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(54) SECURITY DEVICE FOR A CYLINDER LOCK

SICHERHEITSVORRICHTUNG FÜR EIN ZYLINDERSCHLOSS

DISPOSITIF DE SÉCURITÉ POUR UNE SERRURE À BARILLET

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Description

TECHNICAL FIELD OF INVENTION

[0001] The present invention is relative to a security device for a cylinder lock, in particular for doors or gates, designed for preventing attempts at tampering with the lock, breaking or vandalizing it.

PRIOR ART

[0002] Currently known cylinder locks, suitable for example to allow the closure and opening of a door or gate comprise a cylinder that is operated through a relative key inserted into a keyhole formed axially with respect to the cylinder.
Cylinder locks of known type are generally made of brass, a material that offers scarce mechanical resistance against forcing attempts carried out by drilling and/or breaking and/or wrenching.

[0003] A known means of protecting the cylinder lock from possible break-ins is to mount on the cylinder lock a covering element arranged so as to cover the cylinder and consisting of a circular escutcheon plate that is provided, at the keyhole, with a round hole in which is rotatably associated a keyhole guard disk provided with a slit that allows the insertion of the key.

[0004] Although they improve the protection of the cylinder, such escutcheon plates do not prevent the partial access to the cylinder through the slit on the keyhole guard; thus, the cylinder is still exposed to possible acts of tampering or vandalism, such as for example the insertion through said slit of glue or other substances that could damage the cylinder.

[0005] Italian Patent IT 1342717, on which the preamble of claim 1 is based, describes a security device for a cylinder lock that includes a base plate of essentially rectangular shape at one end of which is formed a through opening in which is inserted the portion of the cylinder projecting from the lock.

[0006] On the front surface of the base plate, facing the direction opposite to the lock, are provided two seats within which are rotatably housed two substantially cylindrical cams that contain magnets.

[0007] On the lateral surface of each cam is radially formed an undercut that can be engaged with a respective locking pin housed slidingly in a through duct formed transversally to the base plate and communicating with the seat of the respective cam. Each pin is urged externally in the respective duct by a spring inserted in the duct.

[0008] To the front surface of the base plate, and thus on the external side of the door in order for it to be accessible to the user, is slidingly associated a cover element capable of selectively occluding the lock cylinder.
Laterally with respect to the covering element are formed, one on each side, suitable slots engageable with the pins protruding from the base plate when the covering element completely occludes the cylinder; in this manner, the sliding of the covering element with respect to the base plate is blocked.

[0009] The unlocking of the covering element is made possible by placing on the same a relative magnetic key containing magnets capable of coupling with the magnets contained in the cams to cause the rotation of these cams until the circumferential undercuts are brought into a position of axial alignment with the pins.

[0010] The lowering of the covering element causes the pins to exit from the side slots and to enter into the undercuts of the cams, so as to allow the covering element to slide downward with respect to the base plate and make the cylinder accessible for inserting the key for opening the door.

[0011] Although the security device described above provides a greater protection with respect to the conventional escutcheons with keyhole guards, it has however some drawbacks.
First of all, the dimensions of the device, and particularly its considerable vertical extension, in addition to making it aesthetically unattractive may cause sticking or jamming during the sliding of the covering element

[0012] Moreover, the positioning of the covering element outside the base plate, and thus in a visible position on the external side of the door on which the device is installed, makes it easily susceptible to attacks and possible actions of tampering, breaking-in and vandalism, for example by being hit with mallet blows to forcibly lower the covering element or by drilling it with a drill bit so as to access the cylinder, even when the covering element is a the locked position.

[0013] Another possible drawback lies in the complicated unlocking procedure in normal conditions, in which the user is required to apply, with a certain force, a downward push on the covering element to disengage the pins from the side slots of the covering element.

[0014] WO 2007/088765 discloses a security device adapted to be coupled to a cylinder lock comprising :

- a substantially cylindrical casing associable to the lock and provided with a first axial opening adapted to house a cylinder of said lock,
- a combinatory unit including magnetic means,
- a slider slidable in respect to the casing between a locking position, wherein the slider occludes the first opening in order to prevent, in use, accessing the cylinder, and an unlocking position, wherein the slider allows accessing the first opening,

wherein the transition between the locking position and the unlocking position, and vice versa, is actuatable through a magnetic actuator provided with a combination adapted to cooperate with the magnetic means of the combinatory unit, and wherein the slider is interposed between the casing and a protective key-plate adapted to be coupled to the casing. The key-plate is provided with a second through-opening aligned, in use, with the first opening.

[0015] WO 03/025316 discloses a protector of cylinder lock for vehicle in which a shutter plate acting between a position for closing an insertion hole corresponding to the key hole of a cylinder lock and a position for opening the insertion hole is contained in a casing, and a magnet lock allowing action of the shutter plate from the closing position to the opening position when a magnet key is fitted in a fitting recess is disposed on the casing. The insertion hole is eccentrically arranged in respect to the casing and the key hole is eccentrically arranged in respect to the center of the key plate.

SUMMARY OF THE INVENTION

[0016] The main objective of the present invention is thus to devise a security device of a cylinder lock capable of overcoming the disadvantages of the prior art.

In the scope of the above objective, one purpose of the present invention is to provide a security device for a cylinder lock provided with a greater capacity to withstand break-in attempts, tampering or vandalism.

[0017] Another purpose of the present invention is to provide a device that combines in a single structure the functions of protecting or shielding the cylinder.

A further purpose of the present invention is to provide a security device having a more compact structure, both to guarantee a more reliable operation and a more attractive aesthetic appearance.

Yet another purpose is to realize a device in which the locking and unlocking operations performed by the user can be carried out more easily.

One not least important purpose is to realize a security device for a cylinder lock that achieves the above objective and purposes at competitive costs and that can be created with the usual well-known machines, systems and equipment.

[0018] The above objective and purposes, and others that will become more evident in the following description, are achieved by a security device for a cylinder lock as defined in claim 1.

BRIEF DESCRIPTION OF THE FIGURES

[0019] Further characteristics and the advantages of the present invention will become more evident from the following description of a particular, but not exclusive, embodiment illustrated by way of non-limiting example with reference to the accompanying figures, in which:

- figure 1 illustrates, in a front perspective exploded view, a security device for a cylinder lock according to the present invention;
- figure 2 illustrates the device of figure 1 according to a rear perspective exploded view;
- figures from 3a to 3c illustrate different operating phases of the device of the preceding figures, partially disassembled;
- figure 4a illustrates in a front elevation the device to which is coupled a magnetic key in a locking position;
- figure 4b is a cross section along plane A-A of figure 4a;
- figure 5a illustrates, in a front elevation, the device to which is paired a magnetic key in unlocking position;
- figure 5b is a cross section along plane B-B of figure 5a;
- figures 6a and 6b show schematically the device mounted on a protective key-plate, respectively in the locking and in the unlocking position;
- figures 7a to 7c illustrate the operating sequence that a user must follow to clear the access to the cylinder and open the lock on which the device is mounted;
- figure 8 illustrates a further embodiment of the protective device according to the present invention.

DETAILED DESCRIPTION OF THE INVENTION

[0020] With reference to the above-mentioned figures, reference numeral 1 indicates a security device for a cylinder lock 100 (fig. 7a) applicable, for example, to a door 200. The device comprises a basic body, or casing 2, of essentially cylindrical shape associable to the lock 100 and provided with a first axial opening 3 for inserting a cylinder (not shown in the enclosed figures). The first opening 3 is arranged in an eccentric position with respect to the casing 2.

[0021] As a protection of the first opening 3, and thus of the cylinder contained in it, a key-hole guard disk 4 can be advantageously provided rotatably associable to the casing 2 at a recessed circumferential portion 5 arranged along at least an edge portion of the first opening 3.

The key-hole guard disk 4 is provided with a slit 6 to allow the insertion of the stem of a relative key 300 into the cylinder lock 100.

A protective key-plate 7 is adapted to be coupled to the casing 2 from the side opposite the direction of insertion of the cylinder so that, when in use, it is arranged on the outward-facing side of the door 200.

[0022] The protective key-plate 7 is provided with a second through-opening 8 arranged eccentrically with respect to the centre of the key-plate 7 so that, when the device is installed, said second opening 8 is preferably substantially aligned coaxially with the first opening 3 of the casing 2 and, if present, with the key-hole guard disk 4.

At the internal surface 9 of the protective key-plate 7 opposite the casing 2 is provided a cavity 10 having a substantially rectilinear extension and arranged substantially parallel to the medial axis passing through the second opening 8 and the protective key-plate 7.

[0023] Laterally to said cavity 10 are advantageously provided guiding means 11, 12, consisting for example of a first portion 11 on one side of the cavity 10 and of a second portion 12 on the opposite side, both lowered with respect to the inner surface 9 of the protective key-

plate 7 facing the casing 2.

[0024] The cavity 10 or, if present, the guiding means 11, 12, have, at least on one side, and preferably on each side of its longitudinal extension, abutting means, whose function will be better explained later, comprising, on one side, at least a first slot 13 and a second slot 14 and advantageously, on the opposite side, at least a third slot 15 and a fourth slot 16.

[0025] In the embodiment illustrated by way of example in the enclosed figures, the pair formed by the first slot 13 and by the second slot 14 is arranged offset with respect to the pair formed by the third slot 15 and by the fourth slot 16. In particular, the first slot 13 is arranged near the end of the cavity 10 adjacent to the second opening 8 and the second slot 14 in an intermediate section; on the opposite side, the third slot 15 is arranged in an intermediate section of the cavity 10 and the fourth slot 16 near the opposite end of the cavity 10 with respect to the second opening 8.

[0026] Advantageously, the walls of the cavity 10, or the first recessed portion 11 and the second recessed portion 12, are joined near the respective slots 13, 14, 15, 16 through an inclined plane or a radiused section.

[0027] A slider 17 is slidingly accommodated within the cavity 10 and is movable between a locking position (figures 3a, 4a, 4b, 7a), in which the slider 17 closes the second opening 8 so as to occlude the cylinder lock 100 and prevent access to it through the first opening 3 and the slit 6, if any, on the key-hole guard disk 4, and an unlocking position (figures 3c, 5a, 5b, 7c), in which the slider 17 clears the passage through the second opening 8 to allow the user to insert the stem of the key 300 into the cylinder through the slit 6 and the opening 3.

[0028] A combinatory unit of magnetic type is adapted to be housed in the slider 17 so that it will be jointly movable with the slider 17.

The combinatory unit comprises at least a cam, preferably two cams 20, 21, in each of which are housed magnetic means 22, 23; the rotation of the cams, driven by a magnetic actuator 36 as will be better explained later, allows the slider 17 to slide or blocks it through suitable blocking means 30, 31 controlled by the cams 20, 21. At the travel end positions of the slider 17, that is, when the slider 17 is in the upper or blocked position to occlude the second opening 8 or in the lower unlocking position, the blocking means 30, 31 engage the abutting means, comprising at least the slots 13, 14 and/or 15, 16 to stably block the slider in said positions.

[0029] For this purpose, the slider 17 is provided with at least a first seat 18 and a second seat 19, essentially of circular shape and arranged offset with respect to each other, adapted to rotatably accommodate the first cam 20 and the second cam 21. Naturally, if there is only a single cam, the slider 17 will of consequence be provided with a single seat.

[0030] In the first cam 20 are accommodated first magnetic means 22 and in the second cam 21 are accommodated second magnetic means 23; the first and the second magnetic means 22, 23 may include at least one magnet on each cam, of opposite polarity, or two magnets of opposite polarity S-N on the first cam 20 and as many oppositely polarized magnets in the second cam 21, or, again, two magnets of the same polarity S-S on the first cam 20 and two magnets of the same polarity, opposite to the previous one, N-N on the second cam 21. In each case, the configuration of the magnets must be such that, in the end locking and unlocking positions of the slider 17, a magnet housed in the first cam 20 faces the oppositely polarized magnet housed in the second cam 21, as exemplified in figures 3a and 3c. Naturally, it is possible to provide more than two magnets so as to increase the combinatory possibilities of the device.

[0031] On the circumference of each cam 20, 21 is formed a respective first notch 24 and a second notch 25. A pair of washers 26, 27 is advantageously provided to hold and cover the first cam 20 and the second cam 21 in the respective seats 18, 19.

[0032] Within the thickness of the slider 17 are formed, on the respective sides, a first conduit 28 and a second conduit 29 arranged axially offset from each other and communicating, respectively, with the first seat 18 and the second seat 19 at approximately their respective transversal axes. The conduits 28, 29 are suitable to slidably accommodate the slider 17 blocking means, comprising a respective first pin 30 and second pin 31, whose sliding movement is opposed by elastic means such as a respective first spring 32 and second spring 33 biased against suitable abutments 34, 35 provided in the conduits 28, 29.

[0033] The movement of the slider 17 from the locking position to the unlocking position, and vice versa, is achieved through a magnetic actuator 36 provided with a suitable combination of third magnetic means (not shown in the enclosed figures) adapted to couple with the combination defined by the first and the second magnetic means 22, 23 contained in the first and in the second cam 20, 21 to cause the rotation of the latter, as will be better explained below.

Advantageously, the slider 17 is provided with a recess 37 to avoid interfering, in the unlocking position, with the second opening 8.

[0034] The operation of the device is as follows: in the condition with the door closed with the security device actuated, and therefore with the slider 17 covering the second opening 8 from inside to prevent access to the cylinder lock (figures 3a, 4a, 4b, 7a), the first and the second magnetic means 22, 23 are arranged so that a magnet contained in the first cam 20 faces the magnet of opposite polarity contained in the second cam 21, as exemplified in figure 3a. With this arrangement, the first spring 32 pushes the head of the first pin 30 into engagement with the first slot 13, while the opposite end of the first pin 30 presses against the cylindrical wall of the first cam 20 from a direction approximately opposite the first notch 24.

[0035] Similarly, and in a symmetrical manner, the sec-

ond spring 33 pushes the head of the second pin 31 into engagement with the third slot 15, while the opposite end of the second pin 31 presses against the cylindrical wall of the second cam 21 from a direction approximately opposite the second notch 25.

In this manner, the sliding movement of the slider 17 is blocked by the engagement of the pins 30, 31 with the respective slots 13, 15, preventing access to the cylinder and therefore to the lock.

To release the slider 17, and thus to allow access to the cylinder to insert the key 300, it is necessary to place the magnetic actuator 36 on the external face of the security device in the position of the second opening 8, covered internally by the slider 17.

[0036] The specific magnetic combination preset on the actuator 36 causes the misalignment of the magnetic means 22, 23 and thus the counterclockwise rotation, with reference to figure 3b, of the first and the second cam 21, 21 so as to bring the first notch 24 into axial alignment with the first pin 30 and, correspondingly, the second notch 25 with the second pin 31. The springs 32, 33 thus push the respective pins 30, 31 into engagement with the notches 24, 25.

[0037] The downward displacement of the actuator 36, while it is kept in constant contact with the security device as exemplified in figure 7b, allows the disengagement of the heads of the pins 30, 31, no longer subjected to the actions of the springs 32, 33, from the respective slots 13, 15 as exemplified in figure 3b, and thus the downward sliding of the slider 17 along the guiding means 11, 12 which, in turn, gradually clears the second opening 8 to allow, once the operation has been completed, the opening of the lock.

[0038] At the end of the downward travel the actuator 36 is removed and the slider 17 reaches the unlocking position, exemplified in figures 3c, 5a, 5b and 7c; the removal of the actuator 36 causes the inverse rotation, clockwise with reference to figure 3c, of the cams 20, 21, which return to the initial position with the first magnetic means 22 aligned with the second magnetic means 23 by effect of the magnetic attraction between magnets of opposite polarities. The ends of the pins 30, 31 become disengaged from the respective notches 24, 25 and, pushed by the action of the springs 32, 33, the heads of the first pin 30 and of the second pin 31 become engaged respectively in the second slot 14 and in the fourth slot 16. In this manner, the slider 17 is blocked in the unlocking position at the travel stop, thus completely clearing the second opening 8 and allowing the access with the key 300 to the cylinder for opening the door 200.

To return the security device 1 again to the unlocking position it is sufficient to repeat the operation in reverse sequence, by placing the actuator 36 on the security device 1 and dragging it upward.

[0039] The advantageous presence of inclined planes or of arc-shaped connecting sections between the slots 13, 14, 15 and 16 and the guiding means 11, 12 facilitates the disengagement of the heads of the pins 30, 31 to free the sliding movement of the slider 17, making it easier for the user to draw the actuator 36 without requiring any strenuous efforts.

[0040] From the above, it is evident how the present invention achieves the initially foreseen purposes and advantages: in effect, a security device has been designed for a cylinder lock capable of overcoming the drawbacks of the prior art, and in particular a device having a level of strength, and therefore a more effective security against break-in and tampering attempts and vandalism, resulting from the arrangement of the slider 17 and of the combination mechanism, consisting of the cams 20, 21, the magnetic means 22, 23 and the pins 30, 31, that are entirely held and protected within the structure of the same mechanism, and thus much less liable to external attacks; consequently, the structure of the device integrates and performs both the protection and shielding functions of the cylinder lock, when in the locked position.

[0041] Another advantage of the present invention lies in the extremely compact structure of the device, obtained as a result of prearranging the combinatory unit inside the cursor 17. In this manner, it was possible to obtain a device with a more reliable operation, as being not prone to jamming or sticking and less susceptible to external agents, such as icing, in addition to having an attractive aesthetic appearance.

The accommodation of the combinatory unit inside the slider also makes it possible to realize the advantage that, even in the event of perforation of the device in a breaking-in attempt, the slider remains locked in its position.

[0042] It is also pointed out that the compact structure thus achieved makes it possible to considerably reduce the operating travel of the slider, which remains contained within the maximum diameter of the protective key-plate 7, making it possible to reduce the dimensions on the door and to embed the security device in a washer 38 for a more attractive aesthetic appearance, as exemplified in figures 6a, 6b.

[0043] A further advantage lies in the ease by the user to carry out the locking and unlocking operations, further facilitated if ramped approaches are provided near the locking and unlocking positions of the slider.

[0044] Naturally, the present invention is susceptible to numerous applications, modifications or variants without thereby departing from the scope of patent protection as defined in claim 1.

For example, the combinatory unit may include more than two cams, with the relative locking pins and slots, to increase the number of combinations available; figure 8 exemplifies a further embodiment of the security device according to the present invention, wherein is illustrated the protective key-plate 107 in which is slidably accommodated the slider 117, whose movement is controlled by a combinatory unit comprising three cams 120, 121 and 122.

[0045] Moreover, the materials and the equipment

used to implement the present invention, as well as the shapes and dimensions of the individual components, can be the most suitable for the specific requirements.

Claims

1. Security device adapted to be coupled to a cylinder lock, said security device comprising a substantially cylindrical casing (2) associable to said lock and provided with a first axial opening (3) adapted to house a cylinder of said lock, said first axial opening (3) being eccentrically arranged in respect to said casing (2), a combinatory unit (20, 21) including magnetic means (22, 23), a slider (17) slidable in respect to said casing (2) between a locking position, wherein said slider (17) occludes said first axial opening (3) in order to prevent, in use, accessing said cylinder, and an unlocking position, wherein said slider (17) allows accessing said first axial opening (3), the transition between said locking position and said unlocking position, and vice versa, being actuatable through a magnetic actuator (36) provided with a combination adapted to cooperate with said magnetic means (22, 23) of said combinatory unit (20, 21), said slider (17) being interposed between said casing (2) and a protective key-plate (7) adapted to be coupled to said casing (2), said key-plate (7) being provided with a second through-opening (8) eccentrically arranged in respect to the center of said key-plate (7) such that said second through-opening (8) is aligned, in use, with said first axial opening (3), wherein said combinatory unit (20, 21) is adapted to be housed inside, and jointly movable with, said slider (17).

2. Security device as in claim 1, wherein a cavity (10) facing, in use, said casing (2) is provided on the inner surface (9) of said key-plate (8), said cavity (10) having a substantially linear extension arranged substantially parallel to the medial axis passing through said second opening (8) and said key-plate (7).

3. Security device as in claim 2, wherein said slider (17) is adapted to be slidably accommodated inside said cavity (10) so as to be movable between said locking position, wherein said slider occludes said second opening (8), and said unlocking position, wherein said slider (17) clears the passage through said second opening (8).

4. Security device as in claim 1, wherein said combinatory unit (20, 21) comprises at least a cam (20, 21) rotatably associated to said slider (17) and including said magnetic means (22, 23), said at least a cam (20, 21) being adapted to control suitable blocking means (30, 31) adapted to allow said slider (17) to slide between said locking position and unlocking position or to block said slider (17) at said locking position or unlocking position.

5. Security device as in claim 1, wherein said combinatory unit (20, 21) comprises at least a first cam (20) and a second cam (21) rotatably associated to said slider (17), each of said at least a first cam (20) and a second cam (21) including at least a magnet (22, 23) polarized so as to be attracted, at said locking position and at said unlocking position, by an oppositely polarized magnet included into the other cam.

6. Security device as in claim 5, wherein said at least a first cam (20) and second cam (21) are adapted to control suitable blocking means (30, 31) adapted to allow said slider (17) to slide between said locking position and unlocking position or to block said slider (17) at said locking position or unlocking position..

7. Security device as in claim 6, wherein said blocking means (30, 31) are slidably associated to said slider (17) and movable against elastic means (32, 33) so as to block or to llow a sliding movement of said slider (17).

8. Security device as in claims 2 and claim 7, wherein said blocking means (30, 31) are adapted to engage suitable abutting means (13, 14, 15, 16) provided into said cavity (10) to stably block said slider (17) at said locking position or unlocking position.

9. Security device as in claim 8, wherein said magnetic actuator (36) interacting with said magnetic means (22, 23) causes a rotating movement of said first cam (20) and said second cam (21) adapted to disengage said blocking means (30, 31) from said abutting means (13, 14, 15, 16) so as to allow said slider (17) sliding from said locking position to said unlocking position and vice versa.

Patentansprüche

1. Sicherheitsvorrichtung, die angepasst ist, um mit einem Zylinderschloss gekoppelt zu sein, wobei die Sicherheitsvorrichtung ein im Wesentlichen zylindrisches Gehäuse (2), das mit dem Schloss verbindbar und mit einer ersten axialen Öffnung (3) versehen ist, die angepasst ist, um einen Zylinder des Schlosses aufzunehmen, wobei die erste axiale Öffnung (3) mit Bezug auf das Gehäuse (2) exzentrisch angeordnet ist, eine kombinatorische Einheit (20, 21), die eine magnetische Einrichtung (22, 23) aufweist, und einen Schieber (17) umfasst, der mit Bezug auf das Gehäuse (2) zwischen einer Verriegelungsposition, wobei der Schieber (17) die erste axiale Öffnung (3) verschließt, um bei Benutzung einen

Zugriff auf den Zylinder zu verhindern, und einer Entriegelungsposition verschiebbar ist, wobei der Schieber (17) den Zugriff auf die erste axiale Öffnung (3) zulässt, wobei der Übergang zwischen der Verriegelungsposition und der Entriegelungsposition und umgekehrt durch ein magnetisches Stellelement (36) betätigt werden kann, das mit einer Kombination bereitgestellt wird, die angepasst ist, um mit der magnetischen Einrichtung (22, 23) der kombinatorischen Einheit (20, 21) zusammenzuarbeiten, wobei der Schieber (17) zwischen dem Gehäuse (2) und einer Schlüsselschutzplatte (7) angeordnet ist, die angepasst ist, um mit dem Gehäuse (2) gekoppelt zu sein, wobei die Schlüsselplatte (7) mit einer zweiten Durchgangsöffnung (8) versehen ist, die mit Bezug auf die Mitte der Schlüsselplatte (7) exzentrisch angeordnet ist, so dass die zweite Durchgangsöffnung (8) bei Benutzung mit der ersten axialen Öffnung (3) ausgerichtet ist, wobei die kombinatorische Einheit (20, 21) angepasst ist, um im Inneren aufgenommen und mit dem Schieber (17) gemeinsam bewegbar zu sein.

2. Sicherheitsvorrichtung nach Anspruch 1, wobei ein bei Benutzung dem Gehäuse (2) zugewandter Hohlraum (10) an der inneren Oberfläche (9) der Schlüsselplatte (8) bereitgestellt wird, wobei der Hohlraum (10) eine im Wesentlichen lineare Verlängerung aufweist, die im Wesentlichen parallel zur mittleren Achse angeordnet ist, die durch die zweite Öffnung (8) und die Schlüsselplatte (7) führt.

3. Sicherheitsvorrichtung nach Anspruch 2, wobei der Schieber (17) angepasst ist, um innerhalb des Hohlraums (10) aufgenommen zu werden, so dass er zwischen der Verriegelungsposition, wobei der Schieber (17) die zweite Öffnung (8) verschließt, und der Entriegelungsposition bewegbar ist, wobei der Schieber (17) den Durchgang durch die zweite Öffnung (8) räumt.

4. Sicherheitsvorrichtung nach Anspruch 1, wobei die kombinatorische Einheit (20, 21) wenigstens einen Nocken (22, 23) umfasst, der mit dem Schieber (17) drehbar verbunden ist und die magnetische Einrichtung (22, 23) aufweist, wobei der wenigstens eine Nocken (20, 21) angepasst ist, um eine geeignete Sperrvorrichtung (30, 31) zu steuern, die angepasst ist, um es dem Schieber (17) zu ermöglichen, zwischen der Verriegelungsposition und der Entriegelungsposition zu gleiten oder um den Schieber (17) an der Verriegelungsposition oder der Entriegelungsposition zu sperren.

5. Sicherheitsvorrichtung nach Anspruch 1, wobei die kombinatorische Einheit (20, 21) wenigstens einen ersten Nocken (20) und einen zweiten Nokken (21) umfasst, die mit dem Schieber (17) drehbar verbunden sind, wobei jeder von wenigstens dem ersten Nocken (20) und dem zweiten Nocken (21) wenigstens einen Magneten (22, 23) aufweist, der so polarisiert ist, dass er in der Verriegelungsposition und der Entriegelungsposition durch einen entgegengesetzt polarisierten Magneten angezogen wird, der in dem anderen Nocken enthalten ist.

6. Sicherheitsvorrichtung nach Anspruch 5, wobei wenigstens ein erster Nokken (20) und ein zweiter Nocken **(21)** angepasst sind, um eine geeignete Sperrvorrichtung (30, 31) zu steuern, die angepasst ist, um es dem Schieber (17) zu ermöglichen, zwischen der Verriegelungsposition und der Entriegelungsposition zu gleiten oder um den Schieber (17) in der Verriegelungsposition oder der Entriegelungsposition zu sperren.

7. Sicherheitsvorrichtung nach Anspruch 6, wobei die Sperrvorrichtung (30, 31) mit dem Schieber (17) verschiebbar verbunden und gegen eine elastische Einrichtung (32, 33) bewegbar ist, um so eine Gleitbewegung des Schiebers (17) zu sperren oder zu erlauben.

8. Sicherheitsvorrichtung nach Anspruch 2 und 7, wobei die Sperrvorrichtung (30, 31) angepasst ist, um mit einer geeigneten Anstoßeinrichtung (13, 14, 15, 16) in Eingriff zu kommen, die in dem Hohlraum (10) bereitgestellt wird, um den Schieber (17) in der Verriegelungsposition oder der Entriegelungsposition stabil zu sperren.

9. Sicherheitsvorrichtung nach Anspruch 8, wobei das magnetische Stellelement (36), das mit der magnetischen Einrichtung (22, 23) zusammenwirkt, eine Drehbewegung des ersten Nockens (20) und des zweiten Nockens (21) bewirkt, die angepasst ist, um die Sperrvorrichtung (30, 31) von der Anstoßeinrichtung (13, 14, 15, 16) zu lösen, um es so dem Schieber (17) zu ermöglichen, von der Verriegelungsposition zur Entriegelungsposition und umgekehrt zu gleiten.

Revendications

1. Dispositif de sécurité adapté pour être couplé à une serrure à barillet, ledit dispositif de sécurité comprenant un boîtier (2) sensiblement cylindrique pouvant être associé à ladite serrure et pourvu d'une première ouverture axiale (3) destinée à loger un cylindre de ladite serrure, ladite première ouverture axiale (3) étant disposée excentriquement par rapport audit boîtier (2), une unité combinatoire (20, 21) comprenant des moyens magnétiques (22, 23), un coulisseau (17) pouvant coulisser par rapport audit boîtier (2) entre une position de verrouillage, dans laquelle ledit coulisseau (17) obture ladite première ouvertu-

re axiale (3) afin d'éviter pendant l'utilisation, l'accès audit cylindre, et une position de déverrouillage, dans laquelle ledit coulisseau (17) permet d'accéder à ladite première ouverture axiale (3), la transition entre ladite position de verrouillage et ladite position de déverrouillage, et vice versa, pouvant être actionnée par l'intermédiaire d'un actionneur magnétique (36) muni d'une combinaison apte à coopérer avec lesdits moyens magnétiques (22, 23) de ladite unité combinatoire (20, 21), ledit coulisseau (17) est interposé entre ledit boîtier (2) et une plaque de verrouillage (7) de protection adaptée pour être couplée audit boîtier (2), ladite plaque de verrouillage (7) étant pourvue d'une seconde ouverture (8) traversant disposée excentriquement par rapport au centre de ladite plaque de verrouillage (7) de telle sorte que ladite seconde ouverture traversant (8) est alignée, pendant l'utilisation, avec ladite première ouverture axiale (3), dans lequel ladite unité combinatoire (20, 21) est adaptée pour y être logée, et être conjointement mobile avec ledit coulisseau (17).

2. Dispositif de sécurité selon la revendication 1, dans lequel une cavité (10) faisant face, en utilisation, audit boîtier (2), est prévue sur la surface intérieure (9) de ladite plaque de verrouillage (8), ladite cavité (10) ayant une extension sensiblement linéaire, disposée sensiblement parallèlement à l'axe médian passant à travers ladite seconde ouverture (8) et ladite plaque de verrouillage (7).

3. Dispositif de sécurité selon la revendication 2, dans lequel ledit coulisseau (17) est adapté pour être logé de façon coulissante à l'intérieur de ladite cavité (10) de manière à être mobile entre ladite position de verrouillage, dans laquelle ledit coulisseau obture ladite seconde ouverture (8), et ladite position de déverrouillage, dans laquelle ledit coulisseau (17) libère le passage à travers ladite seconde ouverture (8).

4. Dispositif de sécurité selon la revendication 1, dans lequel ladite unité combinatoire (20, 21) comprend au moins une came (20, 21) associée de manière rotative audit coulisseau (17) et incluant lesdits moyens magnétiques (22, 23), ladite au moins une came (20, 21) étant apte à commander des moyens de blocage (30, 31) appropriés adaptés pour permettre audit coulisseau (17) de coulisser entre lesdites positions de verrouillage et de déverrouillage, ou de bloquer ledit coulisseau (17) au niveau de ladite position de verrouillage et de ladite position de déverrouillage.

5. Dispositif de sécurité selon la revendication 1, dans lequel ladite unité combinatoire (20, 21) comprend au moins une première came (20) et une seconde came (21) associées de manière rotative audit coulisseau (17), chacune desdites au moins une première came (20) et une seconde came (21) comportant au moins un aimant (22, 23) polarisé de manière à être attiré, dans ladite position de verrouillage et dans ladite position de déverrouillage, par un aimant à polarisation inverse compris dans l'autre came.

6. Dispositif de sécurité selon la revendication 5, dans lequel lesdites au moins une première came (20) et une seconde came (21) sont adaptées pour commander des moyens de blocage (30, 31) appropriés adaptés pour permettre audit coulisseau (17) de coulisser entre ladite position de verrouillage et ladite position de déverrouillage ou à bloquer ledit coulisseau (17) dans ladite position de verrouillage ou ladite position de déverrouillage.

7. Dispositif de sécurité selon la revendication 6, dans lequel lesdits moyens de blocage (30, 31) sont associés de façon coulissante audit coulisseau (17) et mobiles à l'encontre de moyens élastiques (32, 33) de manière à bloquer ou à permettre un mouvement de coulissement dudit coulisseau (17) .

8. Dispositif de sécurité selon les revendications 2 et 7, dans lequel lesdits moyens de blocage (30, 31) sont adaptés pour engager des moyens de butée (13, 14, 15, 16) prévus dans ladite cavité (10) pour bloquer de manière stable ledit coulisseau (17) au niveau de ladite position de verrouillage ou ladite position de déverrouillage.

9. Dispositif de sécurité selon la revendication 8, dans lequel ledit actionneur magnétique (36) coopérant avec lesdits moyens magnétiques (22, 23) provoque un mouvement de rotation de ladite première came (20) et ladite seconde came (21) adaptées pour désengager lesdits moyens de blocage (30 31) à partir desdits moyens de butée (13, 14, 15, 16) de manière à permettre audit coulisseau (17) de coulisser à partir de ladite position de verrouillage vers ladite position de déverrouillage et vice versa.

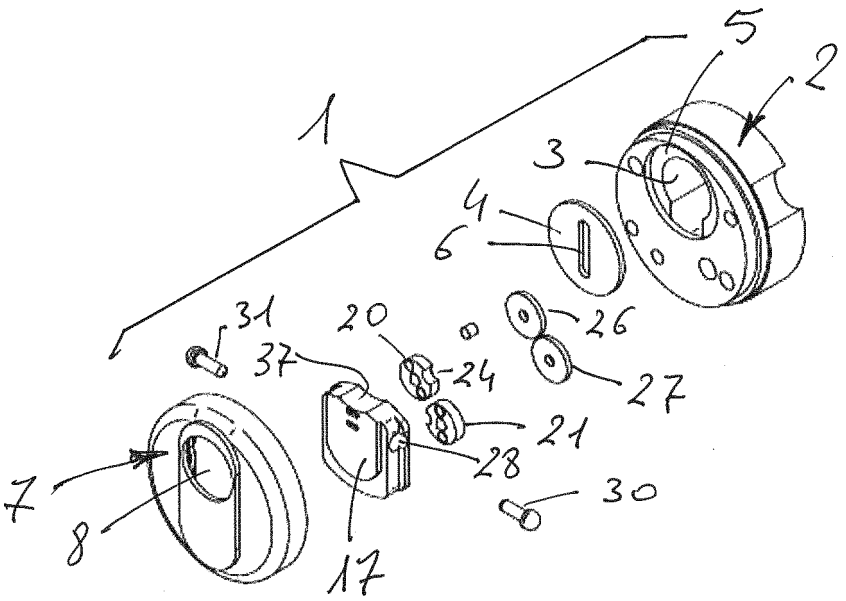
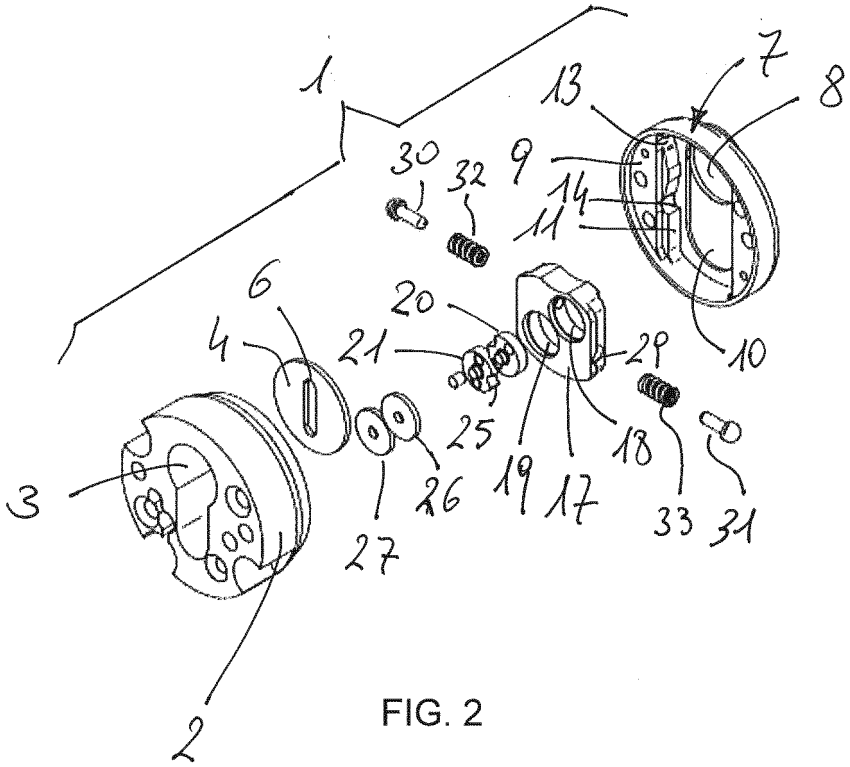

1
5
2
3
4
6
31
20
26
37
24
27
21
28
7
30
8
17

FIG. 1


1
13
7
8
30
32
9
14
11
6
20
4
21
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10
25
18
3
26
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17
33
31
27
2

FIG. 2

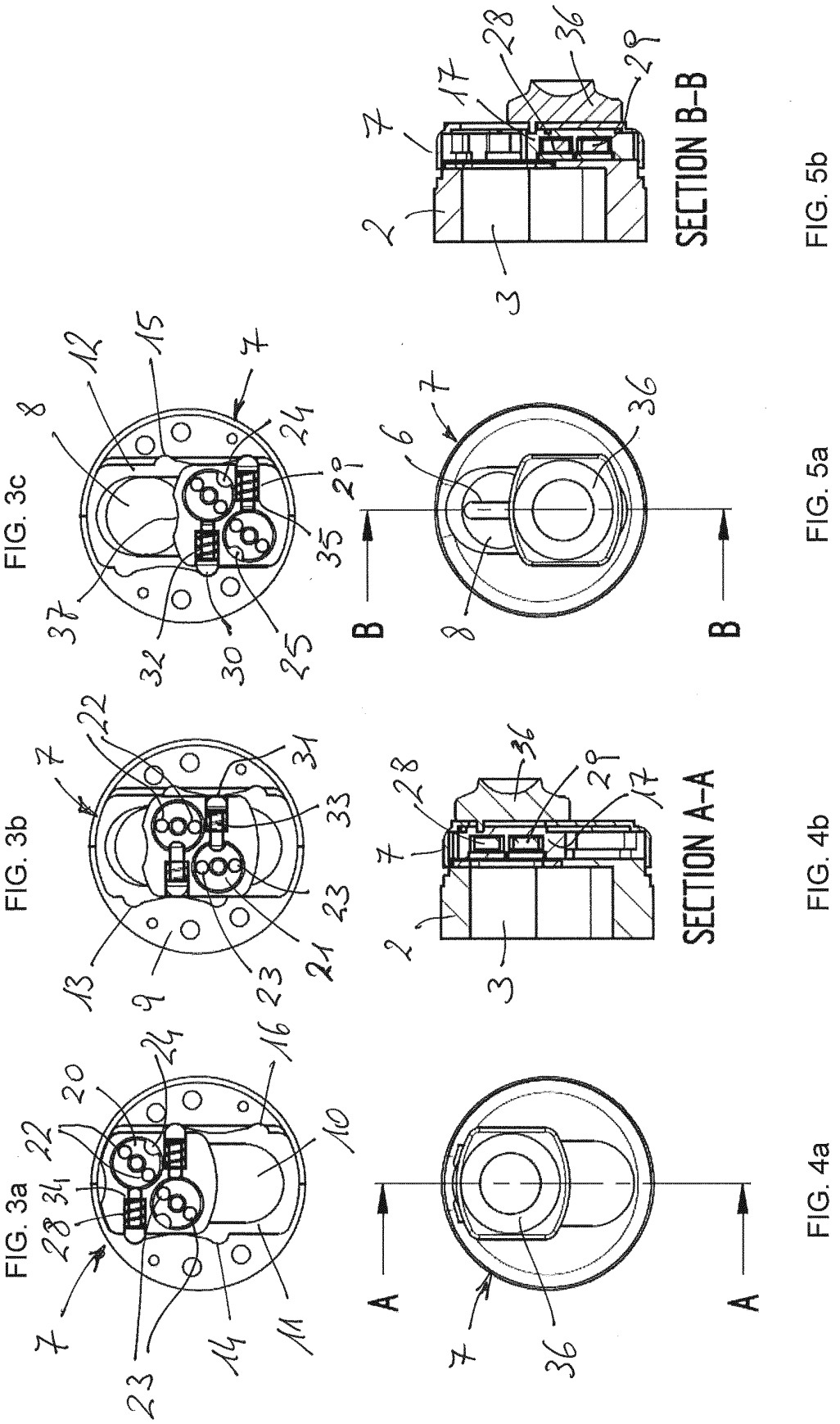
FIG. 3a
FIG. 3b
FIG. 3c
FIG. 4a
FIG. 4b
FIG. 5a
FIG. 5b
SECTION A–A
SECTION B–B
A
B

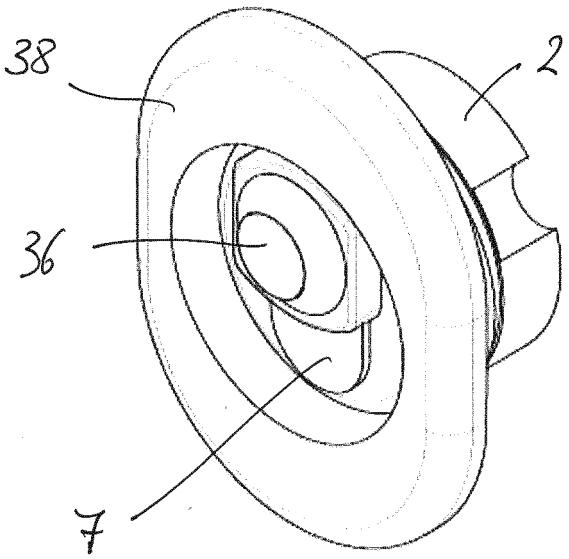

FIG. 6a

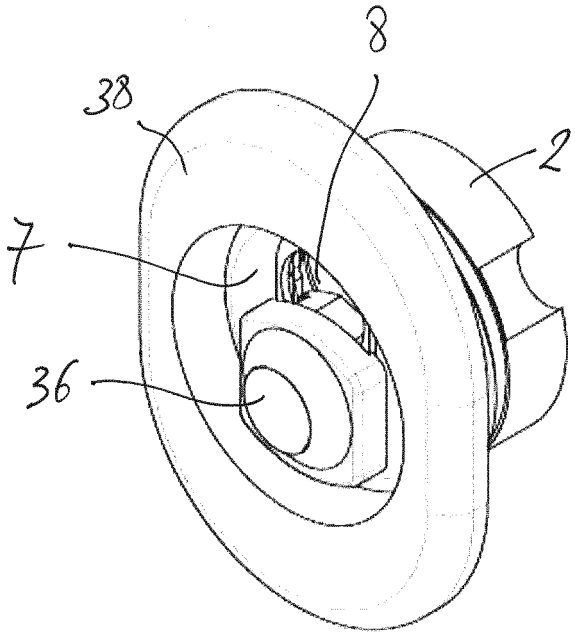

FIG. 6b

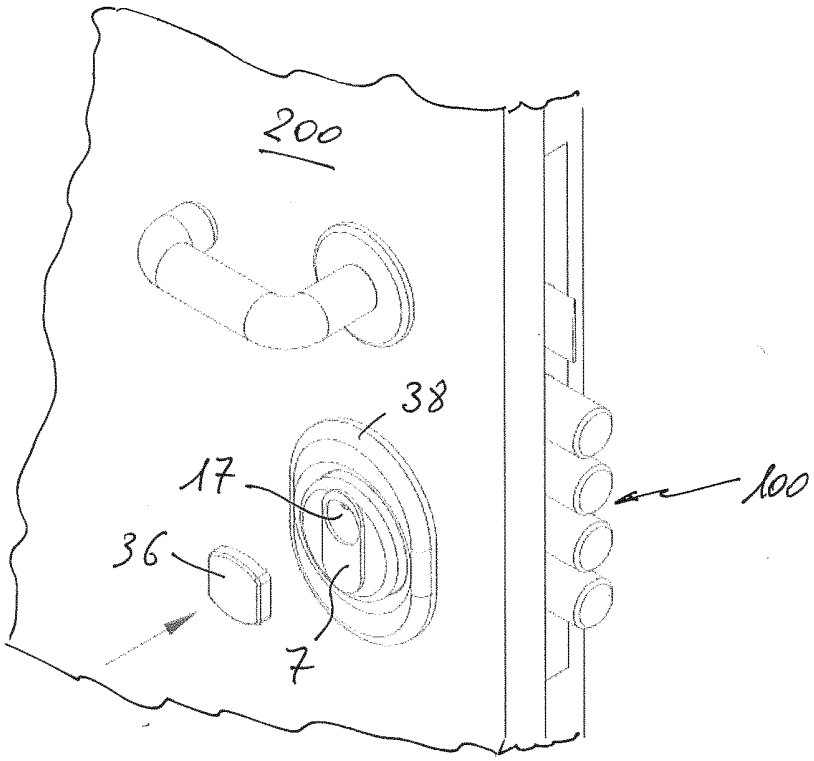

FIG. 7a

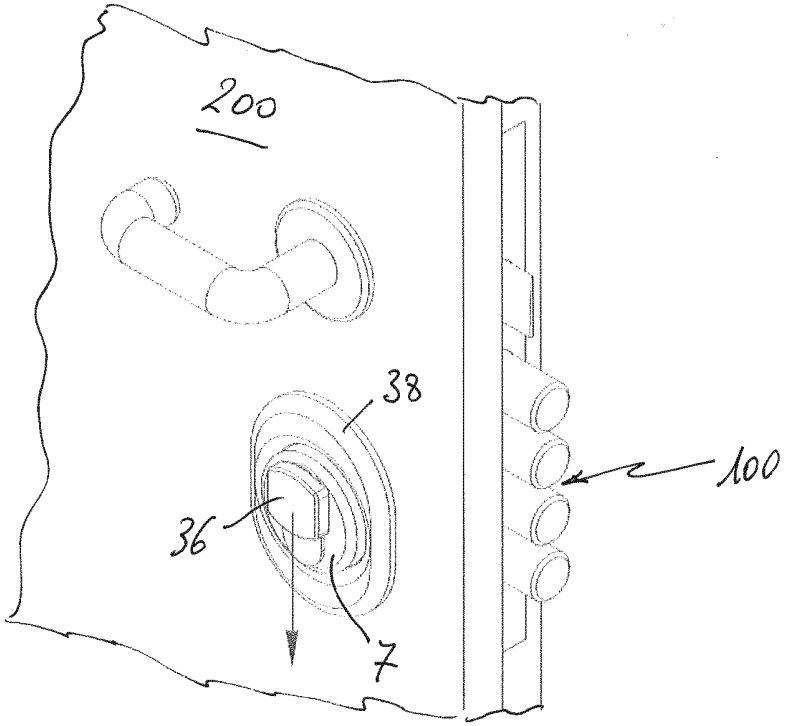

FIG. 7b

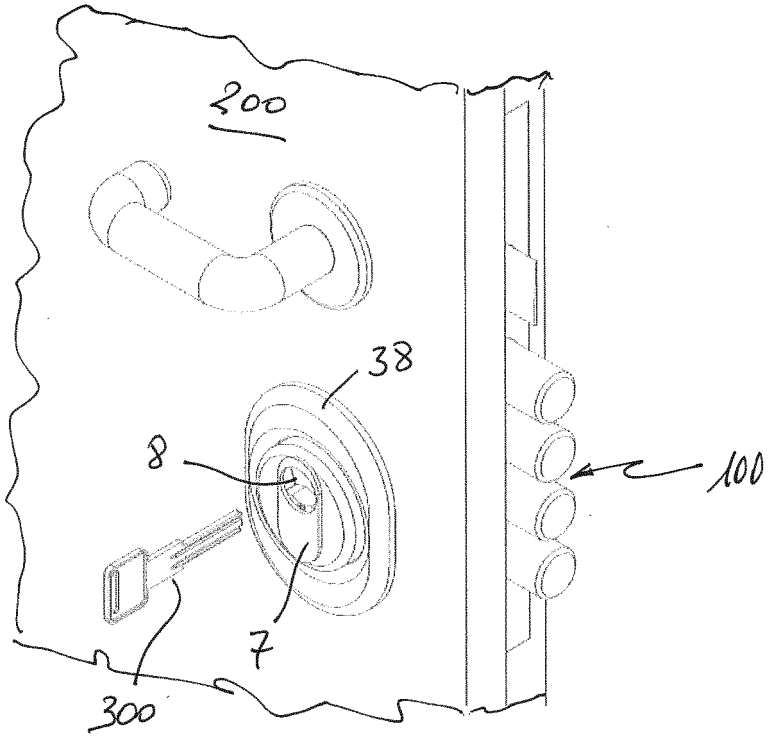

FIG. 7c

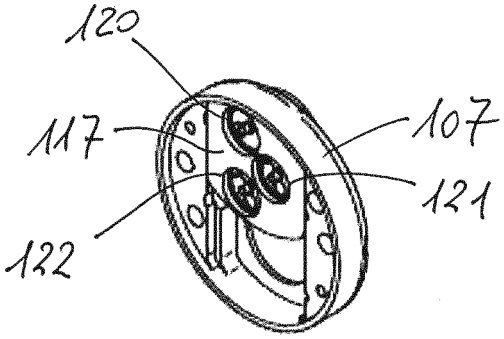

FIG. 8

REFERENCES CITED IN THE DESCRIPTION

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