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(54) **REVERSIBLE LATCH LOCK**

UMKEHRBARES FALLENSCHLOSS

VERROU DEMI-TOUR RÉVERSIBLE

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**EP 3 045 625 B1**

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## Description

### BACKGROUND OF THE INVENTION

**[0001]** The present invention refers to a reversible latch lock, suitable for opening right-hand and left-hand doors, in which the orientation of a spring latch can be reversed by turning of 180°, after being moved in an advanced position with respect to a front plate that normally closes the box body of the lock.

### PRIOR ART

**[0002]** A conventional latch lock comprises a box body closed by a front plate having an opening, for example of rectangular shape, through which an elastically biased spring latch partially protrudes with respect to the same front plate. The box body of the latch lock is normally housed in a cavity of a door, by fastening the box body to the door frame by screws inserted through suitable holes in the front plate.

**[0003]** In a conventional latch lock, the latch has to be suitably pre-oriented by the manufacturer during the assembly, according to the direction of closure of the left-hand or right-hand door; thus a conventional latch lock, with a pre-oriented latch, for example for right-hand opening doors, cannot be used on left-hand opening doors because it would not allow such doors to shut and, if the door slammed, the lock and even the door could be damaged.

**[0004]** As a result, if a conventional latch lock is mounted with the latch incorrectly oriented, the latch lock has to be removed and replaced with another one with a correctly oriented latch. All this entails a waste of time, additional labour costs for replacing the lock and the need for the manufacturer to have locks available that have already been set up.

**[0005]** In order to overcome such drawbacks, latch locks have been designed with reversible latches suitable for opening right-hand or left-hand doors; with latch locks of this type it is thus possible to correctly pre-orient or modify the orientation of the latch before fitting the latch lock in a door, by an operator, according to the closure direction of the door, or intervene subsequently to reverse the orientation of the latch without having to replace the latch lock.

**[0006]** Reversible latch locks are disclosed for example in US 4.695.082, US 7.510.222 and US 6.393.878; in most cases the reversal of the latch is performed by disengaging the latch from an internal mechanism of the lock, by acting with a tool through an opening in a side wall of the box body of the latch lock.

**[0007]** Such a solution is advantageous because it frees the manufacturer and the locksmith from having to set up the latch locks with the latches already oriented, enabling the same locksmith to nevertheless reverse the orientation of the latch, if this becomes necessary, without having to replace the latch lock.

**[0008]** Nevertheless, such a solution has a serious drawback; in fact, if a latch lock for a right-hand door is accidentally fitted with the latch incorrectly oriented, it is again necessary to remove the latch lock from the door and act from one side of the box body of the latch lock to reverse the orientation of the latch, then refitting the latch lock into the door with resulting loss of time and additional labour costs.

**[0009]** Reversible latch locks, in which the orientation of the latch can be reversed by acting from the outside, both before and after fitting of the latch lock on a door, are disclosed for example in US 4.958.866, US 5.123.684 and FR 2787491. Furthermore, a latch lock according to the preamble of claim 1 is known from FR 2488644.

**[0010]** In particular, US 4.958.866 discloses a reversible latch lock in which the latch is provided with a long stem terminating with a circular head engaging with an abutting member configured for maintaining the latch in an advanced operative position; by acting with a tool through a hole in a position spaced apart from the opening for the latch in the front plate, it is possible to disengage the abutting member to remove and rotate 180° the latch to reverse the orientation thereof. Such a solution has on the one hand the advantage of being suitable to reverse the latch by acting directly from the front side without removing the latch lock from the door, but nevertheless presents a mechanically complex solution in which the latch has to be previously inserted into the box body during assembly of the latch lock by the manufacturer; accordingly, in a latch lock of this kind it is possible to replace a latch with another one of different type just by reopening the box body to disassemble part of the internal drive mechanism; such a latch lock is not only constructionally complex and costly but it is hardly suitable for meeting today's needs for latch locks of this type.

**[0011]** US 5.123.684 and FR 2787491 in turn show a solution in which the latch is fastened to a slider by a screw that is accessible through an axial hole of the latch; although in this case a simplified solution is proposed in terms of aesthetics and safety, these solutions, like the previous one, are inadvisable because they do not rule out that the orientation of the latch may be accidentally reversed by an inexperienced person, with consequent damage to the latch lock and to the same door.

### OBJECTS OF THE INVENTION

**[0012]** There is thus a need to find a new and different solution for a reversible latch lock, which is suitable to meet different constructional and functional needs, in particular:

- a) has a constructionally simple, safe and easy-to-use solution;
- b) enables the orientation of the spring latch to be reversed by a simple free rotation, both before and after the latch lock has already been fitted in a door, by acting frontally from the outside without having to

remove the latch lock;  
 c) enables the latch to be inserted with the latch lock already mounted in a door without having to remove the latch lock; and  
 d) permits a cheap and aesthetically pleasing solution.

#### SHORT DESCRIPTION OF THE INVENTION

**[0013]** The present invention thus aims to overcome the drawbacks of known reversible latch locks and obtain the advantages stated above by a solution according to claim 1.

**[0014]** In particular, according to the present invention a reversible latch lock has been provided that is suitable for right-hand and left-hand opening doors, comprising:

a box body and a front plate provided with an opening for a spring latch;  
 a spring latch and slider assembly operatively connected to an actuating device of the latch lock;  
 wherein the assembly of the latch and slider is elastically biased and guided in an axial direction along a sliding plane, and is elastically biased to a first advanced position in which the latch partially protrudes from the front plate;  
 snap engaging means between the latch and the slider; and  
 first stop means for stopping the slider, configured for maintaining the latch in the first advanced position, characterised in that  
 the first stop means of the slider are provided with an elastically flexible stop arm having a fore end facing the front plate, in which the stop arm extends having a fore end, which extends on a side of the slider parallel to a sliding axis of the same;  
 the stop arm being configured with a stop protrusion at the fore end slidable in a longitudinal guide slot provided in a side wall of the box body; and  
 in that the latch-slider assembly is axially movable in a second more advanced position than the front plate, in which the latch may be freely turned to reverse the orientation after disengagement of the stop protrusion from the guide slot by flexing the stop arm of the slider by acting from the outside, using a tool insertable from one side of the opening for the latch, or from a hole of the front plate, in a position aligned with the fore end of the stop arm.

#### SHORT DESCRIPTION OF THE DRAWINGS

**[0015]** The invention, and some preferred embodiments, will be disclosed in greater detail below, with reference to the drawings, in which:

Fig. 1 is a side view of the latch lock with the box body closed by a side cover;

Fig. 2 is a similar view to that of figure 1, with the box body open upon removal of the cover;

Fig. 3 is an enlarged view of the front plate, with the latch oriented in one direction;

Fig. 4 is an exploded perspective view of the latch-slider assembly, according to a first embodiment, in a disassembled condition;

Fig. 5 is a perspective view of the latch-slider assembly in an assembled condition;

Fig. 6 is a side view of the latch lock, similar to figure 1, during reversal of the spring latch;

Fig. 7 is an enlarged detail of figure 6;

Fig. 8 is an enlarged view according to line 8-8 of figure 6;

Fig. 9 is a perspective view of the latch and the slider assembly showing the reversal of the spring latch;

Fig. 10 is a perspective view of the latch-slider assembly of a second embodiment;

Fig. 11 is a longitudinal section of the latch-slider assembly of figure 12, in an assembled condition;

Fig. 12 shows a second embodiment of the slider;

Fig. 13 shows a different form of the guide slot for the slider of figure 10.

#### DETAILED DESCRIPTION OF THE INVENTION

**[0016]** With reference to figures 1 to 11, a first embodiment will be disclosed of a reversible latch lock according to the invention; the latch lock comprises a box body 10 of metal sheet, having a cover or side wall 11 and a front plate 12 provided with a rectangular opening 13 for a spring latch 14. The side wall 11 of the box body, as shown in figure 1, is configured with a first longitudinal guide slot 15 for guiding a stop protrusion 16 at the fore end of a stop arm 31 for a latch-slider assembly 14-17, as explained below. In particular the guide slot 15 for the stop protrusion 16 longitudinally extends, in an axial sliding direction of the spring latch 14 and the slider 17, for a length substantially equal to the operative stroke of the latch 14, between a retracted position, not shown, in which the latch 14 is totally inside in the box body 10, and a first advanced position, shown in figures 1 and 2, in which the latch 14 partially protrudes from the front plate 12 with the bevelled side face 14' facing one side wall of the box body of the latch lock, for example for left-hand opening doors.

**[0017]** As shown in figure 2 and in the perspective view of figures 4 and 5, according to this first embodiment the latch lock comprises the spring latch 14 and-slider 17 assembly provided with a snap engaging system configured for axially connecting the latch 14 to the slider 17, enabling the latch 14 to freely rotate or be turned of 180° with respect to the slider 17 in the assembled condition shown in figures 9-11, preventing the latch from disengaging from the slider 17 during rotation.

**[0018]** In particular, from figures 2, 4 and 5 it is noted that the latch 14 comprises a bevelled face 14' and two side slots 18.1 and 18.2 that longitudinally extend in the

axial sliding direction of the latch 14 and the slider 17.

**[0019]** On the rear side facing the slider 17, the latch 14 has a cylindrical or slightly conical shank 19, intended to be threaded into an identically configured axial hole 20 on the front side of the slider 17, as shown in figure 6; the shank 19 terminates with a flat head 21 of substantially triangular shape, having two side recesses 21.1, in which the head 21 of the shank 19 can be threaded into a frontal hole of the slider 17, for snap engaging in an identically configured seat 22 of two elastic arms 23 of the slider 17; as shown in figures 4 and 5, the two elastic arms 23 at the fore end thereof are provided with a tile-shaped tooth, configured with an arched shoulder conforming to the side recesses 21.1 of the head 21; during reversal of the spring latch 14, the hooking of the head 21 to the slider 17 enables the latch 14 to freely rotate and reverse orientation by 180°, so as to conform the latch lock to a right-hand or left-hand opening door.

**[0020]** Thus, as shown, in the assembled condition of the latch 14 and slider 17 assembly, the latch 14 is axially connected to the slider 17, with the possibility to turn of 180° and be oriented in both directions after the latch 14 and slider 17 assembly is disengaged from the box body 10 and moved in a second position in which the latch 14 is more advanced than the front plate 12 and the first advanced position of figure 2.

**[0021]** Returning to the embodiment of figure 2, the latch 14 and slider 17 assembly is slidably guided in the box body 10 and is elastically biased by a spring 25 to normally maintain the latch 14 in the first advanced position in which the latch 14 partially protrudes from the aperture of the front plate; the slider 17 is further operatively connected to a plate 26 constituting part of an internal actuating device, for example of the type described in IT1348100 of the same applicant, or of another type, that can be controlled by a key inserted into a side hole 27, or by a handle connected to a rotatable hub 28 provided with a lever 29 that engages a lateral protrusion 30 of the plate 26.

**[0022]** As previously stated, the latch 14 and slider 17 assembly is axially guided in an slidable manner in the box body 10, and is elastically biased by the spring 25 between a retracted position with respect to the front plate 12, in which the latch 14 is inside the box body 10, and a first advanced position in which the latch slider assembly is biased by the spring 25 in an operative condition in which the latch 14 partially protrudes from the opening 13 of the front plate 12.

**[0023]** These two positions of the latch 14 and slider 17 assembly are defined by a stop protrusion 16 at the fore end of a flexible stop arm 31, against the end of the guide slot 15. In order to enable the latch 14 and slider 17 assembly to be moved forwards, in a second position that is further advanced than the first operative position and the front plate 12, in which the latch 14 can be manually turned to reverse the orientation of the bevelled face 14' thereof, the stop protrusion 16 has to be disengaged from the guide slot 15. Accordingly, as shown in figures

4 and 5, the stop protrusion 16 is provided at the fore end of an elastically flexible arm 31 on a side of the slider 17 parallel to the axial sliding direction, in which the fore end of the stop arm 31 facing the front plate 12 terminates with a bevelled surface 32 axially aligned to a side slot 17.1 of the slider 17, aligned to a side slot 18.1 of the latch 14.

**[0024]** According to the present invention, unlike other solutions, the stop protrusion 16 can be disengaged from the guide slot 15 acting from the outside of the latch lock, by flexing the stop arm 31, in a direction that is orthogonal to the sliding axis of the slider 17, by acting frontally from the outside on the fore end on the slanted surface 32 with an appropriate tool insertable into the front plate 12, for example from one side of the opening 13 for the latch, along the longitudinal slots 18.1 and 17.1, or through a hole 33, figure 3, in a position axially aligned to the fore end of the stop arm 31, or part thereof.

**[0025]** In addition the first stop means in the first advanced position of the slider 17, which means are constituted by the first protrusion 16 of the stop arm 31 and by the guide slot 15, second stop means for the slider 17 are provided suitable for stopping the slider 17 and the latch 14 in a second position that is further advanced than the preceding one and the front plate 12; in the second advanced position the latch 14 can be freely rotated in relation to the slider 17 to reverse the orientation thereof according to the right-hand or left-hand closing direction of a door, without disengaging the latch 14 from the slider 17.

**[0026]** The second stop means for the slider 17 can be anyway configured and positioned on the same slider 17 and on one or more side walls of the box body 10; for example the second stop means for the slider 17 can consist of one or more additional protrusions suitable for stopping against respective shoulders inside the box body 10, or vice versa.

**[0027]** In the case shown, the second stop means for the slider 17 consists of at least a second protrusion 35 and a third protrusion 36 on the same side of the slider 17 in relation to the first stop protrusion 16, and a possible fourth protrusion on the side of the slider 17 opposite the preceding one.

**[0028]** The protrusions 35, 36 relative to the second stop means for the slider 17, slide in corresponding guide slots 37 and 38, figure 1, that extend parallel and in relation to the guide slot 15 of the first stop protrusion 16, for a short length sufficient to enable the stop protrusion 16, once it has been disengaged from the guide slot 15 by the flexure of the stop arm 31, to be moved forwards with respect to the fore edge of the guide slot 15, as shown schematically in figure 9. In this manner, as shown in the perspective view in figure 9 in which the same reference numbers have been used to indicate similar or equivalent parts, after disengagement of the protrusion 16 of the stop arm 31 from the guide slot 15, as shown in the detail in figure 7, the latch slider assembly 14, 17 can be manually moved forward in the position of figure

6, in which the latch 14 is further advanced than the front plate 12, to be turned 180° in one direction or in an opposite direction, to reverse the orientation of the bevelled face 14' thereof, always maintaining the latch 14 axially hooked to the slider 17.

**[0029]** Once the latch 14 has been reversed, the latch-slider assembly just needs to be pushed backwards to make the latch partially re-enter the box body 10; by so doing, the first stop protrusion 16, due to the elasticity of the stop arm 31, snaps and engages again into the guide slot 15.

**[0030]** Figures 10 and 11 show a second solution of the latch 14 and slider 17 assembly of a reversible latch lock of the type previously disclosed; thus in figures 12 and 13 the same reference numbers of the preceding figures have been used to indicate similar or equivalent parts.

**[0031]** Again, in the case of figures 12 and 13, the spring latch 14 snap engages with the slider 17 with the possibility, once engaged to freely rotate or turn around the longitudinal axis of the shank 19; the slider 17 is again provided with a stop arm 31 configured with a stop protrusion 16 slidable in a guide slot 15 of the box body, in a position aligned with the side slots 18.1 of the latch 14 and 17.1 of the slider 17, and with protrusions 35 and 36 defining second guide and stop means for the slider 17.

**[0032]** The solution of figures 12 and 13 differs from the preceding one by the configuration of the snap engaging means of the latch 14 for engaging with the slider 17. In this second case, the shank 19 of the latch 14 has a longitudinal cut 39, that is for example V-shaped, and extends over the entire length of the shank 19 to make the shank 19 elastically deformable in a radial direction; obviously, alternatively to the V-shaped cut, the shank 19 can be differently configured and made elastically deformable in a radial direction.

**[0033]** The shank 19 also has a cylindrical or slightly conical configuration of the longitudinal hole 20 at the fore end of the slider 17, and is provided with two side teeth 40, having bevelled edges that snap engage against a shoulder surface in a cross cavity 42 into which open the longitudinal hole 20.

**[0034]** For the rest, the solution of figures 10 and 11 of the latch and-slider 17 assembly 14, 17 operates in the same way as the embodiment of figures 1-11.

**[0035]** In both solutions, the slider 17 has a body having a rectangular configuration, wherein first and second guide and stop means for the slider 17 are provided on a main side of the rectangular body of the slider 17, parallel to a side wall of the box body 10; nevertheless, it is not ruled out that the slider 17 and the stop means may be differently configured from what has been shown.

**[0036]** In the preceding solutions, the elastic stop arm 31 of the slider 17 is elastically flexible in a direction orthogonal to the sliding axis of the slider 17, to disengage the stop protrusion 16 from the guide slot 15; in this manner, by advancing the latch and-slider assembly 14, 17, the stop protrusion 16 slides partially below the side wall

11 of the box body, as shown in figure 7.

**[0037]** Other solutions are nevertheless possible for the stop means of the slider, configured for disengaging the slider from the box body of the lock, and for advancing the slider to a position in which the reversal is made possible by freely turning 180° the latch without disengaging the same latch 14 from the slider 17, as the previous case.

**[0038]** Figures 12 and 13 show, by way of example, a further solution in which the same reference numbers have been used as for the preceding figures to indicate similar or equivalent parts.

**[0039]** The solution of figures 12 and 13 differs from the preceding solutions inasmuch as now the stop protrusion 16 can be disengaged from the guide slot 15 by laterally flexing the elastic stop arm 31, again with a tool inserted from the outside through the front plate 12 of the latch lock. In this case the bevelled surface 32 at the fore end of the stop arm 31 is differently oriented in respect to the preceding embodiments to permit a lateral flexure of the stop arm 31 by means of longitudinal thrust from the outside by a tool. Whereas in the case of figures 1-11 the surface 32, at the fore end of the stop arm 31, forms an angle, for example of 45°, with the sliding plane of the slider 17, in the case of figures 12 and 13 the slanted surface 32, at the fore end of the elastic arm 31, forms an angle, for example still of 45°, above or below, with a reference plane parallel to the longitudinal axis of the slider and orthogonally arranged to the sliding plane.

**[0040]** Owing to the different flexure direction of the stop arm 31, the shape of the guide slot for the stop protrusion 16 must be modified, as shown in figure 13. In particular, the guide slot 15 for the stop protrusion 16, on the side corresponding to the flexure direction of the stop arm 31, is configured with an additional slit 15.1 into which the stop protrusion 16 can penetrate following the lateral flexure of the arm 31; the slit 15.1 extends forward for a short length beyond the fore end of the guide slot 15, sufficient to stop the slider 17 in a condition in which the latch 14 is in the more advanced second position in which can be reversed by a simple free rotation of 180° without being disengaged from the slider 17.

**[0041]** From what has been said and shown in the various figures, it will be understood that a reversible latch lock has been provided, having an extremely simplified latch-slider assembly suitably configured to permit a reversal of the spring latch in respect to the slider by means of a simple rotation by acting frontally from the outside of the box body 10 with an appropriate tool threaded through a side of the opening 13 for the latch 14, or a side hole 33, aligned to the fore end of an elastic stop arm 31 to disengage a stop protrusion 16 from a guide slot 15 on a side wall of the box body 10 of the latch lock; the slider 17 is further provided with auxiliary stop means 35, 36 suitable for enabling the slider 17 to stop with the latch 14 in a position further advanced than the front plate 12 to manually advancing and rotate the latch 14 to reverse the orientation thereof.

**[0042]** Thus, other modifications and/or changes can

be made to the latch, the slider and to the box body without departing from the claims.

## Claims

1. A reversible latch lock, suitable for right-hand and left-hand opening doors, comprising:

a box body (10) and a front plate (12) provided with an opening (13) for a spring latch (14);  
a spring latch (14) and slider (17) assembly operatively connected to an actuating device (26) of the latch lock;

wherein the assembly of the latch and slider (14, 17) is elastically biased and guided in an axial direction along a sliding plane, and is elastically biased to a first advanced position in which the latch (14) partially protrudes from the front plate (12);

snap engaging means (21, 23) between the latch (14) and the slider (17); and  
first stop means for the slider (17), configured for maintaining the latch (14) in the first advanced position,

**characterised in that**

the first stop means of the slider (17) are provided with an elastically flexible stop arm (31) having a fore end (32) facing the front plate (12), in which the stop arm (31) extends having a fore end which extends on a side of the slider parallel to a sliding axis of the same;

the stop arm (31) being configured with a stop protrusion (16) at the fore end slidable in a longitudinal guide slot (15) provided in a side wall (11) of the box body (10); and

**in that** the latch-slider assembly (14-17) is axially movable in a second more advanced position than the front plate (12), in which the latch may be freely turned to reverse the orientation after disengagement of the stop protrusion (16) from the guide slot (15), by flexing the stop arm (31) of the slider (17) by acting from the outside, using a tool insertable from one side of the opening (13) for the latch (14), or from a hole (33) of the front plate (17), in a position aligned with the fore end (32) of the stop arm (31).

2. The reversible latch lock according to claim 1, **characterised in that** the elastic stop arm (31) of the slider (17) is provided with a slanted surface at the fore end (32).
3. The reversible latch lock according to claim 2, **characterised in that** the stop arm (31) is flexible in a direction orthogonal to a sliding plane of the slider (17), and **in that** the slanted surface at the fore end (32) of the stop arm (31) is angularly oriented in re-

spect to the sliding plane of the slider (17).

4. The reversible latch lock according to claim 2, **characterised in that** the stop arm (31) is flexible laterally in respect to the slider (17), and **in that** the slanted surface at the fore end (32) of the stop arm (31) is angularly oriented in respect to a reference plane parallel to the longitudinal axis of the slider (17) and orthogonally oriented to the sliding plane.

5. The reversible latch lock according to claims 1 and 4, **characterised in that** the longitudinal guide slot (15) for the stop protrusion (16) of the stop arm (31), on a side in the flexure direction of the stop arm (31), is provided with an auxiliary slot (15.1) extending forwards beyond the guide slot (15).

6. The reversible latch lock according to claim 1, **characterised by** comprising second stop and guide means (35, 36) to stop the slider (17) and latch (14) assembly in the second more advanced position in respect to the front plate (12).

7. The reversible latch lock according to claim 6, **characterised in that** the second stop and guide means for the slider (17) comprises at least an auxiliary protrusion (35, 36) on at least one side of the slider (17), slidable in a respective guide slot (37, 38) on a side wall (11) of the box body (10).

8. The reversible latch lock according to claim 1, **characterised in that** the slider (17) has a rectangular configuration, wherein the second guide and stop means for the slider (17) in the first, respectively in the second advanced positions of the latch (14), is provided on at least one side of the rectangular body of the slider (17).

9. The reversible latch lock, according to claim 1, **characterised in that** the snap engaging means comprises a cylindrical or tapered shank (19) of the latch (14), which extends in a similarly configured axial hole (20) at the fore end of the slider (17), and **in that** the shank (19) of the latch is provided with a flat head (21) configured for snap engaging elastic arms (23) of the slider (17), having arc-shaped retaining teeth (22).

10. The reversible latch lock according to claim 1, **characterised in that** the snap-engaging means comprises a cylindrical or tapered shank (19) of the latch (14), which extends in a similarly configured axial hole (20) at a fore end of the slider (17); and **in that** the shank (19) is provided with a longitudinal slit (39) and provided with side teeth (40) configured for snap engaging a shoulder surface into a cavity (42) of the slider (17), into which opens the axial hole (20).

## Patentansprüche

1. Umkehrbares Fallenschloss, das für rechts- und linksöffnende Türen geeignet ist, umfassend:

einen Kastenkörper (10) und eine Frontplatte (12), die mit einer Öffnung (13) für eine Federfalle (14) versehen ist;

eine Anordnung von einer Federfalle (14) und einem Schieber (17), die mit einer Betätigungsverrichtung (26) des Fallenschlosses betriebsmäßig verbunden ist;

wobei die Anordnung von der Falle und dem Schieber (14, 17) in einer axialen Richtung entlang einer Verschiebeebene elastisch vorgespannt und geführt ist und in einer vorgeschobenen Position, in der die Falle (14) teilweise von der Frontplatte (12) vorsteht, elastisch vorgespannt ist;

Schnapp-Eingriffsmittel (21, 23) zwischen der Falle (14) und dem Schieber (17); und erste Anschlagmittel für den Schieber (17), konfiguriert zum Halten der Falle (14) in der ersten vorgeschobenen Position,

**dadurch gekennzeichnet, dass**

die ersten Anschlagmittel des Schiebers (17) mit einem elastisch flexiblen Anschlagarm (31) versehen sind, der ein Vorderende (32) aufweist, das der Frontplatte (12) zugewandt ist, in der sich der Anschlagarm (31) mit einem Vorderende an einer Seite des Schiebers parallel zu einer Verschiebeachse desselben erstreckt; wobei der Anschlagarm (31) mit einem Anschlagvorsprung (16) an dem Vorderende konfiguriert ist, der in einem länglichen Führungsschlitz (15), der in einer Seitenwand (11) des Kastenkörpers (10) vorgesehen ist, verschiebbar ist; und

dadurch, dass die Falle-Schieber-Anordnung (14-17) axial in eine zweite weiter vorgeschobene Position als die Frontplatte (12) bewegbar ist, in der die Falle frei gedreht werden kann, um die Ausrichtung nach dem Lösen des Anschlagvorsprungs (16) von dem Führungsschlitz (15) umzukehren, durch Biegen des Anschlagarms (31) des Schiebers (17) durch Einwirken von Außen, unter Verwendung eines Werkzeugs, das von einer Seite der Öffnung (13) der Falle (14) oder von einem Loch (33) der Frontplatte (17) einsetzbar ist, in einer Position, die mit dem Vorderende (32) des Anschlagarms (31) ausgerichtet ist.

2. Umkehrbares Fallenschloss nach Anspruch 1, **dadurch gekennzeichnet, dass** der elastische Anschlagarm (31) des Schiebers (17) mit einer geneigten Oberfläche an dem Vorderende (32) versehen ist.

3. Umkehrbares Fallenschloss nach Anspruch 2, **dadurch gekennzeichnet, dass** der Anschlagarm (31) in einer Richtung senkrecht zu einer Verschiebeebene des Schiebers (17) flexibel ist und dadurch, dass die geneigte Oberfläche an dem Vorderende (32) des Anschlagarms (31) unter einem Winkel in Bezug auf die Verschiebeebene des Schiebers (17) ausgerichtet ist.

4. Umkehrbares Fallenschloss nach Anspruch 2, **dadurch gekennzeichnet, dass** der Anschlagarm (31) seitlich in Bezug auf den Schieber (17) flexibel ist und dadurch, dass die geneigte Oberfläche an dem Vorderende (32) des Anschlagarms (31) unter einem Winkel in Bezug auf eine Bezugsebene parallel zu der Längsachse des Schiebers (17) ausgerichtet ist und senkrecht zu der Verschiebeebene ausgerichtet ist.

5. Umkehrbares Fallenschloss nach den Ansprüchen 1 bis 4, **dadurch gekennzeichnet, dass** der längliche Führungsschlitz (15) für den Anschlagvorsprung (16) des Anschlagarms (31), an einer Seite in der Biegerichtung des Anschlagarms (31), mit einem Hilfsschlitz (15.1) versehen ist, der sich nach vorne über den Führungsschlitz (15) hinaus erstreckt.

6. Umkehrbares Fallenschloss nach Anspruch 1, **gekennzeichnet durch** Umfassen von einem zweiten Anschlag- und Führungsmittel (35, 36), um die Schieber (17)-und-Falle (14)-Anordnung in der zweiten, weiter vorgeschobenen Position in Bezug auf die Frontplatte (12) zu stoppen.

7. Umkehrbares Fallenschloss nach Anspruch 6, **dadurch gekennzeichnet, dass** das zweite Anschlag- und Führungsmittel (35, 36) für den Schieber (17) zumindest einen Hilfsvorsprung (35, 36) an zumindest einer Seite des Schiebers (17) umfasst, der in einem entsprechenden Führungsschlitz (37, 38) an einer Seitenwand (11) des Kastenkörpers (10) verschiebbar ist.

8. Umkehrbares Fallenschloss nach Anspruch 1, **dadurch gekennzeichnet, dass** der Schieber (17) eine rechteckige Konfiguration aufweist, wobei das zweite Anschlag- und Führungsmittel für den Schieber (17) in der ersten bzw. in der zweiten vorgeschobenen Position der Falle (14) zumindest an einer Seite des rechteckigen Körpers des Schiebers (17) vorgesehen ist.

9. Umkehrbares Fallenschloss nach Anspruch 1, **dadurch gekennzeichnet, dass** das Schnapp-Eingriffsmittel einen zylindrischen oder konischen Schaft (19) der Falle (14) umfasst, der sich in ein ähnlich konfiguriertes axiales Loch (20) an dem Vorderende des Schiebers (17) erstreckt, und dadurch,

dass der Schaft (19) der Falle mit einem flachen Kopf (21) versehen ist, der zum Schnapp-Eingreifen in elastische Arme (23) des Schiebers (17), die bogenförmige Haltezähne (22) aufweisen, konfiguriert ist.

10. Umkehrbares Fallenschloss nach Anspruch 1, **dadurch gekennzeichnet, dass** das Schnapp-Eingriffsmittel einen zylindrischen oder konischen Schaft (19) der Falle (14) umfasst, der sich in ein ähnlich konfiguriertes axiales Loch (20) an dem Vorderende des Schiebers (17) erstreckt; und dadurch, dass der Schaft (19) mit einem Längsschlitz (39) versehen ist und mit Seitenzähnen (40) versehen ist, die zum Schnapp-Eingreifen einer Schulteroberfläche in einen Hohlraum (42) des Schiebers (17), in den sich das axiale Loch (20) öffnet, konfiguriert sind.

## Revendications

1. Serrure réversible à loquet, appropriée pour des portes à ouverture vers la droite et vers la gauche, comprenant :

un corps (10) en forme de boîtier et une plaque avant (12) munie d'une ouverture (13) pour un loquet à ressort (14) ;

un assemblage de loquet à ressort (14) et de coulisseau (17) relié de manière fonctionnelle à un dispositif d'activation (26) de la serrure à loquet ;

dans laquelle l'assemblage du loquet et du coulisseau (14, 17) est mis en état de précontrainte élastique et guidé dans une direction axiale le long d'un plan de glissement, et est mis en état de précontrainte élastique en direction d'une première position avancée dans laquelle le loquet (14) fait saillie en partie par rapport à la plaque avant (12) ;

un moyen d'engrènement par encliquetage (21, 23) entre le loquet (14) et le coulisseau (17) ; et un premier moyen d'arrêt pour le coulisseau (17) configuré pour maintenir le loquet (14) dans la première position avancée ;

**caractérisée en ce que**

les premiers moyens d'arrêt du coulisseau (17) sont munis d'un bras d'arrêt (31) manifestant une flexibilité élastique possédant une extrémité avant (32) opposée à la plaque avant (12), le bras d'arrêt (31) s'étendant d'une manière telle qu'une extrémité avant s'étend sur un côté du coulisseau parallèle à un axe de glissement de ce dernier ;

le bras d'arrêt (31) est configuré avec une saillie d'arrêt (16) à l'extrémité avant, apte à coulisser dans une fente de guidage longitudinale (15) prévue dans une paroi latérale (11) du corps (10)

en forme de boîtier ; et

**en ce que** l'assemblage loquet-coulisseau (14-17) peut se déplacer en direction axiale dans une deuxième position plus avancée que la plaque avant (12), dans laquelle le loquet peut effectuer librement des rotations pour inverser l'orientation après le désengrènement de la saillie d'arrêt (16) par rapport à la fente de guidage (15), via une flexion du bras d'arrêt (31) du coulisseau (17) en agissant depuis l'extérieur, par l'utilisation d'un outil qui peut être inséré à partir d'un côté de l'ouverture (13) pour le loquet (14), ou à partir d'un trou (33) de la plaque avant (17), dans une position en alignement avec l'extrémité avant (32) du bras d'arrêt (31).

2. Serrure réversible à loquet selon la revendication 1, **caractérisée en ce que** le bras élastique (31) du coulisseau (17) est muni d'une surface inclinée à l'extrémité avant (32).

3. Serrure réversible à loquet selon la revendication 2, **caractérisée en ce que** le bras d'arrêt (31) est flexible dans une direction orthogonale par rapport à un plan de glissement du coulisseau (17), et **en ce que** la surface inclinée à l'extrémité avant (32) du bras d'arrêt (31) est orientée en formant un angle par rapport au plan de glissement du coulisseau (17).

4. Serrure réversible à loquet selon la revendication 2, **caractérisée en ce que** le bras d'arrêt (31) est flexible latéralement par rapport au coulisseau (17), et **en ce que** la surface inclinée à l'extrémité avant (32) du bras d'arrêt (31) est orientée en formant un angle par rapport à un plan de référence parallèle à l'axe longitudinal du coulisseau (17) et orienté de manière orthogonale par rapport au plan de glissement.

5. Serrure réversible à loquet selon les revendications 1 et 4, **caractérisée en ce que** la fente de guidage longitudinale (15) pour la saillie d'arrêt (16) du bras d'arrêt (31), d'un côté dans la direction de flexion du bras d'arrêt (31), est munie d'une fente auxiliaire (15.1) s'étendant vers l'avant au-delà de la fente de guidage (15).

6. Serrure réversible à loquet selon la revendication 1, **caractérisée par le fait qu'**elle comprend un second moyen d'arrêt et de guidage (35, 36) pour stopper l'assemblage de coulisseau (17) et de loquet (14) dans la seconde position plus avancée par rapport à la plaque avant (12).

7. Serrure réversible à loquet selon la revendication 6, **caractérisée en ce que** le second moyen d'arrêt et de guidage pour le coulisseau (17) comprend au moins une saillie auxiliaire (35, 36) sur au moins un

côté du coulisseau (17), apte à coulisser dans une fente de guidage respective (37, 38) sur une paroi latérale (11) du corps (10) en forme de boîtier.

8. Serrure réversible à loquet selon la revendication 1, 5  
**caractérisée en ce que** le coulisseau (17) possède une configuration de forme rectangulaire, le second moyen de guidage et d'arrêt pour le coulisseau (17) dans la première, respectivement dans la seconde position avancée du loquet (14), étant prévu au moins d'un côté du corps rectangulaire du coulisseau (17). 10
  
9. Serrure réversible à loquet selon la revendication 1, 15  
**caractérisée en ce que** le moyen d'engrènement par encliquetage comprend une tige cylindrique ou tronconique (19) du loquet (14), qui s'étend dans un trou axial (20) de configuration similaire à l'extrémité avant du coulisseau (17), et la tige (19) du loquet est munie d'une tête plate (21) configurée pour l'engrènement par encliquetage de bras élastiques (23) du coulisseau (17), possédant des dents de retenue de forme arquée (22). 20
  
10. Serrure réversible à loquet selon la revendication 1, 25  
**caractérisée en ce que** le moyen d'engrènement par encliquetage comprend une tige cylindrique ou tronconique (19) du loquet (14), qui s'étend dans un trou axial (20) de configuration similaire à une extrémité avant du coulisseau (17) ; **et en ce que** la tige (19) est munie d'une fente longitudinale (39) et munie de dents latérales (40) configurées pour l'engrènement par encliquetage d'une surface d'épaule-  
ment dans une cavité (42) du coulisseau (17), dans laquelle s'ouvre le trou axial (20). 30  
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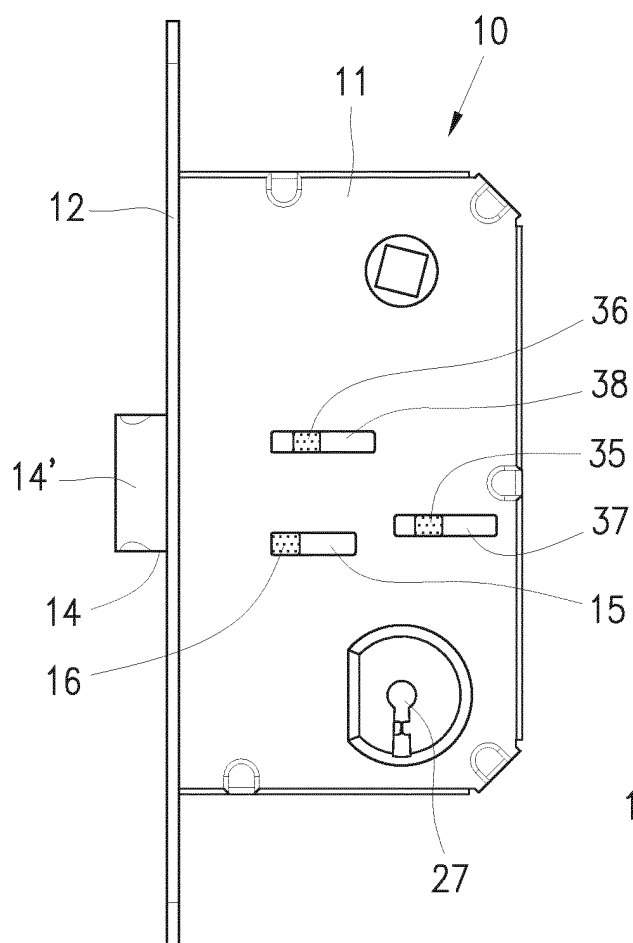


Fig. 1

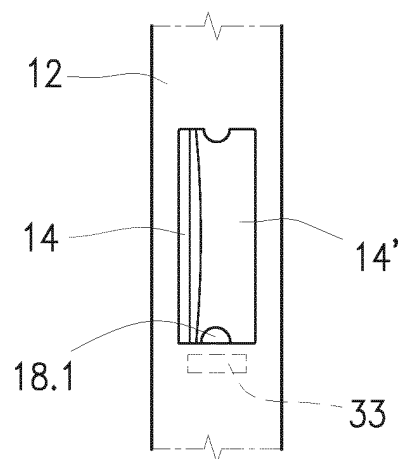


Fig. 3

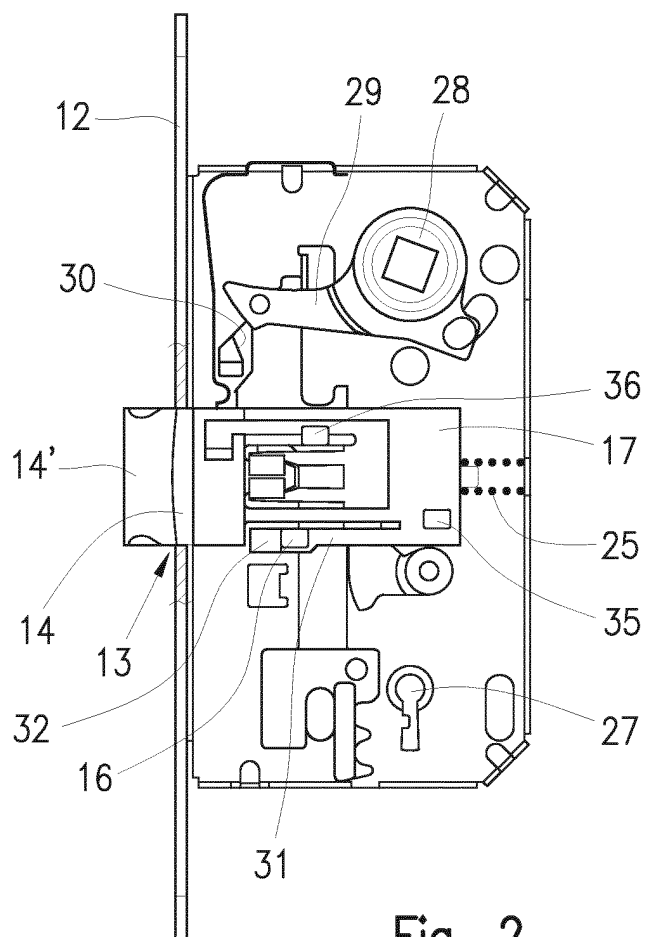


Fig. 2

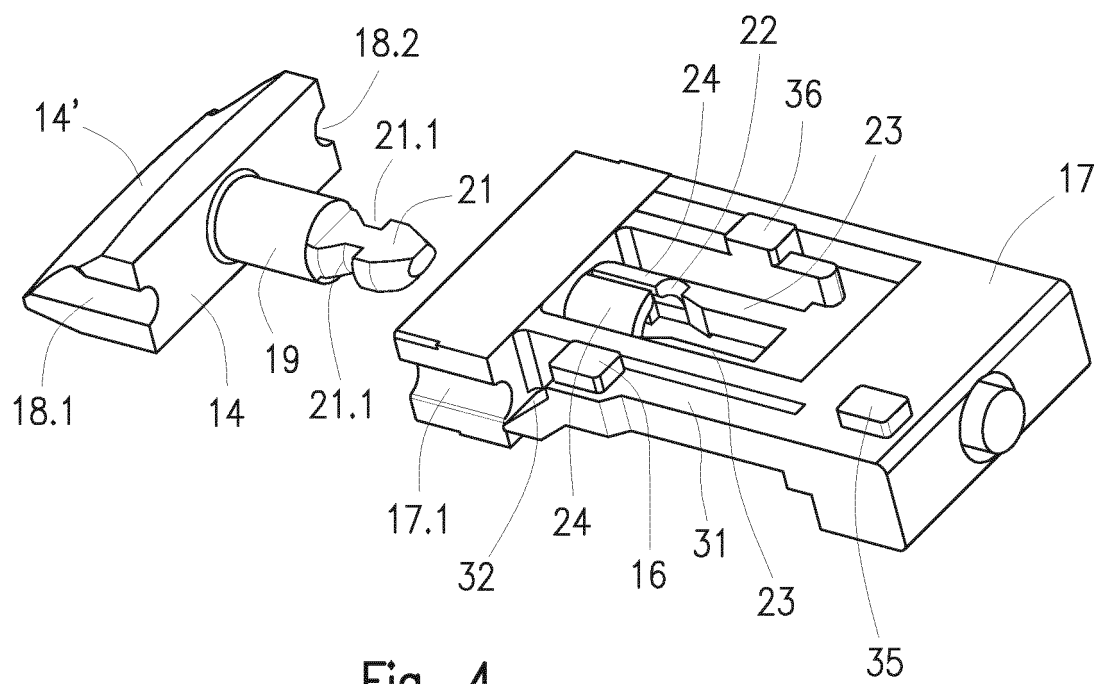


Fig. 4

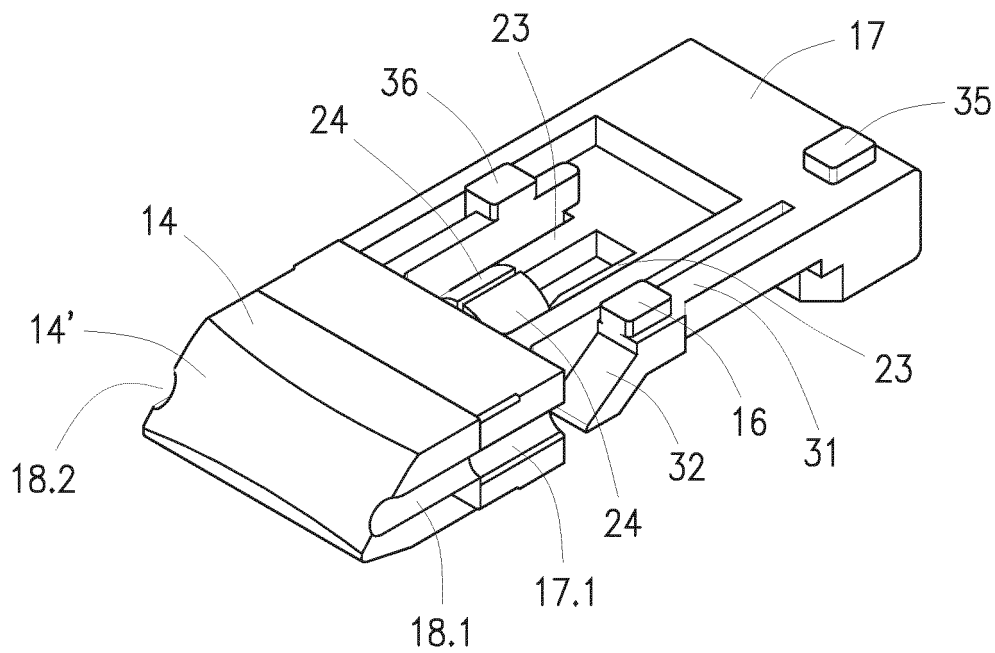


Fig. 5

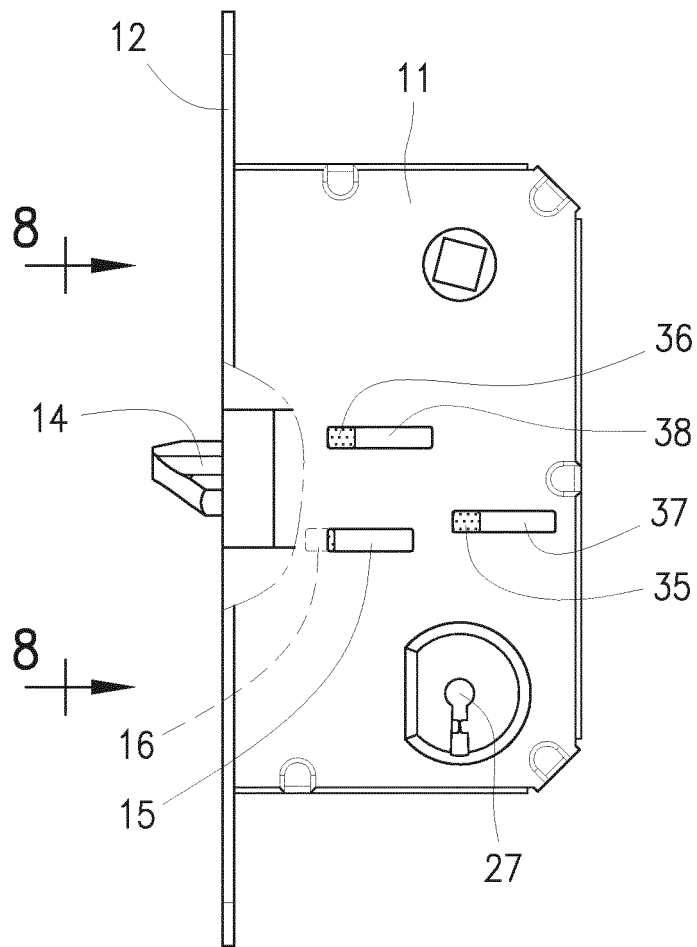


Fig. 6

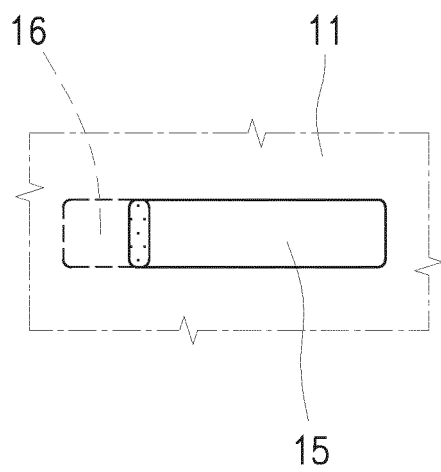


Fig. 7

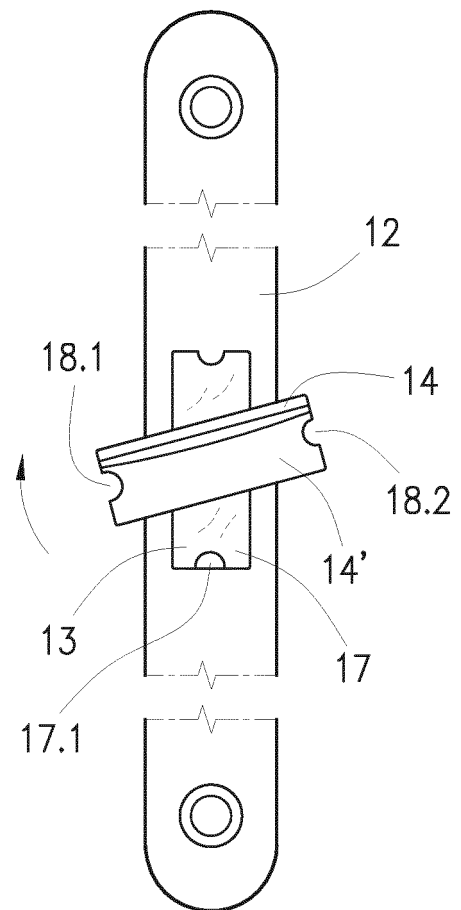


Fig. 8

Fig. 9

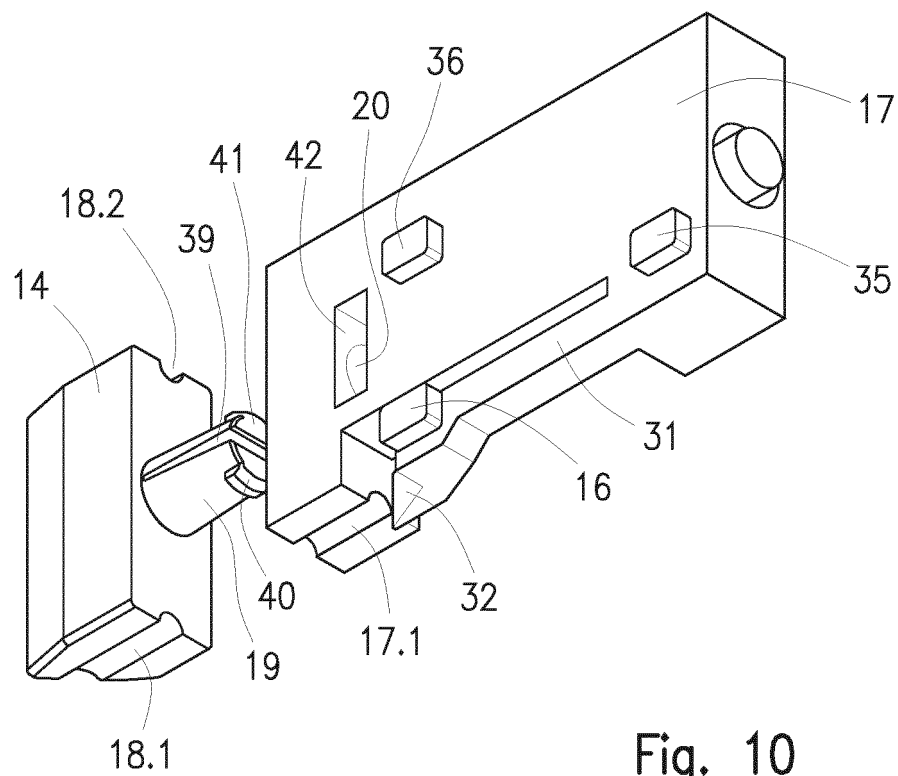
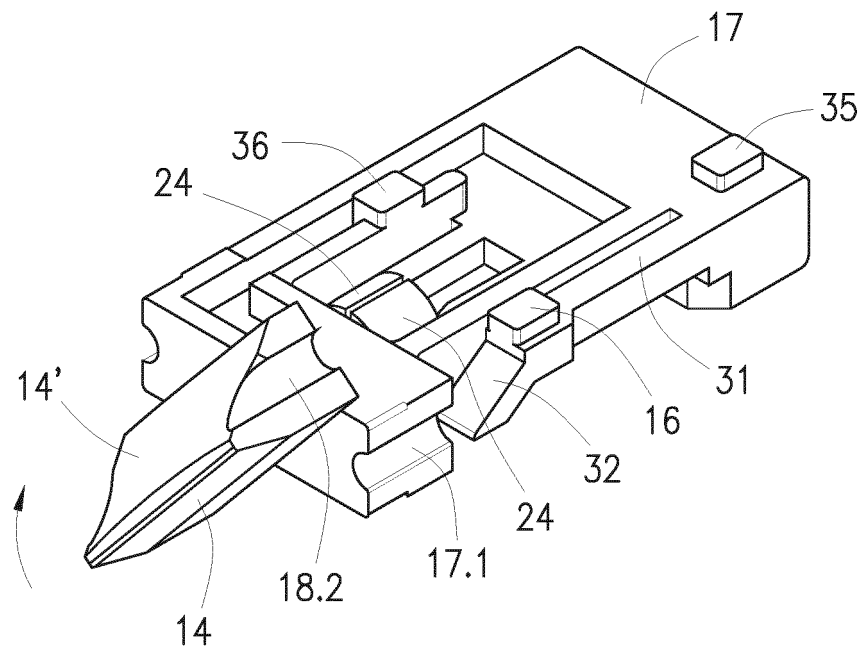


Fig. 10

Fig. 11

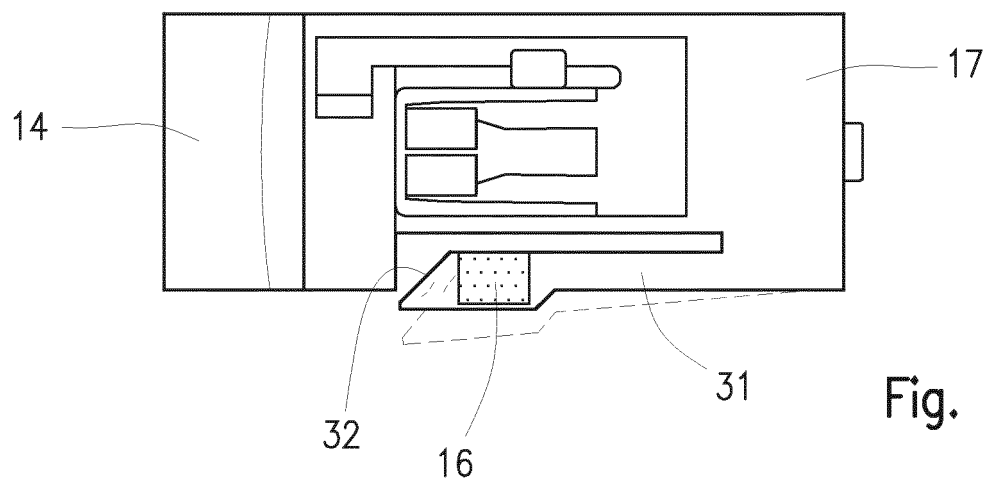
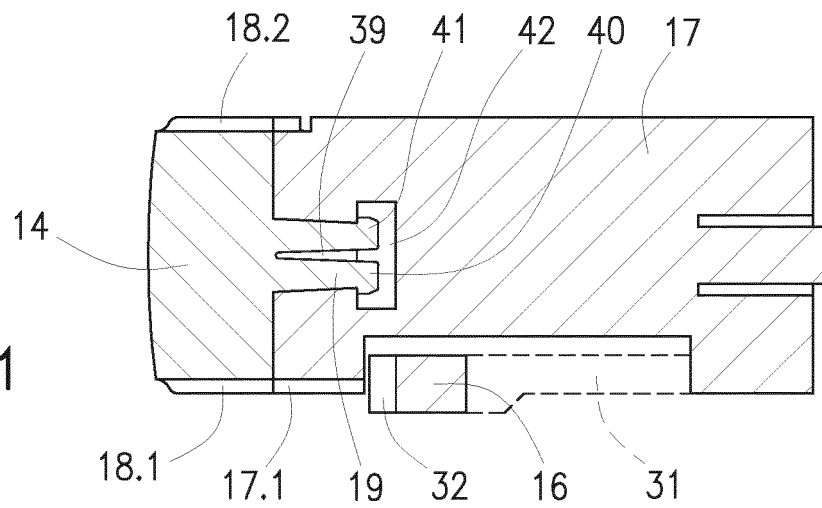
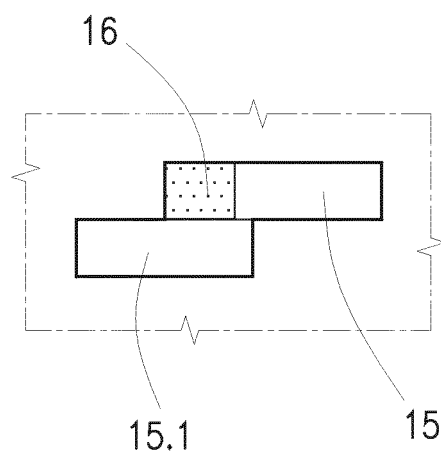


Fig. 12

Fig. 13



**REFERENCES CITED IN THE DESCRIPTION**

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