Dec. 30, 1941. C. LEDIN 2,268,511

REMOVABLE LOCK CORE

Filed Jan. 14, 1939

Fig. 1.

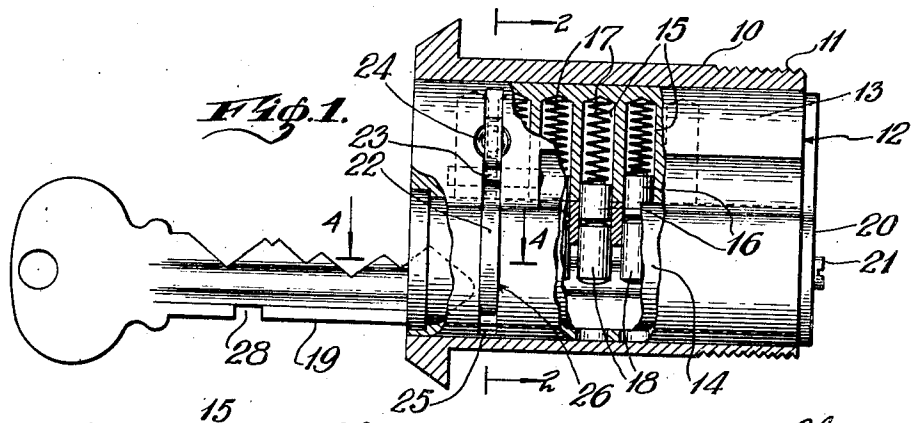


Fig. 2.

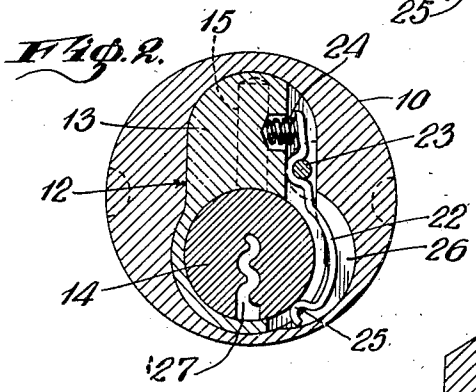
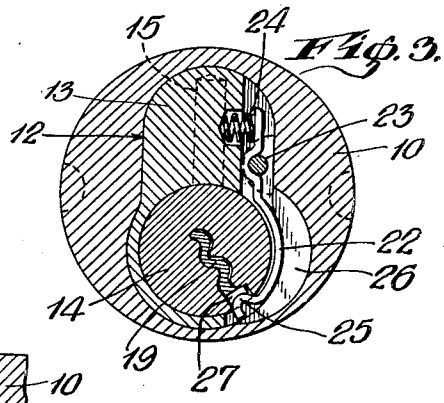


Fig. 3.



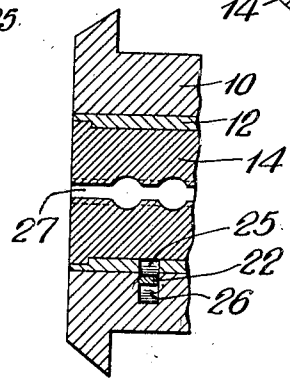


Fig. 4.

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REMOVABLE LOCK CORE

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9 Claims. (Cl. 70—371)

This invention relates to a cylinder lock of the type having a removable core. More particularly, this invention relates to a novel form of lock core retaining means adapted for a cylinder of the class described.

In brief, my invention embodies a cylinder having a removable lock core, with the locking mechanism of the core being normally operable by one key, and the core being removable from the cylinder when operated by another key. More particularly, the core has a key plug equipped with tumblers, which tumblers are positioned by either of the two keys to allow rotation of the key plug, one of the keys being specially formed to effect movement of a retaining detent into release position whereby to effect removal of the core. As a feature of my invention, the two keys are preferably bitted exactly alike, so that I am able to simplify the tumbler structure and thus facilitate master keying a group of cylinders, all as will be understood by those skilled in this art.

Even more particularly, the retaining member which interlocks my lock core and cylinder takes the form of a detent normally spring pressed out of interlocking engagement, and maintained in interlocking engagement by the peripheral surface of the key plug. This peripheral surface includes an opening which, when the key plug is rotated by one key, remains open. When the key plug rotates to a position aligning the opening with a portion of the detent, the detent will enter the opening and move out of interlocking engagement with the cylinder. When a regular key operates the key plug, the opening is filled, and a continuous surface is presented to the detent, so that it does not move out of interlocking position. In the preferred form of my invention, the opening is actually the key slot of the plug, and the detent moves into the key slot and out of interlocking engagement with the cylinder when the key plug is operated by a key whose lower edge is notched to leave an opening in the key slot. The regular key, of course, fills the key slot and prevents movement of the detent to release position. By the simple expedient indicated, I obtain a very desirable function from a construction which is inexpensive to manufacture, and which because of its simplicity, will be trouble free.

Referring now to the drawing, Fig. 1 is a section through a cylinder showing in partial section the lock core within the cylinder. Figs. 2 and 3 are sections taken along lines 2—2 of Fig. 1 showing the interlocking detent in interlocking position in Fig. 2, and out of interlocking position in Fig. 3. Fig. 4 is a section taken along lines 4—4 of Fig. 1.

Referring now more particularly to the drawing, the cylinder of my invention is designated by reference numeral 10 and is herein shown to be of the type equipped with screw threads whereby it may be screwed into a lock casing. The lock core adapted to fit into the cylinder is designated generally by reference numeral 12, and comprises a bible portion 13 and a key plug portion 14. As is best shown in Fig. 1, the bible portion is equipped with a series of driver bores 15 in which are maintained drivers 16 and driver springs 17, all as is standard in the art. Within the key plug 14 there are mounted the tumblers 18 adapted to be set by a key 19 in the usual manner.

Proper alignment of the tumblers and drivers will, of course, permit rotation of the key plug 14 relatively to the bible portion 13 of the lock core 12. This rotation of the key plug 14 operates lock actuating means, in this case, a cam 20 secured to the key plug 14 by screws 21.

For retaining the core 12 within the cylinder 10, I utilize a detent 22 pivoted on a pin 23 relatively to the lock core 12. A spring 24 presses against one end of the detent 22 and tends to press the other end 25 of the detent against the periphery of key plug 14. In the position of the parts in Fig. 2, the detent 22 will lie partially within a slot 26 formed in the cylinder 10, and when so positioned will hold the lock core 12 against outward movement relatively to the cylinder.

The keyway of the key plug 14 is designated by reference numeral 27. When the tumblers of the lock core 12 are set by a key, such as 19, notched as at 28, and the plug 14 then rotated to the position of Fig. 3, there will be nothing obstructing the movement of the end 25 of the detent into the key slot 27, due, of course, to the fact that the notch 28 in the key 19 is positioned opposite the detent 22 when in proper tumbler operating position in the key plug 14. Under such circumstances, the lock core 12 will be readily removable, the detent 22 being entirely out of the slot 26 of the cylinder 10. Of course, I can utilize an opening other than the key slot, which opening will be filled under the control of one key just as is the key slot in the form of invention shown.

A key notched as is key 19 in Fig. 1, will be called a "removal" or "control" key. A key bitted exactly as is the key 19, but not equipped

with the notch 28, will of course rotate the plug 14 by the setting of the tumblers, but will not allow movement of the detent 22 into release position since the lower edge of the key forms with the key plug a continuous surface. Such a key will be called a "change" or "regular" key, and will be the regular operating key of the lock.

It is therefore seen that through use of very simple means, I obtain a removable lock core which is removable only by a proper key, which key must be adapted to operate properly all of the tumblers of the core, and must simultaneously effect the operation of the special detent.

I now claim:

1. In a lock of the class described, a cylinder, a removable lock core in said cylinder comprising a bible and a rotatable key plug, a detent pivoted between said lock core and said cylinder and adapted to interlock said core and said cylinder to prevent outward movement of said core, a spring pressing said detent on its pivot and tending to move said detent out of interlocking engagement with said cylinder, a portion of said detent abutting the key plug and maintained by the key plug against movement by said spring out of interlocking engagement.

2. In a lock of the class described, a cylinder, a removable lock core in said cylinder comprising a bible and a rotatable key plug, a detent pivoted on said bible and adapted for interlocking engagement with said cylinder to prevent outward movement of said core, a spring pressing said detent on its pivot and tending to move said detent out of interlocking engagement with said cylinder, a portion of said detent abutting the key plug and maintained by the key plug against movement by said spring out of interlocking engagement.

3. In a lock of the class described, a cylinder, a removable lock core in said cylinder comprising a driver containing bible and a rotatable key plug having a key slot, said key slot being so formed relatively to the key for which it is intended that said key entirely fills said slot whereby its lower edge forms with the outer periphery of the key plug a continuous cylindrical surface, means between said lock core and cylinder adapted to interlock said core and cylinder to prevent outward movement of said core, a spring normally pressing said means out of interlocking engagement, a portion of said means abutting the key plug and maintained thereby against movement out of interlocking engagement until said key plug is rotated to align its key slot with said portion abutting the key plug, said portion being of such size and configuration as to enter partially into said key slot under said spring pressure when the key slot is open as by the partial cutting away of the key inserted into said slot, whereby to effect movement of said means out of interlocking engagement, said key slot when filled with a key, functioning however as a continuous part of the key plug adapted to maintain said means in interlocking engagement.

4. In a lock of the class described, a cylinder, a removable lock core in said cylinder comprising a bible and a rotatable key plug having a key slot, said key slot being so formed relatively to the key for which it is intended that said key entirely fills said slot whereby its lower edge forms with the outer periphery of the key plug a continuous cylindrical surface, a detent adapted to interlock said core and cylinder to prevent movement of said core out of said cylinder, a spring pressing against said detent and tending to move said detent out of interlocking engagement, a portion of said detent abutting the key plug and maintained by the periphery of the key plug and the lower edge of the key against movement by said spring out of interlocking engagement, rotation of said key plug by a key to align its key slot with said detent portion allowing entry of said portion into the key slot under said spring pressure when the key is notched to expose the keyway to said detent portion, said entry allowing sufficient movement of said detent to withdraw said detent from interlocking engagement.

5. In a lock of the class described, a cylinder, a removable lock core in said cylinder comprising a bible and a rotatable key plug having a key slot, a detent pivoted on said bible and adapted for interlocking engagement with said cylinder to prevent outward movement of said core, a spring pressing said detent on its pivot and tending to move said detent out of interlocking engagement with said cylinder, a portion of said detent abutting the key plug and maintained by the key plug against movement by said spring out of interlocking engagement, rotation of said key plug by a key to align its key slot with said detent portion allowing entry of said portion into the key slot under said spring pressure when said key is notched for said detent portion, said entry allowing sufficient movement of said detent to withdraw said detent from interlocking engagement, while when said key plug is rotated by a key entirely filling said key slot, said detent will be maintained against movement out of interlocking engagement.

6. In a lock of the class described, a cylinder, a removable lock core in said cylinder comprising a bible and a rotatable key plug having tumblers, means adapted to interlock said lock core and cylinder to prevent outward movement of said core and spring pressed toward release position, a portion of said means pressing against the key plug and maintained thereby in interlocking position, said key plug being rotatable relatively to said bible by the setting of the tumblers by either one of two keys, one of said keys having a notch in the lower edge thereof whereby to leave an opening in the keyway, said opening being cooperable with the means interlocking the core and cylinder for allowing movement of said means by said spring pressure out of interlocking engagement when said key plug is rotated by said key, the other of said keys entirely filling said keyway whereby rotation of the key plug by the other of said keys prevents movement of said means by said spring pressure out of interlocking engagement.

7. In a lock of the class described, a cylinder, a removable lock core in said cylinder comprising a bible and a rotatable key plug, a detent pivoted on said bible and adapted for interlocking engagement with said cylinder to prevent outward movement of said core, a spring pressing said detent on its pivot and tending to move said detent out of interlocking engagement with said cylinder, a portion of said detent abutting the key plug and maintained by the key plug against movement by said spring out of interlocking engagement, said key plug having an opening adapted to be filled by one key and to be left unfilled by another key, said opening moving opposite said key plug abutting portion of the detent as said plug is rotated by either key, whereby when said opening is unfilled said detent por-

tion will enter it and said detent will move out of interlocking engagement with said cylinder, while when said plug opening is filled by a key, the said detent will remain in interlocking engagement.

8. In a lock of the class described, a cylinder, a removable lock core in said cylinder comprising a bible and a rotatable key plug, a lever pivoted on said bible and adapted for interlocking engagement with said cylinder to prevent outward movement of said core, a spring pressing said lever on its pivot and tending to move said lever out of interlocking engagement with said cylinder, a portion of said lever abutting the key plug and maintained by the key plug against movement by said spring out of interlocking engagement, said key plug having a key slot adapted to be filled by one key and to be left unfilled by another key, said key slot moving opposite said key plug abutting portion of the lever as said plug is rotated by either key, whereby when said key slot is unfilled said lever portion will enter it and said lever will move out of interlocking engagement with said cylinder, while when said key slot is filled by a key, the said lever will remain in interlocking engagement.

9. In a lock of the class described, a cylinder, a removable lock core in said cylinder comprising a rotatable key plug, a detent mounted for interlocking engagement with said cylinder and lock core to prevent outward movement of said core from said cylinder, a spring pressing said detent and tending to move said detent out of interlocking engagement with said cylinder and lock core, a portion of said detent abutting the key plug and maintained by the key plug against movement by said spring out of interlocking engagement, said key plug having an opening adapted to be filled when a regular key is inserted into said key plug and to be left unfilled when the removal key is inserted into said key plug, said opening moving opposite said key plug abutting portion of the detent as said plug is rotated by either key, whereby when said opening is unfilled said detent portion will enter it and said detent will move out of interlocking engagement with said cylinder and lock core, while when said plug opening is filled as when said key plug is rotated by the regular key, the said detent will remain in interlocking engagement.

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