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Lock

The invention relates to a lock comprising a lock case, a night bolt and a day bolt co-operating with one another, which night bolt is swingably mounted inside the lock case and one end of which in the closing position projects through an opening in the lock case outside said case, and, in the opening position, is swung inside the lock case, a cylinder lock mechanism which is mounted on the lock case and has a rotating operating member which co-operates with a transmission to actuate both the night bolt and the day bolt so that the unlocking of the door can be obtained through the cylinder lock mechanism and a key.

Locks with swingable night bolts are already used because they offer some advantages with respect to the known locks with a rectilinear slidable night bolt.

In the first place with a swingable bolt a better closing can be obtained than with a slidable bolt.

In the second place a swingable bolt can have a hook-shaped end, which allows to use the lock for sliding doors whereby the bolt must hook behind a wall for the closing.

It has already been proposed to mount besides a lock with exclusively a swingable night bolt, also a further lock with exclusively a day bolt, which is then operated by a door handle. This day bolt can however, not be operated by the cylinder lock mechanism and thus a key, so that to open the completely closed door wherein the two locks are mounted, one must rotate the key of the cylinder lock mechanism and also must rotate the door handle. An example of such a bolt is shown by DE—A—2.152.199.

According to the above-mentioned patent application the swingable night bolt and the to-and-fro motion of the slidable day bolt are controlled by a sliding plate of which one end is pivotally connected with the lever actuating the sliding day bolt and the other end is equipped with a plate spring co-operating with parts which themselves are actuated by a key in such a manner that locking and unlocking of the night and day bolt can be achieved by said key.

This construction, especially the pivotally connection between the above sliding plate and the sliding day bolt actuating the lever on the one hand and the spring portion of the same sliding plate on the other hand, are submitted to considerable stress. These heavy duties cause an early wearing of the mechanism, some parts of which, especially the above referred to sliding plate, are not burglar proof. The invention has for an object to obviate these drawbacks and to propose a locking mechanism of which the co-operating elements controlling both the swinging night bolt and the day bolt consist of parts which, notwithstanding they can be turned without effort, are all of a heavier construction and resist any effort to force the mechanism.

For this purpose the night bolt is provided on that portion thereof remaining inside the lock case, on a side wall running in parallel relationship to the rotation axis, with at least one protrusion, while the lock has a slider (28) which is slidable to-and-from relative to the bolt inside the lock case, which slider (28) comprises a blocking finger (29) which finger as it engages the night bolt, lies in the night bolt closed position on that side of the protrusion to which the night bolt has to swing for the opening, said lock further comprising a spring element (32) which pushes the slider as far as possible towards the night bolt, and a transmission between the operating member (12, 13) of the cylinder lock mechanism (9) and the slider (28) for moving temporarily the slider away from the night bolt by the rotating of the operating member in the direction for the night bolt opening, in such a way that the slider blocking finger will not retain the bolt any more.

In a preferred embodiment, the operating member of the cylinder lock mechanism (9) comprises a ring (12) and a projection (13) standing thereon, and the transmission between said operating member and the slider (28) comprises a lever (33) which is rotatably mounted inside the lock case, co-operates with the one end thereof with the slider (28) and co-operates with the other end thereof with the operating member projection (13). In this form of embodiment the slider (28) lies between two ribs (30) and (31) on the lock case wall, which ribs form guides for the slider (28) and the night bolt protrusion (36) forms the wall of a notch. Advantageously, the night bolt comprises a second protrusion which in the open position of the night bolt, lies against the slider finger (29), when said finger connected to the night bolt, and on such a side of said finger that the swinging of the night bolt to the closed position is prevented by said finger, while the transmission between the slider and the operating member of the cylinder lock mechanism is so arranged that even by the swinging of the operating member (12, 13) for bringing the night bolt to the closed position, said transmission moves the slider away from the bolt.

Other details and advantages of the invention will stand out from the following description of a lock according to the invention; this description is only given as example and does not limit the invention; the reference numerals pertain to the accompanying drawings, in which:

Figure 1 is a top view from a lock according to the invention as mounted on a door, whereby both bolts are shown in closed position.

Figure 2 is a front view of the lock shown in figure 1, but without the door.

Figure 3 is a side view from the lock shown in figures 1 and 2, but with the key and handle plates removed in addition to the door.

Figure 4 is a side view of a lock similar to figure 3 but with a side wall of the lock case being further removed and whereby another embodiment of the night bolt is shown with parts broken away.

Figure 5 is a side view of part of the lock shown in figure 4, whereby the night bolt is shown in open position.

Figure 6 is a cross-section along line VI—VI in figure 5 but without the cylinder lock mechanism.

In the various figures, the same reference numerals pertain to similar elements.

The lock shown in the figures comprises a lock case 1 which forms a closed box and is comprised of two parallel rectangular side walls 2 and 3, an upstanding rim 4 which stands on two short sides and one long side of side wall 2 and against which bears side wall 3, and a fastening plate 5 which connects to the fourth side of side wall 2 and also connects to rim 4. Said fastening plate 5 projects sidewise outside side walls 2 and 3 and also projects with both ends outside the remainder of lock case 1. With said projecting ends said fastening plate 5 is made fast as shown in figure 1 to an upstanding section 6 from a door. The fastening plate 5 lies on the outer side of section 6 while the remainder of the lock case is arranged inside an opening of the section and for the major part thereof within the section proper. While the side wall 2, the rim 4 and the fastening plate 5 form a unit, the side wall 3 is comprised of a removable plate which is secured against the rim 4 by means of screws 23 which are screwed into projections 7 and 8 standing on side wall 2.

The lock further comprises a cylinder lock mechanism 9 which is of a structure known per se and will only be described here as far as necessary to understand the working of the lock. The housing 10 of the cylinder lock 9 is secured by means of a screw 11 which passes through the fastening plate 5, to the lock case 1. Said housing projects on either side through openings in the side walls 2 and 3. Inside lock case 1 that is between side wall 2 and 3, said cylinder lock 9 comprises a rotatable operating member which is formed by a ring 12 whereon stands a projection 13.

Said operating member 12, 13 controls through transmission means two bolts, namely a night bolt 14 and a day bolt 15. The night bolt 14 and the day bolt 15 project in closed position respectively through openings 16 and 17 in plate 5. In open condition, bolts 14 and 15 still lie precisely partly inside said openings but mainly on the outer side and in any case in such a way that they do not project outside the lock case 1.

In closed position bolts 14 and 15 enter with the ends thereof corresponding recesses provided in a stiffening plate 18 and in a section 19 said plate 18 is made fast to. Said section 19 is part as it is clear from figure 1, of the fixed door frame. The lock case 1 is so mounted in the section 6 of the door proper that the covering plate 5 lies on that side facing section 19 when the door lies in the closed condition, as it is shown in figure 1. Those portions of cylinder lock 9 projecting outside lock case 1 also project outside section 6 on the front and back side of the door. Said projecting portions of cylinder lock 9 are further surrounded by a small key plate on either side. Both key plates are pulled together by two screws 21 which lie respectively above and below cylinder lock 9. The key plates 20 are consequently pushed against section 6. As it appears particularly clearly from figure 2, the screws 21 go through the one key plate 20 wherein the screw heads are sunk, while the screws are screwed with the other end thereof in the other key plate 20 which is provided on that side facing the lock case, with suitably-threaded holes. The top screw 21 runs crosswise through lock case 1, namely through openings 22 in side walls 2 and 3 thereof. The bottom screw 21 runs precisely on the outer side of lock case 1. That key plate 20 wherein the heads of screws 21 are sunk, is arranged on the door inner side. Consequently the key-plate fastening is not visible from the outer side and the small key plate located on the outer side cannot be removed either. Both key plates 20 are moreover provided with bevelled outer edges which converge away from lock case 1. The thickness of the small key plates 20 is moreover such that when said key plates are pushed as shown in figure 1 against section 6, the cylinder lock 9 does not or substantially not project outside said key plates 20. Without removing key plates 20, it is thus also impossible to grip with pliers a cylinder lock end that projects outside section 6. Due to the bevelled edges thereof, the small key plates 20 cannot either be gripped with pliers, so that they cannot be forcefully removed either.

The night bolt 14 is swingably mounted inside lock case 1. The axis said bolt swings about is formed by the above-mentioned projection 8 that stands on side wall 2. Said bolt 14 is swung from the open position to the closed position or vice versa by the operating member 12, 13 of the cylinder lock mechanism 9 through a transmission. Said transmission comprises an arm 24 which is made fast to the side facing side wall 3, of night bolt 14, eccentrically relative to the rotation axis 8 of bolt 14. Said fastening is obtained by means of a small shaft 25 which stands on arm 24 and is loosely rotatably fitted inside an opening provided in bolt 14. Said small shaft 25 runs as well as rotation axis 8 of bolt 14 and the rotation axis of operating member 12, 13 for the cylinder lock at right angle to side walls 2 and 3. The arm 24 extends along the inner side of fastening plate 5 of lock case 1, which plate forms a guide during the alternating sliding of arm 24. That end of

arm 24 removed from shaft 25 is provided with an overthickness 24' which projects both towards side wall 2 and away from fastening plate 5. In that portion of said overthickness removed from fastening plate 5 is provided a notch 26 which opens on that overthickness edge which is removed from plate 5. Actually said latter end of arm 24 forms sidewise a two-pronged fork. Said latter end with notch 26 lies in the open position of night bolt 14, next to but partly over operating member 12, 13 of cylinder lock mechanism 9. In the figures said operating member has been shown in the neutral position whereby thus the key can be removed from the cylinder lock. In such a position the projection 13 is directed downwards. When said operating member 12, 13 is then caused to swing by means of a suitable key in the closing direction, that is counterclockwise, said projection 13 enters notch 26 and arm 24 is carried along by further rotation. Said arm moves thereby in the direction away from small shaft 25. It is clear that arm 24 causes thereby the night bolt 14 to swing about the shaft 8 thereof. This swinging movement to the closed position is limited by the wall of opening 16. In figures 1 to 4 the bolt 14 has been shown in closed position. Said bolt lies in closed position before the operating member 12, 13 has made a complete swinging.

When now the operating member 12, 13 is caused to swing in the other direction, the projection 13 enters again notch 26 which then lies next to but partly below ring 12. By further rotating, the arm 24 is returned to the original position thereof whereby thus also the night bolt 14 swings back to its original position. The swinging in said direction is limited by a stop 27 which stands on side wall 2.

Both in closed and in open position the bolt 14 is still retained by a blocking mechanism. Said blocking mechanism comprises a slider 28 which is slidable to-and-fro along the crosswise direction of lock case 1 over side wall 2 and is provided with an upstanding finger 29 running away from side wall 2. During the sliding movement thereof, said slider 28 is guided by two ribs 30 and 31 which stand on side wall 2. A leaf spring 32 which is secured by stops 27 and 52, pushes slider 28 constantly in the direction of night bolt 14. That portion of slider 28 on which stands finger 29 extends for the major part along side wall 2, between same and bolt 14, up to a small distance from fastening plate 5. The slider 28 can be pushed away from said plate 5 against the action of leaf spring 32, by means of a lever 33. Said lever is hingedly fastened between the ends thereof by means of a small shaft 34 on side wall 2, directly adjacent fastening plate 5. The one leg of lever 33 extends between night bolt 14 and side wall 2 and lies precisely opposite that end of slider 28 facing plate 5. The bolt 14 is retained notably by ribs 30 and 31 at a distance from side wall 2 in such a way that as already noted, a portion of slider 28 and thus also a portion of lever 33 can lie movably between bolt 14 and side wall 2. The other leg of lever 33 extends between arm 24 and side wall 2 and lies with the one end thereof right next to ring 12 from said operating member 12, 13 of cylinder lock mechanism 9. By rotating said operating member 12, 13 as well in the closing direction as in the opening direction, projection 13 pushes said last-mentioned leg of lever 33 away whereby said lever swings about the shaft 34 thereof and causes slider 28 to slide against the action of spring 32. When said projection 13 does not engage any more lever 33, said lever 33 can be swung back to the original position thereof by slider 28 which is pushed in turn under the action of leaf spring 32 in the direction of fastening plate 5. During each revolution of operating member 12, 13 and thus of night bolt 14, the lever 33 thus pushes slider 28 as far as possible away from fastening plate 5. After the swinging of bolt 14 and when operating member 12, 13 lies back in the neutral position, with projection 13 directed downwards, said lever 33 does not exert a force any more on slider 28 whereby thus said slider 28 engages that portion of bolt 14 lying inside lock case 1 and can retain said bolt portion. For this purpose, the last-named portion of night bolt 14 is provided with a notch 35 and a protrusion 36. The protrusion 36 is so located that when night bolt 14 lies in the open position a shown in figure 5 and slider 28 is pushed with the finger 29 thereof against said bolt 14, the finger 29 lies right next to protrusion 36 in the direction along which bolt 14 is swung from the open position to the closed position. Finger 29 prevents as long as slider 28 is not pushed away by lever 33, the swinging of night bolt 14 lying in the open position. Notch 35 in night bolt 14 is so located that when night bolt 14 lies in the closed position as shown in figure 4 and slider 28 is moved farthest away in the direction of said night bolt 14, the finger 29 fits precisely into notch 35. The wall of said notch that lies on the side along which the notch moves during the swinging to open position of bolt 14, then also forms a protrusion which is retained by finger 29. Bolt 14 in closed position is prevented from swinging as long as slider 28 has not been moved by lever 33. In the completely closed position of bolt 14, it is impossible, even if it were possible to reach the end of bolt 14 projecting outside lock case 1, to cause bolt 14 to swing by hitting said end.

That portion of night bolt 14 which lie in closed position outside lock case 1 can take various shapes. Due to said bolt 14 swinging, the last-mentioned portion thereof can form a hook as shown in figures 1 to 3. It is required for example with sliding doors that bolt 14 by the closing hooks behind a portion of section 19 and stiffening plate 18. In the embodiment as shown in figures 5 and 6, the bolt 14 is not of hook-shape in such a way that it can only be used on hinged doors.

To prevent sawing through that portion of night bolt 14 which lies in closed position outside lock case 1, at least one cylinder-like hollow 37 is provided in said bolt 14, hollow inside which lies loosely a round pin 38. In the embodiment of night bolt 14 as shown in figures 4 to 6, two such hollows 37 are cut-out in said bolt 14. Said hollows extend in the lengthwise direction of bolt 14, that is thus in the direction along which the bolt extends in closed position outside lock case 1. Both hollows 37 open on that end of bolt 14 which even in closed position still lies inside lock case 1 and run up to some distance from the other end. Said hollows thus lie partly in that portion of bolt 14 extending in closed position outside lock case 1 and certainly right adjacent to fastening plate 5. Inside each hollow 37 lies a round pin 38 which has substantially the same length as the hollow and thus lie in every case in that hollow portion which lies outside lock case 1 in closed position of bolt 14. Pins 38 are made from steel which has been surface-nitrated. When sawing through that portion of bolt 14 projecting outside lock case 1 in closed position, the saw as it reaches the pins 38, will roll over same. The pins 38 will be substantially impossible to saw through.

The day bolt 15 is comprised of a sidewise-bevelled head 39, an enlarged end 40 and a connecting rod 41 which connects end 40 to head 39. A portion 40' fits precisely between a guide formed by two walls 42 standing on side wall 2 of lock case 1 and connecting to the rim thereof. A spiral spring 43 which bears on ridge 4 and lies between both walls 42, pushes end 40 in the direction of fastening plate 5 and thus pushes day bolt 15 outwards. In the closed position thereof head 39 lies partly in the opening 17 in plate 5 and partly outside lock case 1. Portion 40' from end 40 still lies precisely between both walls 42. In open position the head 39 lies completely inside lock case 1 and spring 43 is completely compressed. As during the complete sliding of bolt 15, the square portion 40' of end 40 lies between both walls 42 and the head 39 constantly lies with a portion thereof inside opening 17, the bolt 15 cannot be swung. In closed position, a further sliding of bolt 15 outwards is normally prevented by a lever 44 which is in turn retained by a resilient stop. The lever 44 is freely rotatable about a shaft 45 which is supported by ends of small cross-section in both side walls of lock case 1. The one end of lever 44 lies next to rod 41 against end 40. By rotating lever 44 in the direction as shown by arrow 46 in figure 4, a portion of lever 44 pushes end 40 against the action of spring 43 away from plate 5 and it is thus possible to move the day bolt from the closed position to the open position. When lever 44 is left completely free, it is pushed by spring 43 and end 40 to the position as shown in figure 4 whereby day bolt 15 lies in the closed position. Thereby lever 44 engages with a projection 51 said resilient stop which is formed by one end of said leaf spring 32 which pushes slider 28 against night bolt 14. Said end of leaf spring 32 is stronger and less distortable than spiral spring 43 with the result that under the action of said spring 43 alone the lever cannot swing further in the direction opposite the direction shown by arrow 46. When the action of spring 43 is however helped by an additional pulling force exerted on bolt 15, the projection 51 can then distort leaf spring 32. Lever 44 still swings further until head 39 lies completely outside lock case 1 and portion 40' of end 40 lies between walls 42. Thereby however as further explained below, the night bolt 14 has to be in closed position. The bolt can then easily be swung about the lengthwise axis thereof over 180°. When releasing bolt 15 after such swinging, the leaf spring 32 pushes lever 44 and thus also bolt 15 back to the position as shown in figure 4.

The swinging of lever 44 can occur in two ways. As already mentioned above, the day bolt 15 can be operated by the cylinder lock mechanism 9. The lever 44 is then part of the transmission between day bolt 15 and operating member 12, 13 of said cylinder lock mechanism 9. A sliding part 47 is also part of said transmission. Said sliding part 47 is a small batten which runs on the side of lever 44, with the one end along the inner side of fastening plate 5, is bent in the location of bolt 14 to run from the side opposite arm 24 about shaft 8 and lies with the end thereof next to arm 24 on the side of cylinder lock mechanism 9. In the location of night bolt 14 said sliding part 47 runs between said bolt 14 and side wall 3 of lock case 1. That end of sliding part 47 which lies on the side of lever 44, lies facing a protrusion 48 from lever 44. When the day bolt 15 lies in closed position and the night bolt in open position, as shown in figure 5, the last-mentioned end of sliding part 47 engages however protrusion 48 so that with a sliding of part 47 towards day bolt 15, the lever 44 is swung in the direction shown by arrow 46. The sliding in said latter direction from the position of sliding part 47 as shown in figure 5 is caused directly by the projection 13 of operating member 12, 13 of the cylinder lock mechanism 9, when said operating member is swung clockwise, that is thus in a direction opposite to the direction followed to bring night bolt 14 to the closed position. As it appears from figure 5, the projection 13 first engages lever 33 which may also be swung. Thereby actually the slider 28 is displaced and the night bolt 14 unlocked but this is no drawback. As soon as lever 33 has been swung far enough, the projection 13 engages the end of sliding part 47, which end is bent in the direction of lever 33, lies between said lever 33 and side wall 3 and extends somewhat outside arm 24. On the side of cylinder lock mechanism 9, the sliding part 47 further comprises a projection 49 projecting

towards fastening plate 5, which is slidable inside a recess 50 which is provided in that side facing side wall 3 of arm 24. It goes without saying that said recess opens on that edge of arm 24 removed from plate 5, above the projecting portion, provided with notch 26, of the overthickness 24' of said arm 24. During the abovementioned sliding of part 47, the projection 49 moves freely in recess 50 in such a way that the sliding is not hampered by arm 24. The recess 50 is further so located that when arm 24 moves away from day bolt 15, which occurs during the swinging to the closed position of the night bolt 14, one end of said recess engages projection 49 and consequently arm 24 carries along sliding part 47. Thereby the sliding part 47 is released from lever 44. Said sliding part 47 then lies with the end thereof at a distance from the protrusion 48 of lever 44 as shown in figure 4. When the night bolt lies in the closed position, it is thus no more possible by means of the cylinder lock mechanism 9, to operate lever 44 and thus day bolt 15. Due to the sliding part 47 no longer engaging protrusion 48 of lever 44, said lever can be swung by distorting the resilient stop 32. In the open position of night bolt 14, the sliding part 47 prevents such swinging which explains why the night bolt has to lie in closed position to be able to swing the day bolt 15.

The second way to operate the day bolt 15 occurs through a door handle. Said door handle is of a known structure and will be not described in detail here. Said handle has not been shown either in the drawings for clearness sake. Only the holder for the handle rod proper has been shown. Said holder is formed by said shaft 45 the lever 44 swings about, which shaft 45 is provided therefor with a square opening 53. To said shaft 45 connects between lever 44 and side wall 2, an arm 54 which extends in the direction of fastening plate 5 of lock case 1 and the end of which is bent over in the direction of side wall 3. Said bent end lies between that portion connecting to bolt 15, of lever 44 and fastening plate 5. In rest position said bent end lies however against the inner side of plate 5 at a slight distance from lever 44 which is large enough to allow the slight swinging which is required to bring day bolt 15 to that position where it can be swung. Said end is pushed against plate 5 by a spiral spring 55 which lies between arm 54 and rim 4 of lock case 1. The lever 44 can swing completely independently from arm 54 and thus operate day bolt 15. When the arm 54 swings also which is only possible in the direction shown by arrow 46 from that position shown in figure 4, said bent end of arm 54 engages lever 44 in such a way that the arm 54 causes the lever 44 to swing together and operates through said lever 44, the day bolt 15.

In the usual way a small handle plate 55 is further mounted on either side of section 6 wherein the lock is mounted, about the handle rod proper. Both handle plates 55 are fastened to one another and to section 6 in the same way as the key plates 20. This occurs by means of two screw 56 which are screwed cross-wise through the one handle plate 55 and which are screwed in threaded openings on that surface facing section 6 of the other handle plate 55. Said latter handle plate is moreover also mounted on the outer side of the door in such a way that no screws are visible there either. But for the handle-rod opening, the handle plates are identical in shape and size to the key plates 20. In side walls 2 and 3 are provided openings 57 for two screws 56. Said screws 56 can as well as the one screw 21 run through the lock case 1 without being hampered by the parts located inside said case 1 and without hampering the movement of said parts.

The above-described lock has a high safety against breaking-in and is easy to operate. The day bolt can be controlled as well by a handle as by the cylinder lock mechanism which controls the night bolt.

It must be understood that the invention is in no way limited to the above embodiments and that many changes can be brought therein without departing from the scope of the invention as defined by the appended claims.

Claims

1. Lock comprising a lock case (1), a night bolt (14) and a day bolt (15) co-operating with one another, which night bolt (14) is swingably mounted inside the lock case and one end of which, in the closing position, projects through an opening (16) in the lock case (1), outside said case, and, in the opening position, is swung inside the lock case, a cylinder lock mechanism (9) which is mounted on the lock case and has a rotating operating member (12, 13) which co-operates with a transmission (24, 25, 26) to actuate both the night bolt (14) and the day bolt (15) so that the unlocking of the door can be obtained through the cylinder lock mechanism and a key, characterized in that the night bolt (14) is provided, on that portion thereof remaining inside the lock case, on a side wall running in parallel relationship to the rotation axis, with at least one protrusion, while the lock has a slider (28) which is slidable to-and-fro relative to the bolt (14) inside the lock case (1) which slider (28) comprises a blocking finger (29), which finger, in the night bolt closed position, engages that side of the protrusion to which the night bolt (14) has to swing to open, said lock further comprising a spring element (32) which pushes the slider (28) as far as possible towards the night bolt (14) and a transmission (33) between the operating member (12, 13) of the cylinder lock mechanism (9) and the slider (28) for moving the slider (28) temporarily away from the night bolt (14) by rotating the operating member (12, 13) in the direction to open the night bolt (14) in such a way that the slider

blocking finger (29) will not retain the bolt (14) any more.

2. Lock as defined in claim 1, characterized in that the operating member of the cylinder lock mechanism (9) comprises a ring (12) and a projection (13) standing thereon, and the transmission between said operating member and the slider (28) comprises a lever (33) which is rotatably mounted inside the lock case, co-operates with the one end thereof with the slider (28) and co-operates with the other end thereof with the operating member projection (13).

3. Lock as defined in either one of claims 1 and 2, characterized in that the slider (28) lies between two ribs (30 and 31) on the lock case wall, which ribs form guides for the slider (28).

4. Lock as defined in any one of the claims 1 to 3, characterized in that the night bolt protrusion (36) forms the wall of a notch.

5. Lock as defined in any one of claims 1 to 4, characterized in that the night bolt comprises a second protrusion which in the open position of the night bolt, lies against the slider finger (29), when said finger connects to the night bolt, and on such a side of said finger that the swinging of the night bolt to the closed position is prevented by said finger, while the transmission between the slider and the operating member of the cylinder lock mechanism is so arranged that even by the swinging of the operating member (12, 13) for bringing the night bolt to the closed position, said transmission moves the slider away from the bolt.

6. Lock according to either one of claims 1 and 5, characterized in that the day bolt (15) has a bevelled head (39), a tie rod (41) connecting thereto and an end projecting outside said rod which is connected by said rod to the head and which co-operates with a lever (44), the lock case comprising a guide wherein said end fits slidingly but not swingably during the sliding from the open to the closed position of the day bolt, and the lock comprises a resilient stop formed by leaf spring (32) which is mounted inside the lock case, said leaf spring (32) being stronger and thus more difficult to distort than the spring element (43) co-operating with said day bolt (15).

7. Lock according to claim 2 characterized in that the sliding part of the lock is releasable from said lever (44) in such a way that in the released condition, the swinging of said lever is possible by a deflecting of the leaf spring (32).

Revendications

1. Serrure comprenant un boîtier (1), un pêne de nuit (14) et un pêne de jour (15) qui coopèrent entre eux, ledit pêne de nuit (14) étant monté à pivotement à l'intérieur du boîtier, pêne dont l'extrémité, en position de fermeture, dépasse du boîtier en passant par une ouverture (16) ménagée dans le boîtier et est, en position de fermeture, basculé à l'intérieur du boîtier, un mécanisme de serrure à barillet (9) monté dans le boîtier et qui possède un organe de commande rotatif (12, 13) qui coopère avec une transmission (24, 25, 26) pour actionner à la fois le pêne de nuit (14) et le pêne de jour (15), de telle façon que le déverrouillage de la porte peut être réalisé par le mécanisme de serrure à barillet et une clef, caractérisée en ce que le pêne de nuit (14) présente sur sa partie demeurant à l'intérieur du boîtier, sur une paroi latérale parallèle à l'axe de rotation, au moins une saillie, la serrure possédant un coulisseau 28, qui peut glisser selon un mouvement de va-et-vient par rapport au pêne (14), à l'intérieur du boîtier (1) ledit coulisseau (28) comprenant un doigt de blocage (29), doigt qui, lorsqu'il vient buter contre le pêne de nuit (14), en position de fermeture de celui-ci se trouve du côté de la saillie vers laquelle le pêne de nuit (14) doit basculer pour s'ouvrir, ledit pêne comprenant, de plus, un élément élastique (32) qui pousse le coulisseau (28) aussi loin que possible en direction du pêne de nuit (14) et une transmission (33) entre l'organe de commande (12, 13) du mécanisme de serrure à cylindre et le coulisseau (28) pour écarter temporairement celui-ci du pêne de nuit (14) en faisant tourner l'organe de commande (12, 13) dans la direction permettant d'ouvrir le pêne de nuit (14) de telle manière que le doigt de blocage (29) ne retienne plus le pêne (14).

2. Serrure selon la revendication 1, caractérisée en ce que l'organe de commande du mécanisme de serrure à barillet (9) comporte un anneau (12) présentant une saillie (13) et en ce que la transmission entre ledit organe de commande et le coulisseau (28) comprend un levier (33) qui est monté à rotation à l'intérieur du boîtier, coopère, par une des ses extrémités, avec le coulisseau (28) et, par l'autre extrémité, avec la saillie (19) de l'organe de commande.

3. Serrure selon l'une quelconque des revendications 1 et 2, caractérisée en ce que le coulisseau (28) se trouve entre deux arêtes (30 et 31) ménagées sur la paroi du boîtier, arêtes qui forment des guides pour le coulisseau (28).

4. Serrure selon l'une quelconque des revendications 1 à 3, caractérisée en ce que la saillie du pêne de nuit (36) forme la paroi d'une rainure.

5. Serrure selon l'une quelconque des revendications 1 à 4, caractérisée en ce que le pêne de nuit comporte une seconde saillie, qui dans la position ouverte du pêne de nuit (14), se trouve contre le doigt (29) du coulisseau lorsque ledit doigt se raccorde au pêne de nuit et cela de ce côté dudit doigt pour que basculement du pêne de nuit en position fermée soit empêché par ledit doigt, tandis que la transmission entre le coulisseau et l'organe de commande du mécanisme de serrure à barillet est agencée de telle sorte que, même lors de basculement de l'organe de commande (12, 13) destiné à amener le pêne de nuit en position de fermeture, ladite transmission écarte le coulisseau du pêne.

6. Serrure selon l'une quelconque des revendications 1 et 5, caractérisée en ce que le pêne de jour (15) possède une tête biseautée (39), une tige de raccord (41) la reliant et une extrémité faisant saillie hors de ladite tige et qui coopère avec un levier (44), le boîtier comportant un guide dans lequel ladite extrémité s'adapte à glissement mais sans possibilité de rotation pendant que le pêne de jour (15) glisse de la position ouverte vers la position fermée et en ce que la serrure comporte une butée élastique formée par un ressort à lame (32) qui est monté à l'intérieur du boîtier, ledit ressort à lame (32) étant plus résistant et donc plus difficile à déformer que l'élément élastique (43) qui coopère avec ledit pêne de jour (15).

7. Serrure selon la revendication 6, caractérisée en ce que la partie formant glissière de la serrure peut être désaccouplée dudit levier (44) de telle manière que dans la position désaccouplée, le basculement dudit levier est rendue possible grâce à une déformation du levier à lame (32).

Patentansprüche

1. Schloss mit einem Schlossgehäuse (1), einem Nachtriegel (14) und einem Tagesriegel (15), welche miteinander zusammenwirken, wobei der Nachtriegel (14) schwenkbar im Schliessgehäuse gelagert hat und ein Ende aufweist, welches in der Schliessstellung durch eine Öffnung (16) des Schlossgehäuses (1) hindurch aus diesem hervorsteht und in der Offenstellung in das Schlossgehäuse eingeschwenkt ist, einem am Schlossgehäuse montierten Zylinderschlossmechanismus (9) mit einem verdrehbaren Betätigungsteil (12, 13), welches zur Betätigung des Nachtriegels (14) sowie auch des Tagesriegels (15) mit einer Übertragungsanordnung (24, 25, 26) zusammenwirkt, so dass das Aufschliessen der Tür mittels des Zylinderschloss-mechanismus und eines Schlüssels bewerkstelligbar ist, dadurch gekennzeichnet, dass der Nachtriegel (14) an einer parallel zur Drehachse verlaufenden Seitenwand seines innerhalb des Schlossgehäuses bleibenden Teils mit wenigstens einem Vorsprung versehen ist, während das Schloss einen innerhalb des Schlossgehäuses (1) relativ zu dem Riegel (14) hin und her verschieblichen Schieber (28) aufweist, mit einem Verriegelungsfinger (29), welcher sich in der Schliessstellung des Nachtriegels an der Seite des Vorsprungs in Anlage befindet, in deren Richtung der Nachtriegel für das Öffnen zu verschwenken ist, und dass das Schloss ferner ein den Schieber (28) so weit wie möglich in Richtung auf den Nachtriegel (14) schiebendes Federelement (32) sowie eine zwischen dem Betätigungsteil (12, 13) des Zylinderschlossmechanismus (9) und dem Schieber (28) angeordnete Übertragungsanordnung (33) aufweist, mittels dessen der Schieber (28) durch Verdrehen des Betätigungsteils (12, 13) in der Richtung zum Öffnen des Nachtriegels (14) zeitweilig derart vom Nachtriegel (14) weg bewegbar ist, dass der Verriegelungsfinger (29) den Riegel (14) nicht mehr festhält.

2. Schloss nach Anspruch 1, dadurch gekennzeichnet, dass das Betätigungsteil des Zylinderschlossmechanismus (9) einen Ring (12) und einen von diesem abstehenden Vorsprung (13) aufweist und dass die Übertragungsanordnung zwischen dem Betätigungsteil und dem Schieber (28) einen verschwenkbar im Schlossgehäuse gelagerten Hebel (33) aufweist, welcher met einem seiner Enden mit dem Schieber (28) und mit dem anderen seiner Enden met dem Vorsprung (13) des Betätigungsteils zusammenwirkt.

3. Schloss nach Anspruch 1 oder 2, dadurch gekennzeichnet, dass der Schieber (28) zwischen zwei Rippen (30 und 31) an einer Wand des Schlossgehäuses liegt, welche Führungen für den Schieber (28) bilden.

4. Schloss nach einem der Ansprüche 1 bis 3, dadurch gekennzeichnet, dass der Vorsprung (36) des Nachtriegels eine Wand einer Kerbe bildet.

5. Schloss nach einem der Ansprüche 1 bis 4, dadurch gekennzeichnet, dass der Nachtriegel einen zweiten Vorsprung hat, welcher sich in der Offenstellung des Nachtriegels derart an einer Seite des in der Anlagestellung am Nachtriegel befindlichen Schieberfingers (29) befindet, dass das Verschwenken des Nachtriegels in die Schliessstellung durch den Finger verhindert ist, während die Übertragungsanordnung zwischen dem Schieber und dem Betätigungsteil des Zylinderschlossmechanismus so ausgebildet ist, dass sie den Schieber durch Verdrehen des Betätigungsteils (12, 13) zum Bewegen des Nachtriegels in die Schliessstellung von dem Riegel weg bewegt.

6. Schloss nach Anspruch 1 oder 5, dadurch gekennzeichnet, dass der Tagesriegel (15) einen abgeschrägten Kopf (39), eine damit verbundene Verbindungsstange (41) und ein ausserhalb der Stange hervorstehendes Ende aufweist, welches über die Stange mit dem Kopf verbunden ist und mit einem Hebel (44) zusammenwirkt, dass das Schlossgehäuse eine Führung aufweist, in welcher das genannte Ende bei der Verschiebung des Tagesriegels von der Offenstellung in die Schliessstellung verschieblich aber nicht verschwenkbar geführt ist, und dass das Schloss einen elastischen Anschlag in Form einer innerhalb des Schlossgehäuses angebrachten Blattfeder (32) aufweist, welche härter un damit schwerer verformbar ist als das met dem Tagesriegel (15) zusammenwirkende Federelement (43).

7. Schloss nach Anspruch 6, dadurch gekennzeichnet, dass das verschiebliche Teil des Schlosses in einer solchen Weise von dem Hebel (44) lösbar ist, dass der Hebel im gelösten Zustand unter Verformung der Blattfeder (32) verschwenkbar ist.

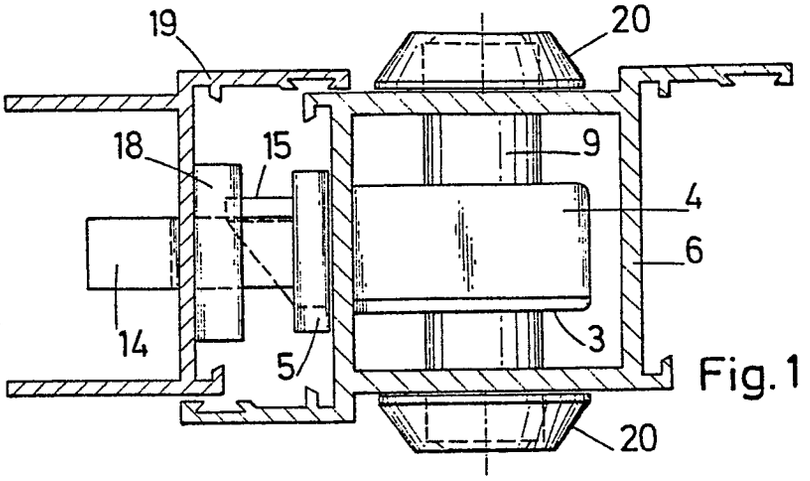


Fig. 1

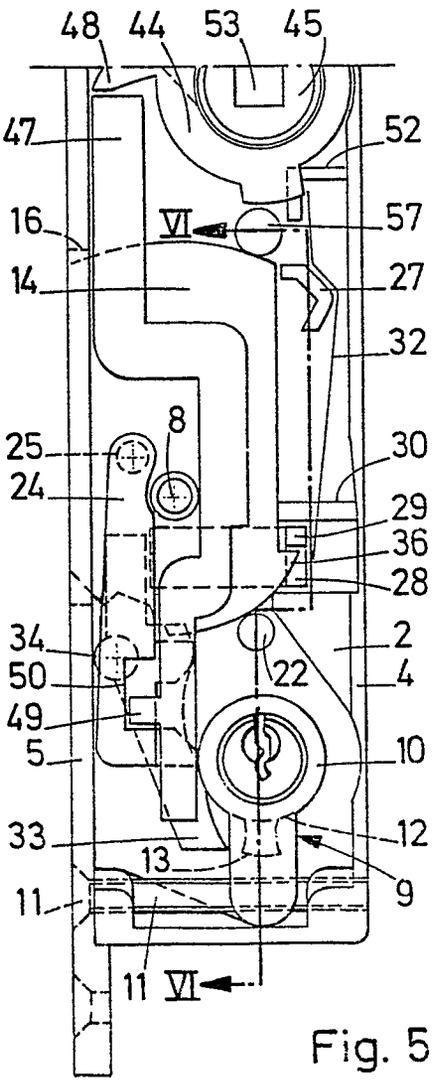
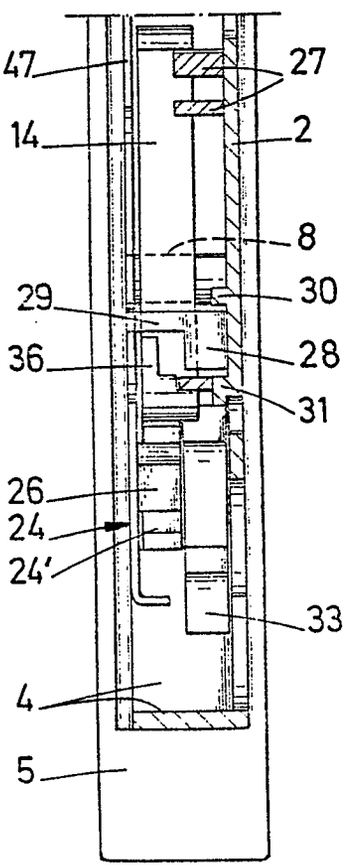


Fig. 5

Fig. 6



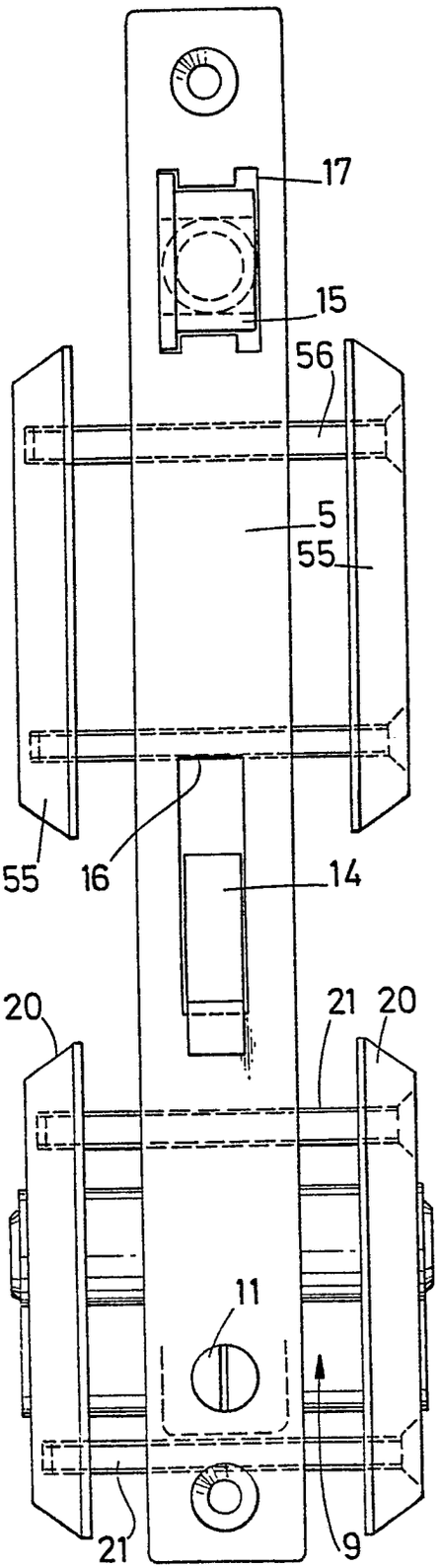


Fig. 2

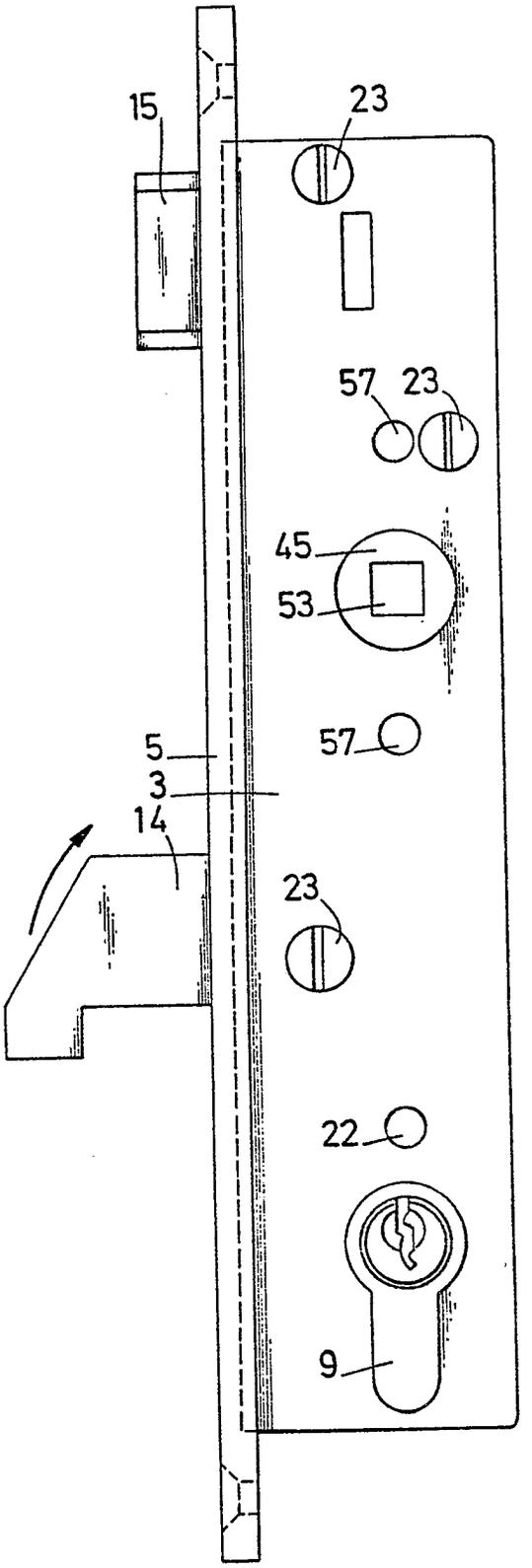
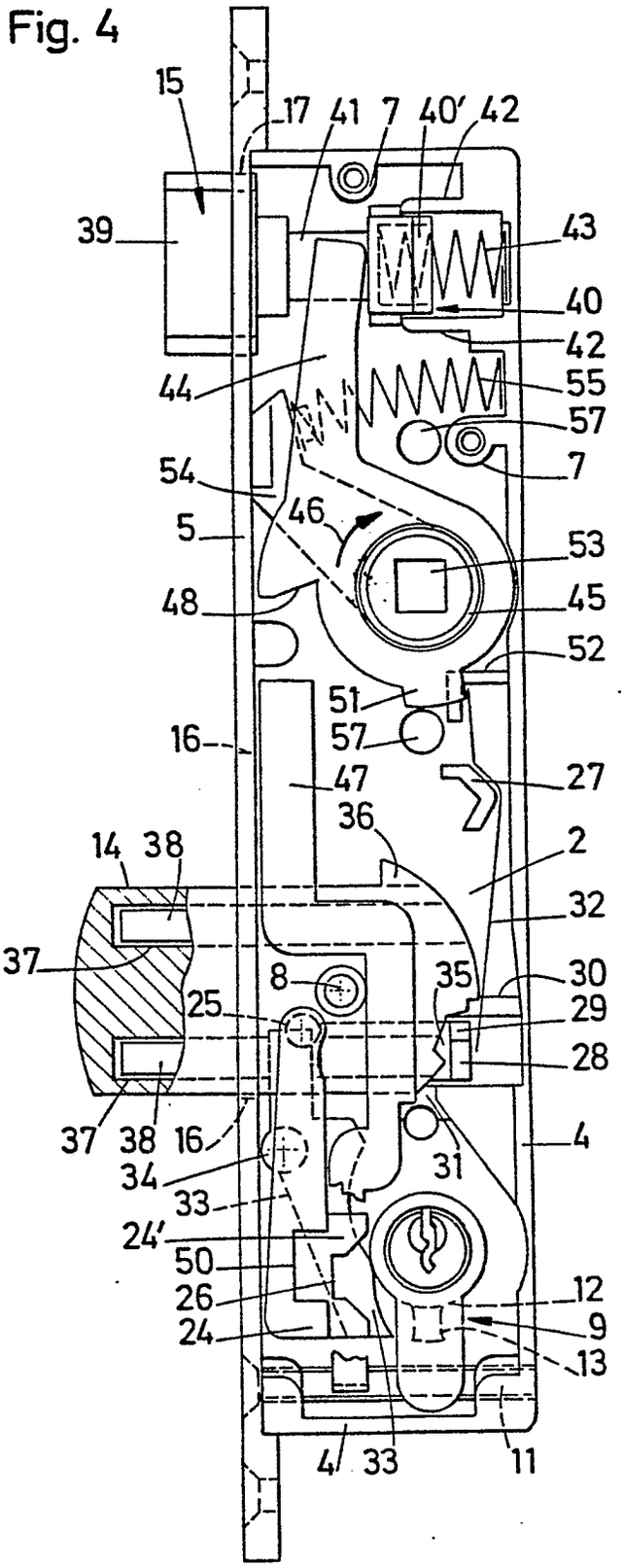


Fig. 3

Fig. 4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