(12) UK Patent Application (19) GB (11) 2 083 131 A

(21) Application No **8126800**
(22) Date of filing **4 Sep 1981**
(30) Priority data
(31) **80/28803**
(32) **5 Sep 1980**
(33) **United Kingdom (GB)**
(43) Application published **17 Mar 1982**
(51) **INT CL³**
E05C 17/34
E06B 3/50
(52) Domestic classification
E2F 612 651 SG SL
(56) Documents cited
None
(58) Field of search
E2F
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(54) **Improvements in friction supporting stays for windows**

(57) A friction supporting stay for windows comprises a track 10, a slider 15 movable along the track, a strut 16 pivotally connected to the track, a brace 18 pivotally connected between the slider and the strut, a link 21 pivotally connected to the slider 15, and a bar 24 pivotally connected to the link and to the strut, the arrangement being such that as the slider 15 moves along the track the bar can swing from a closed position overlying the track to an open position where it is angled with respect to the track. A trailing link 28 is pivotally connected between the strut 16 and a further slider 15A movable along the track 10. There is mounted on the trailing link 28 a stop member 31 which is adjustable between an operative position in which it prevents the win-

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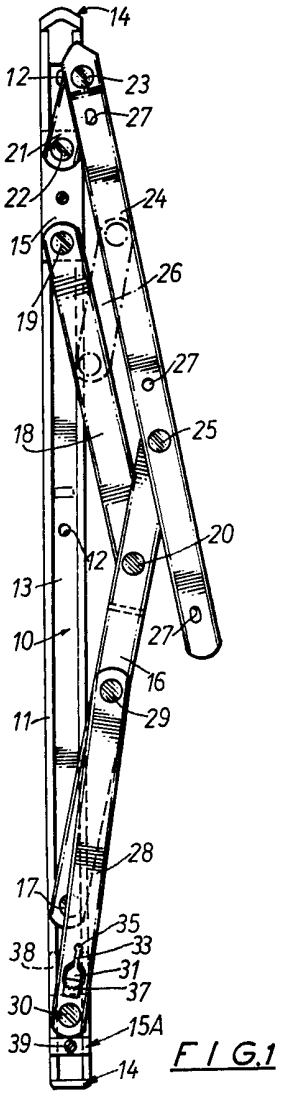

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The drawing(s) originally filed was/were informal and the print here reproduced is taken from a later filed formal copy.

dow from being swung beyond a partly-open position and a released position in which it permits the window to be swung beyond said partly-open position.

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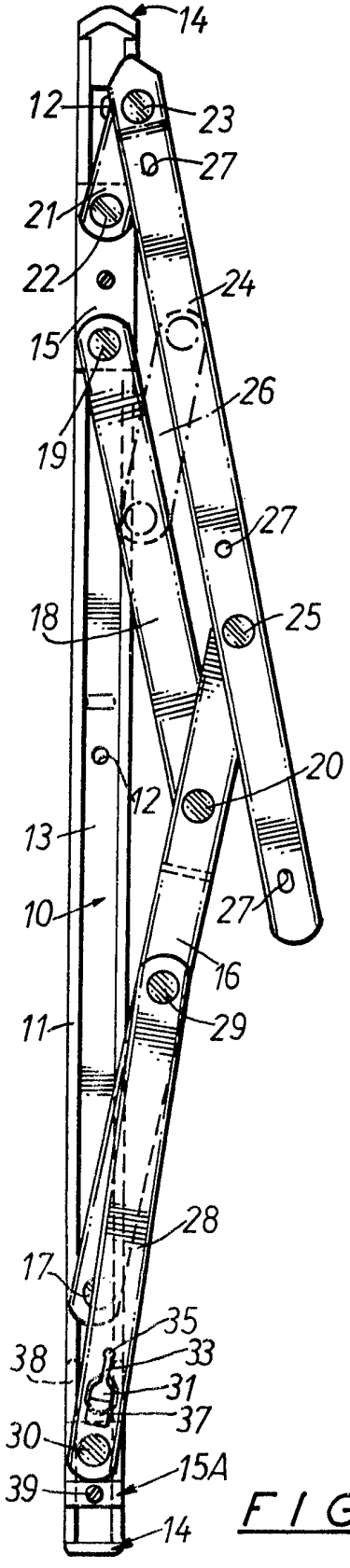

FIG.1

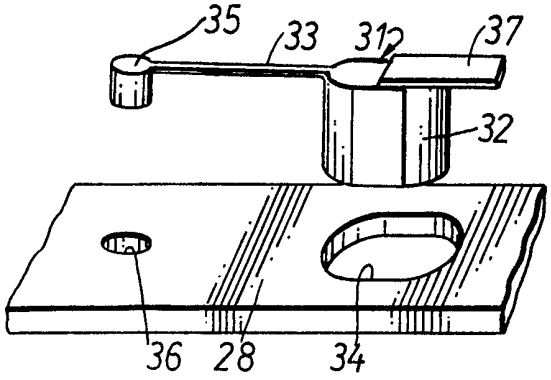

FIG.4

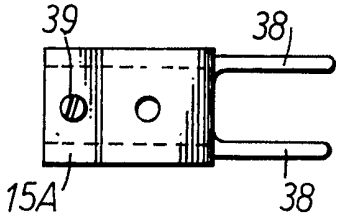

FIG.2

FIG.3

SPECIFICATION

Improvements in friction supporting stays for windows

The invention relates to friction supporting stays, for windows, of the kind comprising a track, a slider movable along the track, a strut pivotally connected to the track, a brace pivotally connected between the slider and the strut, a link pivotally connected to the slider, and a bar pivotally connected to the link and to the strut, the arrangement being such that as the slider moves along the track the bar can swing from a position overlying the track to a position where it is angled with respect to the track.

In use, two such stays are normally provided at opposite sides of a window pivotable about a horizontal axis or at the top and bottom of a window pivotable about a vertical axis, the track of each stay being mounted on the window sash. The arrangement is such that, as the window pivots on the stays, the axis of pivoting of the window sash moves away from the window frame so that, when the window is fully open, both sides thereof are freely accessible from one side of the window frame.

In friction supporting stays of this kind the window sash is restrained in any angular position in which it is set simply by means of the friction between the slider and the track. This has the disadvantage that, when the window is closed or slightly open, it is possible for a small child to push the window into a position in which there is a danger of the child falling out of the window. The invention sets out to provide a supporting stay which enables a window to be left slightly open at night or at other times for the purpose of ventilation without providing a safety risk. Furthermore it is an object of a further aspect of the invention to prevent the window from being fully opened from outside by an intruder.

According to the invention there is provided a friction supporting stay of the kind first referred to above, wherein there is movably mounted on a component of the stay a stop member which is adjustable between an operative position in which it prevents the bar from being swung beyond a partly-open position and a released position in which it permits the bar to be swung beyond said partly-open position.

The partly-open position is preferably sufficient to provide adequate ventilation, but insufficient to enable a small child to fall out of the partly-open window. Normally the stop member will be in its operative position, possibly being biased into that position by resilient means, and is only moved into its second position when it is desired to open the window fully, for example to clean it.

The stop member may be movably mounted on a component of the stay which is displaced with respect to the track as the stay is opened, the stop member, when in its operative position, being engageable with an abutment on said track after a predetermined displacement of said component relative to the track, corresponding to movement of the bar to said partly-open position.

Said component may be a component which is angularly displaceable with respect to the track as the stay is opened. For example, the component may comprise a trailing link pivotally connected between the aforesaid strut and a further slider movable along the track. In this case the abutment with which the stop member is engageable may be formed on said further slider. Adjustable locking means may be provided for locking the further slider to the track to prevent operation of the stay. Said locking means comprise a screw threadedly engaging said further slider and adjustable into and out of locking engagement with the track.

The stop member may be mounted on one end of a resiliently flexible arm, the opposite end of which is secured to said component. For example, the stop member may be integrally formed with said resiliently flexible arm. The resiliently flexible arm may be located on one side of the component and the stop member may extend through an aperture in the component so as to project from the opposite side thereof when in the operative position. The stop member is preferably formed with a manipulating element by means of which it may be moved manually from the operative position to the released position.

In an alternative arrangement to those referred to above, the stop member is movably mounted on the track for engagement, when in the operative position, with a component which is displaced with respect to the track as the stay is opened.

The following is a detailed description of a window friction supporting stay according to the invention, by way of example, reference being made to the accompanying drawings in which:

Figure 1 is a plan view of the friction supporting stay, shown in a partly-open position,

Figure 2 is a plan view of the further slider incorporated in the stay,

Figure 3 is a side elevation of the further slider, and

Figure 4 is an enlarged perspective view showing the stop member and its method of mounting on the trailing link.

Referring to Figure 1, the supporting stay comprises a metal channel-sectioned track member 10 having longitudinal inturned flanges 11. Fixing holes 12 are provided in the web 13 of the track member 10 to receive fixing screws for securing the track member 10 to the window frame. The track member 10 is closed at both ends by plastics caps 14 which are plugged into the ends. Two sliders 15 and 15A are slideable along the track member 10.

An elongate cranked strut 16 is pivotally connected to the track member 10, adjacent one end thereof, by a rivet 17. An elongate brace 18 is pivotally connected at one end, by a rivet 19, to the slider 15 and the opposite end, by a rivet 20, to a part of the strut 16 intermediate the ends thereof. A link 21 is pivotally connected to the slider 15 by a rivet 22 at a location spaced from the rivet 19. The opposite end of the link 21 is pivotally connected by a rivet 23 to one end of a bar 24, which is in turn pivotally connected, intermediate its ends, by a rivet 25, to the

extremity of the strut 16. Fixing holes 27 are provided in the bar 24 to receive fixing screws for securing the bar 24 to the window sash frame. A cross link 26, shown in chain lines, may be connected between the brace 18 and the bar 24, parallel to the strut 16, if required.

A trailing link 28 is pivotally connected at one end, by a rivet 29, to the strut 16 intermediate its ends and at the opposite end, by a rivet 30, to the slider 15A. A releasable stop member 31 is mounted on the trailing link 28 to limit the extent of opening of the stay. The construction of the stop member is shown on an enlarged scale in Figure 4.

Referring to Figure 4, the stop member 31, which may be formed from an acetal plastics, comprises a stop block 32 integrally moulded on one end of a spring arm 33. The stop block 32 is elongate with rounded ends in cross-section and passes freely through a correspondingly shaped aperture 34 in the trailing link 28 so as to project from the opposite side of the trailing link. The stop member 31 is secured to the trailing link 28 by means of a boss 35 integrally moulded on the end of the spring arm 33 remote from the stop block 32, which boss is received in an aperture 36 in the trailing link. The boss 35 may simply be a press fit in the aperture 36 or may be so shaped that it snaps into engagement with the aperture. Alternatively, the boss may be secured in the aperture 36 by heat deformation of the boss. A lifting tab 37 projects from the side of the stop block 32 opposite the spring arm 33.

When the stop member 31 is in its normal operative position the portion of the stop block 32 which projects through the trailing link 28 extends into the channel between the flanges 11 of the track member 10. As best seen in Figures 2 and 3 the further slider 15A is formed with side extensions 38 which fill the recesses at the sides of the track member 10, under the flanges 11.

In operation, the bar 24, connected to the window sash, may be swung from a closed position in which it overlies the track member 10, to the partly-open position shown in Figure 1. As the stay is opened the trailing link 28 pivots relatively to the track and both sliders 15 and 15A slide along the track member. As the partly-open position is reached the stop block 32 engages one of the side extensions 38 of the slider 15A thereby preventing further angular displacement of the trailing link 28 and thereby preventing the window from being opened further.

The stop may be over-ridden if it is desired to open the window fully by withdrawing the stop block 32 through the aperture 34 by lifting the tab 37, against the action of the spring arm 33. The stop block 32 is thus withdrawn from between the flanges 11 and side extensions 38 of the slider 15A, and the trailing link 28 is then free to be further displaced angularly with respect to the track member 10, thus permitting the window to be fully opened. When the window is to be closed again, the stop block 32 is again withdrawn through the aperture 34 by lifting the tab 37 so that the stop block clears the adjacent flange 11 of the track member. When the stop member is released it snaps back into the space between the flanges 11 under the action of the spring arm 33.

Alternatively, the stop block 32 may be so positioned that, after having been withdrawn from the aperture 34, it bears on the flange 11 during the whole of the further opening movement of the stay. Consequently, when the window is closed again the stop block will automatically snap back into the space between the flanges without requiring first to be lifted.

The arrangement is such that, in the limited stop position shown in Figure 1, the degree of opening of the window is very slight so as to provide ventilation but to prevent a child falling out of the window. To permit the window to be positively locked against movement in any position, there is provided on the further slider 15A a screw 39 which passes in threaded engagement through the slider and may be screwed into and out of locking engagement with the track member 10.

It will be apparent that the trailing link 28 and the slider 15A are provided solely to accomodate the stop member 31 and the locking screw 39 and that these components may be dispensed with if the stop member and locking screw are provided on other components of the stay. For example, the stop member 31 could be mounted on the strut 16 provided that it is situated sufficiently closely to the rivet 17 to enable the stop member to engage within the channel of the track member 10 when the window is in its partly-open position. Similarly the locking screw 39 might extend through a tapped hole in the slider 15.

Furthermore the stop member may be of a different form from that shown in the drawings. For example, the slider 15 may be provided with an extension having pivotally mounted on one end thereof a stop member which engages an abutment on the track member 10 when the stay reaches the partly-open position. The window may, in that case, be fully opened by disengaging the stop member from the abutment to permit further sliding of the slider 15 along the track member 10.

Alternatively, a stop member may be movably mounted on the track member 10 so as to engage one of the movable components of the stay when the stay reaches the partly-open position. For example, the stop member may be mounted on the track member 10, or on the further slider 15A, and may be biased to snap into engagement with a hole in the trailing link 28 or other link of the stay when the stay reaches the partly-open position. In order to override the stop the stop member is disengaged from the aperture in the link so as to permit the link to pass beyond the stop member.

It will also be appreciated that in the arrangement shown in the drawings where the stop member is provided on a trailing link connected to a further slider, the stop member may take forms other than that shown. For example, the stop may be in the form of a cylindrical plunger passing through a hole in the trailing link and urged into the space between the flanges 11 of the track member 10 by a helical compression spring encircling the plunger.

Generally a friction supporting stay having the limited stop facility described above is provided on both sides of the window or at both the top and bottom of the window in the case of a side hung

window. In certain circumstances, however, it may be sufficient for only one of the stays to be provided with this facility, the other stay being of conventional construction.

CLAIMS

1. A friction supporting stay comprising a track, a slider movable along the track, a strut pivotally connected to the track, a brace pivotally connected between the slider and the strut, a link pivotally connected to the slider, and a bar pivotally connected to the link and to the strut, the arrangement being such that as the slider moves along the track the bar can swing from a closed position overlying the track to an open position where it is angled with respect to the track, there being movably mounted on a component of the stay a stop member which is adjustable between an operative position in which it prevents the bar from being swung beyond a partly-open position and a released position in which it permits the bar to be swung beyond said partly-open position.

2. A friction supporting stay according to claim 1, wherein said stop member is biased into its operative position by resilient means.

3. A friction supporting stay according to claim 1 or claim 2, wherein the stop member is movably mounted on a component of the stay which is displaced with respect to the track as the stay is opened, the stop member, when in its operative position, being engageable with an abutment on said track after a predetermined displacement of said component relative to the track, corresponding to movement of the bar to said partly-open position.

4. A friction supporting stay according to claim 3, wherein said component is a component which is angularly displaceable with respect to the track as the stay is opened.

5. A friction supporting stay according to claim 4, wherein said component on which the stop member is mounted comprises a trailing link pivotally connected between the aforesaid strut and a further slider movable along the track.

6. A friction supporting stay according to claim 5, wherein said abutment with which the stop member is engageable is formed on said further slider.

7. A friction supporting stay according to claim 4 or claim 6, wherein adjustable locking means are provided for locking the further slider to the track to prevent operation of the stay.

8. A friction supporting stay according to claim 7, wherein said locking means comprise a screw threadedly engaging said further slider and adjustable into and out of locking engagement with the track.

9. A friction supporting stay according to any of claims 1 to 8, wherein the stop member is mounted on one end of a resilient flexible arm, the opposite end of which is secured to said component.

10. A friction supporting stay according to claim 9, wherein the stop member is integrally formed with said resiliently flexible arm.

11. A friction supporting stay according to claim 9 or claim 10, wherein said resiliently flexible arm is located on one side of said component and the stop member extends through an aperture in the component so as to project from the opposite side thereof when in the operative position.

12. A friction supporting stay according to any of the preceding claims wherein the stop member is formed with a manipulating element by means of which it may be moved manually from the operative position to the released position.

13. A friction supporting stay according to claim 1 or claim 2, wherein the stop member is movably mounted on the track for engagement, when in the operative position, with a component which is displaced with respect to the track as the stay is opened.

14. A friction supporting stay according to claim 1 or claim 2, wherein the stop member is movably mounted on the slider for engagement, when in the operative position, with an abutment on the track member.

15. A friction supporting stay as hereinbefore described with reference to the accompanying drawings.

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Published by The Patent Office, 25 Southampton Buildings, London, WC2A 1AY, from which copies may be obtained.