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(54) **An emergency opening device**

(57) A device for emergency opening of doors has been provided in which control means (4) associated with a frame (2) selectively allows or inhibits opening of the door. Closure means (10) associated with the frame (2) and active on the control means (4) is capable of inhibiting the control means (4) from carrying out a door-opening movement. The device further comprises safety opening means (18) to be activated on the control means (4) and capable of causing opening of the door

even under inhibition conditions by the closure means (10). For the purpose, the safety means (18) is active on a stop element (13) to cause a displacement of the latter to an operating condition in which said stop element enables movement of the control means (4). By this safety opening means (18) a quick and clearly easy opening of a door is allowed even when said door is locked by a key.

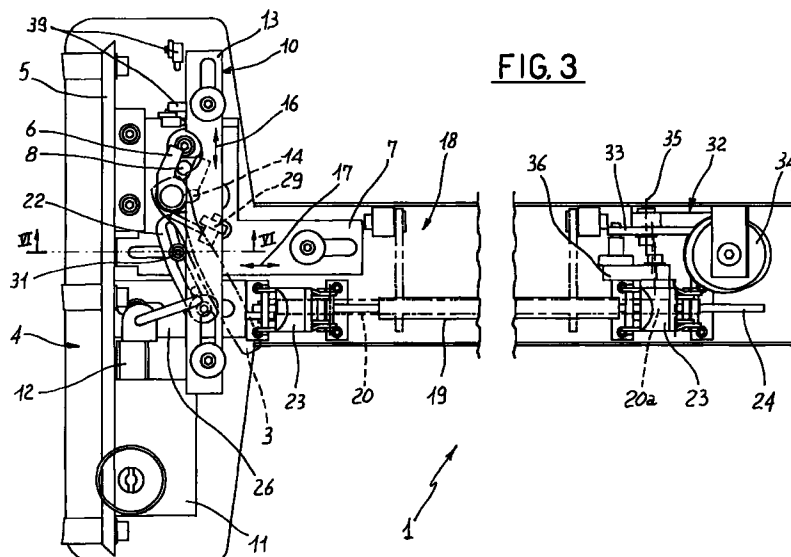


FIG. 3

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Description

[0001] The present invention relates to an emergency opening device.

[0002] In particular the inventive device can be used on doors, main gates and the like requiring a safety closure simultaneously with a panic bolt or bar for emergency opening.

[0003] It is known that there are on the market doors provided with panic devices for emergency opening. These doors consist of a common opening handle that, by a kinematic mechanism, enables a user intervening thereon and rotating it, to cause retraction of a tab projecting from one side of the door and engaged in a corresponding cavity of the door casing. In this way normal opening of the door is allowed.

[0004] Hinged on one side of the support structure there is also a panic bolt generally in the form of a bar which is disposed horizontally and extends over most of the door length.

[0005] By exerting pressure on said bar, retraction of the closing tab is caused and consequently release of the door.

[0006] This device appears to be very advantageous under emergency conditions, in that it enables a quick and clearly easy opening of the door outwardly.

[0007] Normal emergency doors are usually also provided with a lock by which locking of the door by a key can be obtained. Once this locking has been carried out, it is no longer possible to carry out opening of the door, either by means of the handle or by means of the emergency device. In fact, this lock is capable of activating a latch quite independent of the handle and the panic bar.

[0008] Alternatively, a keylock can directly intervene on the tab and inhibit movement of same.

[0009] In both situations intervention of the safety device to enable door opening is no longer possible.

[0010] It is apparent that a lock thus conceived has many drawbacks and/or operating limits.

[0011] In fact, first of all, should emergency conditions occur when the door is locked by a key, the panic bar would be useless and this would bring about a serious risk for those people that should need use of this keyed exit.

[0012] It is also apparent that closing of the door only by means of the tab does not give the door itself the necessary safety requirements towards an intrusion from the outside. In fact, even if the door is devoid of a handle for opening it from the outside, entry of undesired people by door forcing would only require displacement of the tab.

[0013] In order to obviate the above drawbacks, the Applicant has already in the past developed a safety lock for doors, provided with a normal lock and emergency handle, in which, by effect of the handle movement towards the door, release of the keylock and sliding of the latch and the tab is simultaneously

obtained and, as a result, opening of the door.

[0014] This lock comprises a main plate which can carry out a translation movement relative to the support frame of the door. The main plate is provided, at one end thereof, with latches to be engaged into respective cavities of the door casing to cause door closure.

[0015] A handle engaged by a fork thereof with a pin projecting from the main plate, is capable of causing a translation of the main plate, by its own rotation. Plate translation, depending on its direction, involves either engagement or disengagement of the latches from the door casing.

[0016] A keylock, capable of operating a stop element, allows or inhibits displacement of the main plate. In fact, when the door is locked by a key, the stop element abuts against a respective projection integral with the main plate preventing it from sliding relative to the frame. In this way the handle too, made integral with the plate by the fork and pin, is locked.

[0017] Under this situation the emergency handle, by effect of its movement against the door, causes motion of the main plate against the support frame. By effect of this translation, displacement of the projection which is in abutment against the stop element occurs. In this way the stop element and the projection operate in two separate planes and do not interfere with each other.

[0018] Movement of the emergency bar or handle not only causes displacement of the main plate, but also exerts a thrust thereon which is capable of bringing it to a condition in which disengagement of the latches from the door casing occurs.

[0019] Practically, if pressure exerted on the emergency bar goes on, the door reaches an open condition.

[0020] While this lock widely overcomes the limits of the emergency locks of known type, it however has many limits and drawbacks as well.

[0021] First of all this lock has a great bulkiness mainly connected with the arrangement of the various parts forming the different activation mechanisms.

[0022] Positioning of the main plate in side by side relationship with the stop element in one and the same plane gives the lock a great side bulkiness; in addition, the particular conformation and arrangement of the kinematic safety mechanism enabling to carry out release of the lock also gives the device a great bulkiness in height.

[0023] Furthermore, in order to enable release of the keylock by the emergency bar, a movement perpendicular to the latches of the whole main plate must be caused.

[0024] Latches under closure condition are inserted into corresponding mating seats of the door casings and consequently can only translate parallelly of the support frame. As a result of this, it is necessary to carry out disengagement of the latches from the main plate, thus weakening the safety closure, due to such sliding connection.

[0025] Therefore the present invention aims at sub-

stantially obviating the mentioned drawbacks.

[0026] It is a first object of the present invention to enable a quick panic opening even when the device is applied to pre-existing doors provided both with an armour-plated safety closure, and with an electric closure alone, or having both solutions.

[0027] It is another object of the invention to provide a device which is of easy assembling and which, at the same time, has reduced bulkiness and a good aesthetic aspect.

[0028] It is a further object of the present invention to obtain a reliable closure capable of resisting lock-picking attempts.

[0029] Further features and advantages will become more apparent from the detailed description of a preferred, non exclusive embodiment of an emergency opening device in accordance with the present invention. This description is taken hereinafter with reference to the accompanying drawings, given by way of non-limiting example, in which:

- Fig. 1 is a top view of an emergency opening device provided with control means, in a first work position adapted to enable opening of the door;
- Fig. 2 is a top view of the device referred to in Fig. 1 in which closure means inhibits movement of the control means;
- Fig. 3 is a top view of the lock shown in Fig. 1 in which safety means enables release of the closure means and opening of the door;
- Fig. 4 is an elevation view of a kinematic locking mechanism associated with the lock shown in Fig. 1;
- Fig. 5 is an elevation view of the kinematic mechanism shown in Fig. 4 under opening conditions of the door through the safety means;
- Fig. 6 is a sectional view along axis VI-VI in Fig. 3.

[0030] With reference to the drawings, an emergency opening device, to be in particular mounted on doors, main gates and the like, has been generally identified by reference numeral 1.

[0031] The device is provided with a support frame 2 which is applicable to a support structure of a door in such a manner that, on a side thereof turned towards the inside of the environment, it has a safety handle (or panic bar) and an opening handle 3.

[0032] Control means 4 is associated with the support bar and this means is movable between a first work position in which it enables a possible tab and/or latches 5 to be retracted, thereby allowing opening of the door (this situation being shown in Fig. 1) and at least one second work position in which it inhibits this opening (situation shown in Fig. 2).

[0033] Practically, the control means 4 consists of a handle 3 which is mounted on frame 2 in such a manner that it is movable in rotation about a pivot axis. This handle 3 carries a substantially U-shaped fork element 6

which is integral with a portion of said handle that, under assembling conditions of the lock, is located inside the door structure.

[0034] The control means 4 further comprises a main plate 7 susceptible of a reciprocating translation motion (arrow 17) in a sliding plane parallel to the base of the support frame 2.

[0035] Plate 7 integrally carries a given number of locking elements or latches 5, which are movable integrally with said plate between the first work position in which they enable opening of the door and the second work position in which they inhibit opening.

[0036] The main plate 7 is also provided with a pin 8 transversely emerging relative to the sliding plane and intended for being engaged into a seat 9 defined by the fork element 6.

[0037] A partial rotation of handle 3 results in a partial rotation of fork 6 causing a corresponding thrust on pin 8 capable of making the main plate 7 translate.

[0038] In more detail, when handle 3 is in a rest condition (i.e. it is in a substantially horizontal position as in Fig. 1), latches 5 are in an engagement condition with the door casing (first work position of the control means). A rotation in a clockwise direction of handle 3 and of a predetermined amount involves a translation of plate 7 in a direction adapted to cause disengagement of latches 5 from the casing (second work position of the control means; see Fig. 1).

[0039] Furthermore, the lock has closure means 10 also associated with frame 2 and movable between a first operating condition in which it enables movement of the control means 4 and at least one second operating condition in which it inhibits at least movement between the second and first work positions of the control means 4.

[0040] More specifically, the closure means 10 comprises an activation block 11, to be operated by a key for example, capable of actuating a kinematic mechanism for movement transfer 12 which acts on a stop element 13. The stop element operates at least partly in a superposed relationship with the main plate 7 and is defined by a metal strip slidable on two supports present at its ends and integral with the support frame 2.

[0041] As shown in Fig. 6, the stop element 13 can also move away from the support frame 2 under the action of a thrust in such a direction.

[0042] In order to keep it in an approached position, the pins of frame 2 guiding sliding of strip 13 are equipped with a prestressed spring element 38 generating a force directed towards frame 2.

[0043] The stop element 13 is susceptible of translation upon the action of the activation block 11 and the kinematic transfer mechanism 12 between said first operating condition, in which it enables movement of the control means 4, and the second operating condition in which it inhibits it. In order to be able to selectively obtain locking of the device (lock by a key), handle 3 of the control means 4 is provided with a projection 14,

whereas the stop element 13 has a respective recess 15 adapted to enable movement of the handle projection 14 when the closure means 10 is in its first operating condition. Practically, in such a condition, projection 14 and recess 15 of the stop element 13 are disposed in side by side relationship and a movement of handle 3 followed, as a result, by movement of projection 14, does not give rise to interferences with strip 13 (Fig. 1).

[0044] After translation of the stop element 13 in a transverse direction 16 relative to the movement direction 17 of the main plate 7 has occurred and recess 15 has been, as a result, moved away from the region in which there is the projection 14, movement of handle 3 is inhibited; in fact, under this situation (second operating condition of the closure means shown in Fig. 2) projection 14 abuts against strip 13 and the retraction movement of latch 5 is inhibited.

[0045] This work condition of the door can be obtained by locking the same by a key.

[0046] The device for emergency opening of doors further comprises safety opening means 18 mounted on frame 2 as well and active on the control means 4 in order to cause displacement thereof from the second to the first work conditions.

[0047] The safety means 18 is capable of enabling displacement of the control means 4 both when the closure means 10 is in the first operating condition, and as a result the door is released, and when this means is in the second operating condition corresponding to a keyed lock.

[0048] Advantageously, in fact, the safety means 18 is active on the stop element 13 in order to cause displacement thereof from the first operating condition to a third operating condition or, alternatively, from the second operating condition to the third operating condition. When the stop element 13 is in this third operating condition, the closure means 10 is deactivated thereby enabling movement of latches 5.

[0049] Displacement between the two first operating conditions takes place in one and the same operating plane, whereas passage to the third operating condition involves a displacement of strip 13 in a transverse direction, generally perpendicularly of the plane itself.

[0050] For carrying out these operations the safety means 18 is provided with an actuating element 19 which is movable between a rest position and a work position in which it simultaneously causes movement of the stop element 13 towards the third operating condition and movement of the control means 4 from the second to the first work conditions.

[0051] This actuating element 19 is hinged on the support frame 2 and comprises a safety handle, defined by a pressure bar for example, which is disposed substantially horizontal and external to the door structure. The outer bar is rigidly connected to at least one further bar 20 internal of the door support structure and having an axis parallel to the hinging axis. This bar 20 internal to the door structure, is movable with a substantially rota-

tory motion about the hinging axis.

[0052] The safety means 18 further comprises a kinematic intermediate-control mechanism 21 capable of transmitting displacement of the actuating element 19 to a pusher assembly 22 which is directly active on the stop element 13, as well as on the control means 4.

[0053] The kinematic intermediate-control mechanism 21 consists of at least one, and preferably two, oscillating elements 37 which are substantially identical and are disposed at the ends 20a of the actuating-element bar 20.

[0054] The oscillating elements 37 have a rest surface 23 adapted to receive forces transmitted by the actuating element 19, are substantially L-shaped elements and are hinged on the support frame 2 around an axis perpendicular to the "L" itself and passing through the meeting vertex of sides 37a.

[0055] The actuating element 19 acts on surface 23 and more specifically at a first end 37b of one side of said "L"; on the contrary, hinged on the end 37a of the other side is an oscillating bar 24.

[0056] Elements 37 receive movement from the actuating element 19 along a first direction (substantially perpendicular to the door plane) and, instant by instant, transfer this movement to bar 24 in a transverse direction (substantially parallel to the actuating bar).

[0057] Therefore, the oscillating bar 24 has, at a first end thereof, a first hinging point on one of the L-shaped elements 37 and, on a second end thereof, a second hinging point at the second L-shaped element.

[0058] By exerting pressure on the bar of the actuating element 19, a rotatory motion is generated on the L-shaped element 37 bringing about a consequent dragging along of the oscillating bar 24 which is moved in a first direction in case of lowering of the L-shaped elements, in the opposite direction in case of raising of same.

[0059] In addition, at an end region of the oscillating bar 24 there is a pin 25 intended for engagement into a corresponding guide formed in a plate-like element 26.

[0060] The plate-like element 26 is in engagement with the support frame 2 by means of guides enabling a translation thereof in a plane corresponding to the translation plane (or work plane) of the main plate 7 in substantially parallel directions.

[0061] Movement of the oscillating bar 24 is converted into a corresponding translation of the plate-like element 26. Practically, the kinematic intermediate-control mechanism 21 converts the substantially rotatory motion of the actuating element 19 into a substantially translational motion imparted to the plate-like element 26.

[0062] Actually, the admitted displacement as regards the actuating element 19 is a rotation about the hinging axis through a predetermined number of degrees in the two ways; corresponding to this motion of the actuating element 19 there is a reciprocating translational motion of the plate-like element 26.

[0063] The pusher assembly 22 on which the kinematic intermediate-control mechanism 21 is active, is hinged on frame 2 and is movable relative to the latter about the hinging axis. Coupling between the plate-like element 26 and pusher assembly 22 is obtained by a pin 27 emerging in cantilevered fashion from the plate-like element 26 and engaged in a respective slot 28 provided in the pusher assembly 22. Pin 27 and slot 28 are such arranged that the reciprocating translational motion of the plate-like element 26 causes a corresponding oscillatory rotational motion of the pusher assembly 22. Associated with the pusher assembly at a greater distance from the rotation axis thereof than the distance of pin 27 of the plate-like element 26, is a guide element 29 active on the stop element 13 of the control means 4 and capable of converting a displacement thereof in a plane parallel to the translation plane of the plate-like element 26 into a displacement of the stop element 13 in a substantially perpendicular transverse direction.

[0064] The guide element 29 consists of a metal roller for example, freely mounted on a pin 30 of the pusher assembly 22 and provided with a rotation axis parallel to the translation plane of the plate-like element 26 and also parallel to the strip defining the stop element 13.

[0065] A translation of the plate-like element 26, produced by pressure exerted on the actuating bar 19 causes a rotation of the pusher assembly 22 carrying the metal roller, about the hinging axis of the assembly itself. Said roller, during its movement, abuts against the stop element 13 urging it to move upwardly away from its lying plane (see Fig. 6).

[0066] Practically, once the translational movement of plate 26 has been completed, the roller is under the stop element 13 supporting it in a raised position.

[0067] There is then a connection between the pusher assembly 22 and the main plate 7. This connection is obtained by use of an interconnecting body 31, provided with a first portion 31a slidably in engagement with the pusher assembly 22 and a second portion 31b slidably in engagement with the control means 4 and in particular the main plate 7.

[0068] This interconnecting body 31 aims at transferring motion of the plate-like element 26 to the main plate 7 bringing the control means, and as a result the main plate 7, latches 5 and handle 3 from the second operating condition to the first operating condition enabling opening of the door.

[0069] Taken as a whole, the device is of reduced sizes in that advantageously the main plate 7 and plate-like element 26 are disposed in side by side relationship in the same work plane and substantially move along parallel directions.

[0070] The stop element 13, as already specified, is in superposed relationship relative to the main plate 7 and the plate-like element 26.

[0071] The kinematic intermediate-control mechanism 21 operates at a volume defined under the actuating bar

19, whereas the pusher assembly 22 operates above both the plate-like element 26 and the main plate 7 and is capable of reaching an interference condition with the stop element 13.

[0072] Handle 3 too, together with projection 12 and the fork element are advantageously positioned above the plane defined by the main plate 7.

[0073] The lock is also equipped with means 32 for locking the safety means 18, which is capable of inhibiting operation of the actuating bar 19.

[0074] Practically the locking means 32 has a lever 33 oscillatably connected to frame 2 and provided with a first portion 33a connected to the safety means 18.

[0075] Force-generating means 34 preferably consisting of an electromagnet to be activated by a control circuitry, causes an action on a second portion 33b of lever 33 defined by a circular plate.

[0076] Advantageously, the second portion 33b is at a greater distance than the first portion 33a from the oscillation axis 35 of lever 33.

[0077] As a result of the above, the torque generated on axis 35 by an action of the force-generating means 34 can be only overcome by a corresponding force applied to the first portion 33a of greater intensity and strictly modulus-linked to the distances from the oscillation axis 35.

[0078] Connection between the first portion 33a of lever 33 and the safety means 18 takes place at one of the L-shaped elements 37. A connecting rod 36 has, at one end 36a thereof, an emerging pin guided by a shaped seat formed in the first portion 33a of lever 33.

[0079] The connecting rod is then hinged, at the other end 33b thereof, on the "L" side on which the bar of the actuating element 19 rests.

[0080] Clearly, in order that an increasingly growing force applied by the force-generating means 34 can be overcome, a correspondingly growing action on the actuating element 19 is required.

[0081] By adjusting voltage at the ends of an electromagnet generating an attraction on the circular plate forming the second portion 33b of lever 33, the attraction force can be caused to vary at will and it can be brought from a zero value to such a value that movement of the L-shaped element 37 caused by an action on the actuating element 19 is prevented.

[0082] Finally, the device is provided with detecting means 39 capable of establishing the position both of the control means 4 and the closure means 10.

[0083] The invention achieves important advantages.

[0084] First of all the device being the object of the present invention, in addition to normal use, through the panic bar enables opening of a door both with an armour-plated safety closure, and with the electric closure alone, or with both of them.

[0085] In addition the lock can be applied to previously existing doors, by suitably engaging the support frame to said doors.

[0086] The device is of easy assembling and has very

reduced bulkiness.

[0087] The presence of a kinematic mechanism for locking the panic handle enables operation of the safety means or inhibition of same.

[0088] Also advantageous is the possibility of adjusting the force to be applied to the actuating bar to enable release of the lock. In this way a normal pressure on the panic bar does not enable opening of the door, whereas a strong action of a user due to emergency causes (a panic situation or a too crowded environment) enables release of the closure means.

[0089] In addition, the operating condition (closure, locking by a key, opening) of the lock can be monitored at a distance too through optical and/or sound signalling.

Claims

1. An emergency opening device comprising:

- a support frame (2);
- control means (4) associated with the support frame (2) and movable between a first work position, in which it enables opening of the door, and at least one second work position, in which it inhibits opening thereof;
- closure means (10) associated with the frame (2) and having a stop element (13) susceptible of displacement between a first operating condition, in which it enables movement of the control means (4), and at least one second operating condition, in which it inhibits at least movement of the control means (4) from the second to the first work positions, and
- safety opening means (18) associated with the frame (2) and active on the control means (4) to cause displacement of the latter at least from the second to the first work position, said safety means (18) being capable of allowing displacement of the control means (4) both when the closure means (10) is in the first operating condition and when it is in the second operating condition, characterized in that the safety means (18) is active on the stop element (13) to cause a displacement of same from the first operating condition or the second operating condition to a third operating condition in which the stop element (13) enables movement of the control means (4).

2. A device as claimed in claim 1, characterized in that the stop element (13), preferably in the form of a strip, is susceptible of translation in one and the same operating plane, said stop element (13) being movable either between the first and third operating conditions or between the second and third operating conditions in a direction transverse to the operating plane.

3. A device as claimed in claim 1, characterized in that the safety opening means (18) comprises an actuating element (19) movable between a rest position and a work position, displacement of the actuating element (19) simultaneously causing movement of the stop element (13) towards the third operating condition and movement of the control means (4) from the second to the first work positions.

4. A device as claimed in claim 3, characterized in that said actuating element (19) is hinged on the support frame (2) and has at least one bar (20) the axis of which is parallel to the hinging axis, said bar (20) being movable with a substantially rotatory motion about said axis.

5. A device as claimed in claim 3, characterized in that the safety opening means (18) further comprises a pusher assembly (22) and a kinematic intermediate-control mechanism (21) transmitting displacement of the actuating element (19) to the pusher assembly (22).

6. A device as claimed in claim 5, characterized in that said kinematic intermediate-control mechanism (21) comprises a plate-like element (26), and in that said kinematic intermediate-control mechanism (21) converts the substantially rotatory motion of the actuating element (19) into a substantially translational motion of the plate-like element (21).

7. A device as claimed in claim 5, characterized in that the pusher assembly (22) is hinged on the frame (2) and is movable relative to the latter about a hinge axis, said pusher assembly (22) being activated by the kinematic intermediate-control mechanism (21) and being active on the stop element (13).

8. A device as claimed in claim 6, characterized in that the plate-like element (26) has a pin (27) emerging therefrom in cantilevered fashion and slidably engaged in a respective slot (28) provided in the pusher assembly (22), said plate-like element (26) by its reciprocating translational motion causing a corresponding oscillatory rotational motion of the pusher assembly (22).

9. A device as claimed in claim 5, characterized in that it comprises an interconnecting body (31) provided with a first portion (31a) slidably in engagement with the pusher assembly (22) and a second portion (31b) slidably in engagement with the control means (4).

10. A device as claimed in claim 6, characterized in that the pusher assembly (22) further comprises a guide element (29) active on the stop element (13) of the control means (4) and capable of converting a dis-

placement thereof in a plane parallel to a translation plane of the plate-like element into a displacement of the stop element (13) in a preferably perpendicular, transverse direction.

11. A device as claimed in claim 10, characterized in that the pusher assembly comprises a pin and in that the guide element (29) is defined by a roller mounted on the pin of the pusher assembly (22), said roller (29) having a rotation axis parallel to the translation plane of the plate-like element (26).

12. A device as claimed in claims 7 and 9, characterized in that the pin (27) of the plate-like element (26) is slidably in engagement with the pusher assembly (22) at a lower distance from the hinging axis than the first portion (31a) of the interconnecting body (31).

13. A device as claimed in claim 1, characterized in that the control means (4) comprises:

- a main plate (7) susceptible of translation with a reciprocating motion relative to the support frame (2) and provided with a transversely emerging pin (8),
- a predetermined number of locking elements (5) integral with the plate (7) and movable therewith between a first work position in which said elements enable opening of the door and a second work position in which they inhibit opening, and
- a handle (3) movable in rotation relative to the frame (2) and provided with a fork element (6) joined to the pin (8) of the main plate (7) for operating, through its rotation, a translation of the plate (7), moving the control means (4) between the first and second work positions.

14. A device as claimed in claim 13, characterized in that the handle (3) further has a projection (14) capable of inhibiting the translational motion of the main plate (7) when the closure means (10) is in the second operating condition.

15. A device as claimed in claim 1, characterized in that the closure means (10) comprises:

- a motion-transferring kinematic mechanism (12) active on the stop element (13),
- an activation block (11) capable of activating the kinematic transferring mechanism (12) and preferably to be operated by a key.

16. A device as claimed in claim 5, characterized in that the kinematic intermediate-control mechanism (21) comprises an oscillating bar (24) and at least one oscillating element (37) capable of receiving motion

from the actuating element (19) along one direction and, instant by instant, transferring it to the bar (24) in a direction transverse to said one direction.

17. A device as claimed in claim 13, characterized in that the stop element (13) operates at least partly in a superposed relationship relative to the main plate (7).

18. A device as claimed in claims 6 and 13, characterized in that the main plate (7) and the plate-like element (26) are disposed in side by side relationship and move in one and the same work plane, preferably in parallel ways.

19. A device as claimed in claim 14, characterized in that the stop element has a recess (15) adapted to enable movement of the handle projection (14) when the closure means (10) is in the first operating condition.

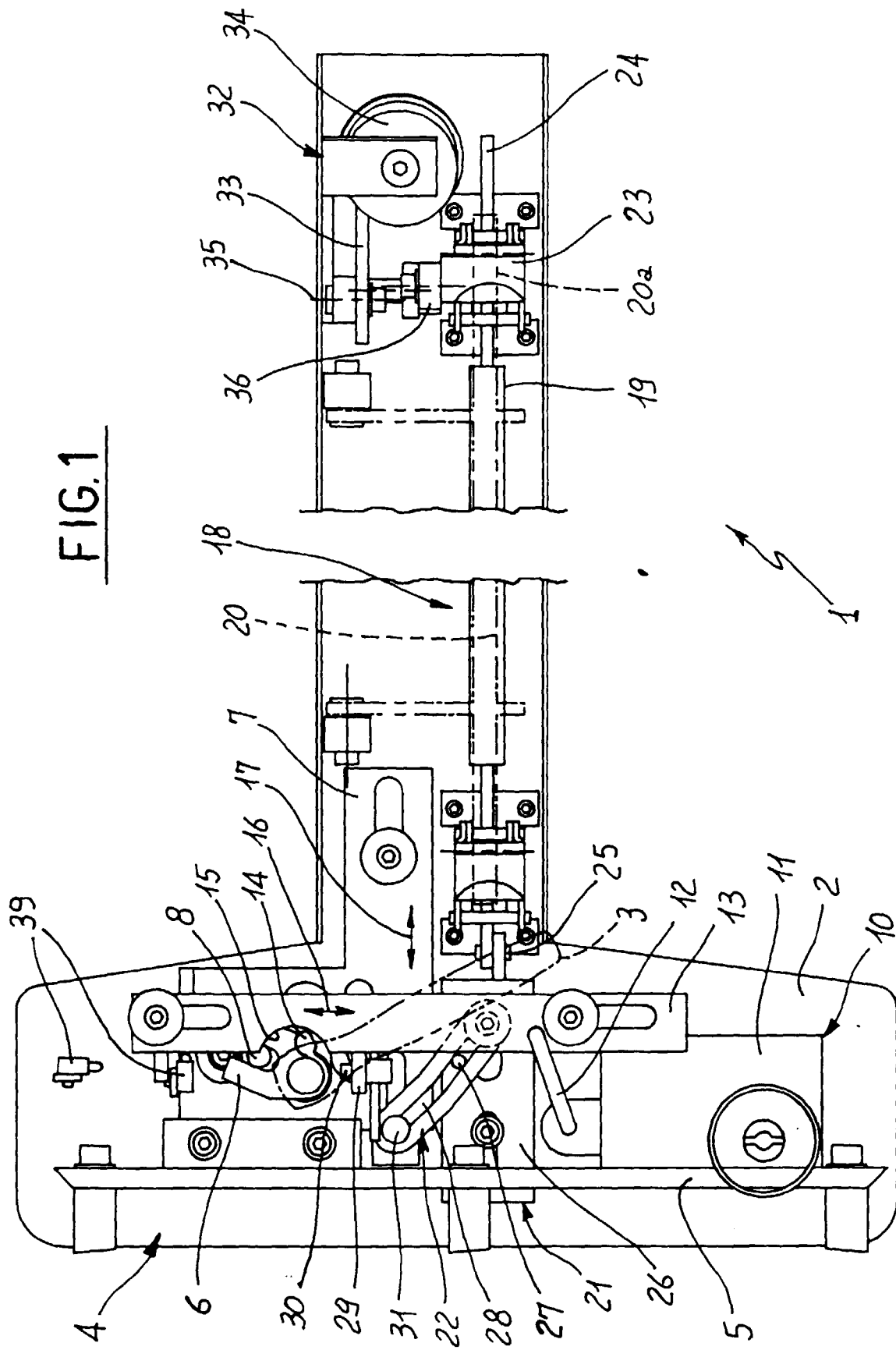
20. A device as claimed in claim 19, characterized in that the stop element (13) is susceptible of translation in a transverse direction (16) relative to a movement direction (17) of the main plate (7) to bring the closure means (10) either from the first to the second operating conditions or from the second to the first operating conditions.

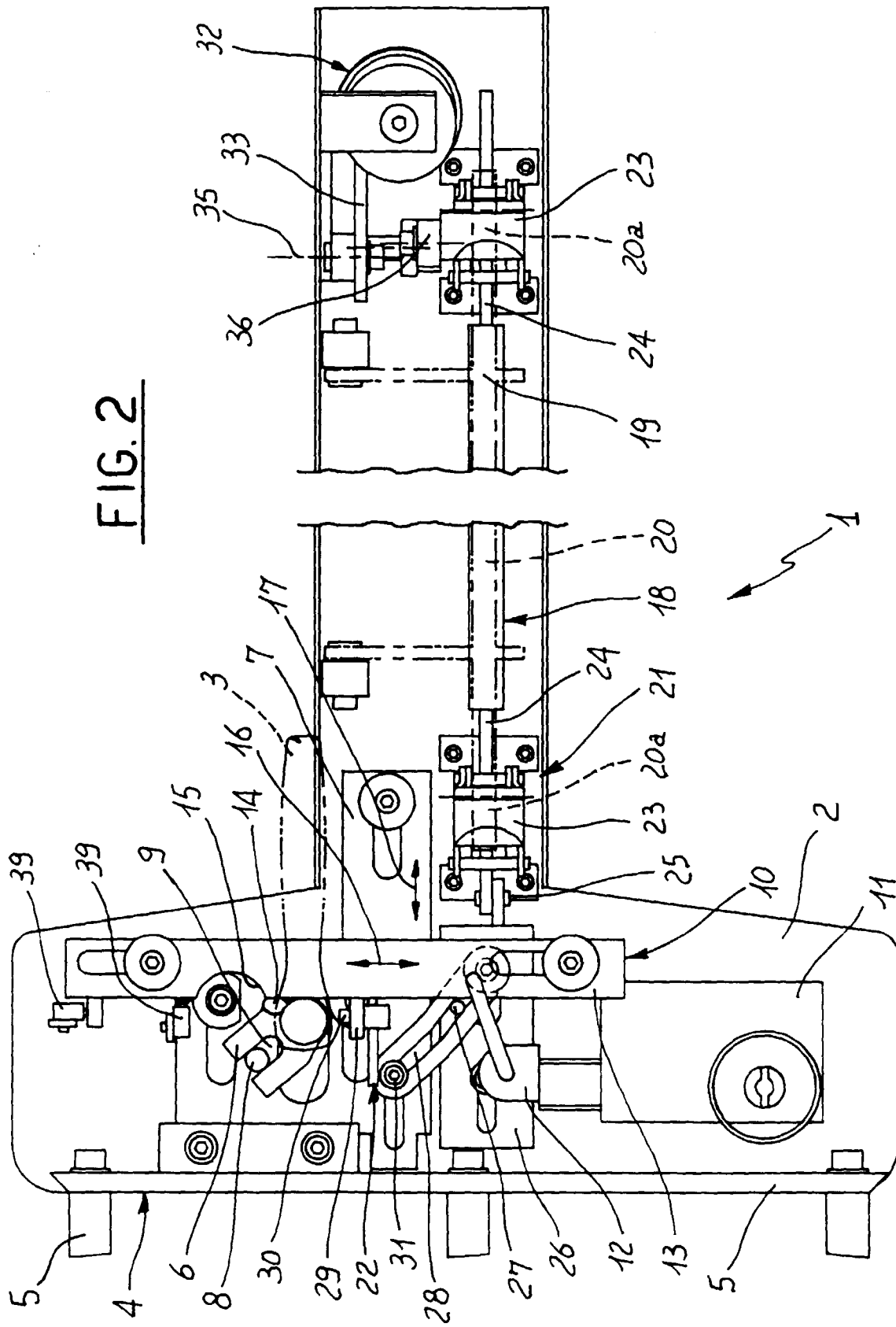
21. A device as claimed in claim 1, characterized in that it further comprises locking means (32) provided with a lever (33) oscillatably in engagement with the frame (2) and active on the safety opening means (8), and means (34) for generating a force applied to said lever (33).

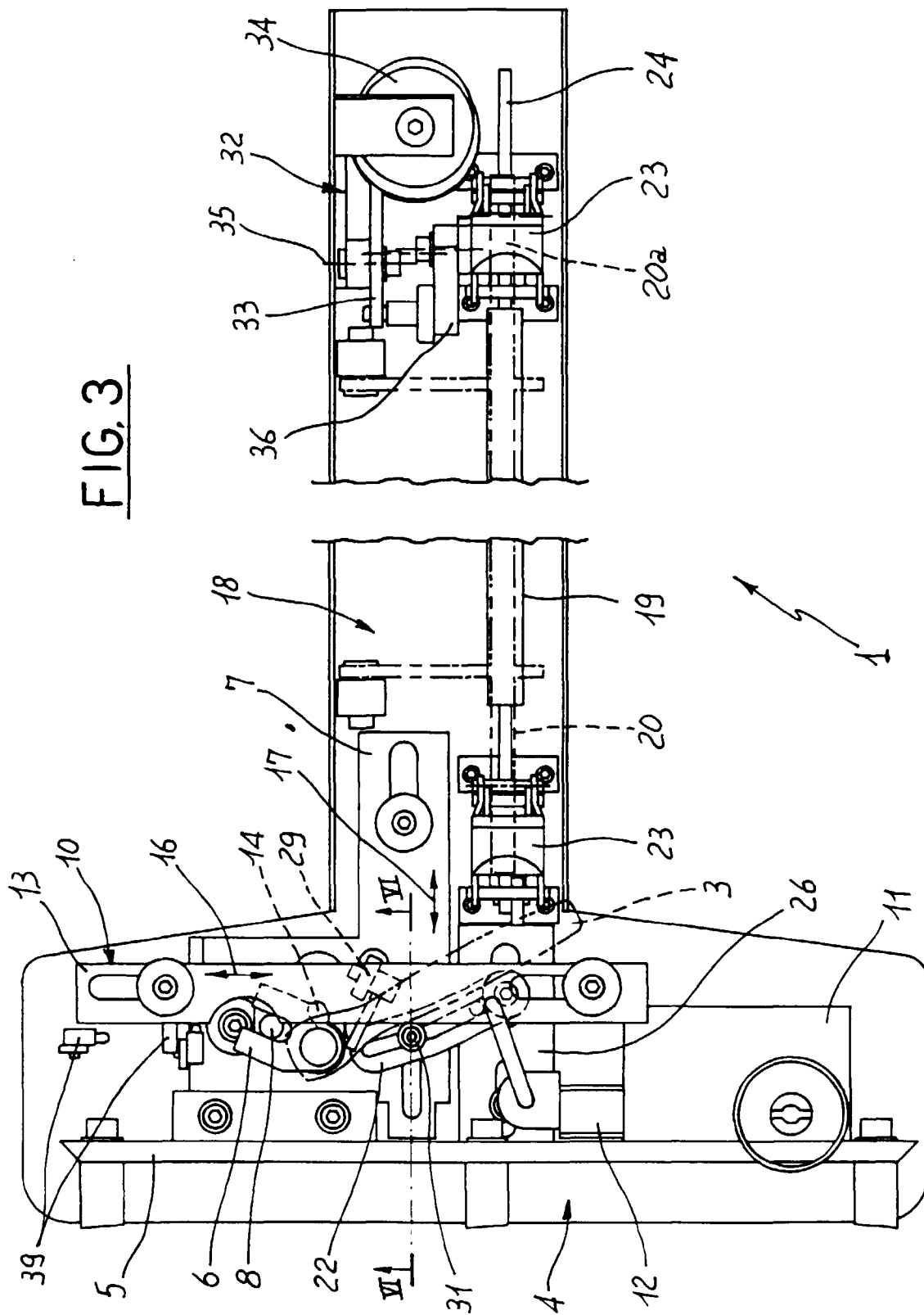
22. A device as claimed in claim 21, characterized in that the lever (33) has a first portion (33a) active on the safety opening means (18) and a second portion (33b) which is acted upon by the generating means (34), said second portion (33b) being at a greater distance than the first portion (33a) from an oscillation axis (35) of the lever (33).

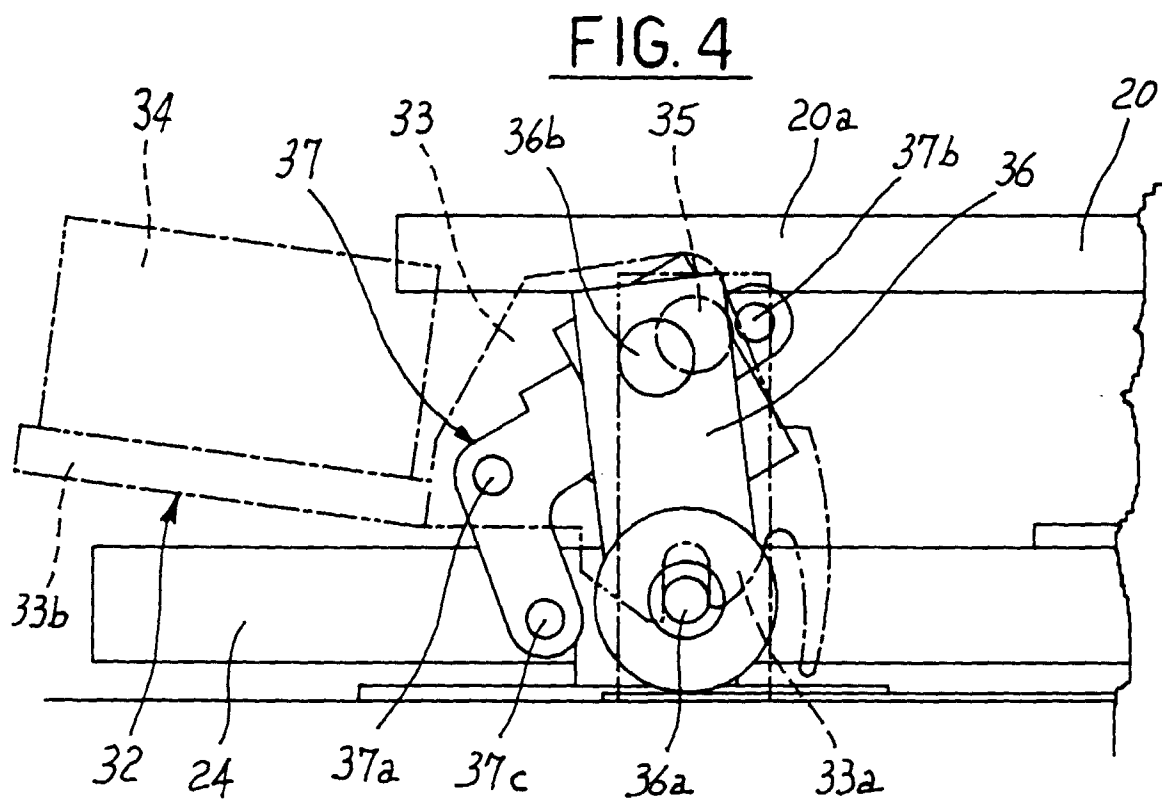
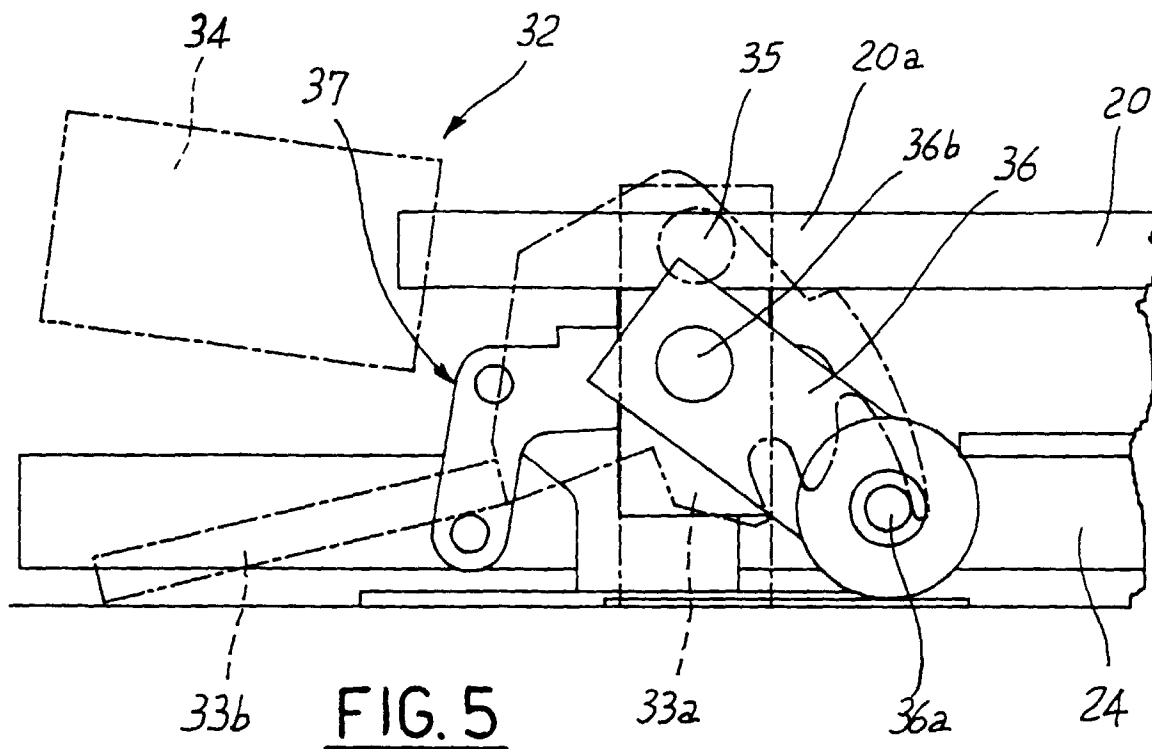
23. A device as claimed in claim 22, characterized in that said force-generating means (34) comprises an electromagnet which is selectively active on a circular plate exhibited by the second portion (33b) of the lever (33).

24. A device as claimed in claim 23, characterized in that the force generated by the electromagnet is adjustable as regards its intensity from a zero value to a value adapted to lock the safety means (18).











European Patent
Office

EUROPEAN SEARCH REPORT

Application Number
EP 98 83 0285

DOCUMENTS CONSIDERED TO BE RELEVANT			
Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	CLASSIFICATION OF THE APPLICATION (Int.Cl.6)
X	US 2 531 848 A (HENKEL) 28 November 1950 * the whole document *	1,3,13,15	E05B65/10 E05B63/16
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