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(54) **OPENING OR CLOSING MECHANISM FOR TILT AND TURN DOORS AND/OR WINDOWS**

(57) The present application relates to an opening or closing mechanism for use in doors or windows, in particular for tilt and turn ones, comprising a handle (3), a mobile profile (1) and a transmitting platen (2), wherein the handle (3) is fastened in the mobile profile (1), and wherein said mobile profile (1) is incorporated into a transmission box (5), wherein by mechanical means the rotational movement is transformed by actuating the handle (3) into a longitudinal movement which is propagated through the grooved transmitting platen (2) to said mobile profile (1), wherein the mobile profile (1) incorporates a bidirectional locking mechanism (6), from both the outside and the inside of the door or window, thereby preventing any unauthorised attempt to open or close the mechanism, both from the inside and the outside of the door or window.

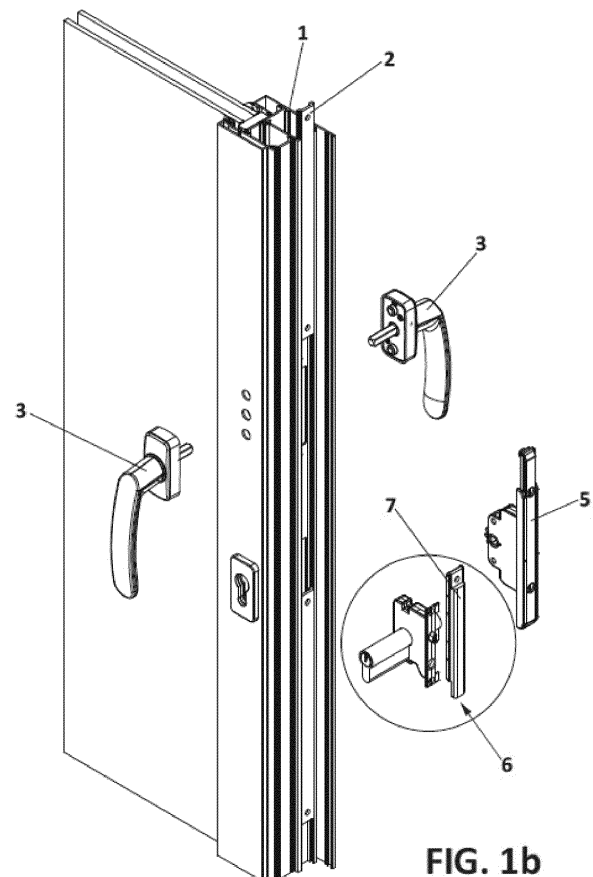


FIG. 1b

Description

OBJECT OF THE INVENTION

[0001] The present application relates to an opening or closing mechanism for use in doors or windows, in particular for tilt and turn ones. The object of the invention is to prevent any unauthorised attempt to open or close the mechanism, both from the inside and the outside of the door or window.

BACKGROUND OF THE INVENTION

[0002] The use of security devices for opening or closing tilt and turn doors and/or windows is known. The security devices known in the state of the art are used to prevent or slow down access to the dwelling during a robbery.

[0003] According to statistics on robberies in dwellings, the most common way robbers access the inside of said dwellings is through the windows on the ground floor or through the patio door. This can be done, for example, by perforating the frame, such that the door or window handle is accessed in order to actuate said handle and open the door or window.

[0004] An opening and closing device for windows and/or doors, which is equipped with a security mechanism against assault, is the object of patent ES2204161 or Utility Model 201330657. The mentioned devices incorporate a mechanical diode function in the mechanism thereof such that they cannot be actuated from the outside of the dwelling and it only transmits the movement to the rest of the mechanism if the turning is performed from the inside. When implemented, these mechanisms work individually and do not admit the possibility of installing a double exterior/interior handle, in the case of balcony windows which provide access to patios or balconies. This can cause users to be locked outside the dwelling and as a result, several derived security problems such as in the care of children and/or the elderly.

[0005] Moreover, standard locking mechanisms with key and cam cylinders on the market, such as those of patent EP3162993, are known. In this case, the actuation and transmission of the movement to the closing mechanism is done only with the key and makes it most suitable for closing systems wherein the (mobile) pane runs on a frame and the locking position is in the closed position.

[0006] Locks with different mechanisms which enable bidirectional closing or opening are also known on the market, but they are intended to be installed in swing doors or windows, wherein a tilting function is not able to be performed.

DESCRIPTION OF THE INVENTION

[0007] The present invention aims to solve some of the problems mentioned in the state of the art.

[0008] More particularly, the present invention discloses

es an opening or closing mechanism for tilt and turn doors and/or windows, comprising:

- A handle adapted to be fastened in a mobile profile, wherein said mobile profile actuates a transmission box wherein by mechanical means the rotational movement is transformed by actuating the handle into a longitudinal movement which is propagated through a grooved and transmitting platen to said mobile profile or moves relatively to said mobile profile; wherein the mobile profile incorporates a bidirectional locking mechanism, from both the outside and the inside, by means of:
 - a locking platen which incorporates at least one fitting slot in the geometry thereof, said locking platen moves on the mobile profile and is secured to the transmitting platen, and
 - a locking pin actuated by the rotation of a cam incorporated in a key cylinder, wherein the locking pin is adapted to be able to fit into the locking platen by means of any of at least one fitting slot incorporated in said locking platen enabling the immobilisation of the mechanism.

[0009] Preferably, the locking pin, at the distal end thereof, has a protuberance which is geometrically adapted to be inserted into any of the three slots incorporated in the locking platen. Said fitting slots are aligned with the longitudinal axis of the protuberance of the locking pin.

[0010] Preferably, the locking mechanism has two external casings which define an inner body for the mechanism.

[0011] Preferably, the external casings have an opening adapted to the outer geometry of the protuberance of the locking pin.

[0012] Preferably, the locking pin has two positions defined in the path thereof in the longitudinal axis.

[0013] In the first position of the locking pin, without the actuation of the key cylinder, the protuberance of the locking pin is in the inner body formed by the outer casings and does not protrude through the opening.

[0014] In the second position, after the actuation of the key cylinder, the protuberance of the locking pin protrudes through the opening of the outer casings.

[0015] Each slot of the locking platen defines a reference position of a tilt and turn window, by means of the insertion of the protuberance of the locking pin it defines a reference position of a tilt and turn window.

[0016] According to the present invention, an actuation key is required to change the reference position of the tilt and turn window and unlock the movement.

DESCRIPTION OF THE DRAWINGS

[0017] As a complement to the description provided herein, and for the purpose of helping to make the features of the invention more readily understandable, in

accordance with a preferred practical exemplary embodiment thereof, said description is accompanied by a set of drawings which, by way of illustration and not limitation, represent the following:

Figure 1a shows a perspective view of some of the components of an opening or closing mechanism for tilt and turn doors and/or windows according to an embodiment of the present invention.

Figure 1b shows an exploded perspective view of the main components of an opening or closing mechanism for tilt and turn doors and/or windows according to an embodiment of the present invention.

Figure 2 shows a detail of the opening or closing locking system for tilt and turn doors and/or windows of an embodiment according to the present invention, wherein the locking platen, as well as the key cylinder and the external casings of the assembled bidirectional locking system can be seen more clearly.

Figure 3 shows an exploded perspective view of the bidirectional opening or closing locking mechanism for tilt and turn doors and/or windows of an embodiment according to the present invention, wherein the locking pin, the cam, the protuberance of the locking pin and the opening defined by the outer casings are more clearly seen.

Figure 4 shows a perspective view of the locking platen, wherein the three fitting slots are clearly seen.

Figures 5a, 5b, 5c and 5d show different views of a reference position known in the sector as closed.

Figures 6a, 6b, 6c and 6d show different views of a reference position known in the sector as an open position.

Figures 7a, 7b, 7c and 7d show different perspective views of the door or window in the tilted position.

PREFERRED EMBODIMENT OF THE INVENTION

[0018] Figure 1 shows a perspective view of a preferred embodiment of the invention, which has a handle (3) adapted to be fastened in a mobile profile (1), wherein said mobile profile actuates a transmission box (5) wherein, by means of a rack and pinion mechanism, it transforms the rotational movement which is generated by actuating the handle (3) into a longitudinal movement which is propagated through a grooved transmitting platen (2) to said mobile profile (1).

[0019] Figure 1b shows an exploded perspective view of the main components of the preferred embodiment of an opening or closing mechanism for tilt and turn doors and/or windows, wherein a bidirectional locking mechanism (6) can be seen in detail, which is able to be actuated both from the outside and from the inside, which comprises a locking platen (7) which incorporates in the geometry thereof three fitting slots (13), said locking platen (7) moves on the mobile profile (1) and is secured to the transmission box (2).

[0020] Figure 2 shows a perspective view of the bidirectional locking mechanism (6) according to the preferred embodiment, wherein it is more clearly seen that it comprises a locking pin (10), see Figure 3, which incorporates a projection (15) at the distal end thereof. Said locking pin is actuated by means of a cam (12), see Figure 3, incorporated in the longitudinal body of a key cylinder (11), which is in turn actuated by means of a mechanical key.

[0021] Figure 3 shows an exploded perspective view of the bidirectional locking mechanism (6) according to the present invention, wherein the locking pin (10) located inside the body is more clearly seen, defining two outer casings (8) and (9). Said casings (8, 9) protect and define an inner body for the locking pin mechanism (10) actuated by the cam (12), said casings (8) having an opening (16) adapted to the outer geometry of the protuberance (15) enabling the movement along the path thereof without friction. The protuberance (15) is geometrically adapted to fit into the locking platen by means of any of the three fitting slots (13) incorporated in said locking platen (7), enabling the immobilisation of the mechanism.

[0022] The locking pin (10) has two positions defined in the path thereof in the longitudinal axis. A position is defined as "resting" when the key cylinder (11) has not been actuated. In the first "resting" position of the locking pin (10), without the actuation of the key cylinder (11), the protuberance (15) of the locking pin is in the inner body formed by the outer casings (8) and (9) and does not protrude through the opening (16).

[0023] In the second position, defined after the actuation of the key cylinder (11), the protuberance (15) of the locking pin (10) protrudes through the opening (16) and protrudes through the outer casings (8 and 9).

[0024] Figure 4 shows a perspective view of the locking platen, wherein the three fitting slots (13) are clearly seen. Said fitting slots (13) are aligned with the longitudinal axis of the protuberance (15), see Figure 3, of the locking pin.

[0025] Each fitting slot (13), by means of the insertion of the protuberance (15), locks the movement of the pin (10) and defines a reference position of a tilt and turn window.

[0026] Figures 5a, 5b, 5c and 5d show different views of a reference position known in the sector as closed, with the handle (3) turned downwards and the profile (1) folded on the transmitting platen (2).

[0027] Figures 6a, 6b, 6c and 6d show different views of a reference position known in the sector as an open position.

[0028] Figures 7a, 7b, 7c and 7d show different perspective views of the door or window in the tilted position.

[0029] The embodiments defined by the present invention enable bidirectional opening or closing, from both the inside and the outside of the window or door, allowing greater comfort and security for the user.

Claims

1. An opening or closing mechanism for tilt and turn doors and/or windows, comprising:

- a handle (3),
- a mobile profile (1),
- a transmitting platen (2),

wherein the handle (3) is fastened in the mobile profile, and wherein said mobile profile (1) is incorporated into the transmission box (5), wherein by mechanical means the rotational movement is transformed by actuating the handle (3) into a longitudinal movement which is propagated through the grooved transmitting platen (2) to said mobile profile (1); **characterised in that** the mobile profile (1) incorporates a bi-directional locking mechanism (6), from both the outside and the inside of the door or window, comprising:

- a locking platen (7) with at least one fitting slot (13),
- a locking pin (10),
- a cam (12),
- a key cylinder (11),

wherein said locking platen (7) moves on the mobile profile (1) and is secured to the transmitting platen (2), and the locking pin (10) actuated by the rotation of the cam (12) incorporated in the key cylinder (11) is configured to fit into the locking platen (7) by means of any of at least one of the fitting slots (13) arranged in the body of the locking platen (7), thus enabling the immobilisation and locking of the doors or windows in the desired position, actuated both from the outside or the inside of the tilt and turn door or window.

2. The opening or closing mechanism for tilt and turn doors and/or windows, according to claim 1, **characterised in that** the locking pin (11), at the distal end thereof, has a protuberance (15) which is geometrically adapted to be inserted into any of the fitting slots (13) incorporated in the locking platen (7).
3. The opening or closing mechanism for tilt and turn doors and/or windows, according to claim 2, **characterised in that** the fitting slots (13) are aligned with the longitudinal axis of the protuberance (15) of the locking pin (10).
4. The opening or closing mechanism for tilt and turn doors and/or windows, according to claim 3, **characterised in that** the locking mechanism (6) has two external casings (8, 9) at opposite ends.

5. The opening or closing mechanism for tilt and turn doors and/or windows, according to claim 4, **characterised in that** the external casings (8, 9) have an opening (16) adapted to the outer geometry of the protuberance (15) of the locking pin (10) enabling relative movement without sliding.

6. The opening or closing mechanism for tilt and turn doors and/or windows, according to claim 5, **characterised in that** it comprises a mechanical actuation key for unlocking the mechanism and changing the reference position of the tilt and turn window.

7. The opening or closing mechanism for tilt and turn doors and/or windows, according to claim 6, **characterised in that** the locking platen (7) has three fitting slots (13).

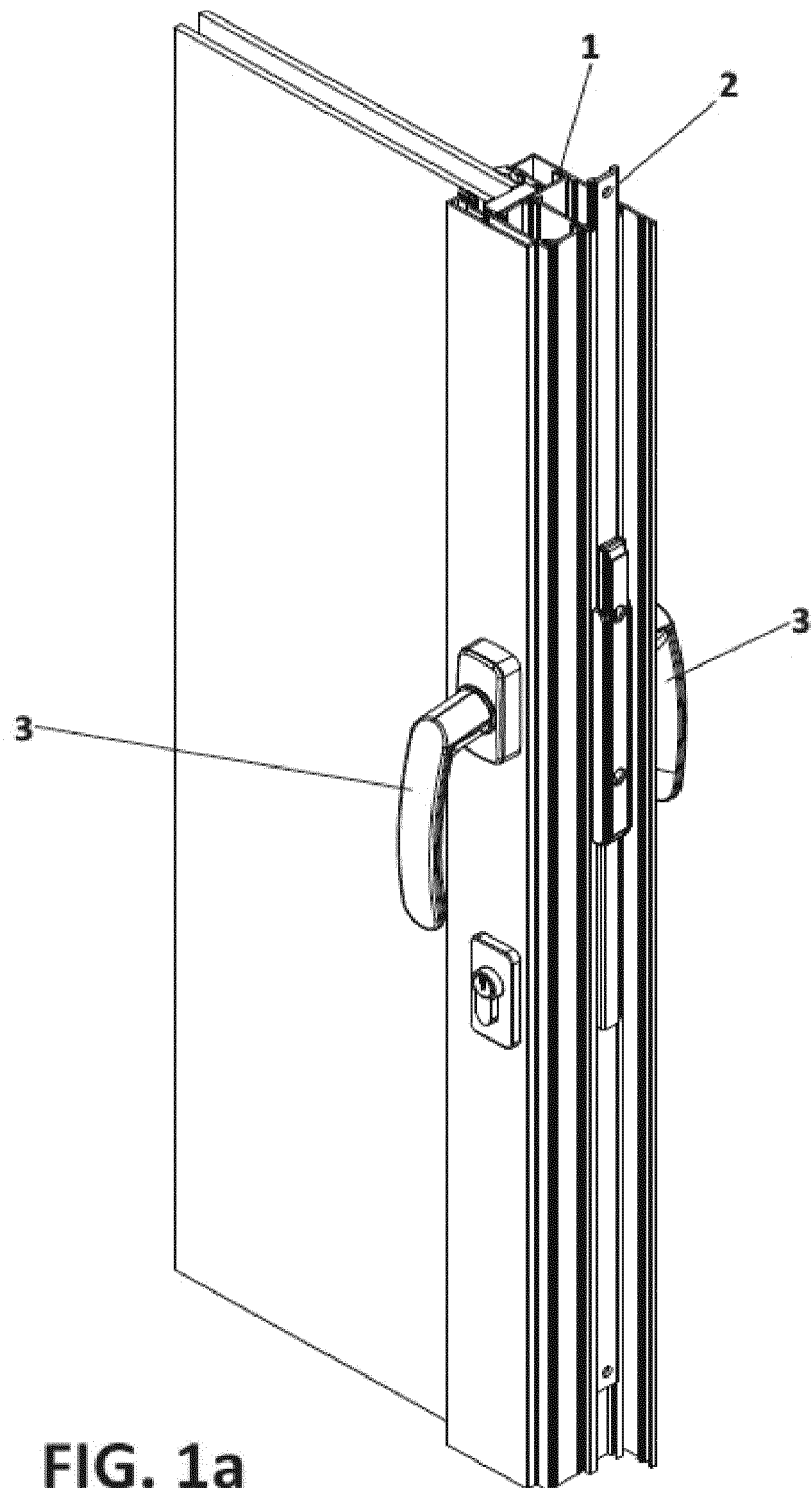
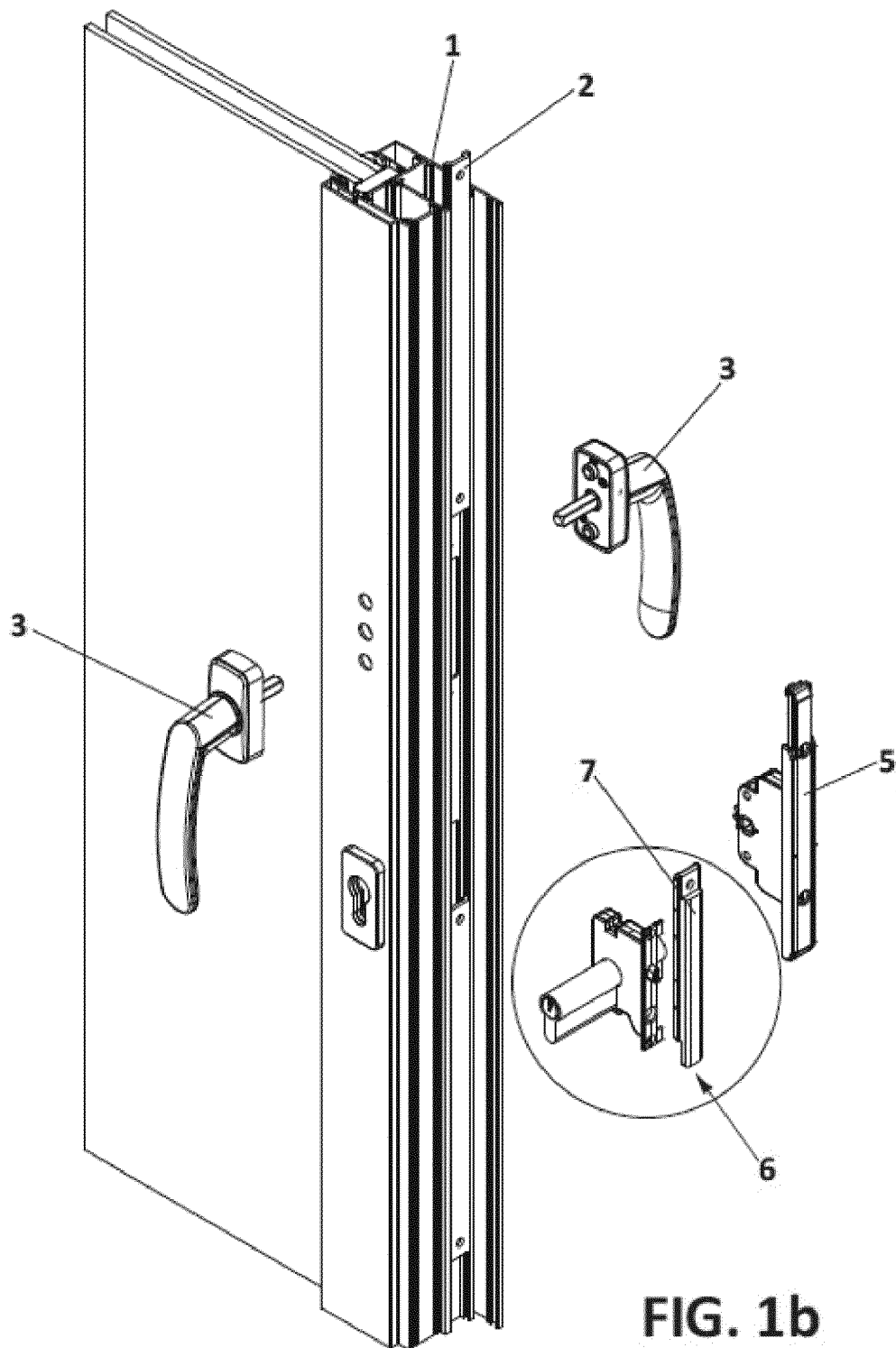


FIG. 1a



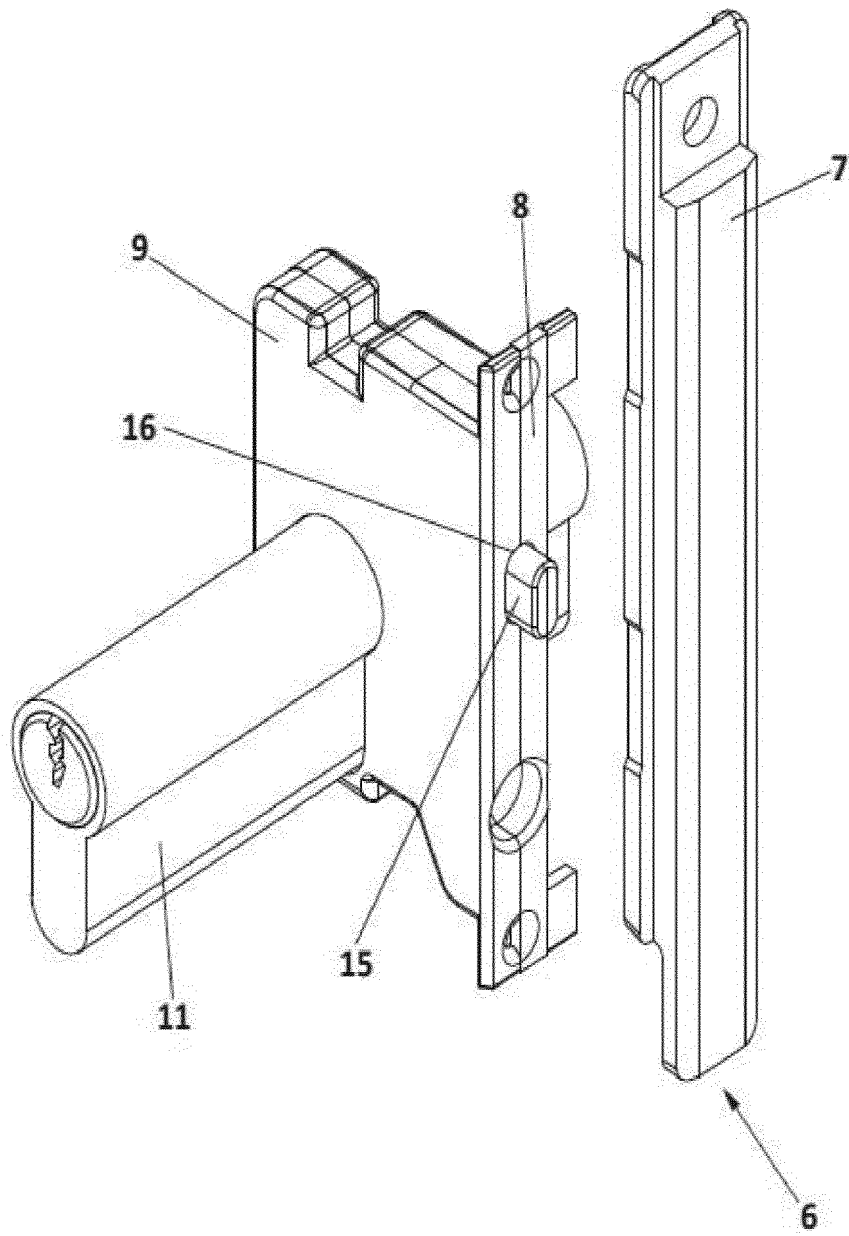


FIG. 2

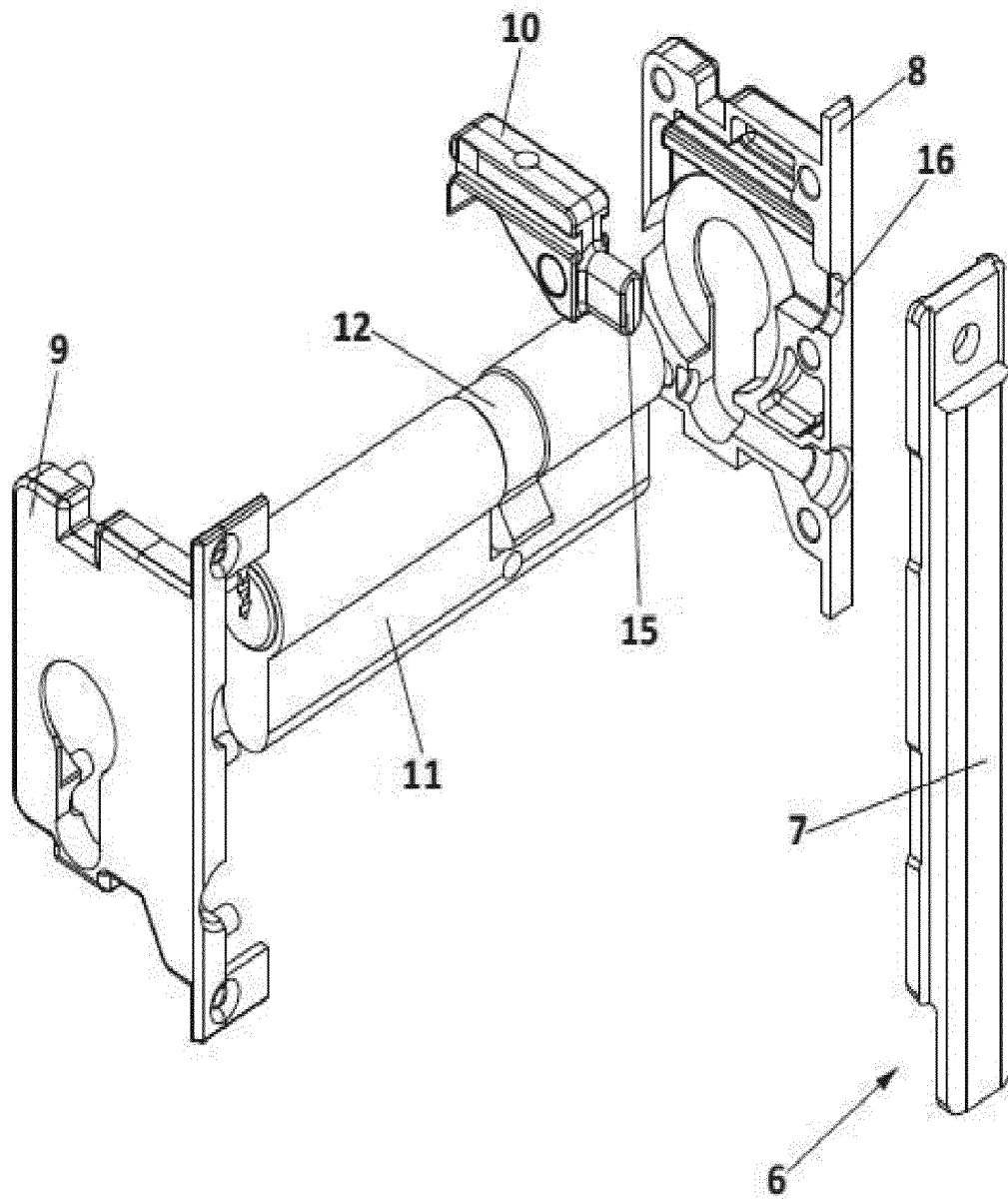


FIG. 3

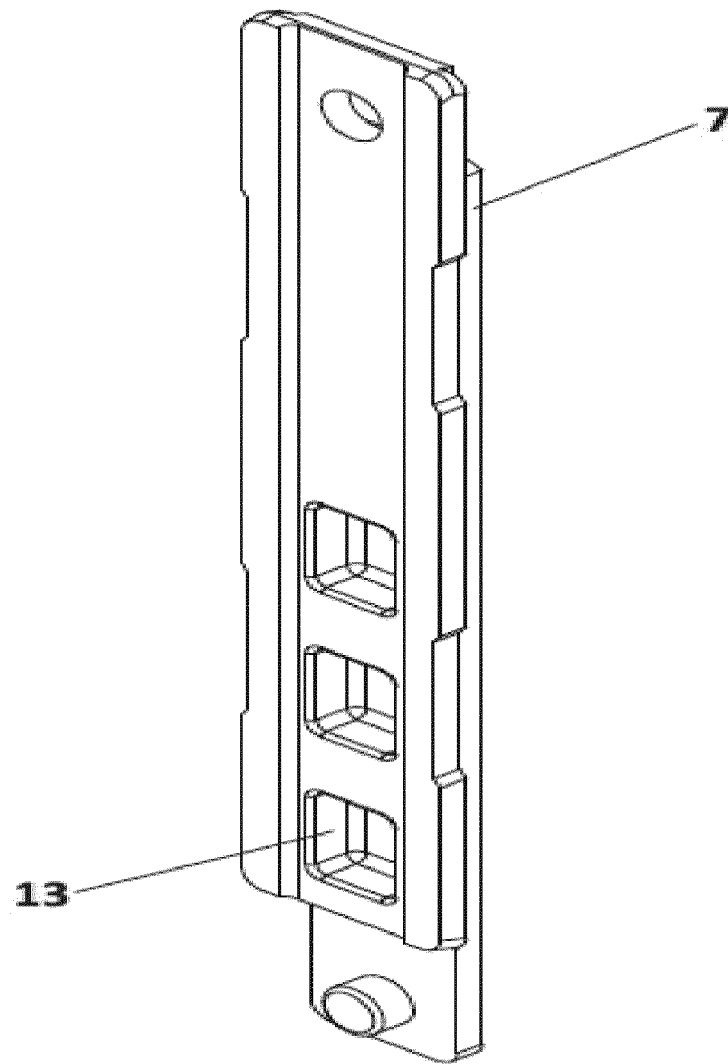


FIG. 4

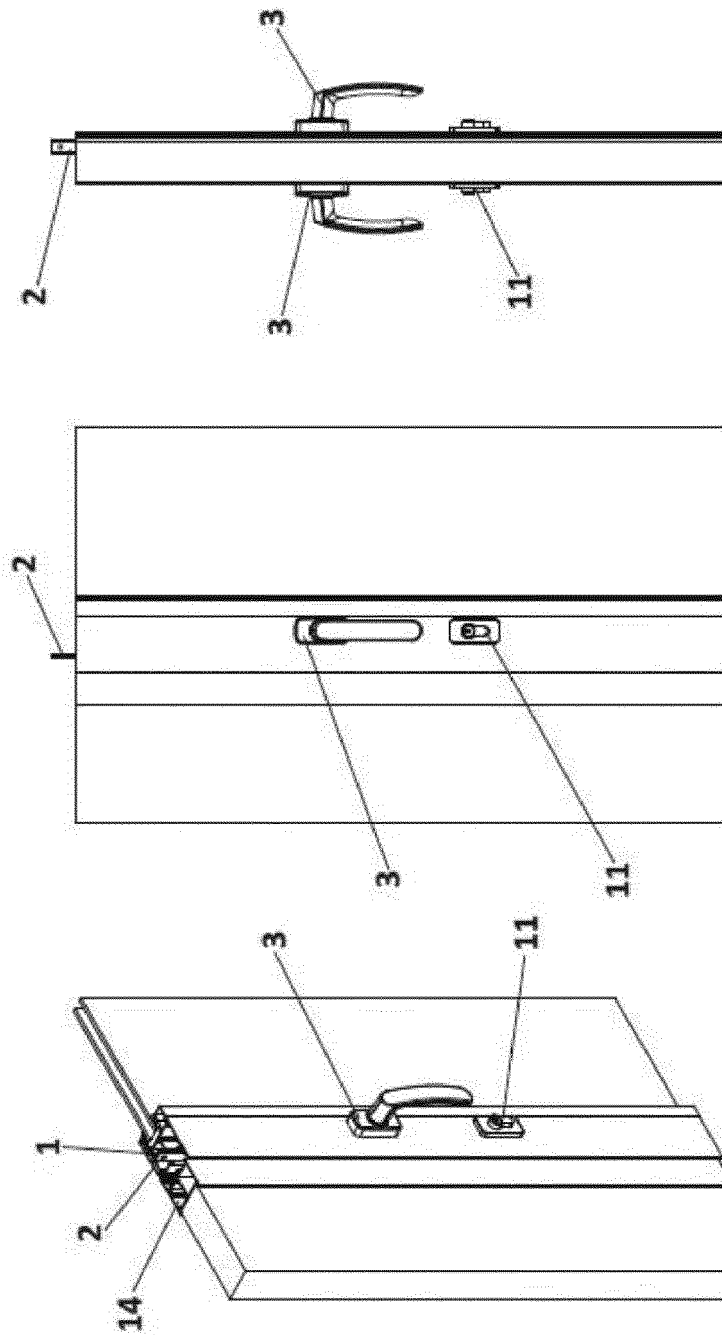


FIG. 5a

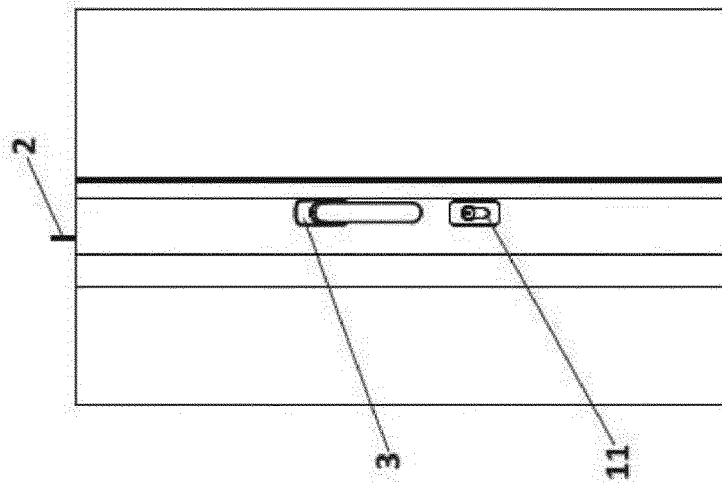


FIG. 5b

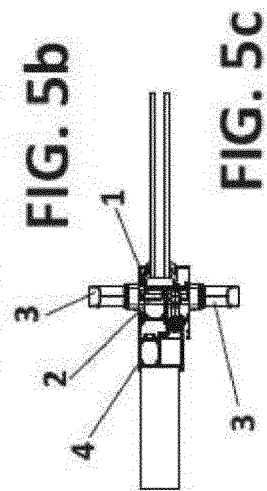


FIG. 5c

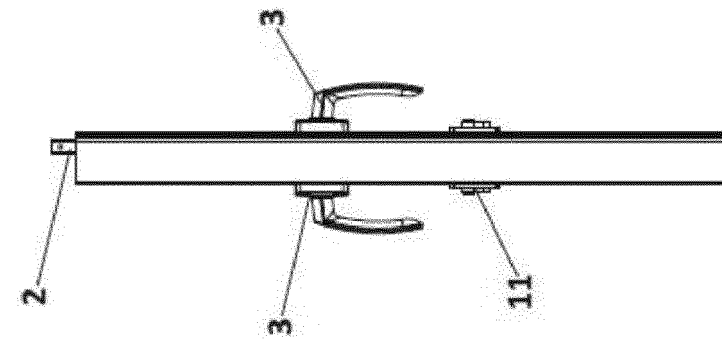


FIG. 5d

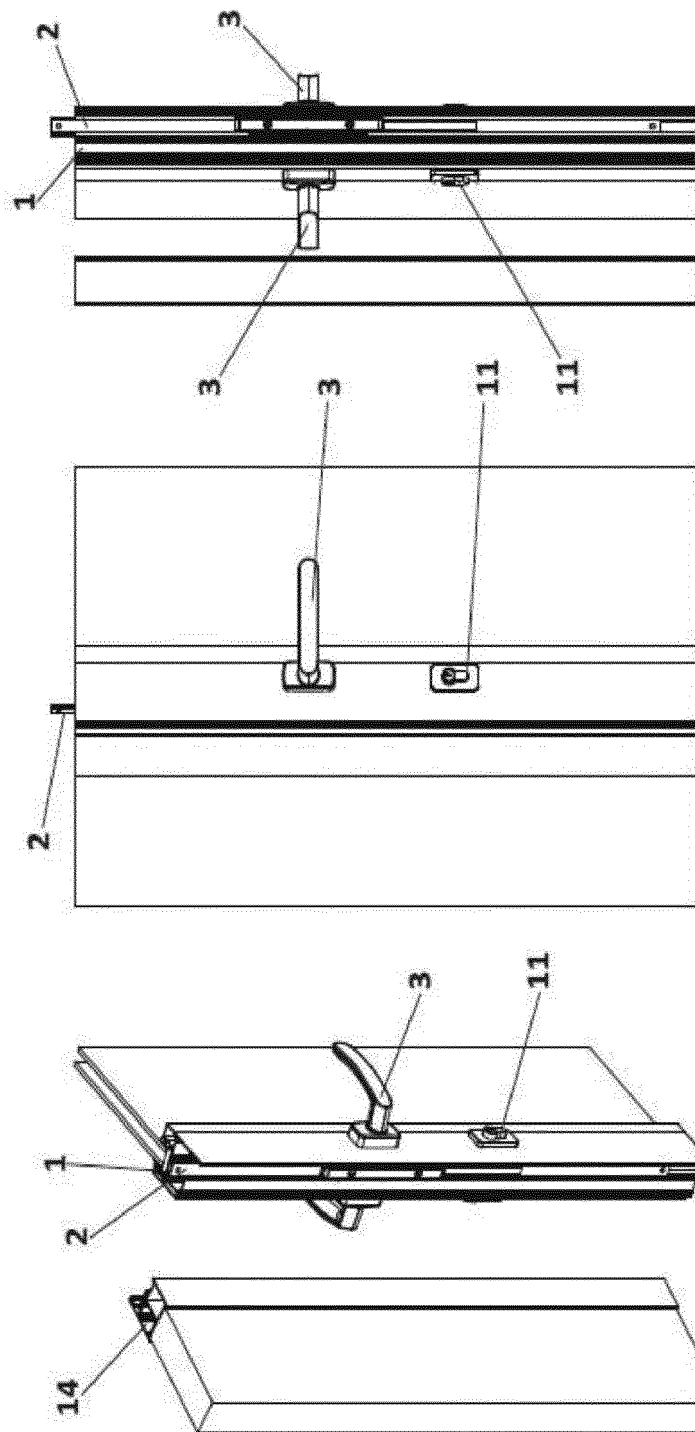


FIG. 6a

FIG. 6b

FIG. 6d

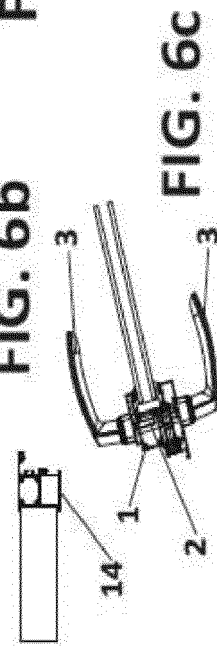


FIG. 6c

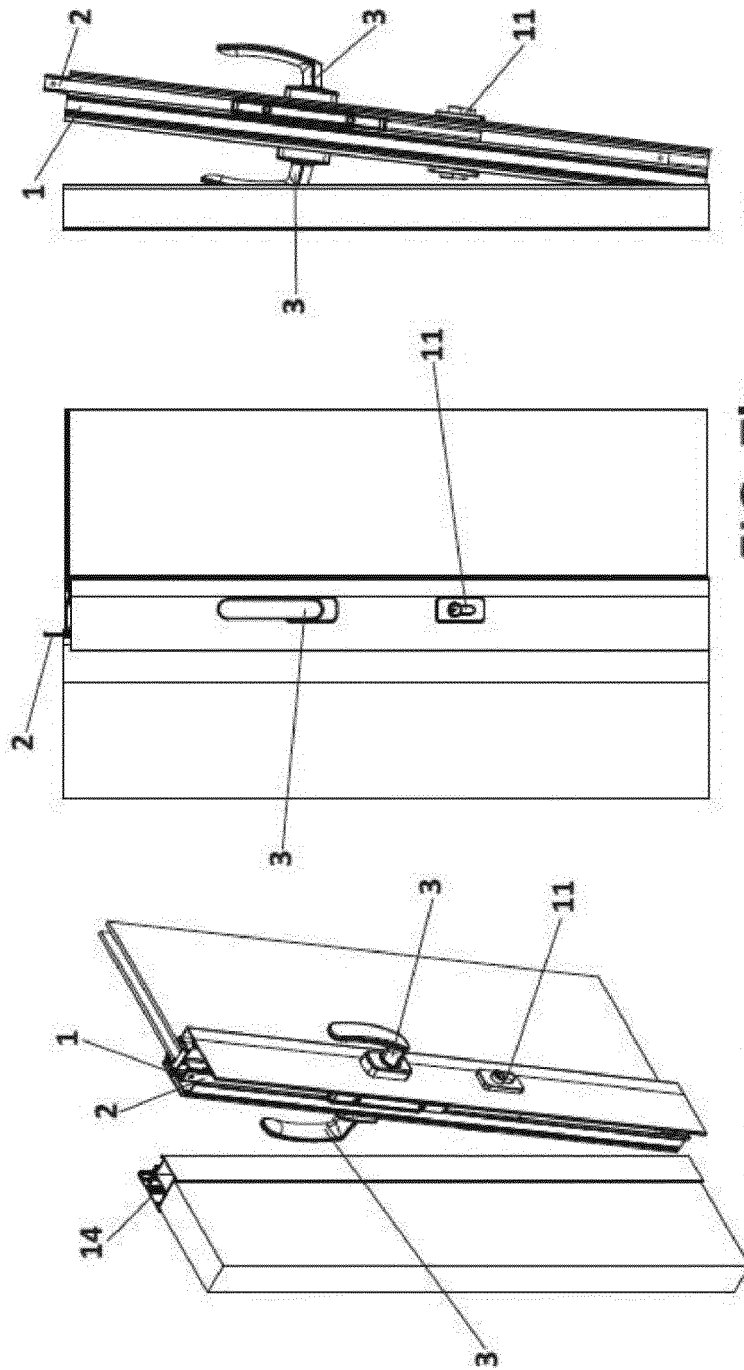


FIG. 7a

FIG. 7b

FIG. 7d

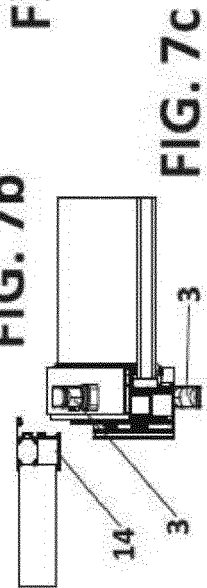


FIG. 7c



EUROPEAN SEARCH REPORT

Application Number
EP 19 38 2984

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Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	CLASSIFICATION OF THE APPLICATION (IPC)
X	EP 0 408 784 A1 (GOLDSCHMIDT BAUBESCHLAEGE [DE]) 23 January 1991 (1991-01-23) * the whole document *	1-7	INV. E05C9/06 E05B63/14
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			TECHNICAL FIELDS SEARCHED (IPC)
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The present search report has been drawn up for all claims			
Place of search The Hague		Date of completion of the search 25 March 2020	Examiner Pérez Méndez, José F
CATEGORY OF CITED DOCUMENTS X : particularly relevant if taken alone Y : particularly relevant if combined with another document of the same category A : technological background O : non-written disclosure P : intermediate document		T : theory or principle underlying the invention E : earlier patent document, but published on, or after the filing date D : document cited in the application L : document cited for other reasons & : member of the same patent family, corresponding document	

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**ANNEX TO THE EUROPEAN SEARCH REPORT
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EP 19 38 2984

5 This annex lists the patent family members relating to the patent documents cited in the above-mentioned European search report.
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25-03-2020

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