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(54) **Window restrictor**

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Arrêt de fenêtre

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(56) References cited:
GB-A- 2 288 433 GB-A- 2 353 560

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Description

FIELD OF THE INVENTION

[0001] This invention relates to a window restrictor, primarily for use upon a tilt and turn window.

[0002] In this description, directional and orientational terms such as "top", "bottom", "vertical" etc., refer to a window in its normal orientation of use, and with a window restrictor fitted in its expected position of use, as shown in Fig.1.

BACKGROUND OF THE INVENTION

[0003] Opening windows are in widespread use in domestic and commercial buildings. The windows are openable primarily to provide ventilation into a room of the building, but they also allow the egress of occupants during a fire for example.

[0004] Opening windows fall into a number of separate groups. The first group are sliding sash windows in which a window panel can slide (typically vertically) within a frame. The second group are hinged windows which are mounted upon butt hinges or friction stays to pivot about an axis, the axis being either vertical or horizontal depending upon the fitment of the window. The third group are tilt and turn windows, which have two distinct actions. The first action is to pivot through a predetermined small angle about a first (typically horizontal) axis, the second action is to pivot about a second axis which is perpendicular to the first axis (and therefore typically vertical).

[0005] Hinged windows may be arranged to pivot either inwardly or outwardly relative to the room or building in which they are fitted. Tilt and turn windows typically pivot (about both of the first and second axes) inwardly relative to the room or building. The present invention is directed primarily to the third group of windows, and the following description refers mainly to such windows. However, it will be understood that the invention could also be utilised with the second group of windows, most advantageously for inwardly-pivoting hinged windows.

[0006] To better explain the action of a tilt and turn window, reference should be made to Fig.1 of the drawings, which shows a glazed window panel 1 mounted in a fixed frame 2. The window is fitted with mechanical componentry interconnecting the window panel and frame, most of which is located in the gap between the window panel and frame, and is therefore not visible in Fig.1. The mechanical componentry is connected to the operating handle 3 of the window panel 1, in known fashion. The view of Fig.1 is from within the room or building, the operating handle 3 being mounted to the inside of the window panel 1.

[0007] In most applications of a tilt and turn window, the window tilts about a first (tilting) axis which is horizontal and is located at or adjacent to the bottom edge 4 of the window panel 1, so that when the window is undergoing its first action it can be tilted with the top edge

5 of the window panel 1 moving away from the corresponding edge of the frame 2, whereby to permit ventilation. The maximum angle of tilt is limited by a stay (not seen) which permanently connects the top edge 5 of the window panel 1 to the top edge of the frame 2, in known fashion.

[0008] The second (turning) axis is therefore generally vertical and in its second action the window can be turned (pivoted) about the vertical axis which is located at or adjacent to the vertical edge 6 of the window panel 1. The second action of the window is not limited by the window mechanism and the window can often be turned about its second axis through 90° or more.

[0009] A tilt and turn window is typically mounted so that it will open inwardly, i.e. it moves into the room or building, and the second action allows the window to be opened sufficiently for the outside of the window to be cleaned from inside the room or building. (The "full" opening of the window in the second action also enables the window to be used as an exit in the event of an emergency such as a fire.) The window panel 1 of Fig.1 is inwardly-opening, so that the edges 4, 5, 6 and 7 of the window panel 1 each carry a lip which overlies a part of the frame 2 (the lip 90 is seen in Fig. 2 for example). A sealing strip is mounted upon the lip in known fashion.

[0010] The mechanical components of a tilt and turn window which are mounted upon the window panel 1 are mostly fitted into a channel of the profile of the window panel referred to as the "Euro-groove". Thus, despite the large number of different profiles which are used by the various window manufacturers, they all share common features such as the Euro-groove, which enables the mechanical component suppliers to make components which can be fitted to many or all of the available profiles.

[0011] Because of the complexity of the mechanical componentry required for tilt and turn windows, the componentry for some of these windows occupies the Euro-groove around the profile of most or all of the window panel 1.

[0012] The handle 3 of a tilt and turn window has three positions of use, a central (locked) position as shown in which the window is fixed relative to its frame, and two operating positions. The user can decide whether the window is to be tilted (i.e. moved in its first action) by partially rotating the handle 3 in a first direction (e.g. downwards), or turned (i.e. moved in its second action) by partially rotating the handle 3 in a second direction (e.g. upwards).

[0013] To facilitate the tilting and turning movements, a stud 36 (shown in dotted outline in Fig.1 since it is not visible in practice) is mounted upon the horizontal edge 4 of the window frame 1. Adjacent to the stud 36 is a fixed keeper (not shown) mounted upon the corresponding edge 9 of the frame 2. Movement of the operating handle 3 causes the stud 36 to move relative to the keeper, and it is arranged that when the handle 3 is in either of the locked position and the operating position for tilting the window panel the stud 36 is retained by the keeper,

whereas in the operating position for turning the window panel the stud 36 is free of the keeper. It will be understood that when the stud 36 is retained by the keeper the edge 4 of the window panel 1 is retained against the edge 9 of the frame 2, although with sufficient freedom of movement to permit the tilting action.

[0014] It is a feature of most if not all tilt and turn windows that a movable stud 36 is located upon the bottom edge 4 of the window panel 1, close to the vertical edge 7 upon which the operating handle 3 is mounted.

[0015] Typically also, the handle 3 will be key-lockable. In such cases, it is generally only necessary to prevent the handle being rotated in the second direction, i.e. so that the window cannot be turned.

[0016] Tilt and turn windows are often used in high-rise buildings, which establishes another criterion for the window, that of preventing the accidental turning of the window and an occupant falling out of the window opening.

[0017] The known key-lockable tilt and turn windows are able to satisfy this criterion partially, in that the turning of the window is prevented whilst the handle is locked. However, the user must unlock the handle when the window is to be turned for cleaning, and may unlock the handle if the window is to be turned for greater ventilation than is available with the window tilted. If the user fails to re-lock the handle after the window has been closed there is then no barrier to a child for example (deliberately or inadvertently) rotating the handle in its second direction and then turning the window sufficiently to permit the child to fall through the window opening.

[0018] This is a disadvantage with all opening windows, and has been addressed in relation to the first and second groups of windows by the use of safety catches or window restrictors which permit only partial opening of a window, in particular to a position in which the window opening provides ventilation but is too small for a person to pass therethrough. A window restrictor for a sliding sash window is described in our UK patent 2 398 102. A window restrictor for a hinged window is described in our UK patents 2 263 934 and 2 391 901.

[0019] The window restrictors described in UK patents 2 263 934 and 2 391 901 can be "concealed", i.e. fitted into the Euro-groove, or elsewhere within the gap between the window panel and frame, as desired. These restrictors are therefore invisible when the window is closed, and only partially visible when the window is opened. The provision of a concealed window restrictor is much more desirable than a window restrictor which is surface-mounted (i.e. mounted upon the interior surface of the window panel and frame) and which is visible when the window is open or closed).

[0020] The window restrictors described in UK patents 2 263 934 and 2 391 901 are designed for outwardly-opening windows, since these restrictors are disabled by the user when the window is partially opened. Thus, in UK patent 2 391 901 for example the restrictor must be accessed (after the window has been partially opened) to permit insertion of the key so that the restrictor can be

disabled and the window fully opened.

[0021] Another restrictor for a hinged window is disclosed in UK patent application 2 353 560. This restrictor is very similar to the restrictor of UK patent application 2 263 934 in having a pivoting stay which is biased towards an extended position. The stay is mounted upon the window frame and engages a fixed peg or stud mounted upon the window. A spring plate is also mounted to the window frame, and can retain the stay in its retracted position so that the stay does not interfere with the egress of a person through the open window in the event of a fire. The spring plate is automatically released when the window is closed so that the stay is free to restrict the next opening movement of the window.

[0022] Hardware manufacturers have sought to provide window restrictors for tilt and turn windows for many years, but none has been particularly successful, and it is understood that all of the window restrictors which are presently available for use with tilt and turn windows are surface-mounted, with substantially all of their components visible when the window is open or closed. Since significant parts of a window restrictor are necessarily designed for function rather than aesthetic appeal these products are visually obtrusive when surface-mounted, considerably reducing their appeal to users and therefore reducing their uptake by installers.

[0023] It is for example not possible to mount a concealed restrictor such as that of UK patent 2 391 901 upon an inwardly-opening window such as a tilt and turn window. Firstly, that restrictor could not be mounted upon the vertical edge 7 since it is not able to adapt to the linear tilting movement and the arcuate turning movement of that edge. Secondly, with a tilt and turn window the top edge 5 is typically around two metres above the floor and immediately adjacent to the top edge of the window reveal, and the bottom edge 4 is typically immediately adjacent to the window sill. When the window is partially open, therefore, the restrictor would not be visible, and the access required to disable the restrictor would not be available.

SUMMARY OF THE INVENTION

[0024] It is an object of the present invention to provide a window restrictor which is suitable for use on a tilt and turn window. It is another object to provide a window restrictor with at least some of its mechanical componentry (and preferably the least visually appealing mechanical componentry) fitted into the gap between the window panel and the frame of the window. It is a further object to provide a window restrictor which can be fitted to an inwardly-opening window. It is yet another object to provide a window restrictor which is disabled with a key.

[0025] According to the invention, there is provided a window restrictor for an opening window, the window having:

a window frame; and

a window panel which is movable relative to the frame between a closed position and an open position, the window panel having a lip which overlies a part of the window frame when the window panel is closed,
the window restrictor having:

a first mounting part adapted for mounting upon an edge of the window frame in the gap between the window frame and the window panel;
a stay pivotably mounted upon the first mounting part, the stay comprising a beam and a hooked end, the hooked end being adapted to engage and retain a stud or a peg mounted upon the window panel, the stay being movable between a retracted position and an extended position, the stay being resiliently biased relative to the first mounting part towards its extended position;
a second mounting part adapted for mounting upon the edge of the window frame adjacent to the lip of the window panel; a slider mounted upon the second mounting part and movable between a first position and a second position, the slider having a control member adapted to lie underneath the lip, the control member in its second position being adapted to engage the stay and to retain the stay in its retracted condition.

[0026] In one embodiment for use on a tilt and turn window the peg is the stud which is provided as part of the tilt and turn mechanism, the stay engaging the stud when the restrictor is enabled. Accordingly, the restricted position of the window in its turning action is determined by the stay of the invented window restrictor and the stud of the tilt and turn mechanism. By using the stud which is provided in the tilt and turn mechanism the inventors do not need to fit any component to the window panel, and so avoid the mechanical componentry which is present upon many designs of window panel.

In another embodiment, for a different design of window, the peg is provided as an additional component primarily (or solely) for use by the window restrictor. This embodiment is suitable for those windows, including tilt and turn windows, which have sufficient space along the bottom edge of the window panel in which to fit the peg.

[0027] The inventors appreciate that whilst it would be preferable to mount all of the restrictor into the gap between the window and frame, it is generally acceptable to mount some of the componentry on the surface of the window or frame, provided that the visible componentry is substantially unobtrusive and is not aesthetically displeasing. The second mounting part and associated componentry which are visible in the present invention can be made more aesthetically pleasing and substantially unobtrusive, for example by being coloured to match the window panel and frame if desired. The first mounting part, the stay, and the peg, which must be mechanically robust and are therefore less aesthetically pleasing, are

located in the gap between the window panel and frame, and are therefore invisible when the window is closed and substantially invisible when the window is open. The inventors are therefore able to overcome the accessibility constraints without creating a visually unacceptable product.

[0028] Preferably, the first mounting part and the second mounting part are fitted to the bottom edge of the window frame. It will be understood that the bottom edge of the window panel undergoes linear movement relative to the bottom edge of the window frame during the turning action of a tilt and turn window, and does not undergo any significant relative movement during the tilting action. Fitting the window restrictor to the bottom edge therefore avoids it having to accommodate any arcuate movement between the window panel and frame. In addition, fitting the restrictor to the bottom edge minimises its visual impact.

[0029] Desirably, the slider has a keyhole for receiving a key. In the fitted condition the keyhole lies alongside the lip of the window panel (and preferably underneath the lip of the bottom edge of the window panel) and is accessible to a key.

[0030] Preferably, the key has a handle part which projects in the same direction as the control member. In the fitted condition it is preferably arranged that the handle part projects over the lip, thereby ensuring that the key must be removed in order to fully open the window.

[0031] Desirably, the slider is resiliently biased relative to the second mounting part towards its first position. This feature permits the restrictor to automatically reengage each time the window panel is closed.

BRIEF DESCRIPTION OF THE PREFERRED EMBODIMENTS

[0032] The invention will now be described in more detail, by way of example, with reference to the accompanying drawings, in which:

- Fig.1 shows a tilt and turn window, viewed from inside the room or building in which the window is fitted;
- Fig.2 shows a perspective view from above of a part of a tilt and turn window fitted with a window restrictor according to a first embodiment of the present invention, with the stay in its extended position;
- Fig.3 shows a detailed view of the first mounting part and stay of the first embodiment of window restrictor;
- Fig.4 shows a view from below of the window of Fig.2 in its restricted position;
- Fig.5 shows an exploded view from the front of the

- second mounting part, slider and key of the first embodiment of window restrictor;
- Fig.6 shows an exploded view of a second mounting part, slider and key of an embodiment generally similar to that of Fig.5, from the rear;
- Fig.7 shows a perspective view from above of the window of Fig.2 with the window restrictor disabled, the stay being retained in its retracted condition by the control member;
- Fig.8 shows a perspective view from above of the window of Fig.2, with the restrictor key inserted;
- Fig.9 shows a view as Fig.8 with the window partially opened;
- Fig.10 shows a perspective view from below of the condition of Fig.9;
- Fig.11 shows a view from below of the condition of Fig.9;
- Fig.12 shows a view as Fig.8 with the window more fully opened;
- Fig.13 shows a view from below of the condition of Fig.12;
- Fig.14 shows a perspective view from above of part of a tilt and turn window fitted with a window restrictor according to a second embodiment of the invention;
- Fig.15 shows a perspective view from above of the window of Fig.14 with the restrictor disabled;
- Fig.16 shows a view from below with the window of Fig.14 more fully opened; and
- Fig.17 shows an exploded view from the front of the second mounting part, slider and key of the second embodiment of window restrictor.

DETAILED DESCRIPTION

[0033] The general description of a tilt and turn window as shown in Fig.1 is set out above and will not be repeated. The window restrictor 10 of the present invention is designed to be fitted between the bottom edge 4 of the window panel 1, and the corresponding edge 9 of the frame 2.

[0034] According to the present invention, mounted upon the edge 9 of the window frame 2 is the second mounting part 12 (not seen in Fig.2 but see Figs.5 and 6) of the restrictor 10, including the slider 14. Also mount-

ed upon the edge 9 is the first mounting part 16, and the stay 20 which is pivotally mounted thereupon.

[0035] It will be understood from Fig.8 in particular that the first mounting part 16 and the stay 20 are mounted in the gap between the window panel 1 and the frame 2 (and ideally within a suitable channel of the frame profile), and are therefore not visible when the window is closed. Fig.8 also shows that the slider 14 is visible when the window panel 1 is closed, but the slider 14 does not need to be particularly robust, and is therefore made aesthetically pleasing so that (without the key 22) it is substantially unobtrusive.

[0036] As shown in Figs. 2 and 3, the stay 20 is mounted upon the first mounting part 16 by way of a pivot peg 24. A torsion spring 26 (of which only an end is visible) surrounds a part of the pivot peg 24 and biases the stay 20 to the extended position shown in Figs. 2 and 3, where it engages the stop 30 which limits its pivoting movement. The stay 22 comprises a beam 32 and a hooked end 34.

[0037] Fig.4 shows the stud 36 which is provided as part of the tilt and turn mechanism of the window. In known fashion, the stud 36 is adapted to move along a channel 40 within a part of the mechanical componentry fitted into the Euro-groove of the window panel 1 (Fig.4 does not show the Euro-groove, nor any other mechanical componentry occupying the Euro-groove along the edge 4, since these are not relevant to the present invention). In known fashion, the stud 36 is adapted to engage a keeper 42 (see Fig. 2) which is mounted upon the edge 9 of the frame 2, the stud 36 engaging the keeper 42 in both the locked position of the window and in the operating position for the tilting action. However, when the operating handle 3 is in the operating position for the turning action with which the present invention is concerned, the stud 36 is released from the keeper 42.

[0038] Thus, in this first embodiment the inventors utilise the stud 36 which is provided as part of the tilt and turn mechanism as a part of the window restrictor also.

[0039] It will be understood from Fig. 4 that the hooked end 34 of the stay 20 is adapted to engage and retain the stud 36, so that Fig.4 shows the restricted opening position for the window, with further opening movement being prevented by way of the stay 20 engaging its stop 30. The window panel 1 may, however, be closed from the position shown in Fig.4, and during the closing movement the stud 36 engages the beam 32 and drives the stay 20 against the bias of the torsion spring 26 to its retracted position in which it overlies the keeper 42.

[0040] The exact form of the stay 20 and the first mounting part 16 can be chosen to suit the application, and in particular to suit the form and location of the stud 36 for a particular tilt and turn window. The variation between the studs and their positioning which are used on most tilt and turn windows is small, however, and therefore the number of different stays 20 which will need to be provided is also small. Ideally, the stay 20 is designed to restrict the turning action of the window panel 1 so that the maximum gap between the edge 7 of the window

panel 1 and the corresponding edge of the window frame is around 100 mm.

[0041] The first mounting part 16 must be secured to the edge 9 of the frame 2 in a suitable position so that the stay 20 can engage the stud 36, but it is a feature of most tilt and turn windows that the bottom edge of the frame is relatively free of mechanical componentry, so that sufficient space will typically exist for fitment of the first mounting part 16.

[0042] The second mounting part 12 and the slider 14 of this embodiment is shown in detail in Fig. 5. The second mounting part 12 has two screw holes 44 by which it may be fitted to the edge 9 of the window frame 2. The second mounting part 12 is designed to be surface mounted, and so the edge 9 does not need to be cut, routed or otherwise modified apart from the two drill holes to receive the necessary fixings.

[0043] The second mounting part 12 has a number of enlarged portions 46, and the slider 14 has recesses 50 (Fig.6) which are sized and positioned to correspond to the enlarged portions 46. The slider 14 is generally hollow, and can be fitted over the second mounting part 12, with the enlarged portions 46 passing through the respective recesses 50, so as to totally cover the second mounting part 12.

[0044] It will be seen from Figs. 5 and 6 that the enlarged portions 46 do not occupy the full depth of the second mounting part 12, with the result that the enlarged portions 46, together with the surface of the edge 9 upon which the second mounting part has been mounted, define two sets of aligned channels. As shown in Fig.6, the wall sections 52 of the slider 14 which lie between the recesses 50 provide two sets of aligned rails, which rails can lie within the respective channels, whereby the slider 14 can be moved (slid) relative to the second mounting part 12.

[0045] When the slider 14 has been fitted over the second mounting part 12 it is moved relative thereto, to take the recesses 50 out of alignment with the enlarged portions 46. A plug 54 is inserted through a suitably-shaped hole 56 in the slider 14, the plug 54 lying beyond the first end 60 of the second mounting part 12. (In the embodiment of Fig.5 the plug 54 is circular, whilst in the embodiment of Fig.6 the plug 54 is rectangular, but these plugs perform the same purpose; the embodiments of Figs. 5 and 6 are otherwise identical and so similar reference numerals are used). The plug 54 prevents the slider 14 returning to the position in which the recesses 50 are aligned with the enlarged portions 46, so that the plug 54 effectively retains the slider 14 upon the second mounting part 12.

[0046] When so fitted, the slider 14 is able to move (slide) a short distance relative to the second mounting part 12, the limits of travel being determined by the engagement of the plug 54 with the first end 60, and engagement of the other end 62 of the slider with the second end 64 of the second mounting part 12.

[0047] The second mounting part 12 carries a resilient

member, suitably in the form of a leaf spring 66. If the second mounting part is a plastics moulding the leaf spring 66 may be an integral part of the moulding; alternatively the resilient member may be a separate component fitted to the second mounting part. The slider 14 has a wall 70 which can engage the leaf spring 66.

[0048] The second mounting part 12 has a pocket 72 in which is located a resilient member in the form of a compression spring 74, the respective ends of the compression spring 74 engaging the end of the pocket 72 and a raised lug 76 of the slider 14. The compression spring 74 acts to push the lug 76 away from the end of the pocket 72, thereby biasing the slider 14 towards the top left as drawn in Fig.5, and towards the right as drawn in Fig.6 (and to the bottom left as drawn in Figs. 2 and 8 for example).

[0049] It is arranged that the compression spring 74 drives the slider 14 to a position where the leaf spring 66 engages the wall 70. When the leaf spring 66 engages the wall 70 movement of the slider towards the bottom right as drawn in Fig.5 and towards the left as drawn in Fig.6 is prevented.

[0050] As seen in Fig.5, the slider 14 has a keyhole 80, which is adapted to accept the shaft 82 of a key 22. The keyhole 80 is surrounded by a boss which is shaped to provide a lead-in for the shaft 82 of the key 22, so as to facilitate the correct insertion of the key shaft. Upon insertion of the correct key 22, the key shaft 82 passes through the slider 14 and engages the leaf spring 66; pressure upon the key 22 can release the leaf spring from the wall 70, permitting the slider 14 to be moved towards the bottom right as drawn in Fig.5 (i.e. towards the top-right as drawn in Figs. 2 and 8).

[0051] It will be understood that the key 22 is not required to be rotated, and that the keyhole 80 and the cooperating key shaft 82 do not need to be of particularly complex form. However, it is desired that the keyhole 80 and key shaft 82 are of sufficiently complex form in order to ensure that the correct key 22 is required, and that the keyhole 80 will not accept a screwdriver or other simple tool which might otherwise be inserted therein. In addition, it is arranged that the leaf spring 66 is too stiff to be depressed by child using a pin or straightened paper clip, for example.

[0052] The slider 14 carries a control member 84. As seen in Fig.8 in particular the second mounting part 12 and the slider 14 are suitably mounted into the small gap between the lip 90 of the window panel 1 and the window sill or ledge 92. When the window panel 1 is closed the control member 84 lies underneath the lip 90 and projects into the gap between the frame 2 and the window panel 1. The control member 84 is made sufficiently long to engage the hooked end 34 of the stay 20, as shown in Fig.7.

[0053] When the key 22 has been inserted the slider 14 may be moved into the position shown in Fig.7 (second position) in which the control member 84 overlies (and perhaps engages) a part of the hooked end 34 of the stay

20. With the control member 84 in this position the stay 20 cannot pivot and its biasing spring 26 is avoided. Fig.7 does not show the stud 36, but it will be seen that the hooked end 34 of the stay 20 overlies the keeper 42, and since in the operating position for the turning action the stud 36 is free of the keeper 42, it will be understood that it is also free of the hooked end 34 of the stay 20. Accordingly, the window restrictor 10 is disabled and the window panel 1 may be fully opened.

[0054] The sequence of operations for turning movement of the window with the restrictor 10 disabled is shown in Figs. 8-13.

[0055] The window in Fig.8 is closed, and the operating handle 3 is first rotated to the operating position for the turning action. The keyshaft 82 is inserted into the keyhole 80, the leaf spring 66 depressed, and the slider 14 moved towards the top right as drawn. It will be understood from the above description that when so moved the control member 84 overlies or engages the stay 20 as in Fig.7, preventing pivoting movement of the stay. The window panel 1 may therefore be opened to the position of Figs.9, 10 and 11 (Fig.10 showing that the stay 20 is retained by the control member 84, and Fig.11 showing that the stud 36 is free of the stay 20).

[0056] In the position of Figs.9, 10 and 11 the lip 90 of the window panel 1 engages the projection 94 of the key handle. To open the window panel 1 further the user must therefore remove the key 22. Removing the key 22 causes the leaf spring 66 to engage the surface 86 of the slider, and enables the compression spring 74 to move the slider to the top left as drawn in Fig.10. During this movement the leaf spring 66 slides across the surface 86 until it passes the wall 70. Also during this movement, the control member 84 is moved away from the stay 20 (i.e. to a first position), and the stay becomes released and pivots under the bias of its torsion spring 26 towards the stud 36.

[0057] The form of the stay 20, and in particular the form of the hooked end 34, as well as the length of the key 22, are arranged so that when the lip 90 engages the projection 94 of the key 22 and causes the key to be removed, the hooked end 34 will not pass around the stud 36, so that even if a part of the outside edge of the hooked end 34 engages the stud 36 it does not retain it. The stud 36 therefore remains free of the stay 20, and the window panel 1 can be further opened as shown in Figs. 12 and 13.

[0058] As the window panel 1 is subsequently closed, the stud 36 engages the outside edge of the hooked end 34 of the stay 20. The stud 36 causes the stay 20 to pivot (counter-clockwise in Fig.13) until the free end 38 is able to pass the stud, whereupon the spring 26 urges the stay 20 to pivot (clockwise as drawn in Fig.13) until the beam 32 engages the stud 36. The window panel 1 may then be moved to its fully closed position, with the stud 36 sliding along the beam 32 and pivoting the stay 20 against the bias of the torsion spring 26.

[0059] (It will be understood from the above description

that Fig.7 represents an artificial position for the embodiment shown, which is provided for the purpose of explanation, with the key 22 having been reintroduced into the keyhole 80 and the stay 20 re-disabled following opening of the window. In ordinary use the stay 20 would not be in the disabled condition shown in Fig.7 unless the window panel 1 is almost or completely closed).

[0060] Because the slider 14 is biased by the compression spring 74 away from the disabling position the window restrictor 10 is automatically enabled when the window panel 1 is fully (or almost fully) closed. Subsequent opening movement of the window panel 1 will be accompanied by pivoting movement of the stay 20 (under the bias of the torsion spring 26) until the stud 36 is retained by the hooked end 34. In common with prior art window restrictors the torsion spring 26 is sufficiently strong to cause the stay 20 to pivot much faster than the window panel 1 can be opened, so that there is no possibility of the stud 36 avoiding the stay 20 unless the window restrictor 10 has been disabled by use of the appropriate key 22.

[0061] Figs. 14-17 show a second embodiment of window restrictor 110. This embodiment does not utilise the existing stud 36 and is therefore suitable for windows (including tilt and turn windows) which have an area of the bottom edge 4 of the window panel which is free of tilt and turn componentry and can therefore accommodate the peg 136. The peg 136 is of relatively short length, and lies within the gap between the bottom edge 4 of the (closed) window 1 and the bottom edge 9 of the frame 2. The peg 136 is ideally substantially identical to the peg used in the prior art window restrictor of UK patent 2 391 901, and the stay 120 is of a size and shape to cooperate with the peg 136.

[0062] Mounted to the bottom edge 9 of the window frame is the second mounting part 112 of the restrictor 110, including the slider 114. Also mounted upon the edge 9 is the first mounting part 116, and the stay 120 which is pivotably mounted thereupon.

[0063] In common with the earlier embodiments, the slider 114 carries a control member 184, which as shown in Fig.15 can engage the hooked end 134 of the stay 120. When the window is closed and the key 122 has been inserted the slider 114 may be moved from the position shown in Fig.14 to the position shown in Fig.15, so that the control member 184 overlies a part of the hooked end 134 of the stay 120. When the window is subsequently opened the hooked end 134 engages the control member 184 whereby the stay 120 is held in the (disabled) position of Fig.15. It will be understood that the peg 136 (Fig.16) can pass the hooked end 134 thereby releasing the stud and permitting full window opening.

[0064] In common with the first embodiment, the bottom edge 4 of the window panel 1 will engage the projection 194 of the key 122, requiring or causing the key 122 to be removed during opening of the window. When the key 122 is removed the slider 114 automatically moves back to the position of Fig.14, releasing the stay

120 so as to ensure automatic re-engagement with the stud 136.

[0065] As shown in Fig.16. the peg 136 provided for the window restrictor 110 is separate from the stud 36 provided as part of the tilt and turn window mechanism. The peg 136 is a dedicated component provided for the window restrictor 110, in common with prior art concealed window restrictors.

[0066] It will be noted that the window restrictor 110 is located closer to the hinged edge 6 of the window panel than is the window restrictor 10 of the first embodiment. This will result in a larger restricted opening movement of the window. The length of the stay 120, and the angle through which the stay 120 can pivot, can be chosen (reduced) to match the desired amount of restricted window opening.

[0067] The detailed construction of the second embodiment of first mounting part 112 is shown in Fig.17. Unlike the first embodiment the slider 114 is housed within the first mounting part 112, specifically between the base 112a and cover 112b which together form the first mounting part 112. The slider 114 carries the control member 184, these components being manufactured separately and subsequently assembled together in this embodiment. The slider 114 is biased by a compression spring 174 which locates within a pocket 172 of the slider 114, one end of the spring engaging the end wall of the pocket 172 (not seen) and the other end of the spring engaging a wall member within the second mounting part 112 (also not seen).

[0068] The slider 114 and the second mounting part 112 are assembled together, and the second mounting part is mounted upon the frame part 9 by way of screws (not shown) passing through aligned screw holes 144. Cover caps 96 are provided to fit into the screw holes 144 so as to obscure the heads of the screws.

[0069] The second mounting part 112 has an opening 98 which accommodates a boss 100 of the slider element 114, the boss 100 providing a lead-in to the keyhole 180. When the correct key 122 is inserted into the keyhole 180 a lock plate 102 is driven (upwardly as drawn, against the bias of the springs 104), releasing the lock plate 102 from a recess 106 in the second mounting part 112, and permitting the slider 114 to be moved relative to the second mounting part 112 from the position shown in Fig.14 to the position shown in Fig.15.

[0070] It is expected that the first mounting part and associated componentry of the embodiment of Figs. 14-17 will be easier to manufacture and install than the first mounting part and associated componentry of the embodiments of Fig. 5 or Fig. 6. It will be understood that the first mounting part and associated componentry of the embodiment of Figs. 14-17 could be used in place of the first mounting part and associated componentry of the embodiment of Figs. 5 or 6 (and vice versa if desired).

[0071] The second mounting part and its associated componentry which is shown in Figs. 14-17 is designed to facilitate left- or right-handed operation, i.e. to fit with

windows in which the control member 184 must be moved to the right to disable the restrictor (as shown in Figs. 14-15), and alternatively to fit with windows in which the control member 184 must be moved to the left to disable the restrictor. The slider 114 is therefore substantially symmetrical about its vertical centre-line, having a pocket 172 at each side. The cover 112b has a wall to engage the end of the spring 174 to each side of the opening 98. The cover 112b is not symmetrical about its vertical centre-line, however, in that the recess 106 is offset relative to the centre-line, and in particular lies adjacent to one end of the opening 98. The cover 112b has an additional recess in the top wall as viewed in Fig.17 (not seen) which lies above the recess 106.

[0072] In the orientation of the cover 112b as shown in Fig.17 the recess 106 is adjacent to the left-hand end of the opening 98, and the slider 114 is biased towards that end, the lock plate 102 locating in the recess 106 when the boss 100 of the slider 114 engages the left-hand end wall of the opening 98. The cover 112b may, however, be inverted, so that the recess which is not seen in Fig.17 lies adjacent to the right-hand end of the opening 98; by changing the position of the spring 174 to the left of the slider 114 the slider can be biased to the right and locked with the boss 100 engaging the right-hand end wall of the opening 98. In this alternative construction the key 122 must be inserted to allow the slider to move from the position of Fig. 15 to the position of Fig. 14.

[0073] It will be understood from the foregoing description that the slider 14, 114, and in particular the control member 84, 184, is required only to hold the stay 20, 120 against the bias of its torsion spring 26. The force applied by the torsion spring can be relatively small and so the slider and control member do not need to be mechanically robust. These components, and also the second mounting member 12, 112, can therefore be made relatively small and visually unobtrusive. Also, these parts can be designed to be aesthetically pleasing without compromising their functional suitability.

Claims

1. A window restrictor (10; 110) for an opening window, the window having:

a window frame (2); and
a window panel (1) which is movable relative to the frame (2) between a closed position and an open position, the window panel having a lip (90) which overlies a part of the window frame when the window panel is closed,

the window restrictor (10; 110) having:

a first mounting part (16; 116) adapted for mounting upon an edge (9) of the window frame

- (2) in the gap between the window frame and the window panel (1);
 a stay (20; 120) pivotably mounted upon the first mounting part (16; 116), the stay comprising a beam (32) and a hooked end (34; 134), the hooked end being adapted to engage and retain a stud (36) or a peg (136) mounted upon the window panel (1), the stay (20; 120) being movable between a retracted position and an extended position, the stay being resiliently biased relative to the first mounting part (16; 116) towards its extended position;
 a second mounting part (12; 112) adapted for mounting upon the edge (9) of the window frame (2) adjacent to the lip (90) of the window panel (1); a slider (14; 114) mounted upon the second mounting part (12; 112) and movable between a first position and a second position, the slider having a control member (84; 184) adapted to lie underneath the lip (90), the control member (84; 184) in its second position being adapted to engage the stay (20; 120) and to retain the stay in its retracted condition.
2. A window restrictor (10; 110) according to Claim 1 in which the slider (14; 114) is resiliently biased relative to the second mounting part (12; 112) towards its first position.
 3. A window restrictor (10; 110) according to Claim 2 in which the slider (14; 114) is securable in the first position.
 4. A window restrictor (10; 110) according to Claim 3 in which the slider (14; 114) has a keyhole (80; 180) for receiving a key (22; 122).
 5. A window restrictor (10; 110) according to Claim 4 in which the key (22; 122) must be inserted to allow the slider (14; 114) to move from its first position to its second position.
 6. A window restrictor (10; 110) according to Claim 4 or Claim 5 in which the key (22; 122) has a handle part (94; 194) which in use projects in the same direction as the control member (84; 184).
 7. A window restrictor (110) according to any one of Claims 1-6 in which the slider (114) is housed within the second mounting part (112).
 8. A window restrictor (110) according to Claim 2 in which the operation of the slider (114) is reversible.
 9. A window restrictor (10) according to any one of Claims 1-8 in which the control member (84) is integrally formed with the slider (14).

10. A window fitted with a window restrictor according to any one of Claims 1-9, in which the first mounting part (16; 116) and the second mounting part (12; 112) are fitted to the bottom edge (9) of the window frame (2).

11. A window according to Claim 10 fitted with a tilt and turn mechanism, the peg (36) being provided as part of the tilt and turn mechanism.

12. A window according to Claim 10 fitted with a tilt and turn mechanism, the peg (136) being separate from the tilt and turn mechanism.

Patentansprüche

1. Fenstersperre (10; 110) für ein zu öffnendes Fenster, das Fenster aufweisend:

einen Fensterrahmen (2); und
 eine Fensterfläche (1), die im Verhältnis zu dem Rahmen (2) beweglich ist zwischen einer geschlossenen Position und einer geöffneten Position, die Fensterfläche aufweisend eine Lippe (90) welche einen Teil des Fensterrahmens überlagert, wenn die Fensterfläche geschlossen ist,

die Fenstersperre (10; 110) aufweisend:

ein erstes Befestigungsteil (16; 116), das ausgelegt ist zur Befestigung an einer Kante (9) des Fensterrahmens (2) in dem Spalt zwischen dem Fensterrahmen und der Fensterfläche (1);
 eine Strebe (20; 120), die schwenkbar an dem ersten Befestigungsteil (16; 116) befestigt ist, die Strebe umfassend eine Stange (32) und ein Hakenende (34; 134), wobei das Hakenende ausgelegt ist, in einen Stift (36) oder einen Pflock (136) einzugreifen und festzuhalten, der an der Fensterfläche (1) befestigt ist, wobei die Strebe (20; 120) beweglich ist zwischen einer eingeklappten Position und einer ausgeklappten Position, die Strebe im Verhältnis zu dem ersten Befestigungsteil (16; 116) in Richtung ihrer ausgeklappten Position elastisch vorgespannt ist;
 ein zweites Befestigungsteil (12; 112), das ausgelegt ist zur Befestigung an der Kante (9) des Fensterrahmens (2) angrenzend an die Lippe (90) der Fensterfläche (1);
 einen Schieber (14; 114), der an dem zweiten Befestigungsteil (12; 112) befestigt ist und beweglich ist zwischen einer ersten Position und einer zweiten Position, wobei der Schieber über ein Bedienteil (84; 184) verfügt, das dazu ausgelegt ist, unter der Lippe (90) zu liegen, wobei das Bedienteil (84; 184) in seiner zweiten Posi-

tion dazu ausgelegt ist, in die Strebe (20; 120) einzugreifen und die Strebe in ihrer eingeklapp-ten Position festzuhalten.

2. Fenstersperre (10; 110) nach Anspruch 1, wobei der Schieber (14; 114) im Verhältnis zu dem zweiten Befestigungsteil (12; 112) in Richtung seiner ersten Position elastisch vorgespannt ist. 5
3. Fenstersperre (10; 110) nach Anspruch 2, wobei der Schieber (14; 114) in der ersten Position gesichert werden kann. 10
4. Fenstersperre (10; 110) nach Anspruch 3, wobei der Schieber (14; 114) ein Schlüsselloch (80; 180) zum Aufnehmen eines Schlüssels (22; 122) aufweist. 15
5. Fenstersperre (10; 110) nach Anspruch 4, wobei der Schlüssel (22; 122) eingeführt sein muss, damit der Schieber (14; 114) aus seiner ersten Position in seine zweite Position bewegt werden kann. 20
6. Fenstersperre (10; 110) nach Anspruch 4 oder Anspruch 5, wobei der Schlüssel (22; 122) einen Griffteil (94; 194) aufweist, der im Gebrauch in derselben Richtung wie das Bedienteil (84; 184) absteht. 25
7. Fenstersperre (10; 110) nach einem der Ansprüche 1 bis 6, wobei der Schieber (114) in dem zweiten Befestigungsteil (112) untergebracht ist. 30
8. Fenstersperre (10; 110) nach Anspruch 2, wobei die Bedienung des Schiebers (114) umkehrbar ist.
9. Fenstersperre (10; 110) nach einem der Ansprüche 1 bis 8, wobei das Bedienteil (84) einstückig mit dem Schieber (14) ausgebildet ist. 35
10. Fenster, das mit einer Fenstersperre nach einem der Ansprüche 1 bis 9 ausgestattet ist, wobei das erste Befestigungsteil (16; 116) und das zweite Befestigungsteil (12; 112) an der unteren Kante (9) des Fensterrahmens (2) montiert sind. 40
11. Fenster nach Anspruch 10, das mit einem Kipp- und Drehmechanismus ausgestattet ist, wobei der Pflock (36) als ein Teil des Kipp- und Drehmechanismus bereitgestellt wird. 45
12. Fenster nach Anspruch 10, mit einem Kipp- und Drehmechanismus ausgestattet ist, wobei der Pflock (136) getrennt von dem Kipp- und Drehmechanismus ist. 50

Revendications

1. Un restricteur de fenêtre (10 ; 110) pour une fenêtre

ouvrante,
la fenêtre ayant :

un cadre de fenêtre (2) ; et
un panneau de fenêtre (1) qui est mobile relativement au cadre (2) entre une position fermée et une position ouverte, le panneau de fenêtre ayant une lèvre (90) qui recouvre une partie du cadre de fenêtre lorsque le panneau de fenêtre est fermé,

le restricteur de fenêtre (10 ; 110) ayant :

une première partie de montage (16 ; 116) conçue pour se monter sur un bord (9) du cadre de fenêtre (2) dans l'espace entre le cadre de fenêtre et le panneau de fenêtre (1) ;
un étau (20 ; 120) monté de façon pivotante sur la première partie de montage (16 ; 116), l'étau comprenant une poutre (32) et une extrémité crochue (34 ; 134), l'extrémité crochue étant conçue pour se mettre en prise avec et retenir un goujon (36) ou une cheville (136) monté sur le panneau de fenêtre (1), l'étau (20 ; 120) étant mobile entre une position rétractée et une position déployée, l'étau étant sollicité élastiquement relativement à la première partie de montage (16 ; 116) vers sa position déployée ;
une deuxième partie de montage (12 ; 112) conçue pour se monter sur le bord (9) du cadre de fenêtre (2) de façon adjacente à la lèvre (90) du panneau de fenêtre (1) ;
un coulisseau (14 ; 114) monté sur la deuxième partie de montage (12 ; 112) et est mobile entre une première position et une deuxième position, le coulisseau ayant un élément de commande (84 ; 184) conçu pour reposer sous la lèvre (90), l'élément de commande (84 ; 184) dans sa deuxième position étant conçu pour se mettre en prise avec l'étau (20 ; 120) et pour retenir l'étau dans son état rétracté.

2. Un restricteur de fenêtre (10 ; 110) selon la revendication 1 dans lequel le coulisseau (14 ; 114) est sollicité élastiquement relativement à la deuxième partie de montage (12 ; 112) vers sa première position.
3. Un restricteur de fenêtre (10 ; 110) selon la revendication 2 dans lequel le coulisseau (14 ; 114) peut être assujéti dans la première position.
4. Un restricteur de fenêtre (10 ; 110) selon la revendication 3 dans lequel le coulisseau (14 ; 114) a un trou de serrure (80 ; 180) pour recevoir une clé (22 ; 122).

5. Un restricteur de fenêtre (10 ; 110) selon la reven-

dication 4 dans lequel la clé (22 ; 122) doit être insérée pour permettre au coulisseau (14 ; 114) de se déplacer de sa première position à sa deuxième position.

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6. Un restricteur de fenêtre (10 ; 110) selon la revendication 4 ou la revendication 5 dans lequel la clé (22 ; 122) a une partie formant poignée (94 ; 194) qui en utilisation fait saillie dans la même direction que l'élément de commande (84 ; 184). 10
7. Un restricteur de fenêtre (110) selon l'une quelconque des revendications 1 à 6 dans lequel le coulisseau (114) est logé à l'intérieur de la deuxième partie de montage (112). 15
8. Un restricteur de fenêtre (110) selon la revendication 2 dans lequel le fonctionnement du coulisseau (114) est réversible. 20
9. Un restricteur de fenêtre (10) selon l'une quelconque des revendications 1 à 8 dans lequel l'élément de commande (84) est formé de façon solidaire avec le coulisseau (14). 25
10. Une fenêtre dotée d'un restricteur de fenêtre selon l'une quelconque des revendications 1 à 9, dans laquelle la première partie de montage (16 ; 116) et la deuxième partie de montage (12 ; 112) sont fixées sur le bord inférieur (9) du cadre de fenêtre (2). 30
11. Une fenêtre selon la revendication 10 dotée d'un mécanisme oscillo-battant, la cheville (36) étant fournie en tant que partie du mécanisme oscillo-battant. 35
12. Une fenêtre selon la revendication 10 dotée d'un mécanisme oscillo-battant, la cheville (136) étant distincte du mécanisme oscillo-battant. 40

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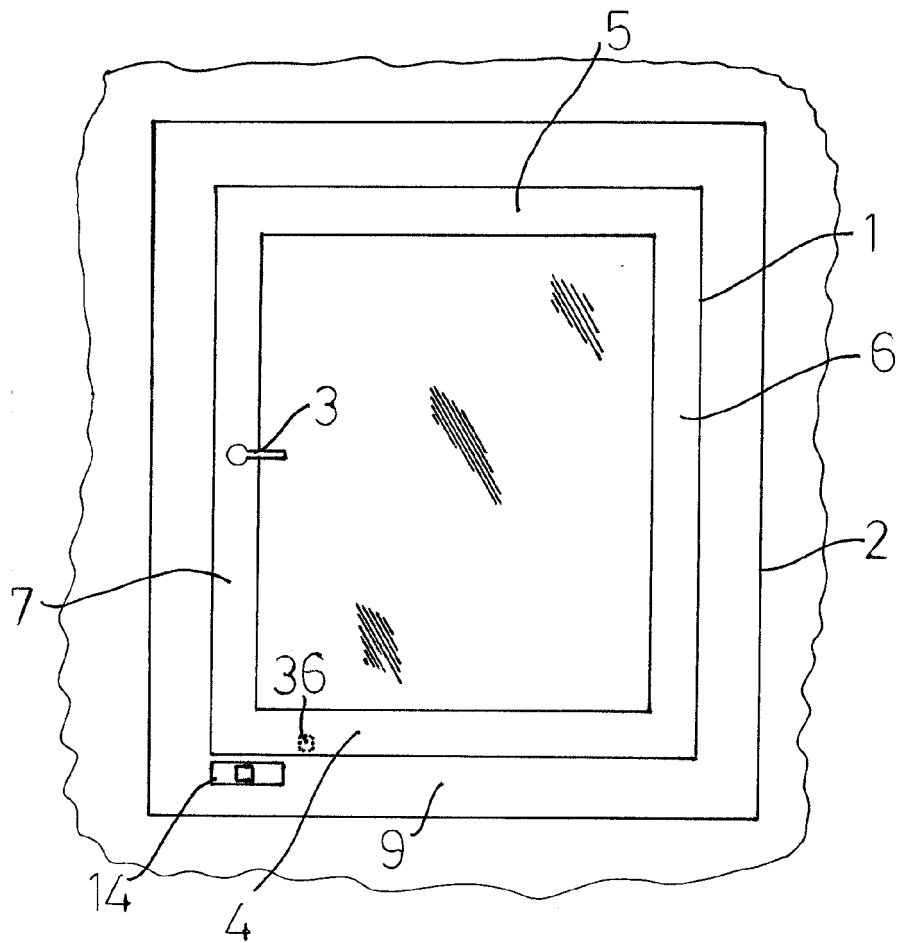
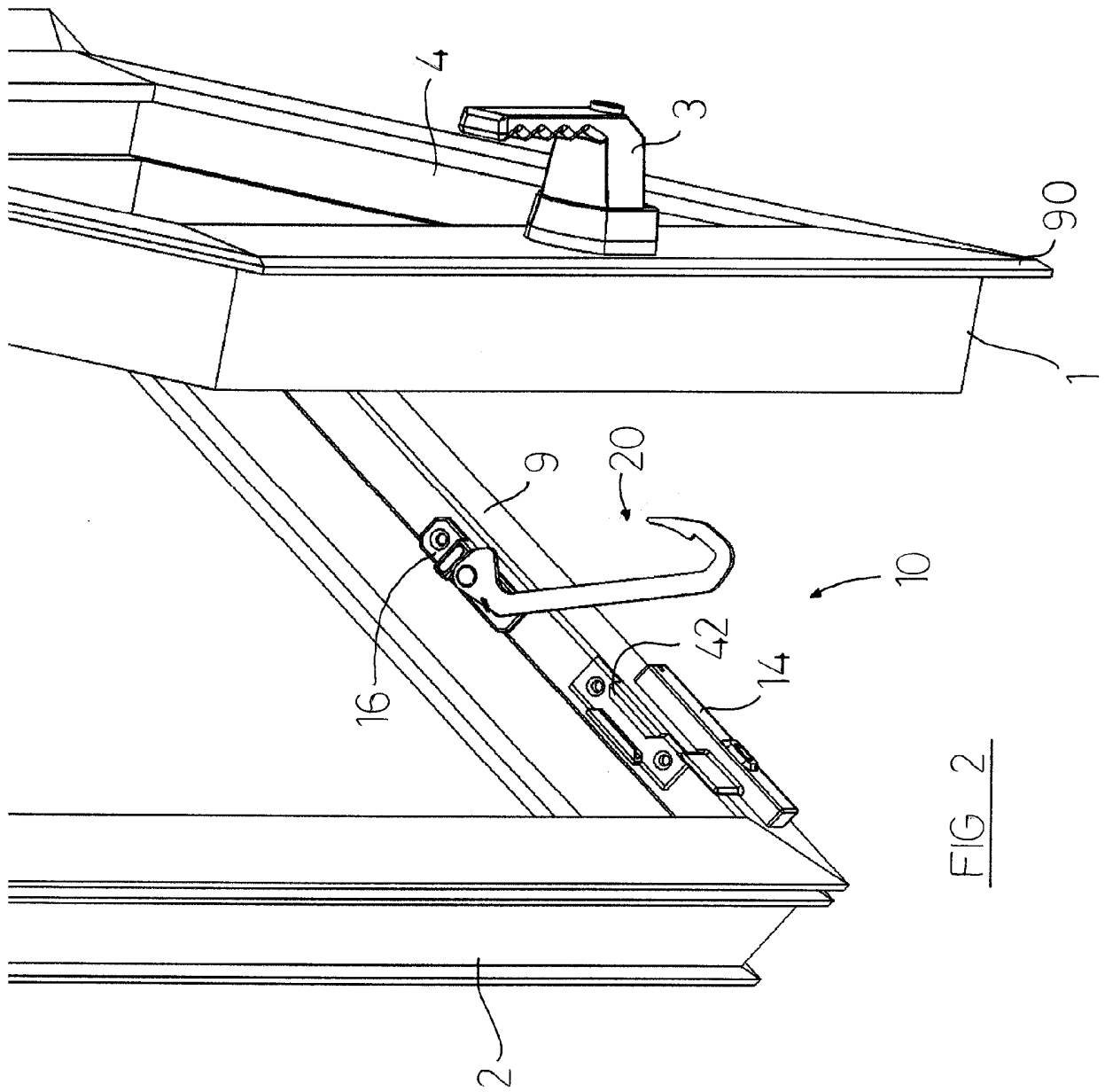


FIG 1



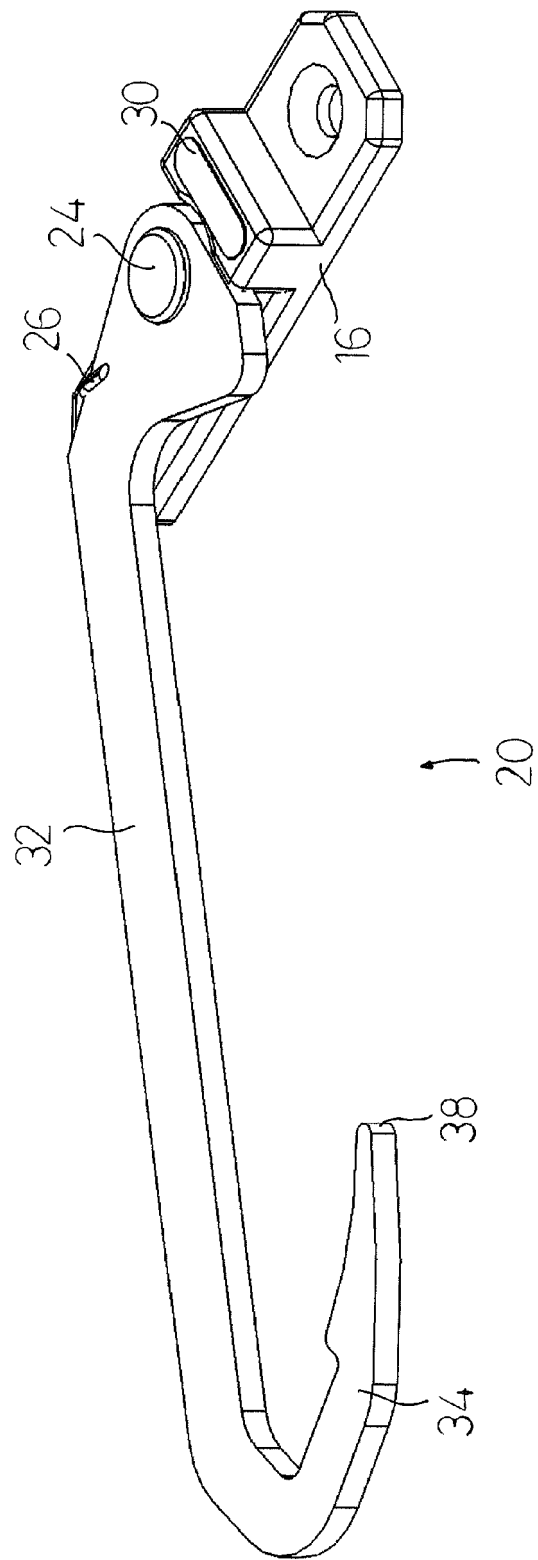


FIG 3

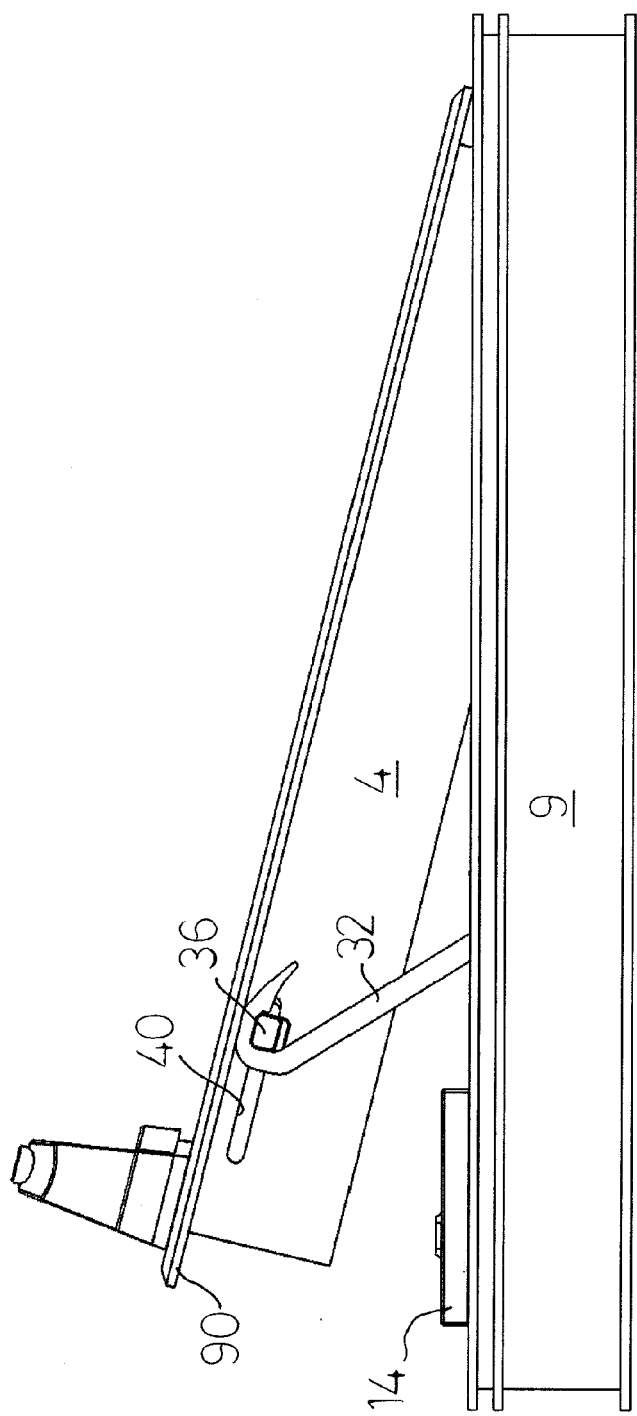


FIG 4

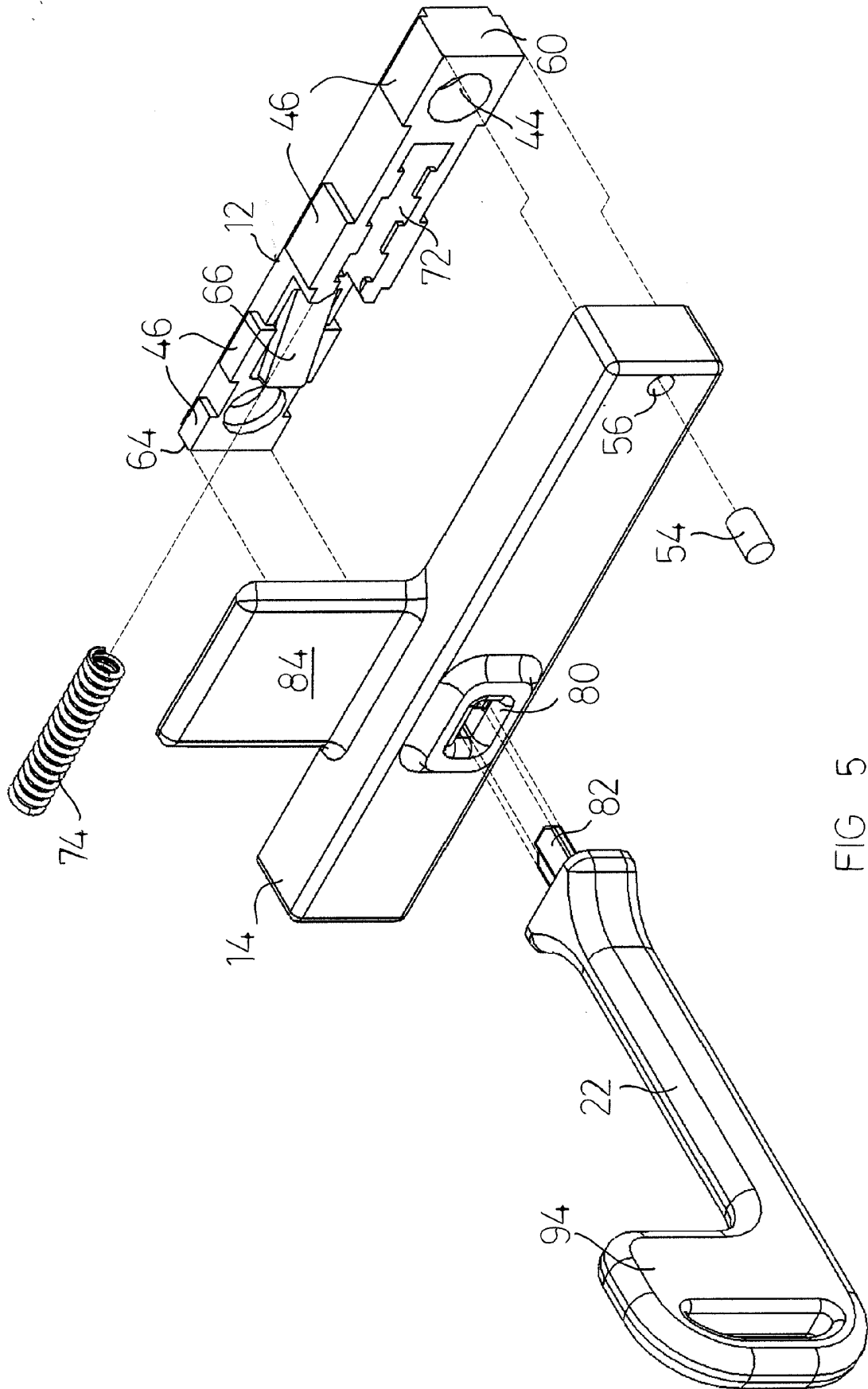
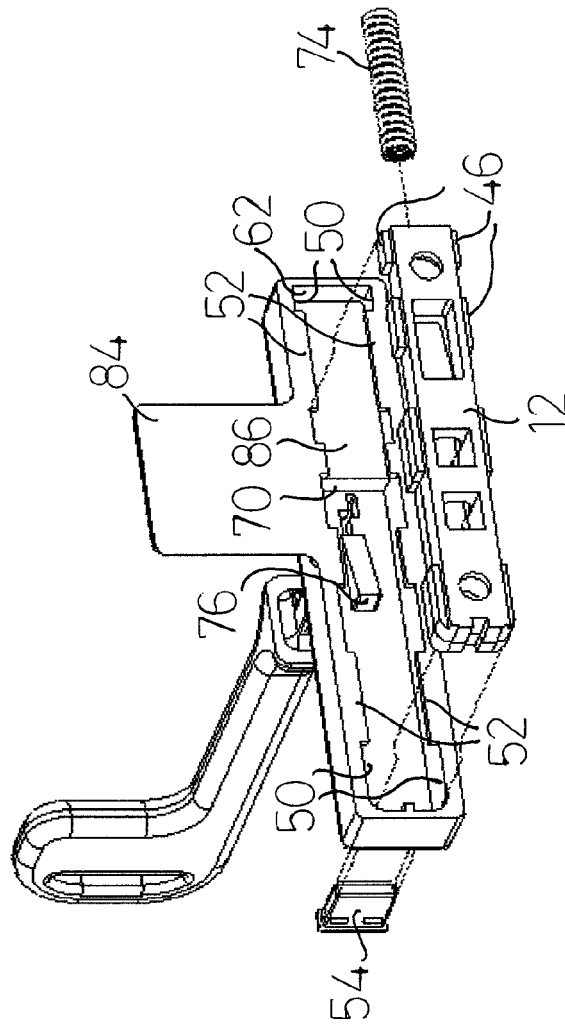
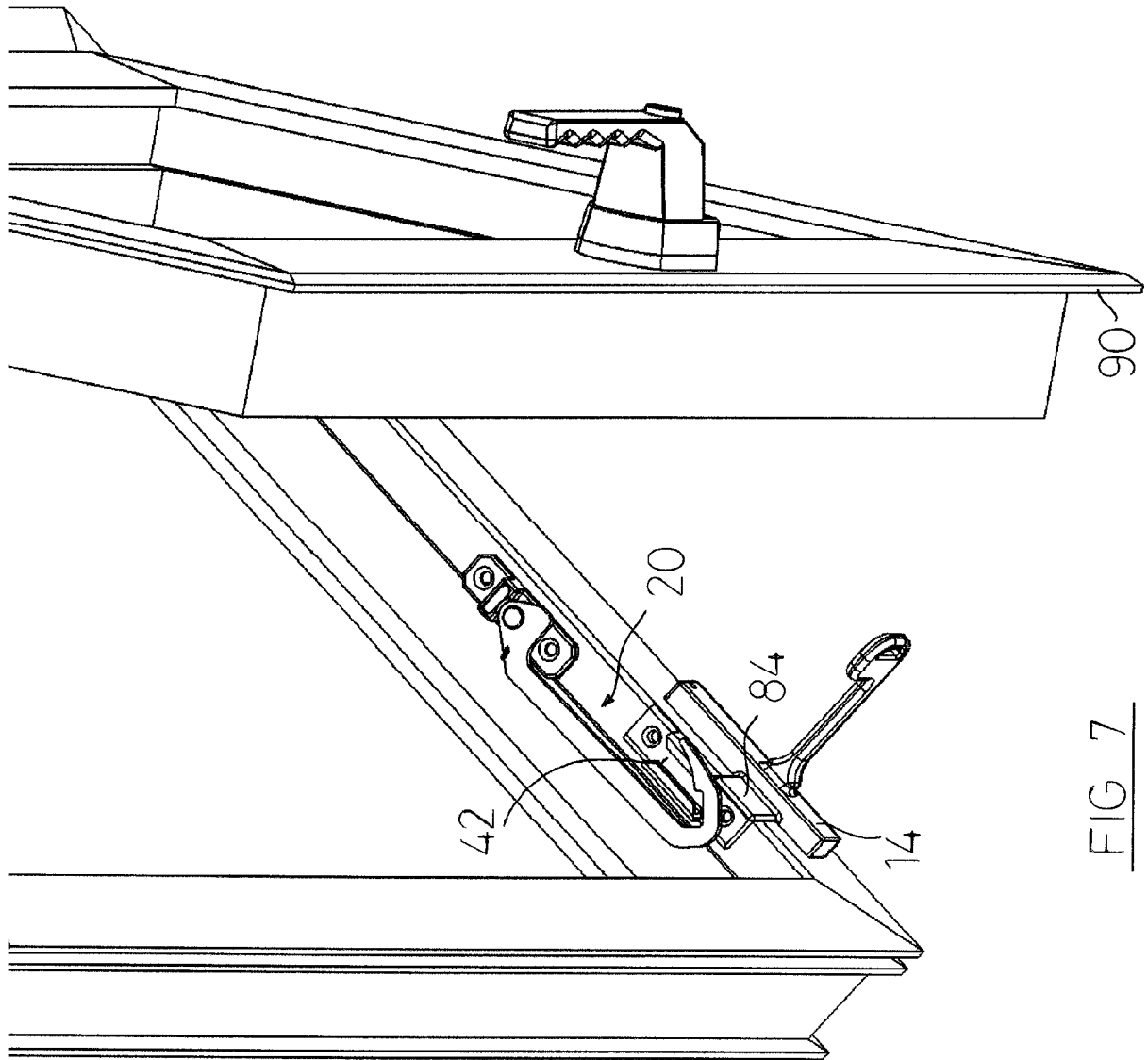
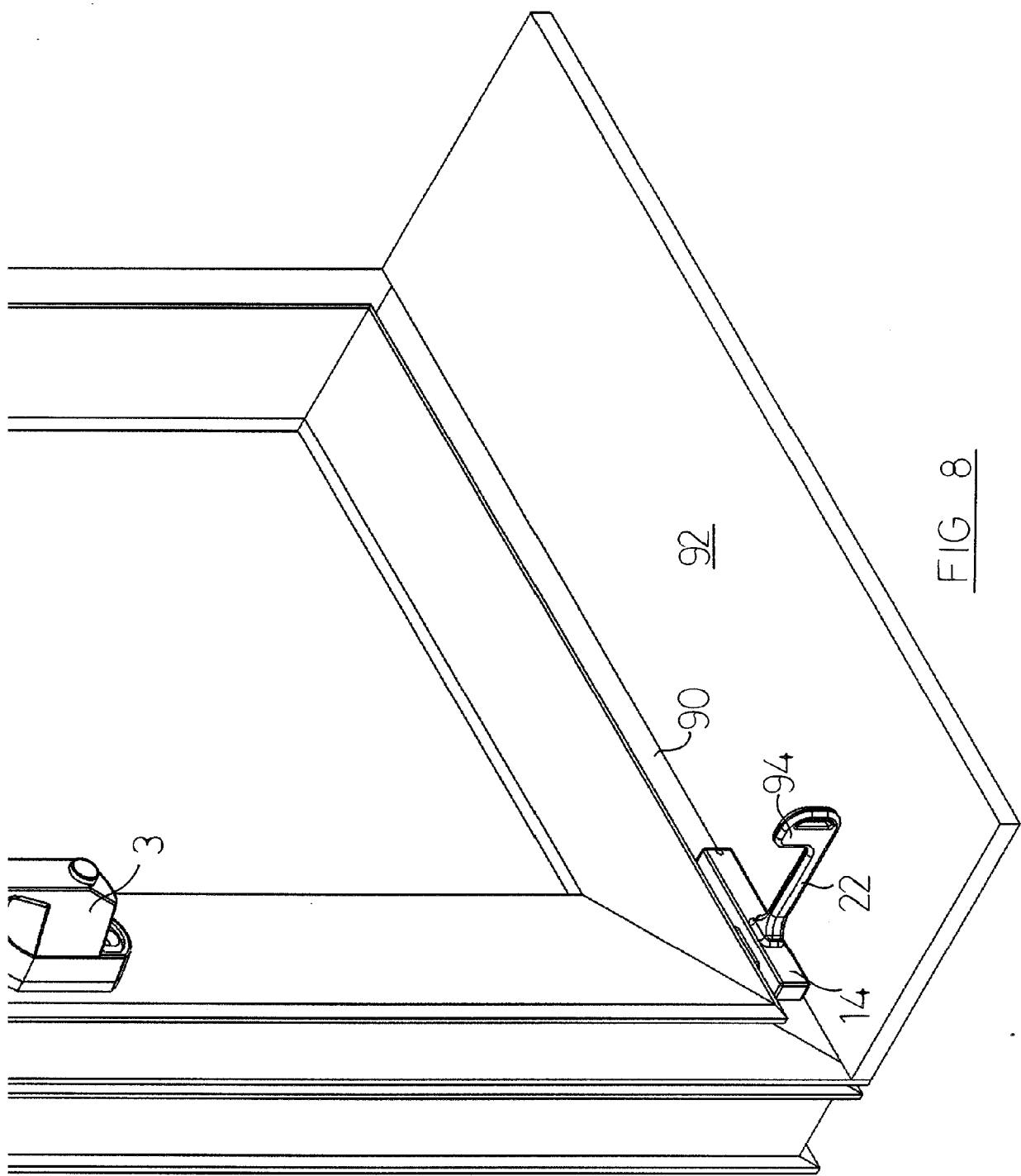
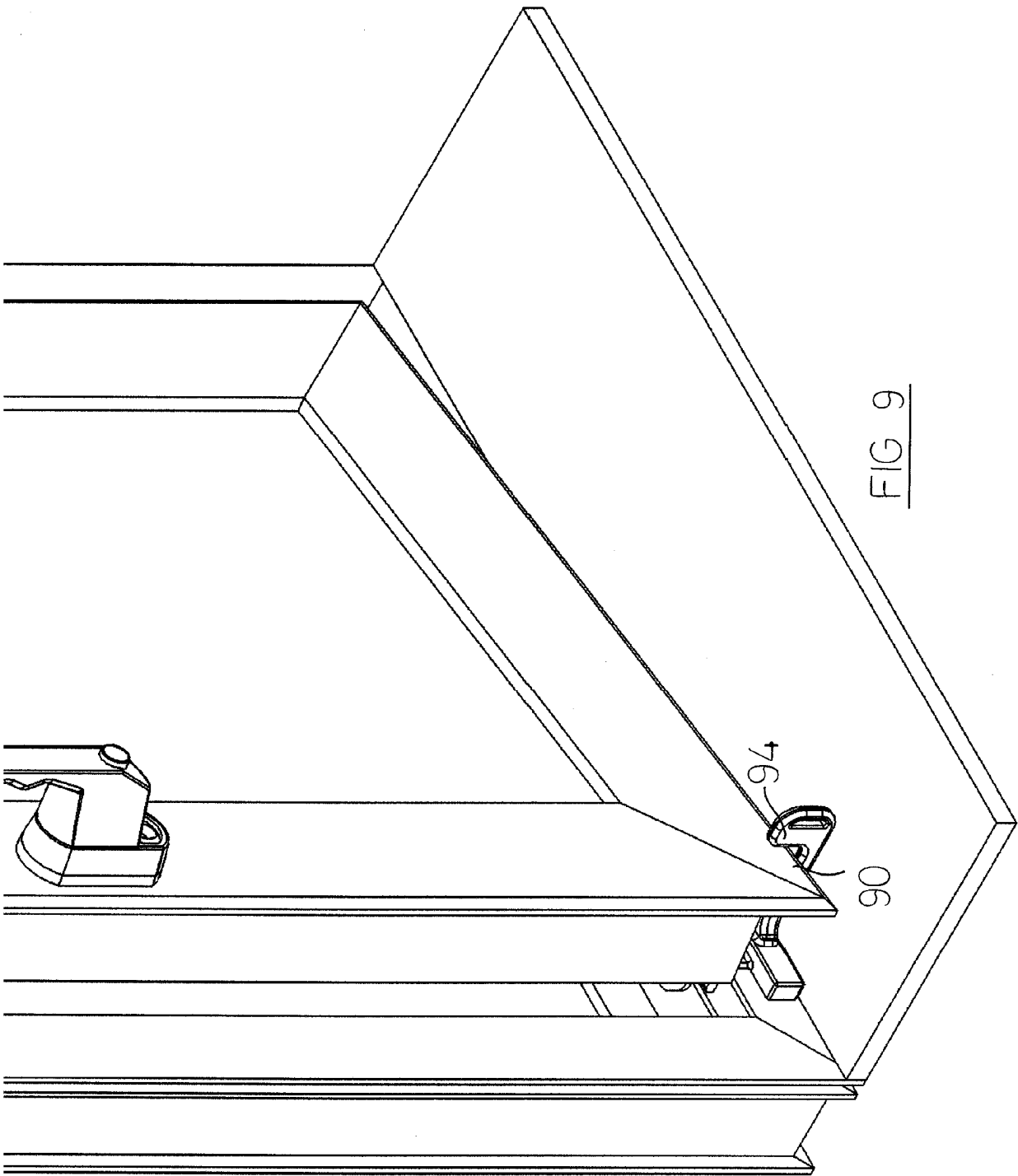


FIG 5

FIG 6







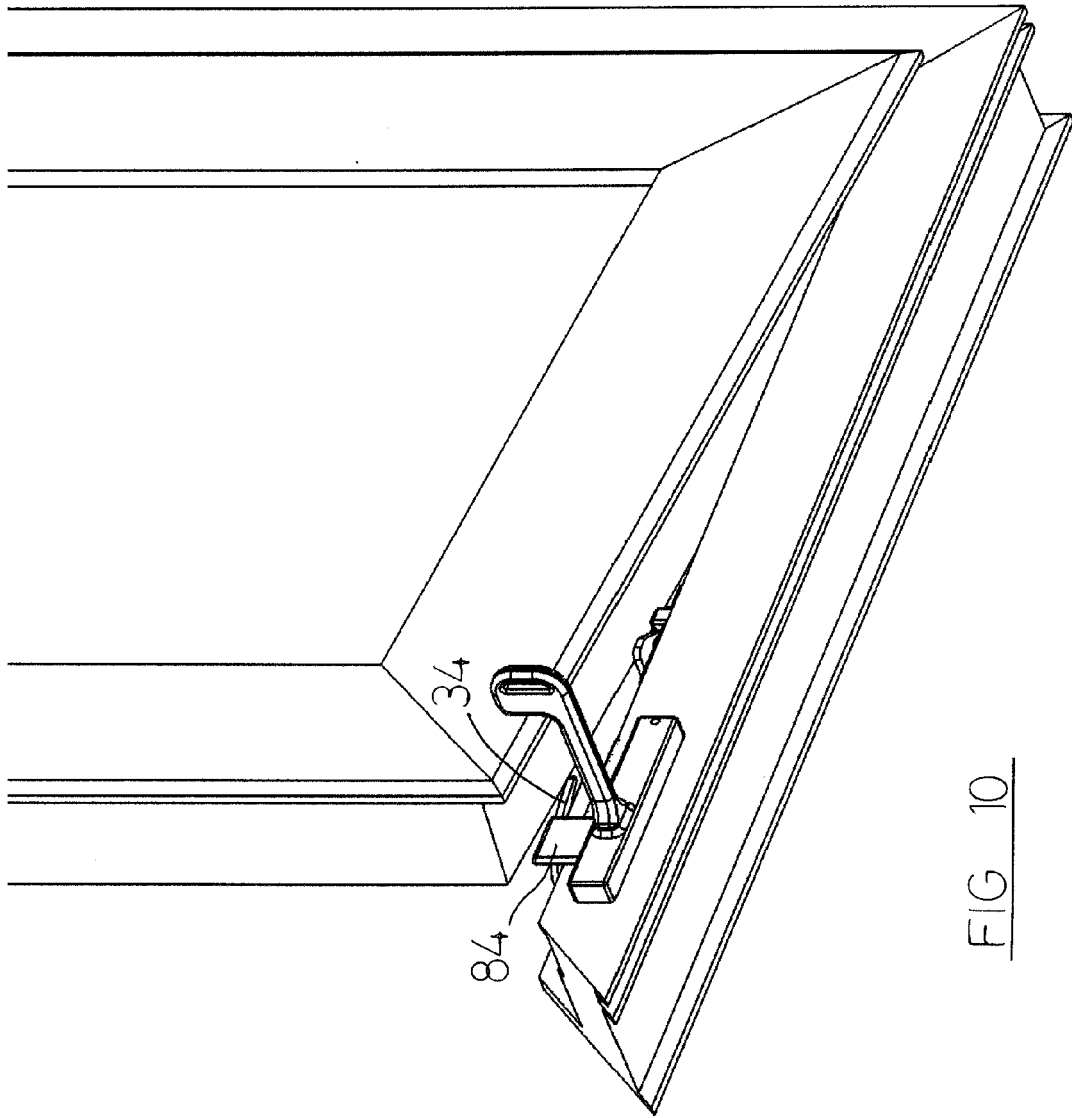


FIG 10

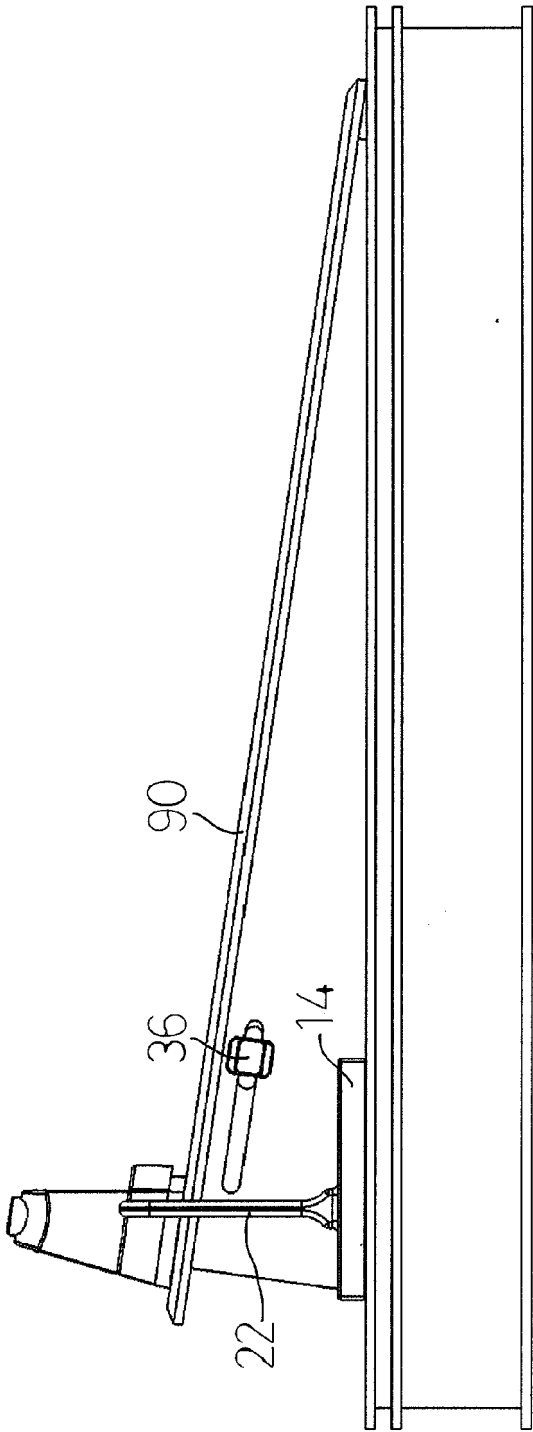


FIG 11

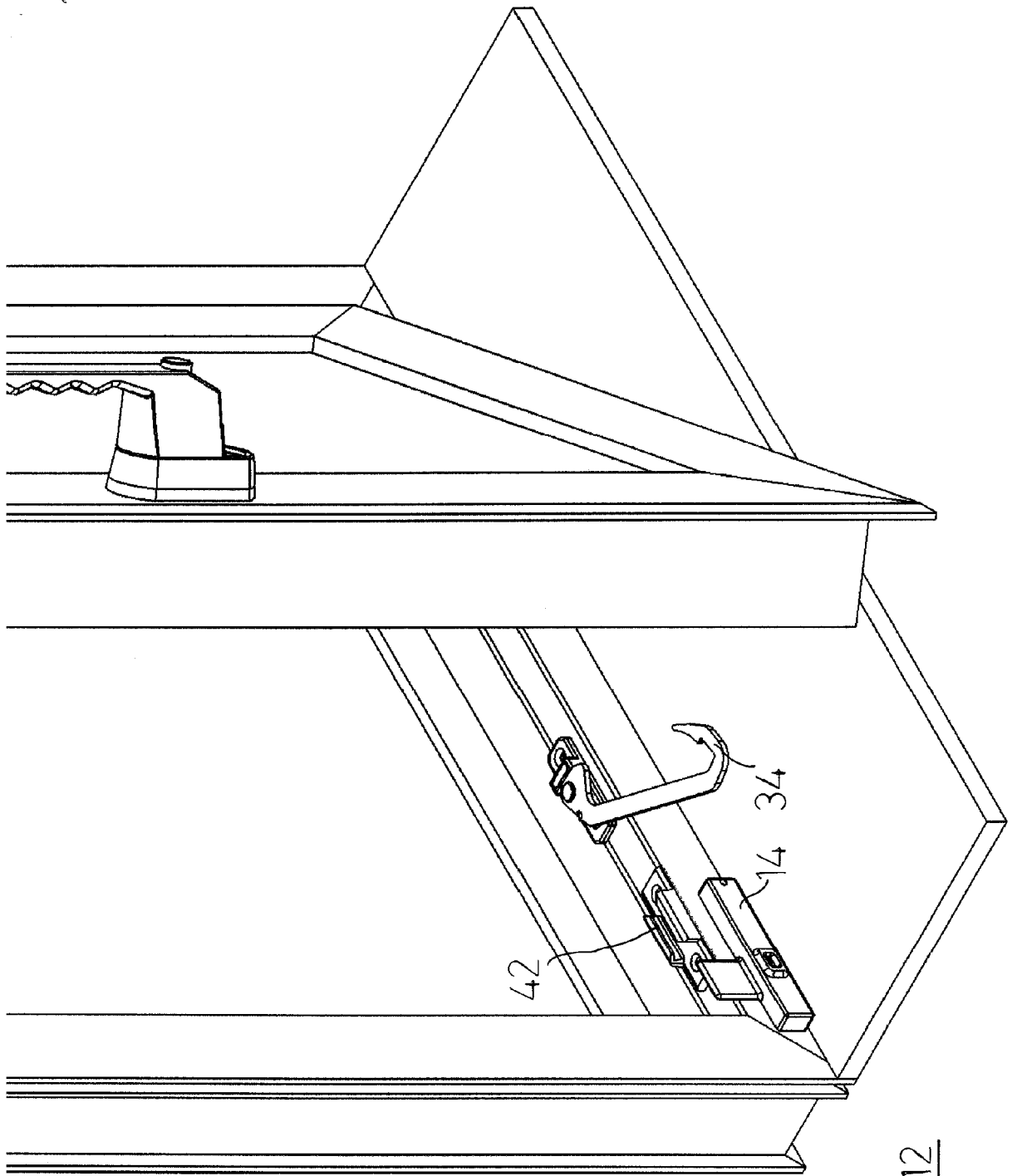


FIG. 12

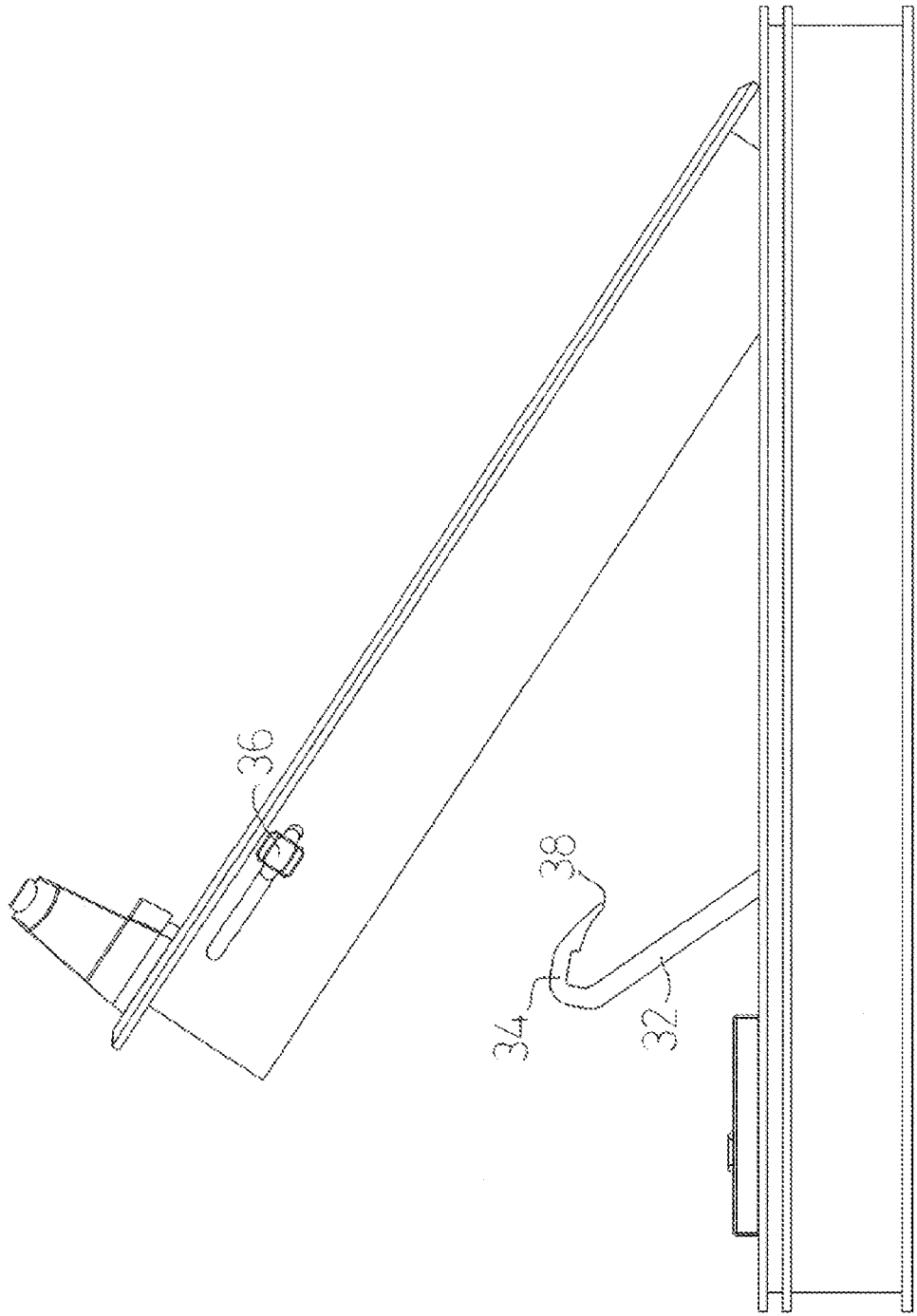


FIG. 13

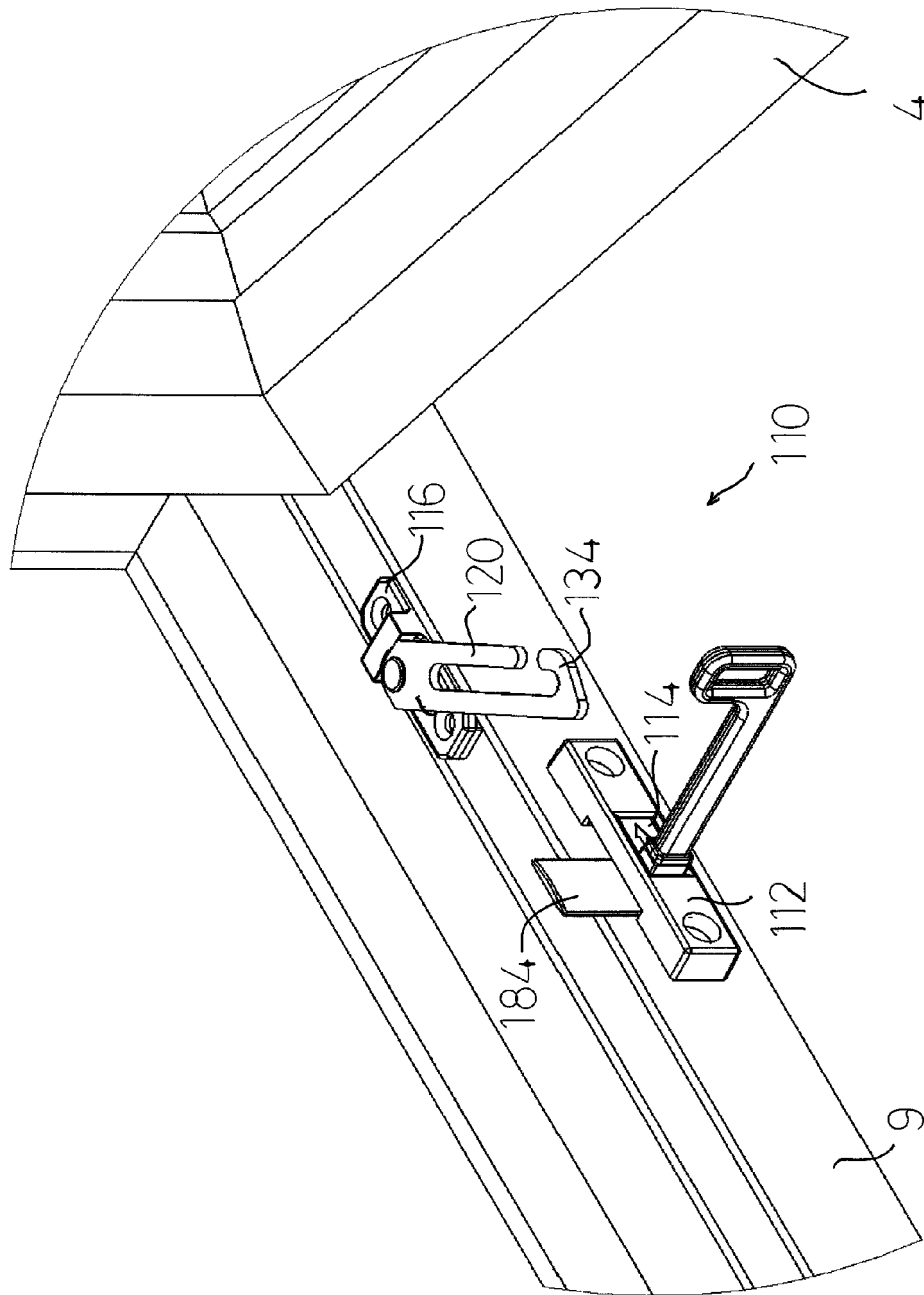


FIG. 14

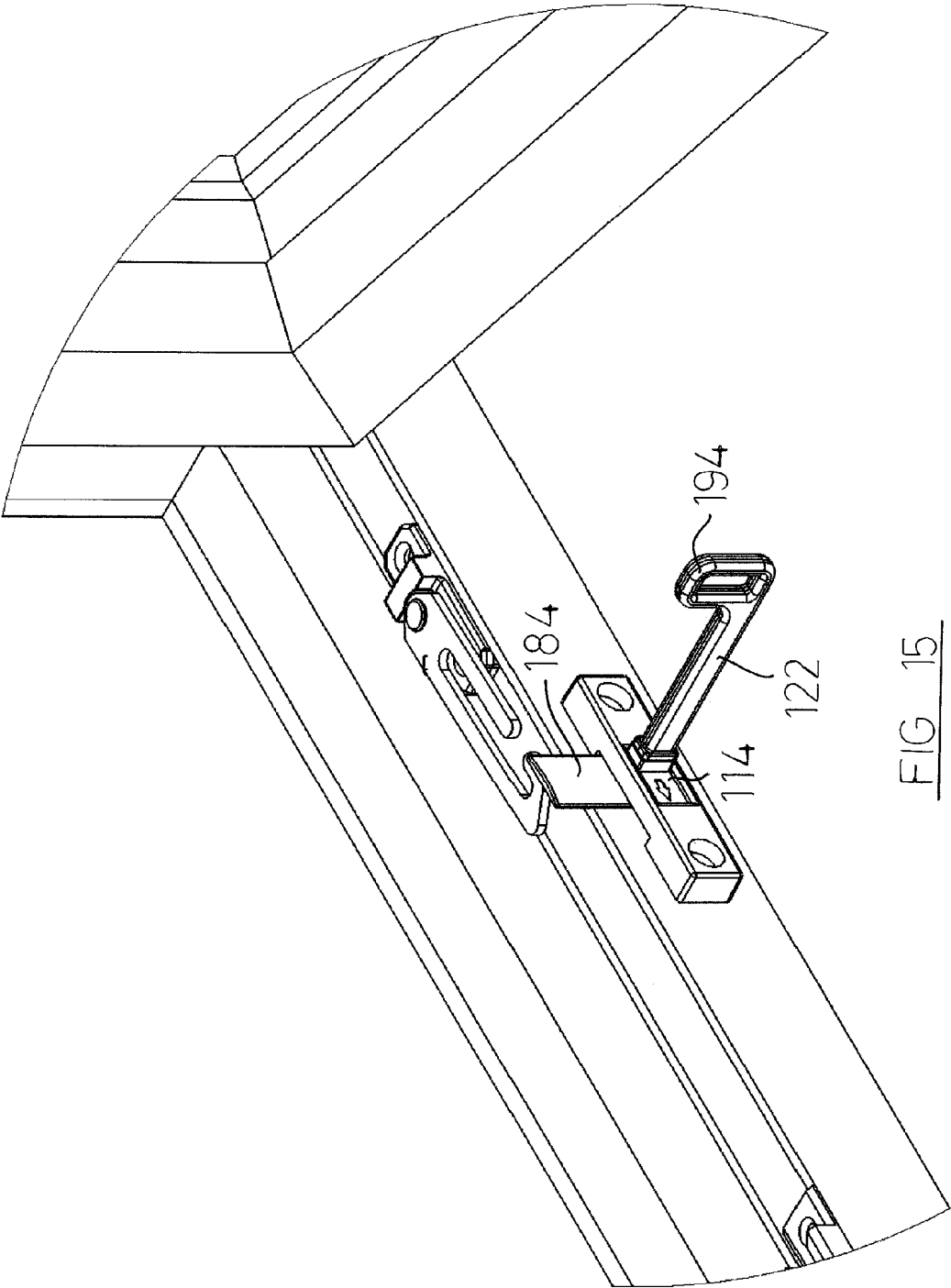
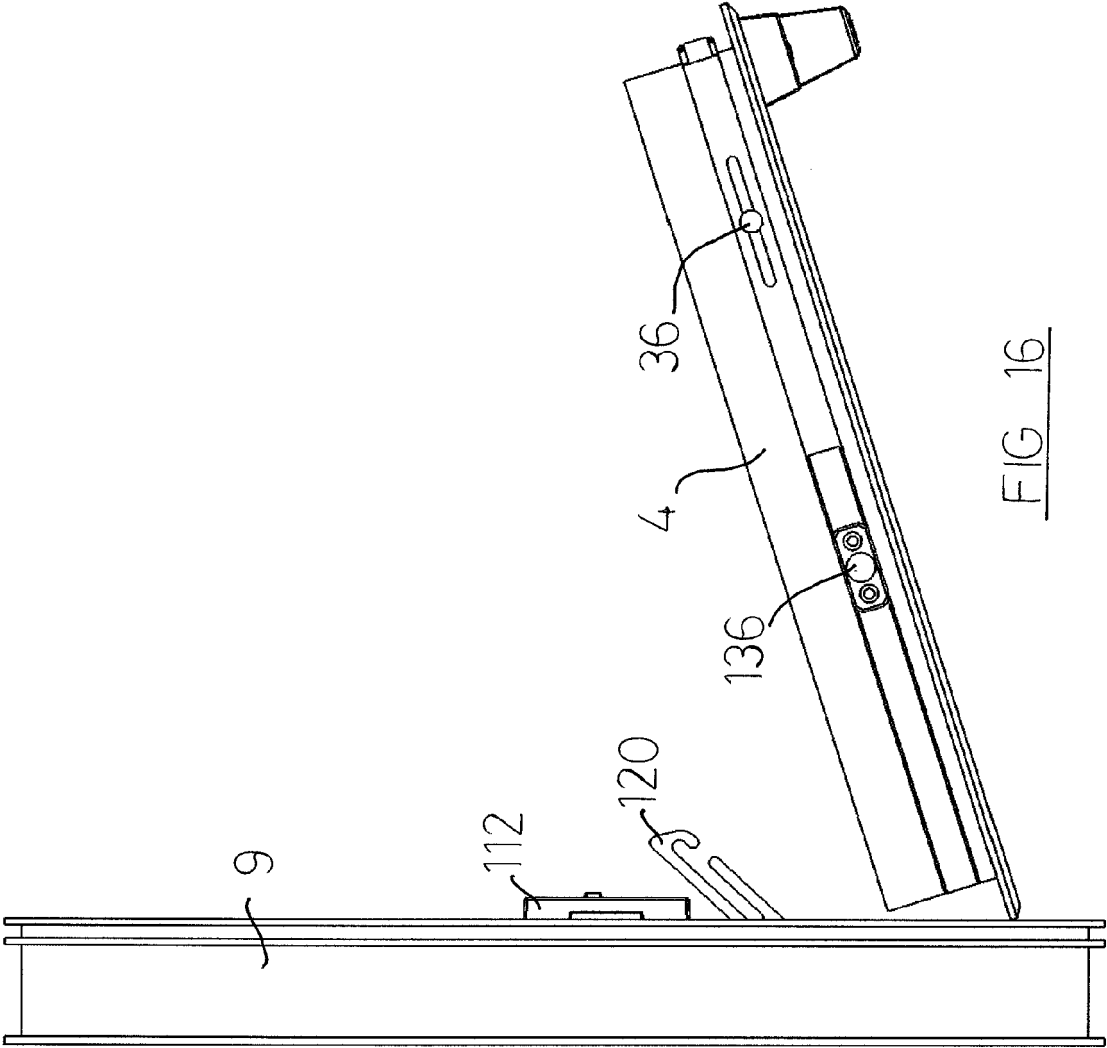
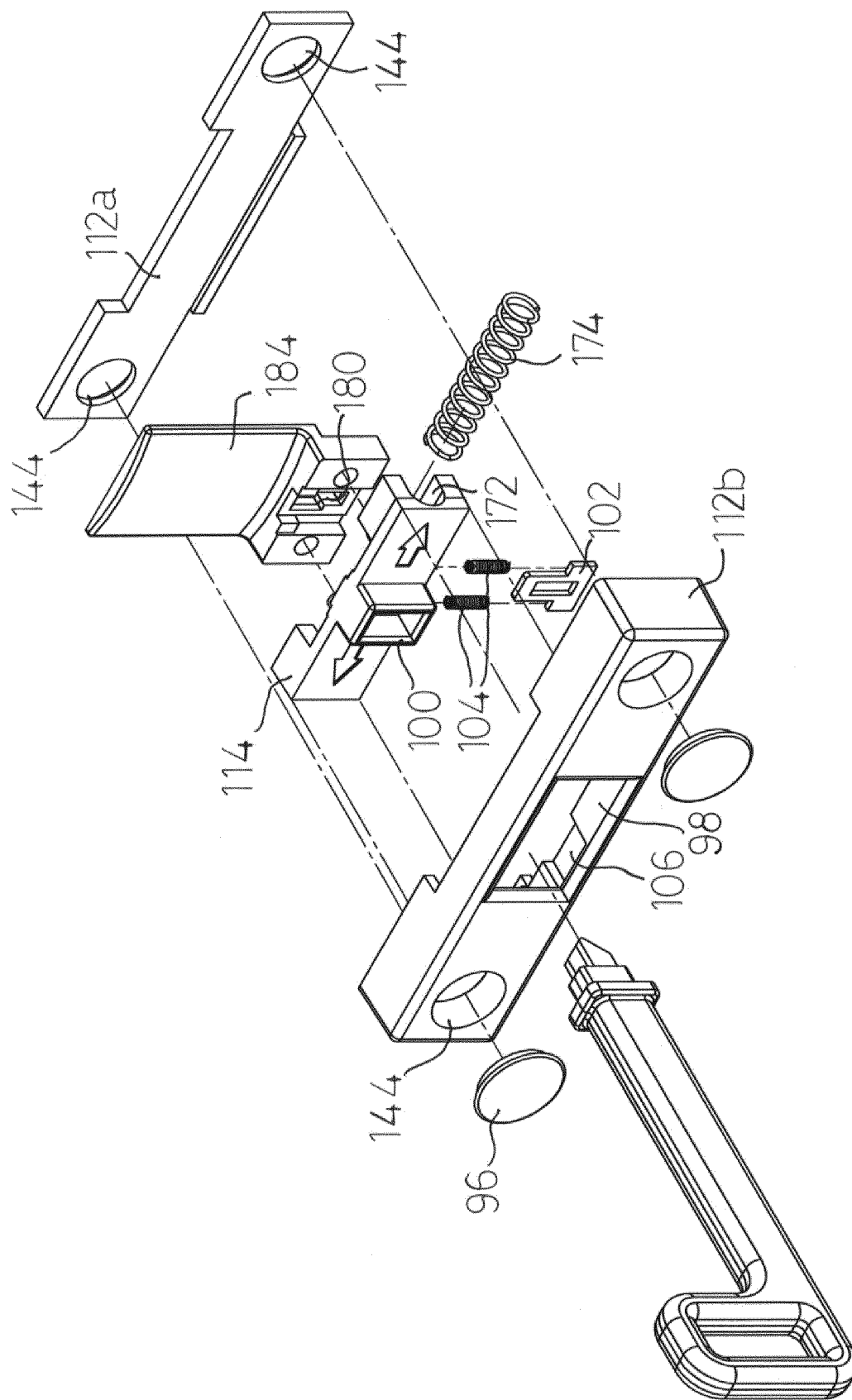


FIG 15



FIG 17

REFERENCES CITED IN THE DESCRIPTION

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Patent documents cited in the description

- GB 2398102 A [0018]
- GB 2263934 A [0018] [0019] [0020] [0021]
- GB 2391901 A [0018] [0019] [0020] [0023] [0061]
- GB 2353560 A [0021]