March 3, 1970 R. P. DAVIS 3,497,909

WINDOW OR THE LIKE STAYS

Filed July 10, 1967

FIG. 1.

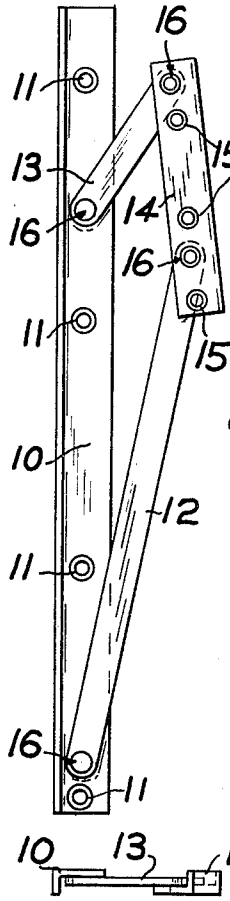


FIG. 4.

FIG. 2.

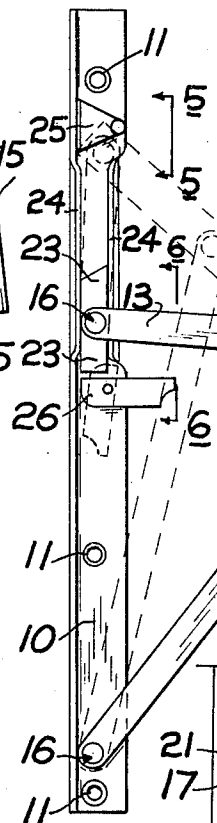


FIG. 3.

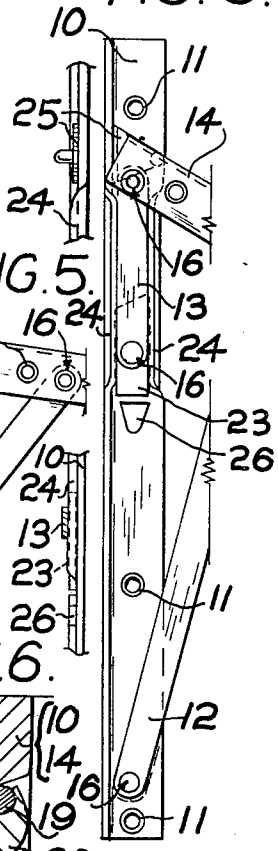


FIG. 6.

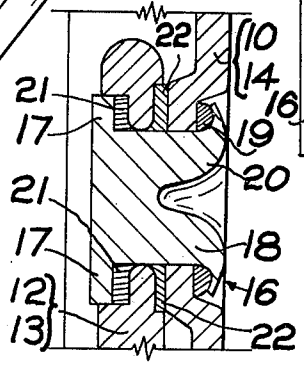


FIG. 7.

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WINDOW OR THE LIKE STAYS

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ABSTRACT OF THE DISCLOSURE

An improved window or the like stay comprising a first plate adapted for attaching to a frame of a window, two arms of different lengths each pivoted at one end to the first plate and a second plate pivoted to the other end of each arm, this second plate being adapted for attaching to a sash of the window and self-lubricating plastics bushings are located at pivot points of the arms, each pivot point being recessed in a housing in the particular arm so that increased pressure effects sufficient friction to hold the window at any desired position.

This invention relates to improvements in stays designed for use in the adjustable mounting of windows or the like.

It is already known to provide window stays incorporating sliding shoes and friction plates and it has been found that these vary and become too tight or too loose under all conditions, i.e. dust, grit, water and paint which all windows are subject to affect the friction bearing surfaces.

One object of the present invention is to provide an improved window or like stay having such a construction that it is workable under conditions such as those mentioned above.

A further object of the invention is to provide a window or the like unit having at two of its opposite edges stays providing for a desired degree of angular opening.

Accordingly in one aspect the invention consists of an improved window or the like stay comprising a first plate adapted for attaching to a frame of a window, two arms of different lengths each pivoted at one end to the first plate and a second plate pivoted to the other end of each arm, this second plate being adapted for attaching to a sash of the window and self-lubricating plastics bushings located at pivot points of the arms, each pivot point being recessed in a housing in the particular arm so that increased pressure effects sufficient friction to hold the window at any desired position.

In a further aspect the invention consists of a window or the like unit comprising a window and two of the improved window or the like stays according to the first aspect, the second plate of each being attached to an opposite side of the sash.

In further describing the invention reference will be made hereinafter to the accompanying drawing, in which:

FIGURE 1 is a side view of one form of the stay,

FIGURES 2 and 3 are modified forms of the stay, certain parts shown incomplete,

FIGURE 4 is a plan taken on FIGURE 1,

FIGURE 5 is a view taken on the line **5—5** in FIGURE 2,

FIGURE 6 is a cross-section taken on the line **6—6** in FIGURE 2,

FIGURE 7 is a typical enlarged cross-section through one of the pivot points.

In giving effect to the invention, the stay parts are made out of a suitable metal or metal alloy. Preferably this is aluminium which of course cannot rust and is substantially more economical than brass. The first plate **10** is of such a size or shape that when the stay is in a

closed position, its arms will lay alongside this plate. This plate **10** is adapted as by having a number of holes **11** spaced along it for reception of fastening means such as rivets, screws or bolts to the window frame.

The arms **12**, **13** are of different lengths, one (**13**) being substantially shorter than the other (**12**). This shorter one **13** can be curved along one edge. Desirably the longer arm **12** is at least four to five times the length of the shorter arm **13**. The longer arm **12** has one end pivoted to a lower end of the first plate **10** and the shorter arm **13** has one end pivoted near the upper end of such plate.

The other ends of the arms **12**, **13** are pivoted to the second plate **14** at points in from one end of the plate, the pivot of the shorter arm being near such end. This second plate **14** is adapted as by having a number of holes **15** for rivets, screws or bolts by which it is attached to the sash of the window.

An improved feature in the stay is for maintaining adequate friction to hold the window. To achieve this at each pivot point **16** each pivot housing is counterbored from both faces of the respective arm (see FIGURE 7) to a desired depth so as to have a clearance under the head **17** of the metal rivet **18**. In this way each rivet **18** holding the friction is designed as to provide the same holding pressure on both sides so as to keep the bearing surface parallel, and also a lock washer **19** is provided on the underside of the tail **20** of the rivet **18** to prevent the latter from turning. The shank of each rivet **18** being smaller than the central clearance hole in its supports i.e. the arm, allow the packing material in the form of plastics bushing **21** to be forced down into the countersinks and the central clearance areas and thus around the rivet shank to prevent the metal rivet touching its metal supporting arm.

The washers **19** can be of the "Fandisc" (trade name) type, or spring washers, or by forming a pressed serrated indentation of the tail **20** of the rivet **18** to prevent the rivet turning in relation to the fixed plate **10** or **14**. As an alternative to that just mentioned the tail **20** of the rivet may turn in relation to the fixed plate by providing packing material in the form of a wear resistant surface washer **22** between the tail **20** of the rivet **18** and the fixed plate **10** or **14**. This wear resistant washer **22** can be obtained by the incorporation of an opposing pair of rivets locked together with self-lubricating, nylon or fibre or similar washers under the heads of the rivets.

As an alternative to nylon and fibre washers **21** and **22** mentioned, the friction can be obtained by the incorporation of packing material in the form of metal washers or bearings together with spring washers fitted to provide a loading and to take up wear on the friction surfaces. As another alternative, two or three of the rivet joints can be plain rivets with all the friction being provided by one or two larger friction points. These one or two points can be made adjustable by means of adjusting screws.

Where the stay is intended for a split rail sash for downward movement in a modification five friction points are provided. These are arranged so that a sliding shoe **23** mounting a lower pivot of the upper arm **13** can operate for about an initial 50° of opening movement only. This shoe **23** is slidable within a track formed by turning up the sides **24** of the fixture mounting plate **10** as shown particularly in FIGURES 2 and 3. A top friction point or pad **25** is affixed to the mounting plate **10**, as shown and the top pivot of the upper arm operates, after which friction is provided by the other four friction points **16**. This gives the most friction where it is most needed, i.e. in the initial degrees of opening movement, as this is where the window is most likely to be blown to. As the sliding friction shoe **23** operates for

only about the first inch of vertical movement, its friction can be made very tight. Actually this cannot be done with the standard type of friction stay because if the sliding shoe was tight enough to hold the sash when only a few degrees open, it would be far too tight when required to move over a greater distance as the sash is fully opened. A stop **26** is affixed to the mounting plate **10** below the track for preventing further downward movement of the shoe **23** sliding in the track. This stop can be pivoted as shown in FIGURE 2 or a fixture as shown in FIGURE 3.

By the incorporation of the nylon and fibre washers **21** and **22** acting as bushes no change in effort is experienced through the whole range of opening positions, also the window does this with absolute minimum of wear, as the nylon itself is a self-lubricating material in its sealed position under the rivet heads **17** it is workable under all conditions i.e. dust, grit, water and paint. Further the incorporation of nylon and fibre washers **21** and **22** or any one of the alternatives, will provide an excellent wear resistant surface as well as a friction promotion means.

Finally the simplicity of the stay's construction is such as to lend itself to cheaper and easier manufacture with no maintenance required.

Although not illustrated the unit aspect simply includes a window or the like panel mounted within a sash and of a shape or size to suit purposes of its use; to opposing side or end edges of the sash are attached the second and pivot plates of the two stays just described. The first and fixture plates are attached by rivets or screws to the frame of the window or the like opening and through movement of the arms of the stays, the pivot plates and the window are allowed to swing outwardly away from the frame, and by virtue of the respective arms being of different lengths this will give the window a partially downward movement when first opening, otherwise it would be impossible to achieve weatherproofing with say three windows fitted above one another without the use of a central rail or transom. The travel of the outer ends of such arms is therefor differential. A curved side of the shorter arms will also allow even further opening for cleaning the glass window from the inside.

In another aspect the invention may be stated to consist of, in a window or like stay, the incorporation of a wear resistance surface or joint embodying nylon and fibre surfaces in frictional contact.

What is claimed is:

1. A window or the like stay comprising a first plate adapted for attaching to a frame of a window, two arms of different lengths each pivoted at one end to the first plate and a second plate pivoted to the other end of each arm, said second plate being adapted for attaching to a sash of the window, headed rivets interconnecting said arms with said first and second plates at the points of pivotal interconnection thereof, at least one of said arms at at least one of said points of pivotal interconnection being counter-bored from both faces of the arm to a depth so as to have a clearance under the head of the associated rivet, and self lubricating plastic packing material in said counter bores whereby the rivets producing the friction will provide the same for holding pressure on both sides so as to keep the bearing surfaces parallel.

2. A window or the like stay as claimed in claim **1**, said plastic being nylon.

3. A window or the like stay as claimed in claim **1**, and lock washers on the underside of the rivets to prevent the rivets from turning.

References Cited

UNITED STATES PATENTS

1,220,722	3/1917	Brand	49—248
1,621,463	3/1927	Estrada	49—248
2,709,839	6/1955	Nicoll	49—248
2,746,101	5/1956	Lickteig	49—251

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U.S. Cl. X.R.

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