improvements in said fasteners, in consequence of which the attached plates are so held that they may move relatively to each other without danger of fracture.

It frequently happens that after the glass windows are set in place the frames settle unevenly or so contract or expand that when said windows are rigidly held together by fasteners they fracture at the aperture through which the clamping member of the fastener is passed.

According to the present invention I provide in lieu of the binding-plate which has hitherto been employed a binder which consists of a rod or bar bent at an angle so that its end portions lie parallel to the glass plates. This rod or bar is relatively small in cross-section, so that it is inconspicuous and is preferably cylindrical, whereby it has a rotative engagement with the parts of the fasteners which engage the glass plates, and consequently permits said plates to automatically adjust themselves. In conjunction with the rod the invention is illustrated as including clamps so constructed that by tightening them they are attached both to the window and to the rod. Each clamp may consist of a nut and screw. One of these parts is adapted to bear against the rod and the other against the outer face of the glass plate. Between the rod and the inner face of the glass plate is introduced a clamping member in the form of a collar, and hence by effecting a relative rotation of the nut and screw the nut, the screw, the clamping-collar, the plate, and the rod are all clamped tightly together.

On the accompanying sheet of drawings, Figure 1 represents one embodiment of the invention secured to two angularly-disposed glass plates of a window as seen from the outside. Fig. 2 represents a view of the same from the inside. Fig. 3 represents a horizontal section through the fastener, the parts all being illustrated as enlarged. Fig. 4 represents in detail some of the parts of the fastener shown in Fig. 3. Fig. 5 represents in section another embodiment of the invention. Fig. 6 represents in detail some of the parts shown in Fig. 5. Fig. 7 represents in section still another form of the invention.

It will be understood that the invention is not limited to the details of construction illustrated by the drawings thus briefly described and explained in the following specification, and, further, that the phraseology which I employ is for the purpose of description and not of limitation.

Referring to the drawings, *a b* indicate two glass plates. They may be plate-glass windows or the walls of a show-case or aquarium or any other angularly-disposed plates which it is desired to secure together.

The illustrated form of the invention comprises a rod or bar 10, which is bent at or near its middle to provide two end portions 11 11, which lie parallel to the plates *a b*, respectively. This rod or bar serves as a binding or connecting member to connect and bind together the clamps which are engaged with the glass plates. The bar or rod is cylindrical in form for the purpose previously described, although so far as certain features of the invention are concerned it may be angular in cross-section.

The clamps which are attached to the glass

plates are each formed with three coacting members—to wit, a screw, a nut, and a clamping-collar. A screw and nut are preferably employed, since they are relatively adjusted without difficulty; but it is to be understood that in lieu of them I may employ any other mechanical equivalents and desire to include such equivalents in the term "screw and nut." The screw is formed with a head which serves as one clamping member, while the nut serves as another member, these members being located on opposite sides of the glass plate. The collar or third clamping member is interposed between the rod and the glass plate and cooperates with the member located outside of the glass plate in clamping the plate and with the member inside of the plate in clamping the rod. In the structure shown in Fig. 3 the screw is indicated at 12, and its head 13 has an aperture 14 to receive the end 11 of the rod 10. The screw is passed from the inside of the window through an aperture in the glass plate and projects therebeyond for threaded engagement with the nut 15. This nut is illustrated as substantially hemispherical in form, and it is adapted to bear against the face of the glass plate. It has a circular flange 16, which engages the plate in a circular line surrounding the aperture therethrough. The nut has a threaded socket instead of having a threaded aperture entirely through it, and it has holes 17 in its convex portion or is otherwise suitably formed to receive a tool by which it may be rotated.

Between the rod 10 and the glass plate is introduced the collar 18, which is apertured to loosely receive the screw 13. One face of the collar engages the rod and its other face engages the plate, so that by screwing the nut and screw tightly together the rod is clamped between the collar and the screw-head, and at the same time the plate is clamped between the collar and the nut. In Fig. 3 the face of the collar which engages the plate is shown as conical or convex, and the aperture in the plate is formed complementally; but this is not essential.

It is quite evident that the screw and nut may be reversed in position, and in my preferred form of the invention they are arranged with the head of the screw outside the plate, as shown in Fig. 5. In this figure the screw 20 has a head 21, with a bearing ring or flange 22 to engage the plate. The nut 23 is elongated and at one end has a threaded aperture to receive the screw and at its other end has an enlargement 24, which is transversely apertured, as at 25, to receive the rod 10. The collar 26 in this case surrounds the nut and has a face with a circular flange 27 to engage the face of the plate. In both forms of clamp the collar is recessed to receive the enlargement of the nut in one case and of the screw in the other case. In Fig. 5 the nut extends into the aperture in the plate, although it is evident that the screw could be made longer and the nut terminate at or near the plane of the inner face of the plate.

From the foregoing description it is apparent that the complementally-threaded clamping members and the collars serve to adjustably clamp the bent rod 10 and the plates *a* and *b* together and that each end 11 of the rod may be adjusted rotatively about its own axis and about the axis of the threaded members. This is a great advantage, since in the event of one of the plates, as *a*, sinking or moving downwardly relatively to that at *b* the end of the rod connected to plate *a* will rotate the nut and screw about their own axis, while the other end of the rod will be rotated about its axis, the frictional engagement of the parts permitting this relative movement.

It is quite evident that in lieu of employing the collar as a separate member it could be rigidly attached to either the screw in Fig. 3 or the nut in Fig. 4, in which event the rod would be secured in place by a small set-screw 30, as shown in Fig. 7, although this is not the preferred form of the invention.

Having thus explained the nature of the invention and described a way of constructing and using the same, although without attempting to set forth all of the forms in which it may be made or all of the modes of its use, I declare that what I claim is—

1. A fastener for glass plates comprising a substantially cylindrical rod bent at an angle, and means by which said rod may be attached to said glass plates.

2. A fastener for glass plates comprising clamps for attachment to two angularly-arranged glass plates, and a cylindrical rod attached to said clamps and longitudinally and rotatably adjustable relatively thereto.

3. A fastener for glass plates comprising a clamp for engagement with each plate, each clamp consisting of two complementally-threaded members of which one has a transverse aperture; and a rod having its ends passed through said apertures and adapted to be therein secured.

4. A fastener for glass plates comprising a rod; and two clamps adapted for engagement with said plates, each clamp consisting of a nut and a screw, of which one has a portion adapted for engagement with said rod, and means for clamping said rod against said portion.

5. A fastener comprising a binding or connecting member; and two clamps for attachment to glass plates, each clamp consisting of two complementally-threaded members, and a collar, said collar being arranged to clamp the binding member to one of said threaded members and to clamp the plate to the other threaded member, when said threaded members are screwed together.

6. A fastener for glass plates comprising two clamps each adapted for attachment to a

glass plate, and each having a transverse aperture, each clamp consisting of two complementally-threaded members; a binder having its ends extending adjustably through said apertures; and means by which the binder is frictionally clamped to each clamp, when the threaded members of said clamp are screwed together.

7. A fastener for glass plates comprising a binding-rod; and clamping means for attaching each end of said rod to said plates, each clamping means consisting of two complementally-threaded members of which one is adapted to bear against one face of a glass plate, and of which the other has a transverse aperture to receive said rod, and a third clamping member which is adapted to bear against the other face of said glass plate and which has a portion for engagement with said rod; whereby when said threaded members are screwed together they are adapted to clamp the rod, the third clamping member and the glass plate between them.

In testimony whereof I have affixed my signature in presence of two witnesses.

WALLACE R. BICKFORD.

Witnesses:
M. B. MAY,
HARRY A. WHEELER.