Oct. 11, 1927. 1,645,006

E. N. JACOBI

TUMBLER LOCK

Original Filed Dec. 23, 1925

FIG. 1

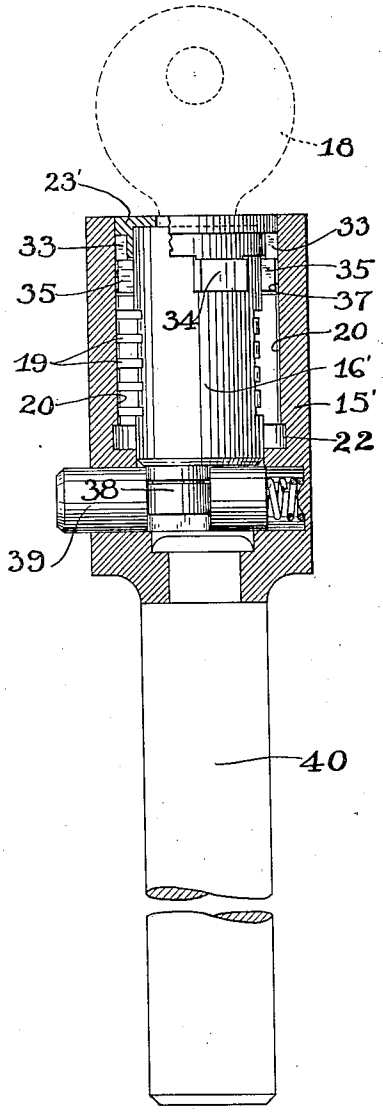


FIG. 2

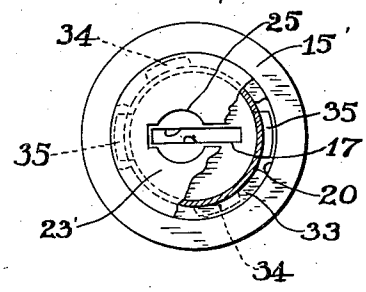


FIG. 3

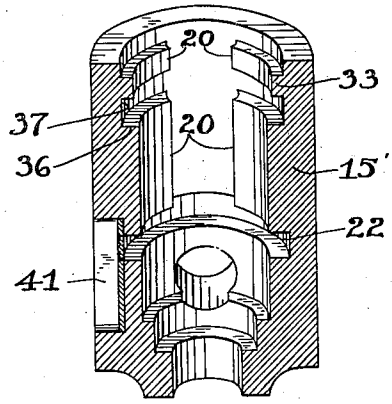
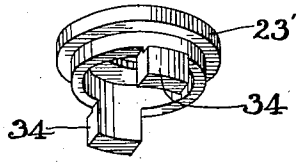


FIG. 4



WITNESSES

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TUMBLER LOCK.

Original application filed December 23, 1925, Serial No. 77,295. Divided and this application filed March 14, 1927. Serial No. 175,344.

This invention has for its object to provide a tumbler lock in which the lock barrel enters the lock-case from the front and is confined in place by means of a metal cap turning therewith and having a sealing engagement with the lock-case that will effectually prevent tampering with the lock barrel.

Another object of the invention is to provide such a sealing cap of soft steel so as to render it of greater protection against damage.

Another object of the invention is to simplify the construction of locks of this character so as to render them inexpensive to manufacture and at the same time difficult to damage in such a way as to obtain the use of the parts locked thereby.

This case forms a division of my application for tumbler locks, Serial No. 77,295, filed December 23, 1925.

With the above and other objects in view the invention consists in the lock as herein claimed, its parts and combinations of parts and all equivalents.

Referring to the accompanying drawings, in which like characters of reference indicate similar parts in different views,

Fig. 1 is a central sectional view of a lock constructed in accordance with this invention;

Fig. 2 is a plan view thereof partly sectioned;

Fig. 3 is a perspective longitudinal sectional view of the lock-case thereof, and

Fig. 4 is a perspective view of the sealing cap thereof.

In these drawings, 15′ indicates a cylindrical lock-case in which is mounted to rotate or oscillate a lock barrel 16′ having a longitudinal key slot 17 to receive a key 18 and provided with transversely extending slide tumblers 19 adapted to engage grooves 20 in the walls of the lock-case when the key is removed but fitting the variously lengthed bits of the key so as to be withdrawn thereby when the key is inserted to lie flush with the surface of the lock barrel and permit the lock barrel to be turned by means of the key. This lock barrel 16′ is let into the lock-case from the front thereof. The annular groove 22 formed in the bore of the lock-case near the lower end thereof is to permit the longitudinal grooves 20 to be broached therein.

The lock barrel 16′ may be made of a die casting as a convenient and inexpensive construction for obtaining uniformity and, as the alloy metal of such die castings is not suitable for withstanding attempts at mutilation for access to or unauthorized use of the parts locked, a protecting sealing cap 23′ is used, preferably of soft steel, as better resisting intentional damage than the harder metal. This cap is provided with a recess to fit over the upper end of the lock barrel and have a tight forced fit therewith so as to turn with the lock barrel. The sealing cap 23′ is provided with a key-hole 25 registering with the key slot 17 of the lock barrel.

The lock-case 15′ is provided with an annular flange 33 in its counterbore interrupted by the same broaching operation that produces the tumbler grooves 20 and the sealing cap 23′ fits within this flange and bears thereon, its lower end, however, being cut away to leave only the opposite pair of downwardly and outwardly extending hook-like locking lugs 34, as shown in Fig. 4, which may be entered through the slots 20 and then turned into locking engagement with the flange 33. The lock barrel 16′ is also provided with a pair of oppositely positioned projecting locking lugs 35, which may also enter through the slot 20 and then turn into engagement beneath the flange 33, the spacing of the flange 33 from the shoulder 36 formed between the bore and the counterbore of the lock-case providing an annular groove 37 to receive said locking lugs 34 and 35.

The sealing cap 23′ has a forced fit on the end of the lock barrel 16′, these parts being forced together during the assembly. It also has an annular flange or shoulder at its upper end with a working fit in the counterbore of the lock-case overlying flange 33 to protect it from injury and to conceal the slots 20. The lock barrel is entered in the lock-case, its locking lugs 35 passing through the slots 20 and then being turned into groove 37 to clear the slots 20 for the reception of the locking lugs 34 of the cap. The cap is then forced onto the end of the lock barrel, its lugs 34 entering through the slots 20 to the level of the groove 37. This latter operation is performed while a key is in place withdrawing the tumblers 19 and while the lock barrel is held thereby in the

unlocking position of the lock. When the key is then turned to the locking position of the lock so that it may be removed, both sets of locking lugs turn together in the groove 37 to the position shown in Figs. 1 and 2, where the lugs 35 of the lock barrel register with the slots 20.

It will be seen that both the lugs 35 of the lock barrel and the lugs 34 of the steel cap serve by their engagement with the flange 33 to prevent the withdrawal of the cap and the lock barrel and that at such times as the mechanism is locked and the key is withdrawn the stronger steel lugs 34 of the sealing cap are in locking engagement with said flange 33. At such times as the mechanism is unlocked with the key in place there will be no occasion for tampering with the lock and the engagement of the die cast lugs 35 of the lock barrel with the flange 33 will be adequate protection against the withdrawal of the parts.

The lock structure controlled by the turning movements of the lock barrel may be of any type, but, as shown, a cam or wrist-pin 38 projecting from the lower end of the lock barrel 16′ engages a groove in a spring-pressed locking bolt 39 slidably mounted in the lock-case and serves by its engagement in a housing, not shown, to prevent longitudinal movement of the lock-case which forms the head of a locking bar 40 for locking the mechanism, such as the gear shift of an automobile.

With this construction the soft steel sealing cap not only retains the lock barrel in the lock-case, but protects it from being tampered with and should an attempt be made to force it to a position for removal, such attempt will be effectively prevented by the engagement of the lugs 34 thereof with the locking lugs 35 that block the slots 20. Any attempt at driving the sealing cap further would cause the rupture of the die cast lock barrel in the plane of one of the tumbler slides and so prevent access to the locked mechanism.

The vertical slot 41 in the side of the lock-case 15′ is to receive a set-screw from the housing in which said lock-case is slidably mounted to prevent the lock-case from turning.

With this lock the lock barrel is assembled in the lock-case from the front, making it inexpensive to manufacture, and is protected by the sealing cap which holds it in place, the wear and resistance to tampering being assumed by the sealing cap, making the lock strong and durable and efficient for the purposes intended. The present lock is designed particularly for locking the gear shift mechanism of automobiles but is not confined thereto and is capable of general use.

What I claim is new and desire to secure by Letters Patent is:

1. In a lock, a lock-case having a bore through its front end, a lock barrel fitting in the bore, a flange in the bore having openings forming slots, locking lugs on the lock barrel entered through the slots and engaging the flange, and a cap fitting on the end of the lock barrel and having projecting locking lugs also entered through the slots and engaging the flange.

2. In a lock, a lock-case having a bore, a flange within the bore provided with openings forming slots, a die cast lock barrel fitting within the bore and having projecting lugs entering through the slots and engaging beneath the flange, and a soft steel cap fitting on the end of the lock barrel and having projecting lugs also entering through the slots and engaging beneath the flange.

3. In a lock, a lock-case having a bore and a counterbore, an annular flange within the counterbore, there being opposite slots formed in the walls of the bore and passing through the flange, a lock barrel fitting in the bore and having lugs fitting in the counterbore beneath the flange, and a cap fitting on the end of the lock barrel and having opposite lugs also fitting in the counterbore beneath the flange.

4. In a lock, a lock-case having a bore opening to its front end and having a counterbore at its front end, a flange within the counterbore, there being slots in the walls of the bore and extending through the flange, a lock barrel fitting in the bore and having tumblers engaging the slots, opposite lugs formed on the lock barrel and entered through the slots into the counterbore beneath the flange, a cap fitting on the end of the lock barrel and contained within the counterbore and fitting between the lock barrel and the flange, and lugs on the cap also entered through the slots and engaged beneath the flange.

5. In a lock, a lock-case having a bore opening to the front end thereof with a counterbore at the front end, an annular flange within the counterbore spaced from the end of the bore, there being an annular groove in the walls of the bore spaced from the counterbore and longitudinal slots broached in the walls of the bore and through the flange to the said groove, a lock barrel fitting in the bore and having tumblers to engage with the slots, opposite lugs formed on the lock barrel and entered through the slots to the counterbore beneath the flange, a cap fitting on the end of the lock barrel and between the lock barrel and the flange and having opposite lugs also entered through the slots and engaging in the counterbore beneath the flange, a cam projection on the other end of the lock barrel, and a spring-pressed locking bolt slidably mounted in the lock-case and engaged by the cam projection.

6. In a lock, a lock-case having a bore through its front end, a lock barrel fitting in the bore, a flange in the bore having openings froming slots, locking lugs on the lock barrel entered through the slots and engaging the flange, and a cap fitting on the end of the lock barrel and having projecting locking lugs also entered through the slots and engaging the flange and having an annular shoulder overlying the flange.

7. In a lock, a lock-case having a bore, a flange within the bore provided with openings forming slots, a die cast lock barrel fitting within the bore and having projecting lugs entering through the slots and engaging beneath the flange, and a soft steel cap fitting on the end of the lock barrel and having projecting lugs also entering through the slots and engaging beneath the flange and also having a projecting shoulder overlying the flange.

8. In a lock, a lock-case having a bore and a counterbore, an annular flange within the counterbore, there being opposite slots formed in the walls of the bore and passing through the flange, a lock barrel fitting in the bore and having lugs fitting in the counterbore beneath the flange, and a cap fitting on the end of the lock barrel and having opposite lugs also fitting in the counterbore beneath the flange and also having an annular flange or shoulder fitting within the counterbore and overlying the flange to protect it and conceal the slots.

In testimony whereof, I affix my signature.

EDWARD N. JACOBI.