

(19)



Europäisches Patentamt
European Patent Office
Office européen des brevets



(11)

EP 1 106 756 B1

(12)

EUROPEAN PATENT SPECIFICATION

(45) Date of publication and mention
of the grant of the patent:
07.04.2004 Bulletin 2004/15

(51) Int Cl.7: **E05B 19/00, E05B 27/00**

(21) Application number: **00126232.8**

(22) Date of filing: **01.12.2000**

(54) **Flat key and cylindrical lock**

Flachschlüssel und Zylinderschloss

Clé plate et serrure cylindrique

(84) Designated Contracting States:
**AT BE CH CY DE DK ES FI FR GB GR IE IT LI LU
MC NL PT SE TR**

(30) Priority: **10.12.1999 IT MI992561**

(43) Date of publication of application:
13.06.2001 Bulletin 2001/24

(73) Proprietor: **ISEO SERRATURE S.p.A.
25055 Pisogne (Brescia) (IT)**

(72) Inventor: **Andreoli, Gian Pietro
25040 Artogne (Brescia) (IT)**

(74) Representative: **Rapisardi, Mariacristina
Ufficio Brevetti Rapisardi S.r.l.,
Via Serbelloni, 12
20122 Milano (IT)**

(56) References cited:

EP-A- 0 899 398	WO-A-98/03754
AT-B- 396 501	DE-A- 19 522 609
FR-A- 2 736 084	GB-A- 2 161 204
US-A- 4 823 575	US-A- 5 074 136

EP 1 106 756 B1

Note: Within nine months from the publication of the mention of the grant of the European patent, any person may give notice to the European Patent Office of opposition to the European patent granted. Notice of opposition shall be filed in a written reasoned statement. It shall not be deemed to have been filed until the opposition fee has been paid. (Art. 99(1) European Patent Convention).

Description

[0001] The present invention refers to a system comprising a flat key and a cylinder lock.

[0002] As is known, flat keys, for cylindrical or cylinder locks currently available on the market, include means of engagement with one or more of the interference organs provided in the stator and the rotor of the lock in order to prevent the rotation of the latter.

[0003] Normally the interference organs are defined by a certain number of pins, some of which operate as small pistons as they are made up of a pin, a counterpin and suitable springs.

[0004] As soon as a flat key is inserted into the lock the pins move into a position which allows for the unblocking of the rotor which may therefore rotate with regards to the stator or the cylinder controlling the movement of the latch.

[0005] Normally, in flat types of keys, currently on sale, the means of engagement are defined by indentations, interacting with one or more small piston, which are for example formed under the plane defined by the lateral side of the key and which, consequently, develops below the same towards the key axle.

[0006] It shall be added that in a flat key for a cylindrical traditional type of lock the maximum thickness of the same is defined by two planes passing through the crest (s) or the surface(s) with the maximum distance from the key axle.

[0007] These planes are those from which, as mentioned above, the indentations to be found in the face(s) of the key are made.

[0008] Obviously, as can be easily perceived, the need to create locks of a remarkable resistance without excessively weakening the surface of the rotor or the stator and with an extremely high number of cipherings, implicates the creation of suitable keys with the possibility of satisfying the high number of cipherings of the lock.

[0009] The creation of a high number of cipherings implicates the execution of various modifications to the structure of the rotor and consequently a remarkable increase in the cost of the lock.

[0010] However, the more cipherings the lock has and the more incisions or crests there are, or be it height imbalances to found in the relative key, and the more the structure is weakened due to encumbrance with the keys with a limited number of cipherings.

[0011] GB-A-2 161 204, US-A-4 823 575, and EP-A-0 899 398 describe a system comprising a flat key and a cylinder lock as disclosed in precharacterising part of claim 1.

[0012] In this situation the technical task at the basis of this invention is that of rectifying the above-mentioned drawbacks of the prior art.

[0013] In this assignment an object of the present invention is that of creating a system comprising a flat key and a cylinder lock which provides a high number of ci-

pherings without any modification to the structure of the rotor and which number of cipherings, being the same allows for the creation of a lock at a lower cost.

[0014] Another object of the present invention is that of creating a system comprising a flat key and a cylinder lock which allows for a number of combinations higher than that of the flat keys and cylinder locks currently on sale of the same kind.

[0015] Furthermore another object of the present invention is that of creating a system comprising a flat key and a cylinder lock where the flat key which, with the same sizes and mechanical resistance of a traditional key, has a remarkably higher number of cipherings.

[0016] This task as well as the above-mentioned objectives are substantially achieved thanks to a system comprising a flat key and a cylinder lock according to characterising part of claim 1.

[0017] Further features and advantages of the invention will be better clear in the description of a preferred, but not exclusive, embodiment of the flat key and the cylindrical lock, illustrated as an exemplificative and not limitative example in the drawings attached, in which:

- figure 1 is a side view of a cylindrical lock according to the finding;
- figure 2 is a front view of the lock including the rotor, stator and pin according to the finding;
- figure 3 is a section view of the key according to the finding, in the presence of an elevation;
- figure 4 is a section view of the key according to the finding, in the presence of an insert;
- figure 5 is a front section view of the lock with a pin with a truncated base and key inserted, according to the finding;
- figure 6 is a front section view of the lock with a pin with a conical base and with a key inserted, according to the finding;
- figure 7 is a front section view of the lock with pin made from a single structure and a key inserted, according to the finding;
- figure 8 is a front section view of the lock with pin in a blocking position to be rotated.

[0018] With particular reference to the drawings indicated the flat key, generally indicated with the reference numeral 6, is adapted for being used in cylindrical type of locks with a rotating rotor 2 in a stator 3.

[0019] The flat key 6 has first and second means of engagement 5 and 7 which are lined up between themselves and lined up with at least a first and/or second interference organ 4 and 15, also lined up between themselves, in order to activate them so as to allow for rotation of the rotor 2 in the stator 3.

[0020] The first means of engagement is defined by crests 30 which protrude from the plane 8 defined by at least one side face of the key 6 or which coincide with the plane 8 of one of the two side faces of the key 6.

[0021] The second means of engagement 7 are, how-

ever, placed under the above-mentioned plane 8 and are defined by indentations 7, which extend towards the central axle of the key 6 included between the two side faces defined by the two planes 8, extracted from the structure of the key 6.

[0022] The key 6 has, furthermore, third means of engagement, indicated as a whole with 9, adapted for activating only at least one third interference organ, generally indicated by 13, which is lined up with the first and second interference organs 4 and 15 and cooperates with the latter to allow for the rotation of the rotor 2 within the stator 3.

[0023] The third means of engagement 9 comprises at least one elevation 9 located on the face of the key sideways in alignment with the first, the second and the third interference organs.

[0024] In one embodiment, the elevation 9 has a first surface 10 which is substantially parallel to the face 8 of the key and at least a second inclined junction surface 11 of the first surface 10 with the face 8 of the key.

[0025] The first surface 10, as indicated, only activates the third interference organ 13 to allow for rotation of the rotor 2 in the stator 3 of the lock.

[0026] The elevation 9 may extend partially or along the entire length of the key.

[0027] In a different embodiment, the elevation 9 includes at least one insert 12 with a configuration object substantially tapered, and in particular preferably of a conical configuration, adapted for engaging with the third interference organ 13 again to allow for rotation of the rotor 2 in the stator 3.

[0028] The third interference organ 13 comprises a hollow glass 19 suitably with a truncated base 23, of a substantially truncated-conical configuration.

[0029] Within the hollow glass 19, there is a mobile element 20 aimed at moving in contrast with and activated by elastic means and in particular by a spring 25.

[0030] The mobile element 20 has a lowered ring area 21 which allows for the wedging impaction of the mobile element with the edge of the glass 19, as illustrated for example in drawing 8.

[0031] Furthermore, the mobile element 20 has a shaft 22 of a predefined length which extends from the lower area 21 towards the bottom of the glass 19.

[0032] The first interference organ 4, unlike the third interference organ 13, comprises a hollow glass 19 with a conical base 24.

[0033] Even in this case, inside the glass 19 there is a mobile element 20 which is identical to the mobile element 20 of the third interference organ 13 which moves internally within the hollow cable in contrast with or activated by elastic means in particular, a spring 25.

[0034] Even in this case the mobile element 20 has a lowered ring area 21 aimed at its wedging with the edge of the glass 19 and a shaft of a predefined length 22 which extends from the lowered area 21 towards the bottom of the glass.

[0035] In other words, the first interference organ, with

regards to the third interference organ 13, is different due to its conical base 24 instead of the truncated-conical base 23 of the third interference organ 13.

[0036] The second interference organ 15 is however defined by a single structure 16, of a substantially cylindrical configuration, with its two opposing ends 17 of a substantially conical configuration.

[0037] Advantageously, the first, the second and the third interference organs are placed in dedicated seats 18, all of which are the same, extracted from the rotor 2 in order to be placed in any position whatsoever in the seats 18.

[0038] When the elevation 9, defined as seen by the insert 12 or by the surface 10 or 11, engaged with the glass 19 with a truncated base 23 of the third interference organ 13 (drawing 5), it leads to a partial lifting of the glass 19 so that the edge of the latter is partially superimposed with that of the shaped head 26 of the mobile element, in order to allow for the transfer of the latter, in contrast with or activated by the spring 25, within the glass allowing for the disengagement of the head 26 from the pocket 40 and the retraction of the mobile element in the rotor profile, therefore allowing for the rotation of the latter with regards to the stator.

[0039] When, however, the elevation 9 and, therefore the insert 12 or the wall 10 with the wall 11, engage with the glass 19 with a conical base 24, the glass will lift and abut against the shaft 22 of the mobile element.

[0040] In this case the mobile element will remain blocked between the bottom of the glass and the pocket 40 in which its head 26 is located, preventing rotation of the rotor with regards to the stator.

[0041] In particular, thanks to the presence of the elevation 9 and consequently the provision of the glass with a truncated base 23, or with a conical base 24, it is possible to increase remarkably the cipherings of the lock, obtaining a number of cipherings much higher than that achieved with traditional locks and keys.

[0042] In particular, as can be seen from drawings 5, 6 and 7, when the key is put into the lock the elevation 9 (in this case defined by the insert 12) is committed with the glass 19 allowing or not, according to the type of glass base, the rotation of the rotor 2 with regards to the stator.

[0043] We can see from drawing 2 that when the truncated base 23 of the glass 19 is not affected by the elevation 9 present on the key 6, the shaft 22 of the interference organ or pin 13 is at a distance from the bottom 23 of the glass 19 and the annular area 21 is partially external to the glass 19.

[0044] In this situation the pin 13 tends to slope with regards to its axle (as illustrated in drawing 8) and wedging itself between the stator 3 and the rotor 2 by blocking the rotation of the latter with regards to the first and not allowing for the opening of the lock.

[0045] When, however, the pin 13 engages with the elevation 9 (drawing 5), the shaft 22 is still slightly set apart from the bottom of the glass 19 and the annular

area 21 is within the glass 19.

[0046] In this position the annular area 21 of the pin can slide through the glass in contrast with or activated by the elastic means 25, thanks to the presence of the head 26 which the mobile element 20 is equipped with, therefore allowing for the rotation of the rotor 2.

[0047] Figure 6 shows the operation of the first interference organ or pin 4, when it is committed with the elevation 9 (defined by insert 12).

[0048] In this case the shaft 22 is in contact with the conical base 24 of the glass 19 and the annular area 21 is within the glass 19.

[0049] Even though the annular area 21 is within the glass 19, the wedging of the head 26 in the pockets 40 present in the stator 3 arises, as the second mobile element 20, due to the presence of the shaft 22, cannot slide inside the glass 19 and therefore blocks the rotation of the rotor 2.

[0050] If we look carefully at figure 7, when the base of the second interference organ or pin 15 is in contact with the elevation 9, the pin 15 is blocked between the elevation 9 and the grooves or pockets 40 present within the stator 3 not allowing for the rotation of said rotor 2.

[0051] When, however, the conical base of the pin 15 engages with its own indentation 7, the pin 15 is completely inside the rotor 2, allowing for rotation.

[0052] As can be understood from the above-mentioned, the positions of the pin that provoke the opening or not of the lock can be seen from the combination of the features of the key and those related to the various pins.

[0053] The invention reaches the objects proposed and achieves important and numerous advantages.

[0054] In fact, a flat key and a cylindrical lock have been invented, which allows for the achievement of a remarkably high number of cipherings without any modifications made to the thickness, width or length of the key and in particular without any modifications made to the structure of the rotor.

[0055] Furthermore, we must observe that with the same number of cipherings the key allows for the creation of a cheaper lock and therefore at the same cost a remarkably higher number of cipherings can be achieved. This number of cipherings is substantially higher than the number of cipherings achieved with current techniques.

[0056] Furthermore, the mechanical resistance of the key does not vary as the number of grooves which would weaken the key is not increased, but work is carried out beyond the plane defined, from at least one face of the key.

[0057] The invention conceived in this way is liable to various modifications and variations, all of which fall within the scope of the invention as defined in the claims.

[0058] In practice, the materials used as well as the sizes can be any whatsoever according to demands and the state of the art.

Claims

1. System comprising a flat key (6) and a cylinder lock of the kind with a rotor (2) rotating within a stator (3), said key (6) comprising at least first (5) and second (7) means of engagement lined up between themselves and lined up with at least a first and/or second (4,15) interference organ of said cylinder lock, also lined up between themselves, in order to activate them in a suitable manner to allow for the rotation of said rotor (2) within said stator (3), said first (5) means of engagement being defined by crests (30) which protrude by at least one face of said key (6) or which coincide with said face and said second (7) means of engagement being defined by indentations (7) placed below said face and extracted from the structure of said key (6), said key (6) further including at least third means (9) of engagement aimed at activating only at least one third interference organ (13), lined up with said first (4) and second (15) interference organs, and cooperating with the latter to allow for rotation of said rotor (2) within said stator (3), **characterised in that** said third means (9) of engagement comprises at least one elevation (9) placed on said key face sideways to the alignment of said first (4), second (15) and third (13) interference organs, said first (4) and respectively third (13) interference organs comprise a hollow glass (19) with a conical base (24) and respectively a substantially truncated-conical base (23), within which a mobile element (20) is placed within said hollow glass (19) in contrast with and activated by elastic means (25), said mobile element (20) having a lower ring area (21) adapted for wedging with the edge of said glass (19) and with a shaft (22) of a predefined length which extends from said lowered area (21) towards the bottom of said glass (19), and said second interference organ (15) has a body made from a single piece (16) with two opposing extremities (17) of a substantially conical configuration.
2. A system according to the previous claim, **characterised in that** said elevation (9) has a first surface (10) which is substantially parallel to the face (8) of said key (6) and at least a second inclined junction surface (11) of said surface with said face (8).
3. A system according to claim 2, **characterised in that** said first surface (10) only activates said third interference organ (13) to allow for the rotation of said rotor (2) in said stator (3).
4. A system, according to one or more of the previous claims, **characterised in that** said elevation (9) extends develops along the entire length of said key (6).

5. A system according to one or more of the previous claims, **characterised in that** said elevation (9) comprises at least one insert (12) with a substantially tapered and preferably conical protrusion adapted for engaging with said third interference organ (13). 5
6. A system according to one or more of the previous claims, **characterised in that** said elevation (9) engages with said glass (19) with a truncated base of said third interference organ (13) in a way suitable for its positioning with regards to the said mobile element (20) to allow for its displacement within said glass (19) for the rotation of said rotor (2) with regards to said stator (3). 10 15
7. A system, according to one or more of the previous claims, **characterised in that** said elevation (9) engages with said glass (19) with a conical base of said first interference organ (4) in a way suitable for its positioning with regards to the said mobile element (20) to prevent displacement of said mobile element (20) within said glass (19) due to the presence of said shaft (22) in abutment with the bottom of said glass (19) to prevent the rotation of said rotor (2) with regards to said stator (3) through the wedging of said mobile element (20) with the edge of said glass (19). 20 25

Patentansprüche

1. Ein System bestehend aus einem Flachkeil (6) und einem Zylinderschloss mit einem Drehkörper (2), der innerhalb eines Rahmens (3) rotiert, wobei besagter Keil (6) mindestens eine erste (5) und eine zweite (7) Eingriffsvorrichtungen umfasst, die untereinander ausgerichtet sind und mindestens mit einem ersten und / oder zweiten (4, 15) auch untereinander ausgerichteten Einwirkungsorgan des besagten Zylinderschlusses ausgerichtet sind, um sie unter Berücksichtigung der Rotation des besagten Drehkörpers (2) innerhalb des besagten Rahmens (3) auf geeignete Art zu aktivieren, wobei besagte erste (5) Eingriffsvorrichtungen durch Spitzen (30) definiert sind, die auf zumindest einer Oberfläche des besagten Keils (6) vorspringen, oder die sich mit besagter Oberfläche und besagter zweiter Eingriffsvorrichtung decken, die durch Einschnitte (7) definiert ist, die sich unter besagter Oberfläche befinden und aus der Struktur des besagten Keils (6) herausgearbeitet wurden, wobei besagter Keil (6) mindestens noch eine dritte (9) Eingriffsvorrichtung umfasst, die nur darauf abzielt, ein drittes Einwirkungsorgan (13) zu aktivieren, das mit den besagten ersten (4) und zweiten (15) Einwirkungsorganen ausgerichtet ist und mit letzteren zusammenwirkt, um die Rotation des besagten Drehkörpers 30 35 40 45 50 55

(2) innerhalb des besagten Rahmens (3) zu berücksichtigen, **dadurch gekennzeichnet, dass** besagte dritte (9) Eingriffsvorrichtung mindestens eine Erhebung (9) aufweist, die seitlich zur Ausrichtung der besagten ersten (4), zweiten (15) und dritten (13) Einwirkungsorgane auf besagter Keiloberfläche platziert ist, wobei besagtes erstes (4) beziehungsweise drittes (13) Einwirkungsorgan ein Hohlglas (19) mit einer kegelförmigen Grundfläche (24) beziehungsweise mit einer in hohem Maße konisch abgeschnittenen Grundfläche (23) aufweist, innerhalb von der ein bewegliches Element (20) innerhalb des besagten Hohlglases (19) im Gegensatz zu und aktiviert durch elastische Hilfsmittel (25) platziert ist, wobei besagtes bewegliches Element (20) einen unteren ringförmigen Bereich (21) aufweist, der darauf angepasst ist, sich mit der Kante des besagten Hohlglases (19) zu verkeilen, wie auch mit einem Zapfen (22) einer vordefinierten Länge, der aus dem besagten abgesenkten Bereich (21) zum Unterteil des besagten Hohlglases (19) verläuft, wobei das besagte zweite (15) Einwirkungsorgan über einen Körper aus einem einzigen Stück (16) mit zwei gegenüberliegenden Enden (17) einer in hohem Maße konischen Anordnung verfügt.

2. Ein System nach dem vorherigen Anspruch **dadurch gekennzeichnet, dass** besagte Erhebung (9) eine erste Oberfläche (10) aufweist, die in hohem Maße parallel zur Oberfläche (8) des besagten Keils (6) verläuft, sowie mindestens über eine zweite, geneigte Kontaktoberfläche (11) zwischen besagter Oberfläche mit besagter Oberfläche (8) verfügt. 30
3. Ein System nach Anspruch 2 **gekennzeichnet dadurch, dass** besagte erste Oberfläche (10) nur besagtes drittes (13) Einwirkungsorgan aktiviert, um die Rotation des besagten Drehkörpers (2) innerhalb des besagten Rahmens (3) zu ermöglichen. 35
4. Ein System nach einem oder mehreren der vorherigen Ansprüche **gekennzeichnet dadurch, dass** besagte hervorstehende Erhebung (9) über die gesamte Länge des besagten Keils (6) verläuft. 40
5. Ein System nach einem oder mehreren der vorherigen Ansprüche **gekennzeichnet dadurch, dass** besagte Erhebung (9) über mindestens ein Einsatzstück (12) mit einem in hohem Maße spitz zulaufenden und vorzugsweise konischem Überstand verfügt, das geeignet ist, mit besagten dritten (13) Einwirkungsorgan in Eingriff zu stehen. 45 50 55
6. Ein System nach einem oder mehreren der vorherigen Ansprüche **gekennzeichnet dadurch, dass** besagte Erhebung (9) mit dem besagten Hohlglas 55

(19) mit der abgeschnittenen Grundfläche des besagten dritten Einwirkungsorgans (13) in einer Art in Eingriff steht, die für ihre Positionierung in Bezug zu dem besagten beweglichen Element (20) geeignet ist, ihre Verschiebung innerhalb des besagten Hohlglases (19) zur Rotation des besagten Drehkörpers (2) in Bezug auf den besagten Rahmen (3) zu erlauben.

7. Ein System nach einem oder mehreren der vorherigen Ansprüche **gekennzeichnet dadurch, dass** besagte Erhebung (9) mit dem besagtem Hohlglas (19) mit einer konischen Grundfläche des besagten ersten Einwirkungsorgans (4) auf eine Art in Eingriff steht, die für ihre Positionierung in Bezug auf das besagte bewegliche Element (20) geeignet ist, eine Verschiebung des besagten mobilen Elements (20) innerhalb des besagten Hohlglases (19) durch die Anwesenheit des besagten Zapfens (22) zu verhindern, der an der Unterseite des besagten Hohlglases (19) anliegt, um die Rotation des besagten Drehkörpers (2) in Bezug auf den besagten Rahmen (3) durch das Verkeilen des besagten beweglichen Elements (20) mit der Kante des besagten Hohlglases (19) zu verhindern.

Revendications

1. Un système comprenant une clé plate (6) et une serrure à cylindre du type avec un rotor (2) tournant à l'intérieur d'un stator (3) ladite clé (6) comprenant au moins un premier (5) et un deuxième (7) moyen d'emboîtement alignés entre eux et alignés avec au moins un premier et/ou un deuxième (4, 15) organe d'interférence de ladite serrure à cylindre, alignés aussi entre eux, en vue de les déclencher d'une manière convenable pour rendre possible la rotation dudit rotor (2) à l'intérieur dudit stator (3), ledit premier (5) moyen d'emboîtement étant défini par des crêtes (30) qui avancent par au moins une face de ladite clé (6) ou qui coïncident avec ladite face et ledit deuxième (7) moyen d'emboîtement étant défini par des découpages (7) placés au-dessous de ladite face et tirés de la structure de ladite clé (6), ladite clé (6) comprenant également au moins un troisième moyen (9) d'emboîtement visant à ne déclencher qu'au moins un troisième moyen d'interférence (13) aligné avec lesdits premier (4) et deuxième (15) organes d'interférence, et coopérant avec ce dernier pour rendre possible la rotation dudit rotor (2) à l'intérieur dudit stator (3), **caractérisé en ce que** ledit troisième moyen (9) d'emboîtement comprend au moins une élévation (9) placée sur ladite face de la clé latéralement par rapport à l'alignement desdits premier (4), deuxième (15) et troisième (13) organes d'interférence, lesdits premier (4) et troisième (13) organes d'interférence com-
- prennent respectivement un verre creux (19), avec respectivement une base conique (24) et une base substantiellement tronconique (23), dans lesquelles un élément mobile (20) est placé à l'intérieur dudit verre creux (19), opposé et déclenché par un moyen élastique (25), ledit élément mobile (20) ayant une zone annulaire inférieure (21) adaptée pour s'enfoncer dans le rebord dudit verre (19) et avec un fût (22) d'une longueur prédéfinie qui s'étend de ladite zone baissée (21) vers le fond dudit verre (19), et ledit deuxième organe d'interférence (15) a un corps créé d'une pièce individuelle (16) avec deux extrémités opposées (17) d'une configuration substantiellement conique.
2. Un système selon la revendication précédente, **caractérisé en ce que** ladite élévation (9) a une première surface (10) qui est substantiellement parallèle à la face (8) de ladite clé (6), et au moins une deuxième surface de jonction inclinée (11) de ladite surface avec ladite face (8).
3. Un système selon la revendication 2, **caractérisé en ce que** ladite surface (10) ne déclenche que ledit troisième organe d'interférence (13) pour rendre possible la rotation dudit rotor (2) dans ledit stator (3).
4. Un système selon l'une ou plusieurs des revendications précédentes, **caractérisé en ce que** ladite élévation (9) s'étend et se développe le long de la longueur tout entière de ladite clé (6).
5. Un système selon l'une ou plusieurs des revendications précédentes, **caractérisé en ce que** ladite élévation (9) comprend au moins une insertion (12) avec une saillie substantiellement effilée et de préférence conique adaptée pour s'emboîter avec ledit troisième organe d'interférence (13).
6. Un système selon l'une ou plusieurs des revendications précédentes, **caractérisé en ce que** ladite élévation (9) s'emboîte avec ledit verre (19) avec une base tronquée dudit troisième organe d'interférence (13) d'une façon convenable pour son positionnement en ce qui concerne ledit élément mobile (20) afin d'en rendre possible le déplacement à l'intérieur dudit verre (19) pour la rotation dudit rotor (2) en ce qui concerne ledit stator (3).
7. Un système selon l'une ou plusieurs des revendications précédentes, **caractérisé en ce que** ladite élévation (9) s'emboîte avec ledit verre (19) ayant une base conique dudit premier organe d'interférence (4) d'une façon convenable pour son positionnement en ce qui concerne ledit élément mobile (20) pour empêcher ledit élément mobile (20) de se déplacer à l'intérieur dudit verre (19) en raison de

la présence dudit fût (22) en butée avec le fond dudit verre (19) pour empêcher ledit rotor (2) de tourner en ce qui concerne ledit stator (3) tout au long du coincement dudit élément mobile (20) avec le rebord dudit verre (19).

5

10

15

20

25

30

35

40

45

50

55

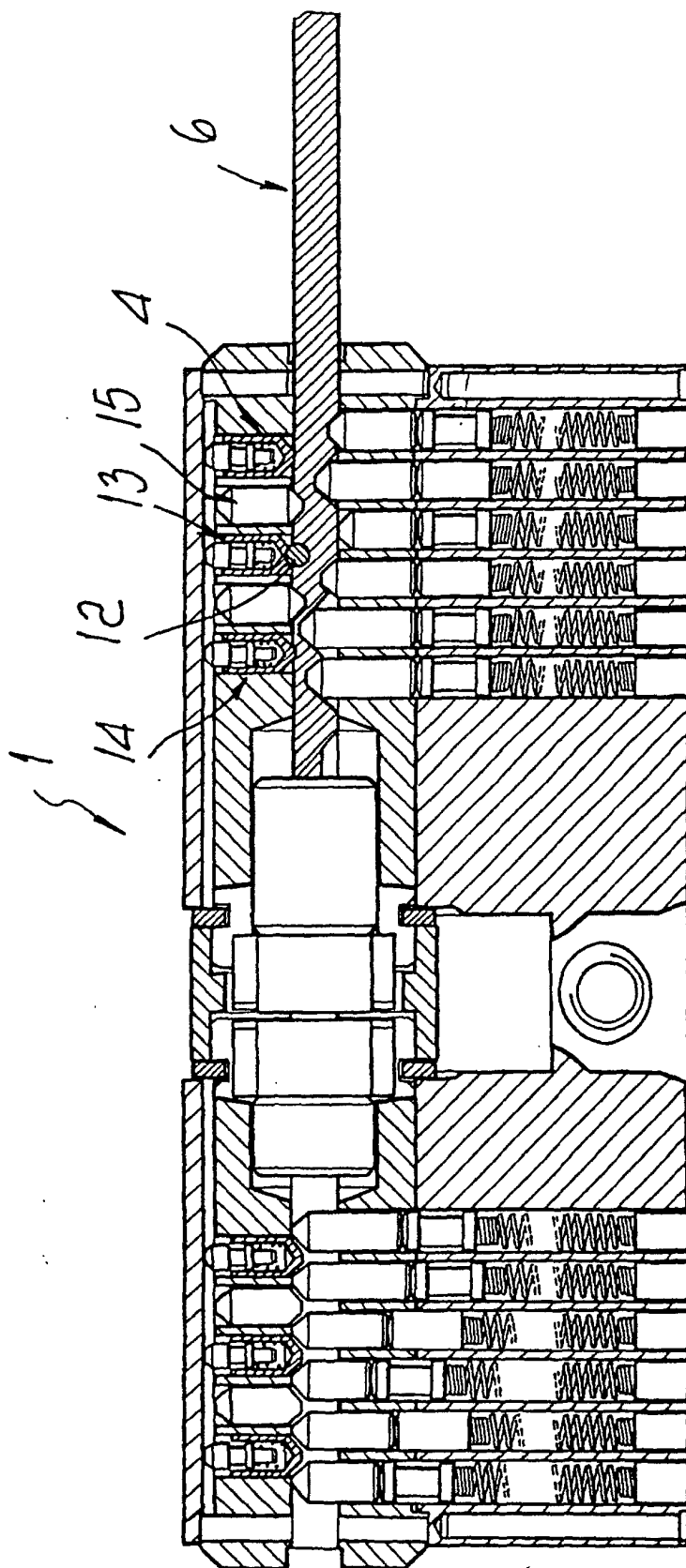


FIG. 1

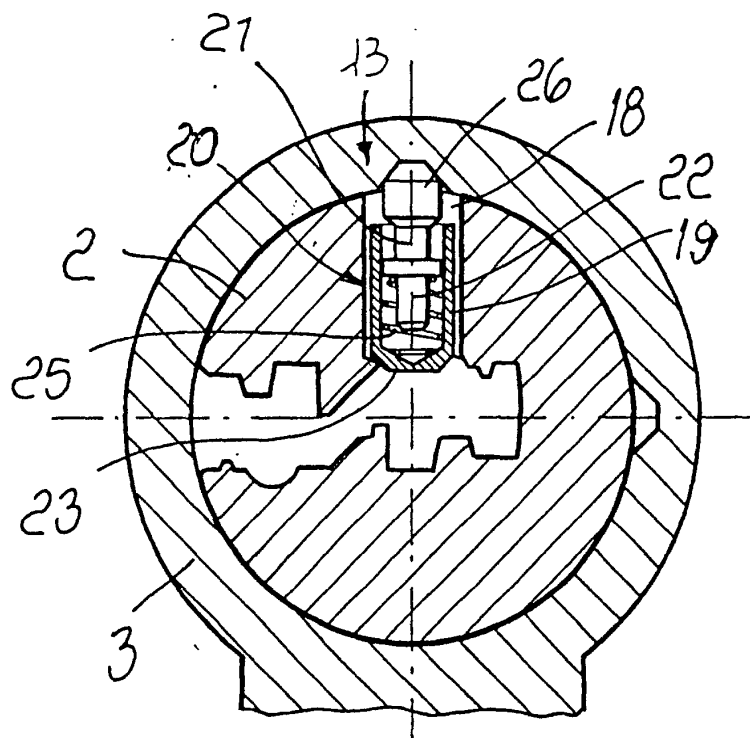


FIG. 2

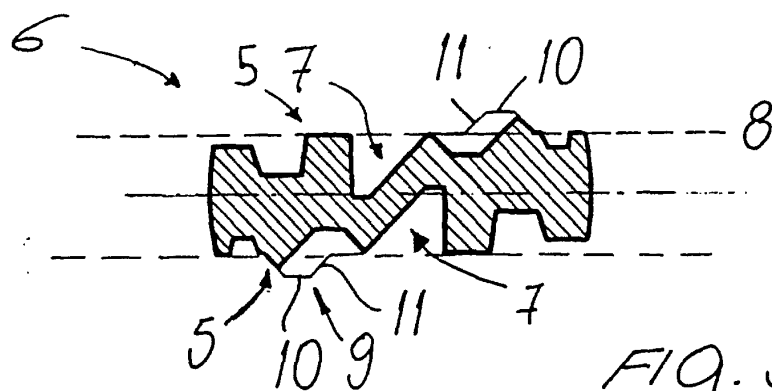


FIG. 3

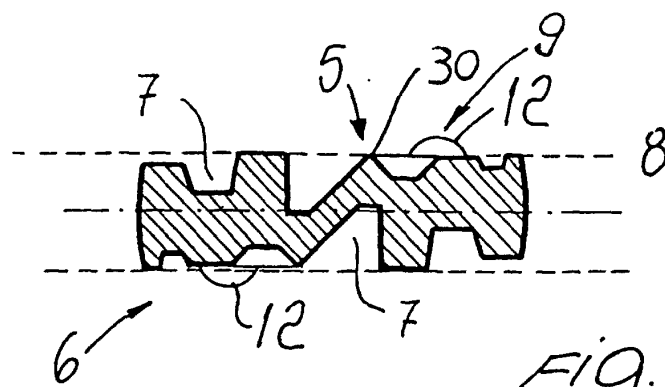


FIG. 4

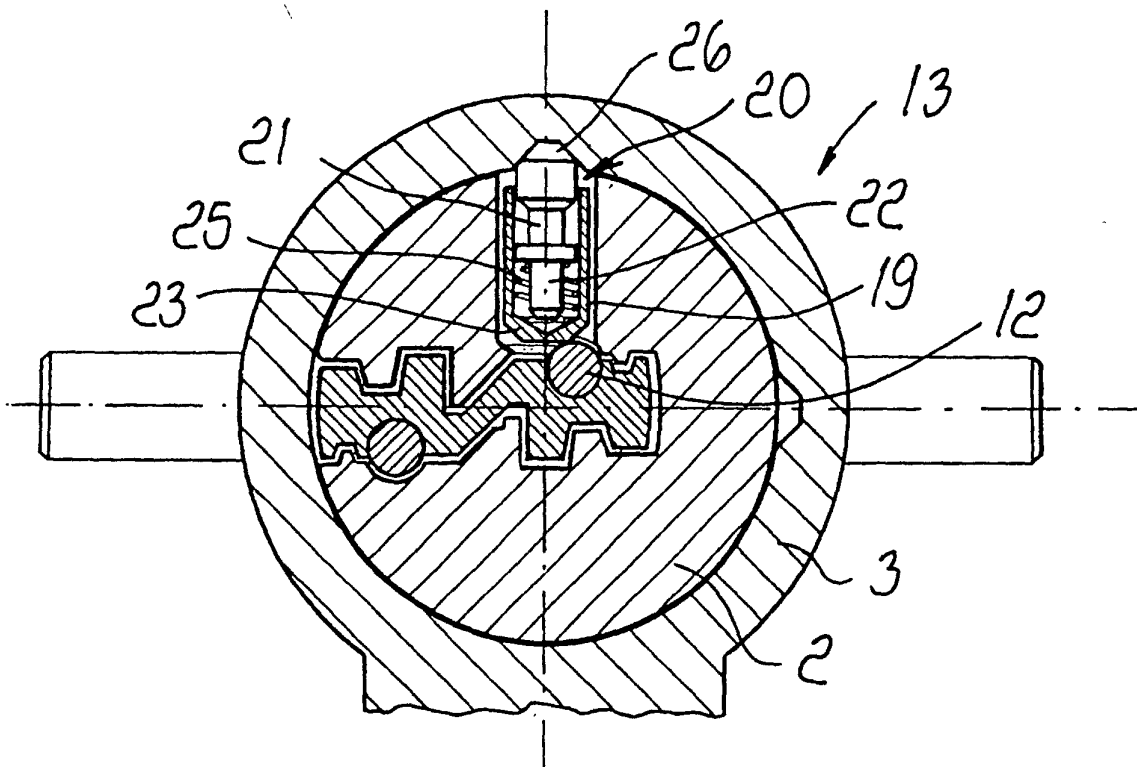


FIG. 5

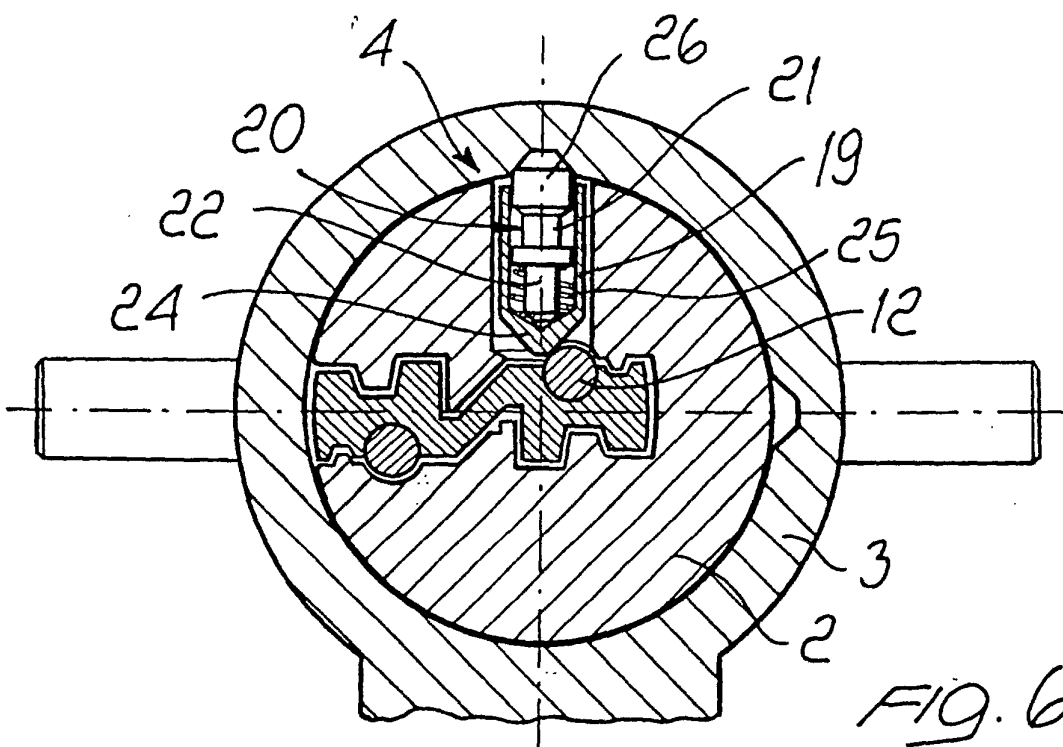


FIG. 6

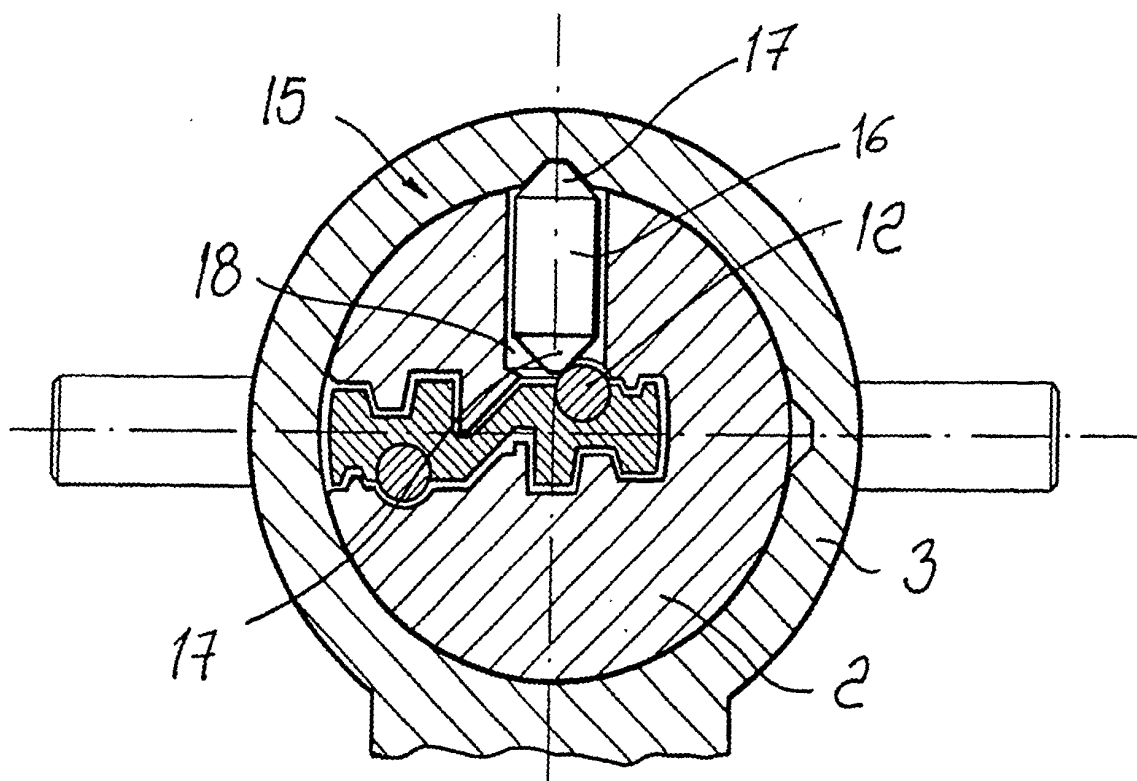


FIG. 7

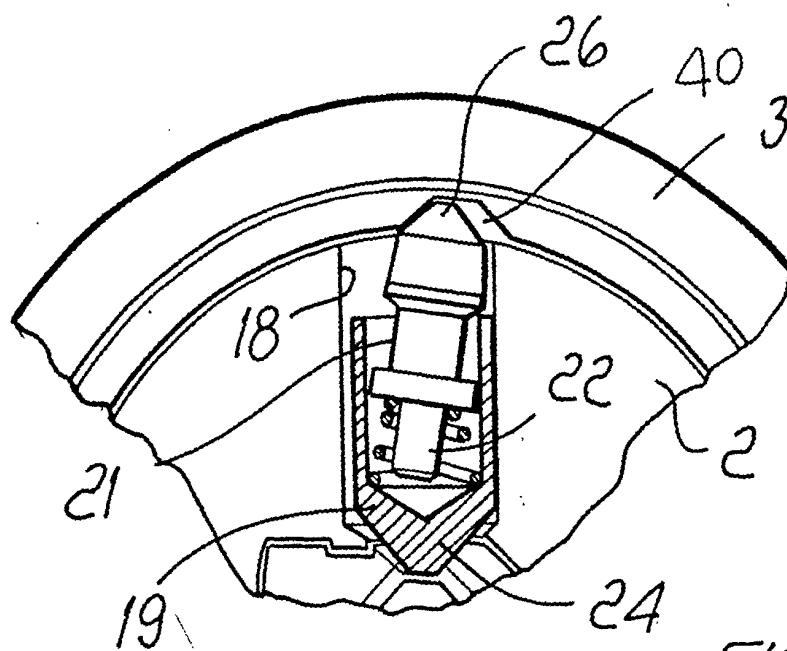


FIG. 8