

(21) Application No 8600751

(22) Date of filing 14 Jan 1986

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E05C 17/18

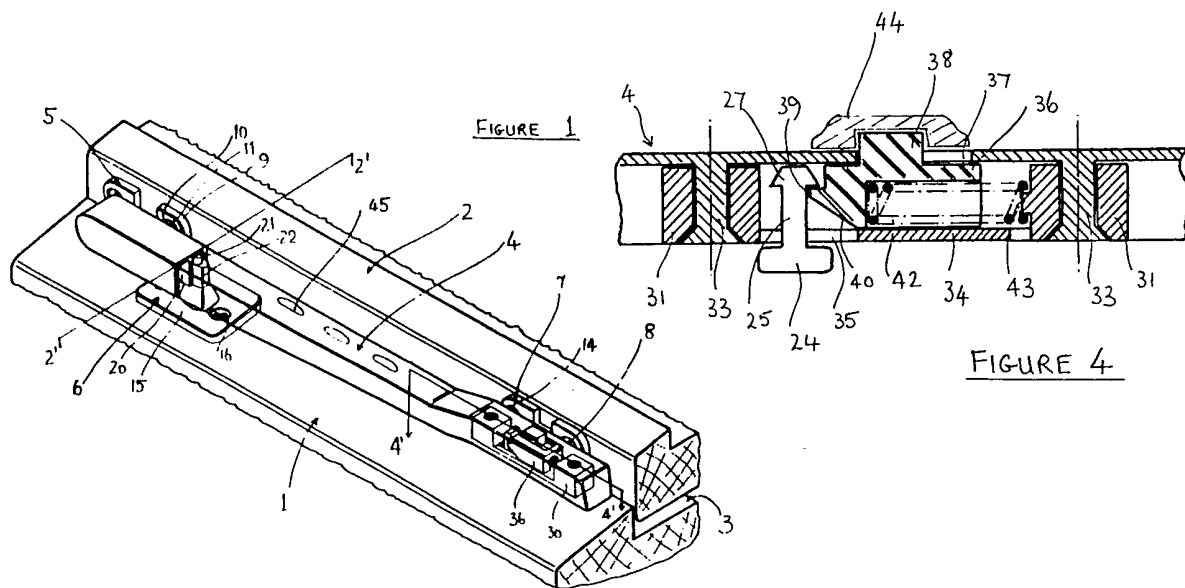
(52) Domestic classification (Edition I):
E2F 543 SK
U1S 1715 E2F

(56) Documents cited
GB 1396102 **GB 1196770** **GB 0385688**
GB 1396101

(58) Field of search
E2F
Selected US specifications from IPC sub-class E05C

(54) Casement stay with security device

(57) A casement stay has an arm 4 of inverted channel section is mounted by a pivot bracket 5 to a casement member 2 with a peg plate 6 being mounted on the fixed cill 1 adjacent to the pivot. A hook plate 7 is mounted on the casement remote from the bracket 5 and is aligned with the free end of the arm 4 that carries a latch device 8. The hook plate 7 is formed with an upstanding striker 25 having a head 27 under which a spring-loaded latch 36 of the device 8 engages to hold the free end of the stay in engagement with the hook plate 7 to prevent lifting of the stay arm 4 when the casement is in either the closed or vent positions. To disengage the latch 8, an actuator boss 38 can be manually slid against the spring bias. In another embodiment the latch is mounted for sideways pivotal movement.



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FIGURE 2

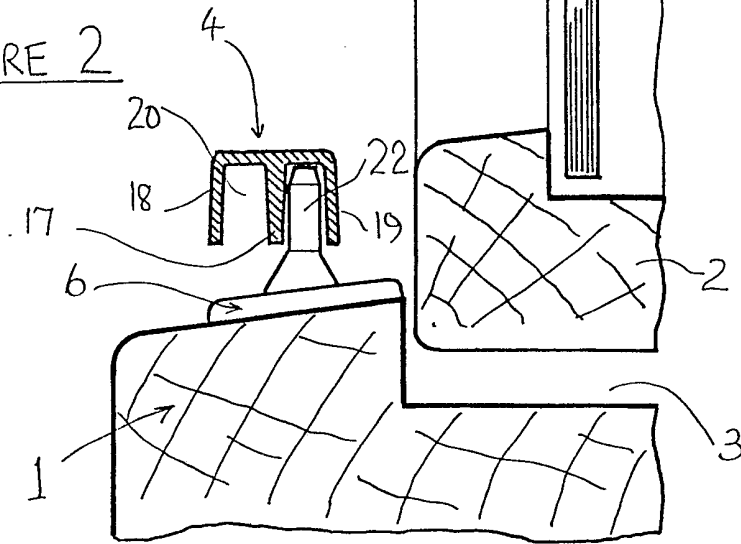
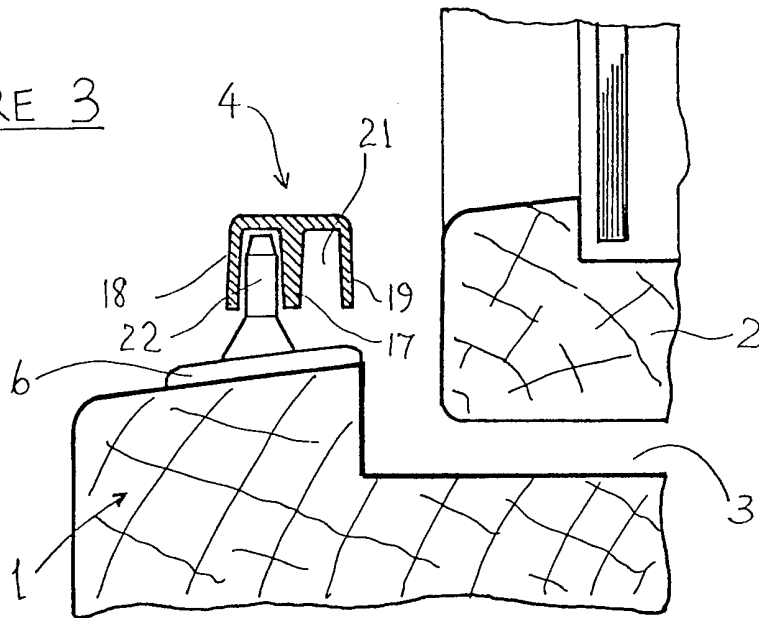


FIGURE 3



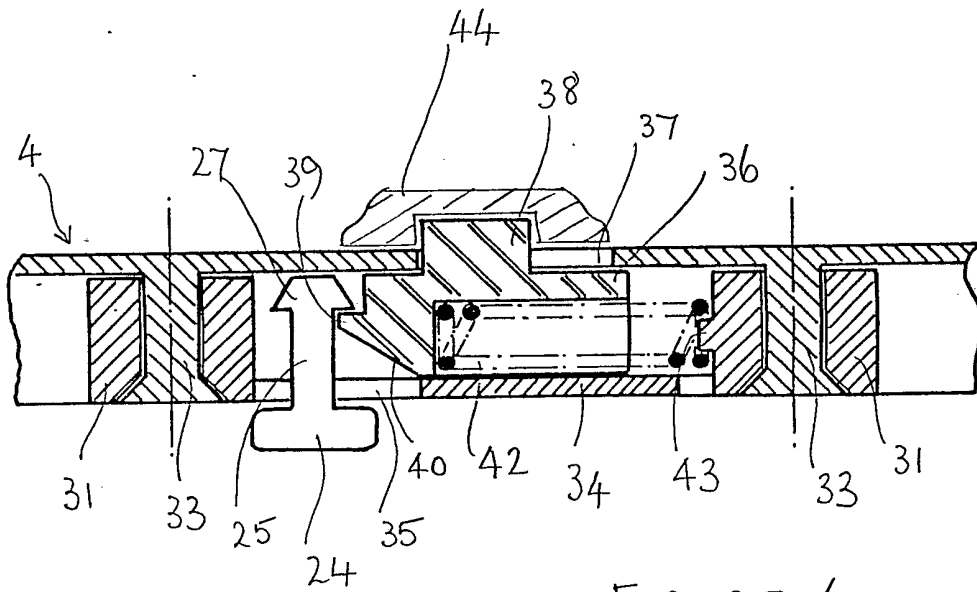


FIGURE 4

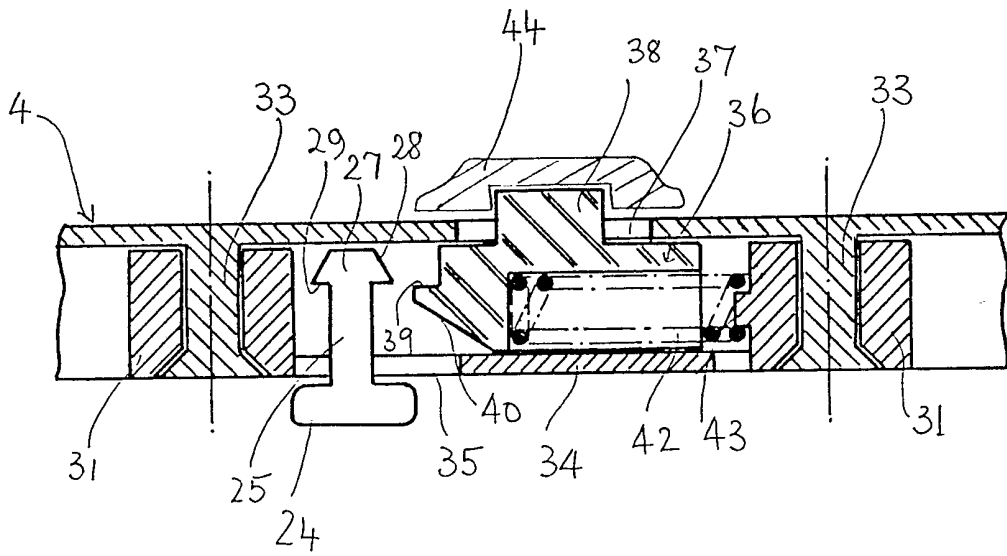


FIGURE 5

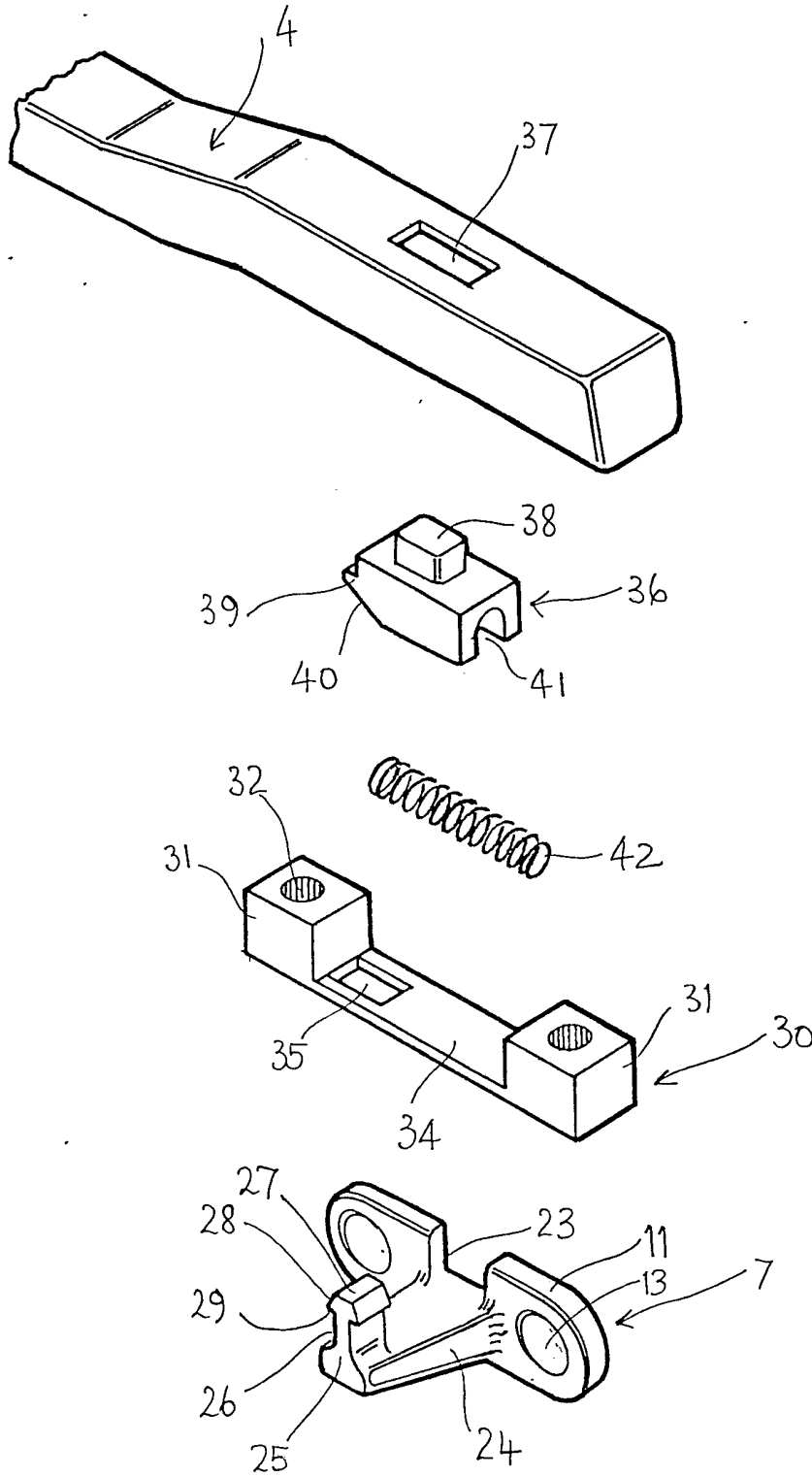


FIGURE 6

FIGURE 7

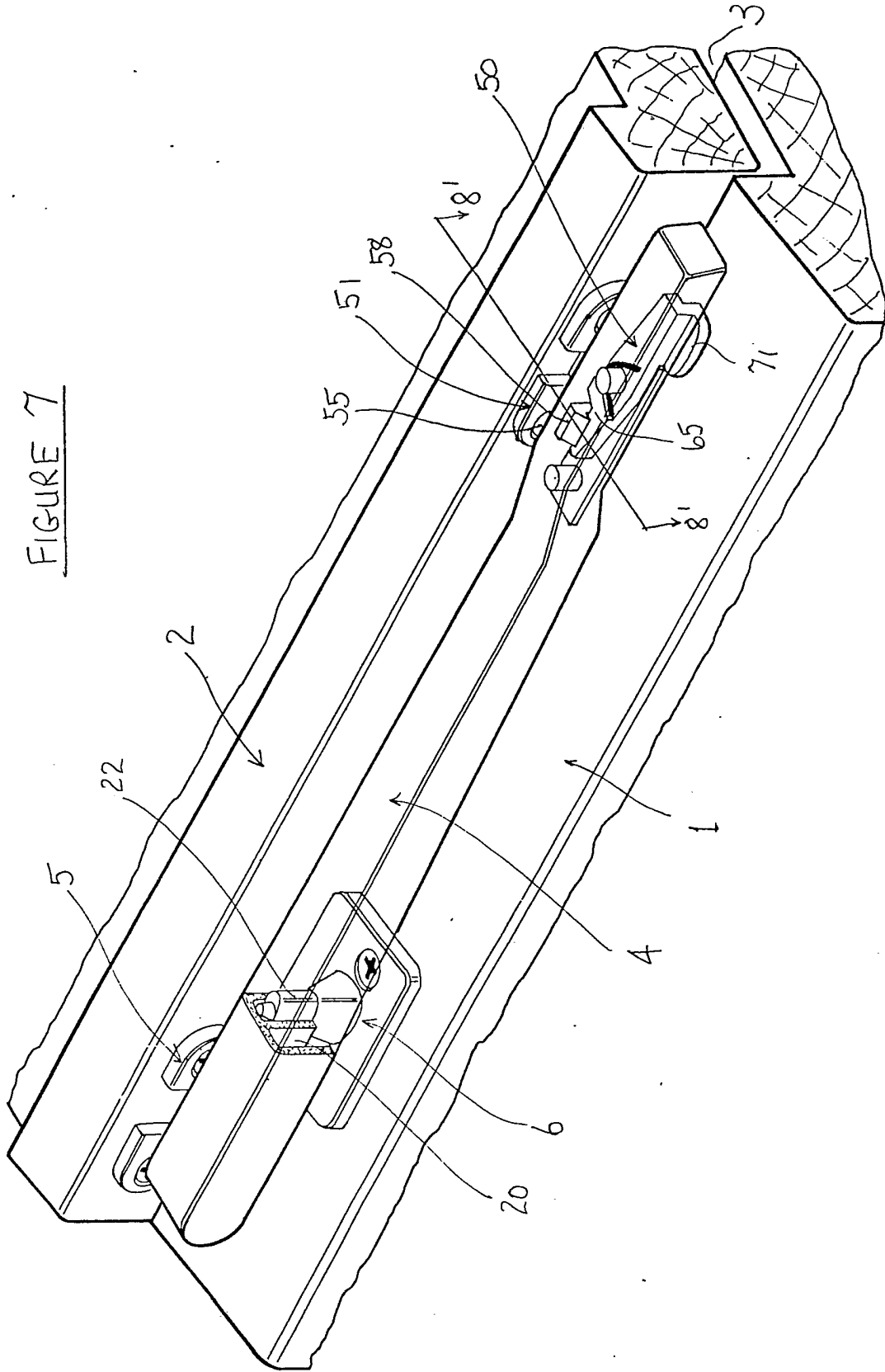


FIGURE 8

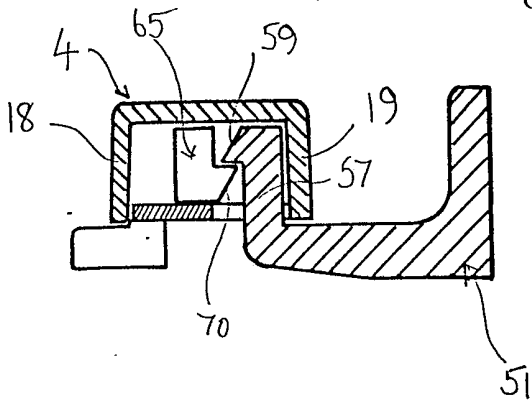


FIGURE 9

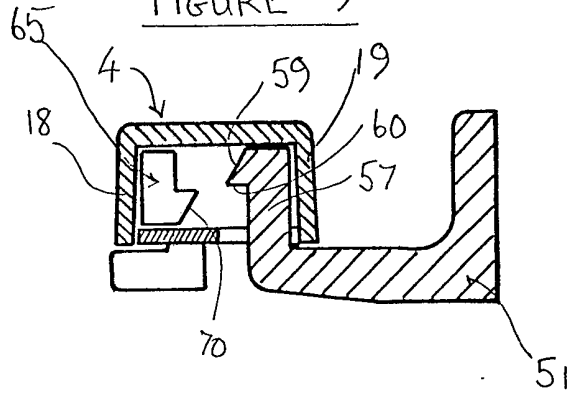


FIGURE 10

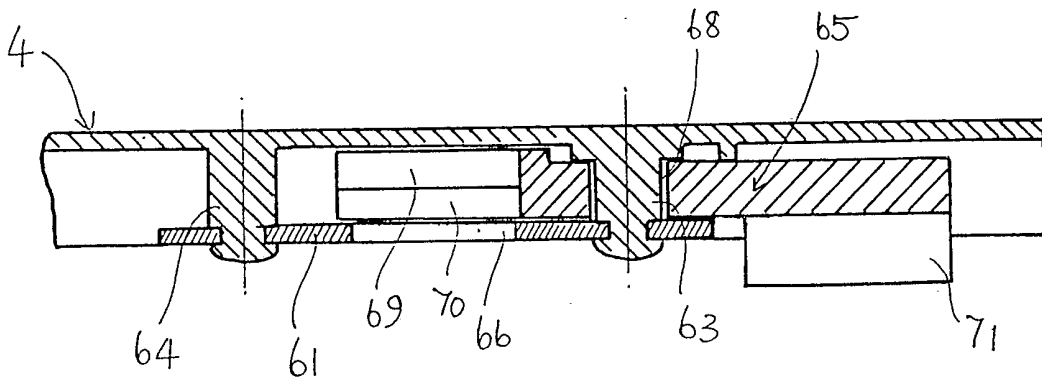
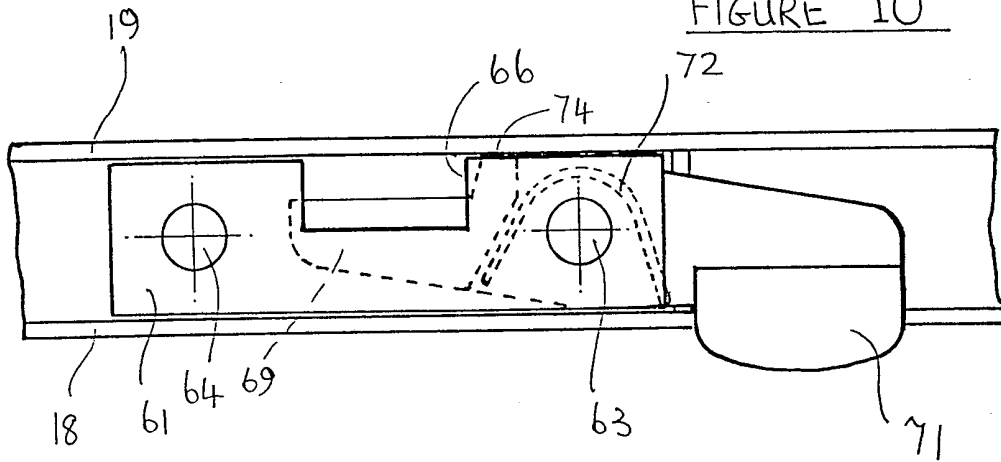


FIGURE 11

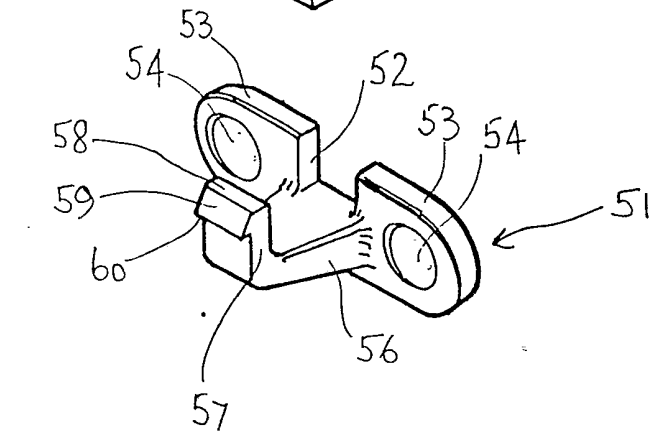
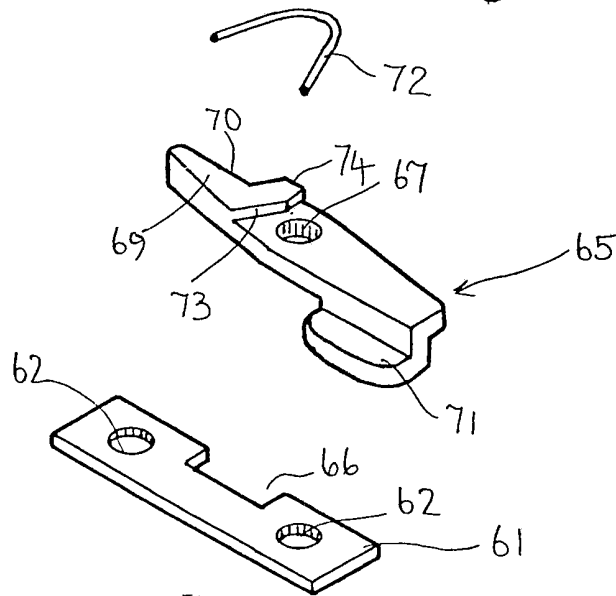
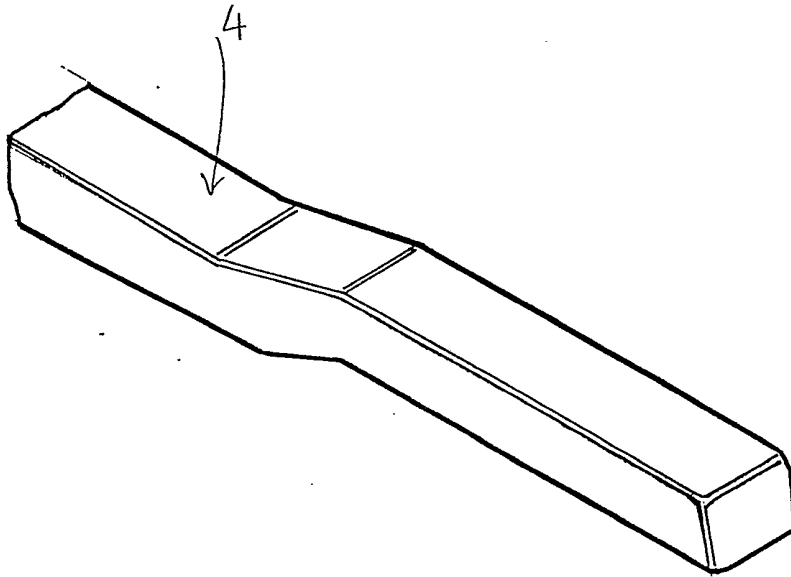


FIGURE 12

SPECIFICATION

Casement stay with security device

5 This invention concerns casement stays for windows of the kind having a fixed frame and a casement hingedly mounted on the frame for opening and closing movement relative to the frame with a casement stay being arranged to fasten the casement in the closed position and to hold the casement window in at least one open position. The casement window may be mounted for hinged movement about a vertical or horizontal axis by any suitable hinge including butt or leaf or stay hinges of the friction or sliding shoe type.

For such casement windows, it is conventional to provide a casement stay comprising an arm which is mounted on the casement window at one end by a bracket including a pivot joint for swivelling movement of the arm relative to the casement. Conventionally, the casement mounts a hook plate remote from the bracket and this hook plate is for engagement by the free end of the stay arm, and a peg plate is mounted on the frame at a position to engage the arm intermediate the pivot joint and the free end.

Although such conventional casement stays provide a dual engagement in the fastened position when the casement is closed, this dual engagement being with the peg plate and the hook plate, it is possible to lift the free end of the arm from the engagement with the hook plate to release the arm so that the casement can be opened, either inadvertently from inside, or purposefully from outside by an action called "rattling".

It has already been proposed to fit various types of security devices to an existing casement stay to lock or fix the arm down on the frame or to the casement. Typical of these devices are so-called locks with keys or threaded studs which are turned by means of a special key which engage with a keeper or the arm itself to hold it in the desired position when the casement is closed.

It is desirable in many installations of windows to provide a casement stay which can be engaged with the peg plate to hold the casement window in a first open position for night ventilation or for limited ventilation without the casement being opened beyond the extent of the frame rebate. In such vent position, it is not normally possible for the free end of the arm to engage the hook plate and the casement is fastened by engagement only with the peg plate from which the arm can easily be lifted either from the inside or from the outside by either a simple tool slidden into the frame rebate or by the "rattling" technique. The known types of security devices are specifically designed and fitted to secure the casement in the closed position and due to their design cannot secure the stay in other

positions.

It is an object of this invention to provide a casement stay in which the arm can be secured to preclude opening the casement from the closed position and can also be secured to preclude opening the casement from a vent position.

It is an object of this invention to provide a casement stay of simple unique construction in which the arm is automatically secured against release from the hook plate unless purposefully intended.

It is a further object of this invention to provide a casement stay in which the arm is automatically secured against release from the hook plate when the arm is located either in the casement closed position or in the casement vent position.

Other objectives of this invention will become apparent later herein with reference to the advantages and merits of the embodiments of the invention as described.

According to this invention, we provide a casement stay for a window of the kind defined, the stay comprising an arm of which one end is pivotally connected to a bracket adapted for mounting on a casement, a hook plate for engagement with the free end of the arm and adapted for mounting on the casement, and a peg plate adapted for mounting on the frame for engagement by the arm in a first closed position of the casement and for engagement by the arm in a second vent position of the casement, the arm having two laterally spaced recesses respectively for engagement with the peg in said first closed position and for engagement with the peg in said second vent position, the hook plate having a striker head for engagement with a spring-loaded latch mounted on the free end of the arm for latching engagement under the striker head when the arm is located on the hook plate in either said first closed position or said second vent position to prevent lifting movement of the arm relative to the hook plate and said latch being releasable from such latching engagement by a manually operable actuator arranged to displace the latch against the spring bias.

By this invention, the security device is integrally with the casement stay and provides secure fastening of the casement either in the first closed position or in the second vent position.

The invented casement stay incorporates the spring-loaded latch which has an automatic or self-latching action engaging with the striker head of the hook plate once the arm is engaged over and with the hook plate and this prevents release of the stay arm from the hook plate until the actuator is operated.

By providing the respective two laterally spaced recesses in the stay arm for selected engagement with the peg plate, the arm extends substantially parallel to the casement in

either the closed or vent positions of the casement and because of this lateral positioning the striker carried by the stay arm head of the hook plate can be engaged by the latch in
 5 both the closed or vent positions of the casement.

Thus, by a simple single spring-loaded latch mounted on the free end of the stay arm, the casement stay can be securely fastened to
 10 hold the casement in two different positions.

Preferably, the arm is generally of inverted channel section and the two laterally spaced recesses are provided adjacent the pivotal connection to the mounting bracket with each
 15 recess being defined by a side wall of the channel and a web extending substantially parallel and between the side walls of the channel.

By this particular preferred form of the recesses, each recess extends parallel to the other and the two recesses can extend a designed distance lengthwise of the arm to accommodate fitting tolerances as might be advantageous when mounting the various stay
 25 parts to a window.

Conveniently and in the normal manner, at spaced apart positions intermediate the lateral recesses and the free end of the arm, pockets or holes are formed in the arm for receiving
 30 the peg plate to fasten the casement in a range of open positions beyond the vent position.

In one preferred embodiment of this invention, the latch is mounted for latching movement lengthwise of the arm and the actuator is a boss or plate mounted thereon projecting
 35 through the arm for access to displace the latch against the spring bias by a manual movement lengthwise of the arm.

In this construction, a simple sliding latch is provided and is guided for lengthwise movement between the side walls of the arm by a mounting block housed within said side walls. The plate mounted on the boss over the upper or top face of the arm conceals the assembly of the latch housed within the free
 45 end of the arm.

In an alternative embodiment of this invention, the spring-latch is mounted for pivotal latching movement and is displaceable
 50 transversely of the arm with the actuator being a thumb plate extending laterally outwards to one side of the arm at the free end thereof. The actuator is arranged to be pushed towards the arm to overcome the spring bias applied to the pivotal latch and to release same from latching engagement with the striker head of the hook plate.

In this construction, it is possible to satisfy an aesthetic requirement of leaving the top surface of the arm clean and plain, and this is important for some types of casement stays where special finishes or suite designs require such a style. However, in this construction, the casement stay is handed and must be
 65 made to suit left or right fitting.

The invention will now be described in further detail with reference to two embodiments of casement stay as shown in the accompanying drawings wherein:

70 *FIGURE 1* depicts a first embodiment of a casement stay shown with the casement in the closed position with certain portions of the stay arm being broken away for clarity;

75 *FIGURE 2* is a detail sectional view in the plane 2'-2' shown in Figure 1 and showing the engagement of the stay arm with the peg plate, the casement being in the closed position;

80 *FIGURE 3* is a detail sectional view similar to that of Figure 2 but showing the engagement of the stay arm with the peg plate, the casement being in the vent position;

85 *FIGURE 4* is a detail sectional view in the plane 4'-4' shown in Figure 1 and showing the arrangement of the spring-loaded latch engaged with the striker head of the peg plate;

90 *FIGURE 5* is a detail sectional view similar to that of Figure 4 but showing the latch in the releasing position disengaged from the striker head; and

FIGURE 6 are detailed isometric views of the component parts of the latch and hook plate.

95 *FIGURE 7* depicts a second embodiment of a casement stay with certain portions of the stay arm being broken away for clarity;

100 *FIGURE 8* is a detail sectional view in the plane 8'-8' shown in Figure 7 and showing the springloaded latch in engagement with the striker head of the hook plate;

105 *FIGURE 9* is a detail sectional view similar to that shown in Figure 8 but showing the latch in the releasing position disengaged from the striker head;

110 *FIGURE 10* is a detail underside view of the spring-loaded latch in engagement with the striker head;

115 *FIGURE 11* is a detail sectional view in the plane 11'-11' shown in Figure 10 and showing the assembly of the latch; and

120 *FIGURE 12* are detailed isometric views of the component parts of the latch and hook plate.

The first embodiment of the invention as depicted in Figures 1 to 6 is shown as applied to a side hung casement window of which only parts are illustrated. The parts shown are the cill 1 of the fixed frame and the bottom frame member 2 of the casement which closes into a rebate 3 in the cill 1. In known manner, the rebate 3 would extend all round the fixed frame and the casement would be hingedly mounted on the left-hand side by means of suitable hinges.

125 The casement stay comprises an arm 4 mounted on the casement member 2 by a bracket 5 which has a concealed swivel pivot connection (not shown) to the end of the arm. A peg plate 6 is mounted on the cill 1 adjacent to the pivotal connection of the arm 4. A
 130

hook plate 7 is mounted on the casement member 2 remote from the bracket 5 and is aligned with the free end of the arm 4 which carries a spring-loaded latch 8.

5 In known manner, the mounting bracket 5 has side lugs 9 each formed with holes 10 by means of which the casement stay arm can be mounted on the frame member 2 by screws 11. Similarly, the hook plate 7 has
10 side lugs 12 each formed with holes 13 for receiving screws 14 by means of which the hook plate 7 is secured to the frame member 2. The peg plate 6 has a base plate 15 also formed with holes through which screws 16
15 extend to secure the peg plate 6 to the cill 1 at the required position.

The arm 4 is generally of U-shape or channel section with the channel section opening to the underside and facing the cill 1. In the
20 portion of the arm 4 adjacent to the mounting bracket 5 there is a central web 17 extending lengthwise of the arm 4 and between the respective two side walls 18,19 of the arm 4. This web 17 defines two laterally spaced recesses 20,21 which are each of a width to
25 receive the upstanding peg 22 of the peg plate 6. Each recess 20,21 extends lengthwise of the arm 4 for a limited distance and this permits the peg plate 6 to be mounted within a range of positions to aid installation and fitting.

In Figures 1 and 2 the casement is shown in the closed position with the peg 22 being engaged in the recess 21 extending adjacent
35 to the casement. Figure 3 shows the peg 22 engaged in the other recess 20 with the casement in the vent position wherein the casement is opened slightly for limited ingress of air through the gap between the casement
40 and the frame rebate. In either of these positions of the stay arm, the free end of the arm 4 is engaged with the hook plate 7 by means of the latch 8 which automatically operates when the free end of the arm is lowered into
45 position over the hook plate 7.

As best shown in Figure 6, the hook plate 7 comprises a mounting plate 23 formed with the two lugs 12 and a base limb 24 projecting from the plate 23 carries an upstanding
50 striker 25 having a waisted neck 26 and a head 27. The head 27 has opposed chamfer faces 28 extending from the top of the head and these chamfer faces 28 terminate in undercut faces 29 extending generally
55 transversely to the plane of the casement.

The latch 8 is mounted in the free end of arm 4 and comprises a support plate 30 having at each end bearer lugs 31 having through
60 holes 32 for receiving integral rivet 33 of the arm 4 and extending from inside the arm section intermediate the side walls 18,19. The support plate 30 is assembled to the arm 4 and secured by peening over the ends of the rivets 33. Between the bearer lugs 31 the
65 support plate 30 has a base portion 34

formed with an aperture 35 through which, in use, the striker 25 of the hook plate 7 extends. A latch 36 is housed between the base
70 portion 34 of the support plate 30 and within the channel section of the arm 4. A slot 37 is formed in the centre top part of the arm 4 adjacent to the free end and an actuator boss 38 of the latch projects through this slot to be accessible on the top end of the arm 4.

75 One end of the latch 36 is formed with a nose 39 having a chamfered underface 40. A part-cylindrical recess 41 is formed in the underside of the latch 36 remote from the nose 39 and this receives a helical spring 42 of
80 which one end is located on a protruding seat 43 formed in the right hand bearer lug 31. The spring 42 is arranged to urge the latch 36 lengthwise of the arm towards the aperture 35 so that the nose 39 can engage under
85 the head 27 of the striker as shown in Figure 4. The latch 36 can be slidden lengthwise of the arm to release the latching engagement with the striker head 27 by means of the actuator boss 38 projecting through the slot
90 37 in the arm 4.

As shown only in Figures 4 and 5, the actuator boss 38 may mount a thumb plate 44 to close over the slot 37 and to facilitate manual operation for releasing the latch 36 by sliding
95 movement.

The underside of the arm 4 intermediate the ends may be formed with pockets 45 as schematically shown in Figure 1 within which
100 the peg 22 may be received in known manner to hold the casement open in positions beyond the vent position.

In the invented casement stay of this first embodiment, the security device is the latch arrangement which operates automatically
105 when the casement arm is lowered to fasten the casement either in the vent position when the peg 22 extends into the recess 20 or in the closed position when the peg 22 extends into the recess 21. As the free end of the
110 arm 4 is lowered down into the proximity of the hook plate 7, the striker head projects into and through the aperture 37 in the underside of the support plate 30. The chamfered face 28 of the striker head 27 engages with the chamfered underside face 40 of the latch
115 and on further lowering of the arm, the latch 36 is displaced against the bias of spring 42 until the nose 39 of the latch rides over the striker head 27 and engages under the striker head engaging the undercut face 29 as shown
120 in Figure 4.

When the casement stay is so fastened, it is not possible to lift the free end of the arm upwards unless the latch is released by sliding
125 the actuator boss 38 lengthwise of the arm against the spring bias to release the nose 39 from its engagement under the striker head 27. Thus, the stay arm 4 is held securely and cannot be disturbed inadvertently nor can the
130 arm be dislodged purposefully by the "rat-

ting" action and cannot be displaced upwardly by any simple tool inserted through the gap in the rebate which arises when the casement is in the vent position.

5 As will be noted, the striker head is designed symmetrically in order that the same hook plate can be used for either left or right handed mounting of the casement stay.

10 The second embodiment of a casement stay according to this invention will now be described with reference to the drawings of Figures 7 to 12. Generally, in this second embodiment, the casement stay is the same as that previously described except for the form of the latch 50 mounted on the free end of the arm and the hook plate 51 engageable by the latch. Accordingly, the same reference numerals as given for the previously described drawings are used where appropriate for the component parts which are the same as in the first embodiment.

15 The latch 50 is mounted on the free end of the arm 4 to engage with the hook plate 51. The hook plate 51 has a base plate 52 formed with two opposed lugs 53 pierced by holes 54 to receive mounting screws 55 by means of which the hook plate 51 is secured to the frame member 2. A base limb 56 extends from the base plate 52 and carries an upstanding striker 57 which has a head 58 with a chamfered face 59 extending to an undercut face 60. The chamfered and undercut faces 59,60 of the striker head 58 extend substantially parallel to the casement.

35 The latch 50 is mounted within the side walls 18,19 of the stay arm and comprises a support plate 61 having two holes 62 through which dependent integral rivet lugs 63,64 of the central wall of the arm project with their respective ends being peened over to retain the assembly together with a latch 65 housed and mounted between the walls of the arm and the support plate 61. A recess 66 is formed in one side of the support plate 61 to provide in the assembly an opening through which the head 58 of the striker 57 may extend to be engaged by the latch 65.

45 The latch 65 is mounted for limited pivotal movement by a central hole 67 engaged over a central bearing portion 68 formed on the rivet lug 63. On one side of the pivot axis of the latch 65 there is a thickened nose portion 69 having a chamfered face 70, and on the other side of the pivot axis, the latch 65 has a projecting actuator 71 which is arranged to project laterally from the underside of the arm. The latch 65 is biased in a clockwise direction by a hair spring 72 of which one limb engages with an upstanding face 73 adjacent the nose portion 69. A stop face 74 on one side of the nose portion limits the pivotal movement of the latch 65 by engagement with the inner face of the side wall 19 of the arm.

65 When the free end of the stay arm is en-

gaged with the hook plate 51 as shown, the nose portion 69 of the latch 65 engages with the undercut face 60 of the striker head 58 and the spring 72 urges and maintains the nose in such engagement. To release the latch 65, the actuator 71 is manually urged towards to arm and this causes the latch 65 to pivot about the axis against the bias of spring 72 so that the nose is displaced in a counter-clockwise direction to be disengaged from beneath the striker head 58. Once the nose portion 69 of the latch is so released, then the arm can be lifted clear of the hook plate. Whilst the latch is so engaged with the the striker head, it is not possible to lift the free end of the stay without purposefully actuating the latch.

70 The latching action is automatic when the stay arm is lowered onto the hook plate as the striker head extends through the opening provided by the recess 66 in the support plate until the chamfered face 59 of the striker head engages with the chamfered face 70 of the nose portion 69. On such engagement, the latch is displaced about the pivot against spring bias until the nose portion 69 clears over the head and engages under the head.

75 As explained with reference to the first embodiment of this invention, the self-latching action is achieved with the casement either in the closed position or when the casement is in the vent position as in each of these positions the free end of the stay arm is aligned with the hook plate and can be engaged therewith.

80 In the construction of this second embodiment, the assembly of the latch is such that it is handed and for a right hand hinged window, it would be necessary to have an opposite handed latch assembly.

85 As will be appreciated, the constructions of the casement stays according to this invention are simple and provide security for a casement window in an effective manner without any need for separate keys or locking devices that have to be fitted independently of the stay. The concept of this invention can be applied to a wide range of styles and types of casement stays, and all of the major component parts are neatly secreted within a short portion of the casement stay at the free end thereof.

90 Preferably, the parts such as the latch and support plate may be of plastics material and so may the hook plate be provided that an adequate strong rigid plastics material is used. The method of securing the component parts to a window may be varied, or the profiles of the mounting plates may be changed to suit the configuration or profile of the window.

95 Other advantages and merits of this invention will be appreciated by those skilled in this field.

100 CLAIMS

1. A casement stay for a window of the kind having a fixed frame and a casement hingedly mounted on the frame for opening and closing movement relative to the frame, the stay comprising an arm of which one end is pivotally connected to a bracket adapted for mounting on the casement, a hook plate for engagement with the free end of the arm and adapted for mounting on the casement, and a peg plate adapted for mounting on the frame for engagement by the arm in a first closed position of the casement and for engagement by the arm in a second vent position of the casement, the arm having two laterally spaced recesses respectively for engagement with the peg in said first closed position and for engagement with the peg in said second vent position, the hook plate having a striker head for engagement with a spring-loaded latch mounted on the free end of the arm for latching engagement under the striker head when the arm is located on the hook plate in either said first closed position or said second vent position to prevent lifting movement of the arm relative to the hook plate and said latch being releasable from such latching engagement by a manually operable actuator arranged to displace the latch against the spring bias.
2. The casement stay according to Claim 1 wherein the spring-load latch is arranged for self-latching engagement with the striker head on placement of the free end of the arm over and onto the hook plate.
3. The casement stay according to Claim 1 or Claim 2 wherein the arm is generally of inverted channel section and the two laterally spaced recesses are provided adjacent the pivotal connection to the mounting bracket with each recess being defined by a side wall of the channel and a web extending substantially parallel to and between the side walls of the channel.
4. The casement stay according to Claim 3 wherein at spaced apart positions intermediate the lateral recesses and the free end of the arm, pockets or holes are formed in the arm for receiving the peg plate to fasten the casement in a range of open positions beyond the vent position.
5. The casement stay according to Claim 4 wherein the spring-loaded latch is mounted for latching movement lengthwise of the arm and the actuator is a Loss projecting through the arm for access to displace the latch against the spring bias by a manual movement lengthwise of the arm.
6. The casement stay according to Claim 5 wherein the latch is mounted for sliding movement between the side walls of the arm by a mounting block housed between said side walls.
7. The casement stay according to Claim 6 wherein the striker head has opposed chamfer faces terminating in undercut faces leading to a waisted neck portion, and said latch has a nose with a chamfered underface, the arrangement of said faces of the striker head and the nose of the latch being such that on engagement of the nose with one of the chamfer faces of the striker head, the latch is displaced against the spring loading so that the nose can engage under an undercut face of the striker head.
8. A casement stay according to Claim 7 wherein the latch is supported for sliding movement between the side walls of the arm by a support plate connected to the arm by opposed bearer lugs with a helical spring acting between one of the lugs and the latch.
9. The casement stay according to any one of Claims 5 to 8 wherein a plate is mounted on the boss projecting through the arm to conceal the latch.
10. The casement stay according to Claim 4 wherein the spring-loaded latch is mounted for limited pivotal movement relative to the arm and the actuator projects laterally from the underside of the arm for movement towards and away from the arm.
11. The casement stay according to Claim 10 wherein the latch has on one side of the pivot axis a nose portion for engaging under the striker head of the hook plate, and a spring acts on the latch on the other side of the pivot axis to urge the latch towards the striker head.
12. The casement stay according to Claim 11 wherein the striker head has a chamfer face terminating in an undercut face and the nose portion of the latch has a chamfered underface, the arrangement of said faces of the striker head and the nose of the latch being such that on engagement of the nose with the chamfer face of the striker head, the latch is displaced against the spring loading so that the nose can engage under the undercut face of the striker head.
13. The casement stay according to Claim 12 wherein the latch has a stop face on one side of the nose portion to limit pivotal movement of the latch by engagement with the inner face of a side wall of the arm.
14. The casement stay with a security spring-loaded latch device substantially as hereinbefore described with reference to Figures 1 to 6 of the accompanying drawings.
15. The casement stay with a security spring-loaded latch device substantially as hereinbefore described with reference to Figures 7 to 12 of the accompanying drawings.