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(54) Title: CYLINDER LOCK AND ASSOCIATED KEY AND KEY BLANK THEREFOR

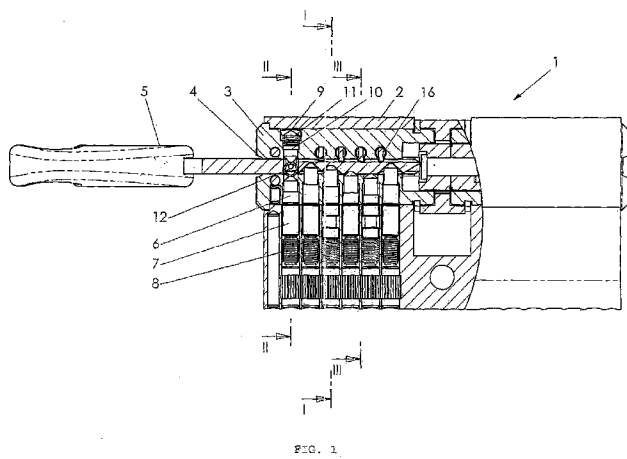


FIG. 1

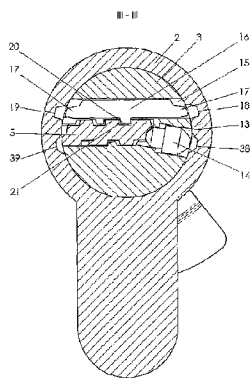
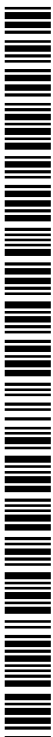


FIG. 2

(57) Abstract: Cylinder lock with associated key and key blank therefor, used in configuration of locking systems with increased security for living houses, public buildings, for cabinets, safes, padlocks etc. The cylinder lock comprises housing (2), core (3). Coaxial bores (35, 36) are formed with axially disposed respectively basic core pins (6) and housing pins (7). Disposed is additional pin assembly (9) in the core (3) to push built-in movable element (12) into the key, thus to engage with its opposite basic core pin (6). Core recesses (15) are formed in the core (3). Profiled slides (16) are disposed having side protrusions (17) to block in corresponding housing recesses (18, 19), as well one protrusion (20) protrudes in the key channel (4) to engage one wave groove (21) on the key (5). Side core bores (13) are formed in the core (3) sidelong key channel (4), side core pins (14) are disposed in the said side core bores (13) to engage with the side coding combination (33) made on the side crimped surfaces (26) of the relevant key (5).



WO 2009/012541 A1



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CYLINDER LOCK AND ASSOCIATED KEY AND KEY BLANK THEREFOR

TECHNICAL FIELD

The invention relates to a cylinder lock and associated key and key blank for producing the
5 key, which can be implemented for the configuration of locking systems with an increased security for living houses, public etc. buildings, as well for cabinets, safes, padlocks etc.

BACKGROUND ART

Cylinder lock and associated key and key blank therefore is known BG 61702 B1. The
10 known solution consists of a cylinder core rotatable mounted in a housing, having a key channel for the insertion of the key.

There is respectively formed a plurality of coaxial bores one-sided the key channel in the housing and in the core, wherein are axially placed a plurality of housing and core pins loaded by springs and being axially movable. On the other side of the key channel in the
15 core there is opposite and coaxial to the plurality of housing and core pins placed an additional pin assembly, consisting of a pin loaded by a spring and intended to axially push out of the key at least one built-in movable displaceable element, purposely to engage the said movable displaceable element with one of the core pins.

The respective key blank consists of an elongate shaft portion disposed along the general
20 axis and determining first and second opposite flat surfaces jointed by cramped side surfaces. On the first wide surface of the key blank there are formed longitudinal guide channels along the first guide channel axis, which is parallel to the general axis. In the elongate shaft portion there is built-in at least one first movable displaceable element along first movable axis, which is perpendicular to the first guide channel axis, and located from
25 the first flat surface till the second flat surface being axially shifted along the first movable axis, from second flat surface inwards to the first flat surface, so that when at least one first movable displaceable element is hidden with respect to the second flat surface, it is outwardly protruded of the first flat surface. On the second wide surface of the key blank there are also formed guide channels along second guide channel axis, which is parallel to
30 the general axis and to the first guide channel axis. In the elongate shaft portion there is built-in at least one second movable displaceable element along second movable axis,

which is perpendicular to the second guide channel axis and parallel to the first movable axis. Said movable element is also axially shifted along the second movable axis, from first flat surface inwards to the second flat surface, so that when at least one second movable displaceable element is hidden with respect to the first flat surface, it is outwardly protruded of the second flat surface. A key relevant to the cylinder lock is produced from the key blank, as along first and second channel guide axis, on the both surfaces, there are provided cuts in a straight line defining a relevant key combination, including a movable elements being selectable configurable to provide a part of the key combination.

Said cylinder lock has a disadvantage – it is vulnerable to burglary actions, since all decoding key elements being protruded in the key channel are loaded under springs, thus allows their quick overcoming and lock's cam approach, and respectively the lock opening.

SUMMARY OF THE INVENTION

The present invention seeks to provide a cylinder lock with associated key and a key blank to produce a key with an increased security, that cylinder lock also has an optimum simplified construction, which is technologically effective in the same time, providing an increased number of the coding possibilities and a possibility for control over the key blanks and unauthorized key duplicating.

There is thus provided a cylinder lock, consisting of housing and a core rotatably mounted therein, having a key channel for the key insertion. One-sided the key channel, respectively in the core and in the housing, there are formed coaxial bores, wherein are axially placed respectively basic core pins and housing pins being loaded by springs. In the core, on the other side of the key channel, opposite and coaxial to the basic core pins, in respective bore there is disposed at least one additional pin assembly, which includes a pushing pin loaded by a spring and being protruded in the key channel.

In accordance with the invention, in the core after the additional pin assembly, in planes perpendicular to the general axis and parallel to the plane passing through the additional pin assembly, there are formed core recesses wherein profiled slides are disposed, moreover the pushing pin and its respective opposite core pin are made of a hardened metal.

In accordance with the invention, the profiled slides are “isosceles trapezium” shaped with identical side protrusions provided to block into respectively formed housing recesses in the housing, as well as at least one protrusion with selective location on the big trapezium base protrudes in the key channel. Besides, there are formed side core bores radially in the core, sidelong the key channel, in planes being joined in a sharp angle with the plane of the key channel, side core pins being disposed in the said side core bores, and two longitudinal channels inside the housing are formed with a configuration corresponding to the side core pins configuration.

The key blank to produce a key associated to the cylinder lock, comprises a grip portion, an elongate shaft portion disposed along the general axis and determining first and second opposite flat wide surfaces jointed by cramped side surfaces, as longitudinal guide channels are formed on the first wide surface one-sided and parallel to the general axis, whilst the same channels on the second wide surface are symmetrically formed on the other side of the general axis and parallel to the same general axis, as there are movable elements inserted in the elongate shaft portion.

In accordance with the invention, in the elongate shaft portion of the key blank, right next to the grip portion at least one pair of rectangular pass holes is formed, which holes are disposed symmetrically on both sides of the general axis which is parallel to the longitudinal pass holes axes, so that in each one there are mounted movable elements on a general key pin, which is fixed in a transverse key hole of the key blank passing through the middle of the pair of rectangular pass holes crosswise the general axis, and the movable elements have barrel shaped body with a center hole through which passes over the general key pin. The movable elements perform free rotation around the general key pin, and their maximum outer diameter is bigger than the thickness (d) of the key blank, but smaller than $1,5d$, whilst their minimum inside diameter is bigger than the diameter of the general key pin. Besides, in accordance with the invention, additionally on the first and second opposite wide surfaces of the key blank, opposite the longitudinal guide channels, but on the other side of the general axis, there is formed lengthwise at least one relatively deep wave groove, outwardly opened and extended from direction of the key blank tip, thus a key can be produced from said key blank, which key can be used in anyone of both positions, turned at 180° in relation to each other.

The key associated to the cylinder lock, produced from the key blank comprises a grip portion, an elongate shaft portion disposed along the general axis and determining first and second opposite flat wide surfaces jointed by cramped side surfaces, as longitudinal guide channels are formed on the first wide surface, one-sided and parallel to the general axis, whilst the same channels on the second wide surface are symmetrically formed on the other side of the general axis and parallel to the same general axis. Between said guide channels in both surfaces in a straight line there is formed basic dimple combination, as there are movable elements inserted in the elongate shaft portion.

In accordance with the invention, in the elongate shaft portion of the key right next to the grip portion at least one pair of rectangular pass holes is formed, which holes are disposed symmetrically on both sides of the general axis which is parallel to the longitudinal axes of the pass holes, so that in each pass hole there are mounted movable elements on a general key pin fixed in the key and placed in a transverse key hole passing through the middle of the pair of rectangular pass holes crosswise the general axis, and the movable elements are barrel shaped with a center hole through which passes over the general key pin. The movable elements perform free rotation around the general key pin, and their maximum outer diameter is bigger than the thickness (d) of the key, but smaller than $1,5d$, whilst their minimum inside diameter is bigger than the diameter of the general key pin. Moreover, in accordance with the invention, on the first and second opposite wide flat surfaces of the key, opposite the longitudinal guide channels, but on the other side of the general axis, there is formed lengthwise at least one relatively deep wave groove, outwardly opened and extended from direction of the key tip, and a side dimple combination is formed on the both opposite cramped side surfaces, so the key can be used in anyone of both positions, turned at 180° in relation to each other.

In accordance with the invention, a cylinder lock in combination with associated key inserted in the key channel provides that at least one built-in movable element into the key is found to be centered between at least one additional pin assembly and its opposite basic core pin, whereat each profiled slide is found to be engaged by means of its protrusion in a predetermined position in at least one wave groove formed on the key, as all profiled slides are in the core together with all basic and side core pins.

The cylinder lock, in accordance with the invention is applicable to door locks implemented like double, half or knob cylinder, to padlocks and others, moreover it may be fulfilled with each required configuration.

5 The advantage of the cylinder lock with associated key and key blank therefore, in accordance with the invention consists in the increased number of the coding possibilities, which are four and are realized in the key coding, respectively by means of the basic and the side dimple combinations, the built-in movable elements into the key as well, and the wave groove on the key, all these in order to obtain the locking coding combination, are selectively formed together with the respective decoding key elements, the last are
10 disposed rationally in the cylinder lock to make its construction maximum simplified but techno-logically effective in the same time.

Another advantage concerns the additional pin assembly and its opposite basic core pin used to decode the built-in rotating elements into the key, which besides their general function have another anti-burglary function, since the additional pin assembly is right next
15 to the key channel hole, and its pushing pin and opposite basic core pin are made of a hardened metal. In the same time, the profiled slides intended to decode one key combination being set in the selectively formed wave groove on the key, protrude in the key channel, without spring pressure, and move freely in the core, thus additionally reduces the risk of an unauthorized access to the cam of the cylinder lock by means of
20 burglary tools. Additionally, the key blank provided for a key associated to the cylinder lock, can not be executed by means of the widespread conventional locksmiths tools, thus to ensure a control over the key blanks, respectively over the key duplicating.

DESCRIPTION OF THE FIGURES IN THE DRAWINGS

25 The present invention will be understood and appreciated more fully from the following enclosed drawings:

Fig. 1 illustrates a cross-section of the cylinder lock with associated key inserted in the key channel.

30 Figs. 2, 3 and 4 are cuts in typical sections of the cylinder lock with associated key inserted in the key channel.

Fig. 5 represents a perspective illustration of the key blank for producing the associated key.

Figs. 6A and 6B illustrate the key.

Fig. 7 illustrates the cross-section of the key, respectively the key blank, showing the
5 movable inserted elements construction and assembly.

DETAILED DESCRIPTION OF THE EMBODIMENTS

10 In accordance with the examples given one embodiment of the cylinder lock with associated key and key blank for producing the key is shown in Figs. 1, 2, 3, 4, 5, 6A, 6B and 7

The cylinder lock 1 comprises a housing 2 and a core 3 rotatably mounted therein, said core 3 has a key channel 4 for the key 5 insertion. There are formed coaxial bores 35 and
15 36 one-sided the key channel 4, respectively in the core 3 and in the housing 2, wherein are axially disposed respectively basic core pins 6 and housing pins 7 loaded by springs 8. The basic core pins 6 are intended to engage with a basic dimple combination 32, realized as dimples on the wide flat opposite surfaces 24 and 25 on the respective key 5 of the cylinder lock 1.

20 In this specific embodiment the number of the basic core pins 6 is six, but in other embodiments the basic core pins 6 may be more or less than six.

In the core 3, on the other key channel 4 side, there is formed bore 37, disposed opposite and coaxially to one pair of bores 35 and 36, as an additional pin assembly 9 is disposed in said bore 37, which includes pushing pin 10 loaded by a spring 11 and being protruded in
25 the key channel 4. The pushing pin 10 and its respective opposite basic core pin 6 are made of a hardened metal.

In accordance with the invention, there is provided also a variant whereby the bores 37, respectively the additional pin assemblies 9 are more than one.

Besides, there are formed side core bores 13 radially in the core 3, sidelong the key
30 channel 4, in planes being joined in a sharp angle with the plane of the key channel 4, as side core pins 14 are disposed in the said side core bores 13. Inside the housing 2 there are

provided two longitudinal channels 38 and 39 with a configuration corresponding to the side core pins 14 configuration, said longitudinal channels 38 and 39 are meant to block the side core pins 14 if an incorrect key is being inserted outside or inside the cylinder lock 1. In this specific embodiment the number of the side core pins 14 is five, but in other
5 embodiments this number may be more or less than five.

In the core 3, after the additional pin assembly 9, in planes perpendicular to the general axis and parallel to the plane transverse through the axis of the additional pin assembly 9, a core recesses 15 are formed, wherein a profiled slides 16 are disposed.

In this preferable embodiment the number of the profiled slides 16 is four, but in other
10 embodiments the profiled slides 16 may be more or less than four.

The said profiled slides 16 are "isosceles trapezium" shaped with identical side protrusions 17 to stop in corresponding housing recesses 18 and 19 being made lengthwise in the housing 2, also one protrusion 20 with a selective location on the big trapezium base protrudes in the key channel 4.

In this specific embodiment the profiled slides 16 have only one protrusion 20, as in the
15 present example the wave groove 21 on the key 5 which engages the said protrusion 20, is also one. In other embodiments there may have more than one wave groove 21 and respectively more than one protrusion 20 of the slides 16.

Respectively, the key blank 22 to produce a key 5 comprises a grip portion 34, an elongate
20 shaft portion 23 disposed along the general axis and determining first 24 and second 25 opposite flat surfaces, jointed by cramped side surfaces 26, as longitudinal guide channels 27 and 27a are formed on the first wide surface 24 one-sided and parallel to the general axis, whilst the same channels 27 and 27a on the second wide surface 25 are symmetrically formed on the other side of the general axis and parallel to the same general axis. In the
25 elongate shaft portion 23 of the key blank, right next to the grip portion 34 one pair of rectangular pass holes 28 is formed, disposed symmetrically on both sides of the general axis which is parallel to the longitudinal axes of the pass holes 28. In each one of the holes 28 there are mounted movable elements 12 on a general key pin 29, said general key pin 29 is fixed in the key blank 22 positioned in a transverse key hole 30 therein, which passes
30 through the pair of rectangular pass holes 28 crosswise the general axis.

In this specific embodiment there is provided one pair of rectangular pass holes 28 on the key blank 22, but in other embodiments there may have more than one pair of rectangular pass holes 28 on the key blank 22.

5 The movable elements 12 have barrel shaped body with a central hole 31 through which passes over the general key pin 29. Said movable elements 12 perform free rotation around the general key pin 29 and their maximum outer diameter is bigger than the thickness (d) of the key blank 22, but smaller than $1,5d$, whilst their minimum inside diameter is bigger than the diameter of the general key pin 29.

10 Additionally, on the first 24 and second 25 opposite wide flat surfaces of the key blank 22, opposite the longitudinal guide channels 27 and 27a, but on the other side of the general axis there is formed lengthwise a relatively deep wave groove 21, outwardly opened and extended from direction of the key blank 22 tip, thus a key 5 can be produced from said key blank 22, which key 5 can be used in anyone of both positions, turned at 180° in relation to each other.

15 The respective key 5 produced of the key blank 22, comprises a grip portion 34, an elongate shaft portion 23, disposed along the general axis and determining first 24 and second 25 opposite flat wide surfaces jointed by cramped side surfaces 26, as longitudinal guide channels 27 and 27a are formed on the first wide surface 24 one-sided and parallel to the general axis, whilst the same channels 27 and 27a on the second wide surface 25 are
20 symmetrically formed on the other side of the general axis and parallel to the same general axis. Between said guide channels 27 and 27a, in both surfaces in a straight line there is formed basic dimple combination 32, and a side dimple combination 33 is formed on both cramped side surfaces 26. In the elongate shaft portion 23 of the key 5, right next to the grip portion 34 one pair of rectangular pass holes 28 is formed, disposed symmetrically on
25 both sides of the general axis which is parallel to the longitudinal axes of the pass holes 28. In each one of the holes 28 there are mounted movable elements 12 on a general key pin 29, said general key pin 29 is fixed in the key 5 positioned in a transverse key hole 30 therein, which passes through the pair of rectangular pass holes 28 crosswise the general axis.

In this specific embodiment there is provided one pair of rectangular pass holes 28 on the key 5, but in other embodiments there may have more than one pair of rectangular pass holes 28.

The movable elements 12 have barrel shaped body with a central hole 31 through which passes over the general key pin 29. Said movable elements 12 perform free rotation around the general key pin 29 and their maximum outer diameter is bigger than the thickness d of the key 5, but smaller than $1,5d$, whilst their minimum inside diameter is bigger than the diameter of the general key pin 29. Besides, on the first 24 and second 25 opposite wide flat surfaces of the key 5, opposite the longitudinal guide channels 27 and 27a, but on the other side of the general axis there is formed lengthwise a relatively deep wave groove 21, outwardly opened and extended from direction of the key 5 tip, thus the key 5 can be used in anyone of both positions, turned at 180° in relation to each other.

When a cylinder lock 1 is in combination with associated key 5 inserted in the key channel 4, one of the built-in movable elements 12 into the key 5 is found to be centered between the additional pin assembly 9 and its opposite basic core pin 6, whereat each profiled slide 16 is found to be engaged by means of its protrusion 20 in a predetermined position in the wave groove 21 formed on the key 5, as all profiled slides 16 are in the core 3 together with all basic core pins 6 and all side core pins 14.

20 IMPLEMENTATION OF THE INVENTION

In accordance with the invention the cylinder lock using an associated key produced of the relevant key blank, operates as follows:

With the insertion of the associated key 5 into the key channel 4 of the cylinder lock 1, according to figs. 1, 2, 3, 4, 5, 6A, 6B and 7, the basic core pins 6, being engaged in the dimples of the basic dimple combination 32 on first 24 or second 25 wide flat surface of the key 5, completely fall into the core 3, as a shear line 26 forms between contacting surfaces of both pin groups – basic core pins 6 and housing pins 7, thus the core 3 may rotate itself by correct decoding of the rest key combinations set on the key 5. However, if the inserted key 5 doesn't associate to the cylinder lock 1, the shear line 26 becomes disturbed due to an incorrect basic dimple combination 32 on the key 5, and even all rest key combinations were correctly decoded, the core 3 rotation, respectively unlocking is

impossible. In the same time with key 5 insertion in the key channel 4 the side core pins 14 engage in the dimples of one of the side dimple combinations 33 provided on the side cramped opposite surfaces 26 of the key 5, so the side core pins 14 completely fall into the core 3 and make its rotation possible if the rest key combinations were also correctly decoded. However, if the side dimple combination 33 on the key 5 is incorrect, the relevant side core pins 14 fall into the longitudinal channels 38 or 39 in the housing 2, depending on how the key 5 is inserted in the cylinder lock 1— outside or inside, and block the core 2 making its rotation impossible even all rest key combinations on key 5 were correctly decoded. With insertion of an incorrect key outside the cylinder lock 1, the pins 14 block into a channel 38 and with insertion of an incorrect key inside the cylinder lock 1, the pins 14 block into a channel 39. In the same time, immediately with insertion of the key 5 in the key channel 4, the profiled slides 16 by means of their protrusion 20 engage cones-cutively with the wave groove 21 formed on the key 5, sliding themselves and being guide by the wave groove 21, till the full insertion of the key 5 in cylinder lock 1 when said profiled slides 16 come into a predetermined position in the wave groove 21, completely falling into the core 3, thus allows its rotation if the rest key combinations were correctly decoded too. However, if the formed wave groove 21 on the key 5 is incorrect, the relevant profiled slides 16 by means of their side left or right protrusion 17 fall respectively in the left housing recess 19, or in the right housing recess 18 in the housing 2, thereby said profiled slides 16 prevent the core 3 rotation, even all rest key combinations on key 5 were correctly decoded. Besides, when the key 5 is fully inserted in the cylinder lock 1, one of the built-in movable elements 12 into the key 5 is found to be centered between the additional pin assembly 9 and its opposite basic core pin 6, whereat the pushing pin 10 loaded by the spring 11 pushes out the movable insert element 12 till position when the end of its respective opposite basic core pin 6 aligns with the shear line 26, thus to enable the core 3 rotation in the housing 2, if all rest key combinations were correctly decoded. However, if the built-in movable element 12 into the key 5 are missing or their dimensions are incorrect and don't correspond to their decoding elements in the cylinder lock 1, then the respective opposite basic core pin 6 has been disturbed the shear line 26, respectively the core 3 has been blocked, and cylinder lock 1 can not be unlocked, even all rest key combinations were correctly decoded.

CLAIMS

1. A cylinder lock (1) comprising a housing (2) and a core (3) rotatably mounted therein, having a key channel (4) for a key (5) insertion, coaxial bores (35) and (36) are formed on one side of the key channel (4), respectively in the core (3) and in the housing (2), where are axially disposed respectively basic core pins (6) and housing pins (7) loaded by springs (8), in said core (3) at least one additional pin assembly (9) is disposed on other side of the key channel (4), opposite and coaxially to the basic core pins (6), in a relevant bore (37), said additional pin assembly (9) includes a pushing pin (10) protrudes in the key channel (4) loaded by a spring (11), characterized in that core recesses (15) are formed in the core (3), after the additional pin assembly (9) in planes being perpendicular to the general axis and parallel to the plane passing through the axis of the additional pin assembly (9), profiled slides (16) are disposed in the formed core recesses (15), said profiled slides (16) are "isosceles trapezium" shaped with identical side protrusions (17) to stop in corresponding housing recesses (18) and (19) being made lengthwise in the housing (2), as at least one protrusion (20) with a selective location on the big trapezium base protrudes in the key channel (4), additionally there are formed side core bores (13) radially in the core (3), sidelong the key channel (4), in planes being joined in a sharp angle with the plane of the key channel (4), respectively side core pins (14) being disposed in the said side core bores (13), and two longitudinal channels (38) and (39) are formed inside the housing (2) with a configuration corresponding to the side core pins (14) configuration.
2. A cylinder lock, according to claim 1, characterized in that the pushing pin (10) of the additional pin assembly (9) and its opposite basic core pin (6) are made of a hardened metal.
3. A key blank (22) for a key (5), associated with cylinder lock (1) comprising a grip portion (34), an elongate shaft portion (23) disposed along the general axis and determining first (24) and second (25) opposite flat wide surfaces jointed by cramped side surfaces (26), as longitudinal guide channels (27) and (27a) are formed on the

first wide surface (24) one-sided and parallel to the general axis, whilst the same channels (27) and (27a) on the second wide surface (25) are symmetrically formed on the other side of the general axis and parallel to the same general axis, as there are movable elements (12) inserted in the elongate shaft portion (23), characterized in that right next to the grip portion (34) in the elongate shaft portion (23) at least one pair of rectangular pass holes (28) is formed, said holes (28) are disposed symmetrically on both sides of the general axis which is parallel to the longitudinal pass holes (28) axes, so that in each one there are mounted movable elements (12) on a general key pin (29), additionally on the first (24) and second (25) opposite wide flat surfaces of the key blank (22), opposite the longitudinal guide channels (27) and (27a), but on the other side of the general axis there is formed lengthwise at least one relatively deep wave groove (21), outwardly open and extended from direction of the key blank (22) tip, thus a key (5) can be made from said key blank (22), which key (5) can be used in anyone of both positions, turned at 180° in relation to each other.

4. A key blank, according to claim 3, characterized in that the general key pin (29) is fixed into the key blank (22), and disposed in a transverse key hole (30) therein, which passes through the pair of rectangular pass holes (28) crosswise the general axis.
5. A key blank, according to claim 3 and claim 4, characterized in that the movable elements (12) have barrel shaped body with a central hole (31) through which passes over the general key pin (29), said movable elements (12) perform free rotation around the general key pin (29) and their maximum outer diameter is bigger than the thickness (d) of the key blank (22), but smaller than 1,5d, whilst their minimum inside diameter is bigger than the diameter of the general key pin (29).
6. A key (5) for cylinder lock (1), comprising a grip portion (34), an elongate shaft portion (23) disposed along the general axis and determining first (24) and second (25) opposite flat wide surfaces jointed by cramped side surfaces (26), as longitudinal guide channels (27) and (27a) are formed on the first wide surface (24) one-sided and parallel to the general axis, whilst the same channels (27) and (27a) on the second

wide surface (25) are symmetrically formed on the other side of the general axis and parallel to the same general axis, between said guide channels (27) and (27a) in both surfaces in a straight line there is formed basic dimple combination (32), as there are movable elements (12) inserted in the elongate shaft portion (23), characterized in that
5 right next to the grip portion (34) in the elongate shaft portion (23) at least one pair of rectangular pass holes (28) is formed, said holes (28) are disposed symmetrically on both sides of the general axis which is parallel to the longitudinal pass holes (28) axes, so that in each one there are mounted movable elements (12) on a general key pin (29), additionally on the first (24) and second (25) opposite wide surfaces of the key
10 (5), opposite the longitudinal guide channels (27) and (27a), but on the other side of the general axis there is formed lengthwise at least one relatively deep wave groove (21), outwardly open and extended from direction of the key (5) tip, and a side dimple combination (33) is formed on both cramped side surfaces (26), thus the key (5) can be used in anyone of both positions, turned at 180° in relation to each other.

15

7. A key for cylinder lock, according to claim 6, characterized in that the general key pin (29) is fixed into the key (5), and disposed in a transverse key hole (30) therein, which passes through the pair of rectangular pass holes (28) crosswise the general axis.

20

8. A key, according to claim 6 and claim 7, characterized in that the movable elements (12) have barrel shaped body with a central hole (31) through which passes over the general key pin (29), said movable elements (12) perform free rotation around the general key pin (29) and their maximum outer diameter is bigger than the thickness (d) of the key (5) and smaller than 1,5d, whilst their minimum inside diameter is bigger
25 than the diameter of the general key pin (29).

9. A combination of cylinder lock (1) and associated key (5), according claims 1, 2, 6, 7 and 8, characterized in that with a key (5) inserted in the key channel (4), at least one built-in to the key (5) movable element (12) is found to be centered between at least
30 one additional pin assembly (9) and its opposite basic core pin (6), whereat each profiled slide (16) is found to be engaged by means of its protrusion (20) in a

- 14 -

predetermined position in at least one wave groove (21) formed on the key (5), as all profiled slides (16) are in the core (3) together with all basic core pins (6) and all side core pins (14).

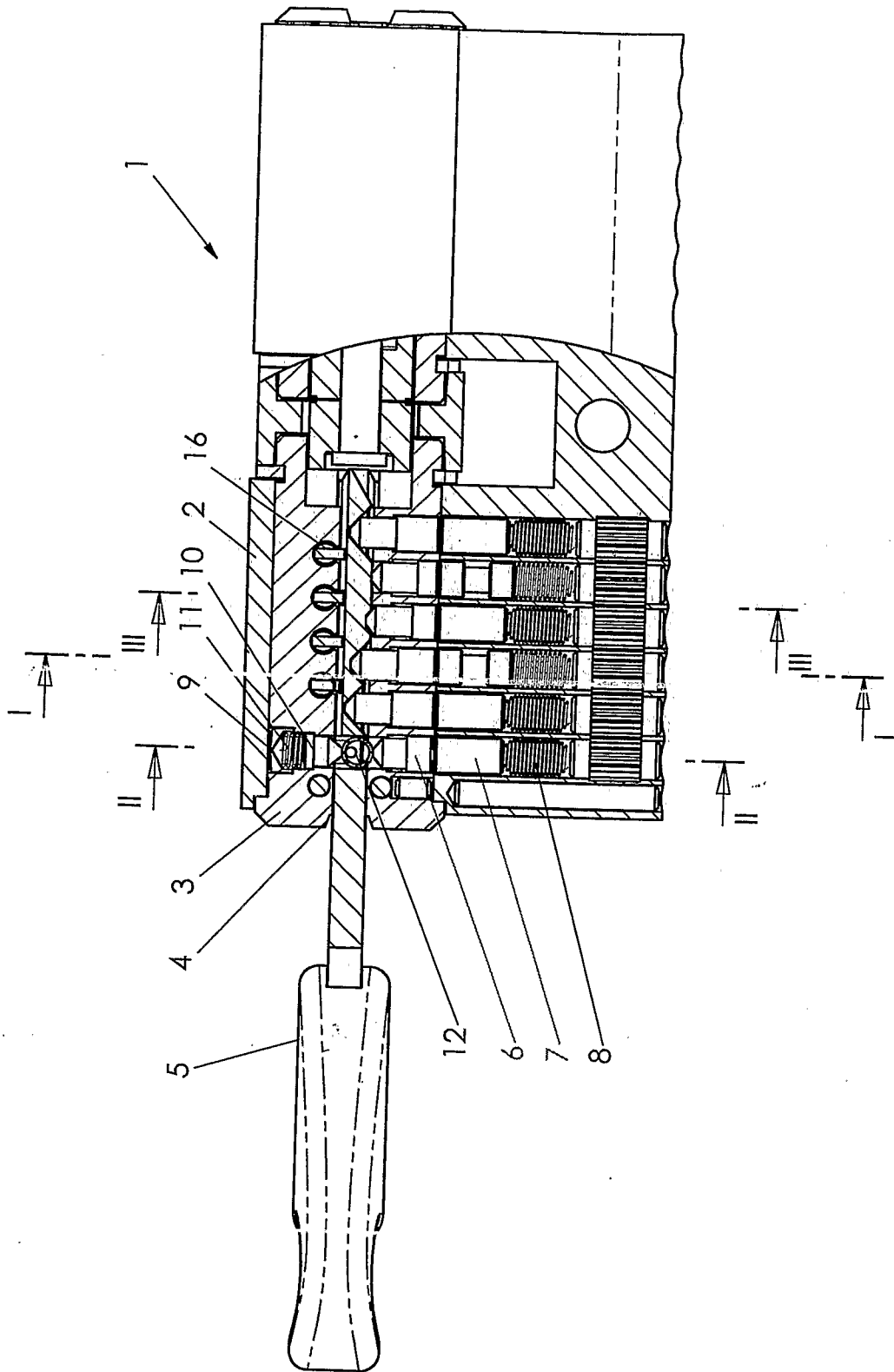


FIG. 1

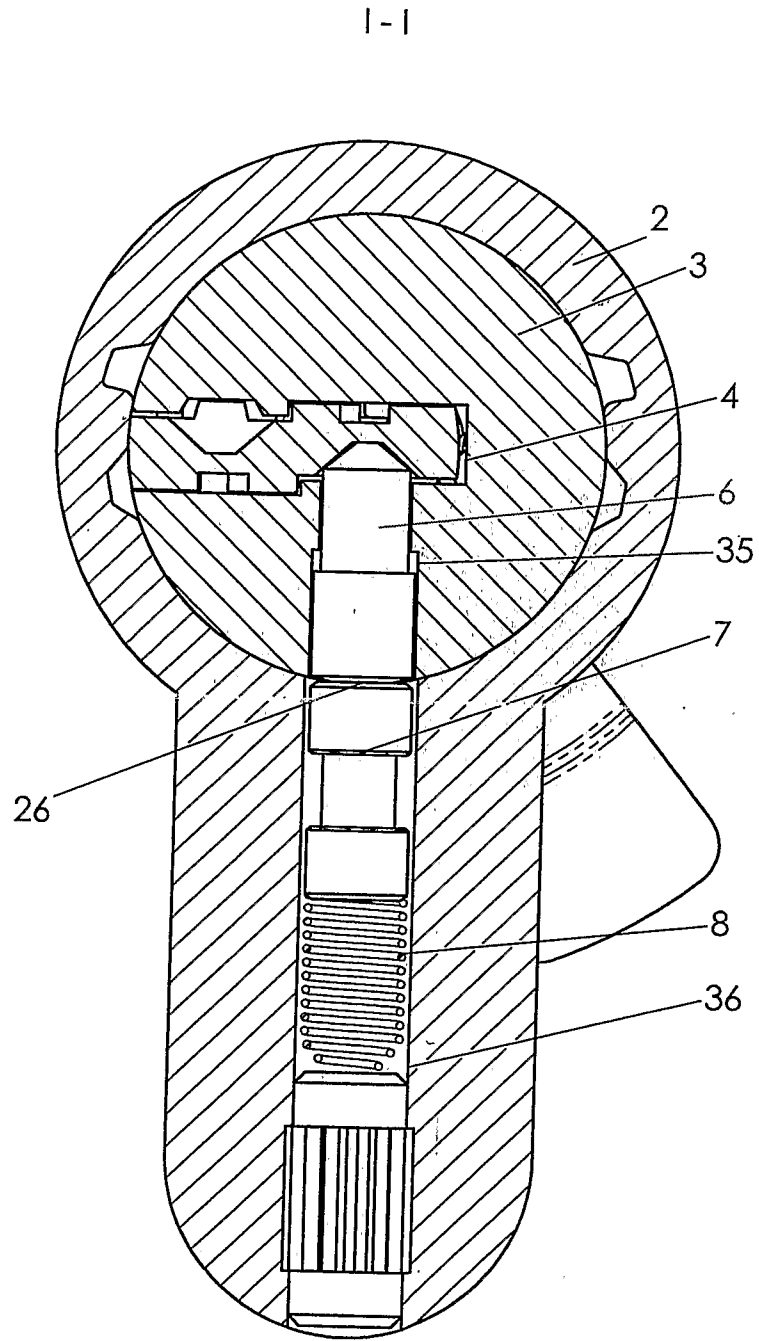


FIG. 2

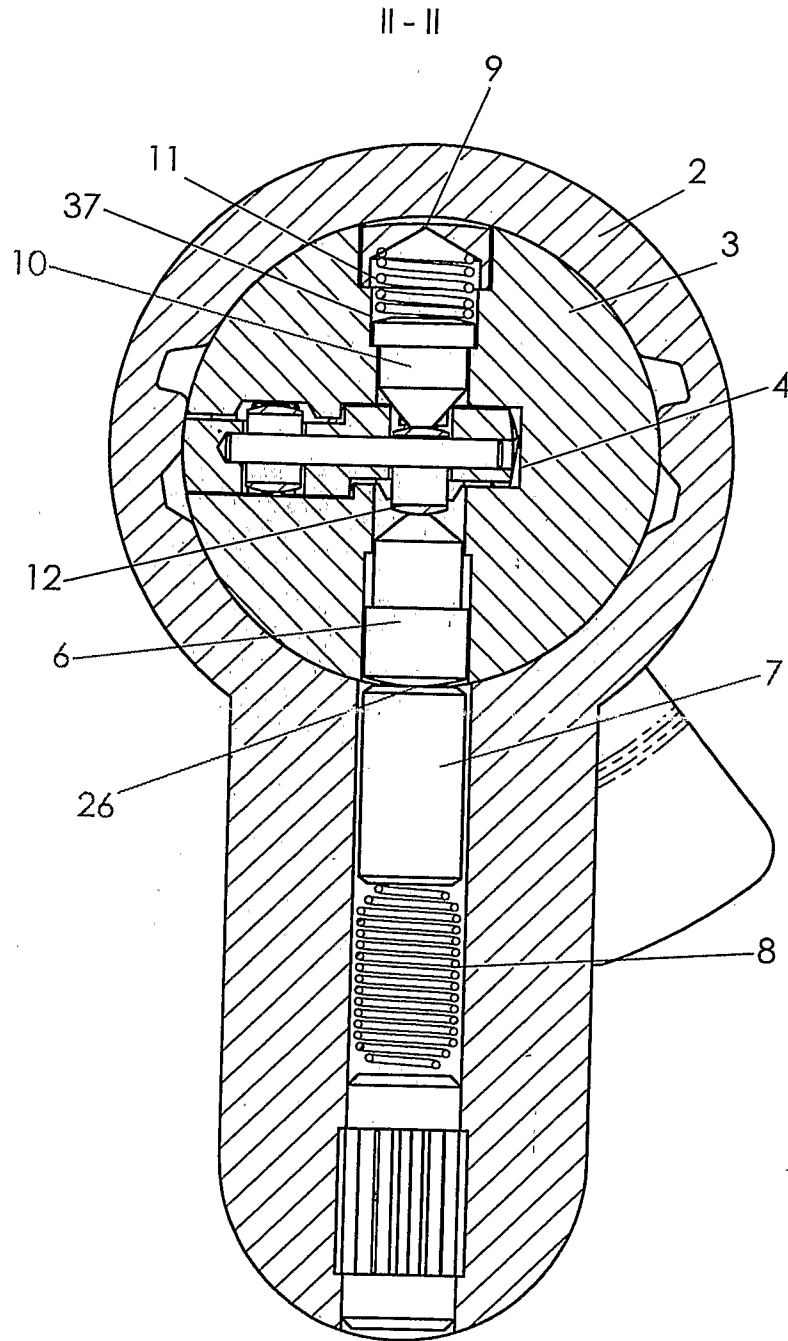


FIG. 3

III - III

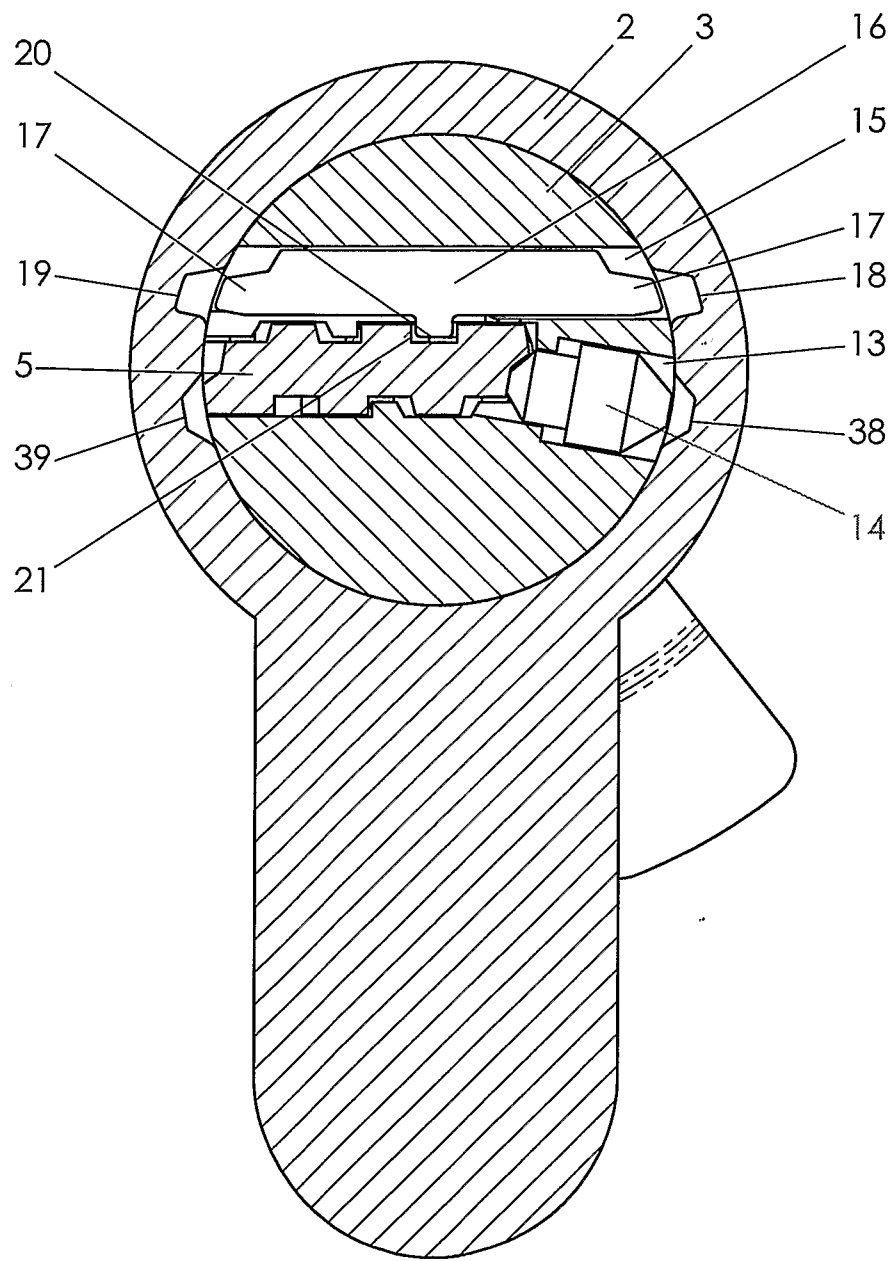


FIG. 4

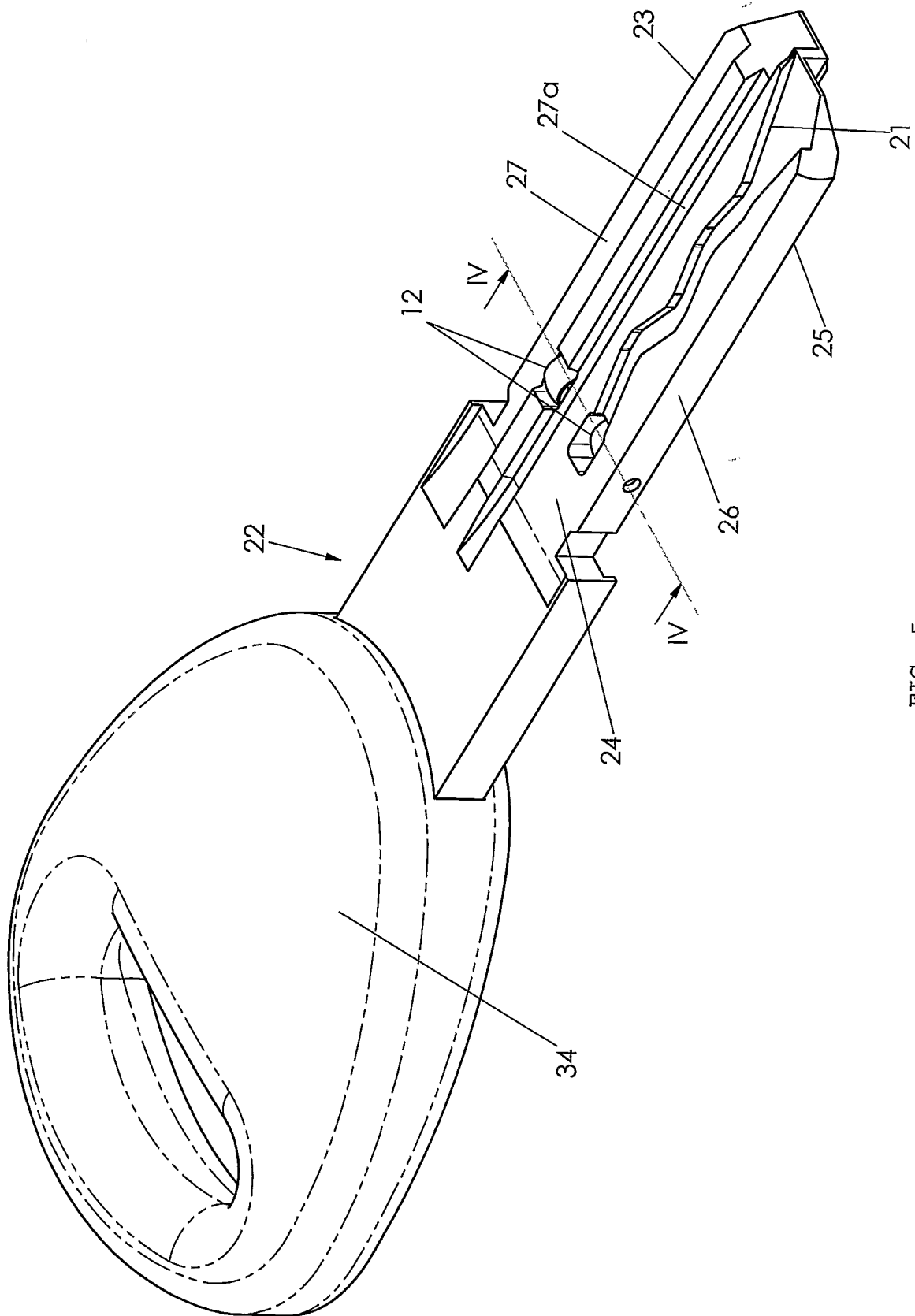


FIG. 5

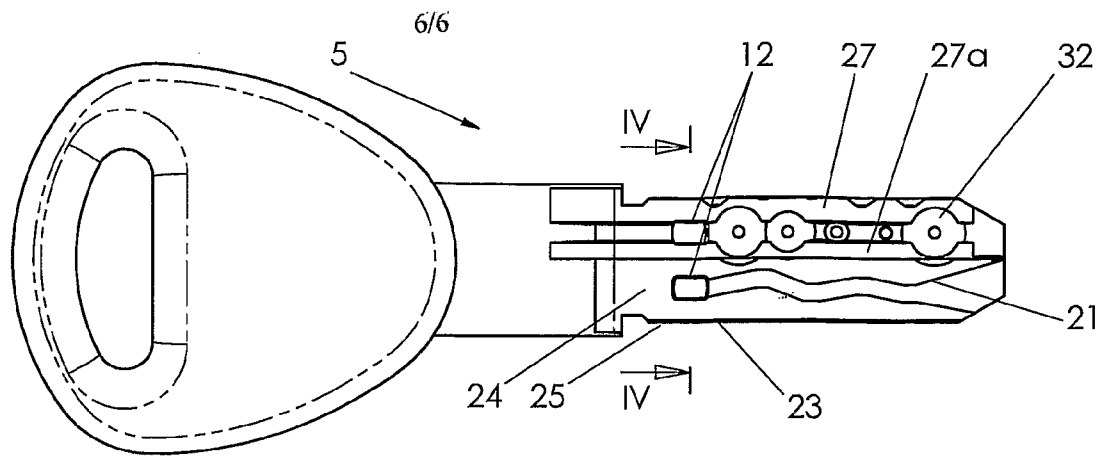


FIG. 6A

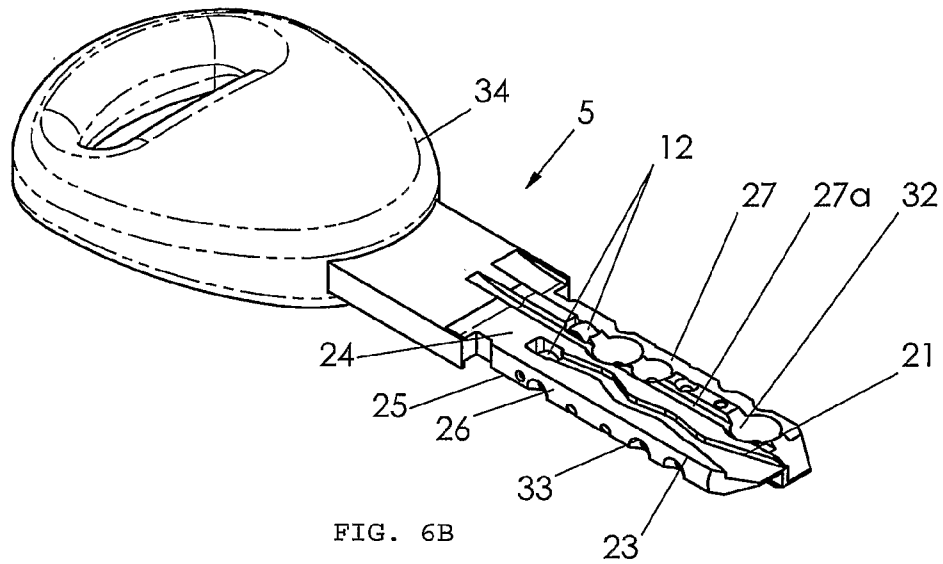


FIG. 6B

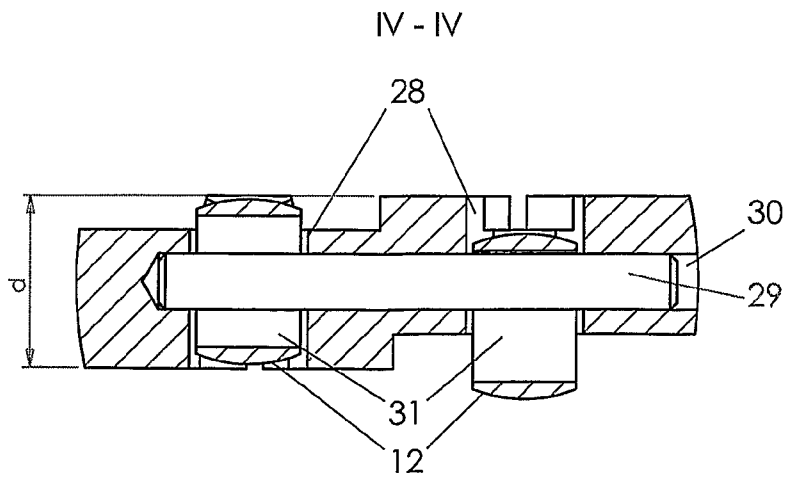


FIG. 7

INTERNATIONAL SEARCH REPORT

International application No
PCT/BG2008/000010

A. CLASSIFICATION OF SUBJECT MATTER
INV. E05B27/00 E05B35/00 E05B31/00

According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHED
Minimum documentation searched (classification system followed by classification symbols)
E05B

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practical, search terms used)
EPO-Internal

C. DOCUMENTS CONSIDERED TO BE RELEVANT

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A	FR 2 762 345 A (ETABLISSEMENTS THIRARD SA) 23 October 1998 (1998-10-23) the whole document	1-9
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Further documents are listed in the continuation of Box C. See patent family annex.

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"Z" document member of the same patent family

Date of the actual completion of the international search 17 November 2008	Date of mailing of the international search report 04/12/2008
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Name and mailing address of the ISA/ European Patent Office, P.B. 5818 Patentlaan 2 NL - 2280 HV Rijswijk Tel. (+31-70) 340-2040, Fax: (+31-70) 340-3016	Authorized officer Cruyplant, Lieve
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INTERNATIONAL SEARCH REPORT

International application No
PCT/BG2008/000010

C(Continuation). DOCUMENTS CONSIDERED TO BE RELEVANT		
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