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(54) **Closing Device**

(57) A closing device for a mobile door or shutter (A), for a front element of a mobile drawer or similar, comprising at least a blocking means (2) connected to a driving means (3) which moves said blocking means (2) be-

tween a blocking condition (B), in which it may match with a stopping means (4) and an opening condition in which it does not interfere with the stopping means (4).

The blocking means (2) is connected in a rotating manner to a first rotating pin (5).

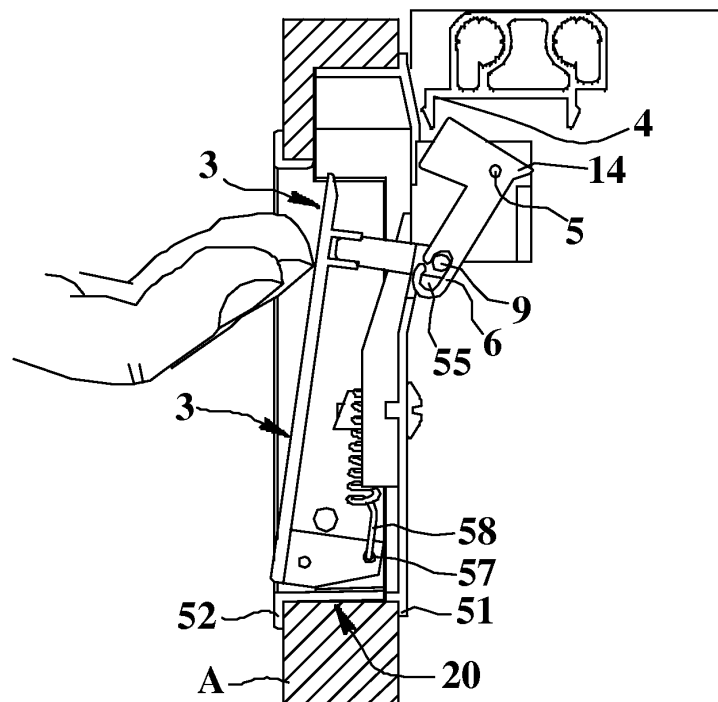


FIG.12

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DescriptionTECHNICAL FIELD

[0001] The present invention refers to the fastenings and in particular It refers to a closing device having safe block for drawers, doors, jambs, doors, hatches and similar, particularly fit to a naval, aeronautic use in vehicles and in general in conditions which provides vibrations and/or stress or in which it is needed to avoid unwanted opening..

BACKGROUND ART

[0002] There are several known closing devices for drawers, doors and similar which allow to block the sliding or the rotation during opening.

[0003] Some of these known devices have electric joint and have the drawback of requiring an initial force for unblocking which may be excessive or not sufficient depending on the use and/or wear.

[0004] Other known devices have a hook inside the drawer or the door which, during the closure, engage with a fixed stop and are provided with a pass-through hole for accessing to the hook. For the opening it is needed to insert a finger into the hole and to unblock the hook.

[0005] A drawback of said latter devices consists in that they may be difficult to activate, they may imply risks, for instance in the case of drawers containing sharp objects and they are subject to blocking due to the object inside the drawer or the room closed by the door.

[0006] There are also known devices provided with handles, knobs or similar fit to activate bolts or similar. Said devices have the drawback to be cumbersome and protruding and, when installed in moving vehicles, to make the risk of contusions for the bystanders.

DISCLOSURE OF THE INVENTION

[0007] The object of the present invention is to propose a safe closing device, which does not protrudes outwardly in respect to the door and which may be driven without excessive effort, in a simply and evident manner.

[0008] Another object is to propose a device fit to use onto vehicles and in a naval room and in difficult environmental conditions in general.

BRIEF DESCRIPTION OF THE DRAWINGS

[0009] The features of the inventions are highlighted in the following with particular reference to the attached figures in which:

- figure 1 shows a partial view of the closing device, object of the present invention, sectioned by a longitudinal plane and associated with a drawer or door portion;

- figures 2-3 show cross-section views respectively of a frame means and of a support mean of the device of figure 1;

- figures 4-5 show axonometric views from opposite sides of the device of figure 1 associated with a drawer or door portion;

- figures 6-7 show respectively side and back views of the device of figure 1 associated with a drawer or door portion;

- figures 8-10 show axonometric views respectively of driving means and of frame means and of support means of the device of figure 1

- figures 11-14 show views of the device of figure 1 in a unblocking section.

BEST MODE OF CARRYING OUT THE INVENTION

[0010] In figures 1-14 the numeral 1 indicates the closing device, object of the present invention, for a mobile door or shutter A, for the front element of a mobile drawer or for jambs, door, hatch and similar.

[0011] The device 1 comprises a blocking means 2 connected to a driving means 3 which moves it between a blocking condition B, in which it may match with a stopping means 4 avoiding the casual opening of the drawer or door, and an opening condition in which it does not interfere with the stopping means 4 allowing the opening thereof.

[0012] The stopping means 4 comprises an arm, a shelf or another relief which protrudes and is perpendicular to the blocking means 2 in order to interfere therewith in the closed and blocking condition B; said stopping means 4 is preferably made of a segment of plastic section bar or preferably metallic.

[0013] Said blocking means 2 has a first end 6 connected to the driving means 3 and a second end 7 fit to match with the stopping means 4 in the blocking condition B and it is connected in a rotating manner to the first rotating pin 5.

[0014] The blocking means 2 is almost shaped like a "L", with the main arm which end with the first end 6 and with the other arm which is enlarged and has the second end 7.

[0015] The housing of the first rotating pin 5 of the blocking means 2 is made almost in the intersection of said arms.

[0016] The device comprises also a support device 10 provided with a housing means 11 protruding inside the room of the door or of the drawer or similar, and fit to support the first rotating pin 5 of the blocking means 2 which protrudes from the housing at least in the blocking direction.

[0017] The support means 10 and the driving means 3 have shape almost plane and they are almost mutually

faced.

[0018] The support means 10 is blocked in a housing of the front element of the drawer or door A or similar by a frame means 10.

[0019] The support 10 and framework 20 means are mutually fixed by means of screws and have correspondent perimetrical frames 51, 52 fit to match respectively the inner and outer faces of the front element of the drawer, of the door or similar.

[0020] The housing means 11 has two walls 12 faced and provided with respective housing holes of the ends of the first rotating pin 5.

[0021] The two walls 12 are provided with a matching means 13 fit to match a protrusion 14 of the stopping means 4 in the blocking condition B.

[0022] The two walls 12 are slightly convergent inwardly in respect to the drawer or similar and towards the matching means 13 which joins the ends thereof.

[0023] Alternatively the two walls 12 may be almost parallel.

[0024] A side of the driving means 3 has two lateral shelf means 56 each one having a housing 63 for a respective second rotating pin 53 for the rotating connection to the framework means 20, or to the support means 10, and almost parallel to the first one 5; the opposite side of the driving means has a connection means 8 spaced from the second rotating pin 53 and connected to the blocking means 2 for driving it.

[0025] Each side shelf means 56 has also a connection 57 for an end of a respective elastic means 58 whose remaining end is fixed to a respective fixing 59 of the support 10 or framework 20 means, in order to transmit an elastic force to the blocking means 2 towards the blocking condition B.

[0026] The connection means 8 has an elongated shape, is almost perpendicular to the rotating pins 5, 53 and its free end is provided with a transversal pin 9, almost parallel to said rotating pin 5, 53 and engaged in a sliding manner in an extended slot 55 of the first end 6 of the blocking means 2.

[0027] The support 10 or framework 20 means have stops 60 fit to match with the side shelf means 56 in the blocking condition B.

[0028] The operating of the device provides that, in the closed blocking condition B, the opening is avoided by the matching of the second end 7 with the stopping means 4. Said closure is guaranteed also at the presence of opening forces or impulses because the matching of the protrusion 14 of the blocking means 2 with the matching means 13 of the support means 10 avoids the rotation of the blocking means 2 in the direction concordant with the opening forces or impulses.

[0029] Manually acting on the driving means 3, as shown in the figures 11-14, the rotation of the stopping means is obtained and thus the unblocking of the front element of the drawer, or door or similar which thus may be opened in a easy manner. The closing may be achieved pushing the blocking means 2 of the door or

the drawer.

[0030] An advantage of the present invention is to provide a safe closing device, which does not protrudes outwardly in respect to the door and which may be driven without excessive effort, in a simply and evident manner.

[0031] Another advantage is to provide a device fit to use onto vehicles and in a naval room and in difficult environmental conditions in general.

Claims

1. Closing device for a mobile door or shutter (A), for a front element of a mobile drawer or similar, comprising at least a blocking means (2) connected to a driving means (3) which moves said blocking means (2) between a blocking condition (B), in which it may match with a stopping means (4) and an opening condition in which it does not interfere with the stopping means (4), said device (1) being **characterized in that** the blocking means (2) is connected in a rotating manner to a first rotating pin (5).
2. Device according to claim 1 **characterized in that** the blocking means (2) has a first end (6) connected to the driving means (3) and a second end (7) fit to match with the stopping means (4) in the blocking condition (B).
3. Device according to claim 2 **characterized in that** the blocking means (2) is shaped almost like a L with the main arm which ends with the first end (6), with the other arm which is enlarged and has the second end (7), said blocking means (2) having a housing for the first rotating pin (5) made almost at the intersection between said arms.
4. Device according to claim 1 **characterized in that** it comprises a support means (10) provided with a housing means (11) protruding inside the drawer, the room limited by the door or similar and fit to support the first rotating pin (5) of the blocking means (2) which protrudes from said housing at least in the blocking condition (B).
5. Device according to claim 4 **characterized in that** the housing means (11) has two walls (12) faced and provided with respective housing holes for the ends of the first rotating pin (5).
6. Device according to claim 5 **characterized in that** the two walls (12) are provided with a matching means (13) fit to match a protrusion (14) of the stopping means (4) in the blocking condition (B).
7. Device according to claim 4 **characterized in that** the support means (10) is blocked in a housing of the front element of the drawer or the door (A) or

similar by a framework means (20).

8. Device according to claim 7 **characterized in that** the support (10) and framework (20) means are mutually fixed by means of screws and have respective perimetrical frames (51, 52) fit to match respectively with the inner and outer faces of the front element of the drawer, of the door or the like. 5

9. Device according to claim 4 **characterized in that** the support means (10) and the driving means (3) have shape almost plane and are almost mutually faced. 10

10. Device according to claim 1 or to claim 9 **characterized in that** the driving means (3) has at least a second rotating pin (53) associated with an end of said driving means (3) and almost parallel to the first pin (5) and has a connection means (8) spaced by the at least a second rotating pin (53) and connected to the blocking means (2) in order to drive it. 15
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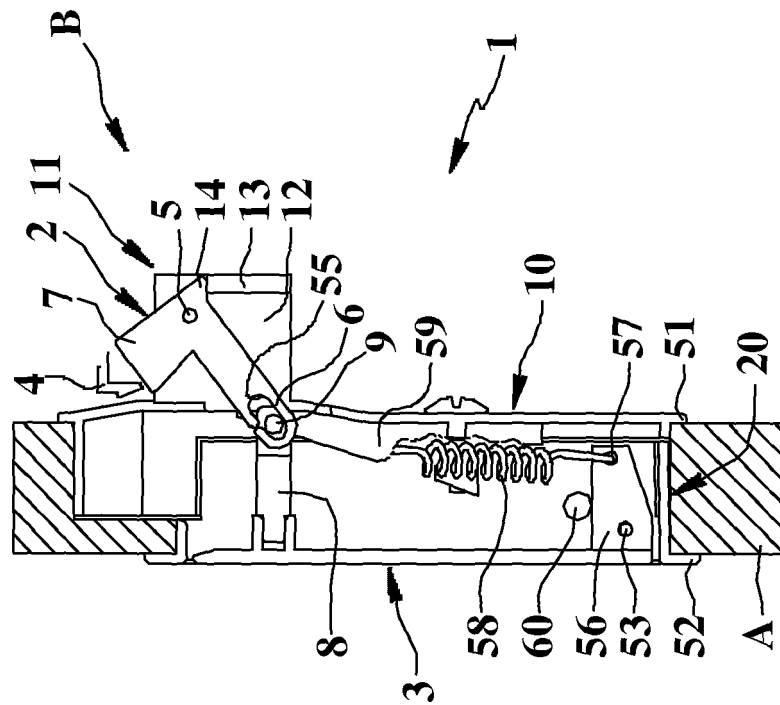
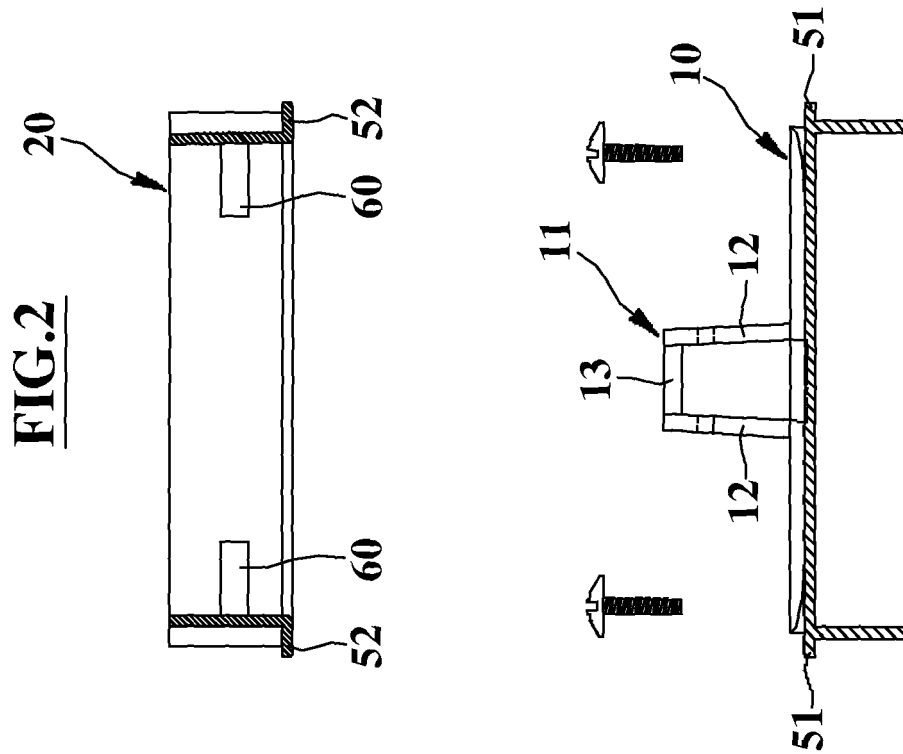
11. Device according to claim 2 and 10 **characterized in that** the connection means (8) has an extended shape, is almost perpendicular to the rotating pins (5, 53) and its free end is provided with a transversal pin (9), almost parallel to said rotating pins (5, 53) and engaged in a sliding manner in at least an extended slot (55) of the first end (6) of the blocking means (2). 25
30

12. Device according to claim 10 **characterized in that** the driving means (3) has two side shelf means (56) each one having a housing (63) for a respective second rotating pin (53) and a connection (57) for an end of a respective elastic means (58) whose remaining end is fixed to a respective fixing (59) of the support means (10) or the framework means (20), in order to transmit an elastic force to the blocking means (2) towards the blocking condition (B). 35
40

13. Device according to claim 12 **characterized in that** the support (10) or framework (20) means have stops (60) fit to match with the side shelf means (56) in the blocking condition (B). 45

14. Device according to claim 6 **characterized in that** the two walls (12) are almost parallel or, preferably, slightly convergent towards the inside and towards the matching means (13) which joins the ends thereof. 50

55



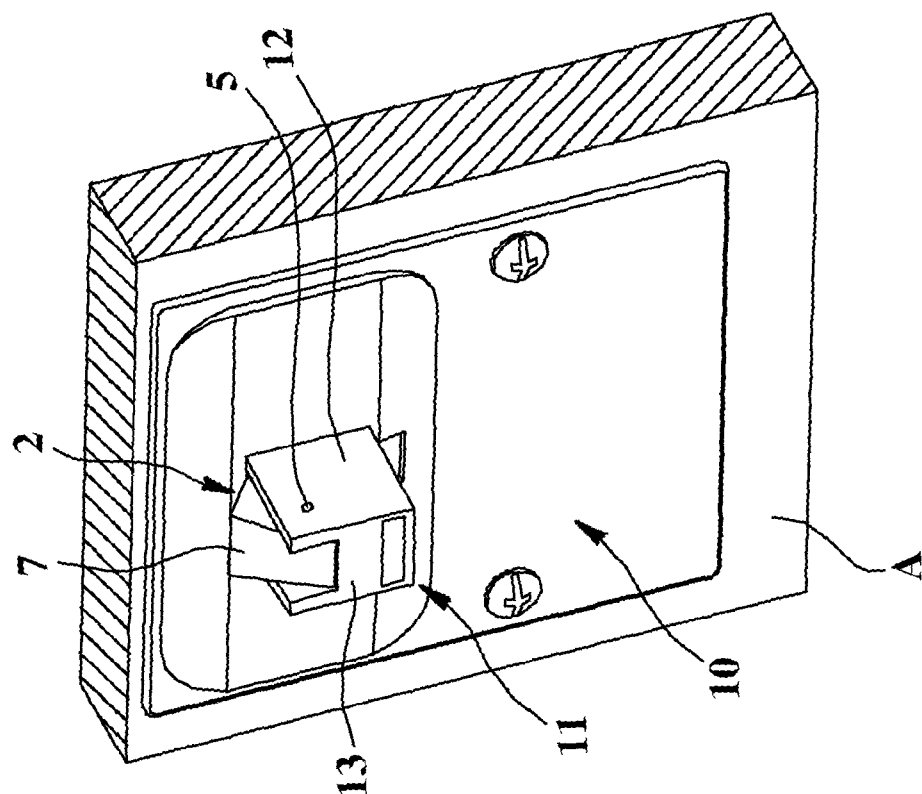


FIG. 5

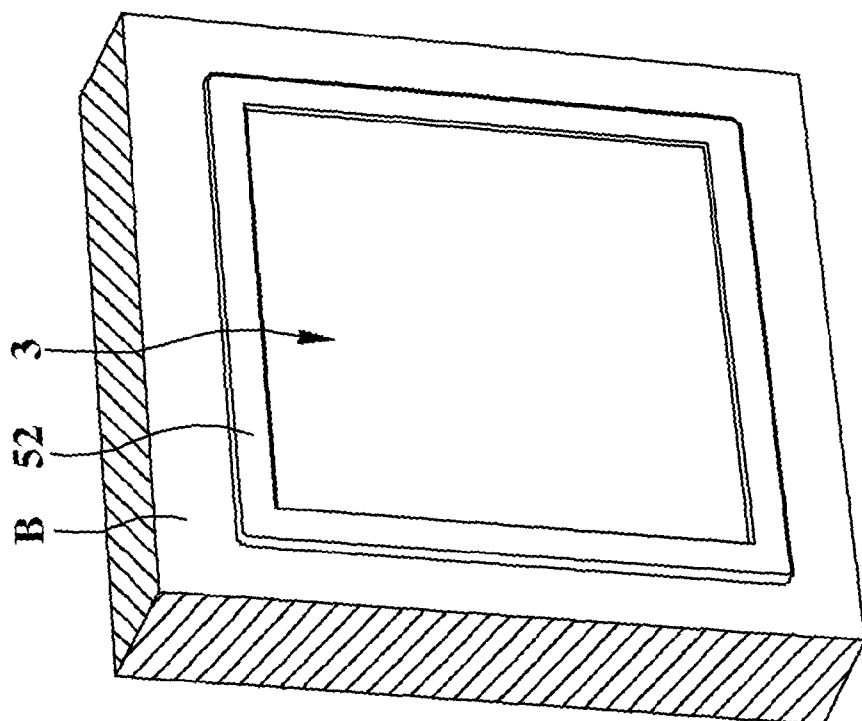


FIG. 4

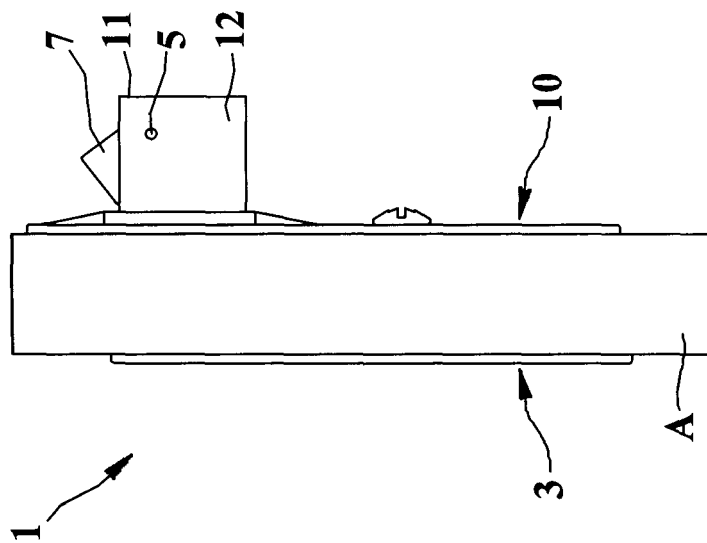


FIG. 6

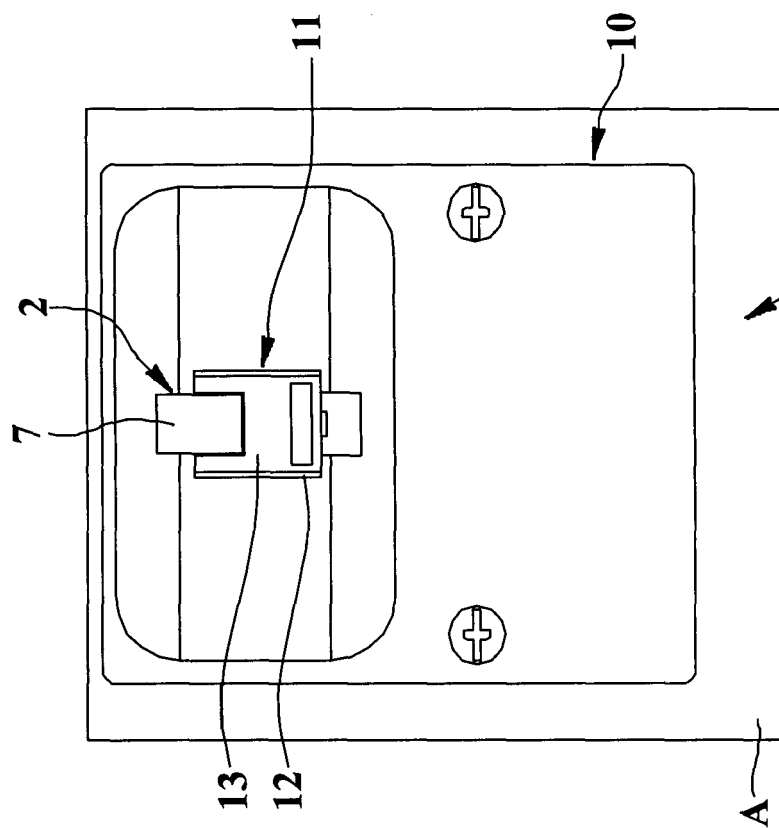


FIG. 7

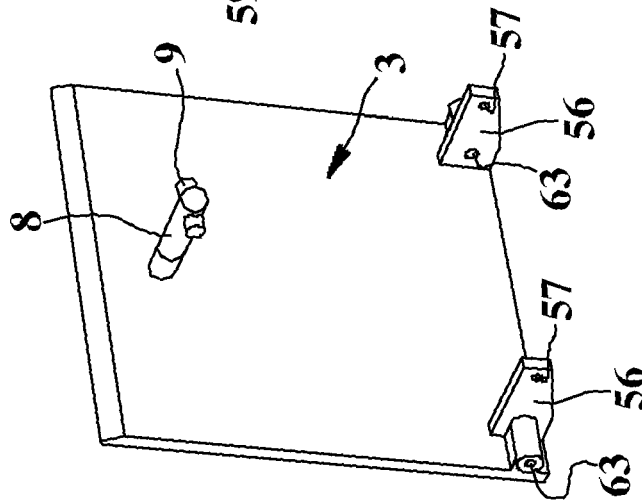


FIG. 8

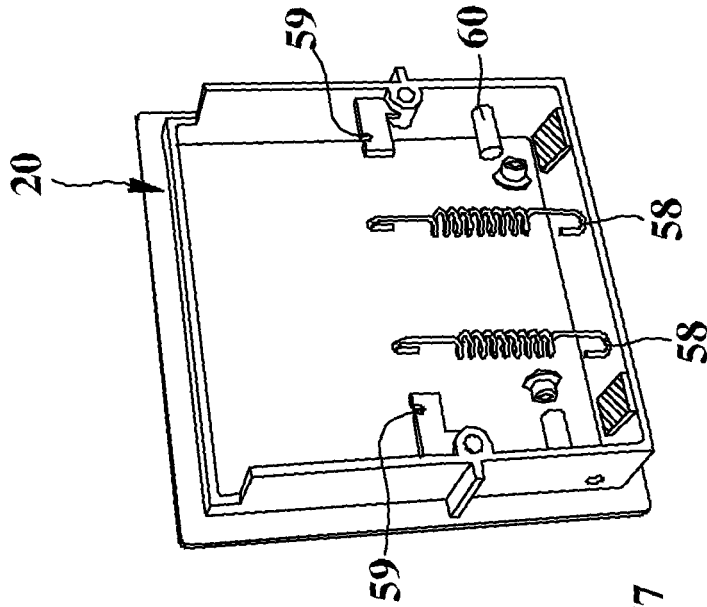


FIG. 9

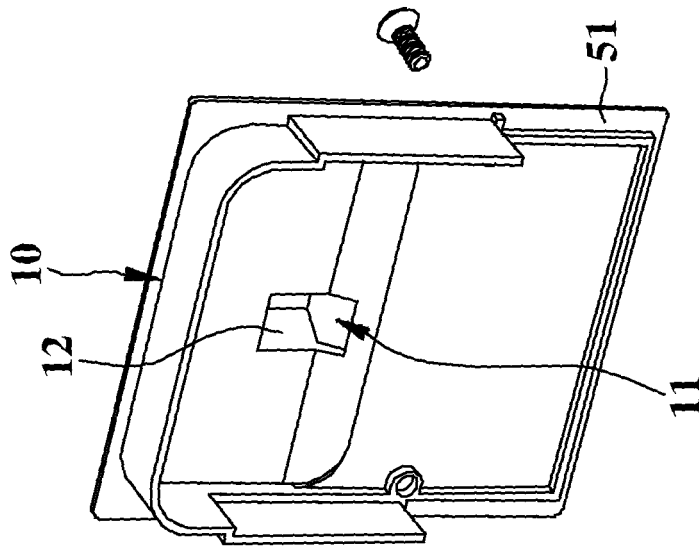


FIG. 10

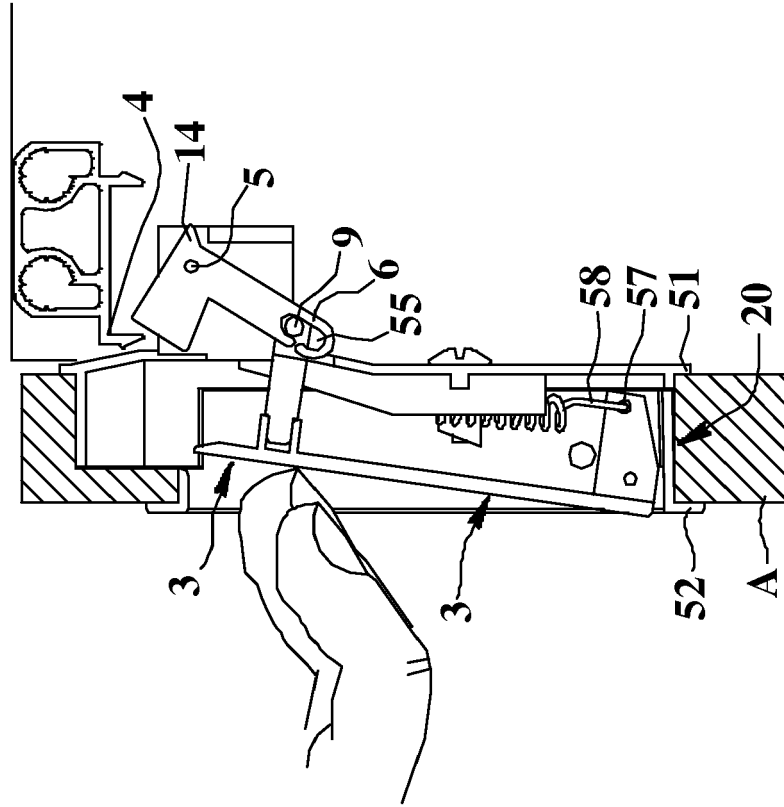


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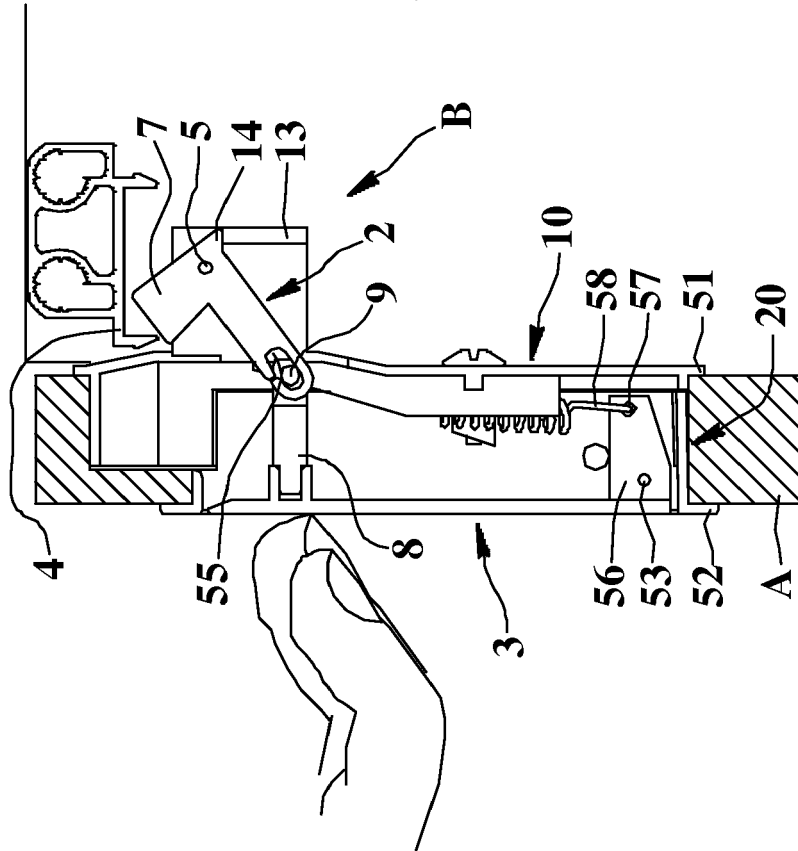


FIG.11

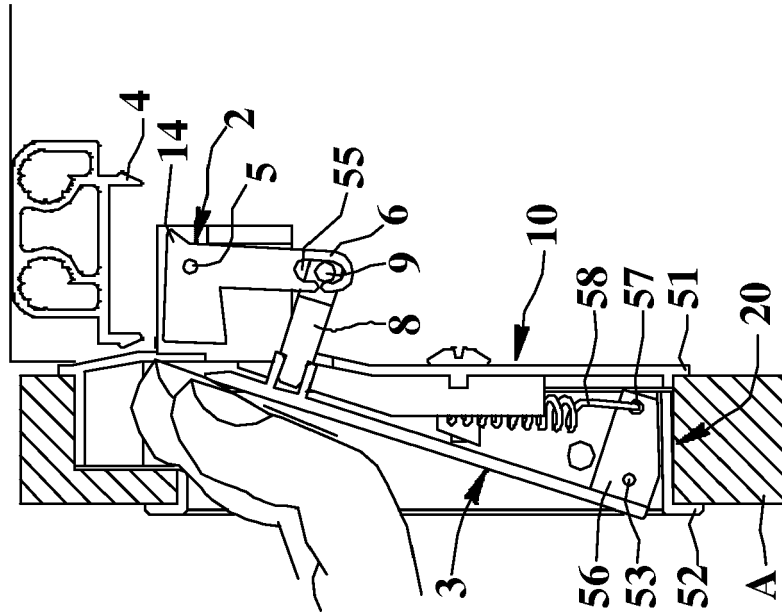


FIG.13

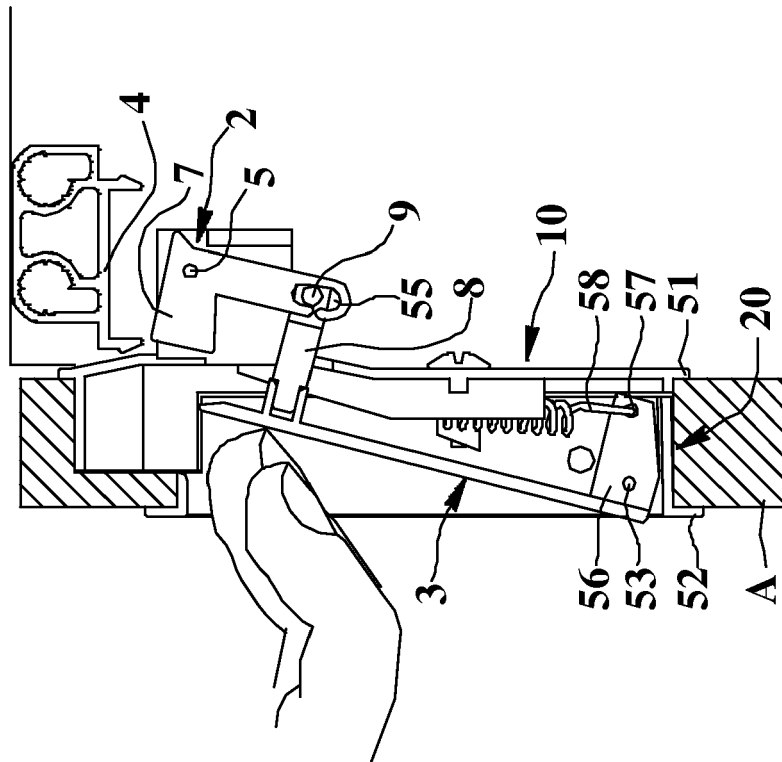


FIG.14



European Patent
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EUROPEAN SEARCH REPORT

Application Number
EP 08 15 5734

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The present search report has been drawn up for all claims			
Place of search Munich		Date of completion of the search 6 August 2008	Examiner MacCormick, Duncan
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EPO FORM 1503 03.82 (P04C01)

**ANNEX TO THE EUROPEAN SEARCH REPORT
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