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(54) ANTI-THEFT LOCKSET

DIEBSTAHLSICHERES SCHLOSS

SERRURE ANTIVOL

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Description

Technical Field of the Invention

[0001] The present invention relates to a hardware lockset, in particular to an anti-theft lockset for a pin tumbler lock.

Background of the Invention

[0002] There are various kinds of locksets which are diverse in structure, of course, among which there are locksets having excellent anti-theft performance. However, most of locksets, as they have less anti-theft orientations due to their simple structure, may be unlocked in a very short time. This is so-called technical unlocking. Burglaries thus happen, and people's property and security are threatened. Undoubtedly, there are always some "forward-looking" merchants who conduct research on a lockset having excellent anti-theft performance to develop some tools or instruments against the anti-theft performance. Given the increasingly developed internet today, criminals can always buy some tools against the anti-theft performance, and thus can easily technically unlock some anti-theft facilities such as anti-theft doors, anti-theft locks, etc. A state of the art lockset is known from document CN 103437600 A.

Summary of the Invention

[0003] An objective of the present invention is to provide a lockset having excellent anti-theft performance, to solve the problems in the prior art.

[0004] For this purpose, the present invention employs the following technical solutions: an anti-theft lockset is provided, including a key, a lock cylinder and a lock shell, a first pin tumbler hole and a second pin tumbler hole being provided in the front part of the lock shell, a third pin tumbler hole and a fourth pin tumbler hole corresponding to the first pin tumbler hole and the second pin tumbler hole on the lock shell being provided in the front part of the lock cylinder, a fifth pin tumbler hole being provided in the rear part of the lock shell, a sixth pin tumbler hole corresponding to the fifth pin tumbler hole being provided in the rear part of the lock cylinder, a corresponding pin tumbler being provided in each of the pin tumbler holes, the key being matched with the lock cylinder, characterized in that the key includes a key handle, a connecting portion and a key head, the key head being mounted on the connecting portion, the connecting portion being connected to the key handle; columns are provided around a hole, into which the key head is to be mounted, on the connecting portion; a long hole is formed on the key head; sliders corresponding to the columns are provided in the lock cylinder, and a conical chute or bulge fitted with the pin tumbler in the fourth pin tumbler hole is provided on the slider; the pin tumbler in the third pin tumbler hole is matched with biting on the key head; a slide bar is provided in the lock cylinder, with a plurality of flanges different in the outer diameter being provided on the slide bar; the pin tumbler in the sixth pin tumbler hole is resisted against the outer circumferential walls of the flanges; the slide bar can extend into the long hole of the key head; and springs are provided at ends of both the slider and the slide bar. In particular according to the invention the pin tumbler in the sixth pin tumbler hole is thus resisted against the outer circumferential walls of the flanges, such that when the key is inserted into the lock cylinder and pushed inward to the proper position, the slide bar will be inserted into the long hole on the key head and moved, so that the pin tumbler in the sixth pin tumbler hole falls onto the corresponding flanges, whereby the pin tumblers in the sixth pin tumbler hole on the lock cylinder are exactly flushed with the outer circumferential surface of the lock cylinder. The connecting portion and the key handle form an integrated structure. A slope is provided between the flanges different in the outer diameter. The columns around the hole on the connecting portion are different in height.

[0005] In the present invention, not only the biting on the key head is matched with the pin tumblers in the pin tumbler holes, but also the conical chute on the slider is matched with the pin tumblers in the pin tumbler holes, and even the step-like flanges on the slide bar are matched with the pin tumblers in the pin tumbler holes. That is, there are three anti-theft functions. When in a locked state, after a criminal inserts an unlocking tool into the lock cylinder and then pushes the slide bar, the step-like flanges on the slide bar are pushed immediately. As a result, the pin tumblers and the matched flanges among those flanges are completely misaligned, and it is thus less able to accomplish unlocking. In this way, the possibility of technical unlocking is eliminated. Hence, the present invention has a scientific and reasonable structure and excellent anti-theft performance.

Brief Description of the Drawings

[0006] Details of the preset invention will be further described below with reference to the accompanying drawings, in which:

Fig. 1 is an exploded view of an overall structure of the present invention;

Fig. 2 is a structural diagram of a key according to the present invention;

Fig. 3 is a structural diagram according to the present invention, when each of pin tumblers is matched with a key, a slider and a slide bar;

Fig. 4 is a structural diagram of a slide bar according to the present invention;

Fig. 5 is a locked state diagram according to the present invention;

Fig. 6 is a locked state diagram according to the present invention;

Fig. 7 is a locked state diagram according to a second

embodiment of the present invention;
Fig. 8 is a locked state diagram according to the second embodiment of the present invention; and
Fig. 9 is a structural diagram of a slider according to the second embodiment of the present invention.

Detailed Description of the Invention

[0007] With reference to Fig. 1 to Fig. 5, such an anti-theft lockset includes a key, lock cylinder 12 and a lock shell 20, first pin tumbler hole 18 and a second pin tumbler hole 19 being provided in the front part of the lock shell 20, a third pin tumbler hole 11 and a fourth pin tumbler hole 10 corresponding to the first pin tumbler hole 18 and the second pin tumbler hole 19 on the lock shell 20 being provided in the front part of the lock cylinder 12, a fifth pin tumbler hole 21 being provided in the rear part of the lock shell 20, and a sixth pin tumbler hole 13 corresponding to the fifth pin tumbler hole 21 being provided in the rear part of the lock cylinder 12. The "front part of the lock shell 20" herein refers to an end close to a key insertion hole, and an end far away from the key insertion hole is the rear part of the lock shell 20. Corresponding pin tumblers 26, 25, 22, 23, 27, and 24 are arranged in the first pin tumbler hole 18, the second pin tumbler hole 19, the third pin tumbler hole 11, the fourth pin tumbler hole 10, the fifth pin tumbler hole 21 and the sixth pin tumbler hole 13, and a small spring is arranged in each of the pin tumbler holes within the lock shell 20. The key is matched with the lock cylinder 20. The pin tumblers assembled in the lock cylinder are all conical, and the lock shell 20 is mounted within a lock sleeve 6. Those are well known and will not be repeated herein. The key includes a key handle 1, a connecting portion 2 and a key head 4, the key head 4 being mounted on the connecting portion 2, the connecting portion 2 and the key handle 1 being connected to form an integrated structure. Five columns 3 different in height are uniformly distributed around a hole, into which the key head 4 is to be mounted, on the connecting portion 2. A long hole 28 is formed on the key head 4. Five sliders 7 corresponding to the columns 3 are arranged in the lock cylinder 12. As the height of the columns 3 may be designed arbitrarily, the length of the slider 7 corresponding thereto is different. Locksets manufactured in this way have various variations, and this avoids opening various locks with a same key. It is thus clear that, as there are many variations of height of the columns 3, the possibility of opening various locks with a same key is extremely low. A conical chute 8 fitted with the pin tumbler 23 in the fourth pin tumbler hole 10 is arranged on the slider 7. The pin tumbler 22 in the third pin tumbler hole 11 is fitted with the biting 5 on the key head 4. The slide bar 14 is arranged in the lock cylinder 12, with a plurality of flanges 15 different in the outer diameter being provided on the slide bar 14, and the outer diameter of the flanges 15 is gradually increased. The pin tumbler 24 in the sixth pin tumbler hole 13 is resisted against the outer circumferential wall of each of the flanges, and a slope 29 is arranged between adjacent flanges for transition, so that the pin tumbler 24 can easily move among the flanges 15. The slide bar 14 can be inserted into the long hole 28 of the key head 4. Springs 9 and 17 are arranged at ends of both the slider 7 and the slide bar 14, respectively. In the present invention, a deep hole 16, into which the spring 17 at an end of the slide bar 14 is partially placed, is formed on the slide bar 14. In this way, the stable elasticity of the spring 17 is maintained. The second embodiment of the present invention is to replace the conical chute 8 on the slider 7 with a bulge 30 structure, referring to Fig. 7 to Fig. 9. Of course, there is a conical surface 31 provided for transition between the location of the bulge 30 and the main body of the slider 7, and this facilitates the movement of the pin tumbler 24 from the main body of the slider 7 onto the bulge 29. The remaining structures are all the same.

Working principle:

[0008] During unlocking, the key is inserted into the lock cylinder 12, and the biting 5 on the key head 4 is matched with the pin tumbler 22 in the third pin tumbler hole 11 on the lock cylinder 12. Meanwhile, after the key is inserted, the columns 3 on the connecting portion 2 push the corresponding slider 7 in the lock cylinder 12, and after the slider 7 moves, the pin tumbler 23 in the fourth pin tumbler hole 10 on the lock cylinder 12 exactly slides into the conical chute 8 of the slider 7, or exactly moves to the top of the bulge 29 of the slider 7. After the key is pushed inward, the slide bar 14 will be inserted into the long hole 28 on the key head 4. When the key is pushed to the proper position, the slide bar 14 will move, so that the pin tumbler 24 in the sixth pin tumbler hole 13 falls onto the corresponding flanges 15 different in the outer diameter. At this moment, the pin tumblers in the third pin tumbler hole 11, the fourth pin tumbler hole 10 and the sixth pin tumbler hole 13 on the lock cylinder 12 are exactly flushed with the outer circumferential surface of the lock cylinder 12; meanwhile, the pin tumblers in the first pin tumbler hole 18, the second pin tumbler hole 19 and the fifth pin tumbler 21 in the lock shell 20 are exactly flushed with the inner circumferential surface of the lock shell 20. In this case, when the key is rotated, the lock cylinder 12 may be rotated and unlocking is realized.

[0009] When the key is pulled out, the key head 4 is pulled out too. The pin tumbler 22 in the third pin tumbler hole 11 moves upward along with the biting 5 on the key head 4, so that the pin tumbler 22 in the third pin tumbler hole 11 partially comes into the first pin tumbler hole 18. The spring 9 at an end of the slider 7 drives the slider 7 to move, so that the pin tumbler 23 in the fourth pin tumbler hole 10 moves out from the conical chute 8 or the pin tumbler 23 in the fourth pin tumbler hole 10 moves down from the top of the bulge 29. In this step, after moving out from the conical chute 8, the pin tumbler 23 also partially comes into the second pin tumbler hole 19, and

after the pin tumbler 23 slides down from the top of the bulge 29, the pin tumbler 25 in the second pin tumbler hole 19 partially comes into the fourth pin tumbler hole 10. Meanwhile, the slide bar 14 is pushed by the spring 17 at an end of the slide bar 14, so that the position of each of the flanges 15 changes. The pin tumbler 24 in the sixth pin tumbler hole 13 moves among the flanges 15, so that the pin tumbler 24 in the sixth pin tumbler hole 13 partially comes into the fifth pin tumbler hole 21 within the lock shell 20, or the pin tumbler 27 in the fifth pin tumbler hole 21 partially comes into the sixth pin tumbler hole 13. From above, it can be seen that, when the key is pulled out, the positions of the pin tumblers in the pin tumbler holes shift and the lock cylinder 12 and the lock shell 20 are thus joined together. That is, the lock cylinder 12 is snapped with the lock shell 20. In this way, locking is realized.

[0010] In the present invention, when in locked state, the slide bar 14 in the lock cylinder 12 may be moved by an external object. The slide bar 14 moves immediately when the external object comes into contact with the slide bar 14. After the slide bar 14 moves, the flanges 15 different in the outer diameter move correspondingly. After the flanges 15 moves, the position of the pin tumbler 24 in the sixth pin tumbler hole 14 changes correspondingly. Only when the slide bar 14 moves to the accurate position, the pin tumblers 24 in the sixth pin tumbler hole 13 will be flushed with the outer circumferential surface of the lock cylinder 12. When the slide bar 14 is moved by an external object, it is difficult to apply a force exactly the same as that of inserting a key as the position of the flanges 15 is unknown. Hence, it is very difficult to move the pin tumbler to the unlocked state and thus difficult to perform technical unlocking.

Claims

1. An anti-theft lockset, comprising a key, a lock cylinder (12) and a lock shell (20), a first pin tumbler hole (18) and a second pin tumbler hole (19) being provided in the front part of the lock shell (20), a third pin tumbler hole (11) and a fourth pin tumbler hole (10) corresponding to the first pin tumbler hole (18) and the second pin tumbler hole (19) on the lock shell (20) being provided in the front part of the lock cylinder (12), a fifth pin tumbler hole (21) being provided in the rear part of the lock shell (20), a sixth pin tumbler hole (13) corresponding to the fifth pin tumbler hole (21) being provided in the rear part of the lock cylinder (12), a corresponding pin tumbler (26, 25, 22, 23, 27, 24) being provided in each of the pin tumbler holes (18, 19, 11, 10, 21, 13), the key being matched with the lock cylinder (12), whereby the key comprises a key handle (1), a connecting portion (2) and a key head (4), the key head (4) being mounted on the connecting portion (2), the connecting portion (2) being connected to the key handle (1); columns (3) are provided around a hole, into which the key head (4) is to be mounted, on the connecting portion; a long hole (28) is formed on the key head (4); sliders (7) corresponding to the columns (3) are provided in the lock cylinder (12), and a conical chute (8) or bulge (30) fitted with the pin tumbler (23) in the fourth pin tumbler hole (10) is provided on the slider (7); the pin tumbler (22) in the third pin tumbler hole (11) is matched with biting (5) on the key head (4); a slide bar (14) is provided in the lock cylinder (12), with a plurality of flanges (15) different in the outer diameter being provided on the slide bar (14); the pin tumbler (24) in the sixth pin tumbler hole (13) is resisted against the outer circumferential walls of the flanges (15); the slide bar (14) can extend into the long hole (28) of the key head (1); and springs (9, 17) are provided at ends of both the slider (7) and the slide bar (14), such that when the key is inserted into the lock cylinder (12) and pushed inward to the proper position, the slide bar (14) will be inserted into the long hole (28) on the key head (4) and moved, so that the pin tumbler (24) in the sixth pin tumbler hole (13) falls onto the corresponding flanges (15), whereby the pin tumblers in the sixth pin tumbler hole (13) on the lock cylinder (12) are exactly flushed with the outer circumferential surface of the lock cylinder (12).

2. The anti-theft lockset according to claim 1, **characterized in that** the connecting portion (2) and the key handle (1) form an integrated structure.

3. The anti-theft lockset according to claim 1, **characterized in that** a slope is provided between the flanges (15) different in the outer diameter.

4. The anti-theft lockset according to claim 1, **characterized in that** the columns (3) around the hole on the connecting portion (2) are different in height.

Patentansprüche

1. Diebstahlverhinderndes Schlossset, umfassend einen Schlüssel, einen Schlosszylinder (12) und ein Schlossgehäuse (20), ein erstes Stiftzuhaltungsloch (18) und ein zweites Stiftzuhaltungsloch (19), die im vorderen Teil des Schlossgehäuses (20) vorgesehen sind, ein drittes Stiftzuhaltungsloch (11) und ein viertes Stiftzuhaltungsloch (10) entsprechend dem ersten Stiftzuhaltungsloch (18) und dem zweiten Stiftzuhaltungsloch (19) am Schlossgehäuse (20), die im vorderen Teil des Schlosszylinders (12) vorgesehen sind, wobei ein fünftes Stiftzuhaltungsloch (21) im hinteren Teil des Schlossgehäuses (20) vorgesehen ist, ein sechstes Stiftzuhaltungsloch (13) entsprechend dem fünften Stiftzuhaltungsloch (21), das im hinteren Teil des Schlosszylinders (12) vor-

gesehen ist, eine entsprechende Stiftzuhaltung (26, 25, 22, 23, 27, 24), die in jedem der Stiftzuhaltungslöcher (18, 19, 11, 10, 21, 13) vorgesehen ist, wobei der Schlüssel zum Schlosszylinder (12) passt, wobei der Schlüssel einen Schlüsselgriff (1), einen Verbindungsabschnitt (2) und einen Schlüsselkopf (4) umfasst, wobei der Schlüsselkopf (4) am Verbindungsabschnitt (2) montiert ist, der Verbindungsabschnitt (2) mit dem Schlüsselgriff (1) verbunden ist, Säulen (3) um ein Loch vorgesehen sind, in dem der Schlüsselkopf (4) am Verbindungsabschnitt (2) montiert werden soll, ein längliches Loch (28) am Schlüsselkopf (4) gebildet ist, Schieber (7), die den Säulen (3) entsprechen, im Schlosszylinder (12) vorgesehen sind und eine konische Rinne (8) oder Auswölbung (30), die zur Stiftzuhaltung (23) im vierten Stiftzuhaltungsloch (10) passt, auf dem Schieber (7) vorgesehen ist, die Stiftzuhaltung (22) im dritten Stiftzuhaltungsloch (11) zu Kerben (5) auf dem Schlüsselkopf (4) passt, ein Schiebestift (14) im Schlosszylinder (12) vorgesehen ist, wobei mehrere Flansche (15) unterschiedlichen Außendurchmessers auf dem Schiebestift (14) vorgesehen sind, die Stiftzuhaltung (24) im sechsten Stiftzuhaltungsloch (13) gegen die Außenumfangswände der Flansche (15) liegen, der Gleitstift (14) sich in das längliche Loch (28) des Schlüsselkopfs (1) erstrecken kann, und Federn (9, 17) an Enden sowohl des Schiebers (7) wie auch des Schiebestifts (14) vorgesehen sind, so dass, wenn der Schlüssel in den Schlosszylinder (12) eingesetzt und nach innen in die richtige Position geschoben wird, der Schiebestift (14) in das längliche Loch (28) am Schlüsselkopf (4) eingesetzt und bewegt wird, so dass die Stiftzuhaltung (24) im sechsen Stiftzuhaltungsloch (13) auf die entsprechenden Flansche (15) fällt, wodurch die Stiftzuhaltungen im sechsten Stiftzuhaltungsloch (13) am Schlosszylinder (12) mit der Außenumfangsfläche des Schlosszylinders (12) exakt bündig sind.

2. Diebstahlverhinderndes Schlossset nach Anspruch 1, **dadurch gekennzeichnet, dass** der Verbindungsabschnitt (2) und der Schlüsselgriff (1) eine integrierte Struktur bilden.

3. Diebstahlverhinderndes Schlossset nach Anspruch 1, **dadurch gekennzeichnet, dass** eine Schräge zwischen den Flanschen (15) mit unterschiedlichem Außendurchmesser vorgesehen ist.

4. Diebstahlverhinderndes Schlossset nach Anspruch 1, **dadurch gekennzeichnet, dass** die Säulen (3) um das Loch am Verbindungsabschnitt (2) von unterschiedlicher Höhe sind.

Revendications

1. Serrure antivol, comprenant une clé, un barillet de serrure (12) et une coque de serrure (20), un premier trou de goupille (18) et un deuxième trou de goupille (19) étant prévus dans la partie avant de la coque de serrure (20), un troisième trou de goupille (11) et un quatrième trou de goupille (10) correspondant au premier trou de goupille (18) et au deuxième trou de goupille (19) sur la coque de serrure (20) étant prévus dans la partie avant du barillet de serrure (12), un cinquième trou de goupille (21) étant prévu dans la partie arrière de la coque de serrure (20), un sixième trou de goupille (13) correspondant au cinquième trou de goupille (21) étant prévu dans la partie arrière du barillet de serrure (12), une goupille (26, 25, 22, 23, 27, 24) correspondante étant prévue dans chacun des trous de goupille (18, 19, 11, 10, 21, 13), la clé correspondant au barillet de serrure (12), dans laquelle la clé comprend une poignée de clé (1), une partie de raccordement (2) et une tête de clé (4), la tête de clé (4) étant montée sur la partie de raccordement (2), la partie de raccordement (2) étant raccordée à la poignée de clé (1) ; des colonnes (3) sont prévues autour d'un trou, dans lequel la tête de clé (4) doit être montée, sur la partie de raccordement ; un trou long (28) est formé sur la tête de clé (4) ; des glissières (7) correspondant aux colonnes (3) sont prévues dans le barillet de serrure (12), et une goulotte conique (8) ou un renflement (30) monté(e) avec la goupille (23) dans le quatrième trou de goupille (10) est prévu(e) sur la glissière (7) ; la goupille (22) dans le troisième trou de goupille (11) correspond à la morsure (5) sur la tête de clé (4) ; une barre coulissante (14) est prévue dans le barillet de serrure (12), une pluralité de brides (15) de diamètres externes différents étant prévues sur la barre coulissante (14) ; la goupille (24) dans le sixième trou de goupille (13) est amenée en contact avec les parois circonférentielles externes des brides (15) ; la barre coulissante (14) peut s'étendre dans le trou long (28) de la tête de clé (1) ; et des ressorts (9, 17) sont prévus aux extrémités à la fois de la glissière (7) et de la barre coulissante (14), de sorte que lorsque la clé est insérée dans le barillet de serrure (12) et poussée vers l'intérieur jusqu'à la bonne position, la barre coulissante (14) est insérée dans le trou long (28) sur la tête de clé (4) et déplacée, de sorte que la goupille (24) dans le sixième trou de goupille (13) tombe sur les brides (15) correspondantes, moyennant quoi les goupilles dans le sixième trou de goupille (13) sur le barillet de serrure (12) sont exactement de niveau avec la surface circonférentielle externe du barillet de serrure (12).

2. Serrure antivol selon la revendication 1, **caractérisée en ce que** la partie de raccordement (2) et la poignée de clé (1) forment une structure solidaire.

3. Serrure antivol selon la revendication 1, **caractérisée en ce qu'**une inclinaison est prévue entre les brides (15) de diamètres externes différents.

4. Serrure antivol selon la revendication 1, **caractérisée en ce que** les colonnes (3) autour du trou sur la partie de raccordement (2) sont de hauteurs différentes.

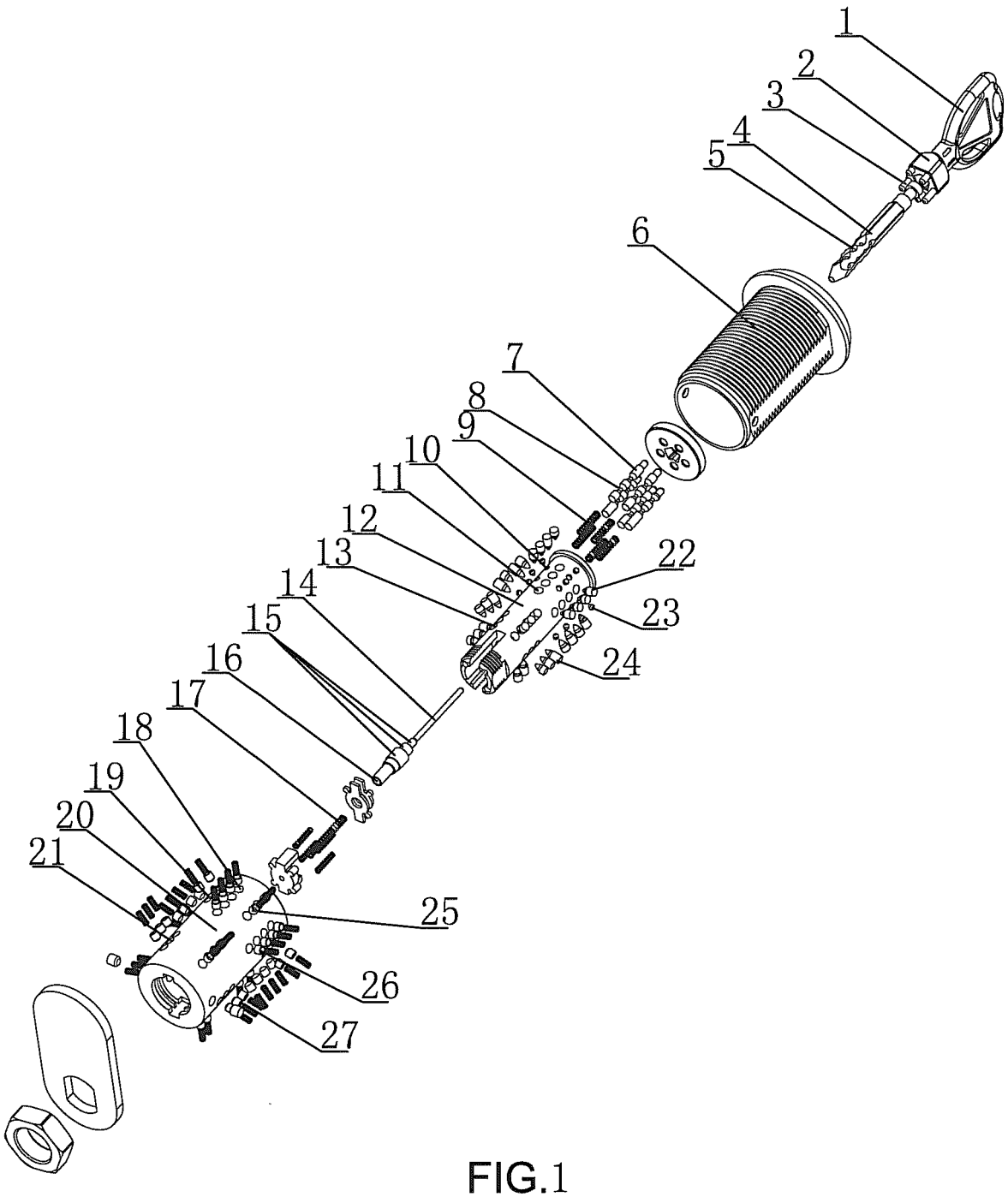


FIG.1

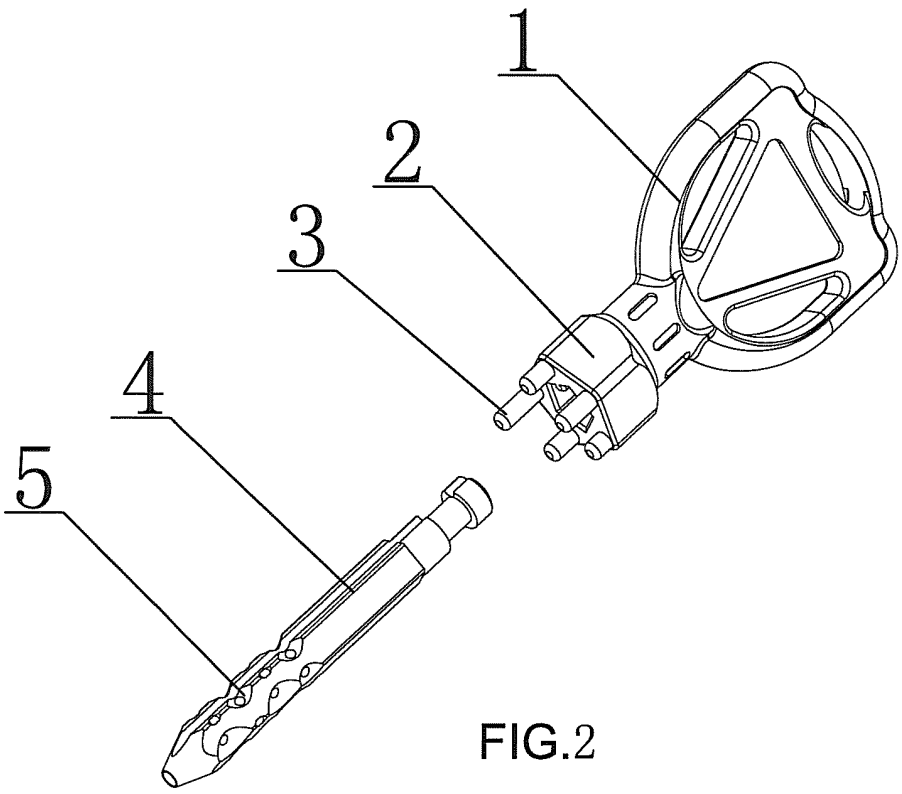


FIG.2

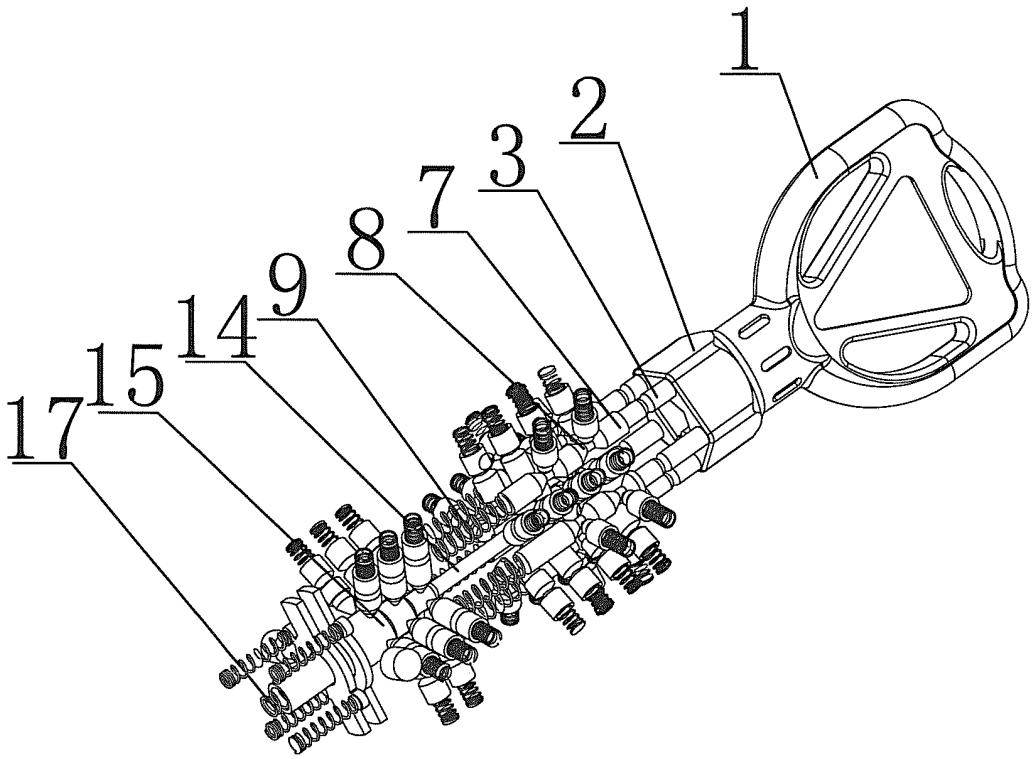


FIG.3

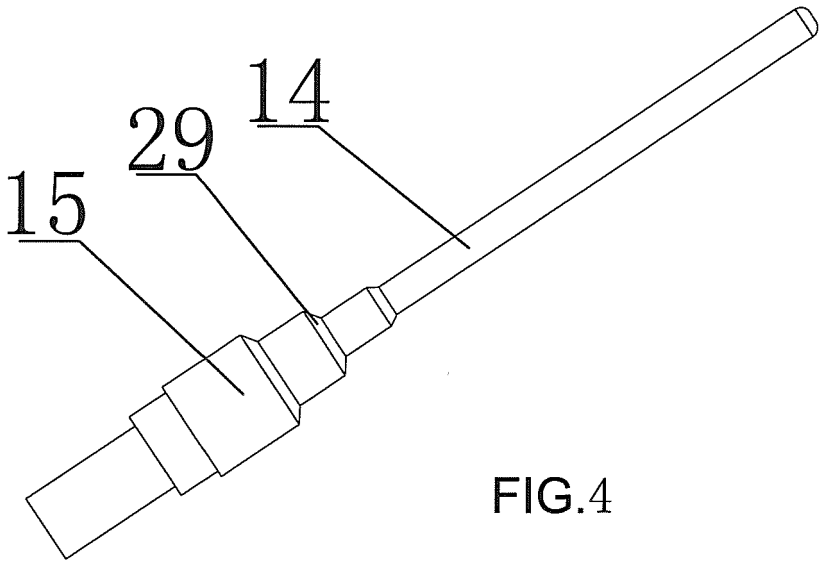


FIG.4

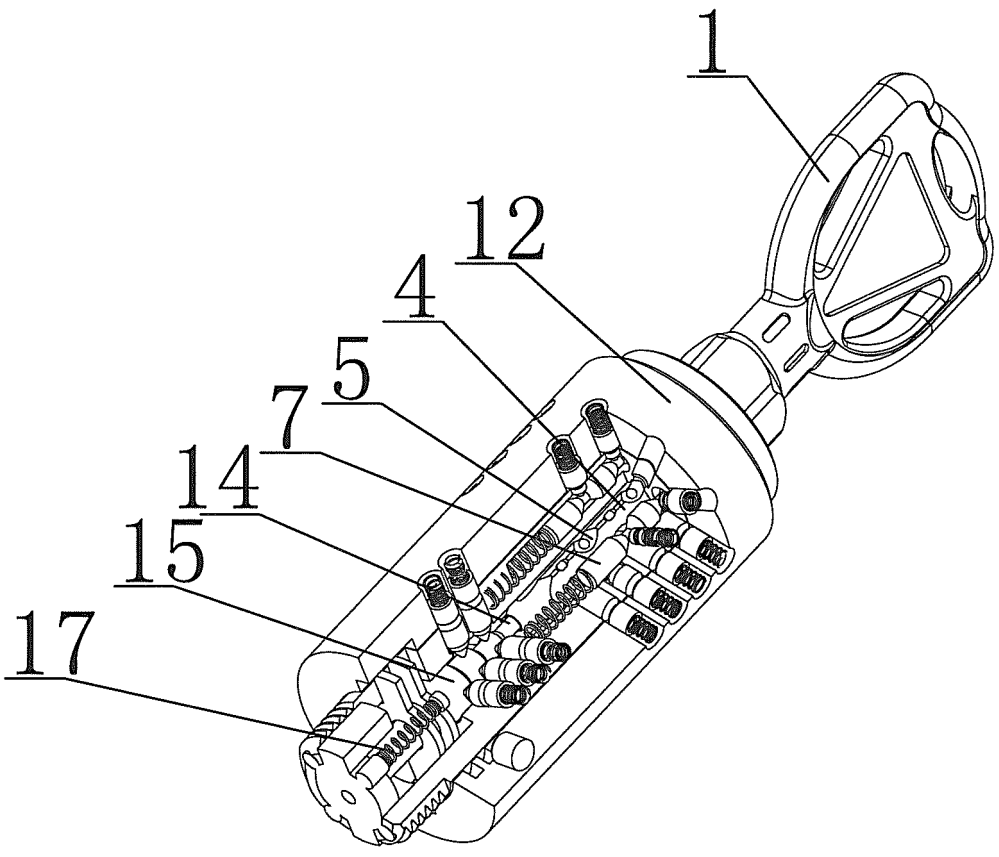


FIG.5

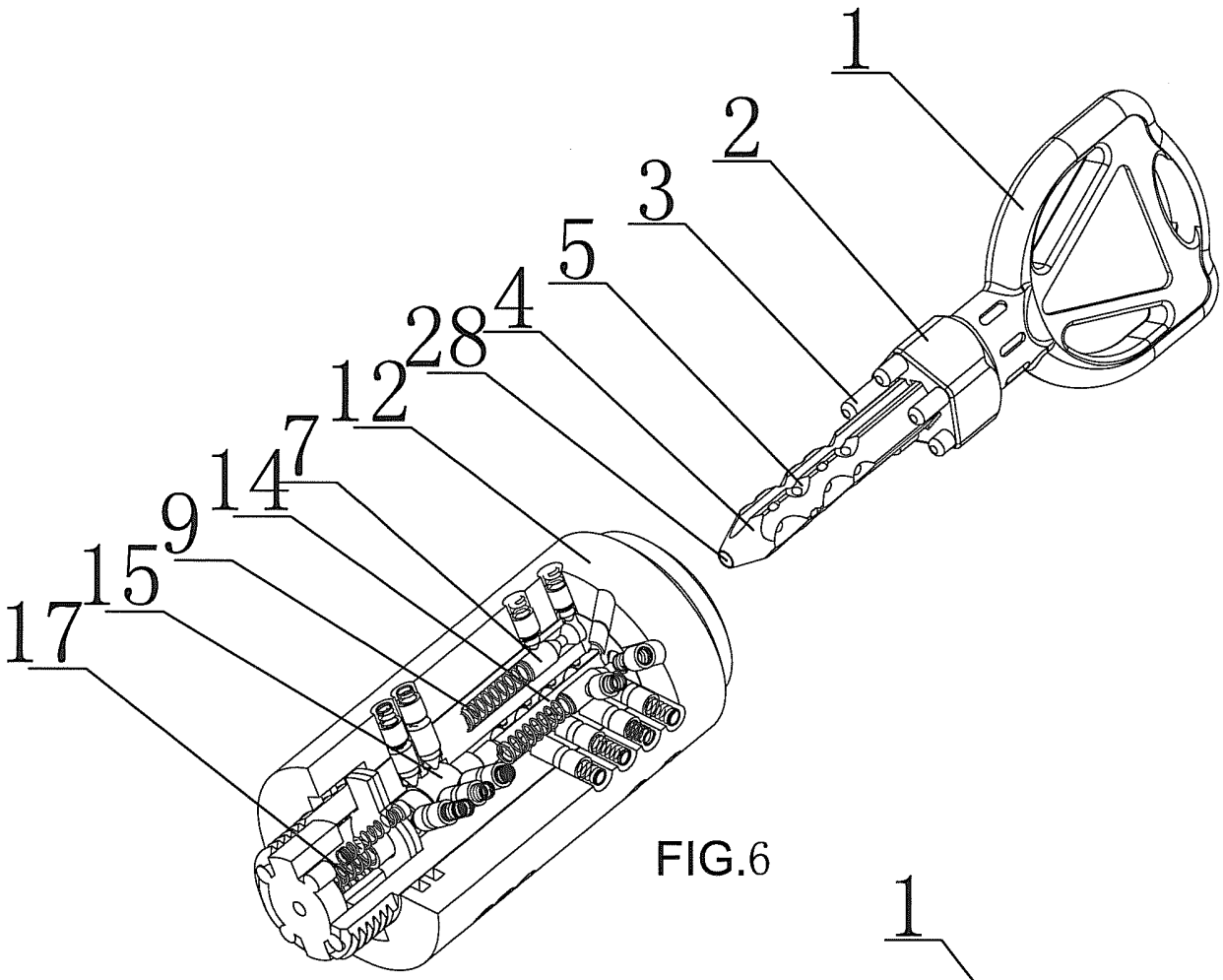


FIG.6

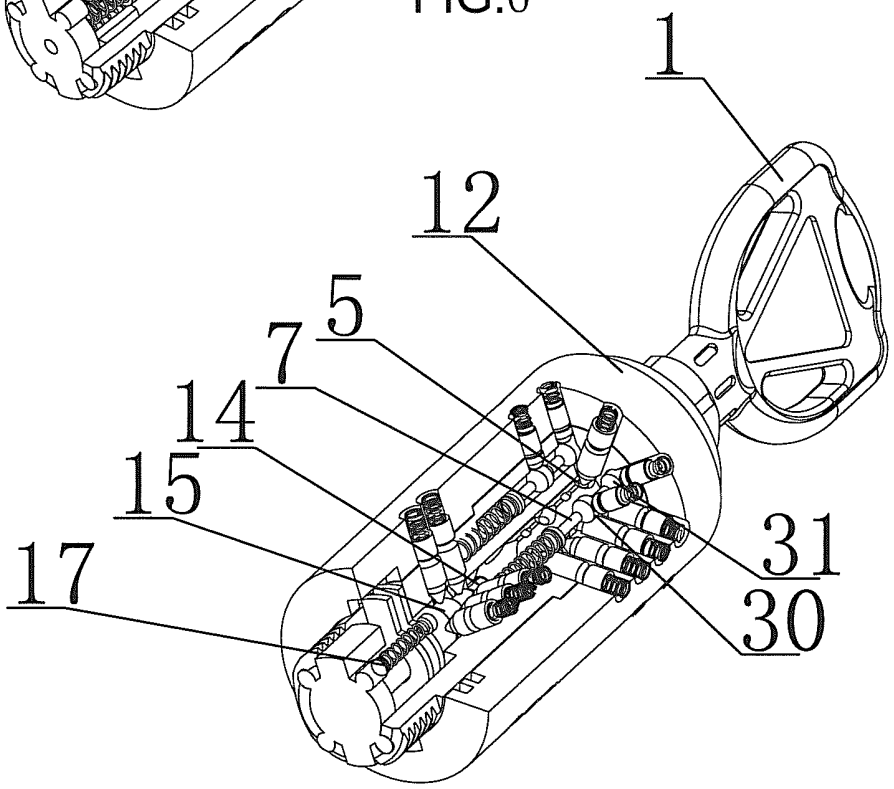


FIG.7

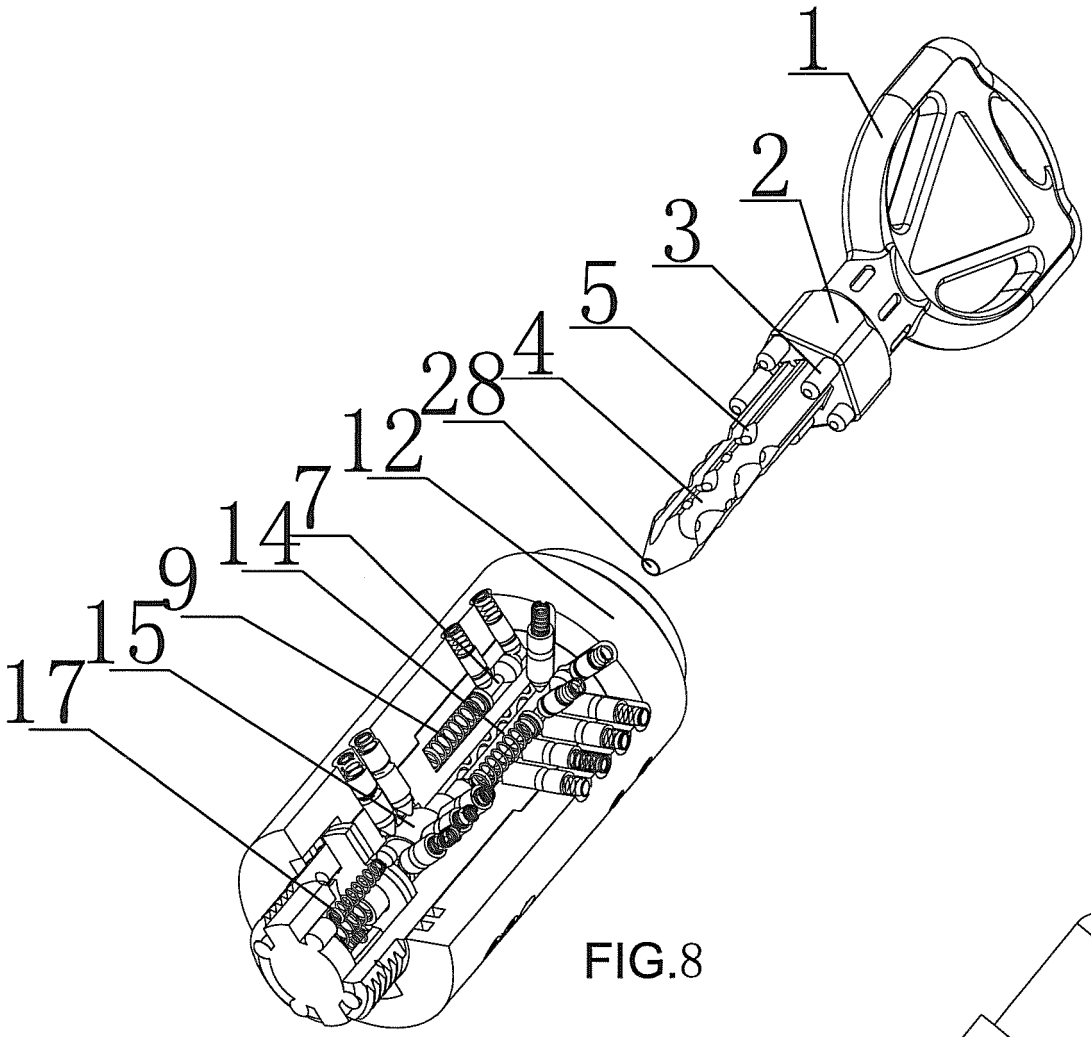


FIG.8

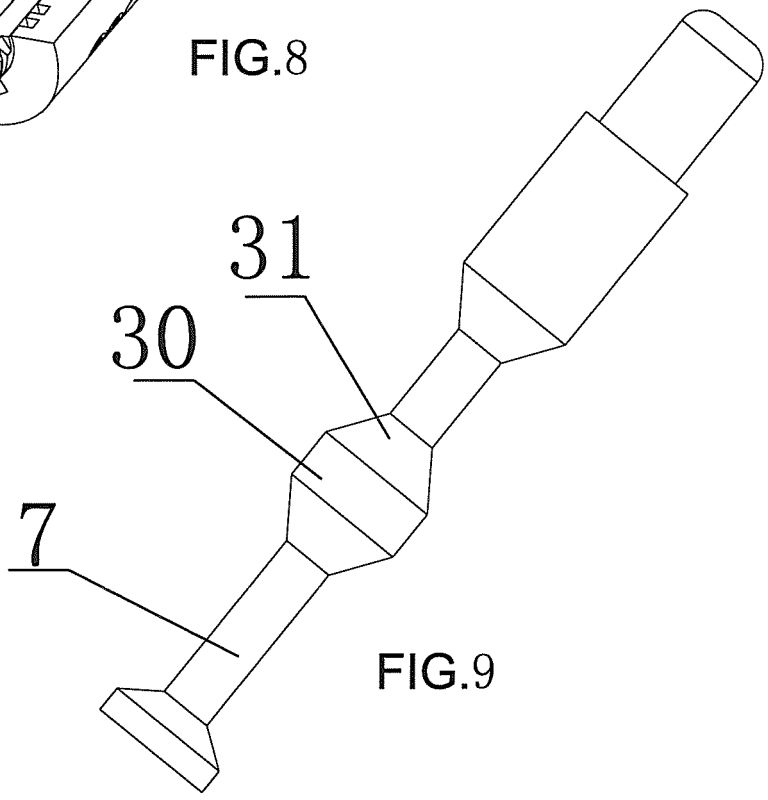


FIG.9

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