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(54) **LOCK CYLINDER REPLACEABLE PADLOCK**

VORHÄNGESCHLOSS MIT AUSWECHSELBAREM SCHLIEßZYLINDER

CADENAS À SERRURE CYLINDRIQUE REMPLAÇABLE

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Description

BACKGROUND OF THE INVENTION

1. Fields of the invention

[0001] The present invention relates to a padlock, and more particularly, to a padlock whose lock cylinder is replaceable and the lock cylinder is well secured.

2. Descriptions of Related Art

[0002] Some of the conventional padlocks have the function of replacement of the lock cylinder so that the housing and the shackle can be used repeatedly, also provide higher security feature.

[0003] U.S. Patent No. 8,245,547 discloses a padlock which includes a lock housing, a U-shaped lock hoop and a lock cylinder in order selectively to lock the lock hoop to the lock housing. The lock cylinder has a cylinder axis and is secured to the lock housing by means of a securing element. The securing element is displaceably supported at the lock cylinder and is resiliently supported transversely to the cylinder axis. The securing element engages into a securing opening at an inner side of the lock housing to secure the lock cylinder to the lock housing.

[0004] However, when the lock hoop is located at the locked position, if an unauthorized person hits the left side of the padlock as shown in Figs. 1 and 2 of the U. S. Patent No. 8,245,547, the securing element is shifted to compress the spring to allow the securing element to be disengaged from the securing opening, and the lock cylinder can be easily removed from the housing and the rotational bolt can be rotated to unlock the padlock without using the key.

[0005] Besides, the spring of the padlock of U.S. Patent No. 8,245,547 has one end contacting an abutment element so as to be movably supported at the lock cylinder. The abutment element is engaged with the cylinder core of the core reception section so as to restrict the rotational angle of the cylinder core relative to the cylinder housing.

[0006] Nevertheless, when the housing is hit, the securing element and the abutment element both compress the spring which may be tilted so that the abutment element may be disengaged from the core reception section. The function of restricting the rotational angle of the cylinder core is then failed.

[0007] The present invention intends to provide a padlock to eliminate the shortcomings mentioned above.

SUMMARY OF THE INVENTION

[0008] The present invention relates to a padlock and comprises a housing having a space defined therein. Two insertion holes are defined through the wall of the housing. A positioning recess is defined in the inside of the housing. An installation hole is defined in the housing and located beneath one of the two insertion holes. A

reception member is located in the space and has a connection hole and an access hole which communicates with the connection hole. The connection hole is located corresponding to the positioning recess of the housing.

5 The access hole is located corresponding to the installation hole. The connection hole has a resilient member and a pin located therein. The pin is biased by the resilient member so as to be resiliently engaged with the positioning recess. When the resilient member is compressed, 10 the pin is disengaged from the positioning recess. The pin has a groove defined transversely in the outer surface thereof. The groove is located corresponding to the access hole. A stop is located in the installation hole and the access hole. The stop is engaged with the groove of 15 the pin when the pin is engaged with the positioning recess.

[0009] Preferably, the access hole communicates with the connection hole perpendicularly.

20 **[0010]** Preferably, the pin has a protrusion extending axially from one end thereof, and the resilient member is mounted onto the protrusion.

25 **[0011]** Preferably, the installation hole is a threaded hole. The stop has a threaded portion formed on the outer surface thereof. The stop is threadedly engaged with the installation hole.

30 **[0012]** Preferably, the padlock further comprises a lock cylinder and a positioning plate, wherein the lock cylinder is located in the reception member and has a top piece. The positioning plate is located in the space and has a guide hole in which the top piece is located so that the rotational angle of the lock cylinder is restricted by the guide hole.

35 **[0013]** Preferably, the top piece is a semi-circular piece and the guide hole is a fan-like hole.

[0014] Preferably, the positioning plate has a lug extends radially from outside thereof.

40 **[0015]** Preferably, the padlock further comprises a shackle and a locking unit, wherein the shackle is a U-shaped shackle and has a long end and a short end. The long end is inserted into the insertion hole that does not have the installation hole located therebeneath. The short end is inserted into the insertion hole that has the installation hole located therebeneath. Each of the long end and the short end has a notch. The locking unit is 45 located in the space. The housing has a passage which is located corresponding to the locking unit and communicates with the insertion hole and the space. The top piece of the lock cylinder is connected to the locking unit. When the locking unit is located at the locked status, the locking unit is engaged with the notches via the passage. 50 When the locking unit is located at the unlocked status, the short end is disengaged from the insertion hole that has the installation hole located therebeneath.

55 **[0016]** Preferably, the locking unit has a driving member which has a flange and a block on two ends thereof. The flange is located corresponding to the top piece. The block is located corresponding to the notches of the shackle.

[0017] Preferably, the padlock further comprises a ring and a torsion spring, wherein the ring is mounted to the driving member and has a first securing portion. The block has a second securing portion. The torsion spring has two ends which are respectively connected to the first and second securing portions.

[0018] Preferably, the block has two recessed faces on two opposite sides thereof. The recessed faces are located in the passage. Two engaging members are respectively located in the passage and located between the two recessed faces and the notches.

[0019] The pin cannot be shifted when the housing is hit when the stop is engaged with the groove, so that the lock cylinder cannot be easily pulled out from the housing. When replacing the lock cylinder, the stop is removed via the insertion hole when the padlock is in unlocked status, the pin can be moved from the positioning recess, and the lock cylinder can be replaced.

[0020] The rotational angle of the lock cylinder can be restricted by the guide hole of the positioning plate, so that the lock cylinder can be rotated to a correct unlocked position. The positioning plate is not moved even when the housing is hit.

[0021] The present invention will become more obvious from the following description when taken in connection with the accompanying drawings which show, for purposes of illustration only, a preferred embodiment in accordance with the present invention.

BRIEF DESCRIPTION OF THE DRAWINGS

[0022]

Fig. 1 is a perspective view to show the padlock of the present invention;

Fig. 2 is an exploded view of the padlock of the present invention;

Fig. 3 is a cross sectional view, taken along line A-A in Fig. 1;

Fig. 4 is a cross sectional view, wherein the padlock is in the unlocked status, and the stop is removed;

Fig. 5 is a perspective view to show the locking unit of the present invention;

Fig. 6 shows that the positioning plate is located in the space 11 of the padlock, wherein the housing is removed, and

Fig. 7 shows that the top piece of the lock cylinder is inserted in the guide hole of the positioning plate.

DETAILED DESCRIPTION OF THE PREFERRED EMBODIMENT

[0023] Referring to Figs. 1 to 7, the padlock of the present invention comprises a housing 1 having a space 11 defined therein, and two insertion holes 12 are defined through the top wall of the housing 1. A positioning recess 13 is defined in the inside of the housing 1. An installation hole 14 is defined in the housing 1 and located beneath

one of the two insertion holes 12.

[0024] A reception member 2 is located in the space 11 and has a connection hole 21 and an access hole 22 which communicates with the connection hole 21 perpendicularly. The connection hole 21 is located corresponding to the positioning recess 13 of the housing 1, and the access hole 22 is located corresponding to the installation hole 14. The connection hole 21 has a resilient member 211 and a pin 212 located therein. The pin 212 has a protrusion 2121 extending axially from one end thereof, and the resilient member 211 is mounted onto the protrusion 2121. The pin 212 is biased by the resilient member 211 so as to be resiliently engaged with the positioning recess 13. When the resilient member 211 is compressed, the pin 212 is disengaged from the positioning recess 13. The pin 212 has a groove 2122 defined transversely in the outer surface thereof. The groove 2122 is located corresponding to the access hole 22.

[0025] A stop 3 is located in the installation hole 14 and the access hole 22. The installation hole 14 is a threaded hole, and the stop 3 has a threaded portion 31 formed on the outer surface thereof. The stop 3 is threadably engaged with the installation hole 14. The stop 3 is engaged with the groove 2122 of the pin 212 when the pin 212 is engaged with the positioning recess 13.

[0026] The padlock further comprises a lock cylinder 4 and a positioning plate 5, wherein the lock cylinder 4 is located in the reception member 2 and has a top piece 41. The positioning plate 5 is located in the space 11 and has a guide hole 52 in which the top piece 41 is located so that the rotational angle of the lock cylinder 4 is restricted by the guide hole 52. The top piece 41 is a semi-circular piece, and the guide hole 52 is a fan-like hole which is larger than the top piece 41. The positioning plate 5 has a lug 51 extends radially from outside thereof so as to be positioned in the space 11.

[0027] The padlock further comprises a shackle 6 and a locking unit 7, wherein the shackle 6 is a U-shaped shackle and has a long end 61 and a short end 62. The long end 61 is inserted into the insertion hole 12 that does not have the installation hole 14 located therebeneath, and the short end 62 is inserted into the insertion hole 12 that has the installation hole 14 located therebeneath. Each of the long end 61 and the short end 62 has a notch 63. The locking unit 7 is located in the space 11. The housing 1 has a passage 15 which is located corresponding to the locking unit 7 and communicates with the insertion hole 12 with the locking unit 7, and the space 11. The top piece 41 of the lock cylinder 4 is connected to the locking unit 7. The locking unit 7 has a driving member 71 which has a flange 711 and a block 712 on two ends thereof. The flange 711 is located corresponding to the top piece 41, and the block 712 is located corresponding to the notches 63 of the shackle 6. A ring 72 is mounted to the driving member 71 and has a first securing portion 721. The block 712 has a second securing portion 7121. A torsion spring 73 has two ends which are respectively connected to the first and second securing portions 721,

7121. The block 712 has two recessed faces 7122 on two opposite sides thereof. The recessed faces 7122 are located in the passage 15. Two engaging members 74 are respectively located in the passage 15 and located between the two recessed faces 7122 and the notches 63.

[0028] When the locking unit 7 is located at a locked status, the locking unit 7 is engaged with the notches 63 via the passage 15. When the locking unit 7 is located at an unlocked status, the short end 62 is disengaged from the insertion hole 12 that has the installation hole 14 located therebeneath.

[0029] As shown in Figs. 2 and 3, the pin 212 is biased by the resilient member 211 so as to be engaged with the positioning recess 13, therefore, the pin 212 is positioned by the positioning recess 13 and the connection hole 21, and the reception member 2 cannot be removed out from the housing 1. The stop 3 extends through the installation hole 14 and the access hole 22 and is engaged with the groove 2122 of the pin 212, so that even if the padlock is hit, the pin 212 is not moved, and the resilient member 211 is not compressed. In other words, the pin 212 is not shifted so that the lock cylinder 4 cannot be removed out from the padlock.

[0030] When replacing the lock cylinder 4, as shown in Fig. 4, a key is used to unlock the padlock, and the short end 62 of the shackle 6 is removed from the insertion hole 12. The stop 3 is seen and accessible. By using a hand tool, the stop 3 can be threadedly removed from the installation hole 14. An elongate tool is inserted into the installation hole 14 and the access hole 22 to be engaged with the groove 2122 of the pin 212, so that the pin 212 can be moved to compress the resilient member 211. Therefore, the pin 212 is disengaged from the positioning recess 13, so the lock cylinder 4 and the reception member 2 can be removed out from the padlock and replaced with new ones.

[0031] After the new lock cylinder 4 and the reception member 2 are installed into the padlock, the pin 212 and the resilient member 211 are installed in the connection hole 21 of the new lock cylinder 4 and the reception member 2. When the pin 212 is engaged with the positioning recess 13, the resilient member 211 pushes the pin 212 at the position. The stop 3 is installed again into the installation hole 14 and engaged with the groove 2122 of the pin 212 to finish the replacement procedures.

[0032] As shown in Figs. 2 to 7, when inserting the key into the keyhole 42 of the lock cylinder 4, rotating the key to drive the lock cylinder 4 whose top piece 41 drives the flange 711 of the locking unit 7. The first and second securing portions 7121, 721 are rotated by the driving member 71 and compress the torsion spring 73. When the recessed faces 7122 of the driving member 71 are rotated to the passage 15, the engaging members 74 are moved to the recessed faces 7122 and removed from the notches 63, so that the shackle 6 is moved upward. The short end 62 is completely removed from the insertion hole 12 and the shackle 6 is rotatable to allow the

user to see the stop 3. When the user does not apply force continuously to the key, the torsion spring 73 returns and the driving member 71 is rotated in the opposite direction, so that the recessed faces 7122 of the driving member 71 are rotated away from the passage 15, and the engaging members 74 protrude into the insertion holes 12. The flange 711 of the driving member 71 pushes the top piece 41 to return the lock cylinder 4 back to its initial position.

[0033] It is noted that the lock cylinder 4 has to be rotated to a position where the recessed faces 7122 face the passage 15 to allow the padlock to be unlocked. When the recessed faces 7122 do not face the passage 15, the padlock is locked. Therefore, the position of the lock cylinder 4 has to be precisely restricted. As shown in Fig. 6, usually, the space 11 is in a shape of a narrow area and a wide area, the lug 51 restricts the positioning plate 5 from rotating by the specific shape of the space 11. As shown in Fig. 7, the top piece 41 of the lock cylinder 4 is inserted in the guide hole 52 of the positioning plate 5 to restrict the rotational angle of the lock cylinder 4. In one embodiment, the top piece 41 is a semi-circular piece, and the guide hole 52 is a fan-like hole which is larger than the top piece 41 so as to precisely set the rotational positions of the top piece 41 of the lock cylinder 4. Of course, other shape may also be used to obtain the same function.

[0034] While we have shown and described the embodiment in accordance with the present invention, it should be clear to those skilled in the art that further embodiments may be made without departing from the scope of the present invention as defined by the appended claims.

Claims

1. A padlock comprising:

a housing (1) having a space (11) defined therein, two insertion holes (12) defined through a wall of the housing (1), a positioning recess (13) defined in an inside of the housing (1), an installation hole (14) defined in the housing (1) and located beneath one of the two insertion holes (12);

a reception member (2) located in the space (11) and having a connection hole (21) and an access hole (22) which communicates with the connection hole (21), the connection hole (21) located corresponding to the positioning recess (13) of the housing (1), the access hole (22) located corresponding to the installation hole (14), the connection hole (21) having a resilient member (211) and a pin (212) located therein, the pin (212) being biased by the resilient member (211) so as to be resiliently engaged with the positioning recess (13), and when the resilient member

- (211) is compressed, the pin (212) is disengaged from the positioning recess (13), the pin (212) having a groove (2122) defined transversely in an outer surface thereof, the groove (2122) located corresponding to the access hole (22), and
 a stop (3) located in the installation hole (14) and the access hole (22), the stop (3) being engaged with the groove (2122) of the pin (212) when the pin (212) is engaged with the positioning recess (13).
2. The padlock as claimed in claim 1, wherein the access hole (22) communicates with the connection hole (21) perpendicularly.
 3. The padlock as claimed in claim 1, wherein the pin (212) has a protrusion (2121) extending axially from one end thereof, the resilient member (211) is mounted onto the protrusion (2121).
 4. The padlock as claimed in claim 1, wherein the installation hole (14) is a threaded hole, the stop (3) has a threaded portion (31) formed on an outer surface thereof, the stop (3) is threadedly engaged with the installation hole (14).
 5. The padlock as claimed in claim 1 further comprising a lock cylinder (4) and a positioning plate (5), the lock cylinder (4) located in the reception member (2) and having a top piece (41), the positioning plate (5) located in the space (11) and having a guide hole (52) in which the top piece (41) is located so that a rotational angle of the lock cylinder (4) is restricted by the guide hole (52).
 6. The padlock as claimed in claim 5, wherein the top piece (41) is a semi-circular piece, the guide hole (52) is a fan-like hole.
 7. The padlock as claimed in claim 5, wherein the positioning plate (5) has a lug (51) extends radially from outside thereof.
 8. The padlock as claimed in claim 5 further comprising a shackle (6) and a locking unit (7), the shackle (6) being a U-shaped shackle and having a long end (61) and a short end (62), the long end (61) inserted into the insertion hole (12) that does not have the installation hole (14) located therebeneath, the short end (62) inserted into the insertion hole (12) that has the installation hole (14) located therebeneath, each of the long end (61) and the short end (62) having a notch (63), the locking unit (7) located in the space (11), the housing (1) having a passage (15) which is located corresponding to the locking unit (7) and communicates with the insertion hole (12) with the locking unit (7), and the space (11), the top piece (41) of the lock cylinder (4) being connected to the locking unit (7), when the locking unit (7) is located at a locked status, the locking unit (7) is engaged with the notches (63) via the passage (15), when the locking unit (7) is located at an unlocked status, the short end (62) is disengaged from the insertion hole (12) that has the installation hole (14) located therebeneath.
 9. The padlock as claimed in claim 8, wherein the locking unit (7) has a driving member (71) which has a flange (711) and a block (712) on two ends thereof, the flange (711) is located corresponding to the top piece (41), the block (712) is located corresponding to the notches (63) of the shackle (6).
 10. The padlock as claimed in claim 9 further comprising a ring (72) and a torsion spring (73), the ring (72) is mounted to the driving member (71) and having a first securing portion (721), the block (712) having a second securing portion (7121), the torsion spring (73) having two ends which are respectively connected to the first and second securing portions (721, 7121).
 11. The padlock as claimed in claim 10, wherein the block (712) has two recessed faces (7122) on two opposite sides thereof, the recessed faces (7122) are located in the passage (15), two engaging members (74) are respectively located in the passage (15) and located between the two recessed faces (7122) and the notches (63).

35 Patentansprüche

1. Vorhängeschloss, das Folgendes umfasst:

ein Gehäuse (1), das einen in demselben definierten Raum (11), zwei durch eine Wand des Gehäuses (1) definierte Einsetzlöcher (12), eine in einer Innenseite des Gehäuses (1) definierte Positionierungsaussparung (13), ein in dem Gehäuse (1) definiertes und unterhalb eines der zwei Einsetzlöcher (12) angeordnetes Einbauloch (14) hat,
 ein Aufnahmeelement (2), das in dem Raum (11) angeordnet ist und ein Verbindungsloch (21) und ein Zugangsloch (22), das mit dem Verbindungsloch (21) in Verbindung steht, hat, wobei das Verbindungsloch (21) entsprechend der Positionierungsaussparung (13) des Gehäuses (1) angeordnet ist, wobei das Zugangsloch (22) entsprechend dem Einbauloch (14) angeordnet ist, wobei das Verbindungsloch (21) ein elastisches Element (211) und einen in demselben angeordneten Stift (212) hat, wobei der Stift (212) durch das elastische Element (211) so vor-

- gespannt wird, dass er elastisch mit der Positionierungsaussparung (13) in Eingriff gebracht wird, und wobei, wenn das elastische Element (211) zusammengedrückt wird, der Stift (212) aus der Positionierungsaussparung (13) ausgerückt wird, wobei der Stift (212) eine Rille (2122) hat, die quer in einer Außenfläche desselben geformt ist, wobei die Rille (2122) entsprechend dem Zugangsloch (22) angeordnet ist, und einen Anschlag (3), der in dem Einbauloch (14) und dem Zugangsloch (22) angeordnet ist, wobei der Anschlag (3) mit der Rille (2122) des Stifts (212) in Eingriff gebracht ist, wenn der Stift (212) mit der Positionierungsaussparung (13) in Eingriff gebracht ist.
2. Vorhängeschloss nach Anspruch 1, wobei das Zugangsloch (22) senkrecht mit dem Verbindungsloch (21) in Verbindung steht.
3. Vorhängeschloss nach Anspruch 1, wobei der Stift (212) einen Vorsprung (2121) hat, der sich in Axialrichtung von einem Ende desselben aus erstreckt, wobei das elastische Element (211) an dem Vorsprung (2121) angebracht ist.
4. Vorhängeschloss nach Anspruch 1, wobei das Einbauloch (14) ein Gewindeloch ist, wobei der Anschlag (3) einen Gewindeabschnitt (31) hat, der an einer Außenfläche desselben geformt ist, wobei der Anschlag (3) mit dem Einbauloch (14) in Gewindeeingriff gebracht ist.
5. Vorhängeschloss nach Anspruch 1, das ferner einen Schließzylinder (4) und eine Positionierungsplatte (5) umfasst, wobei der Schließzylinder (4) in dem Aufnahmeelement (2) angeordnet ist und ein oberes Stück (41) hat, wobei die Positionierungsplatte (5) in dem Raum (11) angeordnet ist und ein Führungsloch (52) hat, in dem das obere Stück (41) angeordnet ist, so dass ein Drehwinkel des Schließzylinders (4) durch das Führungsloch (52) beschränkt wird.
6. Vorhängeschloss nach Anspruch 5, wobei das obere Stück (41) ein halbkreisförmiges Stück ist, wobei das Führungsloch (52) ein fächerartiges Loch ist.
7. Vorhängeschloss nach Anspruch 5, wobei die Positionierungsplatte (5) eine Nase (51) hat, die sich von außerhalb derselben in Radialrichtung erstreckt.
8. Vorhängeschloss nach Anspruch 5, das ferner einen Bügel (6) und eine Verriegelungseinheit (7) umfasst, wobei der Bügel (6) ein U-förmiger Bügel (6) ist und ein langes Ende (61) und ein kurzes Ende (62) hat, wobei das lange Ende (61) in das Einsetzloch (12) eingesetzt ist, welches das Einbauloch (14) nicht unterhalb desselben angeordnet hat, wobei das kurze Ende (62) in das Einsetzloch (12) eingesetzt ist, welches das Einbauloch (14) unterhalb desselben angeordnet hat, wobei sowohl das lange Ende (61) als auch das kurze Ende (62) eine Kerbe (63) hat, wobei die Verriegelungseinheit (7) in dem Raum (11) angeordnet ist, wobei das Gehäuse (1) einen Durchgang (15) hat, der entsprechend der Verriegelungseinheit (7) angeordnet ist und mit dem Einsetzloch (12) mit der Verriegelungseinheit (7) und dem Raum (11) in Verbindung steht, wobei das obere Stück (41) des Schließzylinders (4) mit der Verriegelungseinheit (7) verbunden ist, wenn die Verriegelungseinheit (7) bei einem verriegelten Zustand angeordnet ist, wobei die Verriegelungseinheit (7) über den Durchgang (15) mit dem Kerben (63) in Eingriff gebracht ist, wenn die Verriegelungseinheit (7) bei einem entriegelten Zustand angeordnet ist, wobei das kurze Ende (62) von dem Einsetzloch (12) ausgerückt ist, welches das Einbauloch (14) unterhalb desselben angeordnet hat.
9. Vorhängeschloss nach Anspruch 8, wobei die Verriegelungseinheit (7) ein Antriebselement (71) hat, das einen Flansch (711) und einen Block (712) an zwei Enden desselben hat, wobei der flansch (711) entsprechend dem oberen Stück (41) angeordnet ist, wobei der Block (712) entsprechend den Kerben (63) des Bügels (6) angeordnet ist.
10. Vorhängeschloss nach Anspruch 9, das ferner einen Ring (72) und eine Torsionsfeder (73) umfasst, wobei der Ring (72) an dem Antriebselement angebracht ist und einen ersten Befestigungsabschnitt (721) hat, wobei der Block (712) einen zweiten Befestigungsabschnitt (7121) hat, wobei die Torsionsfeder (73) zwei Enden hat, die jeweils mit dem ersten beziehungsweise dem zweiten Befestigungsabschnitt (721, 7121) verbunden sind.
11. Vorhängeschloss nach Anspruch 10, wobei der Block (712) zwei ausgesparte Flächen (7122) auf zwei gegenüberliegenden Seiten desselben hat, wobei die ausgesparten Flächen (7122) in dem Durchgang (15) angeordnet sind, wobei zwei ineinandergreifende Elemente (74) jeweils in dem Durchgang (15) angeordnet sind beziehungsweise zwischen den zwei ausgesparten Flächen (7122) und den Kerben (63) angeordnet sind.

Revendications

1. Cadenas comprenant :

un boîtier (1) dans lequel est défini un espace (11), deux trous d'insertion (12) étant définis à travers une paroi du boîtier (1), une cavité de positionnement (13) étant définie dans une par-

- tie intérieure du boîtier (1), un trou de montage (14) étant défini dans le boîtier (1) et situé sous l'un des deux trous d'insertion (12) ; un élément récepteur (2) placé dans l'espace (11) et ayant un trou de connexion (21) et un trou d'accès (22) qui communique avec le trou de connexion (21), le trou de connexion (21) étant placé en correspondance avec la cavité de positionnement (13) du boîtier (1), le trou d'accès (22) étant placé en correspondance avec le trou de montage (14), un élément résilient (211) et un axe (212) étant placés dans le trou de connexion (21), l'axe (212) étant sollicité par l'élément résilient (211) de façon à être engagé de manière résiliente dans la cavité de positionnement (13), et quand l'élément résilient (211) est comprimé, l'axe (212) se dégage de la cavité de positionnement (13), l'axe (212) comportant une rainure (2122) définie transversalement dans une surface extérieure de celui-ci, la rainure (2122) étant placée en correspondance avec le trou d'accès (22), et une butée (3) située dans le trou de montage (14) et le trou d'accès (22), la butée (3) étant engagée dans la rainure (2122) de l'axe (212) quand l'axe (212) est engagé dans la cavité de positionnement (13).
2. Cadenas selon la revendication 1, dans lequel le trou d'accès (22) communique avec le trou de connexion (21) de façon perpendiculaire.
 3. Cadenas selon la revendication 1, dans lequel l'axe (212) comporte une protubérance (2121) qui s'étend axialement depuis une extrémité de celui-ci, l'élément résilient (211) étant monté sur la protubérance (2121).
 4. Cadenas selon la revendication 1, dans lequel le trou de montage (14) est un trou fileté, la butée (3) comporte une partie filetée (31) formée sur une surface extérieure de celle-ci, la butée (3) est vissée dans le trou de montage (14).
 5. Cadenas selon la revendication 1, comprenant en outre un barillet de serrure (4) et une plaque de positionnement (5), le barillet de serrure (4) étant situé dans l'élément récepteur (2) et comportant une pièce supérieure (41), la plaque de positionnement (5) étant placée dans l'espace (11) et comportant un trou de guidage (52) dans lequel la pièce supérieure (41) est placée, de sorte qu'un angle de rotation du barillet de serrure (4) est limité par le trou de guidage (52).
 6. Cadenas selon la revendication 5, dans lequel la pièce supérieure (41) est une pièce semi-circulaire, et le trou de guidage (52) est un trou en éventail.
 7. Cadenas selon la revendication 5, dans lequel la plaque de positionnement (5) comporte une oreille (51) qui s'étend radialement vers l'extérieur.
 8. Cadenas selon la revendication 5, comprenant en outre une anse (6) et une unité de verrouillage (7), l'anse (6) étant une anse en forme de U et ayant une extrémité longue (61) et une extrémité courte (62), l'extrémité longue (61) étant insérée dans le trou d'insertion (12) sous lequel ne se trouve pas le trou de montage (14), l'extrémité courte (62) étant insérée dans le trou d'insertion (12) sous lequel se trouve le trou de montage (14), l'extrémité longue (61) et l'extrémité courte (62) ayant chacune une encoche (63), l'unité de verrouillage (7) étant située dans l'espace (11), le boîtier (1) comportant un passage (15) qui se trouve en correspondance avec l'unité de verrouillage (7) et qui communique avec le trou d'insertion (12) et avec l'unité de verrouillage (7), et l'espace (11), la pièce supérieure (41) du barillet de serrure (4) étant connectée à l'unité de verrouillage (7), quand l'unité de verrouillage (7) est mise dans un état verrouillé, l'unité de verrouillage (7) est engagée dans les encoches (63) via le passage (15), quand l'unité de verrouillage (7) est mise dans un état déverrouillé, l'extrémité courte (62) est déagée du trou d'insertion (12) sous lequel se trouve le trou de montage (14).
 9. Cadenas selon la revendication 8, dans lequel l'unité de verrouillage (7) comporte un élément d'entraînement (71) qui a une bride (711) et un bloc (712) sur deux extrémités de celui-ci, la bride (711) se trouvant en correspondance avec la pièce supérieure (41), le bloc (712) se trouvant en correspondance avec les encoches (63) de l'anse (6).
 10. Cadenas selon la revendication 9, comprenant en outre une bague (72) et un ressort de torsion (73), la bague (72) étant montée sur l'élément d'entraînement (71) et comportant une première partie de fixation (721), le bloc (712) comportant une deuxième partie de fixation (7121), le ressort de torsion (73) ayant deux extrémités qui sont connectées respectivement à la première et à la deuxième partie de fixation (721, 7121).
 11. Cadenas selon la revendication 10, dans lequel le bloc (712) a deux faces en retrait (7122) sur deux de ses côtés opposés, les faces en retrait (7122) se trouvant dans le passage (15), deux éléments de mise en prise (74) sont positionnés respectivement dans le passage (15) et positionnés entre les deux faces en retrait (7122) et les encoches (63).

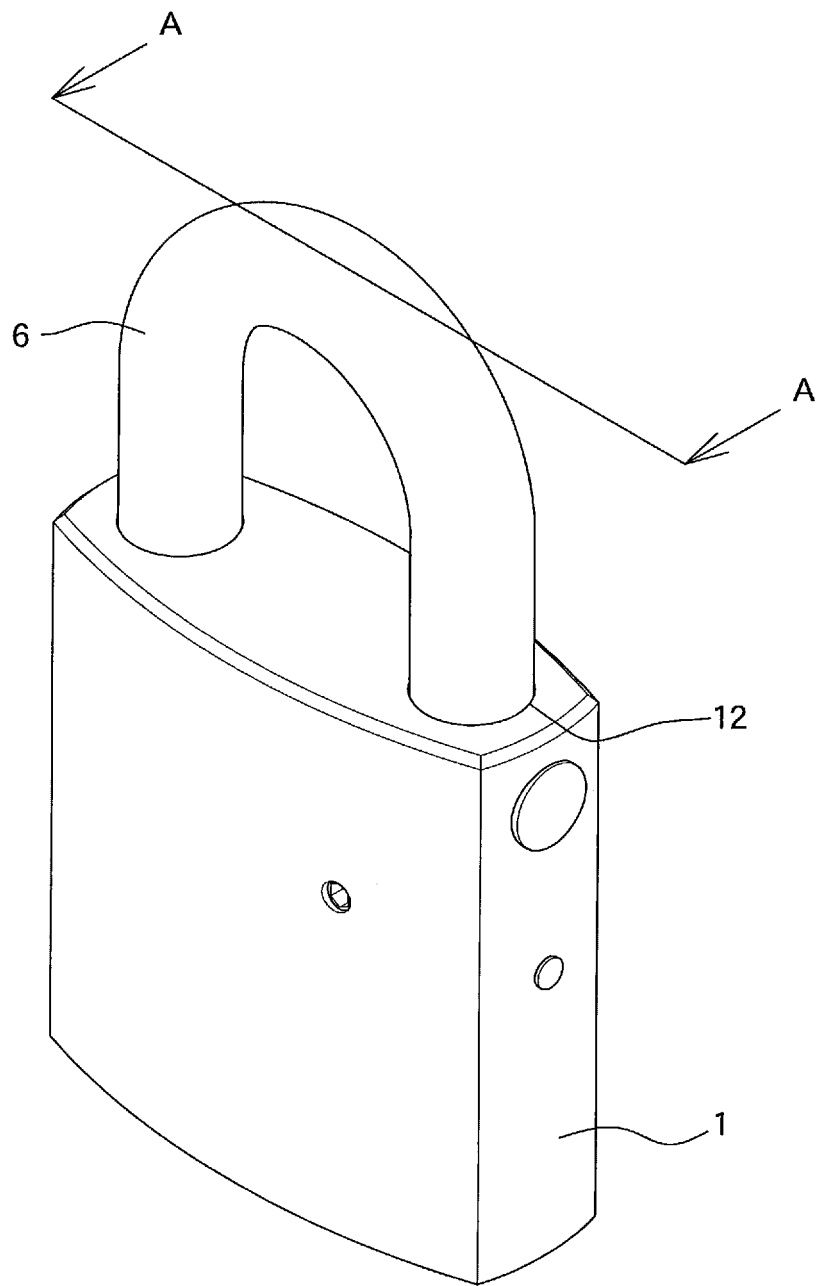
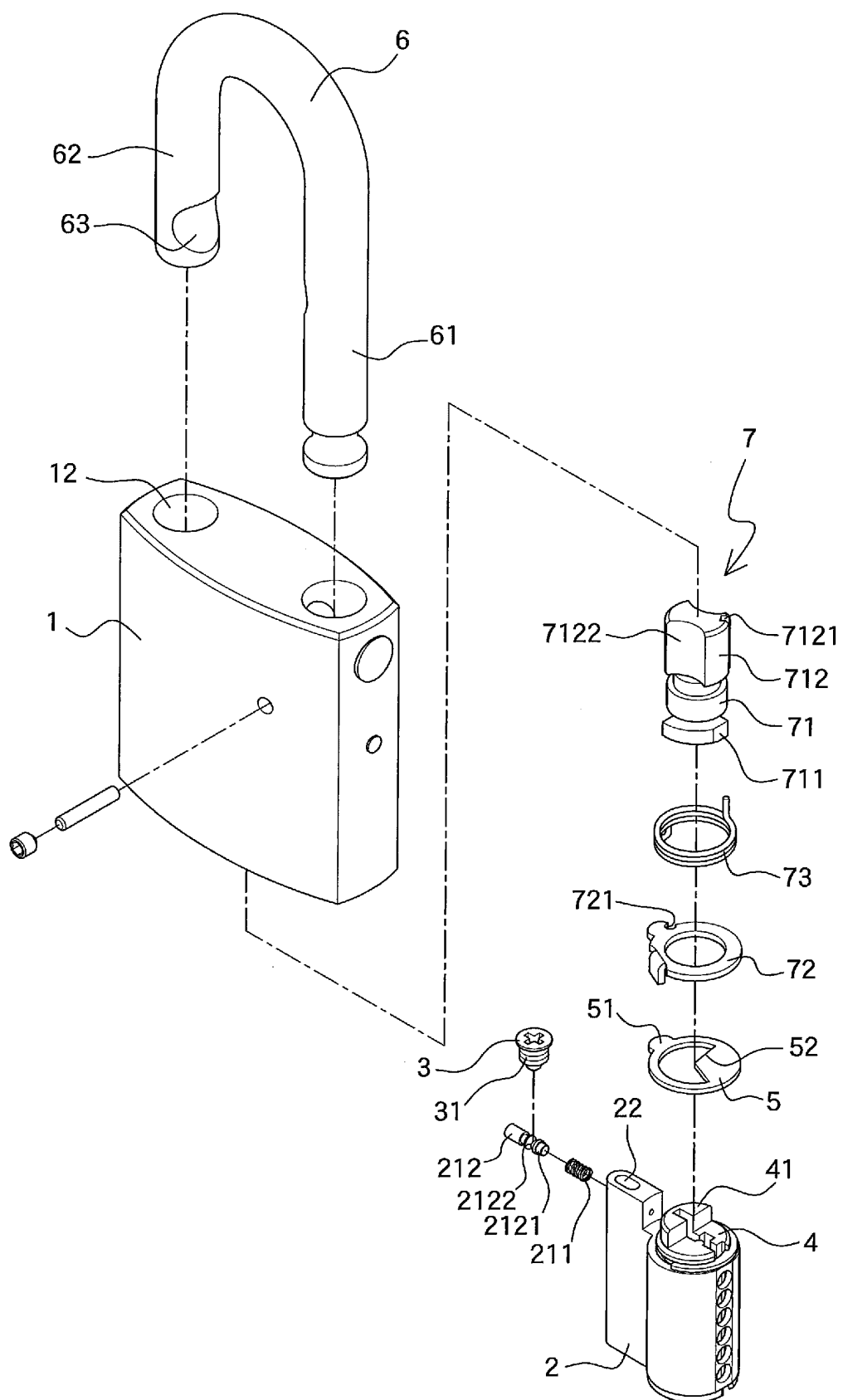


FIG.1



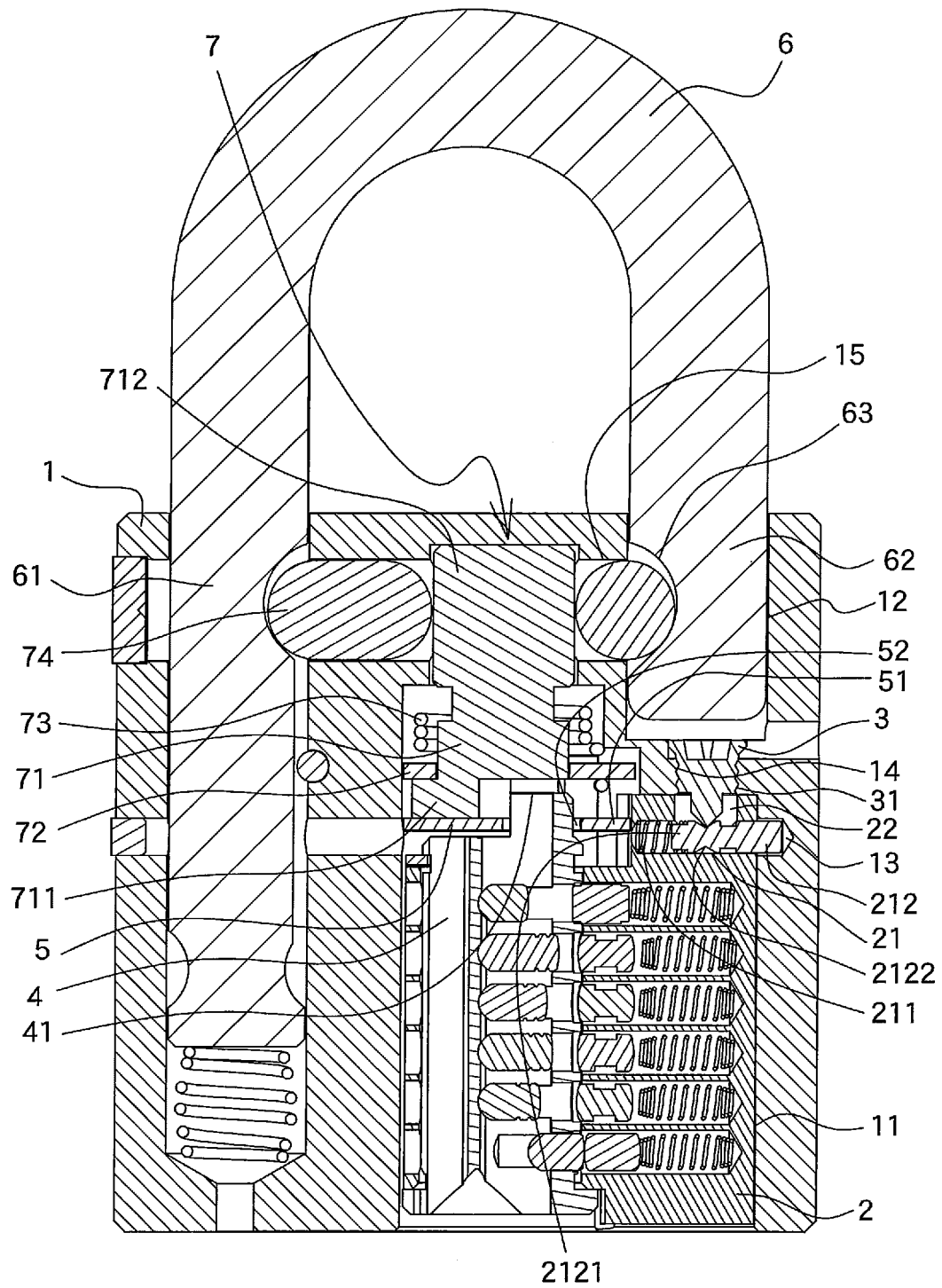
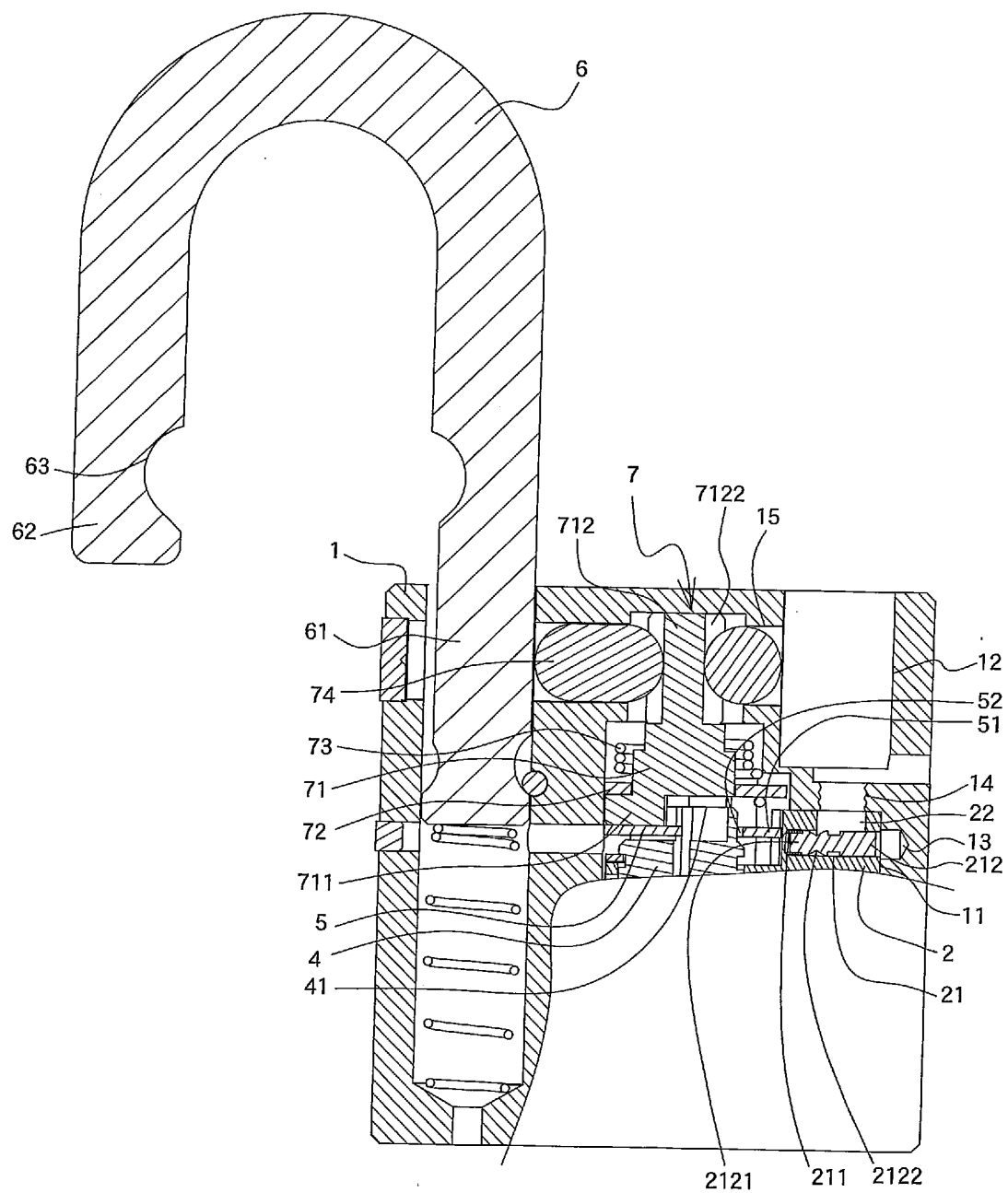


FIG.3



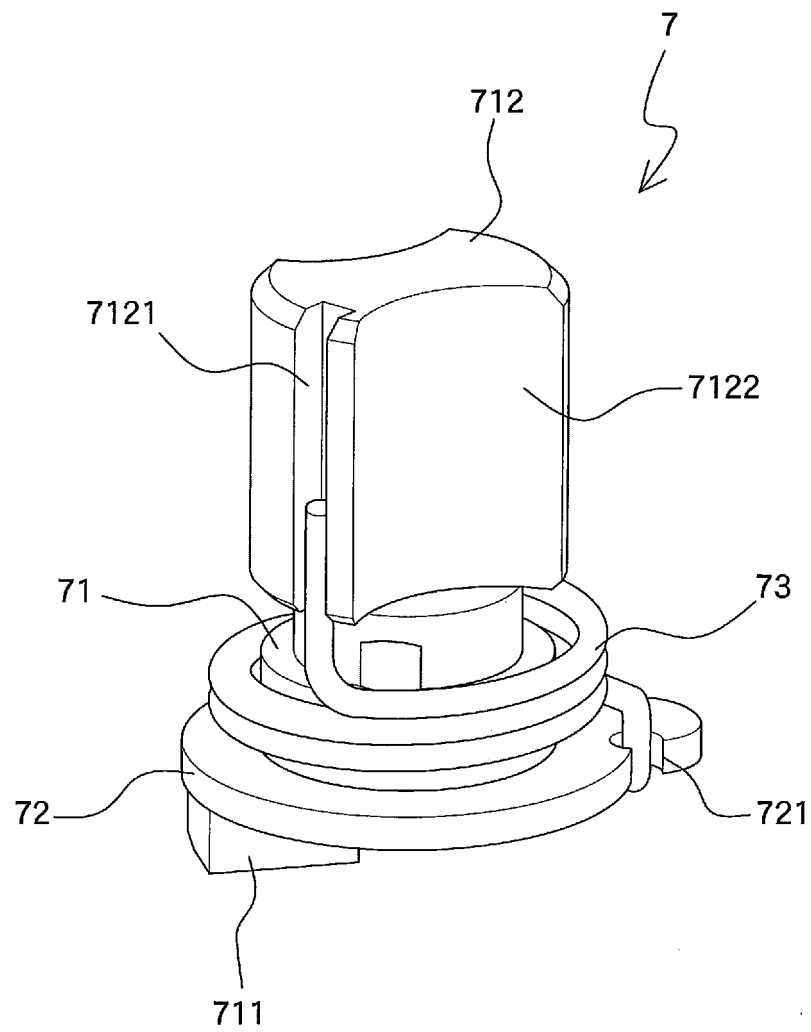


FIG.5

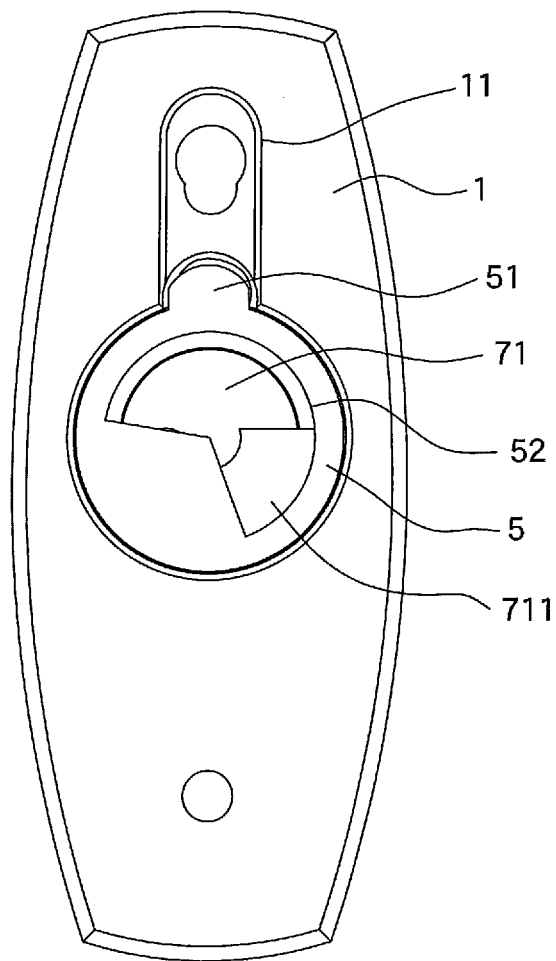


FIG.6

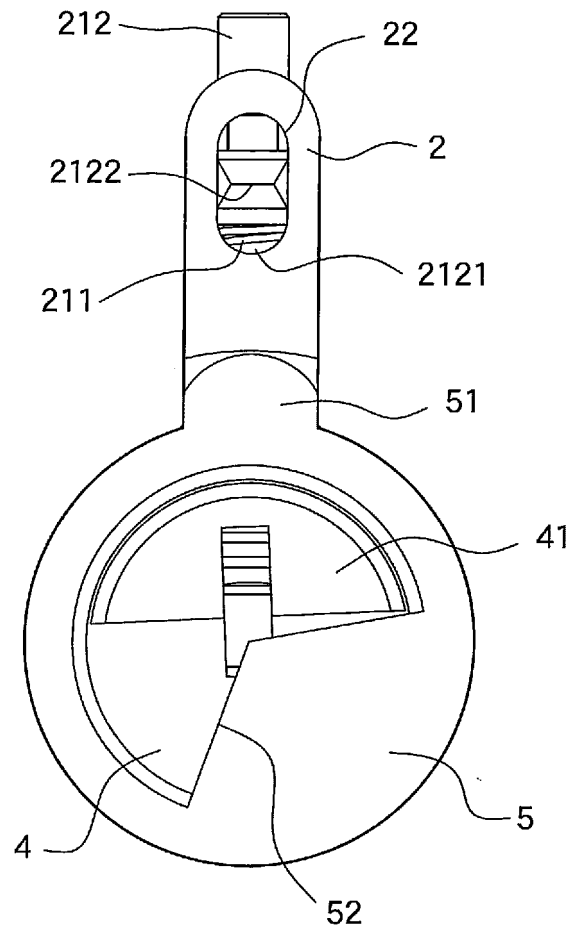


FIG.7

REFERENCES CITED IN THE DESCRIPTION

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Patent documents cited in the description

- US 8245547 B [0003] [0004] [0005]