Jan. 31, 1933. J. H. SHEARD 1,896,057

PIVOT WINDOW

Filed Nov. 29, 1930

FIG. I.

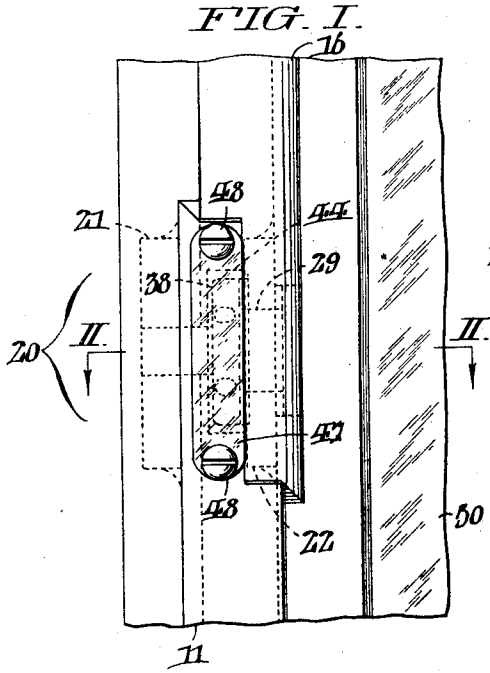


FIG. III.

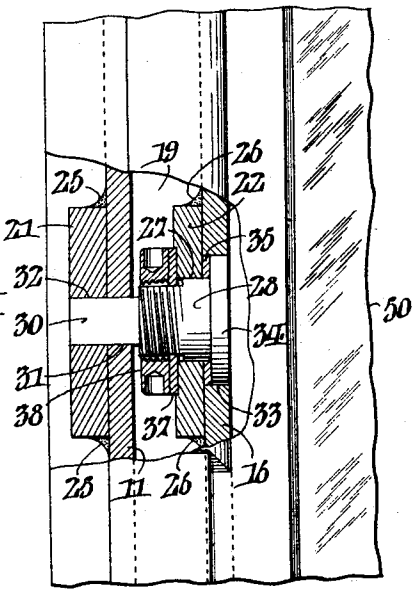


FIG. II.

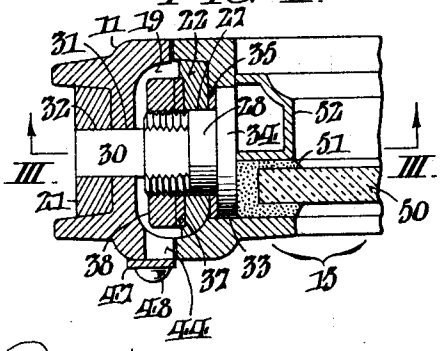
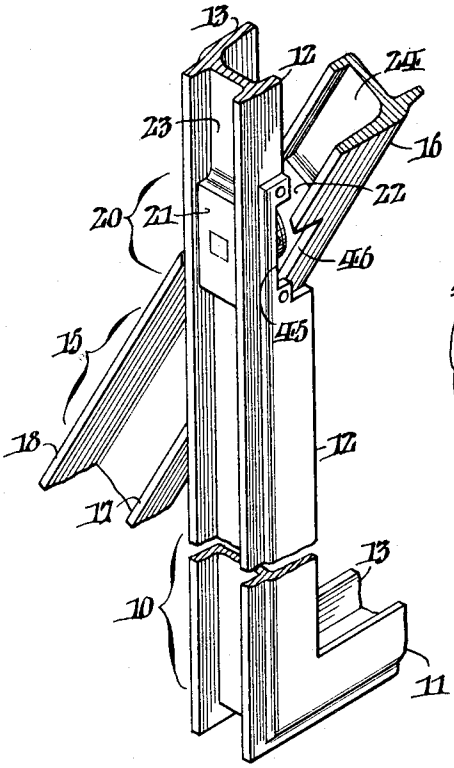


FIG. IV.



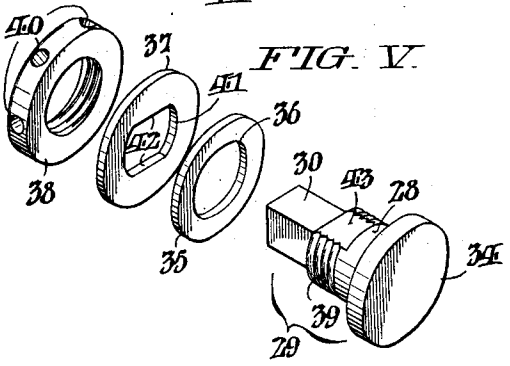


FIG. V.

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Patented Jan. 31, 1933 1,896,057

UNITED STATES PATENT OFFICE

JOSEPH H. SHEARD, OF PHILADELPHIA, PENNSYLVANIA, ASSIGNOR TO DAVID LUPTON'S SONS COMPANY, OF PHILADELPHIA, PENNSYLVANIA, A CORPORATION OF PENNSYLVANIA

PIVOT WINDOW

Application filed November 29, 1930. Serial No. 498,979.

This invention relates to pivot windows, and it has more especial reference to metallic pivot windows wherein the frame and sash rails are of channel section. In metallic windows of the kind specifically referred to, the sashes are ordinarily supported by projected pivot brackets which are exposed to the weather and therefore liable to deterioration and corrosion that soon interferes with the ready operation of the sashes. This is particularly true in connection with windows wherein the pivot mountings embody friction means which are relied upon to hold the sashes against wind pressure in different positions of opening. Frequent inspection and adjustment of the pivot mountings is therefore necessary to maintain such hinges in proper working order.

The chief aim of my invention is to overcome the recited drawbacks of previous practice in this art through provision of a simple and reliable friction pivot means capable of ready incorporation in metallic windows, and of accommodation within hollows afforded between contiguous frame and sash rails of such windows, so as to be concealed from view and at the same time effectively protected from the weather.

Further objects and attendant advantages will be manifest from the following detailed description of the attached drawing, wherein Fig. I is a fragmentary elevation of a pivot window conveniently embodying my invention.

Fig. II is a cross sectional view through one of the pivot junctures, between the frame and sash of the window, taken as indicated by the arrows II—II in Fig. I.

Fig. III is a vertical sectional view of the pivot juncture, taken as indicated by the arrows III—III in Fig. II.

Fig. IV is a fragmentary perspective view of the window with the sash swung to open position; and,

Fig. V is an exploded view showing the component parts of my improved pivot means.

Referring in greater detail to these illustrations, the frame of the window is generally designated by the numeral 10 and the sash by the numeral 15, the said sash being in the present instance pivoted to swing on a horizontal axis. After common practice in metallic window construction, the perimetric rails 11 of the window frame 10 are of channel section. The corresponding side rails 16 of the sash 15 are likewise of channel section, and their flanges 17, 18 adapted to seal weathertight all around against the flanges 12, 13 of the frame rails when the sash 15 is in closed position. In this connection it is to be noted that hollows 19 are incidentally formed between the contiguous frame and sash rails 11, 16 at the sides of the window.

To pivotally mount the sash 15 of a metallic window of the described sort, I make duplicate provisions such as comprehensively designated at 20 at opposite sides thereof including reinforcement blocks 21, 22 which are secured respectively within the outer channels 23, 24 of contiguous frame and sash rails 11, 16, preferably by welding as conventionally indicated at 25 and 26 in Fig. III. In each instance, the reinforcing block 22 on the sash rail 16 is apertured as at 27 for capacity to serve as a bearing for the smooth cylindric portion 28 of a pivot stud 29, illustrated in perspective in Fig. V. This pivot stud 29 may be of steel, and, as shown, has its shank end squared as at 30 to engage correspondingly configured aligned openings 31 and 32 respectively in the cross web of the frame side rail 11 and in the reinforcing block 21 attached thereto. An opening 33 cut into the cross web of the sash rail 16 accommodates the head 34 of the pivot stud 29, so that the face of said head is flush with the inside of said cross web, after the manner shown in Figs. II and III. Interposed between the head 34 and the contiguous face of the reinforcing block 22 is a friction washer 35, which, in practice, is made from relatively soft metal, for example, brass or bronze. As shown in Fig. V, the opening 36 of the washer 35 is circular and of such diameter as to snugly fit the smooth portion 28 of the stud shank. For abrasion with the out side of the reinforcing block 22 there is provided another washer 37 which is likewise preferably of brass or bronze and which

is forced against the block 22 by an annular nut 38 engaging a threaded portion 39 of the pivot stud 29, said nut 38 having socket wrench holes 40 at intervals around its periphery. Also as shown in Fig. V, the opening 41 of the washer 37 is formed with flats 42 which are adapted to coact with planed surfaces 43 on the pivot stud shank portion 30 in preventing the washer from rotating relative to the stud. From Figs. I, II and III it will be noted that the nut 38 is accommodated within the hollow 19 between the contiguous side rails 11 and 16 respectively of the frame 10 and sash 15. The nut 38 is accessible, for the purposes of adjustment, through an opening 44 jointly afforded by registering cutouts 45, 46 respectively in the flanges 12 and 17 of the side rails 11 and 16 of the frame 10 and sash 15. Normally this access opening 44 is covered by a removable plate 47 which is secured to the frame side rail 11 by means of screws 48, and which does not interfere with the swinging movement of the sash 15 as will be apparent from inspection of Fig. I.

In assembling the window, the nut 38 is inserted into the channel 19 through the access opening 44, the washer 35 applied to the pivot stud smooth portion 28 and the shank of the latter then introduced, from within the sash 15, through the openings 33 and 27 respectively in the side rail 16 of said sash and the attached reinforcing block 22 as well as through the opening in the nut 38. The nut 38 is thereupon rotated with the fingers and engaged on the threaded portion 39 of the stud shank, while the squared portion 30 of the latter is at the same time thrust into the aligned squared openings 31, 32 respectively in the side rail 11 of the window frame and in the reinforcing block 21 attached to the latter. By means of a suitable wrench applied through the access opening 44, the nut 38 is finally adjusted for attainment of the proper frictional pressure for maintenance of the sash 15 in different positions of adjustment against wind pressure. The sash glass 50 is applied subsequent to the assembling of the window and made fast with the aid of putty, conventionally represented at 51, as well as with the aid of supplemental beading, best shown at 52 in Fig. II.

From the foregoing, it will be seen that I have provided a simple friction pivot means for windows which is sturdy, durable and reliable in operation, which is normaly concealed from view and protected from the weather, yet readily accessible for the purposes of adjustment from time to time or for the purpose of replacement after long periods of use.

Having thus described my invention, I claim:

1. A pivot structure for fixed and relatively movable elements comprising a headed stud embodying cylindrical and screw-threaded shank portions with a polygonal-section extension, said cylindrical portion being adapted to engage a pivotal opening in the movable element, and the extension to engage in a correspondingly-configured aperture in the fixed element, friction washers on the cylindrical and screw-threaded shank portions, and a nut adjustable on the screw-threaded portion to oppose the stud head and friction washers in applying pressure to resist swinging of the movable element.

2. A pivot structure for fixed and relatively movable elements comprising a headed stud embodying cylindrical and screw-threaded shank portions with a polygonal-section extension, said cylindrical portion being adapted to engage a pivotal opening in the movable element and the extension to engage in a correspondingly-configured aperture in the fixed element, plane surfaces on the screw-threaded shank portion, friction washers on the shank one of which is suitably apertured to coact with said plane surfaces, and a nut adjustable on the screw-threaded portion to oppose the stud head and friction washers in applying pressure to resist swinging the movable element.

3. A pivot structure for metallic windows with horizontally-swingable sash comprising a headed stud having a shank embodying cylindrical and screw-threaded portions and a squared extension, said cylindrical portion being adapted to engage a pivotal opening in the sash side rail and the squared extension to engage in a corresponding aperture in the window frame contiguous rail, plane surfaces longitudinally of the screw-threaded shank portion, friction washers on the stud shank one of which is apertured to coact with the plane surfaces aforesaid, and an annular nut with radial wrench holes adjustable on the stud screw-threaded portion to oppose the head of said stud and friction washers in applying pressure to resist swinging movement of the window sash.

In testimony whereof, I have hereunto signed my name at Philadelphia, Pennsylvania, this 25th day of November, 1930.

JOSEPH H. SHEARD.