

[54] WINDOW STAY ASSEMBLY

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FOREIGN PATENTS OR APPLICATIONS

|         |         |                    |         |
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[58] Field of Search..... 70/89, 93, 94; 292/262, 292/265, 266

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[57] ABSTRACT

Safety locking stay assemblies for windows and the like are disclosed comprising two tubular members, one within the other each having a plurality of apertures. When an aperture in each tubular member are aligned a locking pin with an enlarged head may be inserted, movement of the tubular movement so as to move the apertures out of alignment trapping the enlarged head of the pin.

12 Claims, 3 Drawing Figures

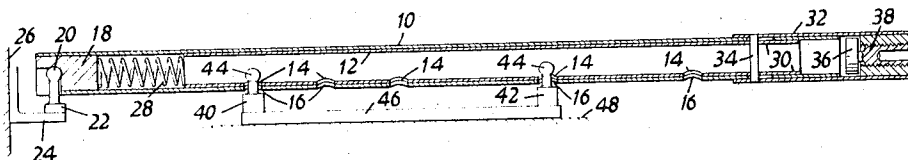




FIG. 2.

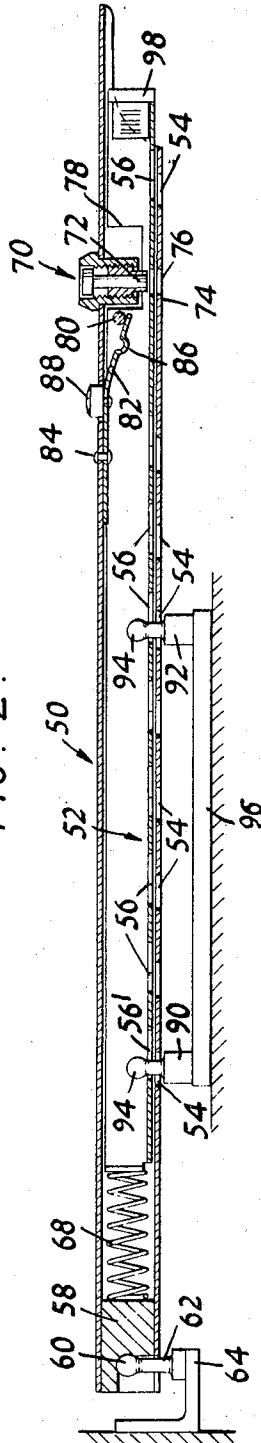
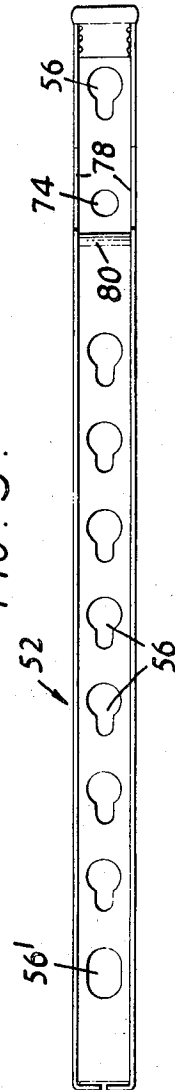


FIG. 3.



## WINDOW STAY ASSEMBLY

## BACKGROUND OF INVENTION

The invention relates to stay assemblies for windows, doors and the like (herein referred to generally as windows).

Stay assemblies are normally provided which comprise two parts, an elongate member pivotally connected to the window, which elongate member includes a plurality of apertures spaced along its length, and a pin which is mounted on the stationary frame of the window. The pin is inserted into a selected one of the apertures to hold the window open by a predetermined amount.

A disadvantage of this arrangement is that it is easy for a child or burglar to release the stay and open the window. It has therefore been proposed to provide window stays which are difficult to release and which preferably may be locked. However, arrangements so far proposed are complicated and not wholly satisfactory.

## SUMMARY OF THE INVENTION

It is an object of the invention to provide an improved window stay assembly of relatively simple construction.

According to the present invention there is provided a stay assembly for a window comprising a tubular member, a wall of said tubular member including an aperture; an elongate inner member movably located within the tubular member and having an aperture which on relative movement of said two members can be brought into alignment with the aperture in the tubular member; spring means mounted so as to act between the tubular member and the inner member to urge the apertures out of alignment; means for relatively moving the two members against the spring means so as to bring the apertures into alignment; and a locking pin with an enlarged head adapted to pass through the apertures when aligned whereafter said spring means may urge the apertures out of alignment to thereby trap the enlarged head of the locking pin.

Preferably the tubular member is for pivotally mounting to the window, and the locking pin is for mounting to the window frame. A plurality of apertures may be provided, spaced apart along the tubular member and the inner member, so as to provide a plurality of different openings to receive the locking pin and therefore a plurality of different positions for the window. Preferably locking means is provided on the tubular member for locking the two members against relative movement when the apertures are out of alignment and the head of the locking pin is trapped.

Preferably, the means for relatively moving the two members against the spring means comprises a sleeve surrounding the end of the tubular member, a pin rigidly connecting the sleeve to the inner member and passing through an elongate slot in the tubular member, the slot limiting the relative movement of the two members. In this case the locking means may comprise a plunger screw threadedly attached to the sleeve and movable by rotation against an end of the tubular member. The plunger may be rotatable by a key.

In a preferred arrangement restraining means is provided for restraining said two members against the action of the spring means when said apertures are

aligned, said restraining means including a manual releasing member to allow the two members to be moved by said spring means. The restraining means may comprise a further spring means mounted to the tubular member and shaped so as to be displaced by a part of the inner member when the inner member is moved so as to align the apertures and to retain said part when the apertures are aligned.

The further spring means may be a leaf spring and includes a shaped portion for engaging a complementary shaped portion of the inner member when the inner member is moved to align the apertures. Preferably the shaped portion of the further spring means comprises a channel shaped portion and the complementary shaped portion of the inner member comprises a pin. Preferably said manual releasing member comprises a projection on said further spring means extending externally of the tubular member so as to be engageable by finger pressure to displace the spring element and release the inner member.

The locking means may comprise a key operated lock for moving a pin through further apertures in both members which are aligned when said first mentioned apertures are out of alignment.

## DESCRIPTION OF THE DRAWINGS

FIG. 1 is a longitudinal cross section through a first window stay assembly according to the invention.

FIG. 2 is a longitudinal cross section through a second window stay assembly according to the invention, and

FIG. 3 is a plan view of the inner member of FIG. 2.

Referring to FIG. 1, the first window stay assembly comprises an outer tube 10 and an inner tube 12 which is longitudinally slidable within the outer tube. The two tubes are provided with apertures 14, 16 respectively of identical size, which can be brought into and out of alignment by relative longitudinal movement of the two tubes. The Figure shows the two sets of apertures in alignment. At one end the outer tube 10 is closed by a plug 18 which is made in two halves, each provided with a hemispherical cavity to receive, when assembled, a spherical head 20 of a mounting pin 22 provided on a bracket 24 which is adapted for mounting to the window 26. The plug 18 and head 20 thus form a conventional ball-and-socket joint which allows free pivotal movement between the tube 10 and the mounting bracket 24. A helical compression spring 28 acts between the inner end of the plug 18 and the inner tube 12 so as to urge the tube 12 away from that end of the tube 10 and thereby bring the apertures 14, 16 out of alignment. At the other end of the tube 10 there is provided a pair of diametrically opposite elongate slots 30. A tubular sleeve 32 is a slidable fit over that end of the tube 10, and a diametrically disposed pin 34 extends between the sleeve 32 and the inner tube 12 through the slots 30 so as to hold the sleeve 32 fast with the tube 12. The slots 30 thus limit the range of movement between the two tubes 10, 12. A plunger 36 is slidably located within the sleeve 32 and is movable along it by means of a screw adjustment 38 in the end of the sleeve. The screw can be rotated, for example, by means of a hexagonal spanner or a key. By screwing the plunger 36 up against the end of the outer tube 10, the two tubes 10, 12 are locked in the unaligned position of their apertures.

A pair of upstanding locking pins 40, 42 having enlarged heads 44 are provided on a bar 46 which is adapted for mounting to the window sill 48. The size of the enlarged heads 44 is such that they can pass through the aligned apertures 14, 16. Two pairs of apertures 14, 16, are provided, as shown in the drawing, to receive both locking pins when the window is closed. When the window is opened, only the locking pin 40 is used. With the plunger 36 retracted, the apertures can be brought into alignment by simply pushing on the end of the sleeve 32 towards the other end of the tube 10. A locking pin can then be introduced into one of the aligned pairs of apertures. The sleeve is then released and the spring 28 forces the apertures out of alignment, and thereby traps the head of the locking pin within the tubular members 10, 12 and thus holds the window at that position. By then advancing the plunger 36 against the end of the tube 10, the stay can be rigidly locked in this position.

Referring now to FIGS. 2 and 3, the second window stay assembly comprises an outer tube 50 of rectangular cross-section and an inner member 52 of rectangular upwardly opening channel section longitudinally slidable within the outer tube. The two tubes are provided with apertures 54, 56 respectively, the apertures 54 being circular and the apertures 56 being of key-hole shape, the enlarged circular part of each key-hole aperture having the same diameter as that of the aperture 54. The apertures are arranged so that in their aligned condition the enlarged parts of the apertures 56 are coincident with the apertures 54 and in the unaligned condition the narrow necks of the apertures 56 lie over the apertures 54.

At one end the outer tube 50 is closed by a plug 58 which is made in two halves, each provided with a hemispherical cavity to receive, when assembled, a spherical head 60 of a mounting pin 62 provided on a bracket 64 which is adapted for mounting to a window. The plug 58 and head 60 thus form a conventional ball-and-socket joint which allows free pivotal movement between the tube 50 and the mounting bracket 64. A helical compression spring 68 acts between the inner end of the plug 58 and the inner member 52 so as to urge the member 52 away from that end of the tube 50 and thereby bring the apertures 54, 56 into their unaligned condition.

Near the other end of the tube 50 there is provided a key-operated lock 70 which, on operation of the key, advances a pin 72 downwardly through apertures 74, 76 in the inner member and outer tube, which apertures are aligned when the apertures 54, 56 are in the unaligned condition. The pin 72 thus locks the inner member and outer tube in the unaligned condition. An elongate recess 78 in the inner member limits the possible extent of longitudinal sliding movement of the inner member by abutment of one or the other end of the recess with the body of the lock 70.

A pin 80 extends transversely between the sides of the inner member and rests on the upper surface of the free end portion of a leaf spring 82 which is secured at its upper end portion to the tubular member 50 at a point 84 between the pin 80 and the pivoted end of the stay. The leaf spring has a channel shaped portion 86 which will receive and retain the pin 80 when the two members 50, 52 are in the aligned condition. A stud 88 secured to the leaf spring 82 projects through an aperture in the top of the tubular member 50.

A pair of upstanding locking pins 90, 92 having enlarged heads 94 are provided on a bar 96 which is adapted for mounting to a window sill. The size of the enlarged heads 94 is such that they can pass through the apertures 54, 56 when in their aligned condition. The pin 90 is used when the window is closed, an oval aperture 56 being provided to engage the pin instead of a key-hole aperture to prevent a side loading on the inner member jamming the inner member should any slight misalignment occur in the window when in the closed and locked condition.

When the window is being opened and closed, and when locking is not required, the inner member is pushed towards the pivoted end of the stay against the resistance of the spring 68 by pressure on the exposed end 98 of the inner member. The pin 80 moves forward against the leaf spring 82, deflecting it downwardly until the apertures 54, 56 are in the aligned condition, at which point the pin 80 reaches the channel shaped portion 86 and the leaf spring snaps back and retains the pin in the channel, thus retaining the inner member and the tubular member in the aligned condition. The window can be set at the desired opening by receiving the pin 92 within any of the aligned pairs of apertures 54, 56. The stay can be temporarily retained in this position simply by pressing on the exposed stud 88, which deflects the leaf spring 82 downwardly, releasing the pin 80, and thus allowing the inner member 52 to move under the influence of the spring 68 to the unaligned condition of the aperture 54, 56 at which point the narrow neck of the aperture 56 embraces the restricted neck of the locking pin 92 and prevents its withdrawal from the stay. The stay can be readily released simply by pushing once more on the exposed end 98 of the inner member. The two members 50, 52 can also be locked in the unaligned condition by the lock 70, thus preventing the stay from being removed from the pin 92.

We claim:

1. A stay assembly for a window comprising a tubular member, a wall of said tubular member including an aperture; an elongate inner member movably located within said tubular member and having an aperture which on relative movement of said two members can be brought into alignment with the aperture in said tubular member; spring means mounted so as to act between said tubular member and said inner member to urge said apertures out of alignment; means for relatively moving said two members against said spring means so as to bring the apertures into alignment, said means for relatively moving said two members comprising a sleeve surrounding an end of said tubular member, a pin rigidly connecting said sleeve to said inner member and passing through an elongate slot in said tubular member; and a locking pin with an enlarged head adapted to pass through said apertures when aligned where-after said spring means may urge said apertures out of alignment to thereby trap said enlarged head of said locking pin.

2. The stay assembly defined in claim 1 in which said tubular member is adapted for mounting to a window and said locking pin is adapted for mounting to a window frame.

3. The stay assembly defined in claim 1 in which a plurality of apertures are longitudinally spaced along said tubular member and said inner member.

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4. The stay assembly defined in claim 1 including locking means on said tubular member for locking said two members against relative movement when said apertures are out of alignment and said head of said locking pin is trapped.

5. The stay assembly defined in claim 4 including restraining means for restraining said two members against the action of said spring means when said apertures are aligned, said restraining means including a manual releasing member for allowing said two members to be moved by said spring means and in which the locking means comprises a key operated lock for moving a pin through further apertures in both said members which are aligned when said first mentioned apertures are out of alignment.

6. The stay assembly defined in claim 4 wherein said locking means comprises a plunger screw-threadedly attached to said sleeve and movable by rotation against an end of said tubular member.

7. The stay assembly defined in claim 6 wherein said plunger is adapted to be rotatable by a key.

8. A stay assembly for a window comprising a tubular member, a wall of said tubular member including an aperture; an elongate inner member movably located within the tubular member and having an aperture which on relative movement of said two members can be brought into alignment with the aperture in the tubular member; spring means mounted so as to act between the tubular member and the inner member to urge the apertures out of alignment; means for relatively moving the two members against the spring means so as to bring the apertures into alignment, said means for relatively moving said two members comprising a sleeve surrounding an end of said tubular

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member, a pin rigidly connecting said sleeve to said inner member and passing through an elongate slot in said tubular member; a locking pin with an enlarged head adapted to pass through said apertures when aligned whereafter said spring means may urge said apertures out of alignment to thereby trap said enlarged head of said locking pin; and restraining means for restraining said two members against the action of said spring means when said apertures are aligned, said restraining means including a manual releasing member for allowing said two members to be moved by said spring means.

9. The stay assembly defined in claim 8 in which said restraining means comprises second spring means mounted in said tubular member and shaped so as to be displaced by a part of said inner member when said inner member is moved so as to align said apertures and to retain said part when the apertures are aligned.

10. The stay assembly defined in claim 9 in which said second spring means comprises a leaf spring and includes a shaped portion for engaging a complementary shaped portion of said inner member when said inner member is moved to align the apertures.

11. The stay assembly defined in claim 10 in which said shaped portion of said second spring means comprises a channel shaped portion and said complementary shaped portion of said inner member comprises a pin.

12. The stay assembly defined in claim 9 in which said manual releasing member comprises a projection on said second spring means extending externally of said tubular member.

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