

"Improvements in Window Stays"

This invention relates to improvements in window stays.

A window stay conventionally comprises a pair of mounting plates one being adapted to fit on a window frame and the other adapted to fit with the window sash. The mounting plates are coupled together and in a so called four bar stay this coupling is effected by a pair of arms (one being shorter than the other) while in a so called sliding two bar stay a single arm couples the mounting plates together and one end of the sash mounting plate is coupled to a shoe or carriage which is mounted for sliding movement on the frame mounting plate.

Generally the frame mounting plate is of a length which is sufficient to not only accommodate, in the case of a four bar star, the distance between the pivot bearing centres or, in the case of a sliding two bar stay, the extent of travel of the sliding shoe but also to provide a length which is equal to the "top distance" between the pivot of the short arm to the frame mounting plate or the sliding shoe "in the closed position" and the end of the member of the frame to which the stay will be fitted. Thus by ensuring the end of the frame mounting plate is located right at the end of the frame member the correct position of the stay can always be assured.

Additionally when a four bar stay is being used in a casement application it is known to provide increased support for the short arm by placing a plastics material disc about the pivot connection and between the arm and mounting plate. The thus formed support surface provides support for the short arm in the immediate vicinity of the pivot coupling to the frame mounting plate thereby enabling the short arm to support the weight of the sash over its range of pivotal movement. There is, however, a

limit to which the disc can support the arm when the stay is in the closed position due to the disc being only located in the immediate vicinity of the pivot bearing. Thus in the closed position there is necessarily a portion of the arm beyond the disc which is unsupported.

In situations where the so called top distance is large the extent of the frame plate beyond the pivot only effectively serves as a template. Thus when a high cost material such as stainless steel is being used this length of frame mounting plate represents a significant cost factor.

The primary object of the present invention is thus to provide an alternative means of forming the frame mounting plate beyond the pivot bearing which will be adjacent the end of the frame member on which the mounting plate will be mounted in a window construction.

Accordingly in one broad aspect of the invention there is provided a window stay having a mounting plate for mounting with a window frame and an arm coupled to the mounting plate by a pivot, the window stay being characterized by an extension formed of a plastics material mounted with said mounting plate, said extension extending along the mounting plate from one side of said pivot and terminating beyond an edge of the mounting plate, said extension being located between said mounting plate and a surface of said arm and providing a support surface over which at least part of said arm surface is movable as the arm is pivoted about the pivot from a position which corresponds to the stay being substantially open and a position corresponding to the stay being substantially closed.

The plastics material extension can also be provided with an upstand which forms a stop preventing the arm from moving beyond the position to be assumed at the fully closed position of the stay.

In the following more detailed description reference will be made to the accompanying drawings in which:-

Figure 1 is a front elevation view of a four bar window stay incorporating the invention, the stay being shown in its fully open position,

Figure 2 is a rear elevation view of the stay as shown in Figure 1,

Figure 3 is a front elevation view of the stay in the closed position, and

Figure 4 is a side view from "A" of the stay as shown in Figure 3.

The window stay as illustrated is a four bar stay that is a stay having a frame mounting plate 10, a sash mounting plate 11, these two mounting plates being coupled by a pair of arms 12 and 13 with arm 12 being of significantly shorter length than arm 13. The arms are pivotally coupled to the frame and sash mounting plates by pivot bearings which are preferably friction pivot bearings made in accordance with known bearing construction for window stays. For example the bearings can be constructed in accordance with the pivot bearings disclosed in our New Zealand Patent Specifications 202214/202755 or 212534. Preferably the pivot bearings are of a type which have a hollow centre such that fasteners in the form of screws or the like can pass therethrough for the purposes of attaching the stay to the frame and sash of a window. However, separate openings such as opening 16 in the sash mounting plate 11 can be provided for the purposes of mounting the stay.

The arms and mounting plates can be constructed from any suitable material though in the preferred form of the invention the material is stainless steel. By using stainless steel a stay of less side to side dimensions, e.g. the thickness of the stay as it appears in Figure 4, can be kept to a minimum thereby enabling the stay to be used in narrow cavities formed between the sash and window frame when the window is in the closed position. If additional rigidity in the arms is required then longitudinally extending strengthening ribs can be formed as shown in the drawings.

The frame mounting plate 10 is of sufficient length to encompass the distance between pivot joints 15, coupling arms 12 and 13 to mounting plate 10. However, to extend the mounting plate 10 to a length substantially equal to the required "top distance" as aforesaid an extension 18 is provided. This extension piece 18 is moulded from a suitable plastics material and extends longitudinally of mounting plate 10. As shown this extension piece 18 is preferably of wider dimension than that of the mounting plate 10.

A rebate 19 is formed in the reverse side of extension piece 18 and is shaped so as to accommodate the width and thickness of mounting plate 10. The surface of the reverse side of extension piece 18 is thus in the same plane as the surface of mounting plate 10.

As can be seen from Figure 4 arms 12 and 13 are toggled at their respective ends and accordingly a recess 20 is formed in extension piece 18 so as to accommodate the toggled end of arm 12.

The surface of extension piece 18 forms a support surface 21 over which the reverse side of short arm 12 can

slidingly engage during opening and closing. Thus in the closed position as shown in Figure 3 the entire length (except for the toggled ends) of the short arm 12 is supported by support surface 21. However, even when the stay is in its fully open position as shown in Figure 1 the arm 12 in the immediate vicinity of pivot 15 is in engagement with and supported by support surface 21.

Conveniently a projection 22 is moulded with extension piece 18 and this includes a stop 23 which when the stay is in the fully closed position (see Figure 3) engages with the edge of arm 12. This stop 23 thus prevents arm 12 from moving beyond the position it should assume when the stay is in the fully closed position.

When the stay is being installed in a window cavity mounting plate 10 is positioned on the frame with the end 24 of extension piece 18 being positioned hard up against the frame member which is at right angles to the frame member to which mounting plate 10 is to be attached. As the stay is used in a casement situation end 24 thus engages against a vertical side of the frame while mounting plate 10 is fastened to a horizontal member of the frame. While mounting plate 10 can be fastened to the frame by screws passing directly through the hollow pivots 15 a separate screw hole 17 is preferably provided so that a screw can pass therethrough in order to not only fix the frame mounting plate 10 but also to provide additional fixing of the extension piece 18 to prevent it tending to pivot about the axis of bearing 15. The sash mounting plate 11 is mounted to the sash by screws passing through bearings 14 and/or screw holes 16.

In addition to stop 23 the extension 18 can have moulded therewith a second stop which can engage with arms 12 and limit the extent to which it can open.

Extension 18 thus provides a low cost means of providing the required distance between pivot 15 and the end of the frame mounting plate. In addition it provides a support surface for the support arm but unlike previous disc type supports it provides total support over the length of the arm when the arm is in the closed or substantially closed position. Also extension piece 18 conveniently provides a stop or stops to limit the extent of pivotal movement of the short arm 12.

The invention is open to modification within the scope of the following claims as will be apparent to those skilled in the art. Thus for example, the plastic extension can be used to permit installation and operation of the stay on a sloping window sill by building up the thickness of the front edge of the plastics material extension to suit the angle of the sill.



CLAIMS:

1. A window stay having a mounting plate for mounting with a window frame and an arm coupled to the mounting plate by a pivot, the window stay being characterized by an extension formed of a plastics material mounted with said mounting plate, said extension extending along the mounting plate from one side of said pivot and terminating beyond an edge of the mounting plate, said extension being located between said mounting plate and a surface of said arm and providing a support surface over which at least part of said arm surface is movable as the arm is pivoted about the pivot from a position which corresponds to the stay being substantially open and a position corresponding to the stay being substantially closed.

2. The window stay according to Claim 1 wherein said mounting plate is elongate and said edge forms an end edge of said mounting plate, said extension also projecting beyond that long side edge of the mounting plate over which the arm projects when the stay is in an open position.

3. The window stay according to Claims 1 or 2 wherein the extension includes a projection which forms a stop to prevent the arm from being moved beyond the position assumed by the arm in the fully closed position.

4. The window stay according to Claim 1, 2 or 3 wherein the extension includes a second projection which forms a stop to limit the extent of movement of the arm when the stay is moved to the open position.

5. The window stay according to any one of the preceding Claims wherein the extension includes a rebate into which a portion of said frame mounting plate locates.



6. The window stay according to any one of the preceding Claims wherein the extension includes a recess to accommodate a part of the arm.

7. The window stay according to any one of the preceding Claims wherein the frame mounting plate is fully accommodated within the rebate formed in the extension.

8. A window stay substantially as herein described with reference to the accompanying drawings.

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