



Europäisches Patentamt
European Patent Office
Office européen des brevets



(11) **EP 1 111 178 A2**

(12) **EUROPEAN PATENT APPLICATION**

(43) Date of publication:
27.06.2001 Bulletin 2001/26

(51) Int Cl.7: **E05F 5/12**

(21) Application number: **00204578.9**

(22) Date of filing: **14.12.2000**

(84) Designated Contracting States:
**AT BE CH CY DE DK ES FI FR GB GR IE IT LI LU
MC NL PT SE TR**
Designated Extension States:
AL LT LV MK RO SI

(72) Inventors:
• **Esteve Reynés, Pedro**
Viladecans 08840 (Barcelona) (ES)
• **Roig Ibanez, Juan Daniel**
Viladecans 08840 (Barcelona) (ES)

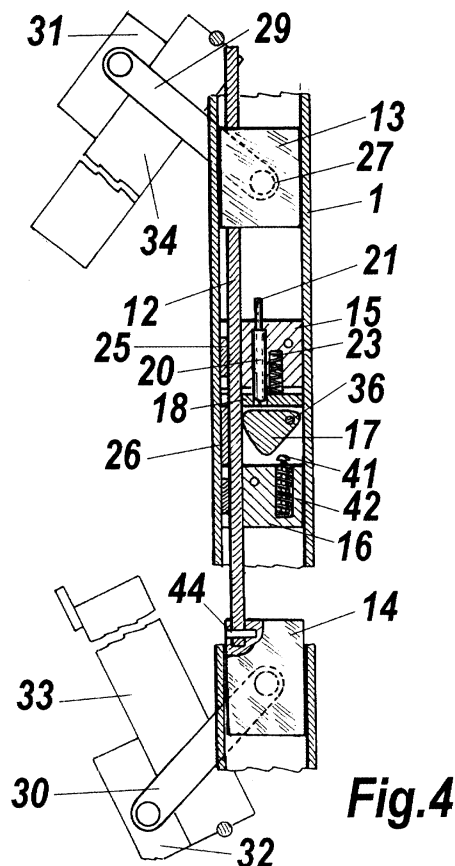
(30) Priority: **24.12.1999 ES 200000065**

(74) Representative: **Canela Giménez, Teresa**
C/Girona no 148, 1o 2a
08037 Barcelona (ES)

(71) Applicant: **Mektila 2000, S.L.**
08840 Viladecans, Barcelona (ES)

(54) **Closure sequence controller for a double-wing door**

(57) The present patent consists of an improved selector for door-closers on doors with two leaves which has the novel characteristic that the internal mechanism of the selector has a central body defined by two half-bodies (15,16), between which there is a partition (18) perpendicular to a strip (12) connecting and pulling along two end shoes (13,14), and respective rods (29,30) acting in accordance with the movements of the two half-doors (33,34).



EP 1 111 178 A2

Description

[0001] The subject of the present patent of invention relates to an improved closer selector for door-closers on doors with two leaves.

[0002] Closer selectors for door-closers on double doors exist at the moment but, owing to their complex construction, these selectors are expensive and their complexity means that these selectors require more up-keep or maintenance and are more prone to damage. Moreover, their complexity makes them expensive.

[0003] The improvements of the invention have been designed to prevent the problems of known selectors and by means of these improvements, a closer selector is obtained which, upon the opening of the secondary door (the second door to be opened), once the main door (the first to open) has been opened to any angle (which allows the secondary door to be opened), enables the main door to be held in place at this angle until the secondary door is fully closed again.

[0004] In addition, when the main door is held in place, it can be opened further to any angle and is held in place again at that angle until the secondary door is closed.

[0005] Another advantage of the improved selector is that, in the event of abrupt actions on the main door (when it is held in place) and in order to prevent damage to people, door-closers and selector, a system has been provided which enables the door to be closed in circumstances in which a force greater than a predetermined force is exerted on the door.

[0006] By virtue of its structural simplicity, the production costs of the closer selector are also reduced.

[0007] For a better understanding of the invention, a practical embodiment thereof is described by way of non-limiting example below, there being appended four sheets of drawings in which Figure 1 shows where the selectors mentioned are fitted.

[0008] In Figure 2, the structural elements of the selector are shown, aligned and separated, in an exploded view.

[0009] In Figure 3 the novel selector is shown, partially sectioned, from below, with the secondary door closed and the main door partially opened.

[0010] Figure 4 is similar to the previous drawing but with both the main door and the secondary door partially open.

[0011] Figure 5 is a detail showing the central mechanism in cross-section.

[0012] The invention consists of a closer-selector assembly in which, inside an outer casing (1) which has a longitudinal opening (2) with edges bent inwardly from right angles (3) without touching one another, and which forms the outer body (1) of the selector, there are four blocks (4, 5, 6, 7) of suitable shape with perpendicular openings (8, 9, 10, 11) defining respective inverted "U"-shapes, except for the central block 6 which corresponds to a "U" in the normal position.

[0013] The block (4) serves as a spacer for the various

bars and its existence is not essential.

[0014] The four blocks (4, 5, 6, 7) are mounted astride a longitudinal support strip (12).

[0015] Disposed inside the body (1) are shoes (13 and 14) and, between them, a selector mechanism formed by two bodies (15 and 16) and a cam (17) which is mounted in the block (6), shown in Figure 2.

[0016] The function of the blocks (5 and 7) is to serve as guides for the longitudinal support strip (12) and a fixing in the outer casing, and the block (6) in which the cam (17) is mounted is for stopping the longitudinal support (12) and holding it in place.

[0017] In the body (15) there is a transverse hole with two diameters (19 and 21) through which a pin (20) with two diameters can slide in a manner such that it can never come out in the direction of the shoe (13) which can operate it.

[0018] Between the central blocks (5 and 6) there is a transverse partition (18) with a hole (22) which coincides with the tip of the pin (20) with two diameters and through which the pin (20) can penetrate. This transverse partition (18) may equally well be integral with or attached to the block (6).

[0019] In the body (15) there is also a cylindrical recess (24) for housing a helical spring (23) or the like, parallel to the pin (20) with two diameters and having a projecting end bearing against the partition (18).

[0020] To facilitate the construction of the blocks (5 and 7), each block has a perpendicular inverted "U"-shaped notch (9 or 11), the mouth of each notch subsequently being closed by a respective rectangular cover (25 or 26).

[0021] Articulated to the shoes (13 and 14) are respective ends (27 and 28) of corresponding arms or rods (29 and 30) which in turn are connected by their opposite ends to respective door-closers (31 and 32) of two doors (33 and 34) which constitute the entire closure means for the opening to be covered.

[0022] The longitudinal strip (12), which may be of any shape whilst having a flat face, can move longitudinally under the effect of the movement of the door closer (32) during the opening and closure of the main door (33).

[0023] This strip (12) is connected, at one end, to the shoe or block (14), by means of a pin (44) or other fixing system and, at the other end, can slide freely through the block or shoe (13). The two shoes or blocks (13 and 14) are articulated to the ends of the arms or rods (29 and 30) which in turn are connected to the corresponding door-closers (31 and 32), respectively.

[0024] The cam (17), which is preferably substantially triangular, has a substantially arcuate base (35) and blunt corners. The cam (17) has an articulation point (36) which is spaced from the partition (18) sufficiently to permit its movement. This articulation point (36) has the characteristic that its radius with respect to the substantially arcuate base (35) increases gradually since there is an eccentricity between the arcuate portion and the articulation point.

[0025] The above-described rotary cam system, the function of which is to brake the longitudinal strip (12) by means of the eccentric system, may be replaced, in this embodiment, by another mechanical element which performs the same function.

[0026] Facing the cam (17) there is a second body or block (16). In this second body or block (16) there is also a hole (40) projecting through which is the tip of a stub (41) housed in the hole (40) in the block (16) and pushed by a rear helical spring (42).

[0027] As indicated in Figure 3, once the mechanism is mounted in the body (1) of the closer selector between the two shoes or blocks (13 and 14), the blocks (15 and 16) are attached to the body (1) by fixing means and the block (6) of the cam (17), which is coupled against the block (16) by the action of the spring (23) via the partition (18), can slide through the body (1) of the selector, overcoming the force exerted by the spring.

[0028] If the secondary door is closed, the shoe (13) acts, either directly or by means of intermediate elements, on the pin (20) with two diameters which, owing to its dimensions, acts on the cam (17) and does not permit the braking action of the cam (17) on the strip (12). In this situation, the main door (33) can open and close freely under the effect of the door-closer (32) since the strip (12), which is attached to the shoe (14), slides freely and is merely guided through the bodies or blocks (5, 6 and 7 of Figure 2) and through the shoe (13) connected to the door-closer (31) of the secondary door (34).

[0029] If the main door (33) is opened to any position and the secondary door (34) is opened, the main door (33) is held in the open position in which it is situated since, when the secondary door (34) opens, the shoe (13) is displaced as shown in Figure (4) and stops acting on the pin (20) with two diameters so that the cam (17) is released and the action of the stub (41), which acts under the pressure of the spring (42), positions the cam (17) so that it locks, braking the strip (12) and holding the main door (33) open in any position in which it is situated.

[0030] When the secondary door (34) is closed completely by the effect of the door-closer (31), the shoe (13) will return to act on the pin (20) with two diameters which in turn will unlock the cam (17), thereby releasing the strip (12), allowing the main door (33) to close.

[0031] For reasons of safety and in order not to damage the components of the system, the mechanism allows the main door to be moved and its angle of opening to be changed by action thereon with a greater force, allowing the main door to be closed or opened as required or according to the action performed.

[0032] When the secondary door (34) is open and the main door (33) is therefore held in position, the user can open it further by a small additional force since, when he acts on the main door (33), the shoe (14) is acted on by the connecting mechanisms and moves in the opposite direction to the locking direction, forcing the cam

(17) to be unlocked and allowing the door (33) to be opened to the desired angle. If the main door (33) is released at this angle, the cam (17) returns to the original position under the action of the stub (41), owing to the effect of the spring (42), and the main door (33) is held in position again at the said angle of opening.

[0033] In the event of an abrupt action on the main door (33) in the direction of the closure of the door, the shoe (14) will move, together with the strip (12) and the support body of the cam (17) locked thereto, overcoming the safety spring (23) so that, at the end of its travel, the action of the pin (20) with two diameters on the cam (17) will unlock the cam (17), allowing the door to be closed and preventing damage to the mechanism. When the action on the main door (33) ceases, the body carrying the cam (17) will return automatically to its initial position, owing to the effect of the spring (42), and the pin (20) with two diameters will stop acting on the cam (17). The cam (17) returns to its original position under the action of the stub (41), owing to the effect of the spring (42), and the door is held in place at the angle of opening once more.

Claims

1. A closer selector for door-closers on doors with two leaves, characterized in that the internal mechanism of the selector has a central body defined by two half-bodies (15 and 16), between which there is a partition (18) perpendicular to a strip (12) connecting and pulling along two end shoes (13 and 14), and respective rods (29 and 30) acting in accordance with the movements of two half-doors (33 and 34).
2. A closer selector for door-closers on doors with two leaves according to the preceding claim, characterized in that one of the half-bodies (15) has a transverse hole (19) in which a pin (20) with two diameters is inserted with a capability for lateral displacement.
3. A closer selector for door-closers on doors with two leaves according to the preceding claims, characterized in that the partition (18) has a hole (22) which coincides with the tip of the pin (20) with two diameters and in which the tip is inserted.
4. A closer selector for door-closers on doors with two leaves according to the preceding claims, characterized in that, parallel to the pin (20) with two diameters, there is a cylindrical recess (24) one end of which is blind and which partially houses a helical spring (23) one end of which projects through the mouth of the recess (24) and presses against the partition (18).

5. A closer selector for door-closers on doors with two leaves according to the preceding claims, characterized in that the body (16) has a cylindrical recess (40) which houses a helical thrust spring (42) for the rear portion of a stub (41) and in that the tip of the stub interferes constantly with the periphery of the cam (17), and with force when the strip (12) is to be locked. 5
6. A closer selector for door-closers on doors with two leaves according to the preceding claims, characterized in that the projecting portion of the spring (23) bears against the wall of the partition (18). 10
7. A closer selector for door-closers on doors with two leaves according to the preceding claims, characterized in that the triangular cam (17), which has blunt corners and an arcuate base (35), is articulated between the partition (18) and the body (16), the cam (17) rubbing the strip (12) in one situation and, in other situations, rubbing and pressing against the strip in an action for the locking thereof. 15 20

25

30

35

40

45

50

55

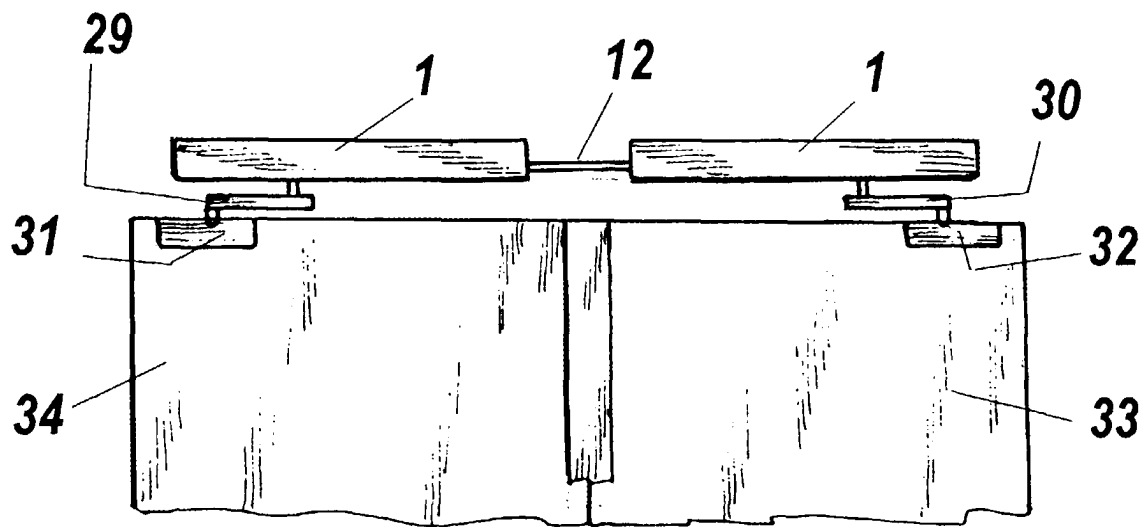


Fig. 1

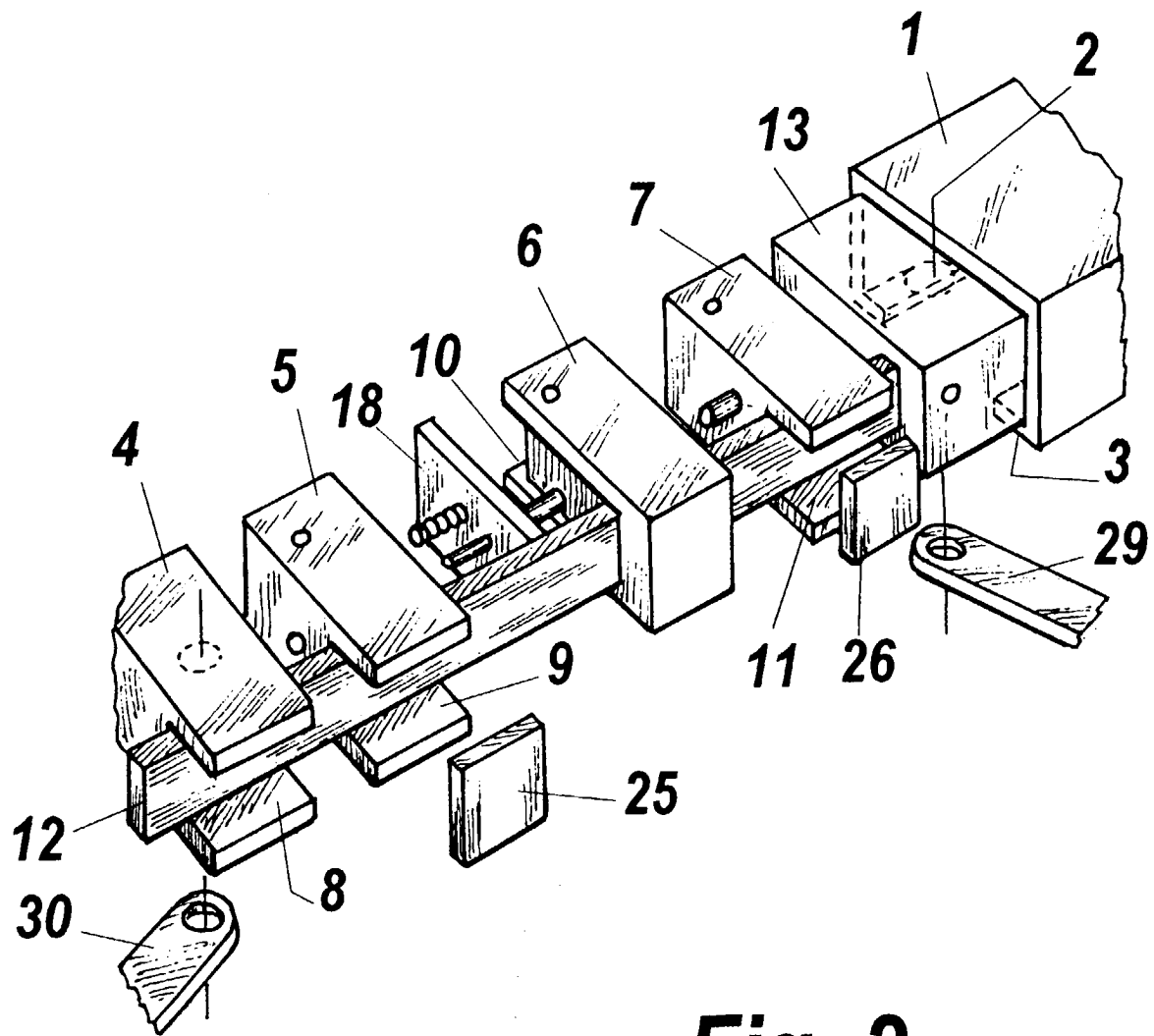


Fig. 2

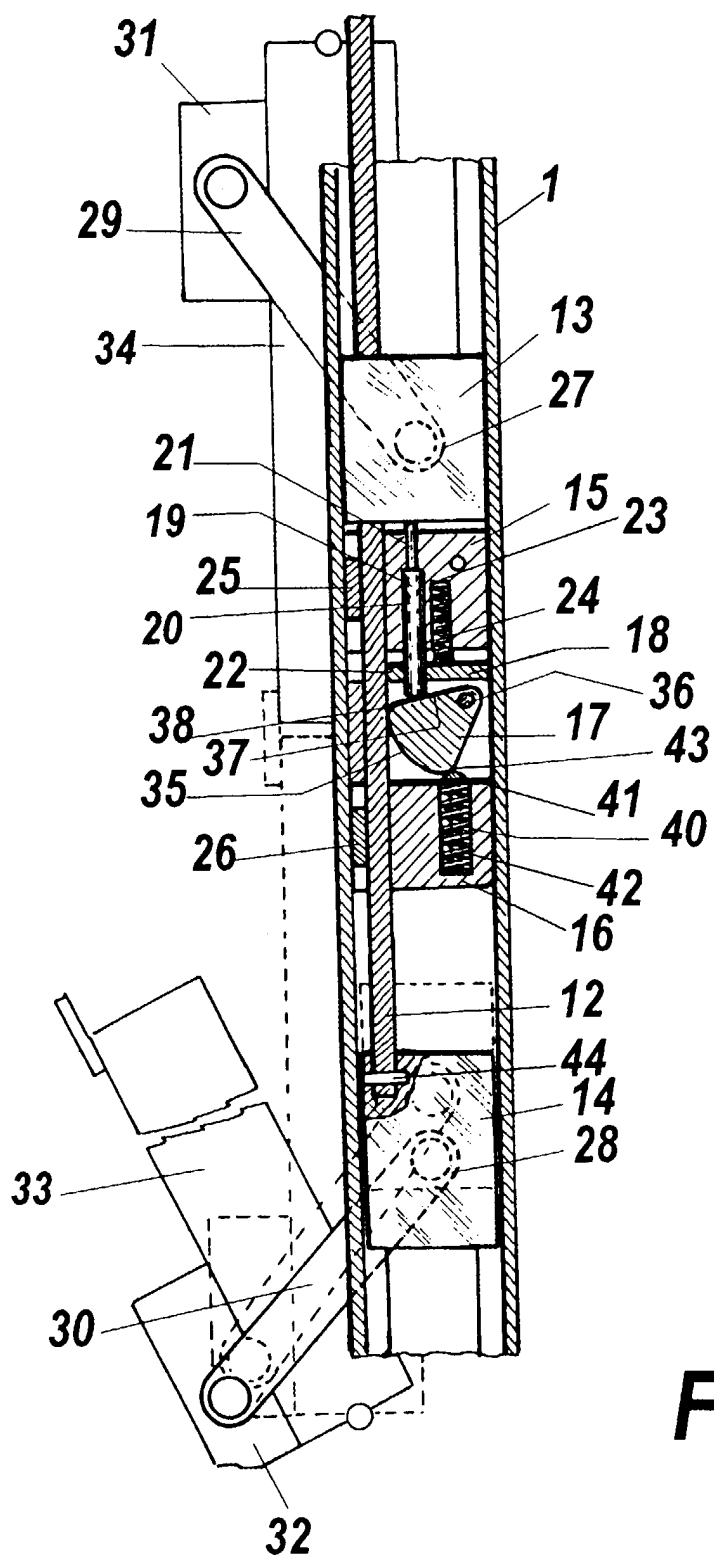


Fig. 3

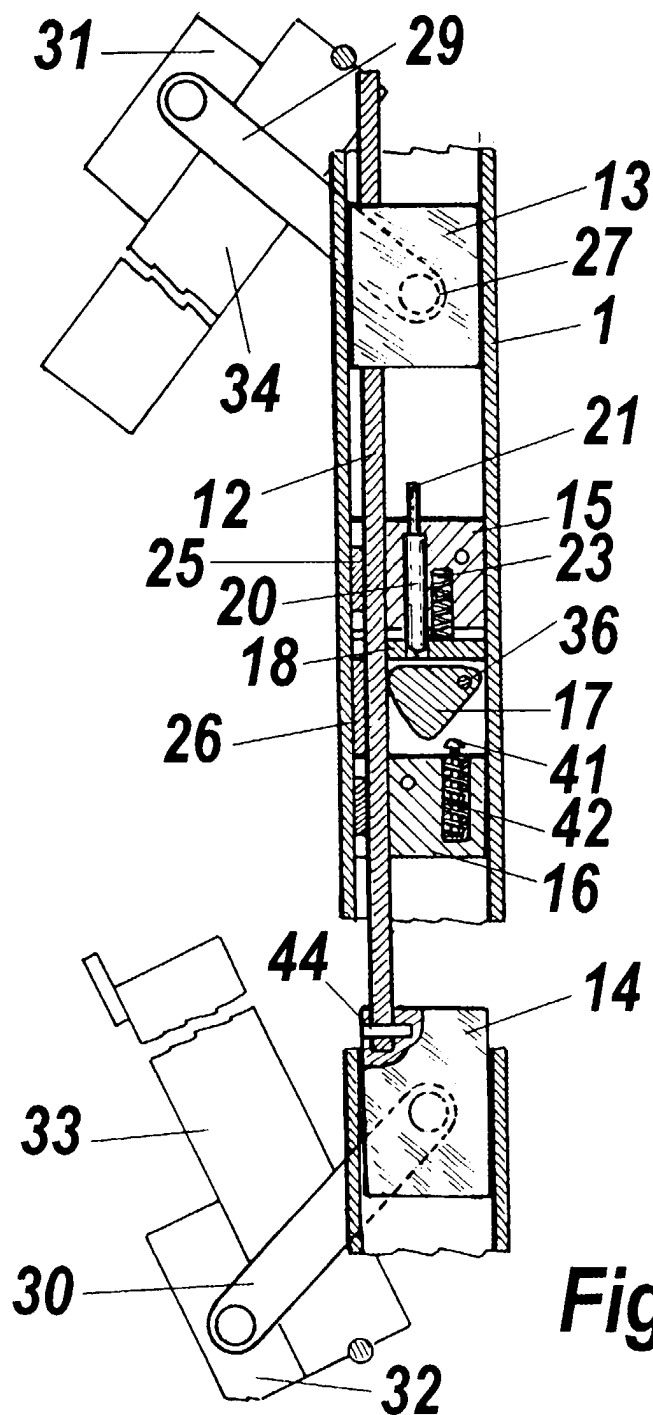


Fig. 5

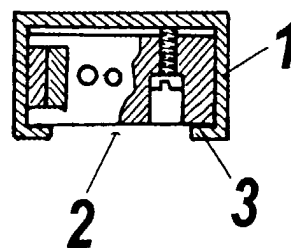


Fig. 4