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(54) **Panic-opening device**

(57) The device (1) is applied to a safety door and comprises a first body (2) with a central part (3) and two lateral parts (4 and 5) one of which houses a mechanism (12) which comprises: a bar (13) supporting a spring latch (14) and which moves between a locking position in which the spring latch (14) engages a seat (29) defined in a second body (30) supported by the doorpost and a release position in which the spring latch (14) is free to disengage from the seat (29); a lever (27) rotating be-

tween a first position in which it locates on the spring latch (14) to maintain the latter in the locking position and a second position in which it is disengaged, permitting the spring latch (14), by means of a simple pressure on the door, to retract towards the inside of the first lateral part (4) and disengage from the seat (29); and a control bar (44) supported by the central part (3) and suitable, if pushed, for acting on the lever (27) to determine rotation of the latter from the first to the second position.

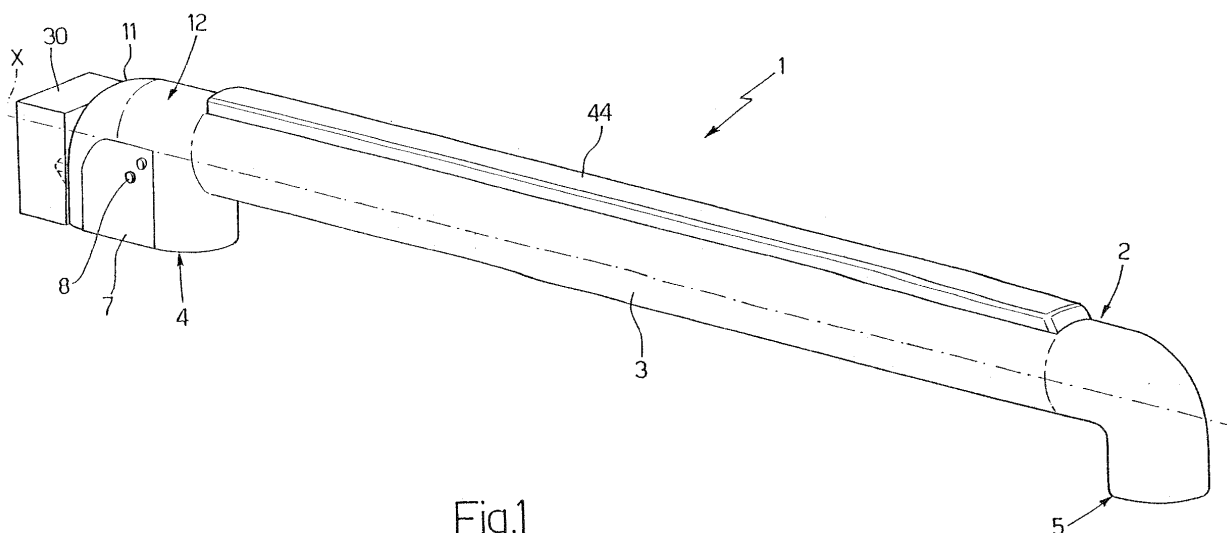


Fig.1

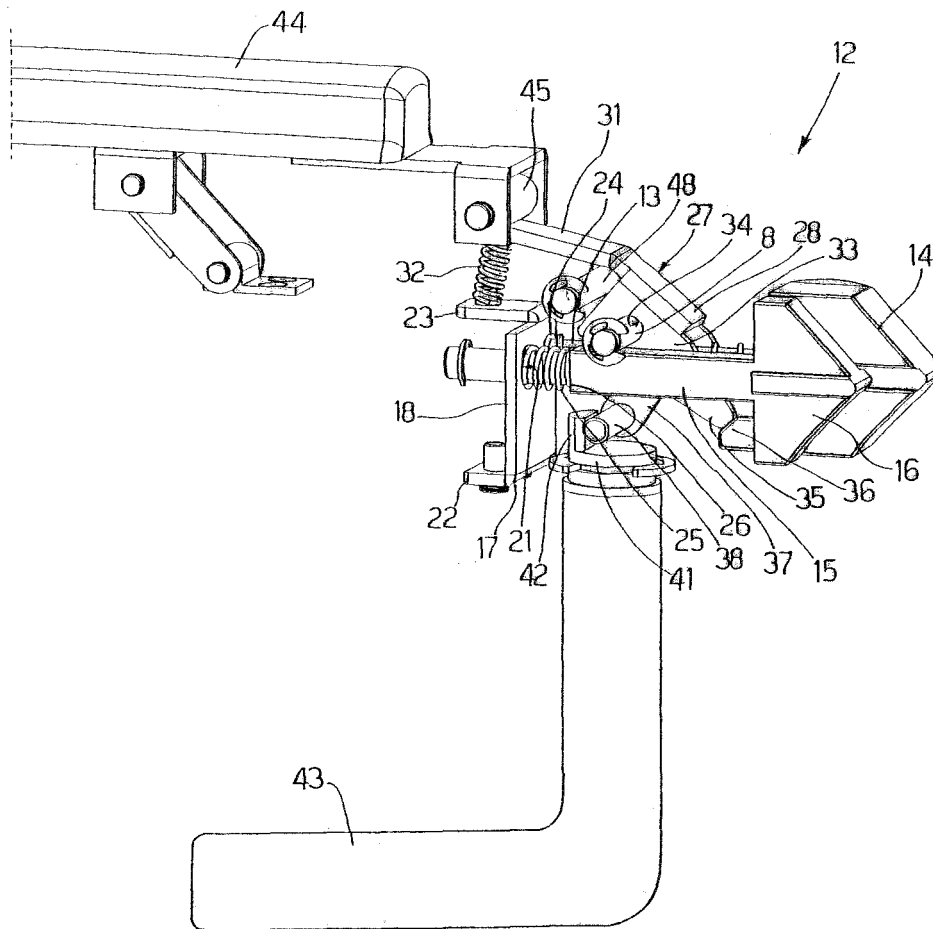


Fig.4

Description

[0001] The present invention relates to a panic-opening device.

[0002] As is known, panic-opening devices are used for rapid opening of safety doors in places such as supermarkets, public offices etc.. The current panic-opening devices comprise a spring latch suitable for engaging a respective seat obtained on the doorpost of the safety door and a bar which is moved by the action of the user and is suitable for releasing the spring latch so as to disengage the seat and permit opening of the door. It is known that said panic-opening devices are used to rapidly evacuate people from a place in the event of fire, for example. It is obvious that in the case of such an event, people crowd towards the safety door often in a state of confusion and therefore there are people who push both the bar and the door. When the bar and the door are pressed simultaneously a wall of the spring latch rests against a corresponding wall of the above-mentioned seat and this obstructs release of the spring latch from its seat; said release can be obtained by a high force which overcomes the contact between spring latch and seat.

[0003] The object of the present invention consists in providing a panic-opening device which is free from the above-mentioned drawbacks, i.e. which permits rapid and effective opening of the door on which it is applied even by pushing the safety door on which the panic-opening device is installed.

[0004] According to the present invention a panic-opening device is provided applied to a safety door comprising a first U-shaped body and having a central part with horizontal longitudinal axis parallel to the plane defined by said door and two lateral parts bent square to said central part and fixed to said door, a first of said lateral parts housing inside it a mechanism which determines closing and opening of said door, characterised in that said mechanism comprises:

a first bar which at one first end supports a first spring latch and which moves between a locking position in which said first spring latch on the outside of said first lateral part engages a seat defined in a second body supported by the doorpost of said door and a release position in which said first spring latch is free to disengage from said seat;

a lever rotating around a first pin between a first position in which with a first appendix it rests against a corresponding appendix of said first spring latch to keep said first spring latch in the locked position and a second position in which said first appendix is disengaged from said appendix of said first spring latch, allowing the latter, by means of a simple pressure on said door, to retract towards the inside of said first lateral part and disengage from said seat; and
a control bar supported by said central part and suitable, if pushed, for acting with its appendix on said

lever to determine the rotation of said lever from the first to the second position.

[0005] The present invention will now be described with reference to the accompanying drawings which illustrate a preferred embodiment thereof and in which:

figure 1 is a perspective view of a panic-opening device produced according to the precepts of the present invention;
figures 2 and 3 are plan and lateral views respectively of a part of the panic-opening device of figure 1;
figures 4, 5 and 6 are perspective views of a mechanism of the panic-opening device of figure 1 in three different operating positions;
figure 7 is a lateral view with parts removed of the mechanism illustrated in figure 6; and
figure 8 is a perspective view of an element of the mechanism of figure 6.

[0006] With reference to figure 1, a panic-opening device applied to a safety door not illustrated is indicated overall by 1. The panic-opening device 1 comprises a U-shaped body 2 and has a central part 3 with horizontal longitudinal axis X parallel to the plane defined by the door not illustrated and two end lateral parts 4 and 5 bent square to the central part 3 and fixed to the door not illustrated by means of screws not illustrated. The end part 4 has a rear wall 6 fixed to the door, two walls 7, upper and lower respectively, square to the rear wall 6 and supporting a vertical pin 8, and a lateral wall 11 defined on a plane square to the walls 7 and to the rear wall 6. Inside the part 4 a mechanism 12 is installed which determines closing and opening of the door not illustrated. It should be noted that, for a better understanding of the mechanism 12, in figures 1, 2 and 3 the part 4 is drawn as if it were made of transparent material.

[0007] With reference to the figures from 2 to 7 the mechanism 12 comprises:

a horizontal bar 13 which moves along its own longitudinal axis and having one end which extends, through a slit 19 (figure 3) made in the wall 11, towards the outside of the part 4 and which supports a spring latch 14;

a horizontal bar 15 parallel to the bar 13, which moves along its own longitudinal axis and has one end which extends, through a second slit 20 (figure 3) made in the wall 11, towards the outside of the part 4 and which supports a spring latch 16;

a bracket 17 inside the part 4 and having a central wall 18 in which two through holes 21 are provided along which the bars 13 and 15 can run, an end tab 22 bent for fastening by means of screws to the rear wall 6 of the part 4, and a tab 23, opposite the tab 22, used for the purposes that will be seen below;
a helical spring 24 mounted on the bar 13 between the wall 18 and the spring latch 14 and suitable for

countering the movement of the spring latch 14 towards the wall 18;
 a helical spring 25 mounted on the bar 15 between the wall 18 and a shoulder 26 obtained on the bar 15 and suitable for countering the movement of the spring latch 16 towards the wall 18; and
 a lever 27 installed in the part 4 and revolving around the pin 8 between a position in which it retains the spring latch 14 outside the part 4 and in particular inside a seat 29 defined in a body 30 supported by a doorpost not illustrated of the safety door and a position in which the spring latch 14 is free to run towards the wall 18 against the action of the spring 24.

[0008] With reference to the figures 7 and 8, the lever 27 is defined by a sheet bent in a U-shape and having:

a wall 28 from which an appendix 31 originates substantially parallel to and overlapping the wall 23 of the bracket 17 and between which a preloaded spring 32 is positioned;
 two walls 33 parallel to each other and square to the wall 28, having a respective through hole 34 engaged by the pin 8;
 an appendix 35 which extends from a respective wall 33 towards the spring latch 14 and suitable for defining a rebate on a corresponding appendix 36 extending towards the inside of the part 4 from the spring latch 14; and
 an appendix 37 which extends from a first wall 33 towards the rear wall 6 of the part 4 and which supports a pin 38.

[0009] With reference to the figures from 2 to 5, inside the part 4 the rear part of the latter supports a disc 41 rotating due to the action of a handle 43 illustrated by a broken line in figure 4 and suitable by means of its appendix 42 for coming into contact with the pin 38 determining rotation of the lever 27. Both the spring latches 14 and 16 have a triangular section head. The panic-opening device 1 furthermore comprises a control bar 44 supported by the central part 3 and suitable for translating due to the action of the user towards the inside of the part 3 so as to press with its appendix 45, against the action of the spring 32, the appendix 31 towards the appendix 23 thus determining rotation of the lever 27 and permitting opening of the safety door.

[0010] With reference to figures 3 and 7, a pin 46 originates from the bar 15 in the direction of the bar 13 but without coming into contact with it; said pin is suitable for coming into contact in a certain operating position of the lever 27 with a section 47 of the second lateral wall 33 of the lever 27. In the part 4 a further pin 48 is installed parallel to the pin 8 and suitable for constituting the stroke end to rotation of the lever 27 around the pin 8 since the lower face of the appendix 31 or a section 49 (figure 8) of the walls 33 can rest against the same.

[0011] Figure 4 illustrates the mechanism 12 with the safety door closed.

[0012] In this condition:

5 the bar 13 is extracted and with its spring latch 14 engages the seat 29;
 the bar 15 for contact between its spring latch 16 and the body 30 is in a retracted position against the action of the spring 25;
 10 the pin 46 supported by the bar 15 is at a distance from the section 47 of the lever 27; and
 the lever 27 due to the action of the spring 32 has its appendixes 35 located on the appendixes 36 of the spring latch 14, hence the latter is not able to return into the part 4.

[0013] Figures 2 and 5 illustrate the mechanism 12 with the safety door closed but with the control bar 44 pushed towards the inside of the central part 3.

[0014] In this condition:

20 the bar 15 is in the position illustrated in the preceding condition;
 the lever 27 due to the action of the appendix 45 is rotated around the pin 8 disengaging the appendixes 35 from the appendixes 36; and
 25 the bar 13 is in the same position illustrated in the preceding condition but without being blocked in its movement towards the wall 18 of the bracket 17.

[0015] By pushing the control bar 44 again or the door itself, the spring latch 14, being free in its movement apart from the counter force of the spring 24 and having a wedge-shaped head, due to the contact that occurs between said head of the spring latch 14 and the walls of the seat 29 which are also triangular-shaped, retracts inside the part 4 causing opening of the safety door.

[0016] Figure 7 illustrates the mechanism 12 with the door open.

[0017] In this condition:

40 the control bar 44 is not pushed and therefore leaves the lever 27 free to rotate, due to the action of the spring 32,
 45 towards the locking position of the spring latch 14, a position which it does not reach, as will be indicated; the bar 15 is extracted due to the action of the spring 24, hence the spring latch 16 is in the outermost position on the part 4;
 50 the pin 46 stops against the section 47 of the lever 27 preventing its rotation towards the locking position of the spring latch 14.

[0018] When the safety door is closed, the bar 15 retracts due to the contact of the spring latch 16 with the body 30 allowing the lever 27 to lock the spring latch 14 in the seat 29. With the door closed, a rotation of the handle 43 determines rotation of the disc 41 and rotation

of the lever 27 from the locking position to the release position of the spring latch 14.

[0019] From the above description, the advantages of the present invention are evident.

[0020] In particular a panic-opening device is provided unlike the devices currently on the market in which, to open the door, a force must be applied to a lever which mechanically determines translation of the main spring latch. In the panic-opening device subject of the present invention, the pressure on the control bar 44 determines only release of the translation of the spring latch 14 and not its translation. Basically, by pushing the control bar 44 the lever 27 is released from the spring latch 14 so that a further pressure on the control bar 44 or on the door itself determines the opening thereof. It is evident that to open a safety door with the panic-opening device subject of the present invention a reduced force applied on the control bar 44 is sufficient. It should be underlined that the mechanism 12 is simple to produce and, above all, increases the safety level of the door.

[0021] Lastly, it is clear that modifications and variations can be made to the panic-opening device 1 described and illustrated here without departing from the protective scope of the present invention.

Claims

1. Panic-opening device applied to a safety door comprising a first U-shaped body (2) and having a central part (3) with horizontal longitudinal axis (X) parallel to the plane defined by said door and two lateral parts (4 and 5) bent square to said central part (3) and fixed to said door, a first (4) of said lateral parts housing inside it a mechanism (12) which determines closing and opening of said door, **characterised in that** said mechanism (12) comprises:

a first bar (13) which at one first end is provided with one first spring latch (14) and which moves between a locking position, in which said first spring latch (14) outside said first lateral part (4) engages a seat (29) defined in a second body (30) supported by the doorpost of said door, and a release position in which said first spring latch (14) is free to disengage from said seat (29); a lever (27) rotating around a first pin (8) between a first position in which with its first appendix (35) it rests against a corresponding appendix (36) of said first spring latch (14) to keep said first spring latch (14) in the locked position, and a second position in which said first appendix (35) is disengaged from said appendix (36) of said first spring latch (14), allowing the latter, by means of a simple pressure on said door, to retract towards the inside of said first lateral part (4) and disengage from said seat (29); and a control bar (44) supported by said central part

(3) and suitable, if pushed, for operating, with its appendix (45), said lever (27) to determine the rotation of said lever (27) from the first to the second position.

2. Panic-opening device as claimed in claim 1 **characterised in that** it comprises first spring means (32) suitable for countering rotation of said lever (27) from the first to the second position.
3. Panic-opening device as claimed in claim 1 and/or 2 **characterised in that** it comprises second spring means (24) suitable for countering the movement of said first spring latch (14) towards the inside of said first lateral part (4).
4. Panic-opening device as claimed in any one of the preceding claims **characterised in that** said first spring latch (14) has a wedge-shaped head with triangular section and that said seat (29) has the same conformation.
5. Panic-opening device as claimed in any one of the preceding claims **characterised in that** it comprises a second bar (15) supporting at one end a second spring latch (16) which, when the door is closed, stops with its head against a wall of said second body (30); said second bar (15) having a first retracted position, which occurs with the door closed due to the contact between said second spring latch (16) and said second body (30), and an extracted position which occurs with the door open when there is no contact between said second spring latch (16) and said second body (30), and said second bar (15) having a second pin (46) which extends towards said lever (27) and which, with the door open, i.e. when said second bar (15) is in the extracted position, stops against a first section (47) of said lever (27) to maintain the latter in the above-mentioned second position.
6. Panic-opening device as claimed in claim 5 **characterised in that** it comprises third spring means (25) suitable for countering the movement of said second bar (15) from the extracted position to the retracted position.
7. Panic-opening device as claimed in any one of the preceding claims **characterised in that** it comprises a third pin (48) suitable for constituting a stroke end of the rotation of said lever (27) which has a second section (49) which stops on said third pin (48) when said lever (27) is in the first position and a third section (31) which stops on said third pin (48) when said lever (27) is in the second position.
8. Panic-opening device as claimed in any one of the preceding claims **characterised in that** it comprises

a disc (41) rotating due to the action of a handle (43) and suitable, by means of its appendix (42), for coming into contact with a fourth section (38) of said lever (27) to determine rotation of the lever (27) from the first to the second position.

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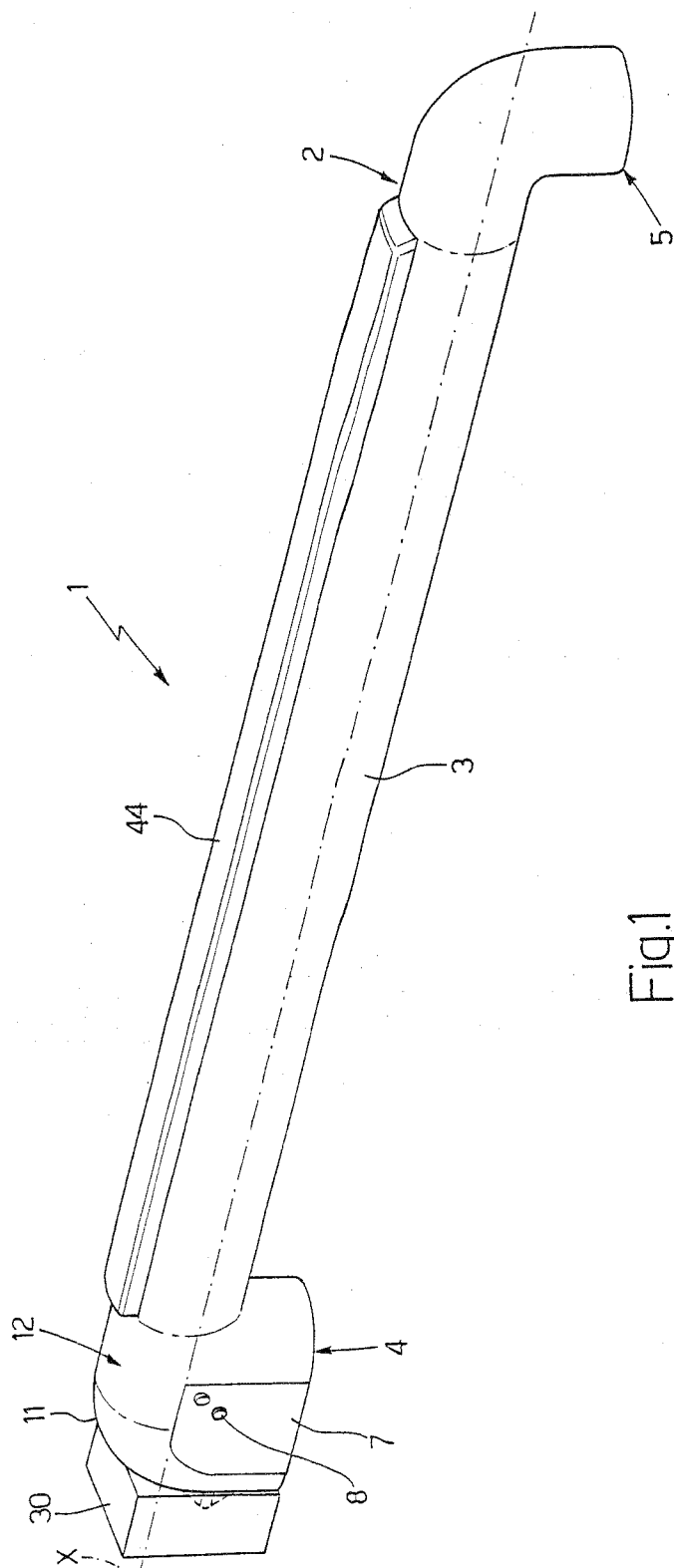
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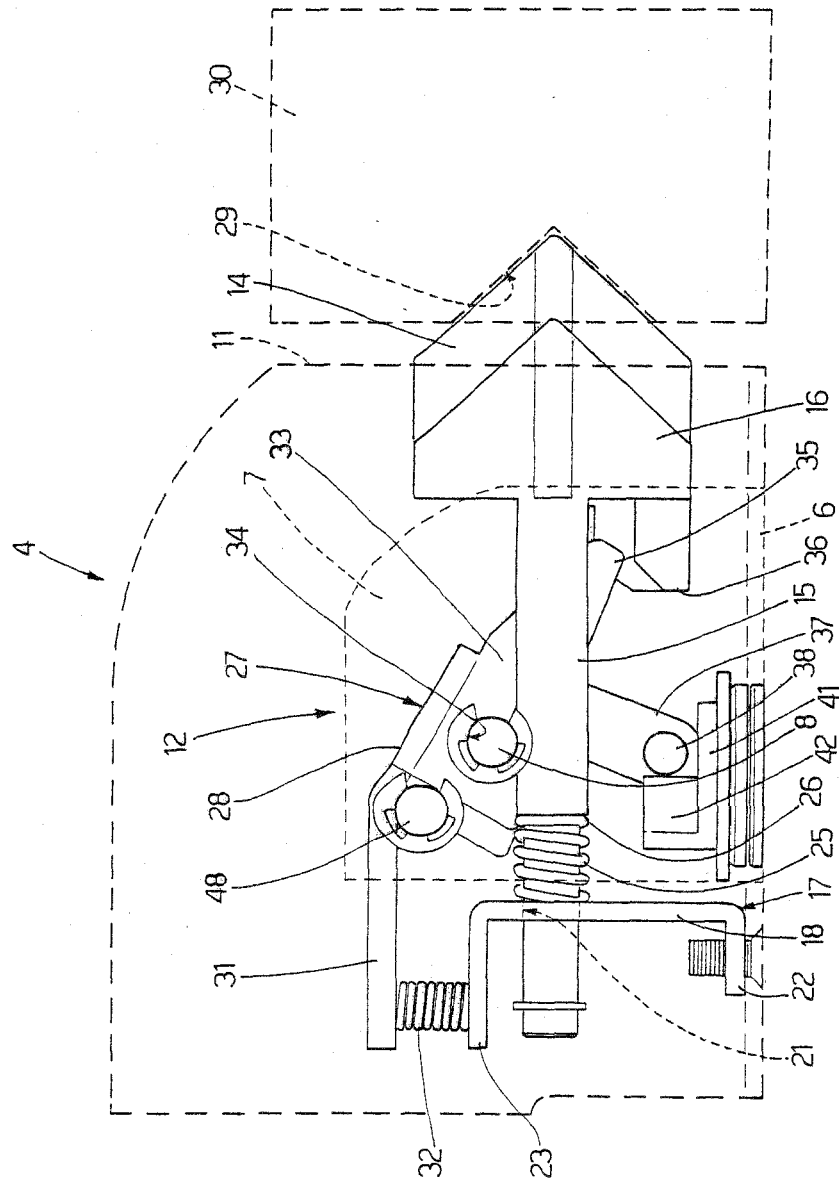


Fig.2

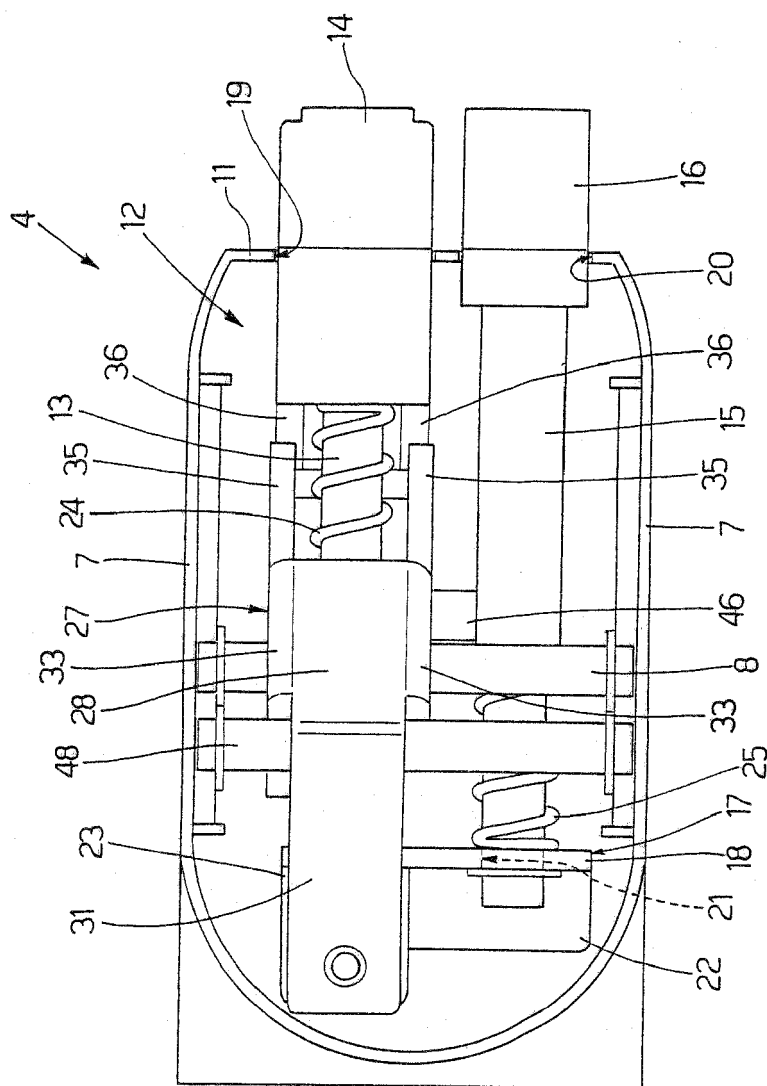


Fig.3

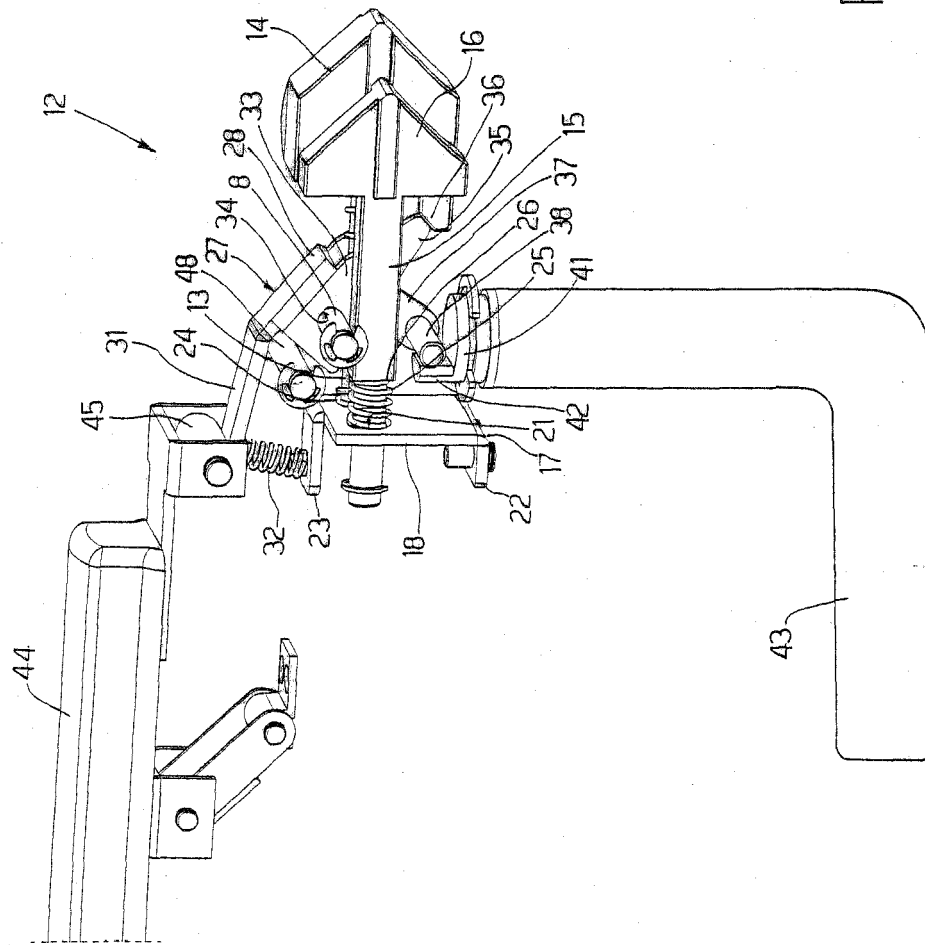


Fig. 4

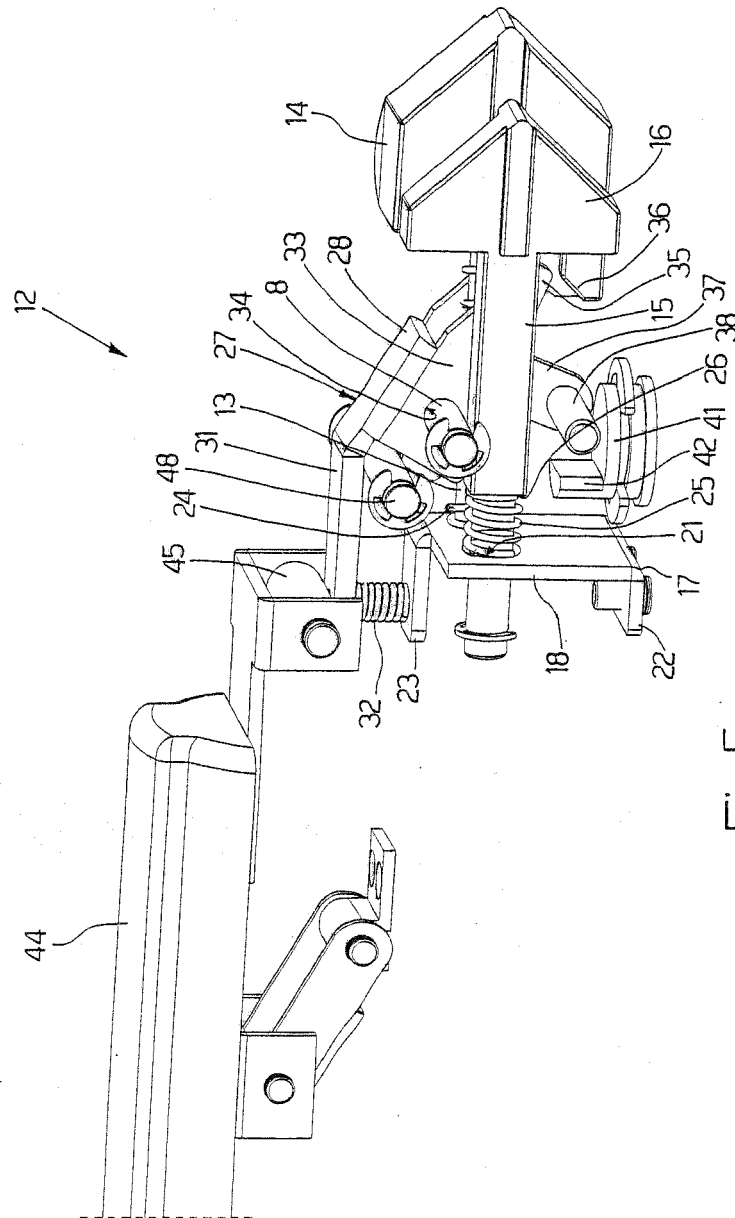


Fig.5

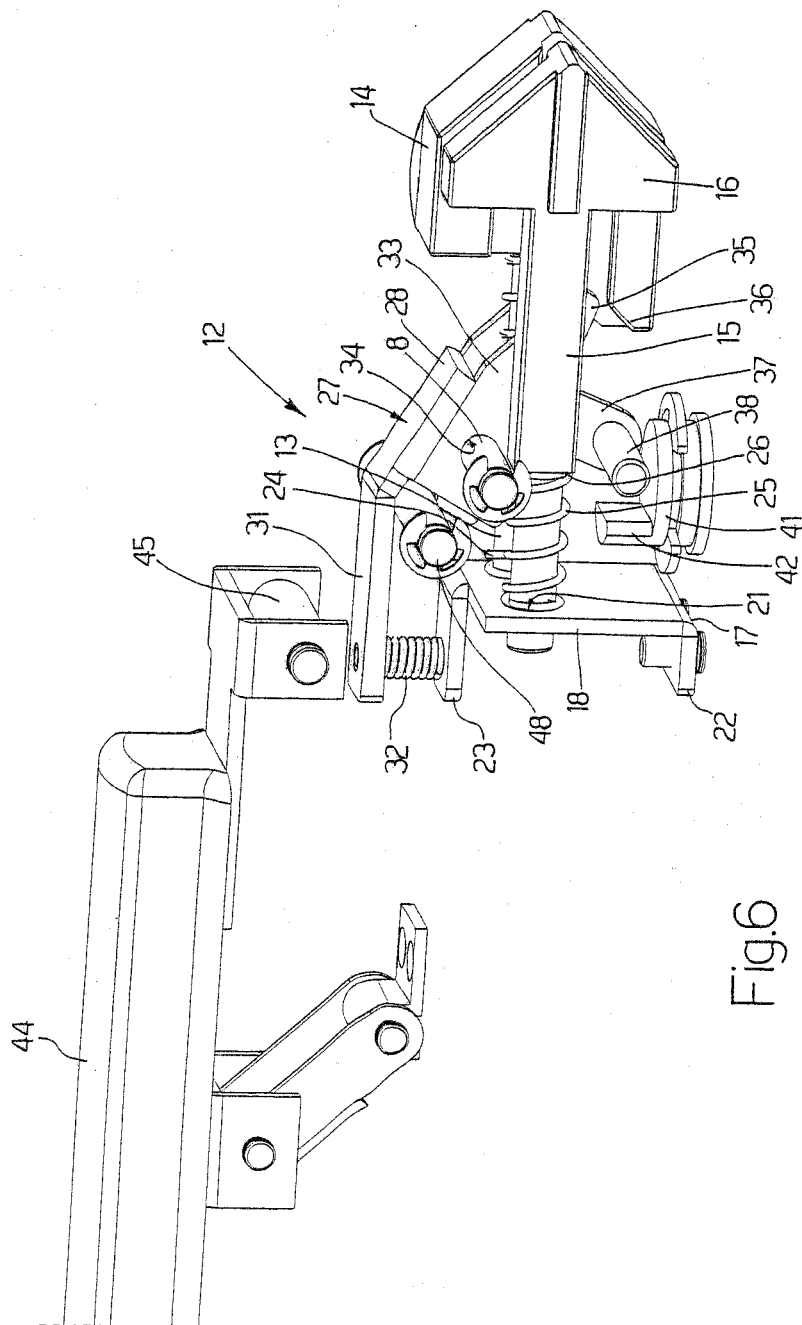


Fig.6

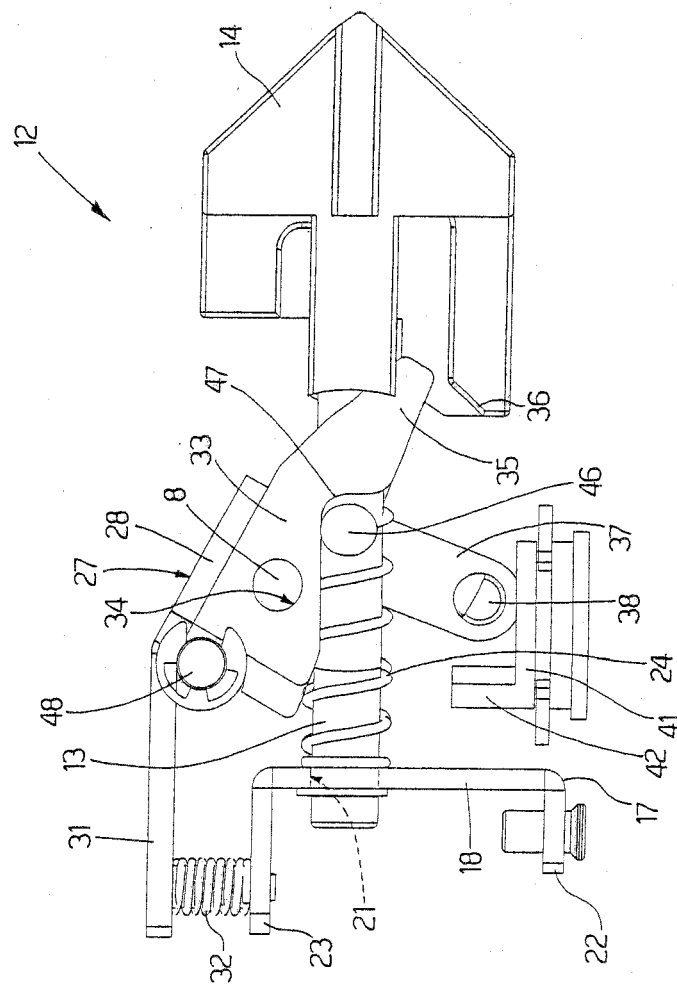


Fig.7

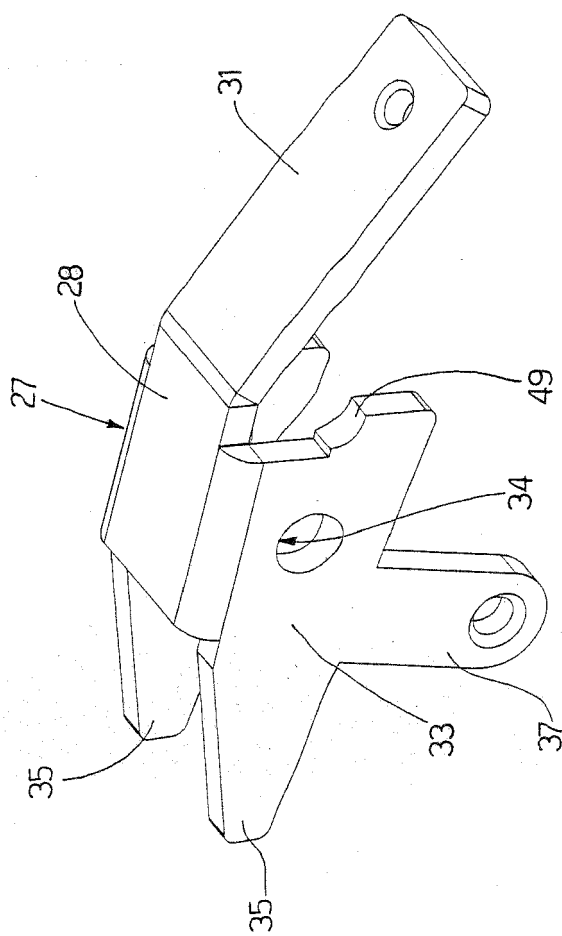


Fig.8