June 25, 1946. B. A. QUINN 2,402,772

WINDOW FASTENER

Filed Dec. 31, 1943

Fig. 1

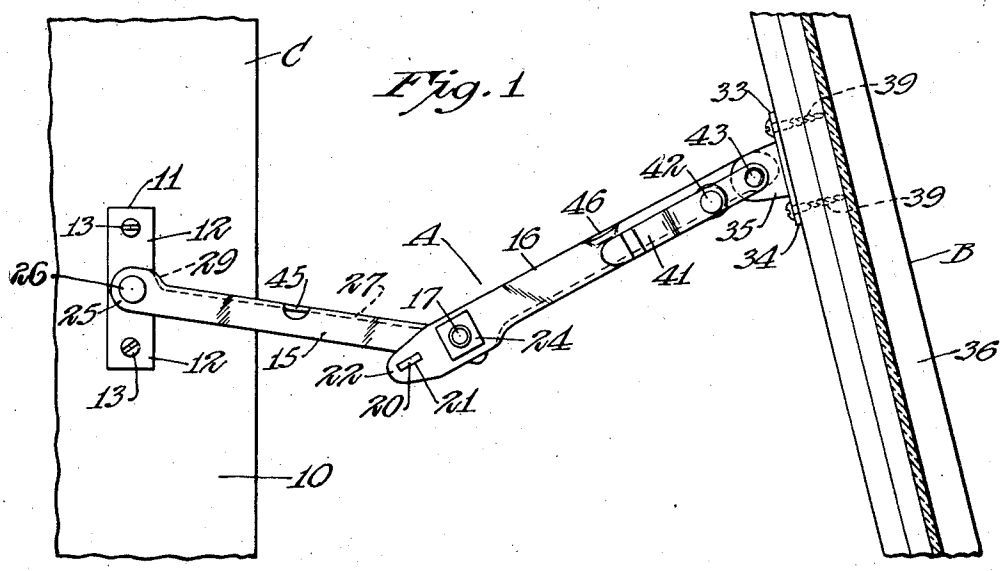


Fig. 2

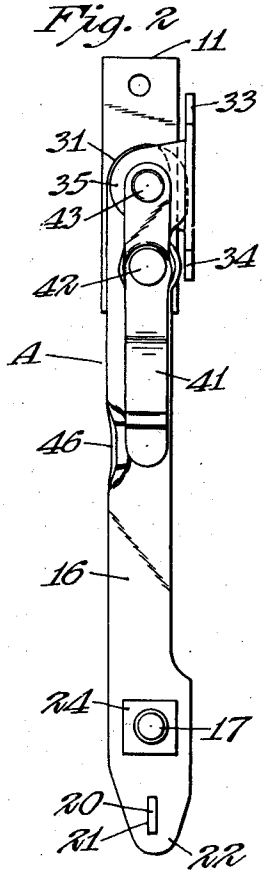


Fig. 3

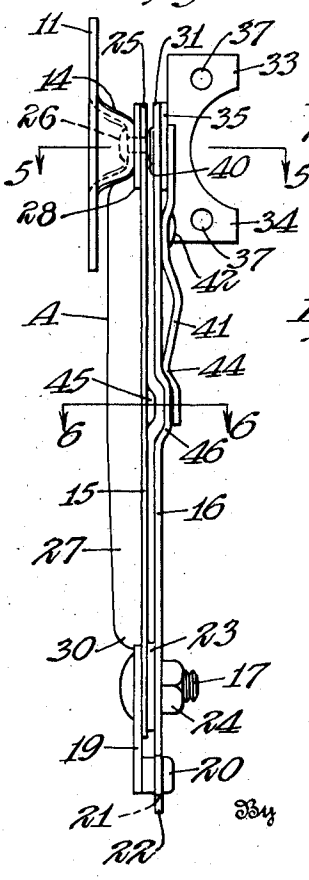


Fig. 5

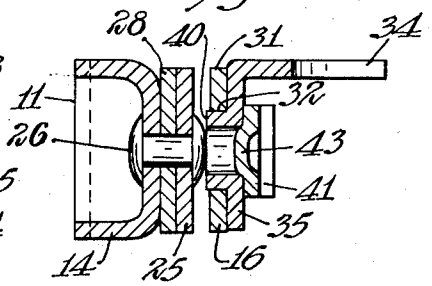


Fig. 4

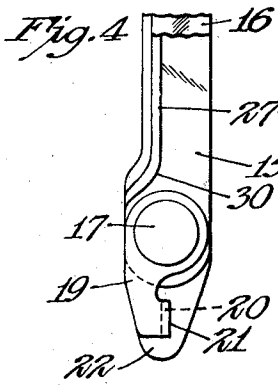
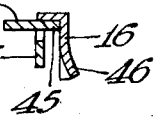


Fig. 6



Inventor

Bert A. Quinn

By Robert M. Dunning

Attorney

Patented June 25, 1946 2,402,772

UNITED STATES PATENT OFFICE

2,402,772

WINDOW FASTENER

Bert A. Quinn, St. Paul Park, Minn.

Application December 31, 1943, Serial No. 516,334

3 Claims. (Cl. 292—263)

1

My invention relates to an improvement in window fastener, wherein it is desired to provide a fastener for removably supporting storm windows, or the like, in adjusted relationship.

A feature of the present invention resides in the angular formation of the arms forming the fastener. Window brackets have previously been constructed employing two pivoted arms, right angular in cross section. In these previous constructions, however, one flange of the right angular arms has terminated in spaced relation to the ends of the arm. Therefore, while the central portion of the arms have been reinforced to prevent bending thereof, these arms may bend relatively easily near the ends thereof.

It is a feature of the present invention that the arms are provided with a flange arranged at right angles thereto, extending throughout the major portion of the length of the arms, and the ends of this flange are connected along curved surfaces to the bodies of the arm. Thus the arms are rendered much stronger than in previous constructions with which I am familiar.

A further feature of the present invention lies in the provision of a spacing means which tends to hold the arms slightly separated when pivoted into adjacent parallel relationship. Difficulty has previously been experienced with brackets employing two pivotally connected arms, due to the expansion and contraction of the window and its frame. If the bracket is attached to the window in dry weather, the arms of the bracket often bind in damp weather due to the swelling of the window and window frame. By providing a means for holding the arms in spaced relationship, these arms are held separated during the attachment thereof and are prevented from binding in the event the window and frame swell with moisture.

A further feature of the present invention lies in the provision of an ear projecting from one of the arms into engagement with the other of the arms, acting to space the ends of the arms attached to the window and its frame. This ear is positioned intermediate the ends of the arms so that the attached ends thereof may spring apart or flex together upon expansion and contraction of the window and its frame.

A further feature of the present invention lies in improving the detachable connection connecting one of the arms to the window or window frame. In the past stile plates have been provided with pivot pins riveted or otherwise affixed thereto to which the arms may be pivoted. Such arms require considerable labor to construct and

2

assemble. The present invention embodies a pivot formed integral with the stile plate or to an end of the bracket arm and which is punched from the material forming the stile plate or bracket arm. Accordingly with the construction described no pivot pin is required to be riveted or otherwise affixed to one of the pivoted elements to extend through an aperture in the other element.

A feature of the present invention resides in punching a circular rim or bead from the body of one of the relatively pivoted elements to form a pivot extending into an aperture in the remaining pivoted element. A latch or arm is then provided which prevents disengagement of this ring or bead from its aperture.

These and other objects and novel features of my invention will be more clearly and fully set forth in the following specification and claims.

In the drawing forming a part of my specification:

Figure 1 is a side elevational view of a window frame, a window pivotally secured thereto, and a window bracket connecting the frame and the pivoted window.

Figure 2 is a side elevational view of the bracket in closed position thereof.

Figure 3 is a front elevational view showing the bracket illustrated in Figure 2 of the drawing.

Figure 4 is a detailed view showing the pivotal connection between the two arms forming the bracket.

Figure 5 is an enlarged sectional view through the pivots connecting the ends of the bracket arms to their respective stile plates, the position of the section being indicated by the line 5—5 of Figure 3.

Figure 6 is a sectional view through the bracket arms, the position of the section being indicated by the line 6—6 of Figure 3.

The bracket A is used for attaching the window B to its frame C. The frame C is provided with a stop 10 against which the inner surface of the window B may engage. This stop 10 is provided with a stile plate 11 constructed as best illustrated in Figures 1, 3, and 5 of the drawing. The stile plate 11 is provided with flat ends 12 having apertures therethrough through which may be extended attached screws 13. The central portion of the stile plate 11 is outwardly cupped intermediate its ends so as to provide an off-set surface 14, best illustrated in Figure 3 of the drawing. This off-set surface is provided to space the bracket arms from the window frame C. A pair of bracket arms 15 and 16

are pivotally connected by means of a pivot bolt 17. An arm 19 is provided with an aperture therethrough through which the pivot bolt 17 extends, and this arm 19 is provided with a projecting ear 20 extending through a slot 21 in the projecting end 22 of the arm 16. In other words, the arm 19 and the end 22 of the arm 16 project beyond the end of the arm 15 and are secured from relative rotation by the ear or lip 20 which is bent to extend through the slot 21 in the end 22. A friction washer 23 may be provided on the pivot bolt 17 between the arms 15 and 16, and the tension resisting pivotal movement between the arms 15 and 16 is adjusted by means of an adjusting nut 24 of the pivot bolt 17.

The bolt 17 is arranged to rotate in unison with the arm 19 and the arm 16 so that the arm 15 is frictionally engaged between the arm 19 and the friction washer 23. A friction washer may also be provided between the arm 19 and the arm 15 if it is so desired. As the bolt 17 does not rotate relative to the arm 16 there is no tendency for the nut 24 to become disengaged during use.

The remaining end of the arm 15 is slightly enlarged to provide a friction head 25, and this head 25 is connected by means of a rivet 26 or other suitable means, to the dished portion 14 of the stile plate 11. The rivet 26 extends through the off-set or dished surface 14, through a friction washer 28, and through the enlarged head 25, being pivotally connected by the washer 28 to the stile plate 11.

The arm 15 is provided with a flange 27 extending the greater portion of the length thereof. This flange 27 is curved to partially follow the curvature of the enlarged head 25, as illustrated at 29. The other end 30 of the flange 27 is also curved outwardly, as best illustrated in Figure 4 of the drawing. This curvature of the ends of the flange 27 is of considerable importance as it adds very materially to the rigidity of the arm 15. Other constructions have previously been made in which a right angular flange extends a portion of the length of the arm, but is cut off square at its ends and is flat throughout its entire length. The present construction has been proven much more rigid and less apt to bend under strain.

The arm 16 is provided with an enlarged head end 31 having an aperture 32 therein. A right angular bracket 33 is provided having a base flange 34 and a right angularly extending flange 35 projecting normally from the sash 36 of the window B. The flange 34 of the bracket 33 is provided with apertures 37 therethrough to accommodate screws 39 or other fastening means by which the bracket is attached to the sash 36.

The flange 35 of the bracket 33 is provided with an integral sleeve 40 thereon which is formed by punching out a portion of the material forming the flange 35 and bending it in such a manner as to form a substantially cylindrical sleeve projecting from one surface of the flange 35. This sleeve 40 is designed to form a pivotal connection between the bracket 33 and the arm 16, this sleeve extending through the aperture 32 in the head end 31 of the arm 16.

In order to hold the arm 16 in pivotal relation with the bracket 33 I provide an arm 41 which is pivoted to the arm 16 at 42. One end of the arm 41 is provided with a detent 43 arranged to extend into the open end of the sleeve 40. Thus when the arm 41 is in proper position

to hold the arm 16 assembled to the bracket 33, the head 31 of the arm 16 extends on one side of the flange 35, while the arm 41 extends over the opposite surface thereof. Likewise, while the aperture 32 accommodates the sleeve 40, the detent 43 is engaged in the hollow interior of the sleeve 40, the natural resilience of the arm 41 holding the flange 35 assembled with the arm 16. By engaging the flange 35 under resilient pressure of the arm 41 between the arm 41 and the enlarged head 31, the arm 16 is pivotally supported to the bracket 33 and can not become disengaged therefrom until the arm 41 is pivoted about its pivot 42 until it is entirely clear of the flange 35.

As best illustrated in Figure 3 of the drawing, the arm 41 is bent so as to lie closely adjacent the arm 16 about the pivot 42. The arm 41 is also provided with an inwardly bowed portion 44 designed to engage frictionally against the surface of the arm 16. The end of the arm 41 in which the detent 43 is situated is off-set from the arm 16 sufficiently to permit the flange 35 to be resiliently clamped between the detent 43 and the head 31 of the arm 16.

An ear 45 is bent from the material forming the arm 15 so as to extend toward the arm 16. The arm 16 is provided with a cam-shaped portion 46 designed to receive the ear 45. The ear 45 insures the fact that the arms 15 and 16 are spread apart at their ends thereof pivotally connected to the window frame and the window, respectively. This engagement between the ear 45 and the arm 16 serves in a multiple capacity. In the first place this ear tends to spread the arms apart upon closing of the fastener, thereby putting the parts under some tension and preventing any rattle between the various elements. In the second place, this ear 45 tends to spread the free ends of the fastener apart before the stile plate 11 and the bracket 33 are connected to the window frame and the window sash respectively. This spacing is important as it prevents bending between the elements in the event the window and window sash expand or swell to some extent in wet weather.

The window fastener is sometimes applied in damp weather and sometimes applied during dry weather. If the fastener A is applied during damp weather, the contraction of the window and frame during dry weather merely acts to spread the enlarged ends 25 and 31 of the arms 15 and 16 somewhat farther apart when the fastener is closed. However, if the fastener is applied during dry weather, the swelling of the window sash tends to move the bracket 33 toward the window frame and the swelling of the window frame C tends to move the stile plate 11 toward the center of the window. As a result, unless the arms 15 and 16 are spread apart to some extent during installation, these parts will bind tightly together during wet weather and interfere with the proper operation of the fastener. The present fastener insures the necessary separation between the ends of the arms 15 and 16 by engagement of the ear 45 against the arm 16. The cam portion 46 merely directs the ear 45 up onto the surface of the arm 16.

The operation of the fastener A is believed obvious from the foregoing description. The construction at the center pivot 17 is such as to provide considerable friction between the arms. Obviously the arms 15 and 16 are prevented from moving into longitudinal alignment by the ear 20 which engages against an edge of the arm 15

in extreme pivotal position between the arms as shown in Figure 1. When in closed position the arms 15 and 16 move into substantially parallel relationship as shown in Figures 2 and 3, and due to the fact that the pivots 26 and 40 are moved into alignment by the closing of the window B, both arms 15 and 16 may be swung about their respective pivots through an angular distance of 180° from the position shown in Figures 2 and 3. By so pivoting the arms 15 and 16 the window is locked in closed position due to the engagement of the flanges on their respective arms.

The arm 16 is shown provided with a flange which extends the major portion of the length thereof and which is curved at each end as best shown in Figures 1 and 4 of the drawing. As a result the arm 16 is reinforced and will not bend to any great extent under normal stresses to which the arm is subjected.

In accordance with the patent statutes, I have described the principles of construction and operation of my window fastener, and while I have endeavored to set forth the best embodiments thereof, I desire to have it understood that obvious changes may be made within the scope of the following claims without departing from the spirit of my invention.

I claim:

1. A storm window bracket for use in connecting a pivotally supported window to its frame, the bracket including a pair of arms pivotally connected together, means connecting one of said arms to said window frame, means connecting the other of said arms to the window, said arms being arranged in substantially parallel relationship, substantially centrally apertured enlarged ends on said arms, a flange extending longitudinally of each of said arms and arranged to lie in parallel relationship when said arms are pivoted into parallel relationship, said flanges extending substantially on a line between said apertures and including outwardly curved end portions extending out of the plane of the remainder of the flanges.

2. A window bracket comprising a pair of pivotally connected arms, said arms extending in substantially parallel relationship when pivoted into side by side relation, an enlarged substantially centrally apertured head on each end of each of said arms, a flange extending at substantially right angles to each of said arms and extending substantially on a line between said apertures, said flange being outwardly curved at its ends to extend partially around said enlarged heads.

3. A window bracket comprising a pair of terminally apertured pivotally connected arms designed to lie in substantially parallel relation when pivoted into side by side relation, a flange extending at substantially right angles to each of said arms throughout the major portion of the length thereof and extending substantially on a line between said apertures, said flanges having outwardly curved ends connected to said arms, said curved ends being bent out of the plane of the remaining portions of said flanges.

BERT A. QUINN.