

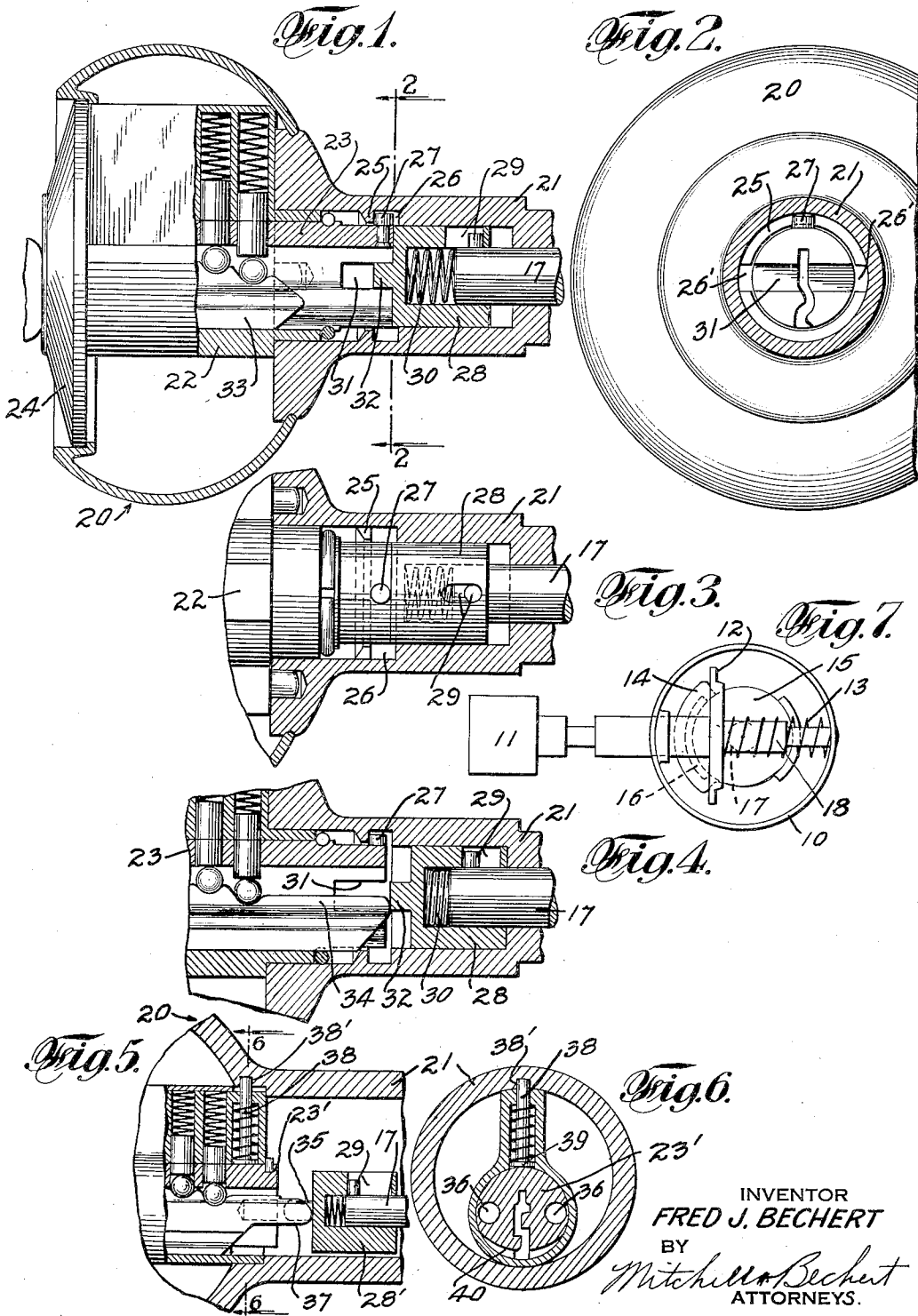
July 23, 1935.

F. J. BECHERT

2,008,662

LOCK DEVICE

Filed Jan. 6, 1933



INVENTOR
FRED J. BECHERT
BY
Mitchell & Bechert
ATTORNEYS.

UNITED STATES PATENT OFFICE

2,008,662

LOCK DEVICE

Fred J. Bechert, Stamford, Conn., assignor to The American Hardware Corporation, New Britain, Conn., a corporation of Connecticut

Application January 6, 1933, Serial No. 650,433

9 Claims. (Cl. 70—91)

My invention relates to a lock device and more particularly to means permitting ready removal of a lock or lock part from its case.

In office buildings, hotels, apartments, private dwellings and the like, it is often desirable or necessary to remove the lock to change the combination or for other purposes, and features tending to simplify such removal are of importance.

It is an object of my invention to provide a lock removable in whole or in part from its case, with features to greatly simplify the removal of the lock or lock part.

Another object is to provide a lock device having novel, simple means to permit removal of the lock by or with the assistance of a key.

A further and general object of the invention is to provide a device of the character indicated, which is simple, sturdy, effective, cheap, and not likely to get out of order.

Other objects will either be pointed out or will become apparent upon a reading of the specification in connection with the drawing.

Briefly stated, in a preferred form of the invention I employ a lock case or housing such as an ordinary lock case or door knob, all broadly comprehended within the term "case". A part of the lock and a part of the lock case have interengaging parts for normally holding the lock in place. The interengaging parts may be disengaged from each other when the key plug is rotated from its normal locked position to what may be termed an abnormal position. The key plug may be and usually would be connected to a cam or roll-back for actuating a door latch, and the door latch or other suitable means serves to limit the rotative movement of the key plug during normal latching operation. When it is desired to remove the lock to reset the tumblers or for other reasons, the key plug and the part actuated thereby such as the roll-back or spindle may be disconnected from each other, after which the key plug may be rotated to its so-called abnormal position and the lock as a whole, or a part thereof, such as a key plug, may be removed.

In the drawing which shows, for illustrative purposes only, preferred forms of the invention—

Fig. 1 is a central, vertical, partial section through a knob lock illustrating features of the invention;

Fig. 2 is a sectional view taken substantially in the plane of the line 2—2 of Fig. 1;

Fig. 3 is a fragmentary top view in horizontal section of the parts shown in Fig. 1;

Fig. 4 is a fragmentary, vertical, sectional view

of parts shown in Fig. 1 moved to different positions by means of a reset key;

Fig. 5 is a view similar to Fig. 4, but illustrating a modified form of means for holding the lock in the knob;

Fig. 6 is a sectional view taken substantially in the plane of the line 6—6 of Fig. 5, the key being omitted;

Fig. 7 is a diagrammatic end view of a lock illustrating features connected with the invention.

My improved lock device may be associated with various types of locks and latches, but will be found particularly effective when associated with a latch lock as illustrated in Fig. 7, which shows the general type disclosed in McKinnéy Patent No. 1,865,128, June 23, 1932.

The latch lock shown in Fig. 7 embodies a case 10 and a latch bolt 11 having a tail-piece which, for purposes of the present description, may simply extend into the latch case and be connected to a cross-head 12 movable back and forth in the casing. The cross-head and latch bolt are spring pressed outwardly by means of a coil spring 13 surrounding the rear extension of the tail-piece. The cross-head 12 may be knob actuated by means of a cam or roll-back 14 offset from the disk 15 in the lock case. Beneath the roll-back 14, and also engageable with the cross-head 12 for actuating the same and the latch bolt is a key actuated roll-back 16 connected through a second disk or otherwise to the spindle 17. The latch bolt of course, has limited back and forth movement, and the roll-back 16, and consequently the spindle 17, are limited in their rotative movement to less than half a revolution. This limitation may be accomplished by the rear end of tail-piece 18 on the cross-head coming in contact with the back of the casing 10.

By suitable or conventional means, the knob roll-back may be dogged so as to prevent latch actuation by the knob and of course the outer knob may be a fixed one as is common in hotel locks.

The invention is illustrated in the present case in connection with a knob lock. As shown more particularly in Figs. 1 to 4, the lock case or knob designated generally 20 has a shank 21 which by suitable means is connected to the knob cam or roll-back 14 so that upon rotation thereof, the cross-head 12 may be retracted so as to retract the latch bolt 11 in the usual manner. The knob carries a lock connected to latch bolt retracting means so that when the knob is dogged against rotation by means (not shown), the latch bolt may be retracted by a lock or key actuated means.

In the form shown, the lock comprises a cylinder 22 carrying a rotatable key plug 23 and the pin tumbler devices of well known construction. The cylinder lock is provided with a finish or face-plate 24 secured thereto so as to close the opening in the knob 20 and which may also help to support the lock.

The lock and its case are provided with means to hold the lock in place under normal conditions. In the form illustrated in Figs. 1 to 4, the knob shank 21 is provided with abutment means such as a flange 25 defining one side of a groove 26 formed annularly therein. The groove 26 is preferably annularly continuous so as to provide the abutment means entirely around the knob shank, but the abutment or flange 25 is interrupted preferably at two points 26'—26' for a purpose to be described. The key plug 23 extends into the knob shank and is provided with a coacting abutment member, as illustrated, in the form of a radially extending pin 27 to engage in rear of the abutment flange 25 so as to hold the key plug and with it the entire cylinder lock in place in the lock case or knob. The cylinder at the forward end may enter and be supported by the knob shank, and the lock assembly is positioned angularly as by means of the dowel pins shown clearly in Fig. 3.

The key plug 23 is connected to the spindle 17 so that the latter may be rotated for latch actuation. I employ what may be termed a coupler between the key plug and the spindle 17 so that the key plug and spindle may be uncoupled for a purpose to be described. In the form shown, I employ a coupling sleeve 28, non-rotatably but slidably carried by the end of the spindle 17 as by the pin and slot arrangement 29. The coupling sleeve is pressed toward the key plug 23 by means of a spring 30. The key plug and coupling sleeve have interengaging parts for coupling the same together and as illustrated, the key plug is transversely slotted as indicated at 31, and the coupling sleeve 28 is provided with a tongue or key 32 to fit the slot 31 so that when the slot and key are in engagement with each other, the key plug, coupler sleeve, and spindle all rotate as a unit.

With the parts positioned as illustrated in Fig. 1, an ordinary pass key 33 may be employed for rotating the key plug 23 whereby the latch 11 may be actuated in the usual manner. The key plug 23 is limited in its rotation by means of the latch or cross-head 12 which has limited reciprocatory movement as heretofore noted. Therefore, during normal operation of the key plug by means of the pass key 33 the pin or abutment member 27 on the key plug cannot reach either of the interruptions 26' in the abutment flange 25, and consequently the key plug and associated parts are held in the lock case or knob. However, when it is desired to remove the lock from its case in order to permit resetting of the tumblers or for any other reason, the latch parts are disconnected from the key plug so that the latter will not be limited in its rotation and the key plug may then be turned so as to bring the abutment pin 27 opposite one of the interruptions 26' in which position the key plug or the key plug and parts associated therewith may be withdrawn from the lock case.

The key plug may be uncoupled from the latch parts by moving the coupler sleeve 28 so as to disengage the tongue 32 from the slot 31. This uncoupling of the parts may be accomplished in various ways, but I prefer to employ a reset key

having a long nose 34, as illustrated in Fig. 4, which nose is long enough to engage and force the tongue 32 from the slot 31 when the key is in position to set the tumblers so as to permit rotation of the key plug. In the position illustrated in Fig. 4, the long nose 34 on the reset key has uncoupled the key plug 23 from the latch parts of the lock, and the key plug is therefore free to be rotated by the key and when suitably positioned may be withdrawn as heretofore described.

The knob and the cylinder lock parts may be assembled with the lock case by first inserting the reset key and turning the key plug 23 to such position that the abutment pin 27 will enter through one of the slots 26', after which the key plug may be turned to key plug locking position by the reset key, at which time the abutment 27 will be behind the abutment 25 and the reset key may be withdrawn so as to permit the tongue 32 to move into the slot 31 so as to couple the key plug to the latch parts as heretofore described. It is also possible to assemble the parts with an ordinary pass key since the end of the key plug 23 will force the coupling sleeve 28 inwardly and when the key plug is turned to key plug locking position with the pin 27 in rear of the flange 25, the spring will snap the tongue 32 into the slot 31. While the arrangement illustrated in Figs. 1 to 4 is simple and efficacious, it is to be understood that the lock or various lock parts may be held by means other than the abutment arrangement 25—27 and a single modification is shown in Figs. 5 and 6. As illustrated in Figs. 5 and 6, the lock parts, coupler, etc., may be substantially the same as heretofore described, except that in the latter form instead of slotting the end of the key plug and making a keyway coupler, I may provide a pair of dowels such as 35 on one of the parts such as the coupler sleeve 28' which may fit into dowel holes 35—36 in the key plug. The coupler sleeve 28', and consequently the latch parts, may be disconnected from the key plug 23' by suitable means such as the reset key having the long nose 37, as illustrated.

Instead of holding the lock parts in the lock case through the medium of the key plug itself, other means may be employed; for example, the parts may be held in by interengaging means between the lock case and the cylinder. As illustrated, the cylinder is provided with a radially inwardly spring pressed pin or locking plunger 38, the head 39 of which normally rides upon the cylindrical surface of the key plug 23' as shown more clearly in Fig. 6. The key plug may be provided with a slabbed off portion forming a depressed cam surface 40 so positioned circumferentially that during normal operation of the key plug for latch operating purposes, the cam surface 40 does not come beneath the head of the locking pin 38. However, when it is desired to remove the lock from its case, the latch parts are uncoupled, as by means of the long nosed key, and the key plug 23' is rotated so that the slabbed off portion or cam surface 40 comes beneath the head of the pin 38, at which time the latter may spring out or be depressed from the hole or abutment shoulder 38' so as to free the cylinder lock parts from the lock case and the lock parts may then be withdrawn from the case.

While the invention has been described in considerable detail and preferred forms illustrated, it is to be understood that various changes and

modifications may be made within the scope of the invention as defined in the appended claims.

I claim:

1. In a device of the character indicated, a lock case, a lock including a rotatable key plug, latch bolt operating means normally connected to said key plug and limiting said key plug to a fractional revolution, interengaging means between said case and key plug for holding said key plug against withdrawal during such fractional revolution, and means for disconnecting said key plug and latch bolt operating means to permit a greater degree of rotation of said key plug and disengagement of said interengaging means, whereby said key plug may be withdrawn.

2. In a device of the character indicated, a cylinder lock including a key plug, means to be actuated thereby, a releasable connection between said key plug and means, a case for said lock, and interengaging parts between said case and key plug, said parts being disengageable from each other only after release of said key plug from said means.

3. In a device of the character indicated, a lock including a key plug, a part to be actuated thereby, a connection between said key plug and part, a lock case, releasable means for normally holding said key plug relatively to said case, said key plug being releasable from said case only when said connection between said key plug and part has been broken.

4. In a device of the character indicated, a lock including a key plug, a part to be actuated thereby for limiting rotation of said plug, coupling means between said part and key plug said coupling means being actuatable from the exterior of said lock for uncoupling said key plug from said part to permit further rotation of said plug and withdrawal thereof.

5. In a device of the character indicated, a lock case, a lock comprising a key plug supported by said case, a latch bolt capable of limited movement, connecting means between said latch bolt and key plug whereby said latch bolt may be key plug actuated and the rotative movement of said key plug limited by said latch bolt, interengaging means between said case and a part of said lock for holding said lock in place, said interengaging means being disengageable to permit separation of said lock and said case only when said key plug is rotated farther than permitted by said latch bolt, said connecting means

between said latch bolt and key plug being disengageable to permit such farther rotation of said plug.

6. In a device of the character indicated, a lock case, a lock comprising a key plug, a member to be actuated thereby, a spring pressed connecting means between said member and key plug and operable by means inserted from the outside for disconnecting said key plug and member, and means for detachably securing said lock to said case and operable to release said lock from said case only when said key plug and member are disconnected.

7. In a device of the character indicated, a latch bolt, a roll-back and spindle for actuating said latch bolt, the rotation of said spindle being limited by said latch bolt to less than a complete revolution, a knob, a cylinder lock carried by said knob and including a key plug, said key plug and knob having interengaging parts for normally holding said cylinder lock and key plug in said knob, a coupling between said key plug and spindle and releasable to permit rotation of said plug and disengagement of said interengaging parts, whereby said cylinder lock may be removed from said knob.

8. In a device of the character indicated, a latch bolt, a roll-back and spindle for actuating said latch bolt, the rotation of said spindle being limited by said latch bolt to less than a complete revolution, a knob, a cylinder lock carried by said knob and including a key plug, said key plug and knob having interengaging parts for normally holding said cylinder lock and key plug in said knob, a coupling between said key plug and spindle and releasable by a key inserted in said key plug to permit rotation of said key plug and disengagement of said interengaging parts, whereby said cylinder lock may be removed from said knob.

9. In a device of the character indicated, a lock including a key plug, a latch bolt actuator, coupling means between said key plug and latch bolt actuator, said coupling means being normally in coupling position during rotation of said key plug and when said key plug is in both locked and unlocked positions, said coupling means being movable by a special key in said key slot to uncoupling position, and spring means for normally urging said coupling means to coupling position.

FRED J. BECHERT.