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Description

[0001] This invention relates to a lock of the kind which extends, in use, through a door or like wing, having a central bolt-operating cam, with a pin tumbler lock at one side thereof for key operation to throw or retract the bolt, and a manually operable knob at the other side thereof to throw or retract the bolt independently of said key operation. Such a lock is known from e.g. document US 6 223 567 B1 or document US 3 922 896 A. Hereinafter a lock of this kind will be referred to as a thumbturn lock. Furthermore, a lock according to the preamble of claim 1 is known from document DE-A-1 553 519.

[0002] Such a thumbturn lock is shown schematically in Figure 1, having a central cam 10 to one end of which is keyed a barrel 11 so that the cam and barrel move angularly together. Secured at the end of the barrel remote from the cam is a thumbturn operating knob 12. At the other end of the cam is rotatably fitted an end of a plug 13 of a pin tumbler lock mechanism which is operated in the normal manner by a key 14, shown having a generally pointed or U-shaped end.

[0003] The end of the barrel remote from the knob 12 has a central circular-section bore 15 therein, with a pair of diametrically opposed, elongated rectangular axially directed slots 16 extending into said bore from the periphery of the barrel for part of the length of the bore. Partly received in said bore is a cylindrical plunger 17 which has a pin 18 extending diametrically therethrough, opposite ends of the pin respectively being received in said slots 16. A coiled compression spring 19 is disposed in the closed end of bore 15 to bias the plunger in a direction out of the bore. The end of the plunger which is disposed out of the bore 15, extends through a central opening of the cam 10 and into the circular section opening at the end of the plug 13. This end has an angled slot 20 therein to receive a sloping end part of the key 13 as shown in phantom.

[0004] In use, turning of the knob 12 will effect turning of the barrel 11 to which it is attached, and as the barrel is keyed to the cam, the cam will thus move angularly and effect throwing or retraction of a bolt of the lock either directly or indirectly. Rotation of the barrel will cause rotation of the plunger 17 therewith as it is rotationally keyed to the barrel by the ends of the pin 18 in the slots 16. Thus the cylindrical end of the plunger received in the plug 13 rotates, without having any effect on the plug.

[0005] If however the key is fully inserted into the plug, as shown in Figure 1, there are two possibilities. Firstly, if the slot 20 happens to be aligned with the plane of the end of the key, said end will be received in the slot, without forcing the plunger into the barrel against its spring 19. Turning of the key (and the plug) will thus effect turning of the plunger, and thus the barrel 11. Since the barrel is keyed to the cam, rotation of the key causes the cam to move angularly to throw or retract the bolt.

[0006] Alternatively if the slot 20 is not in alignment with the end of the key, full insertion of the key will engage

the end of the plunger and push it towards the barrel, against the force of its spring 19. With the correct key fully inserted, it can be turned (with its plug), but without turning the cam, as there is no drive connection from the key to the barrel via the plunger. However on rotating the key, and thus the plug, the end of the key will eventually come into alignment with the slot 20, whereupon the force of the spring 19 will now move the plunger in a direction out of the barrel, so that the end of the fully inserted key is received in the slot 20. The position is then as described above, i.e. there is a drive connection from the key to the cam, via the plunger and its barrel, so that turning the key will turn the cam and operate the bolt.

[0007] The thumbturn lock described is disadvantageous in being open to possible operation without the correct key, with the plunger being turned to operate the bolt.

[0008] An object of the invention is thus to provide an improved lock to overcome this disadvantage.

[0009] According to the invention a lock comprises a manually operable element at one side of a bolt operating cam for effecting angular movement of the cam, in use, a key operable plug of a pin tumbler lock at the other side of said cam such that in one of its states it is angularly movable relative to the cam, and clutch means for inter-connecting the plug and the cam to place the plug in another of its states in which angular movement of the plug effects angular movement of the cam, in use, the clutch means being non-rotatable relative to the plug and having a projection received in a slot of said cam, when said projection and slot are aligned, to place the plug in said another of its states, and a plunger being received in a bore in the manually operable element and biasing the clutch means in a direction away from engagement with the cam, wherein upon full insertion of a correct key into the plug an end thereof engages said plunger to move it in a direction away from said clutch means thereby allowing said projection to be received immediately in said slot of the cam, if it is aligned therewith, or upon subsequent rotation of the fully inserted key if such is necessary to effect such alignment.

[0010] Preferably the clutch means is keyed to the plug and desirably in one embodiment directly engages with the cam to place said plug in said another of its states. Conveniently the projection of the clutch means is received in an arcuate slot of said cam, when said projection and slot are aligned, to place the plug in said another of its states, and advantageously the clutch means includes spring loading automatically to move said projection into said slot when they are aligned.

[0011] Desirably the manually operable element is keyed to said cam by means of a pair of projections of the manually operable element being received in respective arcuate slots of said cam, and said slot being spaced angularly between said slots which receive said projections. More desirably the plunger is spring loaded to effect said bias of the clutch means in a direction away from engagement with the cam. More preferably the plunger

is spring loaded by a compression spring which is stronger than the spring loading of the clutch means. More conveniently said clutch means is received in a hollow end of the plug, and is biased to slide therein by said spring loading from a first position where said projection is out of said slot of the cam, to a second position where it is received therein. Preferably said clutch means is keyed to said plug by respective lugs of the clutch means being received in respective slots in said hollow end of the plug. Most preferably the manually operable element is a knob rotationally fast with a rotatable barrel.

[0012] The invention will now be described, by way of example, with reference to the accompanying drawings, in which:

Figure 1 is a schematic side view of a prior art thumbturn lock,

Figure 2 is a schematic side view similar to Figure 1 of a lock of the invention,

Figure 3 is a schematic, fragmentary sectional side view of the lock of the invention, with a pin tumbler lock plug thereof in its first state,

Figures 4 and 5 are schematic sectional side views of the lock of the invention with a key inserted in the lock plug, and the plug in its first and second states respectively,

Figures 6 and 7 respectively are a side view and an end view of a plunger of the lock,

Figures 8 and 9 respectively are a side view and an end view of a barrel for said plunger, and

Figures 10 to 13 respectively are a view of one end, a side view, a view of the other end, and a side view turned through 90°, of a clutch element of the lock.

[0013] One embodiment of a lock of the invention, in the form of a thumbturn lock is shown in Figures 2 to 5, with component parts thereof being shown in Figures 6 to 13.

[0014] As mentioned in the introduction, this form of lock extends, in use, through a door or other wing, with a deadbolt which extends from the door edge surface being directly or indirectly operated to extend or retract by a central cam element 21 shown in Figures 2 to 5. This cam element 21 is of generally conventional form comprising a main generally hollow cylindrical part from which generally radially extends a bolt-driving arm 22. Extending through the door at one side thereof is a cylindrical barrel 23 which at its one end stepped down to provide an annular collar from which extends a pair of diametrically opposed, arcuate projecting lugs 24,25 respectively, each of the lugs extending for the same amount of arc and lying on the common circle of the collar.

The interior of the hollow cylindrical part of the cam element has an inwardly stepped portion which is formed with corresponding diametrically opposed arcuate slots, so that as shown in Figures 2 to 6, the end of the barrel 23 can be engaged at one side of the cam element with the lugs being received in said slots respectively, thereby keying the barrel and the cam together for angular movement. Each lug terminates flush with the side of the stepped portion of the cam remote from the barrel.

[0015] The opposite end of the barrel from that at which the lugs are provided is formed with a stepped-down cylindrical part 26 shown in Figure 8 on which is received a manually operable knob or thumbturn 27. The knob is pinned or otherwise secured on said cylindrical part 26, so that, in use, turning the knob 27 will result in a corresponding turning of the barrel 23 and thus the cam element 21 in order to retract or extend the aforementioned bolt, depending on the direction of knob movement.

[0016] As can be seen from the drawings, a circular-section blind bore extends centrally inwardly from the end of the barrel at which the lugs 24,25 are formed, this bore extending for approximately two thirds of the length of the barrel as shown in Figure 8. At the closed end of the bore 28 there is disposed a coiled compression spring 29 which acts on a plunger 30, which is shown in detail in Figures 6 and 7. The plunger is in the form of a main cylindrical body which is slidably received in the bore 28 with a central projecting circular section peg 31 at its end remote from the spring 29. As can be seen from Figures 2 and 3, the spring 29 is normally in a state such that it acts upon the plunger 30 to position the end of the main body of the plunger from which the peg extends flush with the opposite side of the cam element 21, with the peg 31 extending therebeyond.

[0017] At this opposite side of the cam element 21 from that at which the barrel 23 is disposed, there is fitted a plug 32 of a conventional pin tumbler cylinder lock, the barrel of which is, for convenience, not shown. In the conventional manner, there would be a series of alignable holes in the plug and barrel with the usual springs, drivers and pins, so that upon insertion of a correct key, the pins are raised to a common level so that the drivers move out of the plug to allow the plug to be angularly movable relative to the barrel and thus operate the pin tumbler cylinder lock.

[0018] At one end of the plug is a stepped-down annular portion 33, the smaller diameter end part of which is received within the interior of the hollow cylindrical part of the cam element 21 at the side of the stepped portion at which the barrel lugs terminate. This smaller diameter annular portion 33 does not extend into the central slotted area of the cylindrical part where the lugs 24,25 of the barrel are disposed, with the result that the plug is freely rotatable relative to the cam, and thus, in this state, is not keyed to the cam like the barrel 23. For a purpose to be described, it will be noted that this annular portion 33 is provided with a pair of diametrically opposed slots.

[0019] As shown in Figures 3 to 5, the interior of the

annular portion 33 is hollow and is in communication with the key slot 34 in the plug into which the key 35 is inserted, in use. The pair of diametrically opposed slots in portion 33 are at 90° to the key slot 34.

[0020] Fitted into the interior of this hollow annular portion 33 is a clutch element 36 shown in detail in Figures 10 to 13. It can be seen that this element has a generally cylindrical main body part 37 which fits centrally in said hollow interior of the annular portion 33, as best shown in Figure 3. Extending generally radially outwardly from the outer periphery of this main body part 37 is a pair of diametrically opposed ears 38,39 respectively, these being sized and arranged to fit in the aforementioned slots in said annular portion 33, thereby rotationally keying the clutch element 36 to the plug 32. From the drawings it can be seen that there is a central circular opening 40 through the clutch element 36, and it can be seen that the peg 31 of the plunger 30 is a close sliding fit therein.

[0021] At its one end, it can be seen that the clutch element 36 is provided with two small circular bores 41,42 respectively, the respective axis of each of which is parallel to the axis of the opening 40 through the clutch element 36. From Figure 12 it can be seen that the centre of each bore is substantially at the junction between the main body part 37 and the ears 38,39 respectively. As shown in Figures 3 to 5, small coiled compressions springs 43,44 respectively are received in these bores and bear against an inner surface of the plug so as to bias the clutch element 36 outwardly of said hollow interior of the annular portion 33.

[0022] As can be seen best from Figures 3 to 5 and Figures 11 and 13, one of the ears 38,39 is extended generally parallel to the axis of the clutch element 36 away from the end of the clutch element remote from that in which the bores 41,42 are provided so as to provide an arcuate projecting lug 45. At the centre of the stepped interior of the cylindrical part of the cam element 21, it has been described how there is a pair of diametrically opposed slots to receive the lugs 24,25 respectively. Additionally a further arcuate slot 46 is provided in said central interior part of the cam, this slot being angularly spaced therearound so as to lie between said slots which receive the lugs 24,25, and being shaped and sized to receive the lug 45 as a close fit therein.

[0023] As shown in Figure 5, the arrangement is such that with this lug 45 received in the slot 46 the clutch element 36 abuts the central internal part in the interior of the cam element 21 so that the peg 31 extends almost to that end of the clutch element 36 into which the bores 41,42 extend. It will be noted that the plunger spring 29 is heavier than the clutch springs 43,44, so that, as shown in Figure 3, before the key 35 is inserted into the plug 32, the plunger engages the clutch element 36 to force it into the plug 32 against the bias of its springs 43,44, so that in this first state of the plug 32, the plug is not keyed to the cam element 21. This first state of the plug 32 is also shown in Figure 4 when the key 35 is inserted into the plug since, as shown, and as will be explained, in this

state the clutch element does not interconnect the plug to the cam element, so that if the key is turned in this state, the plug rotates freely, at least initially, relative to the cam element 21. However, as will be fully explained below, once the projecting lug 45 moves angularly into alignment with the slot 46, the clutch element moves forward to its Figure 5 position to create the interconnection, so that in this second state of the plug shown in Figure 5, the plug is now keyed to the cam element, so that continued turning of the key will now angularly move the cam element and thus throw or retract the bolt, depending upon the direction of key rotation.

[0024] In use, the lock is fitted to a door as described, and conventionally the thumbturn knob 27 would be at the inside face of the door with the entry to the key slot of the plug 32 being at the outside surface of the door. As already described, and with reference to Figure 2 where the plunger 30 is biased to its forwardmost position, it is possible to turn the knob 27, and thus the barrel 23 to move angularly the cam element 21 to retract or extend the bolt, depending upon the direction of turning of the knob 27.

[0025] The knob can be turned to, and remain at rest in, a position where it disposes the cam slot 46 out of alignment with the lug 45, and in one embodiment it can turn past the respective fully thrown and retracted positions of the bolt.

[0026] With the arrangement as shown in Figure 2, i.e. with no key 35 inserted into the plug 32, the spring 29 biases the plunger 30 to its forwardmost position, also shown in Figure 3 where the peg 31 is fully received in the opening 40 in the clutch element 36 and which is forced by the plunger to its rearmost position in the plug 32 with the springs 43 and 44 at their maximum compression being fully received in their respective bores 41,42. Accordingly operation of the knob 27 has no effect whatsoever on the plug 32. There is no interconnection between the thumbturn barrel and the plug, in contrast to the connection provided by the plunger 17 of the Figure 1 prior art arrangement where engagement of the plunger by the key 14 and subsequent turning thereof will rotate the cam.

[0027] Operation of the cam element 21, and thus the bolt of the lock upon insertion of the key 35 will be described with reference to Figures 4 and 5. Figure 4 shows the arrangement when the key is first inserted into the plug, the free end of the key being received in a slot 47 diametrically across the inner end of the clutch element 36, this slot thus being in communication with the opening 40. The free end of the key pushes the plunger 30, against its bias, into the bore 28. In the position shown in Figure 4, the key engages the end of the peg 31, but the clutch element 36 cannot move to the left, as viewed in this Figure under the force of its springs 43,44, in view of the fact that the lug 45 is out of alignment with the slot 46 in the interior of the cam element, as shown in this Figure. Accordingly in this first state of the plug, key rotation will merely turn the plug and not effect the cam element, in

that the clutch is not interconnecting the plug to the cam element in this state.

[0028] Upon turning the plug in the manner described in relation to Figure 4, the lug 45 will eventually become aligned with the slot 46, whereupon force of the springs 43,44 will then automatically move the cam element 21 to the left from its Figure 4 position so that, as shown in Figure 5, the lug 45 is received in the slot 46 with the leading face of the cam element 21 abutting the radially inwardly directed interior part of the cylindrical part of the cam element 21. As shown in both Figures 4 and 5, insertion of the key moves the plunger 30 to the left as shown in these views, from its Figure 3 position, against its biasing spring 29 to allow space for the cam element 21 to move to its Figure 5 position. In this second state of the plug, as shown in Figure 5, turning of the key will now effect angular movement of the cam element 21 by virtue of the interconnection between the plug and the cam element via the clutch means formed by the clutch element 36 and its springs 43,44. This operation is of course totally independent of the thumbturn components, although clearly angular movement of the cam element by virtue of the turning of the key 35 will cause angular movement of the barrel 23 and knob 27 given that these are together keyed to the cam element 21.

[0029] It will be understood that the key 35 can be withdrawn from its plug 32 in either the fully extended or fully retracted position of the bolt. In either case once the key is withdrawn, the stronger bias provided by the spring 29 as compared to the springs 43,44 will then automatically move the plunger back to its extreme right hand position shown in Figure 3 thereby forcing the clutch element 36 to its Figure 4 position. Accordingly whether or not subsequent key insertion results in the movement of the clutch element to its Figure 5 position, without rotation of the plug, will depend upon whether in the meantime the knob 27 has been operated and left in a position where the cam element slot 46 is out of alignment with the lug 45.

[0030] Accordingly it will be seen that this arrangement provides increased security at the key operated side of the lock, in that it is not possible to rotate the clutch, and thereby the cam, without 'picking' the lock.

Claims

1. A lock comprising a manually operable element (23, 27) at one side of a bolt operating cam (21) for effecting angular movement of the cam (21), in use, a key operable plug (32) of a pin tumbler lock at the other side of said cam such that in one of its states it is angularly movable relative to the cam (21), clutch means (36) for interconnecting the plug and the cam (21) to place the plug (32) in another of its states in which angular movement of the plug (32) effects angular movement of the cam (21), in use, **characterised by** the clutch means (36) being non-rotatable relative to the plug (32) and having a projection (45)

received in a slot (46) of said cam (21), when said projection (45) and slot are aligned, to place the plug (32) in said another of its states, and a plunger (30) being received in a bore (28) in the manually operable element and biasing the clutch means (36) in a direction away from engagement with the cam (21), wherein upon full insertion of a correct key (35) into the plug (32) an end thereof engages said plunger (30) to move it in a direction away from said clutch means (36) thereby allowing said projection (45) to be received immediately in said slot (46) of the cam (21), if it is aligned therewith, or upon subsequent rotation of the fully inserted key (35) if such is necessary to effect such alignment.

2. A lock as claimed in Claim 1, wherein the clutch means (36) is keyed to the plug (32).
3. A lock as claimed in Claim 1 or Claim 2, wherein the clutch means (36) directly engages with the cam (21) to place said plug in said another of its states.
4. A lock as claimed in Claim 3, wherein the projection (45) of the clutch means (36) is received in an arcuate slot (46) of said cam (21), when said projection and slot are aligned, to place the plug in said another of its states.
5. A lock as claimed in Claim 4, wherein the clutch means (36) includes spring loading (43, 44) automatically to move said projection (45) into said slot (46) when they are aligned.
6. A lock as claimed in Claim 4 or Claim 5, wherein the manually operable element (23, 27) is keyed to said cam (21) by means of a pair of projections (24, 25) of the manually operable element (27) being received in respective arcuate slots of said cam, and said slot being spaced angularly between said slots which receive said projections (24, 25).
7. A lock as claimed in any one of Claims 1 to 6, wherein the plunger (30) is spring loaded to effect said bias of the clutch means (36) in a direction away from engagement with the cam (21).
8. A lock as claimed in Claim 7 when dependent on Claim 5, wherein the plunger (30) is spring loaded by a compression spring (29) which is stronger than the spring loading (43, 44) of the clutch means (36).
9. A lock as claimed in Claim 5, wherein said clutch means (36) is received in a hollow end of the plug (32), and is biased to slide therein by said spring loading (43, 44) from a first position where said projection (45) is out of said slot (46) of the cam, to a second position where it is received therein.

10. A lock as claimed in Claim 9, wherein said clutch means (36) is keyed to said plug by respective lugs (38, 49) of the clutch means being received in respective slots in said hollow end of the plug (32).
11. A lock as claimed in any one of Claims 1 to 10, wherein the manually operable element is a knob (27) rotationally fast with a rotatable barrel (23).

Patentansprüche

1. Schloss, das ein von Hand zu betätigendes Element (23, 27) an einer Seite eines Bolzenbetätigungs-nockens (21), um, bei Anwendung, eine Winkelbewegung des Nockens (21) zu bewirken, einen mit Schlüssel zu betätigenden Zylinder (32) eines Stift-zuhaltungsschlosses an der anderen Seite des Nockens derart, dass er in einem seiner Zustände winklig im Verhältnis zu dem Nocken (21) bewegt werden kann, ein Kupplungsmittel (36), um den Zylinder und den Nocken (21) miteinander zu verbinden, um den Zylinder (32) in einen anderen seiner Zustände zu bringen, in dem eine Winkelbewegung des Zylinders (32), bei Anwendung, eine Winkelbewegung des Nockens (21) bewirkt, umfasst, **dadurch gekennzeichnet, dass** das Kupplungsmittel (36) im Verhältnis zu dem Zylinder (32) nicht drehbar ist und einen Vorsprung (45) haben, der in einem Schlitz (46) des Nockens (21) aufgenommen wird, wenn der Vorsprung (45) und der Schlitz ausgerichtet werden, um den Zylinder (32) in den anderen seiner Zustände zu bringen, und ein Stößel (30) in einer Bohrung (28) in dem von Hand zu betätigenden Element aufgenommen wird und das Kupplungsmittel (36) in einer Richtung, weg von einem Eingriff mit dem Nocken (21), vorspannt, wobei auf ein vollständiges Einstecken eines richtigen Schlüssels (35) in den Zylinder (32) hin ein Ende desselben den Stößel (30) in Eingriff nimmt, um ihn in einer Richtung, weg von dem Kupplungsmittel (36) zu bewegen, wodurch ermöglicht wird, dass der Vorsprung (45), falls er mit demselben ausgerichtet ist, oder auf eine anschließende Drehung des vollständig eingesteckten Schlüssels (35) hin, falls dies notwendig ist, um eine solche Ausrichtung zu bewirken, unmittelbar in dem Schlitz (46) des Nockens (21) aufgenommen wird.
2. Schloss nach Anspruch 1, wobei das Kupplungsmittel (36) mit dem Zylinder (32) verkeilt ist.
3. Schloss nach Anspruch 1 oder Anspruch 2, wobei das Kupplungsmittel (36) unmittelbar mit dem Nocken (21) ineinander greift, um den Zylinder in den anderen seiner Zustände zu bringen.
4. Schloss nach Anspruch 3, wobei der Vorsprung (45) des Kupplungsmittels (36) in einem bogenförmigen

Schlitz (46) des Nockens (21) aufgenommen wird, wenn der Vorsprung und der Schlitz ausgerichtet sind, um den Zylinder in den anderen seiner Zustände zu bringen.

5. Schloss nach Anspruch 4, wobei das Kupplungsmittel (36) eine selbsttätige Federbelastung (43, 44) einschließt, um den Vorsprung (45) in den Schlitz (46) zu bewegen, wenn sie ausgerichtet sind.
6. Schloss nach Anspruch 4 oder 5, wobei das von Hand zu betätigende Element (23, 27) dadurch an dem Nocken (21) verkeilt ist, dass ein Paar von Vorsprüngen (24, 25) des von Hand zu betätigenden Elements (27) in jeweiligen bogenförmigen Schlitzten des Nockens aufgenommen wird, und der Schlitz mit Winkelabstand zwischen den Schlitzten, welche die Vorsprünge (24, 25) aufnehmen, angeordnet ist.
7. Schloss nach einem der Ansprüche 1 bis 6, wobei der Stößel (30) federbelastet ist, um die Vorspannung des Kupplungsmittels (36) in einer Richtung, weg von einem Eingriff mit dem Nocken (21), zu bewirken.
8. Schloss nach Anspruch 7, soweit abhängig von Anspruch 5, wobei der Stößel (30) durch eine Druckfeder (29) federbelastet ist, die stärker ist als die Federbelastung (43, 44) des Kupplungsmittels (36).
9. Schloss nach Anspruch 5, wobei das Kupplungsmittel (36) in einem hohlen Ende des Zylinders (32) aufgenommen wird und durch die Federbelastung (43, 44) vorgespannt wird, um darin von einer ersten Stellung, in der sich der Vorsprung (45) außerhalb des Schlitzes (46) des Nockens befindet, zu einer zweiten Stellung, in der er in demselben aufgenommen wird, zu gleiten.
10. Schloss nach Anspruch 9, wobei das Kupplungsmittel (36) dadurch an dem Zylinder verkeilt ist, dass jeweilige Nasen (38, 49) des Kupplungsmittels in jeweiligen Schlitzten in dem hohlen Ende des Zylinders (32) aufgenommen werden.
11. Schloss nach einem der Ansprüche 1 bis 10, wobei das von Hand zu betätigende Element ein drehfester Knopf (27) mit einem drehbaren Schaft (23) ist.

Revendications

1. Serrure comprenant un élément actionnable manuellement (23, 27) sur un côté d'une came (21) d'actionnement de verrou, destiné à entraîner un mouvement angulaire de la came (21) lors de l'utilisation, un barillet (32) d'une serrure à goupilles, actionnable par une clé, sur l'autre côté de ladite came, de ma-

- nière à ce que, dans l'un de ses états, il puisse effectuer un mouvement angulaire par rapport à la came (21), un moyen d'embrayage (36) pour interconnecter le barillet et la came (21) pour placer le barillet (32) dans un autre de ses états dans lequel un mouvement angulaire du barillet (32) entraîne un mouvement angulaire de la came (21), lors de l'utilisation, **caractérisée par le fait que** le moyen d'embrayage (36) ne peut pas effectuer de rotation par rapport au barillet (32) et est pourvu d'une saillie (45) reçue dans une fente (46) de ladite came (21), lorsque ladite saillie (45) et ladite fente sont alignées, pour placer le barillet (32) dans ledit autre état parmi ses états, et un piston (30) étant reçu dans un alésage (28) dans l'élément actionnable manuellement et contraignant le moyen d'embrayage (36) dans une direction éloignée de l'engagement avec la came (21), dans laquelle, lorsqu'une clé correcte (35) est totalement insérée dans le barillet (32), une extrémité de la clé entre en contact avec ledit piston (30) pour le déplacer dans une direction éloignée dudit moyen d'embrayage (36), permettant ainsi à ladite saillie (45) d'être reçue immédiatement dans ladite fente (46) de la came (21) si elles sont alignées, ou après une rotation subséquente de la clé entièrement insérée (35) si cela est nécessaire pour réaliser cet alignement.
2. Serrure selon la revendication 1, dans laquelle le moyen d'embrayage (36) est calé sur le barillet (32).
 3. Serrure selon la revendication 1 ou la revendication 2, dans laquelle le moyen d'embrayage (36) se met directement en prise avec la came (21) pour placer ledit barillet dans ledit autre état parmi ses états.
 4. Serrure selon la revendication 3, dans laquelle la saillie (45) du moyen d'embrayage (36) est reçue dans une fente en arc (46) de ladite came (21), lorsque ladite saillie et ladite fente sont alignées, pour placer le barillet dans ledit autre état parmi ses états.
 5. Serrure selon la revendication 4, dans laquelle le moyen d'embrayage (36) inclut une sollicitation élastique (43, 44) automatique pour faire entrer ladite saillie (45) dans ladite fente (46) lorsqu'elles sont alignées.
 6. Serrure selon la revendication 4 ou la revendication 5, dans laquelle l'élément actionnable manuellement (23, 27) est calé sur ladite came (21) au moyen d'une paire de saillies (24, 25) de l'élément actionnable manuellement (27) qui sont reçues dans des fentes en arc respectives de ladite came, ladite fente étant située à une distance angulaire entre lesdites fentes qui reçoivent lesdites saillies (24, 25).
 7. Serrure selon l'une quelconque des revendications 1 à 6, dans laquelle le piston (30) est sollicité par ressort pour exercer ladite contrainte du moyen d'embrayage (36) dans une direction éloignée de l'engagement avec la came (21).
 8. Serrure selon la revendication 7 lorsqu'elle est dépendante de la revendication 5, dans laquelle le piston (30) est soumis à une sollicitation élastique par un ressort de compression (29) qui est plus fort que la sollicitation élastique (43, 44) du moyen d'embrayage (36).
 9. Serrure selon la revendication 5, dans laquelle ledit moyen d'embrayage (36) est reçu dans une extrémité creuse du barillet (32) et est contraint par ladite sollicitation élastique (43, 44) à glisser à l'intérieur de cette extrémité pour passer d'une première position, dans laquelle ladite saillie (45) est sortie de ladite fente (46) de la came, à une seconde position dans laquelle elle est reçue dans la fente.
 10. Serrure selon la revendication 9, dans laquelle ledit moyen d'embrayage (36) est calé sur ledit barillet grâce à des oreilles respectives (38, 49) du moyen d'embrayage qui sont reçues dans des fentes respectives dans ladite extrémité creuse du barillet (32).
 11. Serrure selon l'une quelconque des revendications 1 à 10, dans laquelle l'élément actionnable manuellement est un bouton (27) fixé de manière rotative à un canon rotatif (23).

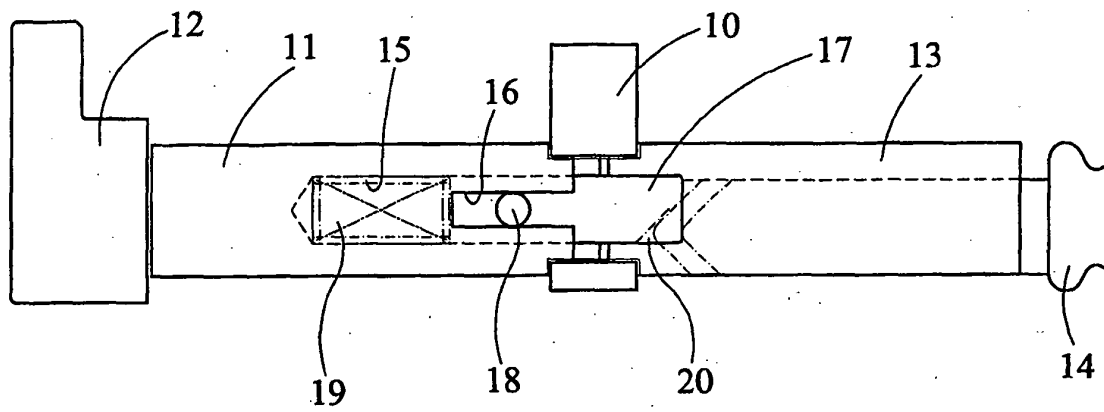


FIG 1

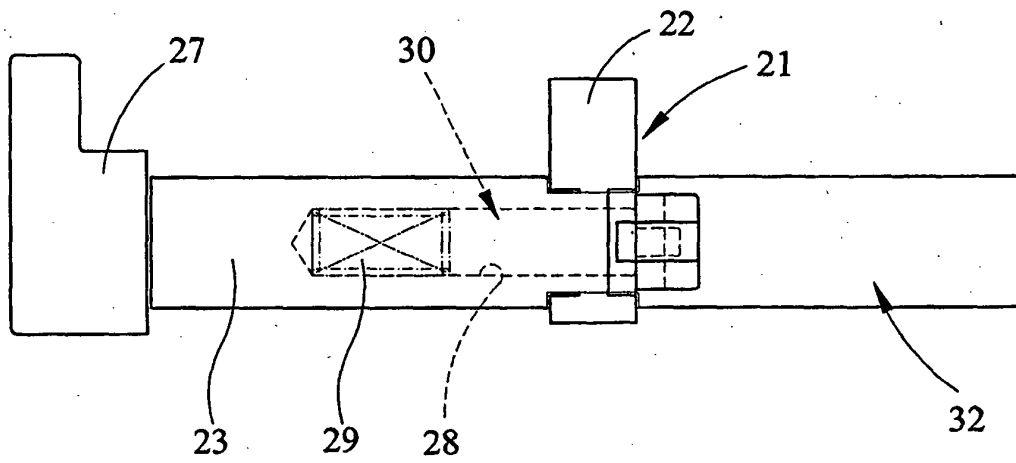


FIG 2

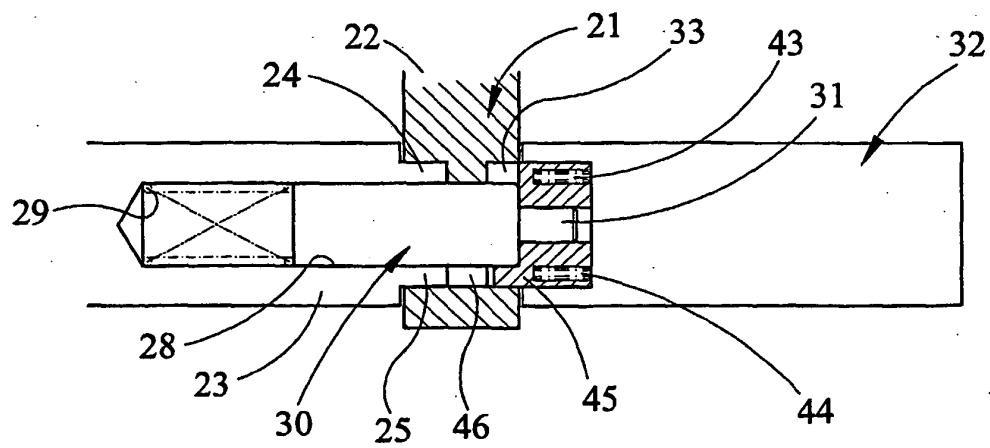


FIG 3

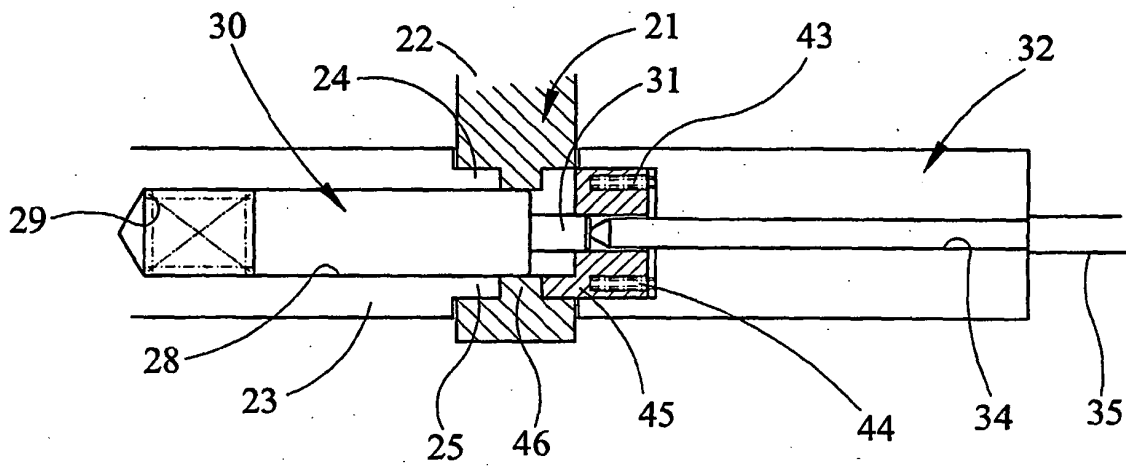


FIG 4

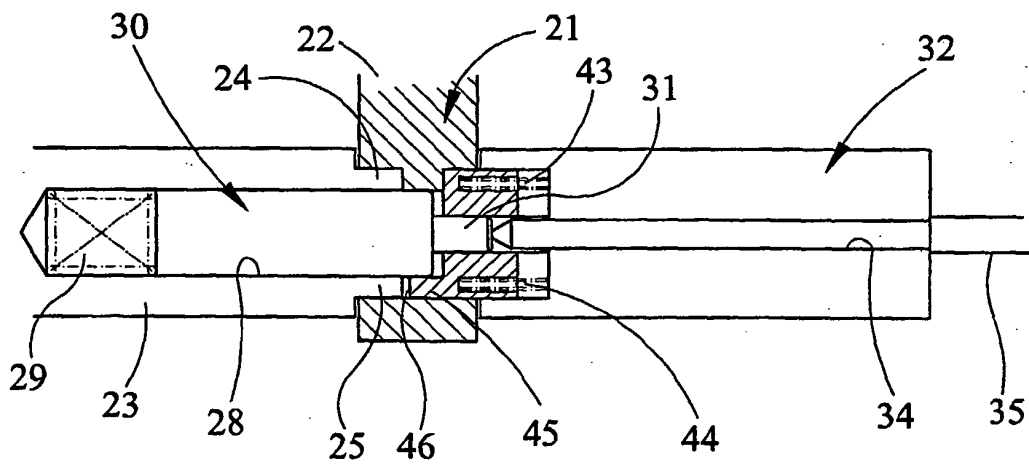


FIG 5

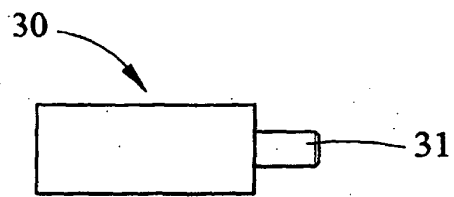


FIG 6

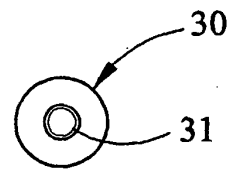


FIG 7

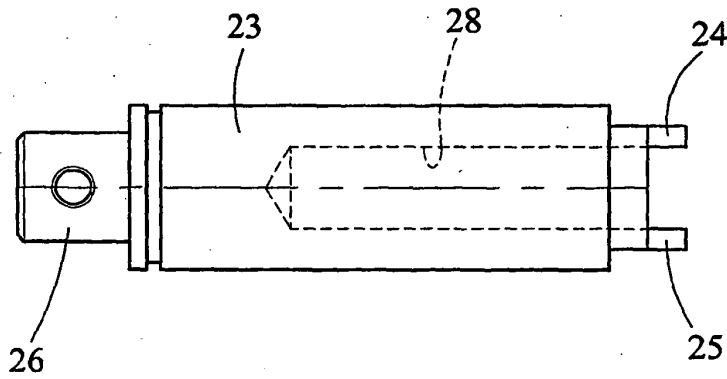


FIG 8

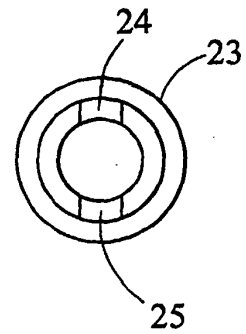


FIG 9

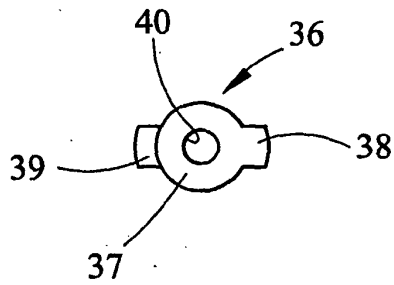


FIG 10

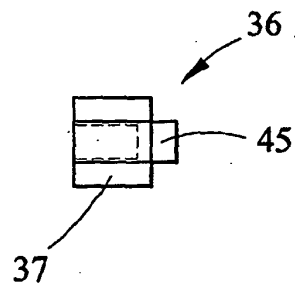


FIG 11

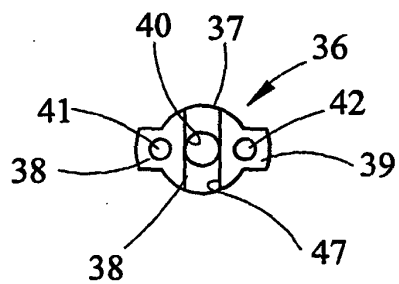


FIG 12

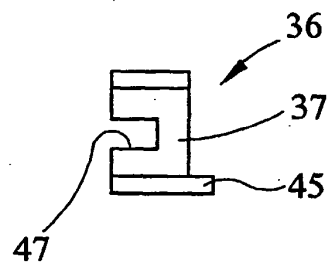


FIG 13

REFERENCES CITED IN THE DESCRIPTION

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