

(19)



(11)

**EP 3 670 791 A1**

(12)

## EUROPEAN PATENT APPLICATION

(43) Date of publication:  
**24.06.2020 Bulletin 2020/26**

(51) Int Cl.:  
**E05B 9/04 (2006.01)**  
**E05B 17/20 (2006.01)**  
**E05B 9/10 (2006.01)**

(21) Application number: **18214395.8**

(22) Date of filing: **20.12.2018**

(84) Designated Contracting States:  
**AL AT BE BG CH CY CZ DE DK EE ES FI FR GB GR HR HU IE IS IT LI LT LU LV MC MK MT NL NO PL PT RO RS SE SI SK SM TR**  
Designated Extension States:  
**BA ME**  
Designated Validation States:  
**KH MA MD TN**

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### (54) LOCK ASSEMBLY

(57) A lock assembly includes an inner unit, an outer unit and a collar. The collar includes a first slot. The inner unit includes a first part, a first block, a first driving member and an inner spring. The outer unit includes a second part, a second block, a second driving member and an outer spring. When unlocking the lock assembly from outside of the lock assembly, the second lateral piece of the

second driving member enters into the first slot, the collar is operated by the second part via the second driving member. When a key is inserted into the lock assembly from the inside, the second driving member is removed off from the first slot, and the first lateral piece enters into the first slot to unlock the lock assembly even if a key or an object is inserted into the lock assembly from outside.

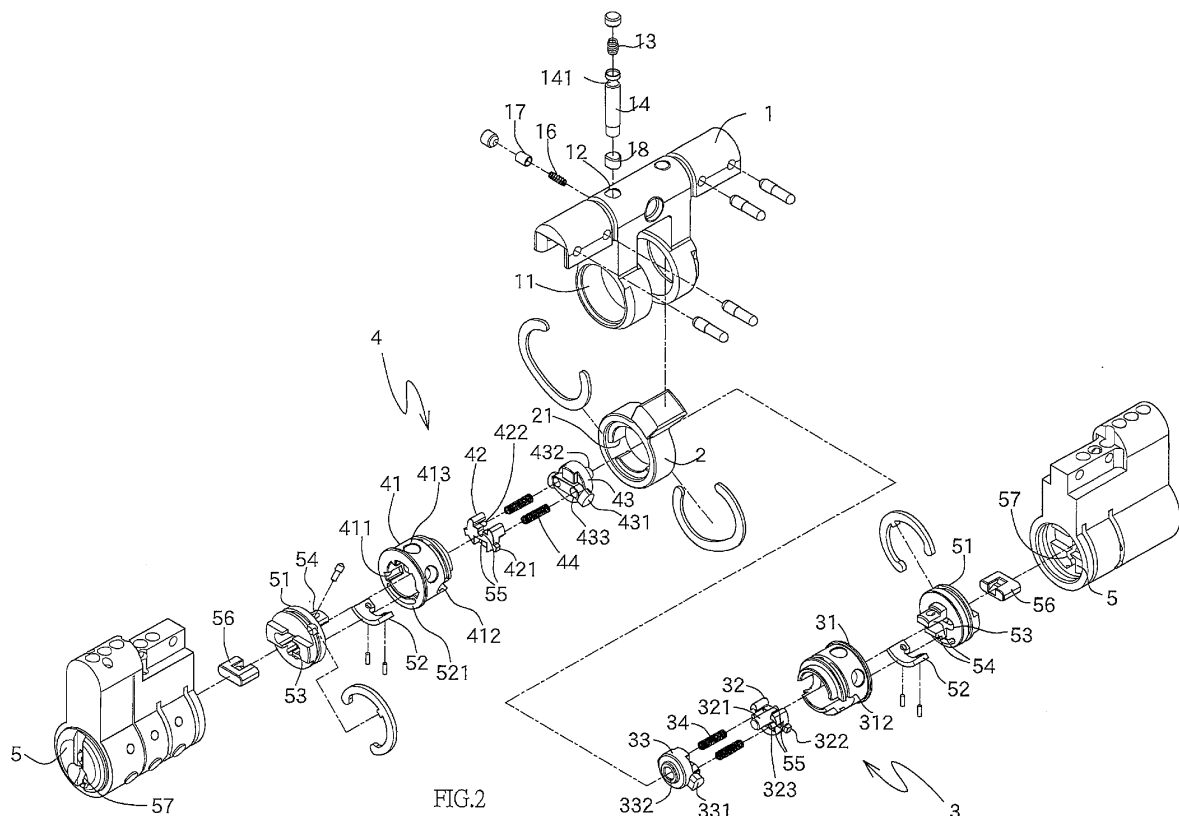


FIG.2

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## Description

### BACKGROUND OF THE INVENTION

#### 1. Fields of the invention

**[0001]** The present invention relates to a lock assembly, and more particularly, to a lock assembly which allows the users to unlock the lock assembly by using the push portion of the first block to push the second driving member to be removed from the at least one slot, and core at the outside rotates freely, even if an object is inserted into the core at the inside.

#### 2. Descriptions of Related Art

**[0002]** Most of the conventional locks installed to a door designed to be unlocked from inside or outside of the door are required to rotate one core at one side of the lock. When a key is inserted into the core of the lock assembly, the key pushes a block in the core to be engaged with a cam so that the core is rotated to unlock the lock. However, when the block is engaged with cam, the other block located the other end of the lock will be pushed so that there is no way to insert another key from the other end of the door. Although this is designed for safety reason, this design may result unexpected situations, especially when in emergency. For example, if a key or an object is inserted into the keyhole from outside, then the users cannot insert another key from the inside to unlock the lock. Therefore, when the lock is used in public facilities, such as homes, clinics or schools, if one key or object is left to the lock and is not removed, then the lock cannot be unlocked from the other side even though the users have a correct key. In an emergency situation, the lock cannot be unlocked from inside of the doors and can result in a disaster.

**[0003]** EP 2679749 B1 discloses an anti-break lock wherein the contact portion of the pin can be inserted into the notch of the second block to achieve the purposes of the invention, however, when the core is damaged and removed by un-authorized persons, the notch of the second block cannot be aligned with the contact portion so that the above mentioned feature cannot be achieved.

**[0004]** The present invention is intended to provide a lock assembly that is designed to eliminate the drawbacks mentioned above.

### SUMMARY OF THE INVENTION

**[0005]** The present invention relates to a lock assembly and comprises a casing having a collar received therein, and the collar is located between an inner unit and an outer unit. The collar includes at least one first slot defined axially in the inner periphery thereof. The inner unit includes a first part, a first block and a first driving member, wherein the first part drives the first block and the first driving member. The first block includes a push portion.

The first driving member includes at least one first lateral piece that is located corresponding to the first slot, and a receiving hole that is located corresponding to the push portion. At least one inner spring is located between the first block and the first driving member.

**[0006]** The outer unit includes a second part, a second block and a second driving member, wherein the second part drives the second block and the second driving member. The second driving member includes at least one second lateral piece that is located corresponding to the first slot, and a contact portion that is located corresponding to the push portion and the at least one receiving hole. At least one outer spring is located between the second block and the second driving member.

**[0007]** When unlocking the lock assembly from outside of the lock assembly, the second block is moved toward the collar to compress the outer spring to axially push the first driving member to compress the at least one inner spring so that the first driving member is not located in the at least one slot. The second lateral piece of the second driving member enters into the at least one slot. The collar is operated by the second part via the second driving member.

**[0008]** When unlocking the lock assembly from inside of the lock assembly, the first block is moved toward the collar to compress the inner spring. The push portion of the first block pushes the contact portion of the second driving member via the receiving hole so that the outer spring is compressed by the second driving member. The second driving member moves to a position where the second lateral piece is removed from the at least one first slot. The first driving member is pushed by the inner spring and the at least one first lateral piece enters into the at least one slot so that the collar is operated by the first part via the first driving member.

**[0009]** Preferably, the first part includes at least one first slot defined axially in the first end thereof, and a first notch is defined in the second end of the first part and located corresponding to the at least one first lateral piece. The first block includes a protrusion which is slidably located in the at least one first slot. The at least one first lateral piece is slidably located in the first notch. When the lock assembly is unlocked from the inside of the lock assembly, the at least one first lateral piece is located corresponding to the at least one slot, the at least one first lateral piece is located in the first notch and the at least one slot.

**[0010]** Preferably, the second part includes at least one second slot defined axially in the first end thereof. A second notch is defined in the second end of the second part and located corresponding to the at least one second lateral piece. The second block includes a slide which is slidably located in the second slot. The at least one first lateral piece is slidably located in the second notch. When the lock assembly is unlocked from the outside of the lock assembly, the at least one second lateral piece is located corresponding to the at least one slot. The second slot is located corresponding to the at least one first lateral

piece. The at least one second lateral piece is located in the second notch and the at least one slot.

**[0011]** Preferably, the first block includes at least one first connection portion. The first driving member includes at least one receiving hole which is located corresponding to the at least one first connection portion. The inner spring is connected between the at least one first connection portion and the at least one receiving hole.

**[0012]** Preferably, the second block includes at least one second connection portion. The second driving member includes at least one connection member which is located corresponding to the at least one second connection portion. The outer spring is connected between the at least one second connection portion and the at least one connection member.

**[0013]** Preferably, two cores are received in the casing and respectively located corresponding to the inner unit and the outer unit. The core that is located corresponding to one end of the outer unit is located opposite to the collar. An end part is located corresponding to each of the two cores and includes a transmission plate which is located off from the axis of the end part and located on a curve path that the core rotates. Each of the first part and the second part includes a guide groove in which the transmission plate corresponding thereto is inserted.

**[0014]** Preferably, the end parts each include a passage and at least one insertion. Each of the first and second blocks includes a connection portion that is connected to the at least one insertion corresponding thereto.

**[0015]** Preferably, the end part and the transmission plate are integrally formed to the core corresponding thereto.

**[0016]** Preferably, each of the end parts include an extension member located in the passage. Each of the two cores has a keyhole and the extension member is located corresponding to the keyhole. A key is inserted into the keyhole to push the extension member, and the extension member pushes the first block or the second block.

**[0017]** Preferably, each of the casing includes two receiving portions which are respectively located corresponding to the first part and the second part. The collar is located between the two receiving portions. The casing includes a through hole that faces the second part. A first spring and a first pin are received in the through hole. The first pin includes a neck. The casing includes a positioning groove which communicates with the through hole. A second spring and a second pin are received in the positioning groove. The second part includes multiple radial holes located corresponding to the first pin, the at least one insertion and the second block. Each radial hole has an end piece received therein which is supported by the at least one insertion and the second block. When the lock assembly is unlocked, the first pin is biased by the first spring and contacts the end piece or outside of the second part. The second pin is biased by the second spring and contacts outside of the first pin. When the lock assembly is locked, the end piece is not supported

by the at least one insertion and the second block, and is disengaged from the radial hole. One of the radial holes is located corresponding to the first pin which is biased by the first spring and is inserted into the radial hole corresponding thereto. The neck is located corresponding to the positioning groove, and the second pin is biased by the second spring and engaged with the neck.

**[0018]** The advantages of the present invention are that when unlocking the lock assembly from outside of the lock assembly, the second lateral piece of the second driving member enters into the at least one slot, the collar is operated by the second part via the second driving member.

**[0019]** When a key is inserted into lock assembly, the push portion of the first block pushes the contact portion of the second driving member via the receiving hole so that the core on the outside of the lock assembly can be freely rotated. The first driving member is pushed by the inner spring and the at least one first lateral piece enters into the at least one slot so that the collar is operated by the first part via the first driving member. In other words, the people can unlock the lock assembly in emergency even if a key or an object is inserted into the lock assembly from outside.

**[0020]** Furthermore, for safety reason, when the key is inserted into the lock assembly from inside, the core on the outside of the lock assembly can only be freely rotated and cannot unlock the lock assembly from outside.

**[0021]** By the transmission plate, the torque that the cores drive the second part or the first part is increased to assist the users to unlock the lock assembly. This is helpful when the door is slightly deformed due to temperature difference, and the collar is stocked against the strike plate.

**[0022]** There are multiple radial holes defined in the second part and located corresponding to the first pin to prevent unauthorized persons from damaging the core and rotating the core to block the first pin from being engage with the radial hole to unlock the lock assembly. By the multiple radial holes, the core cannot be rotated to an angle and removed. When rotating the second part, one of the radial holes will be aligned with the first pin. And, when the end piece is not supported by the insertion and the second block, the first pin is engaged with the radial hole, and the second pin is biased by the second spring and reaches the neck, so that the first pin cannot be pushed backward, and the second part is locked and cannot rotate the collar to unlock the lock assembly. Therefore, the lock assembly has better anti-break features.

**[0023]** 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

### [0024]

Fig. 1 is a perspective view to show the lock assembly of the present invention;  
 Fig. 2 is an exploded view of the lock assembly of the present invention;  
 Fig. 3 is an exploded view of the outer unit of the lock assembly of the present invention;  
 Fig. 4 is an exploded view of the inner unit of the lock assembly of the present invention;  
 Fig. 5 is a cross sectional view, taken along line A-A of Fig. 1;  
 Fig. 6 shows the combination of the two cores, the collar and the inner and outer units of the lock assembly of the present invention;  
 Fig. 7 is a cross sectional view to show when the lock assembly is to be unlocked from outside;  
 Fig. 8 is similar to Fig. 6 and shows when the lock assembly is to be unlocked from outside;  
 Fig. 9 is a cross sectional view to show that the core and the collar are rotated as disclosed in Fig. 7;  
 Fig. 10 illustrates the status disclosed in Fig. 9  
 Fig. 11 shows that another key is inserted into the core from the inside of the lock assembly;  
 Fig. 12 illustrates the status disclosed in Fig. 11;  
 Fig. 13 is a cross sectional view to show that the lock assembly is unlocked from inside;  
 Fig. 14 illustrates the status disclosed in Fig. 13;  
 Fig. 15 is a cross sectional view to show that the lock assembly is in locked status, and  
 Fig. 16 is a cross sectional view, taken along line B-B of Fig. 1.

## DETAILED DESCRIPTION OF THE PREFERRED EMBODIMENT

**[0025]** Referring to Figs. 1 to 6, the lock assembly of the present invention comprises a casing 1 having a collar 2 received therein, and the collar 2 is located between an inner unit 3 and an outer unit 4. The collar 2 has at least one first slot 21 defined axially in the inner periphery thereof.

**[0026]** The inner unit 3 includes a first part 31, a first block 32 and a first driving member 33. The first part 31 drives the first block 32 and the first driving member 33. The first block 32 has a push portion 321. The first driving member 33 has at least one first lateral piece 331 that is located corresponding to the first slot 21, and a receiving hole 332 that is located corresponding to the push portion 321. At least one inner spring 34 is located between the first block 32 and the first driving member 33.

**[0027]** The first part 31 includes at least one first slot 311 defined axially in the first end thereof, and a first notch 312 is defined in the second end of the first part 31 and located corresponding to the at least one first lateral piece 331. The first block 32 includes a protrusion

322 which is slidably located in the at least one first slot 311. The at least one first lateral piece 331 is slidably located in the first notch 312. The first part 31 drives the first block 32 and the first driving member 33 even if the first block 32 and the first driving member 33 are not applied by any force. Specifically, the at least one first connection portion 323 is a protrusion that is located corresponding to the inner spring 34, and the at least one receiving hole 333 receives one end of the inner spring 34 to prevent the inner spring 34 from shifting and disengaging therefrom. Preferably, there are multiple inner springs 34 installed to prevent the first block 32 and the first driving member 33 from shifting and being stocked against the inside of the first part 31 when the first part 31 moves.

**[0028]** The outer unit 4 includes a second part 41, a second block 42 and a second driving member 43. The second part 41 includes at least one second slot 411 defined axially in the first end thereof, and a second notch 412 is defined in the second end of the second part 41 and located corresponding to the at least one second lateral piece 431. The second block 42 includes a slide 421 which is slidably located in the second slot 411. The at least one first lateral piece 331 is slidably located in the second notch 412. In order to reduce manufacturing cost, the first and second parts 31, 41 are identical and able to be respectively connected to the first block 32 and the first driving member 33, or to be respectively connected to the second block 42 and the second driving member 43. The second block 42 includes at least one second connection portion 422. The second driving member 43 includes at least one connection member 433 which is located corresponding to the at least one second connection portion 422. The outer spring 44 is connected between the at least one second connection portion 422 and the at least one connection member 433. The at least one second connection portion 422 and the at least one connection member 433 can be a protrusion and a hole or recess to position the outer spring 44. In order to ensure that the second block 42 and the second driving member 43 are stably moved in the second part 41, there are multiple outer springs 44 installed.

**[0029]** When the lock assembly is installed to a door of a room, inside means the interior side of the room and outside means the exterior of the room. The inner unit 3 is located at the inside of the lock assembly and the outer unit 4 is located at the outside of the lock assembly.

**[0030]** When unlocking the lock assembly from outside, the second block 42 is applied by a force and moved toward the collar 2 to compress the outer spring 44 so as to axially push the first driving member 33 to compress the at least one inner spring 34 so that the first driving member 33 is not located in the at least one slot 21. The second lateral piece 431 of the second driving member 43 enters into the at least one slot 21 when the at least one slot 21 is located aligned with the second driving member 43. The collar 2 is operated by the second part 41 via the second driving member 43. The at least one

second lateral piece 431 is located corresponding to the at least one slot 21. The second slot 412 is located corresponding to the at least one first lateral piece 331. The at least one second lateral piece 431 is located in the second notch 412 and the at least one slot 21.

**[0031]** When unlocking the lock assembly from inside, the first block 32 is applied by a force and moved toward the collar 2 to compress the inner spring 34. The push portion 321 of the first block 32 pushes the contact portion 432 of the second driving member 43 via the receiving hole 332 so that the outer spring 44 is compressed by the second driving member 43. The second driving member 43 moves to a position where the second lateral piece 432 is removed from the at least one first slot 21. The first driving member 33 is pushed by the inner spring 34. The at least one first lateral piece 331 is located corresponding to the at least one slot 21. The first part 31 drives the collar 2 via the first driving member 33, and when the at least one lateral pieces 331 is located corresponding to the at least one slot 21, the at least one first lateral piece 331 is located in the first notch 312 and enters into the at least one slot 21.

**[0032]** The lock assembly further includes two cores 5 which are received in the casing 1 and respectively located corresponding to the inner unit 3 and the outer unit 4. The core 5 that is located corresponding to one end of the outer unit 4 is located opposite to the collar 2. In order to increase the torque that the cores 5 drive the first part 31 and the second part 41, an end part 51 is located corresponding to each of the two cores 5 and includes a transmission plate 52 which is located off from the axis of the end part 51 and located on a curve path that the core 5 rotates. Each of the first part 31 and the second part 41 includes a guide groove 521 in which the transmission plate 52 corresponding thereto is inserted. When the door is slightly deformed due to temperature difference between the interior and exterior of the room, the collar 2 is stocked against the strike plate so that the collar 2 is difficult to be driven by the cores 5, the torque that the cores 5 drive the first part 31 and the second part 41 can be increased by the transmission plate 52 and the guide groove 521 to assist the users to rotate the cores 5 easily.

**[0033]** In one embodiment, the end parts 51 each include a passage 53 and at least one insertion 54. The first and second blocks 32, 42 are located opposite to the passages 53 of the end parts 51 so that when the keys 6, 6' are inserted into the cores 5, the keys 6, 6' push the first block 32 or the second block 42 via the passage 53. Each of the first and second blocks 32, 42 includes a connection portion 55 that is connected to the at least one insertion 54 corresponding thereto so as to drive the cores 5. The torque that is used to drive the collar 2 can also be increased by the at least one insertion 54 driving the first and second blocks 32, 42.

**[0034]** In this embodiment, the end part 51 and the transmission plate 52 are two separated parts. Alternatively, the end part 51 and the transmission plate 52 may

be integrally formed to the core 5 corresponding thereto so as to reduce the number of components and to reduce manufacturing cost.

**[0035]** In order to ensure that when the keys 6, 6' are inserted into the cores 5 via keyholes 57 can rotate the first block 32 or the second block 42 as expected, each of the end parts 51 include an extension member 56 located in the passage 53. The extension member 56 is located corresponding to the keyhole 57 corresponding thereto. When the keys 6, 6' are inserted into the keyholes 57 to push the extension members 56, and the extension members 56 push the first block 32 or the second block 42.

**[0036]** As shown in Figs. 7 and 8, when the key 6 is inserted into the keyhole 57 of the core 5 located at the outside, the distal end of the key 6 pushes the second block 42 via the extension member 56. The at least one lateral piece 431 of the second driving member 43 is located at the at least one slot 21. Because the spring force of the outer spring 44 is larger than that of the inner spring 34, so that the first driving member 33 compresses the inner spring 34, and the first driving member 33 is not located at the at least one slot 21. The insertion of the key 6 into the keyhole 57 only moves the second block 42 toward the collar 2 to compress the outer spring 44. When using the key 6 to rotate the core 5, the at least one insertion 54 drive the second block 42, and the transmission plate 52 drives the second part 41. The second part 41 drives the at least one second lateral piece 431 of the second driving member 43 via the second notch 412, so that the at least one second lateral piece 431 drives the collar 2 and unlock the lock assembly as shown in Figs. 9 and 10.

**[0037]** As shown in Figs. 11 and 12, when the users want to unlock the lock assembly from the inside, the key 6' is inserted into the keyhole 57 of the core 5 located at the inside, the distal end of the key 6' pushes the first block 32 via the extension member 56. The first block 32 is moved toward the collar 2 to compress the inner spring 34, and the push portion 321 pushes the contact portion 432 of the second driving member 43 via the receiving hole 332 so that the outer spring 44 is compressed by the second driving member 43, and the at least one second lateral piece 431 is removed from the at least one slot 21. Therefore, even when the core 5 located at the outside is rotated, the collar 2 is not driven to unlock the lock assembly. In other words, the users in the room is protected and the door cannot be opened from outside. As shown in Figs. 11 and 12, the at least one slot 21 of the collar 2 is not aligned with the at least one first lateral piece 331, so that the inner spring 34 is further compressed. The at least one first lateral piece 331 contacts the lateral side of the collar 2. When the core 5 located at the inside is rotated, the core 5 drives the first block 32 via the at least one insertion 54, and the transmission plate 52 drives the first part 31, so that the first part 31 drives the at least one first lateral piece 331 of the first driving member 33 via the second notch 412. When the

at least one first lateral piece 331 is located corresponding to the at least one slot 21, the lock assembly is unlocked from the inside as shown in Figs. 13, 14. The first driving member 33 is driven by the inner spring 34 so that the at least one first lateral piece 331 enters into the at least one slot 21, the core 5 located at the inside drives the collar 2 via the first part 31 and the first driving member 33 to rotate the collar 2 to unlock the lock assembly. Even is a key 6 or an object is inserted into the core 5 at the outside, the core 5 located at the inside can rotate the collar 2. In emergency, the users in the room can use the key 6' to unlock the lock assembly to escape.

**[0038]** It is noted when there is no key 6 inserted into the core 5 at the outside, and the key 6' is inserted into the core 5 at the inside can also unlock the lock assembly. The push portion 321 contacts the contact portion 432 via the receiving hole 432 to remove the at least one lateral piece 431 from the at least one slot 21. The at least one lateral piece 331 then enters into the at least one slot 21 to rotate the collar 2.

**[0039]** In order to prevent unauthorized persons to damage the core 5 and remove the core 5 so as to directly rotate the second part 41 to rotate the collar 2 to unlock the lock assembly. Preferably, each of the casing 1 includes two receiving portions 11 which are respectively located corresponding to the first part 31 and the second part 41. The collar 2 is located between the two receiving portions 11. The casing 1 includes a through hole 12 that faces the second part 41. A first spring 13 and a first pin 14 are received in the through hole 12. The first pin 14 includes a neck 141. The casing 1 includes a positioning groove 15 which communicates with the through hole 12. A second spring 16 and a second pin 17 are received in the positioning groove 15. The second part 41 includes multiple radial holes 413 located corresponding to the first pin 14, the at least one insertion 54 and the second block 42. Each radial hole 413 has an end piece 18 received therein which is supported by the at least one insertion 54 and the second block 42. When the lock assembly is unlocked, the first pin 14 is biased by the first spring 13 and contacts the end piece 18 or an outside of the second part 41. The second pin 17 is biased by the second spring 16 and contacts an outside of the first pin 14. When the lock assembly is locked, the end piece 18 is not supported by the at least one insertion 54 and the second block 42, and is disengaged from the radial hole 413. One of the radial holes 413 is located corresponding to the first pin 14 which is biased by the first spring 13 and is inserted into the radial hole 413 corresponding thereto. The neck 141 is located corresponding to the positioning groove 15. The second pin 17 is biased by the second spring 16 and is engaged with the neck 141 to prevent unauthorized persons to push the first pin 14 from the radial hole 413. This feature avoids authorized persons from rotating the damaged core 5 to shift the first pin 14 off from the radial hole 413. By the multiple radial holes 413, even if the core 5 is rotated any angle and removed, when rotating the second part 41, the first

pin 14 will be aligned with one of the radial holes 413. When the end piece 18 is not supported by the at least one insertion 54 and the second block 42, the first pin 14 will be in the radial hole 413, and the second pin 17 is biased by the second spring 16 to be engaged with the neck 141 to prevent the first pin 14 from being pushed backward. Therefore, the second part 41 is locked and the collar 2 is not rotatable to unlock the lock assembly.

**[0040]** 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.

## Claims

### 1. A lock assembly comprising:

a casing (1) having a collar (2) received therein, the collar (2) located between an inner unit (3) and an outer unit (4), the collar (2) having at least one first slot (21) defined axially in an inner periphery thereof;

the inner unit (3) having a first part (31), a first block (32) and a first driving member (33), the first part (31) driving the first block (32) and the first driving member (33), the first block (32) having a push portion (321), the first driving member (33) having at least one first lateral piece (331) that is located corresponding to the first slot (21), and a receiving hole (332) that is located corresponding to the push portion (321), at least one inner spring (34) located between the first block (32) and the first driving member (33);

the outer unit (4) having a second part (41), a second block (42) and a second driving member (43), the second part (41) driving the second block (42) and the second driving member (43), the second driving member (43) having at least one second lateral piece (431) that is located corresponding to the first slot (21), and a contact portion (432) that is located corresponding to the push portion (321) and the at least one receiving hole (332), at least one outer spring (44) located between the second block (42) and the second driving member (43);

when unlocking the lock assembly from outside of the lock assembly, the second block (42) is moved toward the collar (2) to compress the outer spring (44) so as to axially push the first driving member (33) to compress the at least one inner spring (34) so that the first driving member (33) is not located in the at least one slot (21), the second lateral piece (431) of the second driving member (43) enters into the at least one slot (21), the collar (2) is operated by the second part (41) via the second driving member (43);

- when unlocking the lock assembly from inside of the lock assembly, the first block (32) is moved toward the collar (2) to compress the inner spring (34), the push portion (321) of the first block (32) pushes the contact portion (432) of the second driving member (43) via the receiving hole (332) so that the outer spring (44) is compressed by the second driving member (43), the second driving member (43) moves to a position where the second lateral piece (432) is removed from the at least one first slot (21), the first driving member (33) is pushed by the inner spring (34) and the at least one first lateral piece (331) enters into the at least one slot (21) so that the collar (2) is operated by the first part (31) via the first driving member (33).
2. The lock assembly as claimed in claim 1, wherein the first part (31) includes at least one first slot (311) defined axially in a first end thereof, a first notch (312) is defined in a second end of the first part (31) and located corresponding to the at least one first lateral piece (331), the first block (32) includes a protrusion (322) which is slidably located in the at least one first slot (311), the at least one first lateral piece (331) is slidably located in the first notch (312), when the lock assembly is unlocked from the inside of the lock assembly, the at least one first lateral piece (331) is located corresponding to the at least one slot (21), the at least one first lateral piece (331) is located in the first notch (312) and the at least one slot (21).
  3. The lock assembly as claimed in claim 1, wherein the second part (41) includes at least one second slot (411) defined axially in a first end thereof, a second notch (412) is defined in a second end of the second part (41) and located corresponding to the at least one second lateral piece (431), the second block (42) includes a slide (421) which is slidably located in the second slot (411), the at least one first lateral piece (331) is slidably located in the second notch (412), when the lock assembly is unlocked from the outside of the lock assembly, the at least one second lateral piece (431) is located corresponding to the at least one slot (21), the second slot (412) is located corresponding to the at least one first lateral piece (331), the at least one second lateral piece (431) is located in the second notch (412) and the at least one slot (21).
  4. The lock assembly as claimed in claim 1, wherein the first block (32) includes at least one first connection portion (323), the first driving member (33) includes at least one receiving hole (333) which is located corresponding to the at least one first connection portion (323), the inner spring (34) is connected between the at least one first connection portion (323) and the at least one receiving hole (333).
  5. The lock assembly as claimed in claim 1, wherein the second block (42) includes at least one second connection portion (422), the second driving member (43) includes at least one connection member (433) which is located corresponding to the at least one second connection portion (422), the outer spring (44) is connected between the at least one second connection portion (422) and the at least one connection member (433).
  6. The lock assembly as claimed in claim 1, wherein two cores (5) are received in the casing (1) and respectively located corresponding to the inner unit (3) and the outer unit (4), the core (5) that is located corresponding to an end of the outer unit (4) is located opposite to the collar (2), an end part (51) is located corresponding to each of the two cores (5) and includes a transmission plate (52) which is located off from an axis of the end part (51) and located on a curve path that the core (5) rotates, each of the first part (31) and the second part (41) includes a guide groove (521) in which the transmission plate (52) corresponding thereto is inserted.
  7. The lock assembly as claimed in claim 6, wherein the end parts (51) each include a passage (53) and at least one insertion (54), each of the first and second blocks (32, 42) includes a connection portion (55) that is connected to the at least one insertion (54) corresponding thereto.
  8. The lock assembly as claimed in claim 6, wherein the end part (51) and the transmission plate (52) are integrally formed to the core (5) corresponding thereto.
  9. The lock assembly as claimed in claim 7, wherein each of the end parts (51) include an extension member (56) located in the passage (53), each of the two cores (5) has a keyhole (57) and the extension member (56) is located corresponding to the keyhole (57), a key (6, 6') is inserted into the keyhole (57) to push the extension member (56), and the extension member (56) pushes the first block (32) or the second block (42).
  10. The lock assembly as claimed in claim 7, wherein each of the casing (1) includes two receiving portions (11) which are respectively located corresponding to the first part (31) and the second part (41), the collar (2) is located between the two receiving portions (11), the casing (1) includes a through hole (12) that faces the second part (41), a first spring (13) and a first pin (14) are received in the through hole (12), the first pin (14) includes a neck (141), the casing (1) includes a positioning groove (15) which communicates with the through hole (12), a second spring (16) and a second pin (17) are received in the

positioning groove (15), the second part (41) includes multiple radial holes (413) located corresponding to the first pin (14), the at least one insertion (54) and the second block (42), each radial hole (413) has an end piece (18) received therein which is supported by the at least one insertion (54) and the second block (42), when the lock assembly is unlocked, the first pin (14) is biased by the first spring (13) and contacts the end piece (18) or an outside of the second part (41), the second pin (17) is biased by the second spring (16) and contacts an outside of the first pin (14), when the lock assembly is locked, the end piece (18) is not supported by the at least one insertion (54) and the second block (42), and is disengaged from the radial hole (413), one of the radial holes (413) is located corresponding to the first pin (14) which is biased by the first spring (13) and is inserted into the radial hole (413) corresponding thereto, the neck (141) is located corresponding to the positioning groove (15), the second pin (17) is biased by the second spring (16) and engaged with the neck (141).

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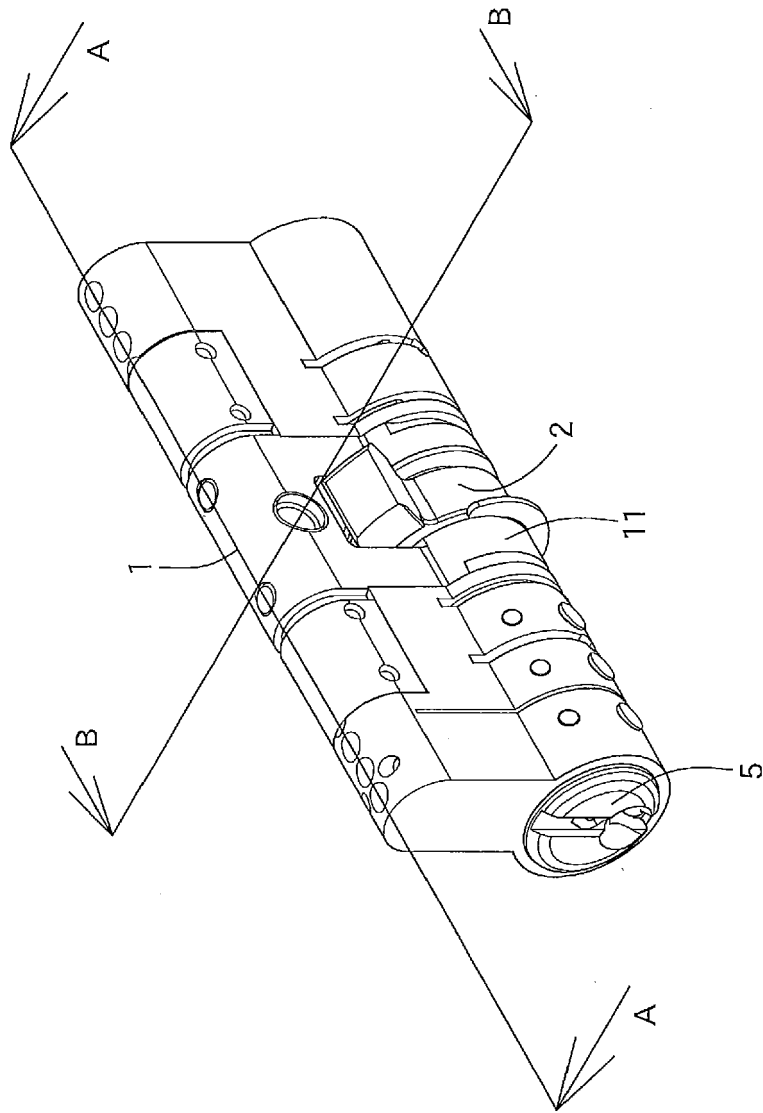
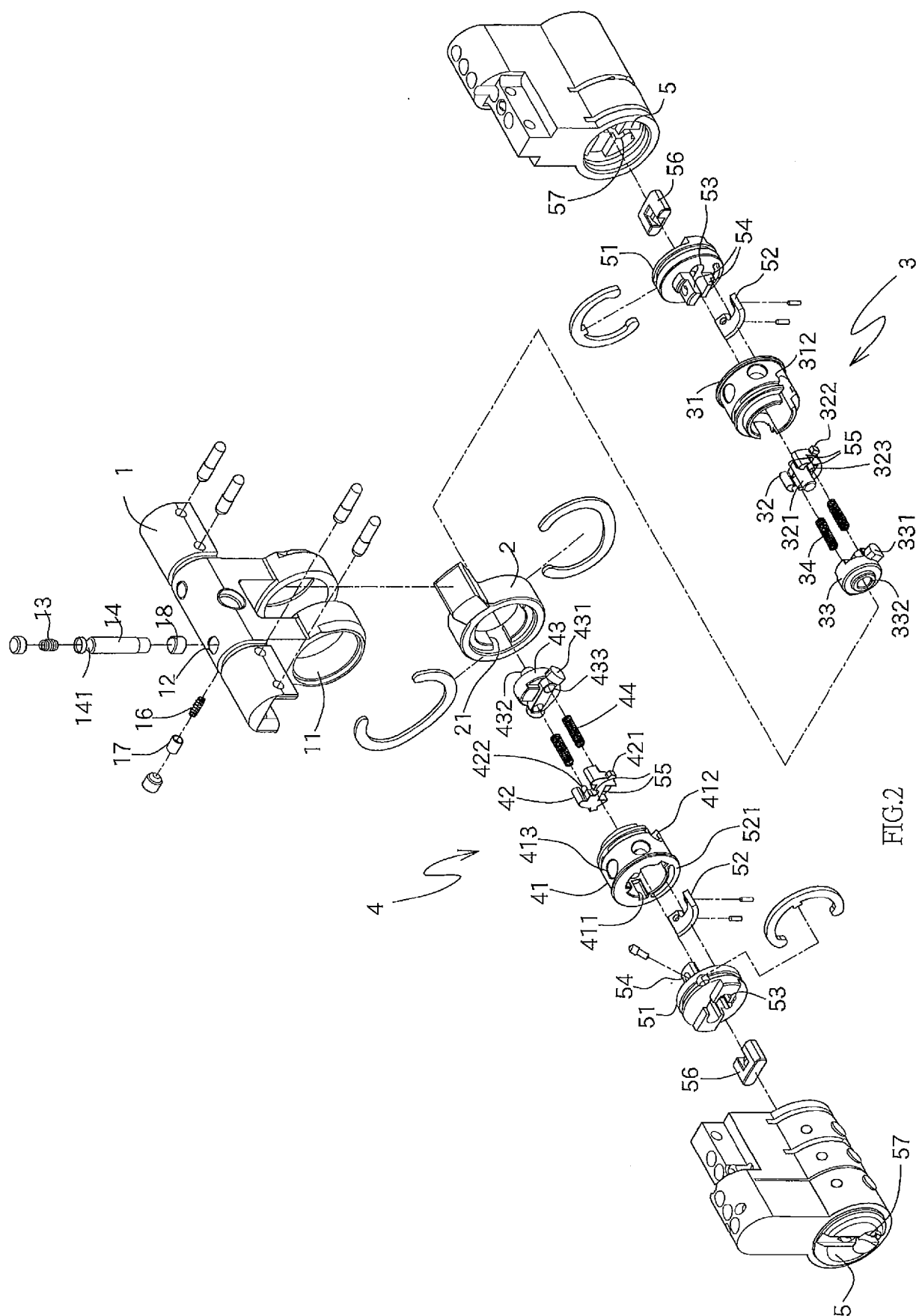


FIG.1



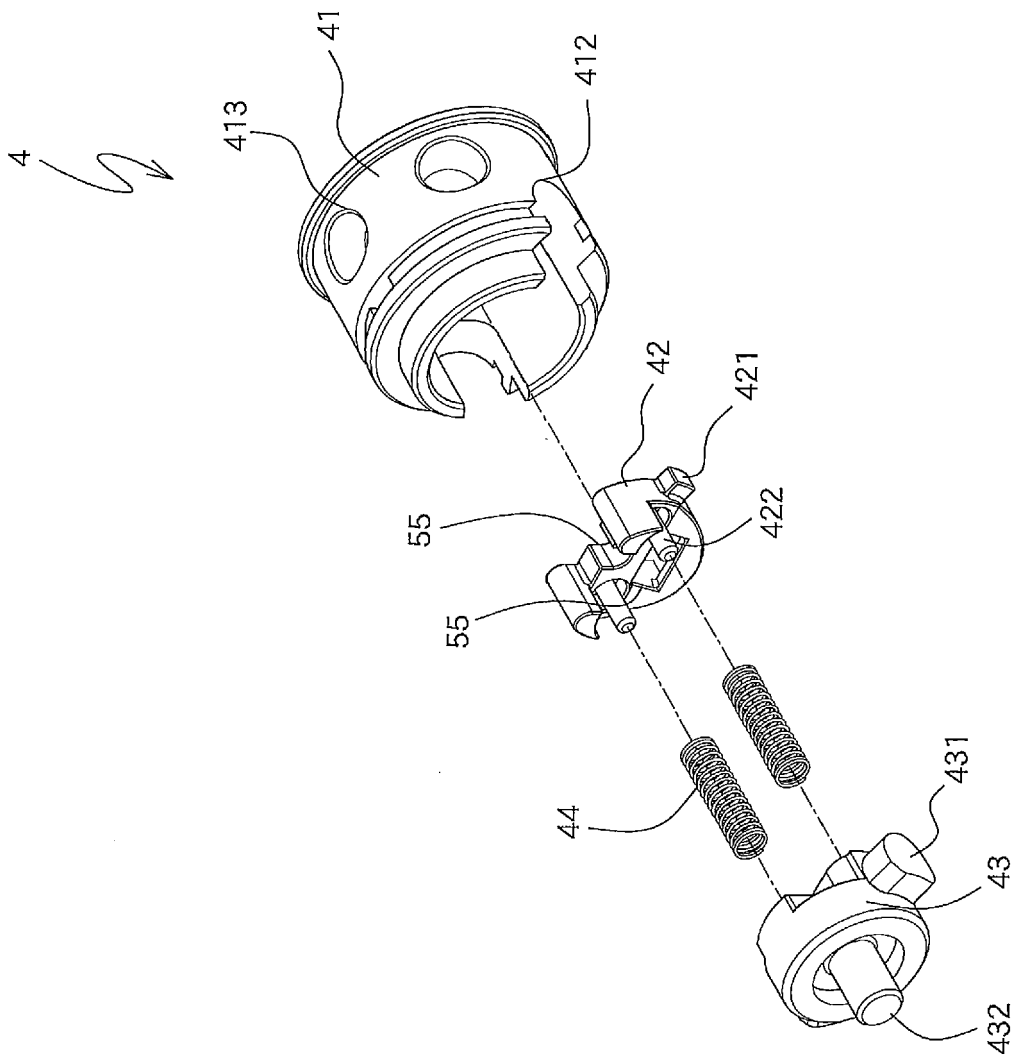


FIG.3

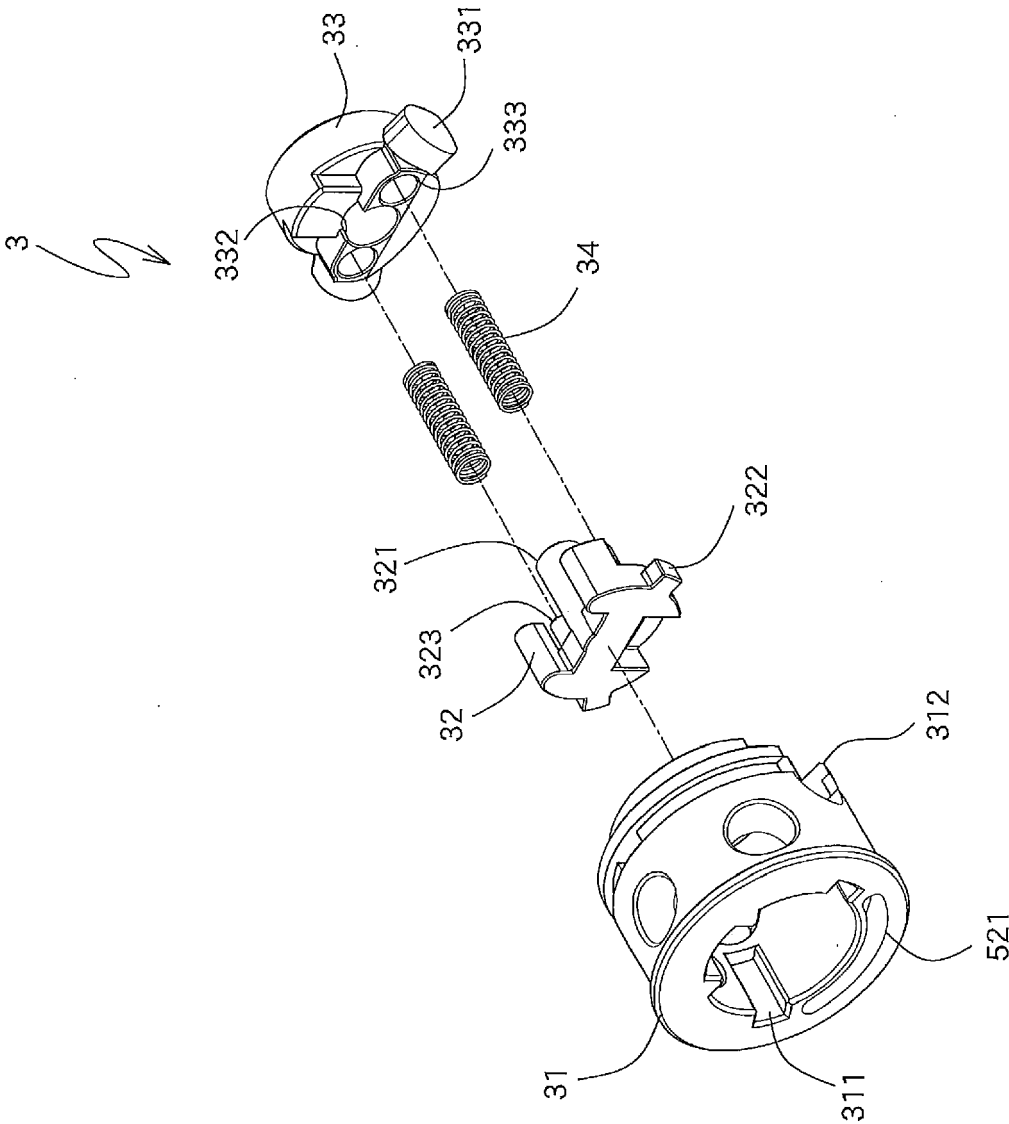


FIG.4

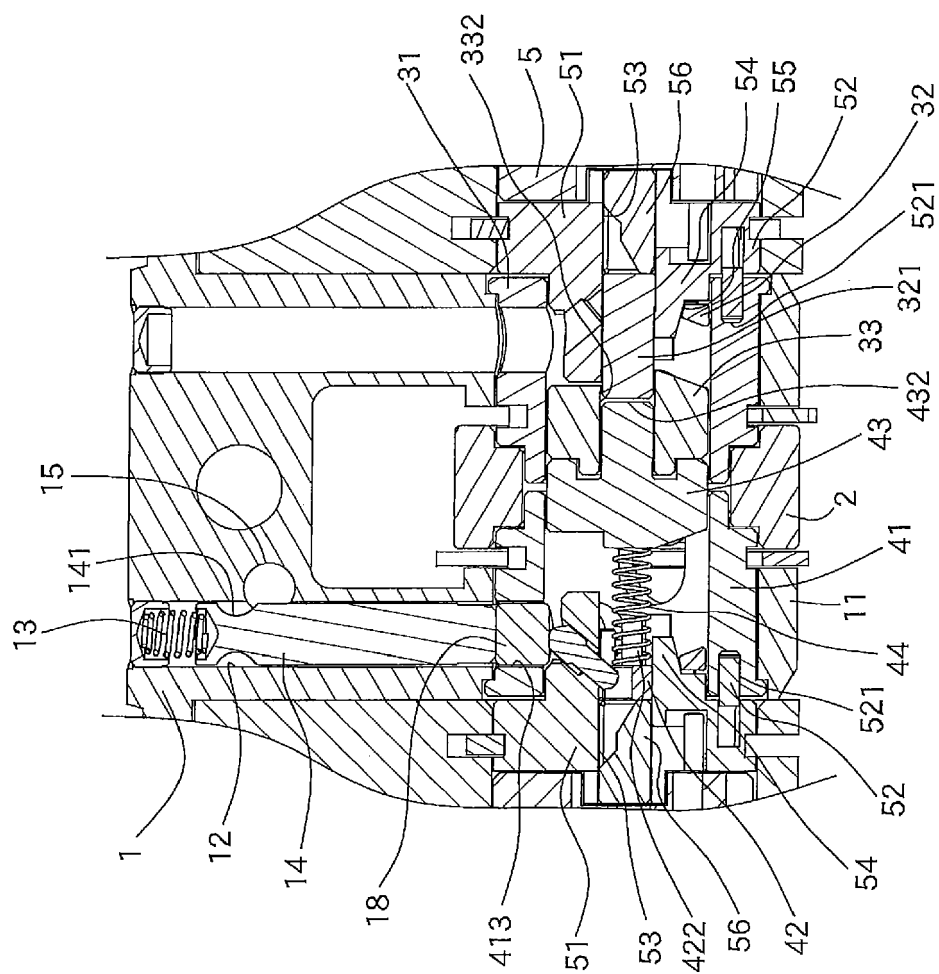


FIG. 5

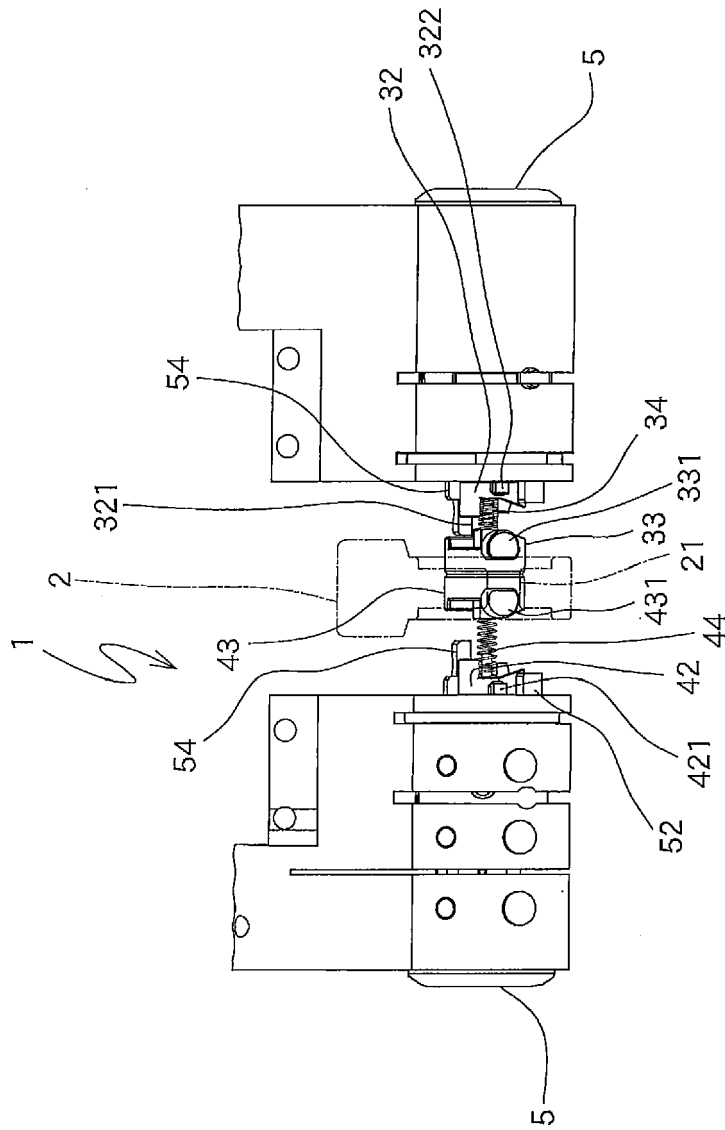


FIG. 6

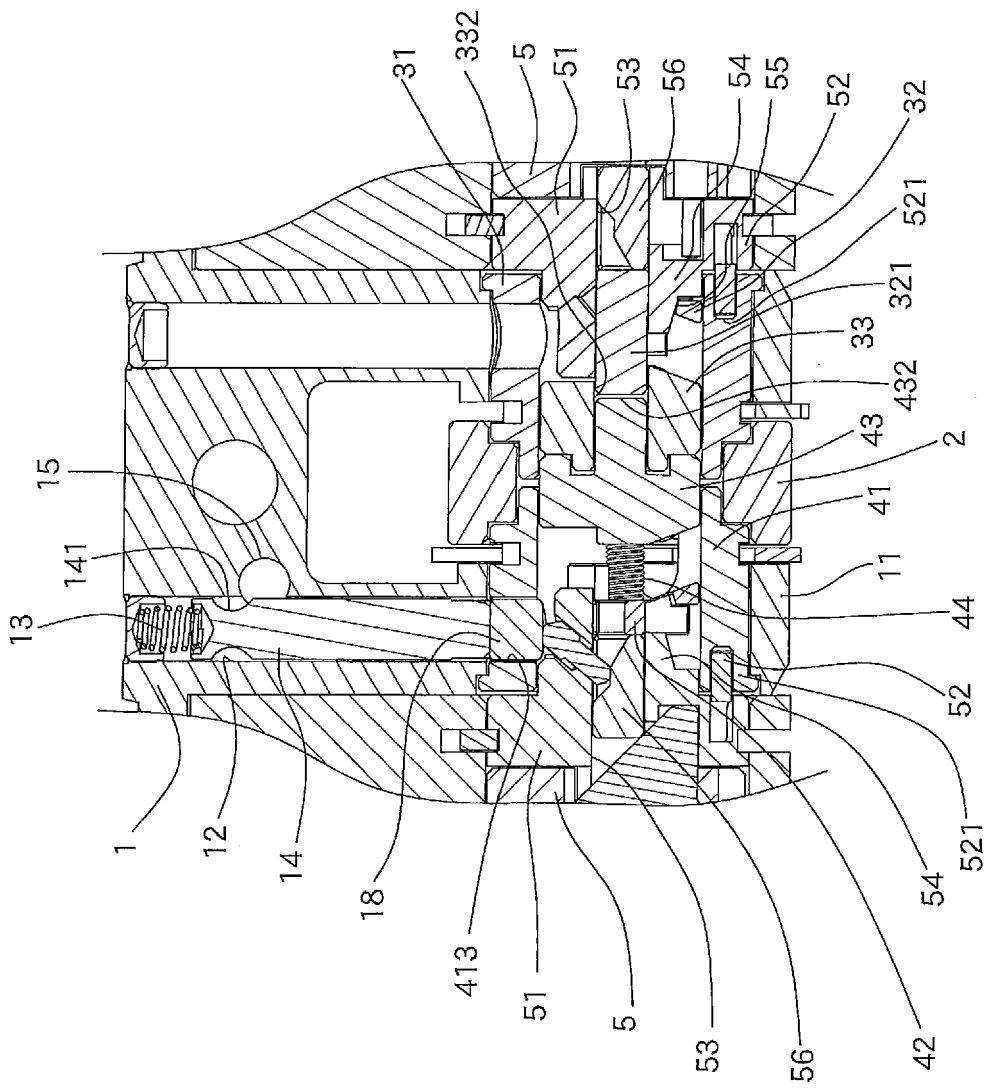


FIG.7

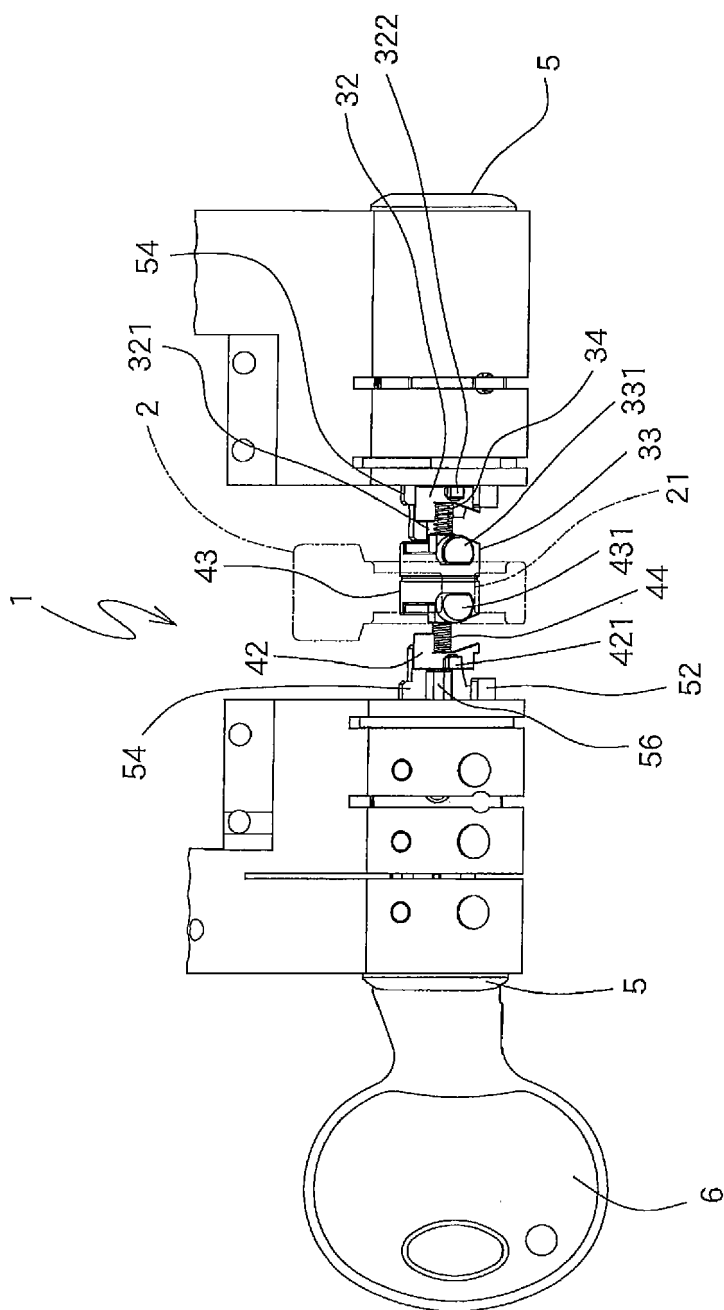


FIG. 8



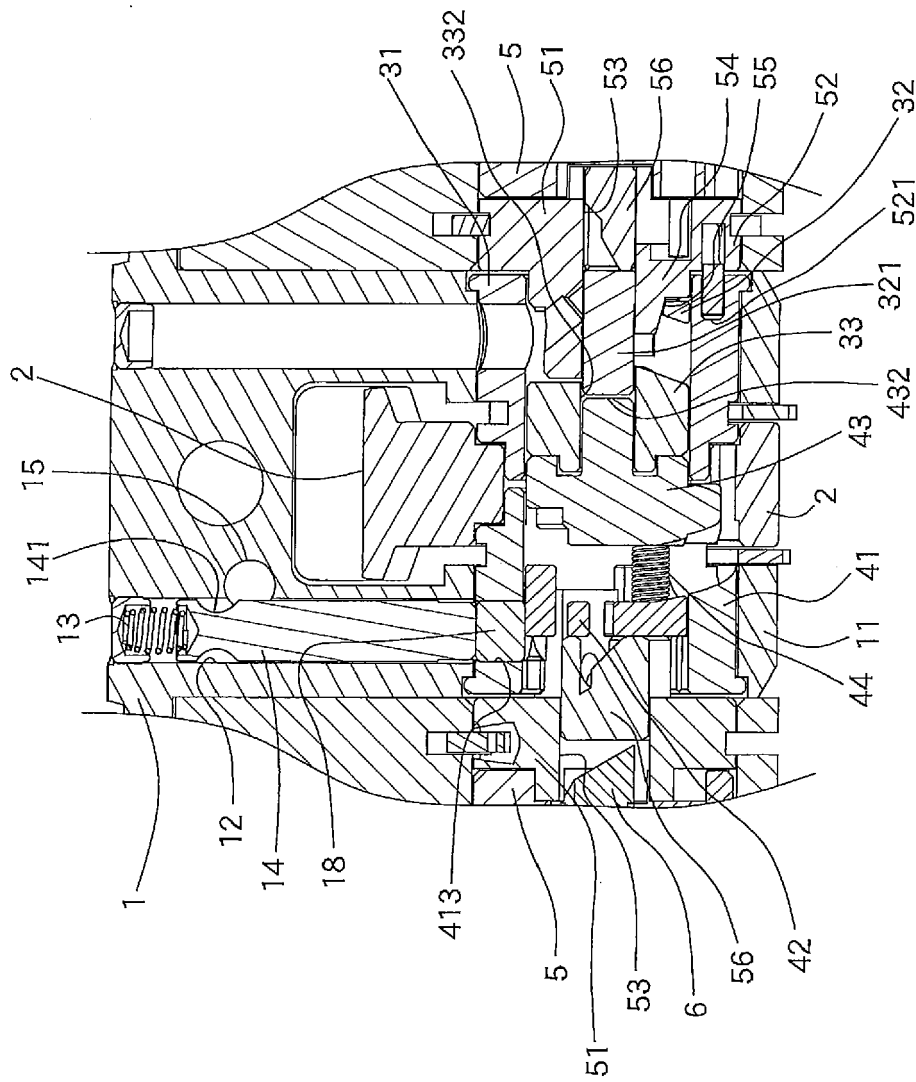


FIG.9

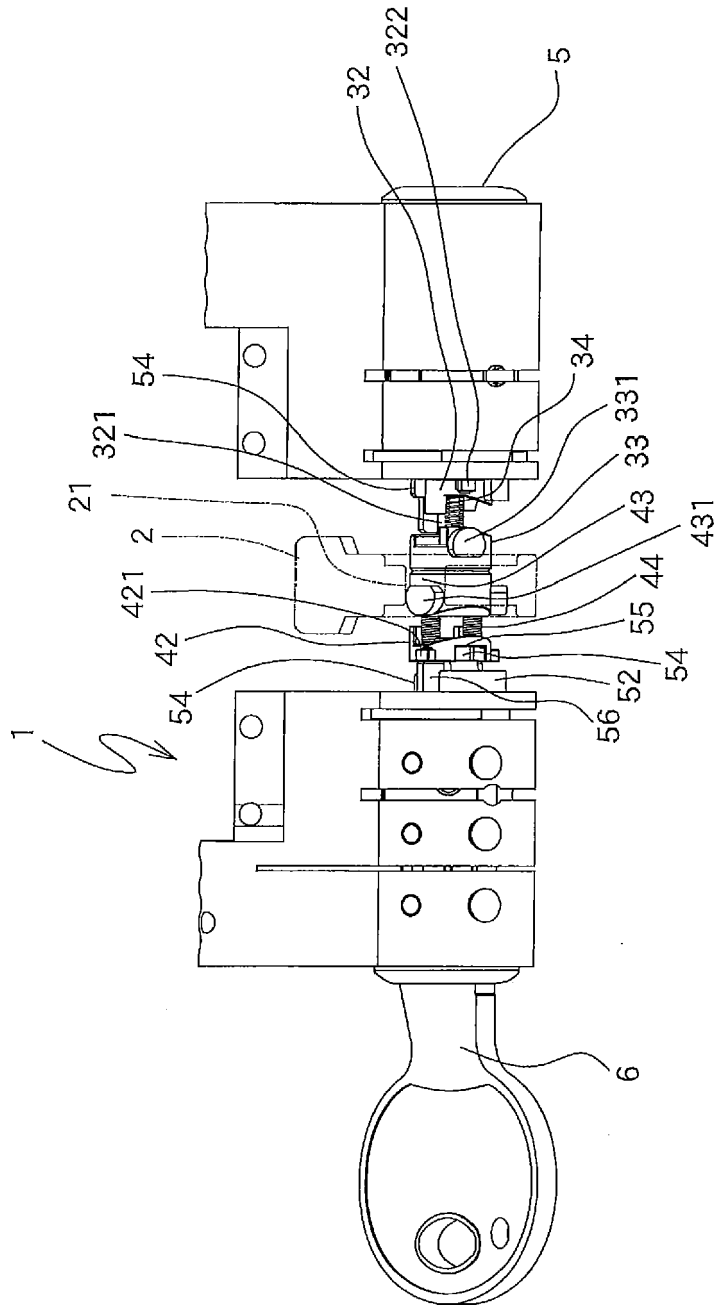


FIG.10

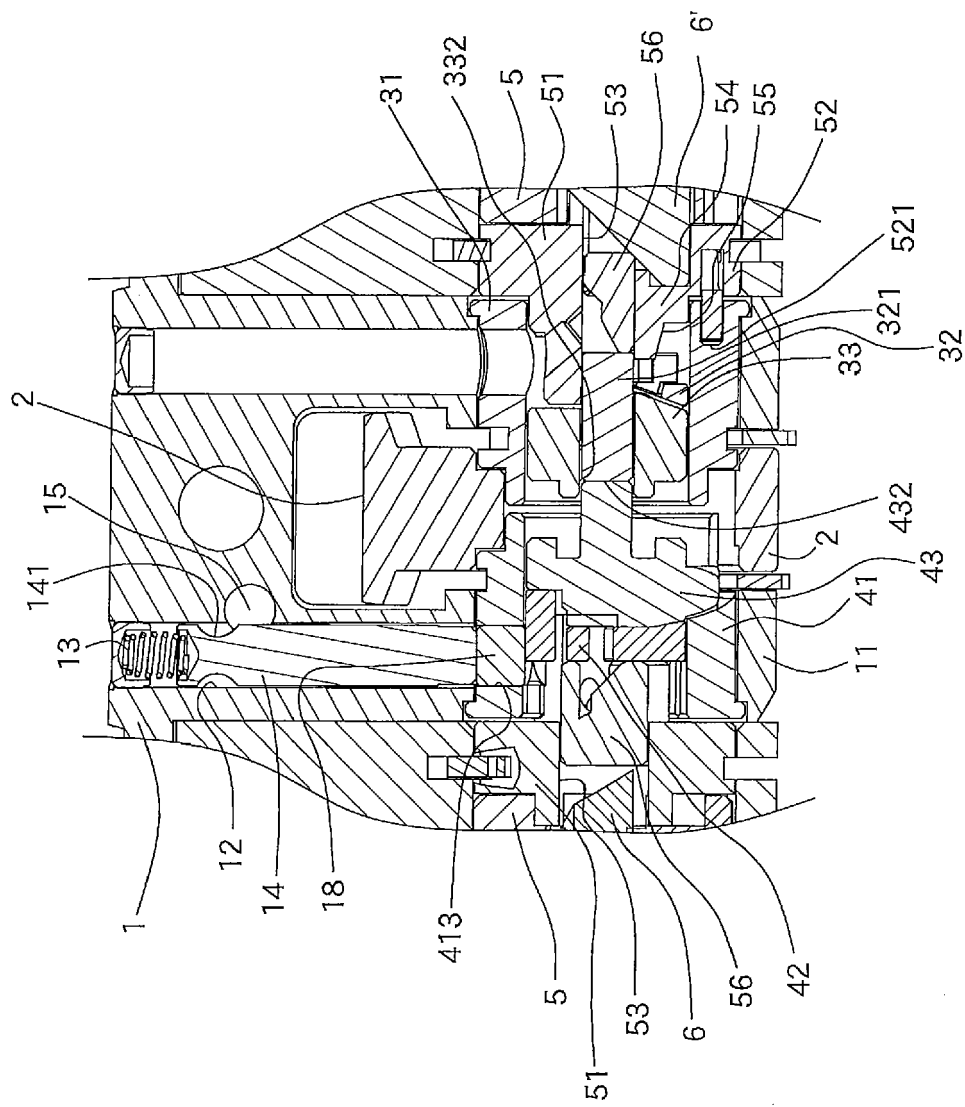


FIG.11

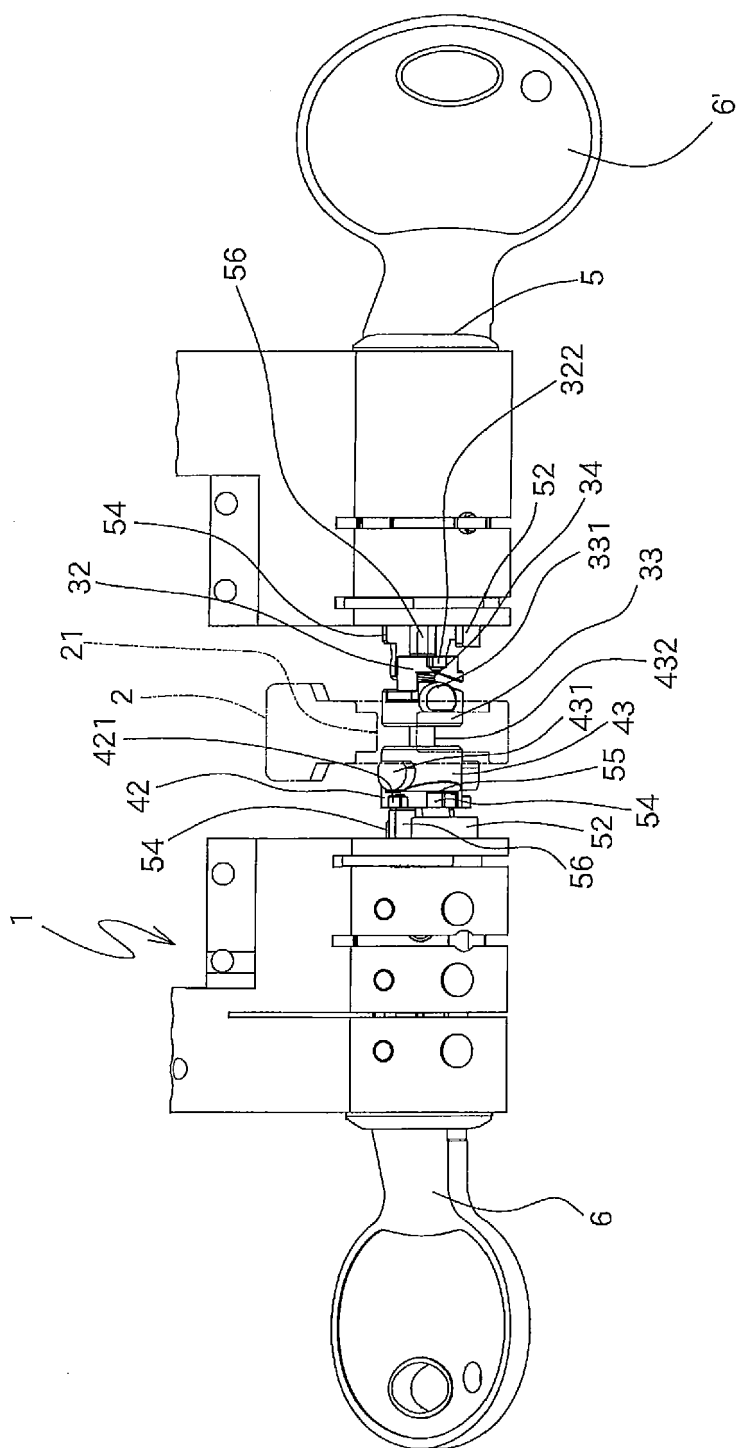


FIG.12

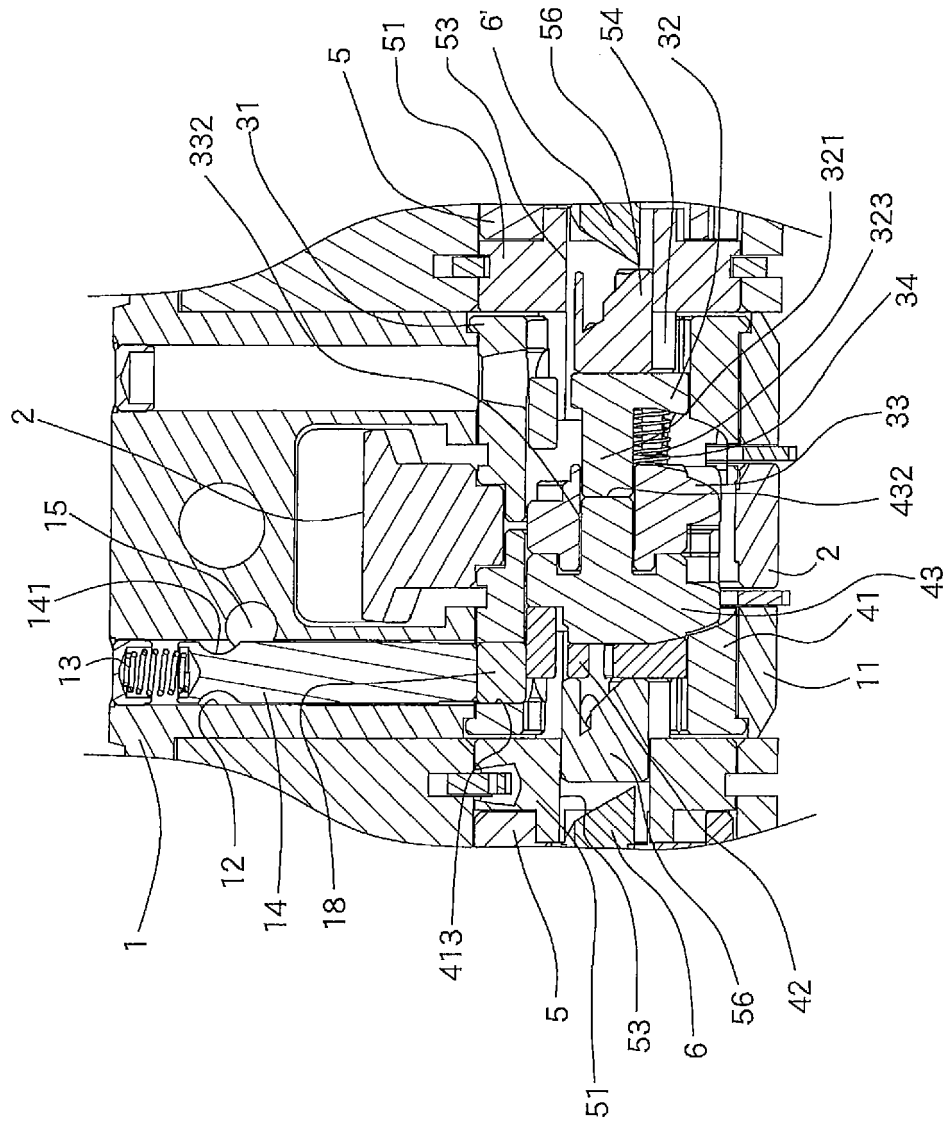


FIG.13

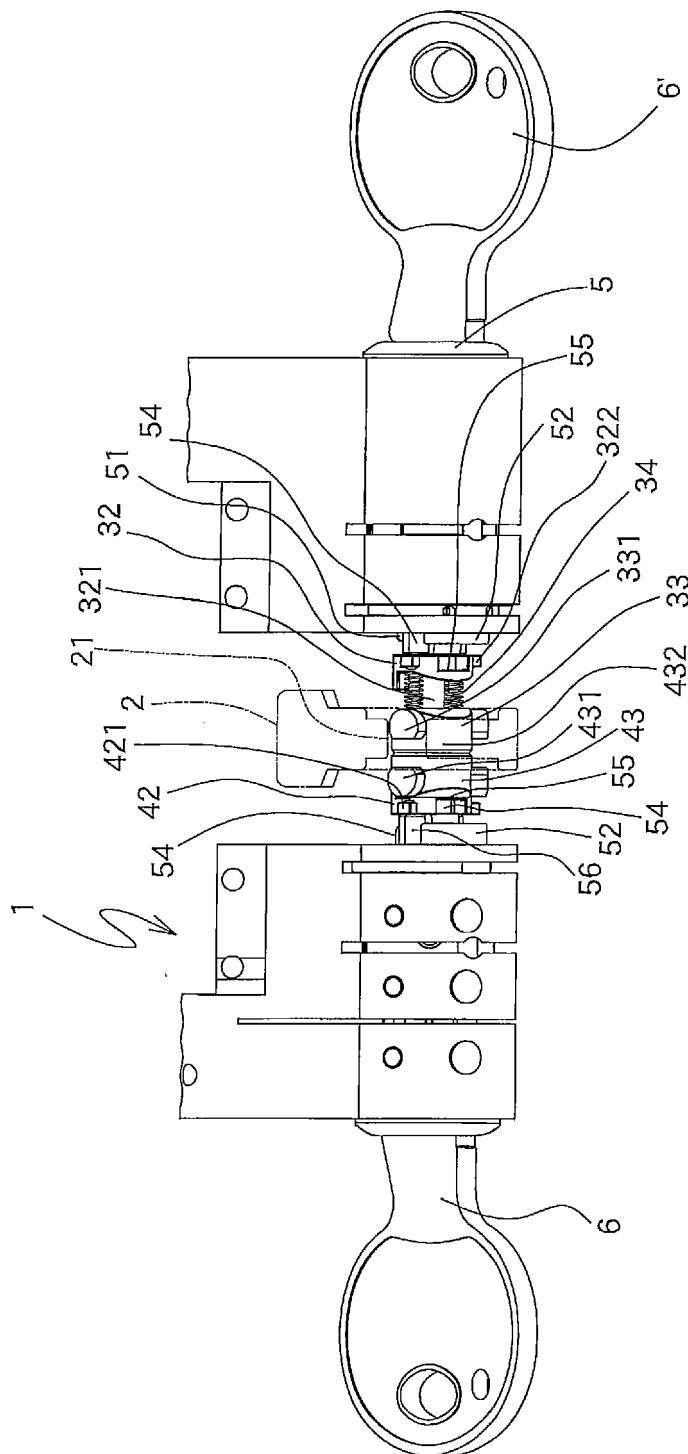


FIG.14

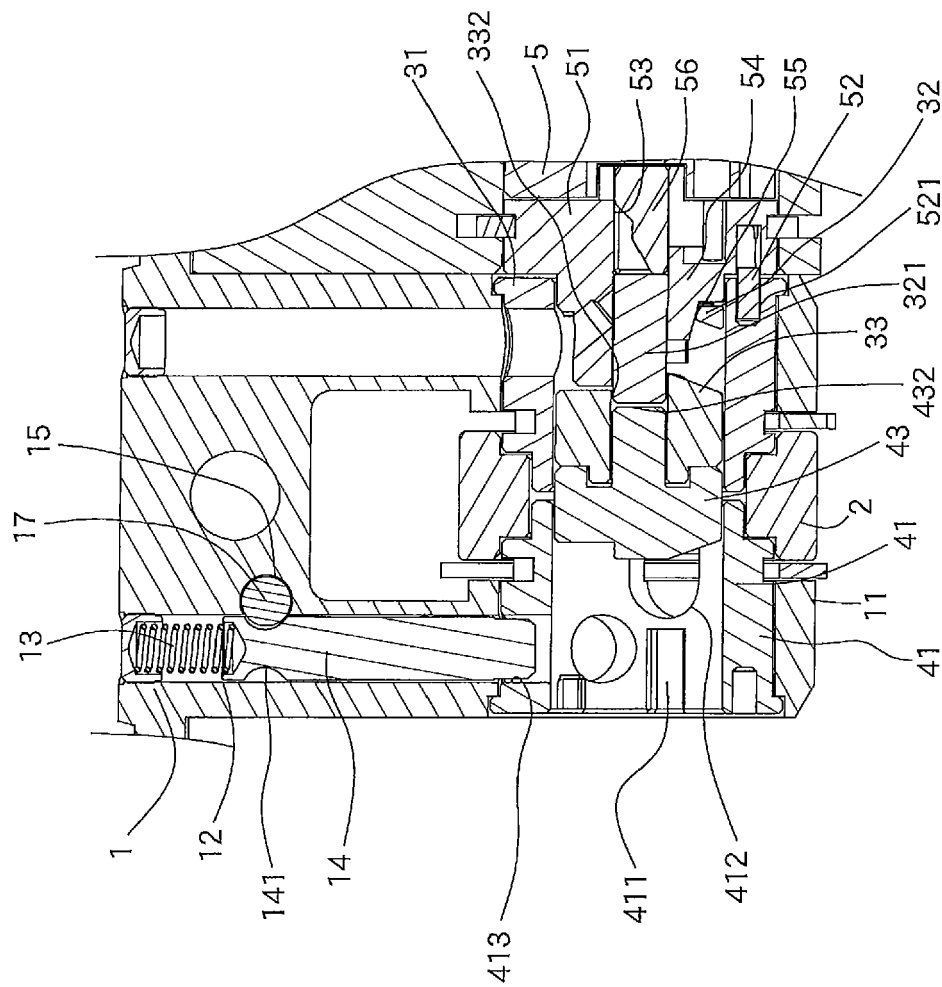


FIG.15

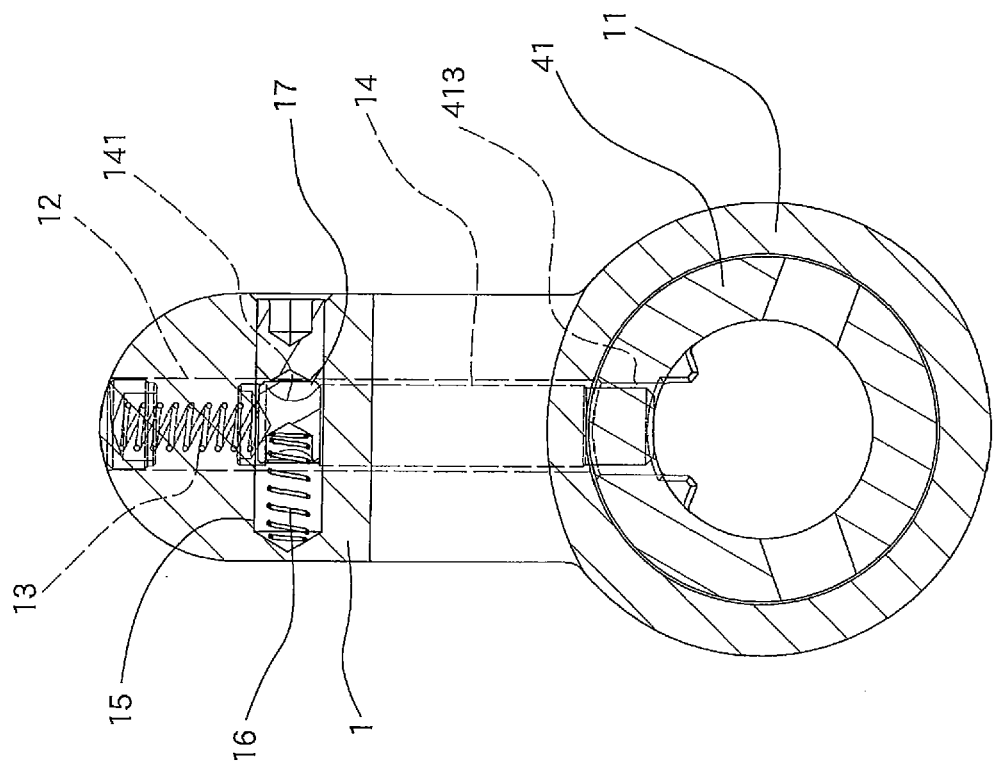


FIG.16





## EUROPEAN SEARCH REPORT

Application Number  
EP 18 21 4395

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Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	CLASSIFICATION OF THE APPLICATION (IPC)
A	DE 38 28 354 A1 (KARRENBERG FA WILHELM [DE]) 22 February 1990 (1990-02-22) * the whole document *	1-10	INV. E05B9/04 E05B9/10 E05B17/20
A,D	EP 2 679 749 B1 (LIU TIEN-KAO [TW]) 13 September 2017 (2017-09-13) * the whole document *	1-10	
			TECHNICAL FIELDS SEARCHED (IPC)
			E05B
The present search report has been drawn up for all claims			
Place of search The Hague		Date of completion of the search 12 June 2019	Examiner Viethen, Lorenz
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The members are as contained in the European Patent Office EDP file on  
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12-06-2019

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DE 3828354	A1	22-02-1990	NONE
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EP 2679749	B1	13-09-2017	NONE
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