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(71) Applicant: **T.J.de Rooij Wood Desing**
5171 DK Kaatsheuvel (NL)

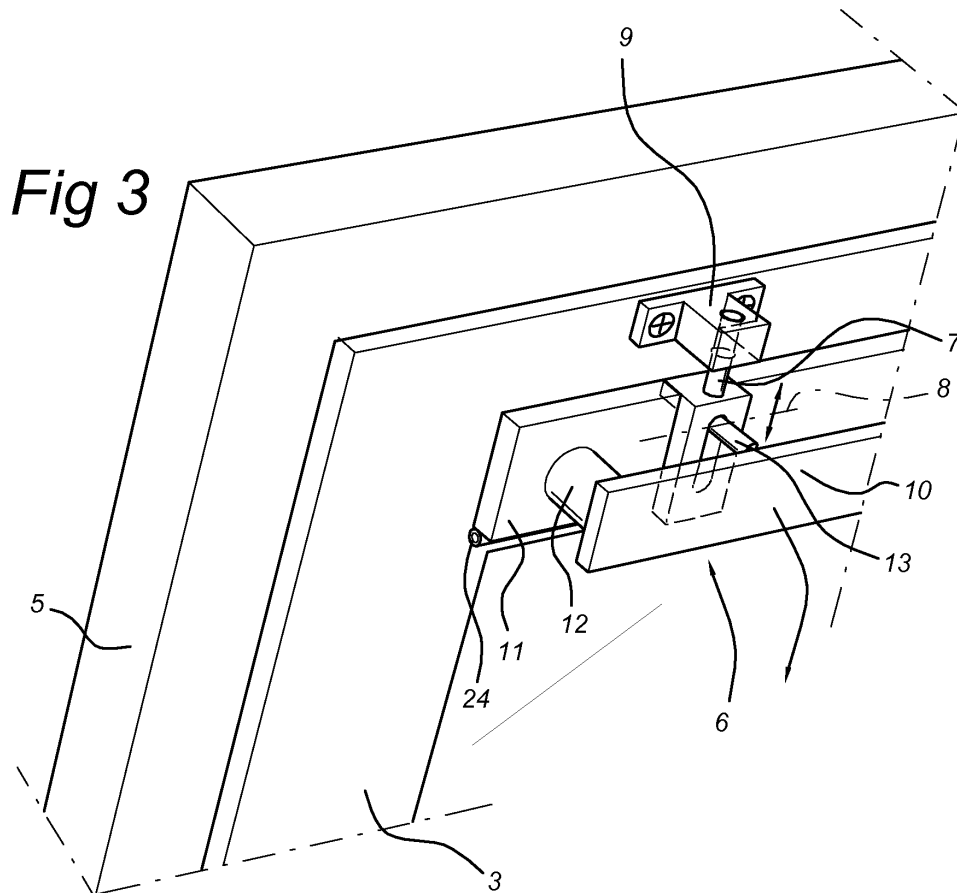
(72) Inventor: **de Rooij, Antonius Johannes Maria**
5143 BE Waalwijk (NL)

(74) Representative: **van Westenbrugge, Andries**
Nederlandsch Octrooibureau
Postbus 29720
2502 LS Den Haag (NL)

(54) **Burglar security for roof skylight window**

(57) The invention relates to a roof skylight window comprising a tilting window with a frame and a glass pane, whereby the tilting window can be tilted and is connected to a window casement frame and can be locked together with the window casement frame by means of a locking

member to which an operating member is mounted near a ventilation opening in the frame, whereby the operating member comprises a second locking member that locks the operating member in a locked position with the frame so that the locking member is no longer operable.



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Description

Background of the invention

[0001] The invention relates to a roof skylight window comprising:

- a casement window frame which, in use, demarcates a window casement opening;
- a tiltable window frame

whereby the tiltable skylight window is incorporated in the window casement frame, tiltable around a pivot center-line between a closed position, wherein the window casement opening is closed, and an open position, wherein the window casement opening is at least partially open;

whereby the tiltable skylight window comprises a rectangular frame composed of four frame members with a glass pane incorporated therein;

whereby the tiltable skylight window further comprises:

- a ventilation passage provided in one of the frame members;
- a cover plate which is moveable between a closed position closing the ventilation passage and an open position releasing the ventilation passage;
- a first locking member moveable between a locking position and a disengaging position, whereby the first locking member in the locking position engages the window frame in order to lock the tiltable window frame in relation to the fixed window frame, and whereby the first locking member permits the tilting of the tiltable skylight window around the pivot center-line in the disengaging position;
- an operating member that is operationally connected to both the cover plate and the first locking member so that, in operation, the first locking member and the cover plate can be moved between a first operating position in which the cover plate and the locking member are in respectively the closed or locking position, and a second operating position in which the cover plate and the first locking member are respectively in the open or disengaging position;

[0002] Tiltable roof skylight windows are known, for example, in US6135510, in which a sliding cam is shown for blocking a tiltable skylight window.

[0003] A tiltable skylight window by the name of Velux is also known in which an additional security lock is available.

[0004] A disadvantage in the current art is that the tiltable skylight windows are insufficiently secure with regard to opening from the exterior by undesired intruders.

Summary of the invention

[0005] The object of the invention is to provide an im-

proved roof skylight window and, in particular, a roof skylight window with an improved burglar security.

[0006] The invention provides therefore a roof skylight window, whereby said roof skylight window is further provided with a second locking member that is moveable between a locked position and a disengaged position, and whereby, on the one hand, the second locking member in the locked position engages with the operating member and, on the other hand, engages with said roof skylight window for locking the operating member in the first operating position, and whereby the second locking member in the disengaged position releases the operating member for operation.

[0007] By locking the operating member in an operating position an additional security is achieved against unlocking the roof skylight window. This additional security is particularly significant when the operating member is in the vicinity of a ventilation passage which renders the operating member relatively easy to operate from the exterior.

[0008] In one embodiment of the roof skylight window the second locking member engages in the locked position on the one hand with the operating member and to the tiltable skylight window on the other hand for locking the operating member in the first operating position.

[0009] Because the second locking member engages the tiltable skylight window, the second locking member can generally be constructed shorter, which therefore benefits overall rigidity.

[0010] In one embodiment of the roof skylight window, the second locking member is accommodated in the window frame (frame) in the locking position.

[0011] In one embodiment wherein the second locking member is in the locked position accommodated in the window casement frame.

[0012] Because the second locking member engages the window casement frame, the second locking member will also contribute to the locking of the tiltable skylight window in a closed position and thus further improve burglar security.

[0013] In one embodiment the roof skylight window is further provided with a securing member and the second locking member is in the locked position incorporated in the securing member.

[0014] By using a securing member, the invention can be easily adapted to existing roof skylight windows simply by mounting the securing member. Additional modifications to the casement window frame or tiltable skylight window are not necessary.

[0015] In one embodiment of the roof skylight window, whereby the cover plate is connected with the frame and made to hinge on a hinge axis along the length of the ventilation passage, the second locking member is slidably connected with the cover plate along the longitudinal axis of the second locking member and whereby the longitudinal axis is substantially perpendicular to the hinge axis and a securing member is provided on a horizontal side of the cover plate opposite the hinge axis.

[0016] A sturdy accommodation of the operating member is achieved by placing the second locking member square to the hinge of the cover plate. In this embodiment, tolerances in the fit of the second locking member in the securing member have the least influence and permit only the slightest possible tilting movement of the operating member.

[0017] In one embodiment of the roof skylight window, the operating member comprises a hand grip which is operationally connected with the second locking member in order for this to be moved between the locked position and the disengaged position.

[0018] This embodiment provides for an improved operation of the skylight window since it is possible, when operating the skylight window, to be automatically forced to slide the second locking member into, for example, the locked position so that the roof skylight window can be opened.

[0019] In one embodiment of the skylight window, the hand grip and the second locking member are operationally connected by means of a gripping force exercised substantially perpendicular to the longitudinal axis of the hand grip.

[0020] The use of the gripping force makes operation of the second locking member very easy and, of course, when the disengagement of the skylight window is desired, the operating member is automatically caused to unlock and disengage in order to make the locking of the skylight window operable. This coupling between the second locking member and the hand grip enables the operator to combine actions and the disengagement of the operating member and the unlocking of the skylight window are made operable by means of a single action.

[0021] In one embodiment of the roof skylight window, the second locking member is slideably connected with the operating member.

[0022] In one embodiment of the roof skylight window, the second locking member is accommodated in an accommodation space within the hand grip.

[0023] This integration of the second locking member and the hand grip provides a compact construction and a good and robust guidance of the second locking member.

[0024] In one embodiment of the roof skylight window, the second locking member is pretensioned in the direction of the locked position.

[0025] The pre-tensioning causes the second locking member to automatically return to its locked position when the roof skylight window is locked, thereby automatically locking the operating member. This reduces the effect of errors being made by the operator, for example, if the operator simply forgets to lock the operating member.

[0026] In one embodiment of the roof skylight window said roof skylight window comprises an electrodrive, driveably connected with the second locking member in order to drive that part.

[0027] This enables an operator to remotely operate

the second locking member.

[0028] According to a further aspect, the invention alternatively relates to a device provided with one or more of the characteristic measures disclosed in the accompanying description and/or attached drawings.

[0029] According to a further aspect, the invention alternatively relates to a method comprising one or more of the characteristic steps disclosed in the accompanying description and/or attached drawings.

[0030] It will be clear that the various aspects described in this present patent application may be either combined and/or be considered individually for a divisional patent application.

15 Brief description of the figures

[0031] The accompanying figures show various embodiments of a roof skylight window according to the present invention, in which:

Fig. 1 is a roof skylight window in perspective view; Fig. 2 is a detail in perspective view of a first embodiment of a roof skylight window according to the invention;

Fig. 3 is a detail in perspective view of a second embodiment of a roof skylight window according to the invention;

Fig. 4 is a detail in perspective view of a third embodiment of a roof skylight window according to the invention;

Fig. 5 is a detail in perspective view of a fourth embodiment of a roof skylight window according to the invention;

Fig. 6 is a cross-section of a hand grip of an embodiment of a roof skylight window according to the invention;

Fig. 7 is a cross-section of a detail of a known tiltable roof skylight window with a locking mechanism.

40 Description of the embodiments

[0032] Fig. 1 shows a roof skylight window in perspective view. The casement window frame 5 is mounted to the roof and a tiltable skylight window (wing) 2 is mounted tiltably in the casement window frame 5. The tiltable roof skylight window 2 comprises a frame (window frame) 3 in which a glass window pane 4 is mounted. The frame 3 is provided with an operating member 6 with which the lock (not shown) is made operable. Here, the operating member 6 is connected on its lowermost side with the frame 3, thus enabling the titling action of the operating member 6 in relation to the frame 3 to operate the locking of the skylight window 1. Here, the operating member 6 is provided with a hand grip 10 and a cover plate 11 which covers a ventilation opening in the illustrated position.

[0033] Fig. 2 shows a detail in perspective view of a first embodiment of a roof skylight window according to the invention. The operating member 6 comprises a lock-

ing member 7 that is slideably connected with a locking housing 25, which is mounted by screws 26 to the hand grip 10. Here, the frame 3 is provided with a securing member 9 permanently connected with the frame 3. One such securing member 9 is possibly also connected with casement window frame 5. Locking member 7 can be moved to a locking position 8 in which locking member 7 is at least partially accommodated into securing member 9, whereby operating member 6 is permanently connected with frame 3 and the locking of the skylight window 1 is no longer operable, thus improving burglar security. The longitudinal axis of the locking member 7 and the longitudinal axis of the operating member 6 are substantially parallel, thereby producing a firm basis for the further extensive integration of the locking member 7 and the operating member 6. A second embodiment is also conceivable, whereby the locking member 7 is at least partially accommodated in its locked position into the frame 3 itself, possibly by means of a recess made in the frame 3.

[0034] Fig. 3 shows a detail in perspective view of a second embodiment of a roof skylight window according to the invention. In this embodiment the longitudinal axis of the locking member 7 is substantially perpendicular to the longitudinal axis of the operating member 6. The securing member 9 is provided on that side of the operating member 6, opposite the side that is tiltably connected with the frame 3 around the hinge 24. This results in a strong locking action of the operating member 6. Here, hand grip 10 is placed at a distance from the cover plate 11 by means of spacing sleeves 12. Locking member 7 is provided with a locking bolt 13 which can slide into a locking position 8 in order to cause locking member 7 to slide into its locked position.

[0035] Fig. 4 shows a detail in perspective view of a third embodiment of a roof skylight window according to the invention. Here, locking member 7 extends substantially into the hand grip 10, thus producing an integrated and compact solution. Here, hand grip 10 is a hollow tube provided with a recess 14 enabling the operation of locking member 7 by means of a locking bolt 13. Spring 15 tensions locking member 7 in the direction of the locking position 8 so as to ensure that the operating member is locked. Locking member 7 is at the end directed towards the securing member provided with a bevel 16 so that locking member 7 is automatically guided into securing member 9 in conjunction with the pre-tensioning when the tiltable skylight window 2 is closed. Securing member 9 is mounted to frame 3 in order to make operating member 6 fixedly connectable to frame 3. It is conceivable that casement window frame 5 is also provided with a second securing member whereby locking member 7 extends in its locked position up to the second securing member.

[0036] Fig. 5 shows an embodiment whereby the locking member 7 is partially accommodated in window casement frame 5 in order to lock operating member 6. To this end, window casement frame 5 is provided with a

securing member 9 or recess 9. Furthermore, here locking member 7 is operationally connected with an electrical drive 17. Various known drives are conceivable, such as, for example, an electromagnetic drive with a solenoid 7 which is possibly battery-fed. Operation is preferably by remote control, for example, by means of an infrared connection.

[0037] Fig. 6 shows a cross-section of a hand grip 10. By means of a coupling piece 20, operating knob 18 drives a movement converter 19, which is rotatably connected with the hand grip 10 around cam 22. Locking member 7 is also connected to a movement converter 19 by means of a coupler 20 and driven by the converter. As the operator grips the hand grip 10 to open the roof skylight window 1, operating knob 18 is, at the same time, forced downwards and locking member 7 is disengaged from the locked position so that the locked position of the roof skylight window is released and the tiltable skylight window can be opened.

[0038] Fig. 6 shows a known tiltable roof skylight window with a locking mechanism 23 that is operated by an operating member 6 to lock and unlock the roof skylight window.

[0039] It may be clear that the foregoing description is incorporated herein in order to illustrate the operation of the various embodiments of the invention and not to limit the scope of the invention. Based upon the previous descriptions, those skilled in the art will recognize that many variations that fall within the spirit and scope of the present invention are possible.

Claims

1. A roof skylight window (1) comprising:

- a casement window frame (5) that, in use, demarcates a window casement opening;
 - a tiltable window frame (2);
- whereby the tiltable window frame (2) is incorporated in the window casement frame (5), tiltable around a pivot center-line between a closed position, wherein the window casement opening is closed, and an open position wherein the window casement opening is at least partially open;
- whereby the tiltable skylight window (2) comprises a rectangular frame (3) composed of four frame members with a glass pane (4) incorporated therein;
- whereby the tiltable skylight window (2) further comprises:
- a ventilation passage provided in one of the frame members;
 - a cover plate (11) which is moveable between a closed position closing the ventilation passage and an open position releasing the ventilation passage;
 - a first locking member moveable between a

locking position and a disengaging position, whereby the first locking member in the locking position of the tiltable window frame (2) engages the casement window frame (5) in order to lock the tiltable window frame (2) in relation to the window casement frame (5), and whereby the first locking member permits the tilting of the tiltable window frame (2) around the pivot centerline in the disengaging position;

- an operating member (6) that is operationally connected to both the cover plate (11) and the first locking member so that, in operation, the first locking member and the cover plate (11) can be moved between a first operating position in which the cover plate (11) and the first locking member are respectively in the closed and locking position, and a second operating position in which the cover plate (11) and the first locking member are respectively in the open and disengaging position;

characterized in that, the roof skylight window (1) is further provided with a second locking member (7), which is moveable between a locked position (8) and a disengaged position;

whereby, on the one hand, the second locking member (7) engages the operating member (6) in the locked position (8) and the roof skylight window (1) on the other hand for locking the operating member (6) in the first operating position, and whereby the second locking member (7) in the disengaged position releases the operating member (10) for operation.

2. Roof skylight window according to claim 1, whereby the second locking member (7) in the locked position (8) engages with the operating member (6) on the one hand and, on the other hand, engages with the roof skylight window (2) for locking the operating member (6) in the first operating position.
3. Roof skylight window according to any of the preceding claims, whereby on the one hand the second locking member (7) engages with the operating member (6) in the locked position (8) and, on the other hand, engages with window casement frame (5) for locking the operating member (6) in the first operating position.
4. Roof skylight window according to any of the preceding claims, whereby the second locking member (7) is in the locked position (8) accommodated in the frame (3).
5. Roof skylight window according to any of the preceding claims, whereby the second locking member (7) is in the locked position (8) accommodated into the window casement frame (5).

6. Roof skylight window according to any of the preceding claims, whereby the roof skylight window (1) is further provided with a securing member (9) and the second locking member (7) is in the locked position (8) accommodated in the securing member (9).
7. Roof skylight window according to any of the preceding claims, whereby the cover plate (11) is connected with the frame (3) and made to hinge with a hinge axis (24) along the length of the ventilation passage, the second locking member (7) is connected with the cover plate (11), slideable along the longitudinal axis of the second locking member (7) and whereby the longitudinal axis is substantially perpendicular to the hinge axis (24), and whereby a securing member (9) is provided on a side of the cover plate (11) opposite the hinge axis (24).
8. Roof skylight window according to any of the preceding claims, whereby the operating member (6) comprises a hand grip (10) which is operationally connected with the second locking member (7) in order for this to be moved between the locked position (8) and the disengaged position, and in particular whereby the hand grip (10) and the second locking member (7) are operationally connected by means of a gripping force substantially perpendicular to the longitudinal axis of the handle (10).
9. Roof skylight window according to any of the preceding claims, whereby the second locking member (7) is slideably connected with the operating member (6), and/or whereby the second locking member (7) is incorporated in an integration space within the hand grip (10).
10. Roof skylight window according to any of the preceding claims, whereby the second locking member (7) is pretensioned in the direction of the locked position (8).
11. Roof skylight window according to any of the preceding claims, whereby the roof skylight window (1) comprises an electrodrive (17), operationally connected with the second locking member (7) in order to drive that part.

Fig 2

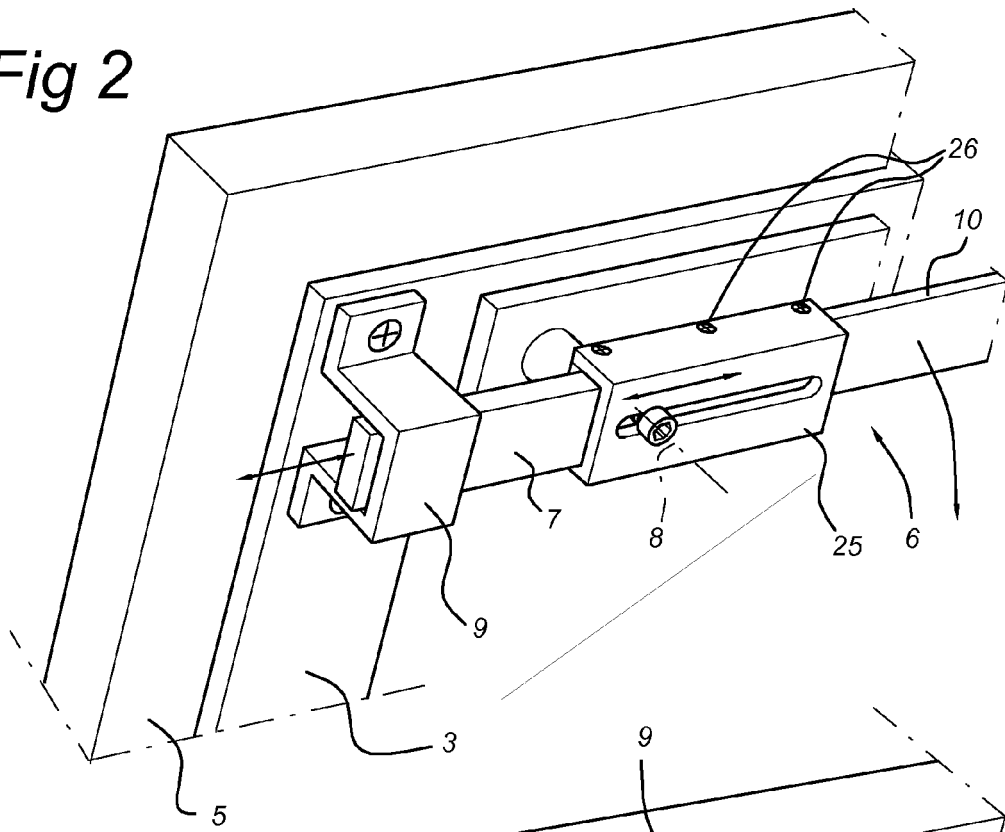


Fig 3

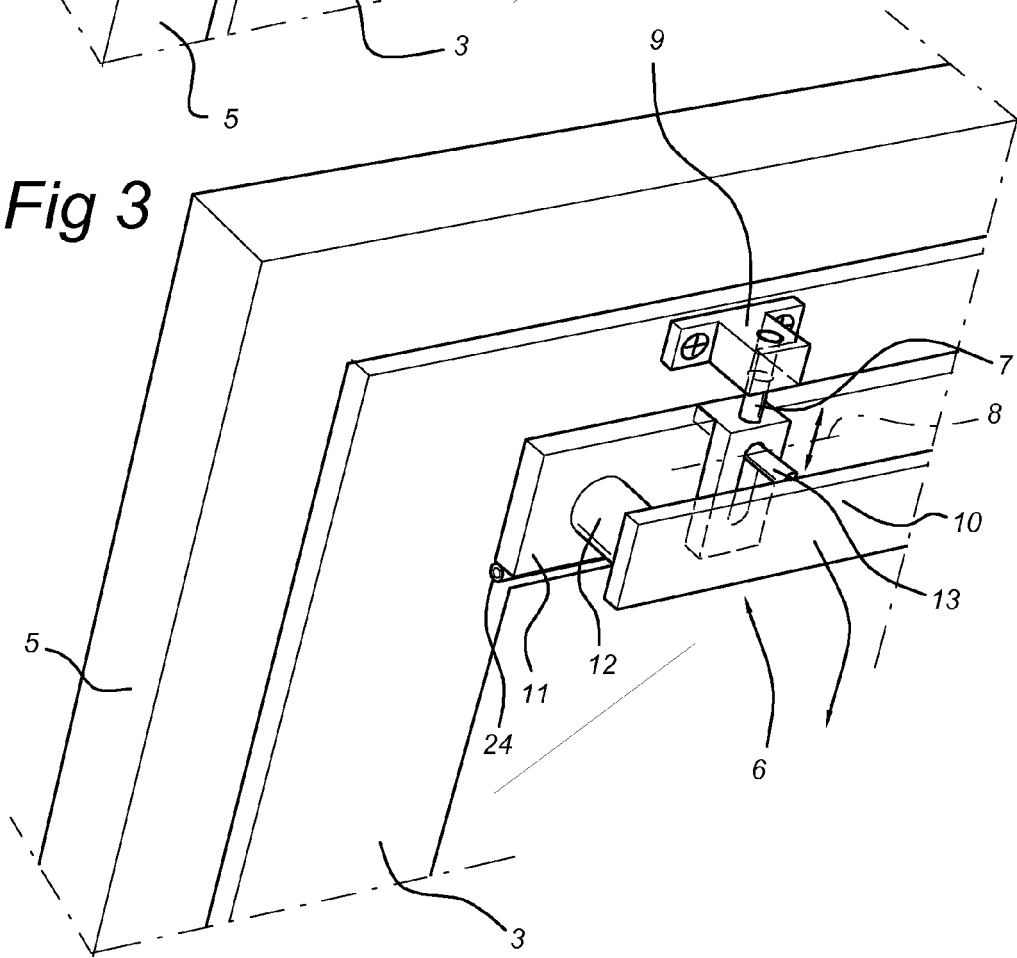


Fig 4

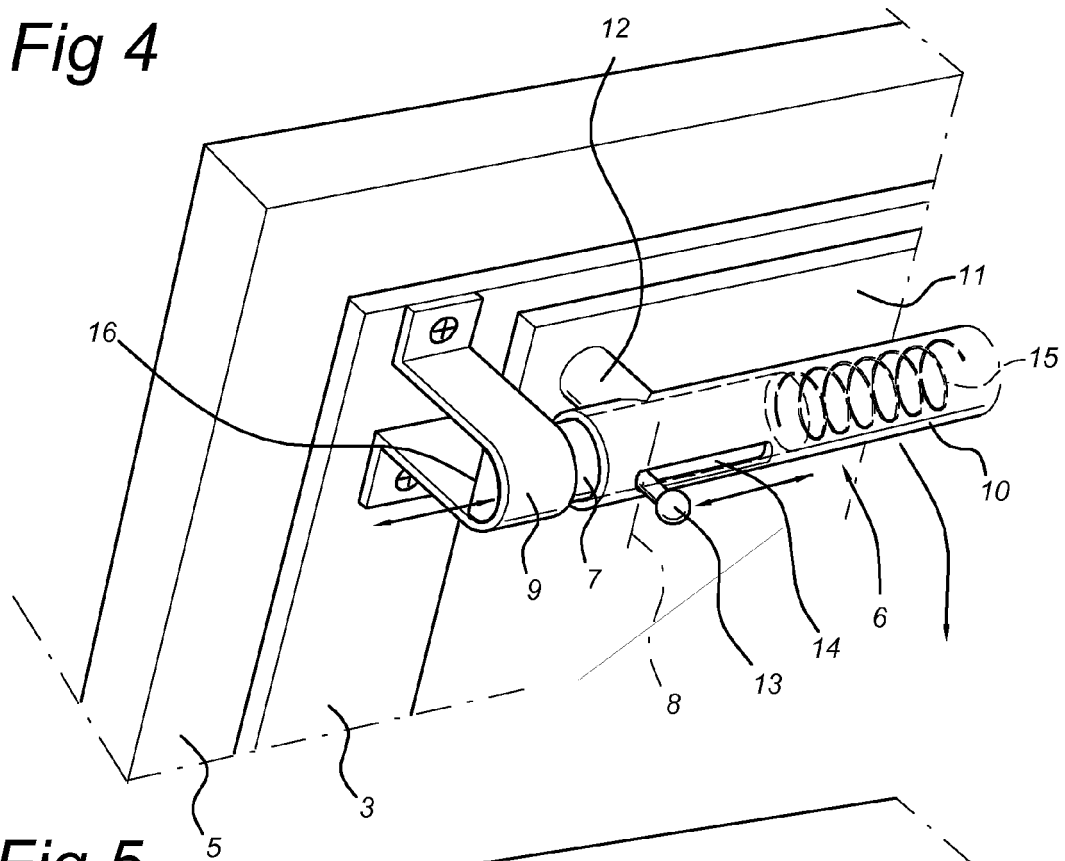


Fig 5

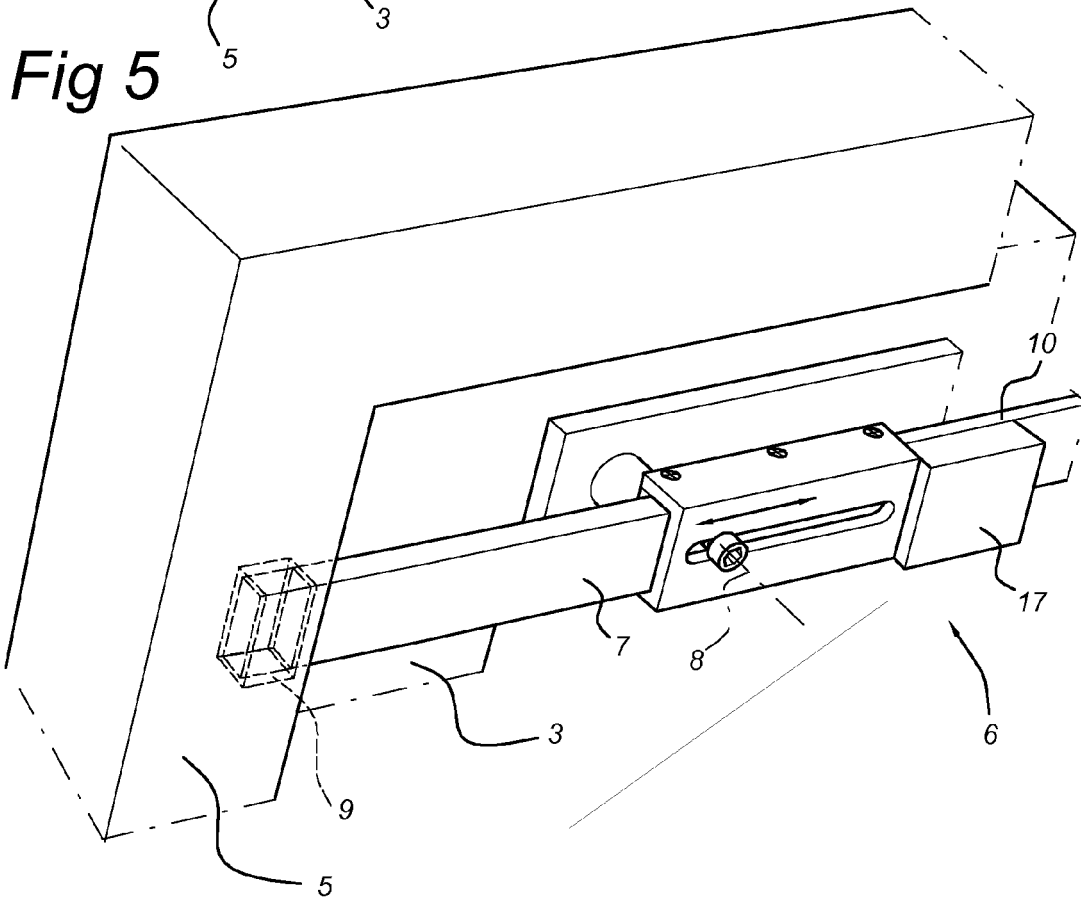


Fig 6

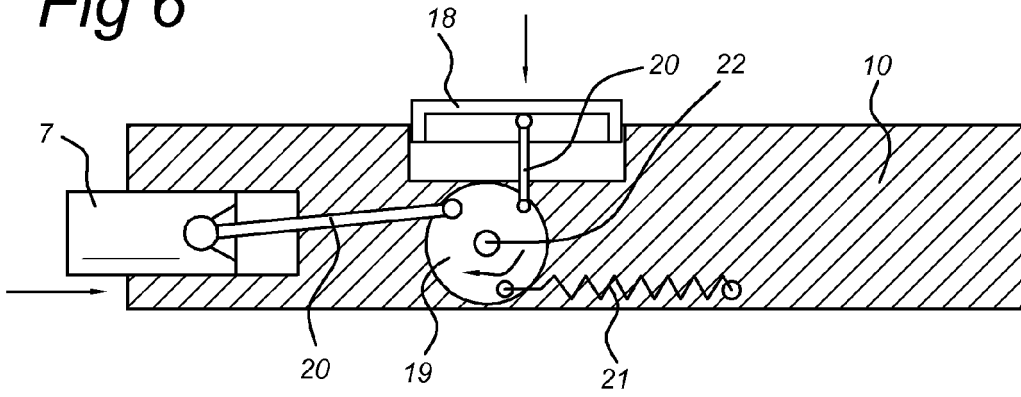
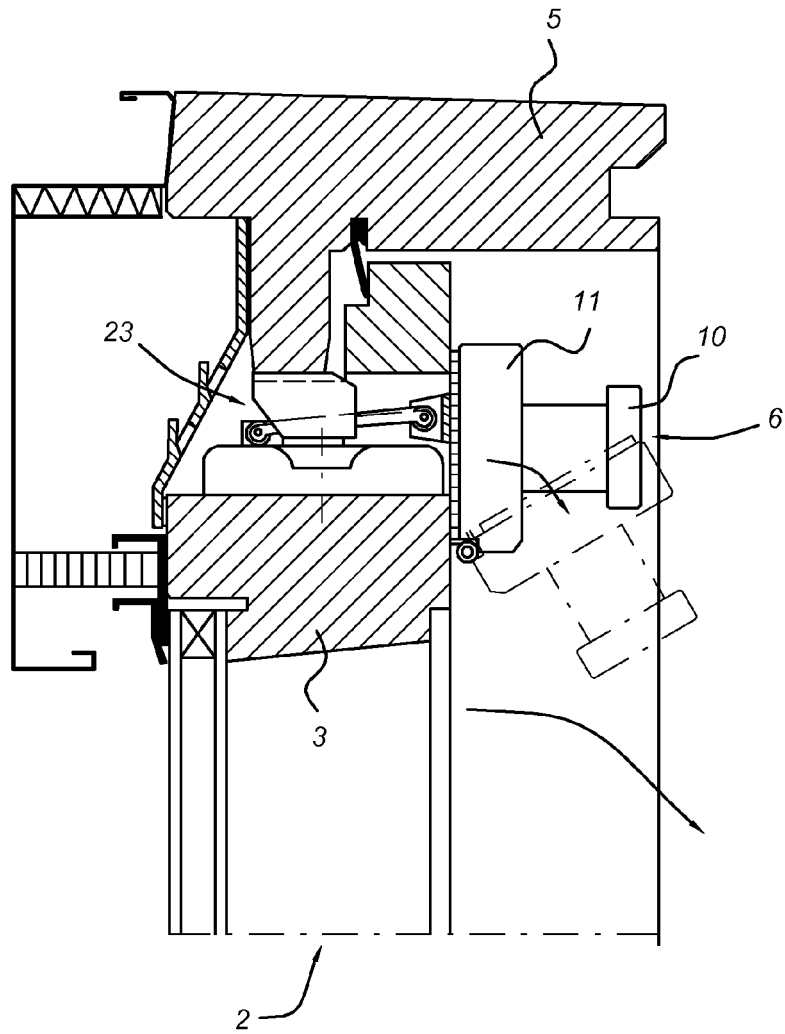


Fig 7





EUROPEAN SEARCH REPORT

Application Number
EP 08 16 2573

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EPO FORM 1503.03.82 (P04G01)

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