(19) Europäisches Patentamt
European Patent Office
Office européen des brevets

(11) EP 2 003 273 A2

# (12) EUROPEAN PATENT APPLICATION

(43) Date of publication:
**17.12.2008 Bulletin 2008/51**

(51) Int Cl.:
***E05B 35/08*** *(2006.01)*

(21) Application number: **08250489.5**

(22) Date of filing: **09.02.2008**

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

(30) Priority: **15.06.2007 CN 200720052829 U**

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## (54) Lock body for a keystroke mechanical code lock

(57) A keystroke mechanical code lock including a lock body (9) holding a code conversion pillar (1), a spring, a passage pillar (2), a cover plate (10). The code conversion pillar (2) is in the form of a deformed pillar body (3) at the upper part, and of cylinders at the lower part with different diameters between top and bottom. The cylinder is provided with a slot and a pit at the underside of the lower cylinder body (7). The diameter of the lower cylinder body (7) of the cylinder is smaller than that of a bottom hole of a hole body of the lock body, while the diameter of the upper cylinder body of the cylinder bigger than that of the bottom hole of the hole body of the lock body. The passage pillar (2) is provided with a hole (14) at the top, and with a deformed hole (15) at the bottom that has the same shape as the deformed pillar body (3) of the code conversion pillar. The passage pillar (2) is provided on the pillar body with an upper passage slot, a middle passage slot and a lower passage slot evenly in three directions with an equal slot opening. The structure of code conversion pillar (1) and passage pillar (2) as well as cooperation of other parts of the keystroke mechanical code lock, the lock allows code conversion without dismantlement of the lock.

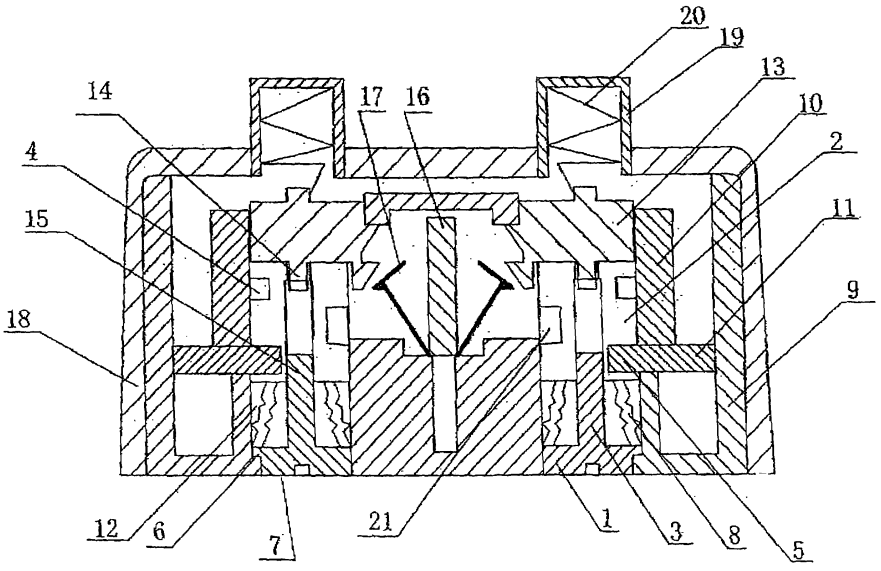


FIG 1

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## Description

### Field of the Invention

**[0001]** The present invention relates to a code lock, and particularly to a lock body of a keystroke mechanical code lock.

### Background of the Invention

**[0002]** A keystroke mechanical code lock provides high security, stable performance, attractive appearance, and convenient application, allowing code conversion without dismantlement of the lock. However, it is easy to decode due to structure of the lock body of the lock, which impairs security.

### Summary of the Invention

**[0003]** The purpose of the present invention is to provide a lock body of a keystroke mechanical code lock that cannot be easily decoded. It will be appreciated that a keystroke mechanical code lock may contain several lock bodies of the present invention.

**[0004]** The purpose of the present invention is achieved as below. A lock body for a keystroke mechanical code lock comprising: a code conversion pillar, a spring, a passage pillar mounted in a hole body of the lock body; a demountable fixedly-connected cover plate mounted on the lock body; a frame slide plate slide fitted between the lock body and the cover plate; a key plate and a reset key mounted on the cover plate; and a key plate spring, a reset plug and a reset resilient plate in contact with the key plate; wherein the code conversion pillar comprises a deformed pillar body at the upper part thereof, and two cylinder bodies, a lower cylinder body and an upper cylinder body, at the lower part thereof; the lower cylinder body is provided with a slot and a pit in the underside thereof; the diameter of the lower cylinder body of the cylinder is smaller than that of a bottom hole of a hole body of the lock body, while the diameter of the upper cylinder body of the cylinder is bigger than that of the bottom hole of the hole body of the lock body; the passage pillar is provided with a hole at the top thereof, and with a deformed hole which has the same shape as the deformed pillar body, at the bottom thereof; and the passage pillar comprises an upper passage slot, a lower passage slot and a middle passage slot distributed evenly in three directions with equal slot openings.

**[0005]** Because of this structure of code conversion pillar and passage pillar as well as cooperation of other parts of the keystroke mechanical code lock, the present invention permits code conversion without dismantlement of the lock, whilst at the same time making decoding difficult, thus achieving a safe and reliable performance.

### Brief Description of the Drawings

**[0006]** In the drawings, which show a preferred embodiment of the present invention:

Figure 1 is a structural schematic view of a keystroke mechanical code lock comprising the lock bodies of the present invention;
Figure 2 is a structural schematic view of the code conversion pillar of the embodiment;
Figure 3 is a top view of Figure 2;
Figure 4 is a bottom view of Figure 2;
Figure 5 is a structural schematic view of the passage pillar of the embodiment.
Figure 6 is a top view of Figure 5;
Figure 7 is a bottom view of Figure 5;
Figure 8 is a structural schematic view of the key plate;
Figure 9 is a view of a code disabling state;
Figure 10 is a view of a single-press code state;
Figure 11 is a view of a double-press code state;
Figure 12 is a bottom view of Figure 9;
Figure 13 is a bottom view of Figure 10; and
Figure 14 is a bottom view of Figure 11;

### Detailed Description of the Embodiments

**[0007]** Figures 1 to 8 show the lock body 9 of the present invention and the various components that compose the lock body 9. A frame slide plate 11 is provided in the keystroke mechanical code lock that comprises the lock bodies of the present invention, the frame slide plate 11 being provided between a demountable fixedly-connected lock body 9 and a lock case 18. The frame slide plate 11 is slide fitted between the lock body 9 and the cover plate 10. The lock body 9 is provided with two rows of hole bodies 12, each of which contains a code conversion pillar 1.

**[0008]** At the bottom of each hole body 12 is a bottom hole with a diameter smaller than that of the hole body 12 and having three notches on the interior wall. A code conversion pillar 1 and a passage pillar 2 are located within each hole body 12.

**[0009]** Figures 2, 3 and 4 show the code conversion pillar 1, comprises a deformed pillar body 3 at the upper part thereof, having a cross section of semicircular or other geometric shape, and two cylinders at the lower part thereof, having different diameters between top and bottom. The bottom cylinder, which is known as the lower cylinder body 7, is provided with a slot 25 and a pit 24 in the underside thereof. On the exterior wall of the underside of the lower cylinder body 7 are three equal bosses. The diameter of the lower cylinder body 7 is smaller than that of the bottom hole of the hole body 12 of the lock body 9. The top cylinder, known as the upper cylinder body 6, has a diameter that is bigger than that of the bottom hole of the hole body 12 of the lock body 9.

**[0010]** Figures 5, 6 and 7 show the passage pillar 2,

which is provided with a hole 14 at the top thereof and with a deformed hole 15 at the bottom thereof, the deformed hole 15 having the same shape as the deformed pillar body 3 (e.g. semicircular). The passage pillar 2 comprises an upper passage slot 4, a lower passage slot 5 and a middle passage slot 21 evenly in three directions with an equal slot opening. The deformed pillar hole 15 is provided to locate the passage pillar 2 on the pillar body 3. A spring 8 is mounted on the deformed pillar body 3 of the code conversion pillar 1 between the passage pillar 2 and the upper cylinder body 6.

**[0011]** The lower cylinder body 7 of the code conversion pillar 1 is positioned in the bottom hole of the hole body 12, with the three bosses of the lower cylinder body 7 embedded in the three notches that are provided on the interior wall at the bottom hole of the hole body 12.

**[0012]** The upper cylinder body 6 of the code conversion pillar 1 is positioned in the hole body 12.

**[0013]** Inside the lock body 9, at the top of the passage pillar 2, is a demountable fixedly-connected cover plate 10. In each of the hole bodies 12 of the corresponding lock body 9 is a holding slot, in which a key plate 13 and a reset plate are located. The bottom of the key plate 13 is inserted into the hole 14 at the top of the passage pillar 2. The top of the key plate 13 is located in contact with one end of a key spring 20. The other end of the key spring 20 is located in contact with the interior side of the key plate cover 19 in the hole of a lock case 18.

**[0014]** The key plate 13 is provided with two sets of barbs 22 and 23, which protrude from on one side of the key plate 13. When the key plate cover 19 is pressed, the barb 23 of the key plate 13 can be positioned in a lower position after compressing a reset resilient plate 17 on the side of a reset plug 16 that can slide in the lock body 9. With the top surface of the key plate barb 23 in contact with the bottom surface of the hook of the reset resilient plate 17, the position of the passage pillar 2 relative to that of the frame slide plate 11 is fixed.

**[0015]** The process of setting a new code involves revolving each of the code conversion pillars, to set the status thereof. The three states of the conversion pillars comprise:

**State 1**. A screwdriver can be placed in the slot 25 on the bottom of the code conversion pillar 1 and the pillar revolved to a position as shown in Figures 9 and 12. An inward convex arrow on the frame slide plate 11 can move back and forth via the lower passage slot 5 of the passage pillar. Here the lock body is under a normally open state with the code disabled.

**State 2.** When the code conversion pillar 1 is revolved to the position shown in Figures 10 and 13, the key plate 13 is pressed once to make the barb 23 tightly buckled on the reset resilient plate 17. This makes the inward convex arrow on the frame slide plate 11 move back and forth via the middle passage slot 21 of the passage pillar. Here the lock body is under a single-press code state.

**State 3.** When the code conversion pillar 1 is revolved to the position shown in Figures 11 and 14, the key plate 13 is pressed twice to make the barb 22 tightly buckled on the reset resilient plate 17. This makes the inward convex arrow on the frame slide plate move back and forth via the upper passage slot 4 of the passage pillar. Here the lock body is under a double-press code state.

## Claims

1. A lock body for a keystroke mechanical code lock comprising:

   a code conversion pillar (1), a spring (8), a passage pillar (2) mounted in a hole body (12) of the lock body (9);
   a demountable fixedly-connected cover plate (10) mounted on the lock body (9);
   a frame slide plate (11) slide fitted between the lock body (9) and the cover plate (10);
   a key plate (13) and a reset key mounted on the cover plate (10); and
   a key plate spring (20), a reset plug (16) and a reset resilient plate (17) in contact with the key plate (13);

   wherein the code conversion pillar (1) comprises a deformed pillar body (3) at the upper part thereof, and two cylinder bodies, a lower cylinder body (7) and an upper cylinder body (6), at the lower part thereof;
   the lower cylinder body (7) is provided with a slot and a pit (24) in the underside thereof; the diameter of the lower cylinder body (7) of the cylinder is smaller than that of a bottom hole of a hole body (12) of the lock body (9), while the diameter of the upper cylinder body (6) of the cylinder is bigger than that of the bottom hole of the hole body (12) of the lock body (9);
   the passage pillar (2) is provided with a hole (14) at the top thereof, and with a deformed hole (15) which has the same shape as the deformed pillar body (3), at the bottom thereof; and
   the passage pillar (2) comprises an upper passage slot (4), a lower passage slot (5) and a middle passage slot (21) distributed evenly in three directions with equal slot openings.

2. The lock body of the keystroke mechanical code lock according to claim 1, wherein the deformed pillar body (3) of the code conversion pillar (1) has a semicircular cross section, and the deformed hole (15) of the passage pillar (2) is a semicircle hole.

3. The lock body of the keystroke mechanical code lock according to claim 1, wherein the deformed pillar

body (3) of the code conversion pillar (1) has a square cross section, and the deformed hole (15) of the passage pillar (2) is a square hole.

**4.** The lock body of the keystroke mechanical code lock according to claim 1, wherein the deformed pillar body (3) of the code conversion pillar (1) has a rectangular cross section, and the deformed hole (15) of the passage pillar (2) is a rectangular hole.

**5.** The lock body of the keystroke mechanical code lock according to any of the preceding claims, wherein the passage pillar (2) is provided on the pillar body with the upper passage slot (4), the middle passage slot (21) and the lower passage slot (5) evenly in three directions with an equal slot opening.

**6.** The lock body of the keystroke mechanical code lock according to any of the preceding claims, wherein three equal bosses protruded on the exterior wall of a lower cylinder body (7) of the cylinder.

**7.** The lock body of the keystroke mechanical code lock according to any of the preceding claims, wherein two sets of barbs protrude from one side of the key plate (13).

**8.** A keystroke mechanical code lock comprising at least one lock body according to any of claims 1 to 7.

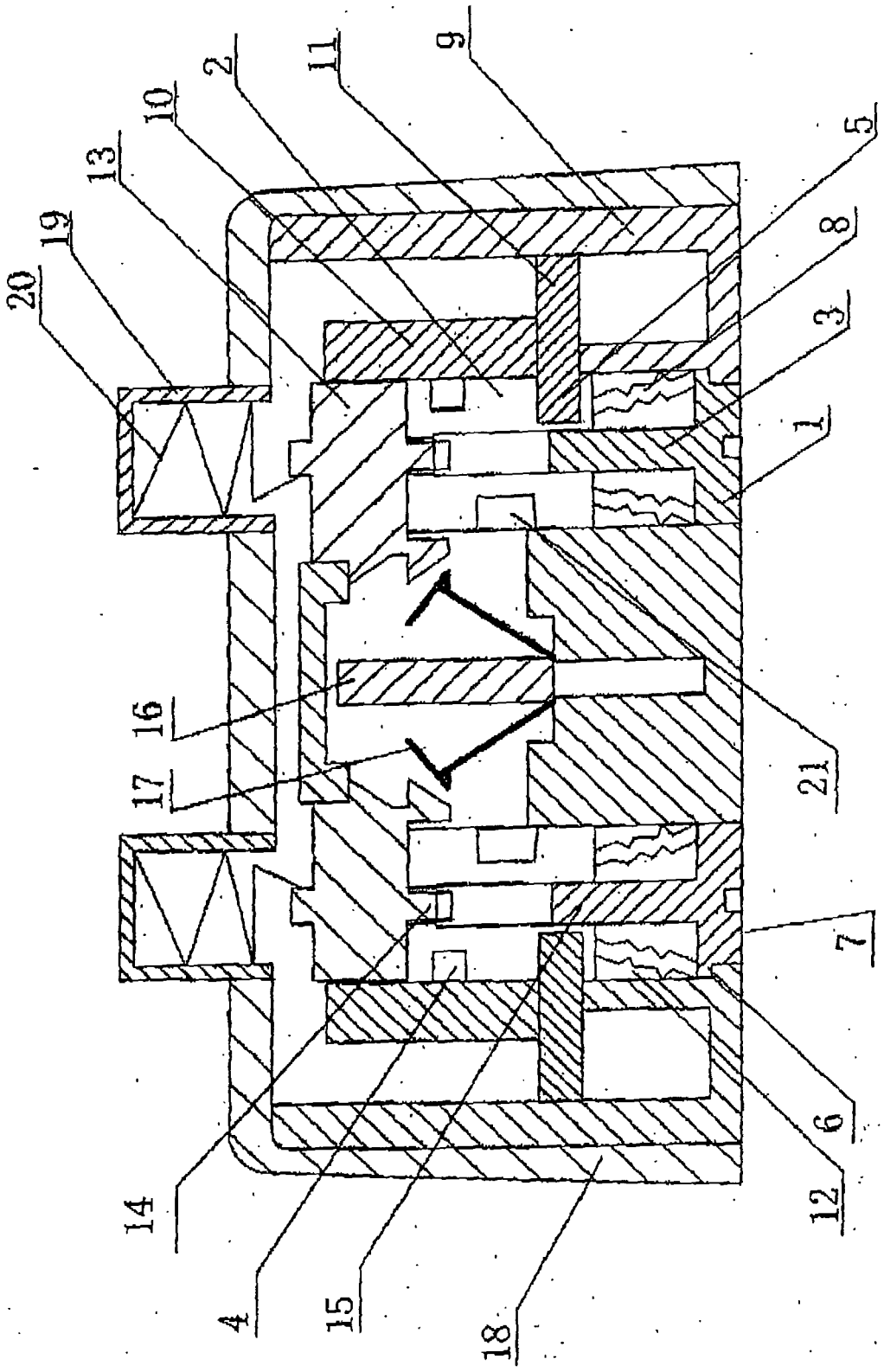


FIG 1

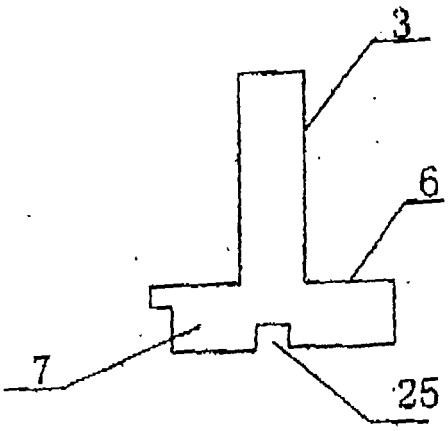


FIG 2

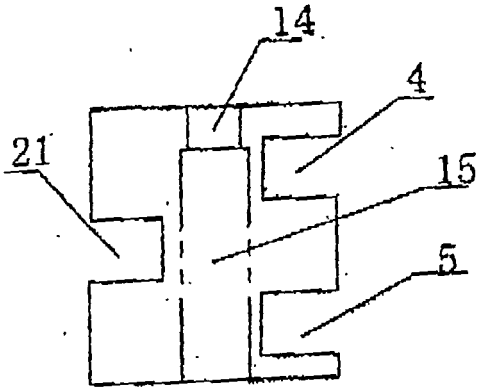


FIG 5

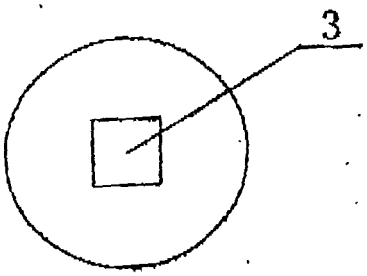


FIG 3

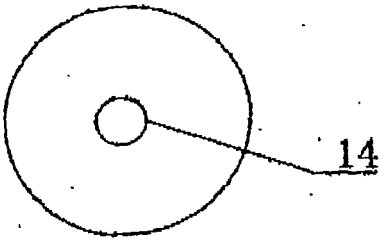


FIG 6

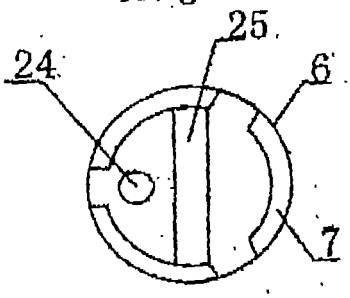


FIG 4

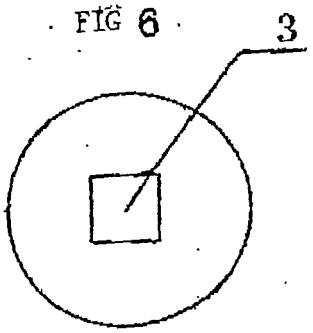


FIG 7

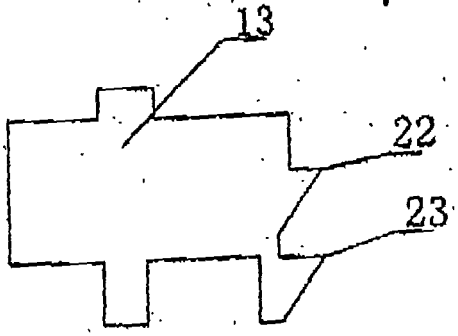


FIG 8

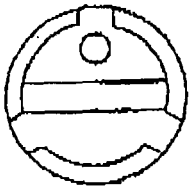

FIG 14

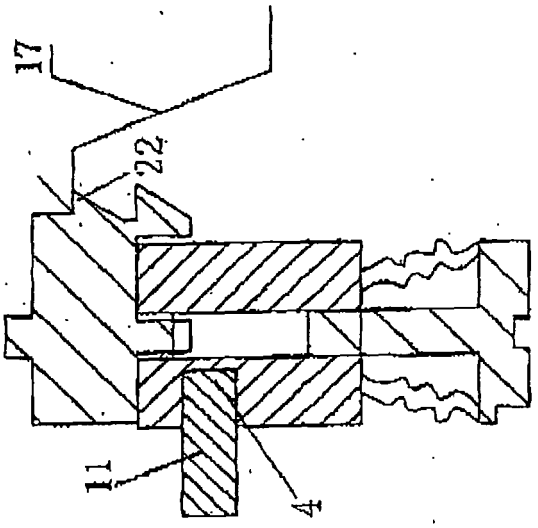


FIG 11

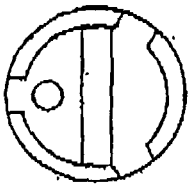

FIG 13

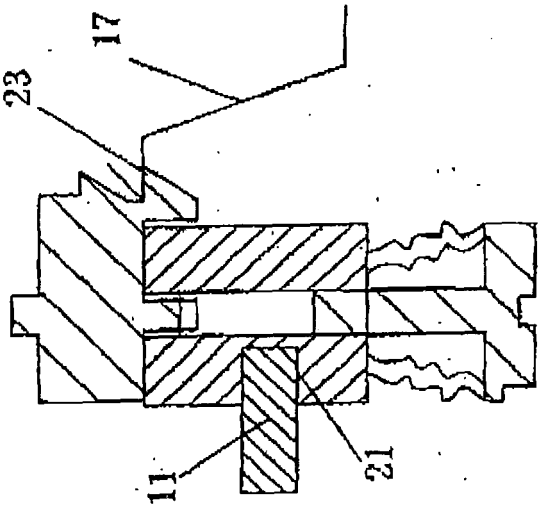


FIG 10

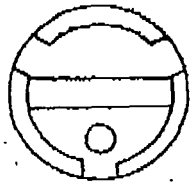

FIG 12

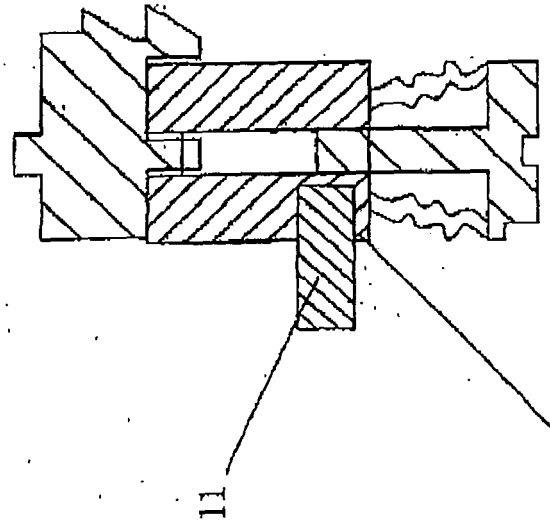


FIG 9