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(54) SECURITY ASSEMBLY FOR EUROPEAN CYLINDER LOCKS

SICHERHEITSEINHEIT FÜR EUROPÄISCHE SCHLIESSZYLINDER

DISPOSITIF DE SECURITE POUR VERROU-CYLINDRE EUROPEEN

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Description

[0001] The present invention relates to a security assembly associable to a European cylinder lock for the purpose of preventing the breaking of the cylinder if subjected to acts of tampering, break-in or vandalism.

[0002] European cylinder locks are the natural evolution of double-sided locks. Compared to the latter, the European cylinder locks have the advantage of working with a key having an extremely small size and of being easy to replace, as well as that of offering higher security against acts of tampering, break-in or vandalism.

[0003] In fact, European-type cylinders are generally provided with anti-probing pins, a body and rotor having anti-drilling protection and anti-ripping central bar. However, despite these security devices, some destructive techniques to put into effect attempts to attack the cylinder externally and tamper with it are known.

[0004] A technique which is particularly dangerous since it is easy and quick to put into effect is the one that makes it possible to snap the cylinder by means of a tool consisting of a handle and a vice in the shape of the cylinder; the vice is tightened on the protruding part of the cylinder and, by prying with the handle, it is broken into two pieces.

[0005] This is possible because European-type cylinders have a weak point in the central part of their body, wherein the resistant portion is small due to the necessary presence of the hole for the fastening screw and of the eyelet for the rotation of the revolving plug which transmits the rotary motion of the key to the lock mechanism so as to open or close it.

[0006] For this reason, one of the most frequent attacks consists in the attempt to snap the cylinder right in this point, so as to extract the outer half of the cylinder, rivet the inner half inwards and thus get free access to the lock, that now can be easily manipulated and opened.

[0007] To protect the cylinder from this type of attacks, security devices called "defenders" or "armours" have been introduced: as shown in figure 1, an armour 2, consisting essentially of a cylindrical escutcheon plate in the form of a half shell, is fastened by screws F to the lock 100, to cover the projecting part of the cylinder 1, so as to leave accessible only the slit or keyhole into which the key is inserted.

[0008] A drawback which is encountered in the known security devices consists in the fact that, for practical reasons concerning mounting, a certain clearance, referred to as A in figure 1, is left between the cylinder 1 and the armour 2; therefore, when the armour 2 is forced, for example because of a break-in attempt, only the screws F withstand the imposed stresses, while the cylinder 1 does not oppose any useful resistance, as it is not integral with the armour 2. Document EP1154102A2 discloses such a safety lock for doors formed by a protective member for protecting the area where the key is introduced, comprising a fixed body and an interchangeable internal element, which has different conformation according to whether the core installed in the lock is of the double-bit mechanism type or of the cylinder lock type.

[0009] To prevent the armour from being detached by inserting and forcing by prying a scaffolding tube to shear off the fastening screws, armours have been made in the shape of a truncated cone or a hemisphere, or anyway having oval or rounded edges so as to prevent the scaffolding tube from gripping the armours.

[0010] However, although they guarantee an appropriate degree of security against the main tampering or break-in attempts, if, with the aid of suitable tools, it is nevertheless succeeded in gripping the armour and in applying a sufficient drawing force or by prying on the same, in applying a bending or twisting force so as to shear off the screws that fasten the armour to the lock, the cylinder is exposed giving way to being tampered thus allowing the opening of the door.

[0011] The main objective of the present invention is thus to devise a security assembly for European cylinder locks capable of overcoming the drawbacks of the prior art.

[0012] In the scope of the above described objective, a purpose of the present invention is that of devising a security assembly for European cylinder locks capable of withstanding, for a longer time lapse compared to that of the prior art security devices, the various external attacks described above, such as break-in attempts made through the application of a drawing, twisting or flexural force or a combined flexural-torsional force.

[0013] Another purpose of the present invention is that of providing a security assembly capable of guaranteeing an improved level of security compared to the prior art devices.

[0014] One but not the least purpose is that of realizing a security assembly for European cylinder locks that achieves the above-mentioned objective and purposes at competitive costs and that can be obtained with the usual known machinery, plants and equipment.

[0015] The above said objective and purposes, and others that will be better described hereinafter, are achieved by a security assembly for European cylinder locks as defined by claim 1.

[0016] Further characteristics and advantages of the present invention will become more apparent from the following description of a particular, but not excluding, form of embodiment shown for exemplification only but not limited to with reference to the appended figures, wherein:

- figure 1 shows a front and a sectional view of a security device according to the prior art;
- figure 2 shows a perspective front view of an exploded security assembly for European cylinder locks according to the present invention, and a European cylinder;
- figure 3 shows, in a perspective rear view, an exploded security assembly for European cylinder locks according to the present invention, wherein a

component of the security devices is mounted on the cylinder;

- figure 4 shows, according to a perspective view, a phase of mounting a security assembly according to the present invention to a European cylinder lock;
- figure 5 shows, according to a partial cutaway perspective view, the security assembly according to the present invention applied to a European cylinder lock;
- figure 6 shows a front and a sectional view of a security assembly according to the present invention.

DESCRIPTION OF THE INVENTION

[0017] With reference particularly to figures 2, 3 and 4, it has been referred as 1 to a European cylinder of a lock 100 adapted to be mounted on an opening/closing fixture, such as a door or a gate, so as to allow its opening/closing.

[0018] Said cylinder 1 is provided with operation means 1A, such as a suitable revolving plug, operable by inserting a key inside a respective slit 1B provided on the front face 12 of a portion 11 of the cylinder thereof which is protruding with respect to the lock 100; said operation means 1A are adapted to transmit the rotating motion of the key to the mechanism of the lock 100 so as to open or close it.

[0019] According to an advantageous characteristic of the present invention, a security assembly 10 is associable to said lock 100 in order to increase the resistance to possible break-in attempts by breaking the cylinder; said security assembly 10 comprises a first security device 2, called "armour", made up of a basically cylindrical body and/or having a frusto-conical tapering shape or anyhow having a shape adapted to prevent tampering attempts.

[0020] Said first security device 2 is arranged in order to cover the protruding portion 11 of the cylinder 1, so as to rest against the surface of the lock 100 to which it is applied, and made integral with the same through suitable fastening means F, such as screws, pins or other means (shown in figure 6), that can preferably be inserted from the side facing the lock.

[0021] As it can be seen in figure 3, said first security device 2 is provided, in correspondence with the side facing the lock, with a housing seat 20, preferably obtained as a suitably shaped recess, inside which the protruding portion 11 of said cylinder 1 is accommodated.

[0022] On the outer side 2B, said first security device 2 is instead provided with a through opening 2A, arranged so as to be, when in use, in communication with said slit 1B of the cylinder 1, to allow the passage of the key.

[0023] According to an advantageous characteristic of the present invention, said security assembly 10 further comprises a second security device 3, associable to said cylinder 1 so as to further increase the resistance to break-ins.

[0024] Said second security device 3, also called "escutcheon", comprises a body provided with a through opening 30, basically central, having a shape and dimensions such as to allow the through insertion of the protruding portion 11 of the cylinder 1, and it is provided with a flat side 31 through which it is abutted against the surface of the lock 100.

[0025] Said second security device 3 is then made integral with said cylinder 1 through suitable fastening means 3A, such as a pair of screws, insertable in respective holes 3B preferably arranged on opposed sides of the body of the device 3.

[0026] Preferably, the outer body of said second device 3 is configured and shaped such that, once associated to the cylinder 1, it is very difficult to remove it, even using, for example, break-in tools since it has rounded off, smoothed or conical edges.

[0027] According to the invention, said second security device 3 is adapted to be, it too, covered by said first security device 2 and accommodated in the housing seat 20 obtained on said first security device 2, anyway without being constrained to it.

[0028] In other words, said housing seat 20 is configured so as to accommodate both the protruding portion 11 of said cylinder 1 and also the body of said second security device 3; to such purpose, the volume defined by said housing seat 20 can advantageously be divided internally into a first cavity 21 having a shape basically complementary to that of said cylinder 1 and adapted to receive the protruding portion 11 thereof, and a second cavity 22 having shape and dimension such as to be complementary to the body of said second security device 3 when associated to said cylinder 1.

[0029] Said second cavity 22, therefore, has a dimension greater than that of said first cavity 21, to make it possible to mount said first device 2 on the lock 100 by slidably inserting the protruding portion 11 of the cylinder 1 and said second device 3 in the respective cavity 21, 22 of the housing seat 20.

[0030] As it can be seen in figures 4 and 5, the mounting of said security assembly 10 on a European cylinder lock 100 is made at first by coupling said second security device 3 with the protruding portion 11 of said cylinder 1, in particular, inserting the latter in the respective through opening 30 obtained on said second security device 3, so that its flat side 31 abuts against the surface of the lock 100 (figure 4).

[0031] Subsequently, said second security device 3 is firmly constrained and made integral with the protruding portion 11 of said cylinder 1 by inserting said fastening means 3A inside the holes 3B.

[0032] Finally, said first security device 2 is mounted arranging it in such a way that the protruding portion 11 of the cylinder 1 and said second device 3, associated to it, are accommodated in the housing seat 20, and in particular in the respective cavities 21, 22 shown in figure 3, thus completing the installation of the security assembly 10 (figure 5).

[0033] Advantageously, said first security device 2 is

basically self-centering, that is said housing seat 20 is made in such a way that the access opening 2A automatically positions itself in correspondence of the cylinder slit 1B, to allow the key insertion.

[0034] The mounting of the security assembly 10 is completed by fixing said first device 2 to said lock 100, advantageously from the inner side, by means of suitable and known fastening means F (figure 6).

[0035] In particular, even if said second security device 3 is not directly constrained to said first security means 2, the latter is indirectly made integral with the cylinder 1 just thanks to the presence of said second security device 3 and to the specific way of mounting the same; consequently, advantageously, the whole security assembly 10 is integral with the cylinder 1 (figure 6).

[0036] From the foregoing, it is therefore apparent that the present invention achieves the expected objects and advantages: in fact, it has been obtained a security assembly 10 for European cylinder locks extremely resistant to tampering and break-in attempts that can be carried out by pulling and/or forcing through twisting or bending or combined twisting and bending the first security device 2 in order to snap the cylinder.

[0037] In fact, the integral union between said second security device 3 and the cylinder 1, results in increasing the resistant portion of the same cylinder, advantageously in the proximity of its most fragile point, furthermore reducing the lever arm usable to make the cylinder bend.

[0038] Further, advantageously, the mounting of said second security device 3 on the cylinder 1 and the subsequent fixing of said first security device 2 to the lock 100 so as to cover both the protruding portion 11 of the cylinder 1 and the second security device 3, results in making the security assembly 10 integral with the cylinder 1, thus increasing the resistant portion to break-in attempts.

[0039] Advantageously, the fact that said first security device 2 is not directly constrained to said second security device 3, contributes to greatly increase the time lapse necessary to attain the snapping of the cylinder 1: in fact, in case of a break-in attempt, it is necessary to remove singularly each one of the two devices.

[0040] Of course, the present invention is susceptible of a great number of applications, modifications or variants without nonetheless departing from the scope of patent protection as defined by the independent claim 1.

[0041] Furthermore, the materials and the equipment used to realize the present invention, as well as the shapes and dimensions of the single components may be the most suitable to meet the specific requirements.

Claims

1. Security assembly (10) associable to a European cylinder lock (100) comprising a first security device (2), associable to said lock (100) and provided with a housing seat (20) wherein a portion (11) of a European cylinder (1) of the said lock (100) protruding with respect to said lock (100) is adapted to be housed, and a second security device (3), said housing seat (20) being configured so as to accommodate also said second security device (3) and make said security assembly (10) integral with said cylinder (1) **characterized in that** said second security device (3) comprises a body provided with a through opening (30) configured to allow the through insertion of said protruding portion (11) of said cylinder (1) so as to increase the resistant portion of the same, said housing seat (20) being configured so as the volume defined by it can be subdivided into a first cavity (21) having a shape basically complementary to that of said cylinder (1) and adapted to receive, in use, said protruding portion (11), and a second cavity (22) having shape and dimension such as to be complementary to the body of said second security device (3) when associated to said cylinder (1).

2. Security assembly (10) according to claim 1, wherein said second security device (3) can be securely constrained to said cylinder (1) so as to be integral with the same, using fastening means (3A) such as a pair of screws, insertable into respective holes (3B) arranged on the opposed sides of the body of said second security device (3).

3. Security assembly (10) according to claim 1 or 2, wherein said second security device (3) is provided with a flat side (31) through which it is abutted against said lock (100).

4. European cylinder lock (100) comprising a security assembly (10) according to any of the claims from 1 to 3.

Patentansprüche

1. Sicherheitseinheit (10), die mit einem europäischen Zylinderschloss (100) kombinierbar ist,
mit einer ersten Sicherheitseinrichtung (2), die mit dem Schloss (100) kombinierbar ist und mit einem Gehäusesitz (20) versehen ist, wobei ein Teil (11) eines europäischen Zylinders (1) des Schlosses (100), der in Bezug auf das Schloss (100) hervorsteht, ausgebildet ist, in einem Gehäuse aufgenommen zu werden, und
mit einer zweiten Sicherheitseinrichtung (3), wobei der Gehäusesitz (20) ausgebildet ist, auch die zweite Sicherheitseinrichtung (3) aufzunehmen und die Sicherheitseinheit (10) mit dem Zylinder (1) zu einer Einheit zu machen,
dadurch gekennzeichnet, dass
die zweite Sicherheitseinrichtung (3) einen Körper aufweist, der mit einer Durchgangsöffnung (30) versehen ist, die ausgebildet ist, das Durchführen des

vorstehenden Teils (11) des Zylinders (1) derart zu ermöglichen, dass der Widerstand bildende Bereich desselben vergrößert wird, wobei der Gehäusesitz (20) so ausgebildet ist, dass das von ihm begrenzte Volumen in eine erste Aussparung (21) mit einer Form, die im Wesentlichen komplementär zu jener des Zylinders (1) und ausgebildet ist, im Gebrauch den hervorstehenden Teil (11) aufzunehmen, und in eine zweite Aussparung (22) mit einer Form und Abmessung derart unterteilbar ist, dass sie Verbindung mit dem Zylinder (1) komplementär zu dem Körper der zweiten Sicherheitseinrichtung (3) bei ist.

2. Sicherheitseinheit (10) nach Anspruch 1, wobei die zweite Sicherheitseinrichtung (3) derart an dem Zylinder (1) gesichert anbringbar ist, dass sie mit diesem eine Einheit bildet, unter Verwendung von Befestigungsmitteln (3A), etwa einem Paar aus Schrauben, die in entsprechende Bohrungen (3B) einführbar sind, die auf gegenüberliegenden Seiten des Körpers der zweiten Sicherheitseinrichtung (3) angeordnet sind.

3. Sicherheitseinheit (10) nach Anspruch 1 oder 2, wobei die zweite Sicherheitseinrichtung (3) mit einer flachen Seite (31) versehen ist, mit der sie an dem Schloss (100) anliegt.

4. Europäisches Zylinderschloss (100) mit einer Sicherheitseinheit (10) nach einem der Ansprüche 1 bis 3.

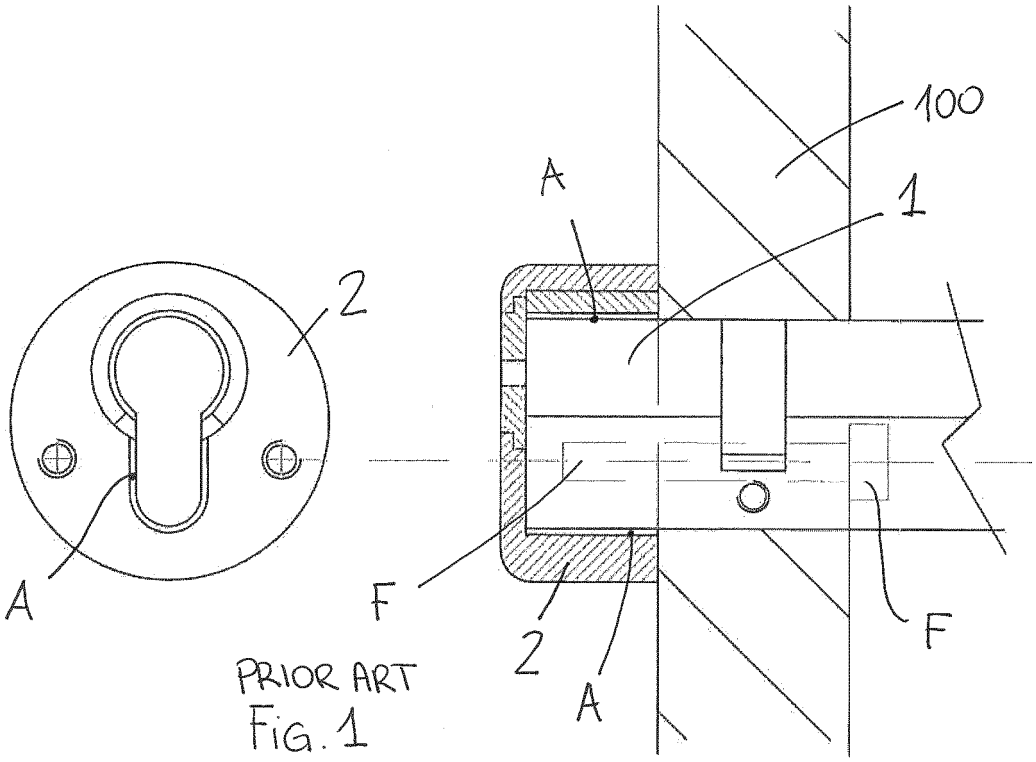
Revendications

1. Ensemble de sécurité (10) pouvant être associé à une serrure (100) à cylindre européen comprenant un premier dispositif de sécurité (2), pouvant être associé à ladite serrure (100) et pourvu d'un logement (20) dans lequel une partie (11) d'un cylindre (1) européen de ladite serrure (100) faisant saillie par rapport à ladite serrure (100) est adapté à être logé, et un second dispositif de sécurité (3), ledit logement (20) étant conçu de manière à recevoir également ledit second dispositif de sécurité (3) et à faire en sorte que ledit ensemble de sécurité (10) soit solidaire dudit cylindre (1), **caractérisé en ce que** ledit second dispositif de sécurité (3) comprend un corps pourvu d'une ouverture traversante (30) conçue de manière à autoriser l'insertion traversante de ladite partie (11) faisant saillie dudit cylindre (1) de manière à augmenter la partie résistante du même, ledit logement (20) étant conçu de sorte que le volume défini par lui peut être subdivisé en une première cavité (21) ayant une forme essentiellement complémentaire à celle dudit cylindre (1) et adaptée à recevoir, en opération, ladite partie (11) faisant saillie, et une second cavité (22) ayant une forme et des dimensions de manière à être complémentaire au corps dudit second dispositif de sécurité (3) lorsqu'associé audit cylindre (1).

2. Ensemble de sécurité (10) selon la revendication 1, dans lequel ledit second dispositif de sécurité (3) peut être solidement fixé audit cylindre (1) de manière à être solidaire de celui-ci, en utilisant des moyens de fixation (3A) tels qu'une paire de vis, insérables dans des trous respectifs (3B) agencés sur les côtés opposés du corps dudit second dispositif de sécurité (3).

3. Ensemble de sécurité (10) selon la revendication 1 ou la revendication 2, dans lequel ledit second dispositif de sécurité (3) est pourvu d'un côté plat (31) par lequel il est en butée contre ledit verrou (100).

4. Serrure (100) à cylindre européen comprenant un ensemble de sécurité (10) selon l'une quelconque des revendications 1 à 3.



PRIOR ART
Fig. 1

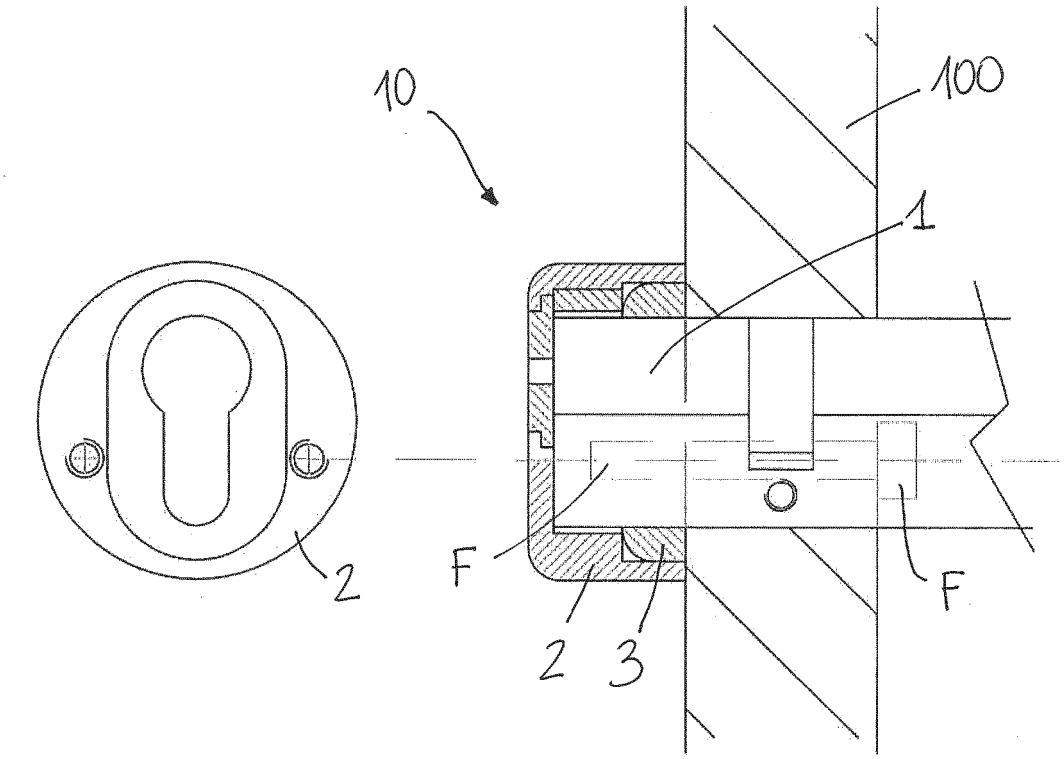


Fig. 6

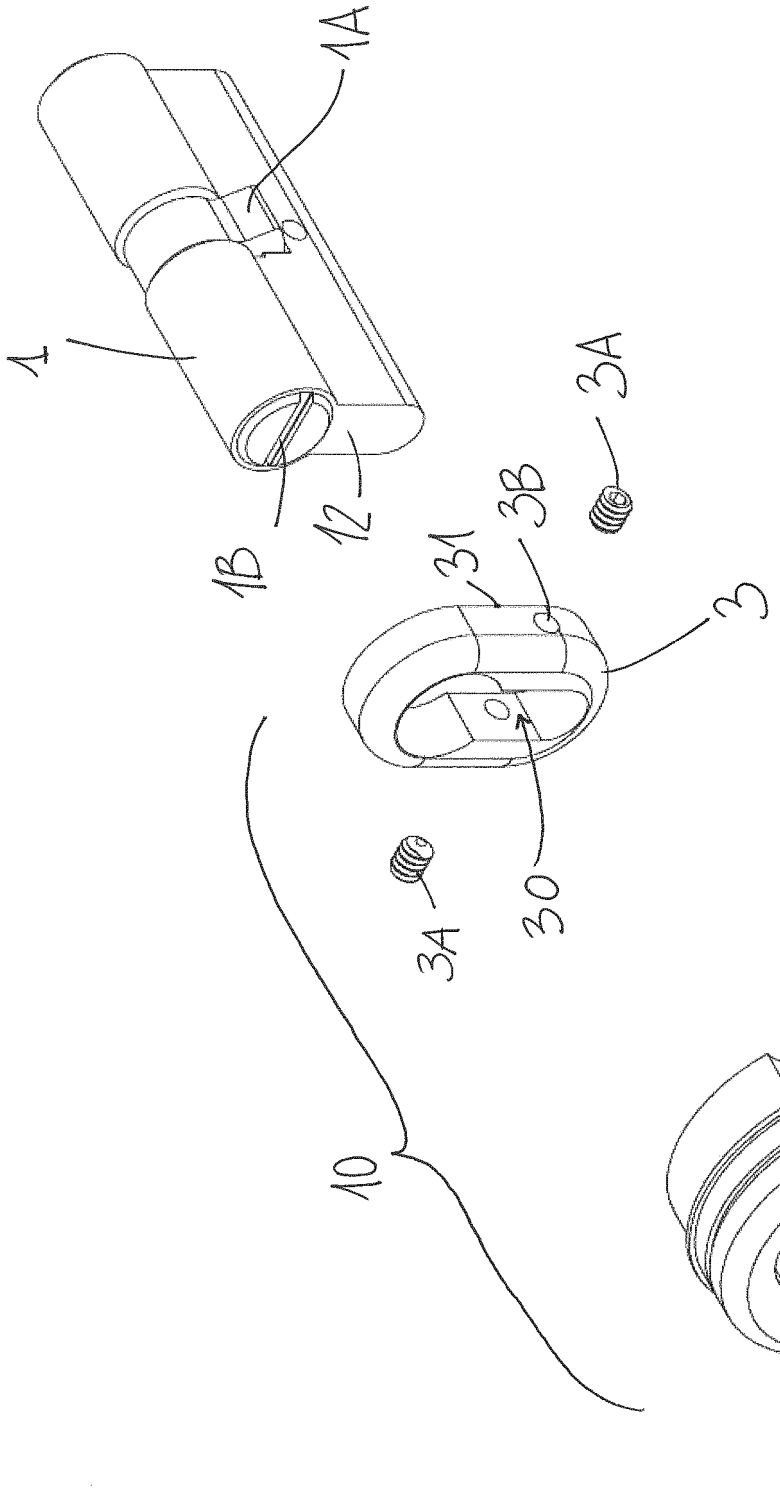


Fig. 2

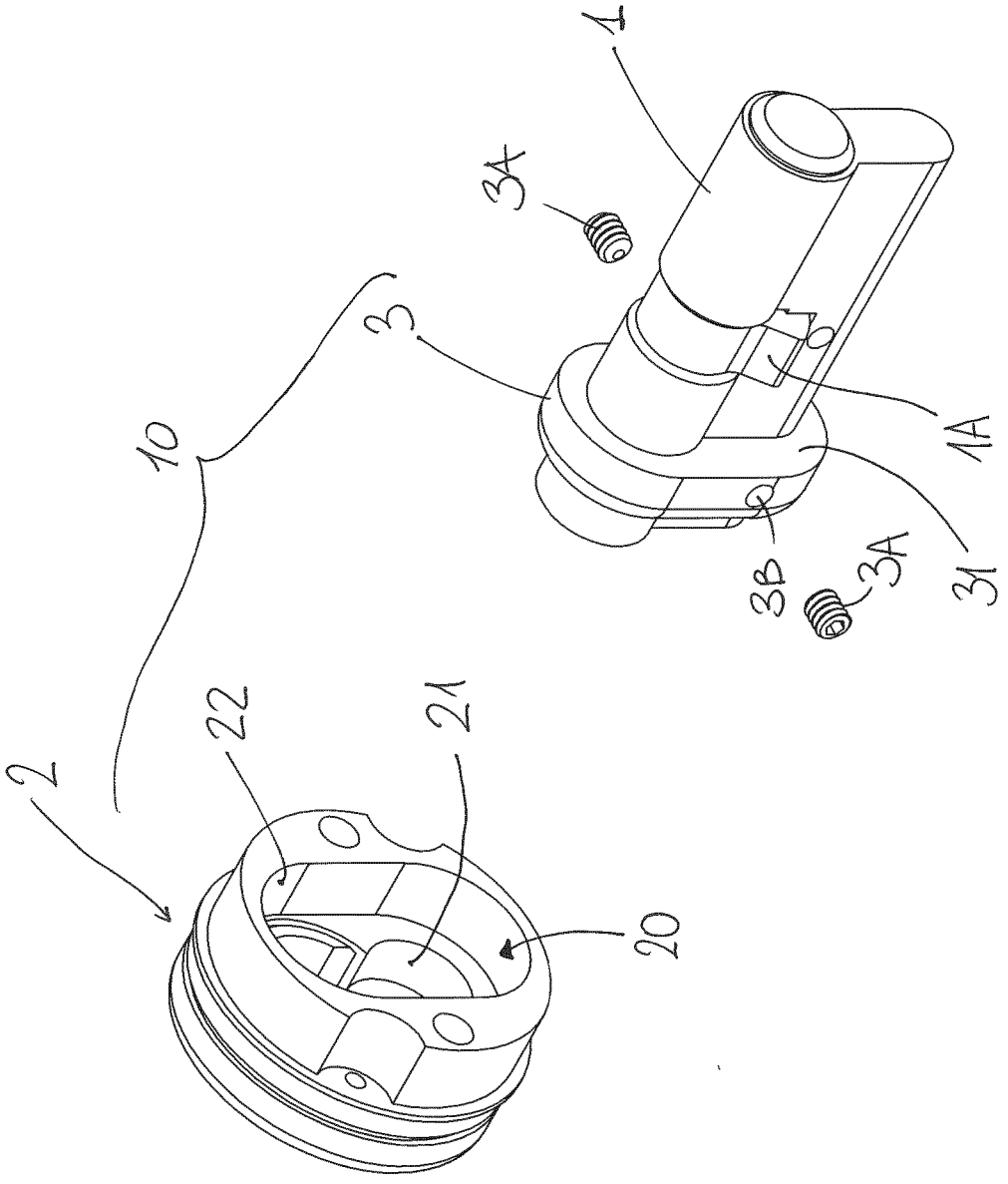


Fig. 3

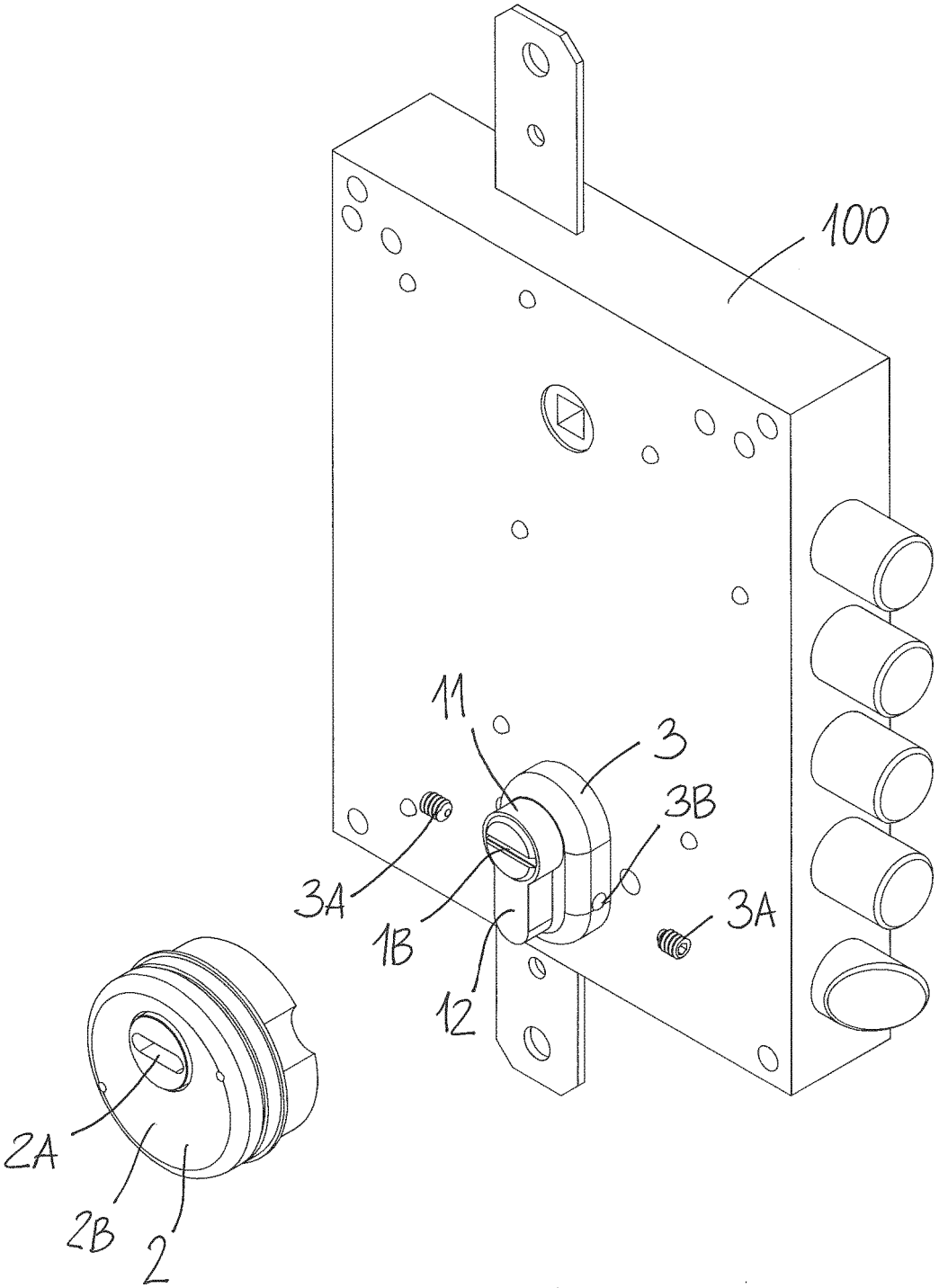


Fig. 4

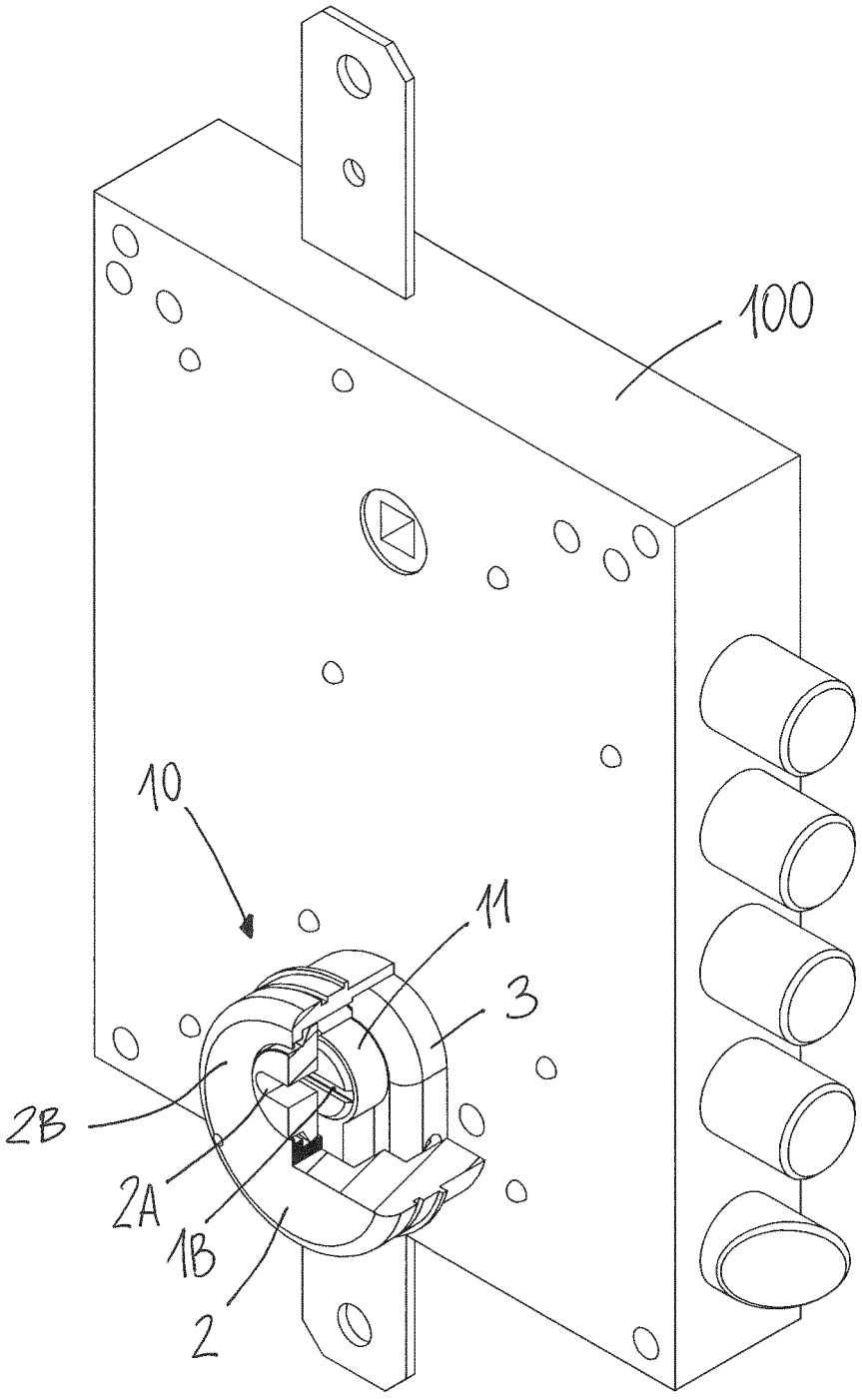


Fig. 5

REFERENCES CITED IN THE DESCRIPTION

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Patent documents cited in the description

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