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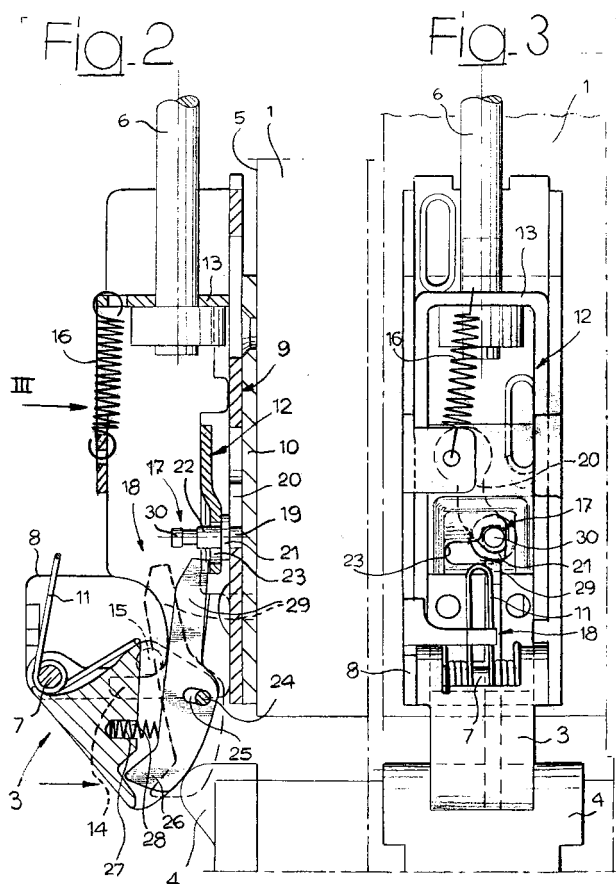
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(54) **An anti-intrusion security device for panic-opening systems for doors**

(57) A panic-opening system for doors comprises at least one spring latch (3), which is able to oscillate, by means of a slide (12) that is able to translate as a result of the displacement of a push-type control bar (2), between an extracted position, in which it engages a sta-

tionary blocking striker (4), and a retracted position for releasing the mechanism for push-opening of the door (1). An anti-intrusion security device (17, 18) prevents oscillation of the spring latch (3) towards its retracted position in the advanced condition of the slide (12).



EP 1 355 028 A2

Description

[0001] The present invention relates to panic-opening systems for doors of the type comprising a control bar, which is applied transversely to the door and which can be displaced by application of a thrust in order to release at least one spring latch, said spring latch being able to oscillate between an extracted position, in which it engages a stationary blocking striker, and a retracted position to enable push-opening of the door. For oscillation of the spring latch between the extracted position and the retracted position there is provided a slide, which can be translated, from an advanced condition to a retracted condition as a result of the displacement of said control bar.

[0002] Opening systems of this sort are exposed to the risk of intrusion, which can be perpetrated by introducing, from outside the door, some kind of tool designed to cause oscillation of the spring latch towards the retracted position, obviously without any need to operate the control bar from the inside.

[0003] The purpose of the present invention is to overcome the aforesaid drawback and to provide a panic-opening system of the type defined above designed to create an effective obstacle to any attempt at intrusion.

[0004] According to the invention, this purpose is achieved thanks to the fact that the panic-opening system comprises an anti-intrusion security device designed to block oscillation of the spring latch towards the retracted position when the slide is set in the advanced condition.

[0005] According to a preferred embodiment of the invention, the security device includes a jamming pin, which can be displaced from an operative position to an inoperative position as a result of the translation of the slide from the advanced position to the retracted position, and a striker carried by the spring latch and designed to interact with the jamming pin in the extracted position of the spring latch, where it engages the stationary striker.

[0006] The said jamming pin is conveniently mounted in a sliding way within a slot opening of the slide according to two directions, one parallel to and the other transverse to the direction of translation of the slide. In this case, the striker is made up of a rocker lever supported in a rotatable way by the spring latch about an axis parallel to the axis of oscillation of the spring latch and subjected to the action of an elastic member, which tends to press it in the direction of a first angular position, where it does not interfere with the jamming pin, the rocker lever assuming a second angular position, where it is able to interfere with the jamming pin against the action of the elastic member when the spring latch is set engaging the stationary blocking striker.

[0007] The invention will now be described in detail with reference to the attached drawings, which are provided purely by way of non-limiting example and in which:

- Figure 1 is a schematic elevation of a door provided with a panic-opening system according to the invention;
- Figure 2 is vertical cross-sectional view at an enlarged scale according to the line II-II of Figure 1, in a first condition of the opening system;
- Figure 3 is a front view according to the arrow III of Figure 2;
- Figure 4 is a view similar to the one of Figure 2 in a second condition of the opening system; and
- Figure 5 is a front view according to the arrow V of Figure 4.

[0008] With initial reference to Figure 1, the number 1 designates a door equipped with a panic-opening system including, in a way of itself generally known, a control bar 2, which can be operated by application of a thrust (in translation or in rotation) so as to actuate opening of one or more spring latches. The ensuing description relates, in particular, to a spring latch 3 set in a position corresponding to the bottom part of the door 1: it should, however, be noted that the invention can be identically applied to possible 'spring latches located in other positions, for instance, in a position corresponding to the top part of the door 1.

[0009] The spring latch 3, which is illustrated in greater detail in Figures 2 to 5, usually co-operates with a stationary blocking striker 4 provided underneath the door 1 on the inside 5. By means of an actuating tie-rod 6, which can be displaced vertically, as a result of the movement of the control bar 2, from the lowered position illustrated in Figures 2 and 3 to the raised position illustrated in Figures 4 and 5, the spring latch 3 is able to oscillate between an extracted position, in which it engages the stationary striker 4 (Figures 2 and 3), and a retracted position (Figures 4 and 5), in which the mechanism for push-opening of the door 1 is released.

[0010] In a generally known way, the spring latch 3 is able to oscillate about a horizontal transverse pin 7 carried by the side flaps 8 of a supporting element 9, which is in turn fixed, by means of a base plate 10, to the lower area of the inside edge of the door 1. A pin spring 11 tends to keep the spring latch 3 in the extracted position illustrated in Figures 2 and 3, and its rotation towards the retracted position illustrated in Figures 4 and 5 is obtained as a result of the upward translation of a slide member 12, which is able to slide in a guided way along the supporting element 9 and has a yoke 13, to which the bottom end of the actuating tie-rod 6 is anchored. The slide member 12 has on one side, or on each of its sides, a cradle part 14, in which, or in each of which, a side pin 15 of the spring latch 3 slidably engages. A tension spring 16 tends to keep the supporting member 9 in the lowered position (represented in Figures 2 and 3), to which, as has been said, there corresponds the extracted position of the spring latch 3. When the control bar 2 is actuated by application of a thrust, bringing about raising of the actuating tie-rod 6, the slide 9 moves

upwards against the action of the spring 16, bringing about, thanks to the interaction between the side pin or pins 15 and the cradle or cradles 14, rotation of the spring latch 3 about the axis of the pin 7 towards the raised position (represented in Figures 4 and 5), thus enabling push-opening of the door 1.

[0011] Provided according to the invention is an anti-intrusion security device for preventing oscillation of the spring latch 3 towards its retracted position by operating from outside with some tool so as to cause lifting of the spring latch 3 without the control bar 2 being actuated. The said security device basically comprises a mobile jamming pin 17 and a mobile striker 18 carried by the spring latch 3.

[0012] The jamming pin 17 is made with one internal end 19 slidably inserted within a curvilinear guide slit 20, shaped in the way appearing in Figures 3 and 5, for guiding the supporting element 9. The internal end 19 of the pin 17 is followed by an annular collar 21 set between the supporting element 9 and the slide member 12 and by an intermediate portion 22 inserted within a slot 23 of said slide member 12, the said intermediate portion 22 being basically L-shaped, as again may be seen from Figures 3 and 5. The pin 17 terminates with an end bar 30 having a double diameter and projecting outwards above the spring latch 3.

[0013] The striker 18 consists of a rocker lever supported in a rotatable way by the spring latch 3 about a substantially central pin 24 parallel to the oscillation pin 7 of said spring latch 3. The rocker lever 18 is mounted on the pin 24 by means of a slot 25, and its bottom branch 26 is subjected to the action of a thrust spring 27 projecting from a seat 28 of the latch spring 3. The top branch of the lever 18, designated by 29, is designed to co-operate with the jamming pin 17 according to the procedure described in detail in what follows.

[0014] In the extracted position of the spring latch 3 (represented in Figures 2 and 3) corresponding to blocking of the door 1, the jamming pin 17 is set in a lowered operative position shifted towards the right, as viewed in Figure 3. In this position, the pin 17 is located immediately above the top branch 29 of the oscillating lever 18, the bottom branch 26 of which pushes against the stationary striker 4. As a result of this contrast, the oscillating lever 18 is set in an angular position where it is rotated in a clockwise direction, as viewed in Figure 2, against the action of the spring 28, with its top branch 29 directed towards the jamming pin 17. In this condition, any possible attempt at intrusion performed from outside the door 1 in order to cause lifting of the spring latch 3 would be inevitably prevented by the contrast between the top of the upper branch 29 of the striker lever 18 and the jamming pin 17. For the pin 17 to be translated it would have to be displaced also laterally. This, however, is prevented by the L shape of the slot 23.

[0015] The only possibility for bringing about raising of the spring latch 3 consequently consists in actuating the control bar 2. In this case, by means of the tie-rod

6, raising of the slide member 12 is produced against the action of the spring 16. As a result of this raising, the jamming pin 17 is displaced upwards and, at the same time, made to translate towards the left along the slot 23 up to the position represented in Figure 4, as a result of the interaction between its internal end 19 and the guide slit 20 of the supporting element 9. Following upon this movement, the jamming pin 17 enables free displacement upwards and in a counterclockwise direction of the rocker lever 18 under the action of the spring 27, whilst the spring latch 3 rotates towards the retracted position in order to enable push-opening of the door 1 in the way illustrated in Figure 5.

[0016] Upon subsequent reclosing of the door 1, the spring latch 3 will be able to oscillate freely from the extracted position to the retracted position in order to overcome the blocking striker 4, then setting itself once again in the extracted position of engagement of said striker 4 thanks to the presence of the spring 27, which holds the oscillating lever 18 in the position in which it is rotated in the counterclockwise direction represented by a dashed line in Figure 2, where the top branch 29 does not interfere with the pin 17. After the rocker lever 18 has overcome the stationary striker 4, and the spring latch 3 has returned into its extracted position, the rocker lever 18 will set itself again in the position represented by the solid line in Figure 2. In this position, the top branch 29 is ready to interact with the jamming pin 17 as a result of the contrast of its bottom branch 26 against the stationary striker 4. During this step, the top branch 29 of the rocker lever 18 does not give rise to situations of interference with the pin 17 thanks to the possibility of the fulcrum 24 translating along the slot 25 present on the spring latch 3.

[0017] From the foregoing description, it emerges clearly that the panic-opening system according to the invention enables assurance of a high degree of security against attempts at fraudulent opening of the door from outside, with a relatively simple but at the same time particularly effective and functional device.

[0018] Of course, the details of construction and the embodiments may vary widely with respect to what is described and illustrated herein, without thereby departing from the scope of the present invention as defined in the ensuing claims.

Claims

1. A panic-opening system for doors, comprising a control bar (2), which is applied transversely to the door (1) and can be displaced by application of a thrust in order to release at least one spring latch (3), said spring latch (3) being able to oscillate between an extracted position, in which it engages a stationary blocking striker (4), and a retracted position to enable push-opening of the door (1), wherein for oscillation of said spring latch (3) from said ex-

tracted position to said retracted position there is provided a slide (12), which can be translated from an advanced condition to a retracted condition as a result of the displacement of said control bar (2), said panic-opening system being **characterized in that** it comprises an anti-intrusion security device (17, 18) designed for blocking oscillation of said spring latch (3) towards said retracted position in the advanced condition of said slide (12).

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2. The system according to Claim 1, **characterized in that** said security device comprises a jamming pin (17), which can be displaced from an operative position to an inoperative position, as a result of the translation of said slide (12) from the advanced position to the retracted position, and a striker (18) carried by said spring latch (3) and designed to interact with said jamming pin (17) in the extracted position of said spring latch (3), in which it engages said stationary blocking striker (4).

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3. The system according to Claim 2, **characterized in that** said jamming pin (17) is slidably mounted within a slot opening (23) of said slide (12) according to two directions, one parallel to and the other transverse to the direction of translation of said slide (12).

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4. The system according to Claim 2, **characterized in that** said striker is made up of a rocker lever (18) supported in a rotatable way by said spring latch (3) about an axis (24) parallel to the axis of oscillation (7) of the spring latch and subjected to the action of an elastic member (27), which tends to press said rocker lever in the direction of a first angular position, where it does not interfere with said jamming pin (17), said rocker lever (18) assuming a second angular position, where it is able to interfere with said jamming pin (17) against the action of said elastic member (27), when said spring latch (3) is set engaging said stationary blocking striker (4).

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Fig. 1

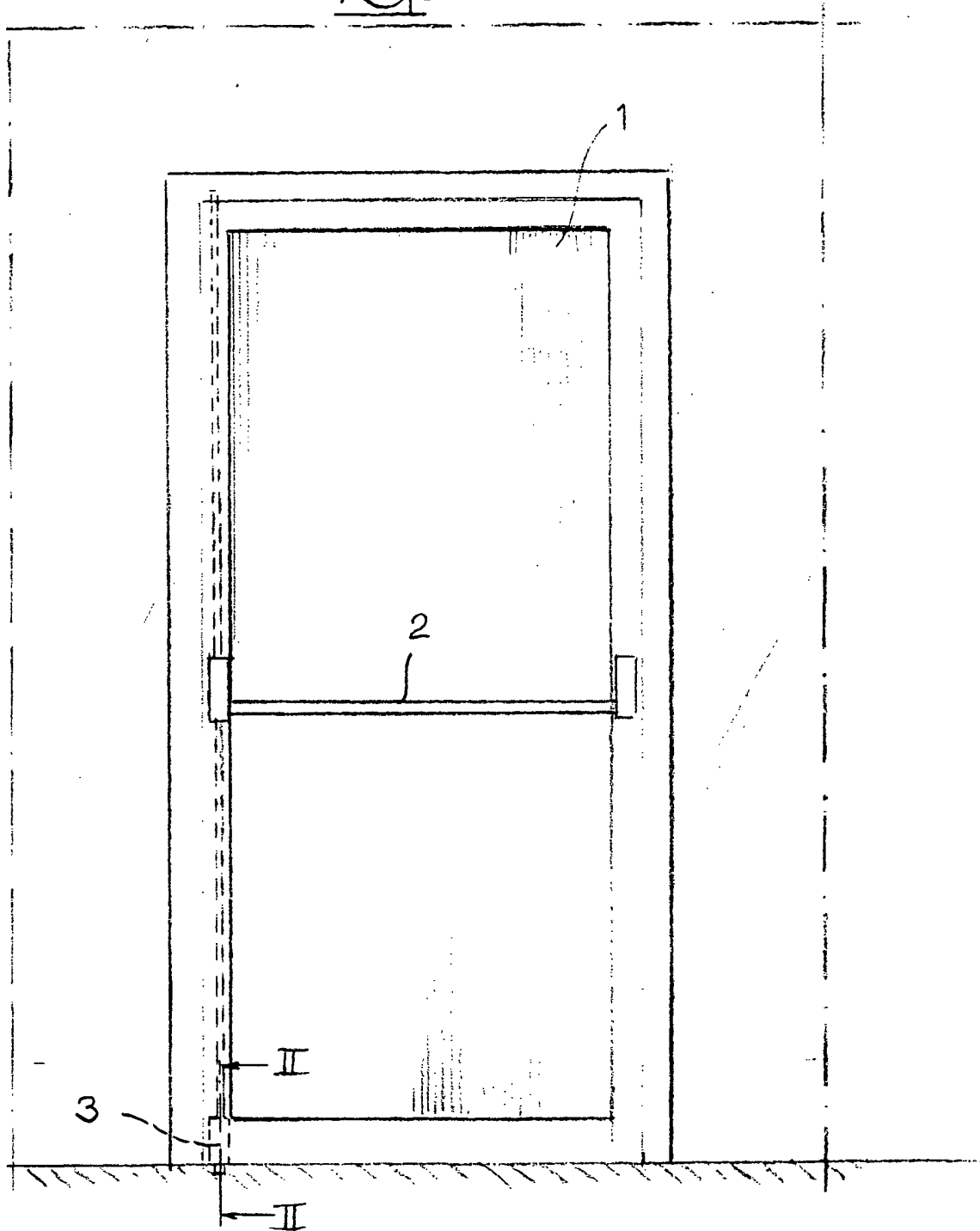


Fig. 2

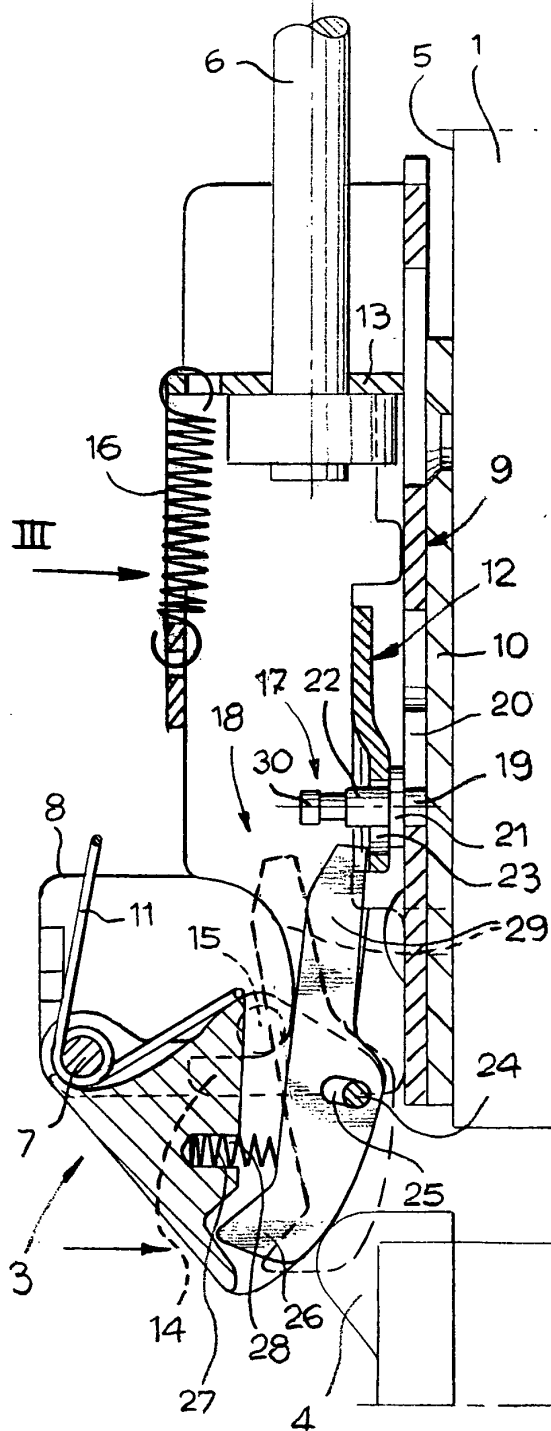


Fig. 3

