

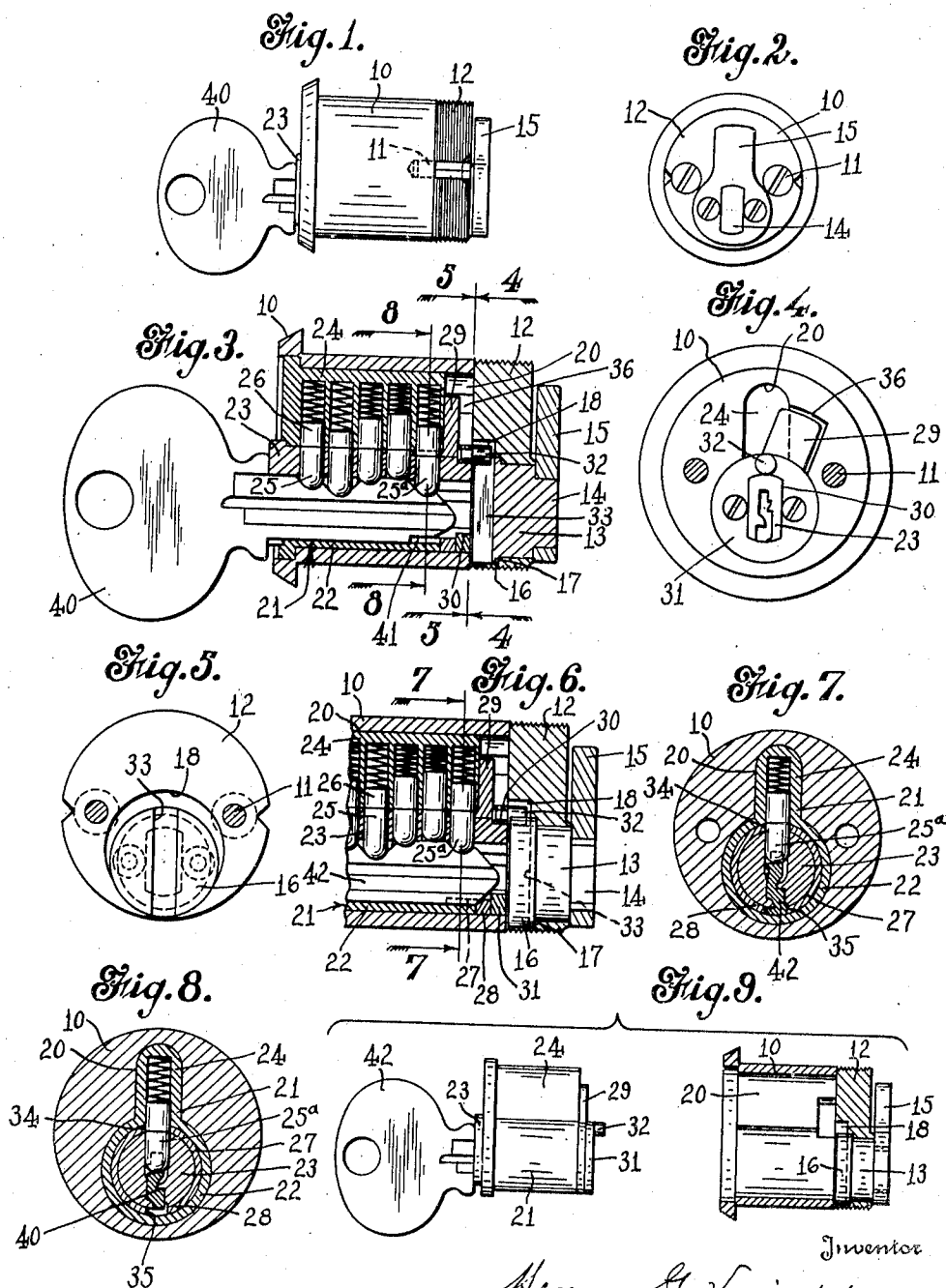
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H. G. VOIGHT
REMOVABLE CORE LOCK

2,347,802

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2 Sheets-Sheet 1



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2 Sheets-Sheet 2

Fig. 10.

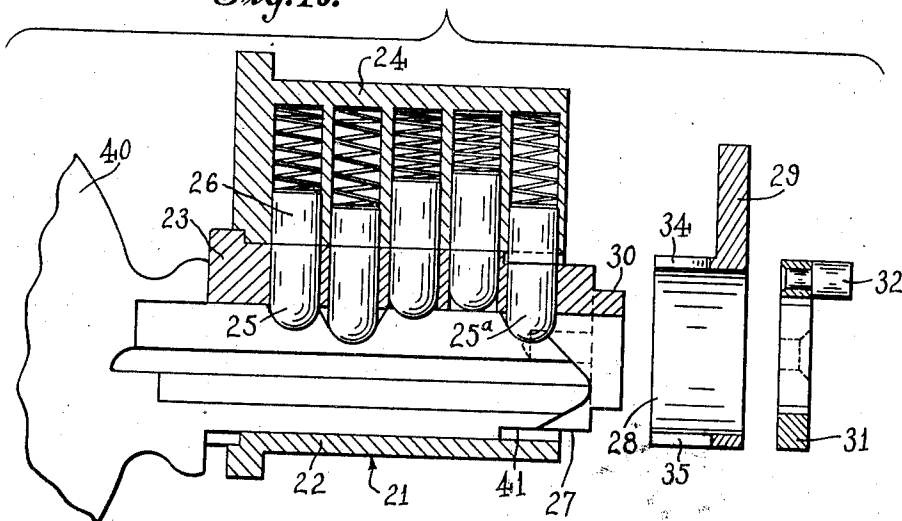
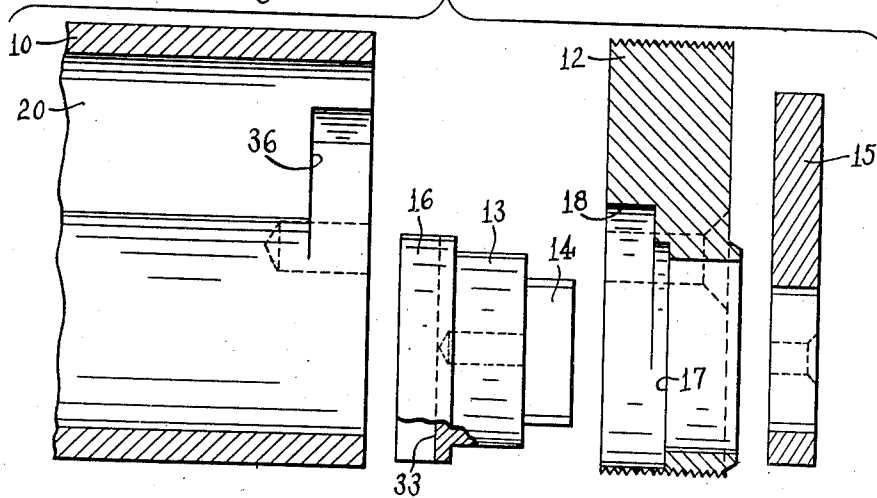


Fig. 11.



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REMOVABLE CORE LOCK

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9 Claims. (Cl. 70—369)

This invention relates to locks, and more particularly to a lock provided with a removable core, whereby the core, including the key barrel and tumblers, may be removed and another substituted therefor provided the key is lost, or if for any other reason it is desired to change the lock mechanism so that it may be operated by a different key.

As shown, the lock is of the type usually referred to as a cylinder lock, adapted for use with a lock case containing bolt mechanism designed to be operated by a rollback on the lock mechanism, which rollback in turn is operated by the key barrel. Such cylinder locks are made in large quantities for use with lock cases mounted upon doors of various types, and are generally of standard form. When the core of such a lock is arranged to be removable, it is usually necessary to place the key barrel at a greater distance from the surface of the lock housing owing to the fact that the key barrel is usually surrounded by a sleeve or hollow portion of the core itself, which is not the case when the key barrel is mounted directly in a lock housing not having a removable core, in which event the key barrel lies close to the surface of the lock case. The rollback is usually actuated by the key barrel, and hence rotates about the same axis as the key barrel. When this axis is placed nearer the center of the lock housing, the axis of rotation of the rollback is thus shifted, and as a result, the lock does not fit the standard bolt mechanism with which it is designed to be used, and which has been constructed for a cylinder lock. That is, when the core is not removable, the axis of this rollback is close to the surface of the lock housing, while when the core is removable, it is further removed from the surface and the lock mechanism itself must be changed to make allowance for this change in the axis of the rollback.

One object of the present invention is to provide a lock mechanism having a removable core and a roll back rotatably mounted thereon, so arranged that the axis of the rollback will be in the same position as that of a lock not provided with the removable core.

A still further object of the invention is the provision of a lock housing having a removable core including a key barrel, and a rollback operated by the key barrel so arranged that the axis of the key barrel will be eccentric to that of the rollback whereby the latter may be placed close to the surface of the lock housing.

A still further object of the invention is the

provision of a novel and relatively simple and inexpensive lock mechanism having a removable core, which lock mechanism will fit into lock cases constructed for use with locks not having removable cores, and from which the core may be readily removed to be replaced by another using a different key.

To these and other ends the invention consists in the novel features and combinations of parts to be hereinafter described and claimed.

In the accompanying drawings:

Figure 1 is a side elevational view of a lock mechanism embodying my invention;

Fig. 2 is an end elevational view of the same;

Fig. 3 is a sectional view through the lock casing;

Fig. 4 is a sectional view on line 4—4 of Fig. 3;

Fig. 5 is a sectional view on line 5—5 of Fig. 3;

Fig. 6 is a partial sectional view similar to Fig. 3, but showing the operation of the change key;

Fig. 7 is a sectional view on line 7—7 of Fig. 6;

Fig. 8 is a sectional view on line 8—8 of Fig. 3;

Fig. 9 constitutes an exploded view of the core and housing;

Fig. 10 constitutes an enlarged exploded view of the lock core; and

Fig. 11 constitutes a partial exploded view of the lock housing showing the parts adjacent the rear end of the same.

To illustrate a preferred embodiment of my invention, I have illustrated in the drawings a lock mechanism comprising a housing 10, which in this instance is of cylindrical form. Secured at the rear end of the housing by the screws 11 is a member 12 within which is rotatably mounted a hub 13 having on the end thereof a flattened portion 14 upon which is non-rotatably secured the usual rollback 15. The hub is provided at its inner end with an enlarged portion 16 which abuts against a shoulder 17 in the member 12 whereby this hub member will be held in place by this enlarged end of the rollback 15. The member 12 is recessed to permit rotation of the enlarged end 16 of the hub 13, and this recess is somewhat enlarged at its upper end, as shown at 18, for a purpose to be hereinafter described.

The portion 10 of the housing is provided with an opening 20 to receive the lock core designated generally by the numeral 21, this core comprising a hollow cylindrical portion 22 within which is mounted the key barrel 23 and an upper pin tumbler extension 24, the opening 20 being of suitable shape to snugly receive this core.

The key barrel 23 is slotted as usual to re-

ceive the key, and is provided with openings receiving the tumblers 25 which cooperate with the drivers 26 mounted in the extension 24 of the core. At its rear end the key barrel is reduced, as shown at 27, to receive on said reduced end a sleeve 28, this sleeve carrying a retaining or locking member 29. A further reduced portion 30 at the end of the key barrel extends through this locking member, and has secured thereto a disk 31 having an eccentric pin 32 thereon, which pin is designed to operate in a transverse slot 33 of the portion 13 of the hub 13, whereby rotation of the key barrel will effect rotation of the hub 13, and thus effect rotation of the rollback 15.

As illustrated in Figs. 3, 6 and 10, the sleeve 28 fits over the reduced portion of the key barrel, in which is mounted the end pin tumbler 25^a, and is provided with a slot 34 to receive this tumbler. It will also be noted that the sleeve 28 is provided with a slot 35 at its lower end, and that the sleeve may be locked to the key barrel to rotate therewith, or be locked to the core so that the key barrel may rotate independently of the sleeve, depending upon the position of the "break" in the pin tumbler 25^a, as determined by the key inserted into the lock.

As shown in Fig. 4, the rear end of the housing 10 is cut out to provide a slot 36 to receive the retaining member 29, and when, as shown in Fig. 4, this retaining member lies in the slot, it will be engaged with a part of the lock housing at the side of the opening 20 and hold the core in place. When, however, the retaining member 29 is rotated to a slight extent so that it is aligned with the extension 24, the entire core mechanism may be removed from the case, as shown in Fig. 9.

It will also be noted that, owing to the thickness of the sleeve or hollow portion 22 of the core, the key barrel 23 must be positioned nearer the center of the lock housing 10 than if this sleeve were not employed and the key barrel mounted directly in the lock housing. In order that the axis of rotation of the rollback 15 will not be similarly shifted, the axis of the hub 13 is eccentric to the axis of the key barrel, and below the latter, as shown in Figs. 3 and 6. It is for this reason that the pin 32 will lie in part above the part 16 of the hub 13, as shown in these figures, and in order to permit rotation of the disk 31 upon which the pin is mounted it is necessary to enlarge the opening or recess 18, as shown in Fig. 5, beyond that actually necessary for the hub portion 16.

With this arrangement the rollback 15 is located in the same position relatively to the surface of the lock housing as in a lock, which is not provided with a removable core. At the same time the connection between the key barrel and the hub member 13, which connection is constituted by the pin 32 and slot 33, is longitudinally separable, so that the core may be readily removed by a longitudinal movement, and when placed in the lock will always be in position to operate the rollback by rotation of the key barrel.

The lock is designed to be operated by the usual key 40, shown in Fig. 3, wherein the breaks of the first four tumblers are aligned at the upper edge of the key barrel, and the break in the last tumbler aligned between the periphery of the reduced end 27 of the key barrel and the sleeve 28. When the tumblers are thus disposed, the key barrel will rotate independently of the

sleeve, and operate the rollback 15 without moving the retaining member 29 carried by the sleeve 28 from its retaining position shown in Fig. 4. This key is also provided with a cut-away portion 41 at the lower front end thereof, so that it will rotate within the sleeve 28 without tending to turn the latter.

When, however, it is desired to remove the core mechanism from the housing for any reason, such, for example, as to make a key change in the lock, a change key 42 is employed. As shown in Fig. 6, this aligns the first four tumblers as before, but aligns the fifth tumbler so that the break occurs at the upper edge of the sleeve 28. This fifth tumbler 25^a thereby locks the sleeve to the key barrel, so that when the latter is turned the retaining member 29 is rotated through a slight angle from the position shown in Fig. 4 to a position in which it is aligned with the extension 24 of the core. In this position of the parts a slight pull on the key will withdraw the entire core mechanism 21 from the lock housing, and a new core provided for operation by a different key may be replaced in the housing. The key 42 will extend into the slot 35 of the sleeve 28 and assist in the rotation of this sleeve.

When the new core is inserted in the case and the key given a slight turn to the left, the retaining member 29 will be turned to the position shown in Fig. 4, in which the core will be locked against removal from the case. In this position the tumblers will be in alignment with the drivers in the pin tumbler extension, so that the key can be removed.

It will be apparent from the above that I have provided a relatively simple lock mechanism in which the core, consisting of the key barrel, the pin tumbler extension and the tumblers themselves, may be removed as a unit from the lock, while at the same time a longitudinally separable connection is provided between the key barrel and the hub of the rollback such that the axis of rotation of the latter is eccentric to that of the key barrel, and may be located nearer the surface of the housing than the axis of the key barrel, as is the case with a cylinder lock not provided with a removable core.

While I have shown and described a preferred embodiment of my invention, it will be understood that it is not to be limited to all of the details shown, but is capable of modification and variation within the spirit of the invention and within the scope of the claims.

What I claim is:

1. In a lock structure, a housing, a tumbler core removably mounted in said housing, a key barrel rotatably mounted within the core, and a rollback operated by the key barrel, the axis of rotation of said rollback being offset from that of the key barrel and being closer to the periphery of the housing.
2. In a lock structure, a housing, a tumbler core removably mounted in said housing, a key barrel rotatably mounted within the core, a rollback operated by the key barrel, the axis of rotation of said rollback being offset from that of the key barrel, and key-operable means for releasably retaining said core within the case, said means comprising a sleeve on said key barrel, a retainer carried by the sleeve to engage a part of the housing, and operable connections between the key barrel and the sleeve for effecting rotation of the latter.
3. In a lock structure, a housing, a tumbler

core removably mounted in said housing, a key barrel rotatably mounted within the core, a hub rotatably carried by the housing and having a rollback thereon, means connecting said hub to the key barrel to rotate the former upon rotation of the latter, and the axis of rotation of the key barrel being offset from that of the hub and being closer to the periphery of the housing.

4. In a lock structure, a housing, a tumbler core removably mounted in said housing, a key barrel rotatably mounted within the core, a hub rotatably carried by the housing and having a rollback thereon, means connecting said hub to the key barrel to rotate the former upon rotation of the latter, and the axis of rotation of the key barrel being offset from that of the hub, and said connection being separable by a longitudinal movement of the key barrel to permit withdrawal of the core from the housing.

5. In a lock structure, a housing, a tumbler core removably mounted in said housing, a key barrel rotatably mounted within the core, a member disposed between the key barrel and housing and carrying a retainer to hold the core in the housing, said member being key-controlled to permit removal of the core, a rollback rotatably carried by the housing and having a longitudinally separable connection with the key barrel to be actuated by the latter, and the axis of rotation of the rollback being eccentric to that of the key barrel.

6. In a lock structure, a housing, a tumbler core removably mounted in said housing, a key barrel rotatably mounted within the core, a member disposed between the key barrel and housing and carrying a retainer to hold the core in the housing, said member being key-controlled to permit removal of the core, a rollback rotatably carried by the housing and having a longitudinally separable connection with the key barrel to be actuated by the latter, the axis of rotation of

the rollback being eccentric to that of the key barrel, and said member comprising a sleeve surrounding the key barrel, and the latter being rotatable independently of said sleeve to effect rotation of the rollback without movement of the retainer.

7. A lock comprising a cylindrical housing, a rollback rotatably carried by the housing, a core removably mounted in the housing, a key barrel rotatably mounted in the core and operatively connected to the rollback to rotate the same, said connections being longitudinally separable to permit removal of the core, and the axis of rotation of the key barrel being closer to the longitudinal axis of the housing than that of the rollback.

8. A lock comprising a cylindrical housing, a rollback rotatably carried by the housing, a core removably mounted in the housing, a key barrel rotatably mounted in the core and operatively connected to the rollback to rotate the same, said connections being longitudinally separable to permit removal of the core, the axis of rotation of the key barrel being closer to the longitudinal axis of the housing than that of the rollback, and means for retaining said core in the housing comprising a movable retaining member carried by the core and adapted to engage a part of the housing, and said retaining member being actuated by a key standing in said key barrel.

9. In a lock structure, a housing, a tumbler core removably mounted in the housing, a key barrel rotatably mounted in said core, a rollback hub rotatably mounted in the housing and having a slot in its inner face, said key barrel carrying an eccentrically mounted member projecting into said slot, the axis of rotation of said hub being offset with respect to that of the key barrel and the greatest dimension of said member being less than the width of the slot.

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