Oct. 18, 1932. W. A. THOR 1,883,326

CYLINDER LOCK

Filed Oct. 7, 1931

Fig. 1.

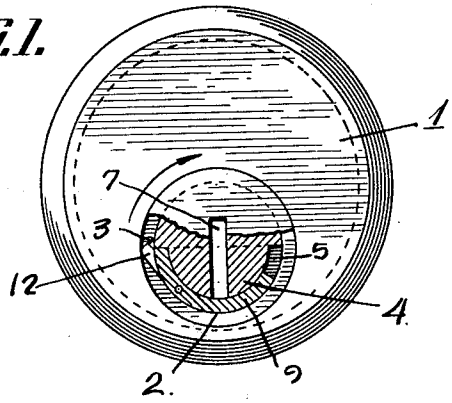


Fig. 2.

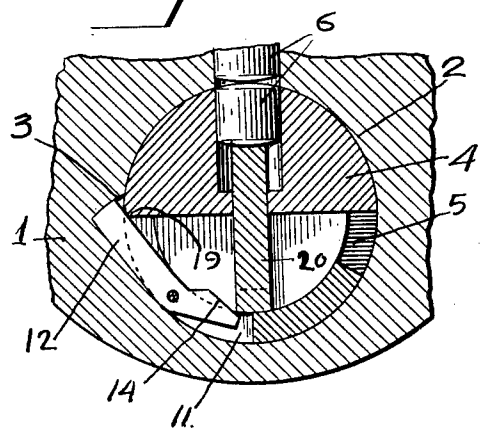


Fig. 3.

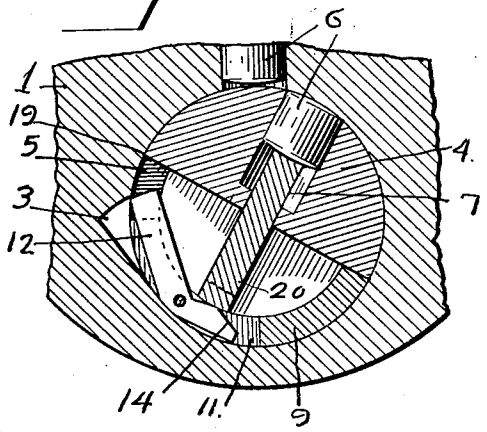


Fig. 4.

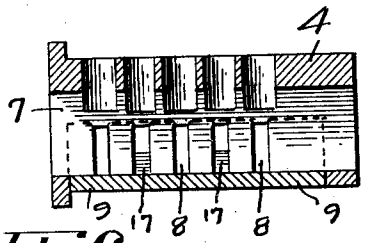


Fig. 5.

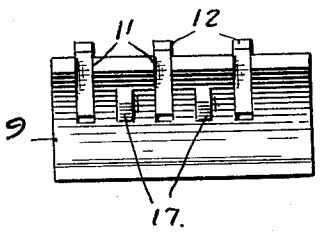
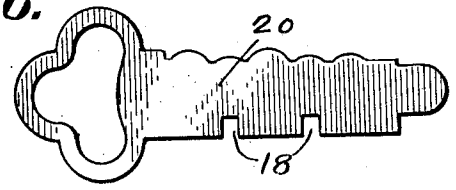


Fig. 6.



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UNITED STATES PATENT OFFICE

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CYLINDER LOCK

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My invention relates to improvements in a cylinder lock wherein a segmental sleeve, mounted for limited movement upon the barrel of said lock, operates in conjunction with supplementary tumblers mounted upon said sleeve and normally engaging the lock to prevent a complete unlocking movement of said barrel after the primary tumblers have been moved to releasing position, said supplementary tumblers being arranged to be released by the lock-key only after the primary tumblers have been released.

The primary object of the present invention is to provide a new and improved cylinder lock.

Another object is to provide a new and improved cylinder lock having improved supplementary means for preventing opening of said lock.

A further object is to provide a set of supplementary locking members arranged to be normally held in locked position by a normal position of the barrel of said lock, and only releasable by a proper key after said barrel has been rotated to release said supplementary locking means, whereby picking of said lock may be prevented.

A further object is to provide a new and improved device of the character set forth having supplementary locking means arranged to be operated only after the primary tumblers of said lock have been released by a proper key.

A still further object is to provide an inaccessible supplementary locking means for a cylinder lock, to prevent or increase the difficulty of picking said lock.

A still further object is to provide an improved supplementary locking means for a cylinder lock, arranged to be moved to releasing position by one side of a key for said lock, only after the primary tumblers of said lock have been released by the other side thereof.

I accomplish these and other objects by means of the improved device disclosed in the drawing forming a part of the present application wherein like characters of reference are used to designate similar parts throughout the specification and drawing, and in which—

Fig. 1 is a slightly enlarged front elevation of a cylinder lock, partly broken and in section to disclose my supplementary locking means attached thereto;

Fig. 2 is a further enlarged broken transverse sectional view disclosing the normal arrangement of the supplementary locking means;

Fig. 3 is a similar view disclosing said supplementary means in unlocked position;

Fig. 4 is a longitudinal sectional view of the barrel removed from the lock, with the segmental sleeve attached, the scale being the same as that shown in Fig. 1;

Fig. 5 is a plan view of the segmental sleeve and supplementary tumblers, as seen in Fig. 1; and

Fig. 6 is a view of the key used.

Referring to the drawing, the numeral 1 is used to designate in general a cylinder having the usual bore 2 within which is rotatably mounted the usual barrel 4, said barrel 4, in the present case, being provided with a segmental groove 5 arranged on the periphery thereof.

The bore 2 is provided with a longitudinally disposed groove 3, the purpose of which will hereinafter be more fully set forth.

The usual tumblers 6 are provided to lock the barrel 4 against rotation, and, for purposes of identification, I have termed these tumblers 6 primary tumblers.

The barrel 4 is provided with the usual longitudinally disposed key-slot 7 and a plurality of transverse grooves 8, said grooves 8 extending from a diameter at right angles to the key slot 7 downwardly, and each groove 8 being arranged, preferably, opposite one of the primary tumblers 6.

Movably mounted within the segmental groove 5 of the barrel 4 is a segmental sleeve 9 provided with slots 11, arranged off the diameter of the key-slot 7, within which are pivotally mounted what I term supplementary tumblers 12 having beveled extensions 14 extending, when in normal position, toward the key-slot 7, and having the opposite ends normally extending beyond the periphery of said sleeve 9 and into the longitudinal groove

3 of the cylinder 1, as disclosed in Figs. 1 and 2 of the drawing.

The segmental sleeve 9 is shorter than the segmental groove 5 of the barrel 4 within which it is movably mounted so that after the tumblers 6 have been released by the key 20, said barrel may be rotated only slightly when one end of said groove 5 will engage one edge or end of the segmental sleeve 9, and, until the supplementary tumblers 12 are released, further rotation or a complete unlocking movement of said barrel 4 will thus be prevented by said sleeve 9.

Between said slots 11 of the sleeve 9 I have provided certain lugs or obstructions 17 which pass through suitably positioned recesses or notches 18 within one edge of a suitable key 20, said edge being preferably the edge opposite the edge which operates the primary tumblers 6.

To simplify illustration of the invention I have shown the supplementary tumblers with their beveled extensions 14 of the same height, but it is obvious that said beveled extensions 14 may be of various heights and the edge of the key 20 which operates them may be cut to correspond.

I have also shown the supplementary tumblers 12 of the segmental sleeve 9 normally extending beyond the transverse slots 8 of the barrel 4, when said barrel is in normal position, as disclosed in Fig. 2 of the drawing. The purpose of this arrangement being that said tumblers 12 will be locked in engaging relation with the slot 3 of the cylinder 1 and may not be moved therefrom until after the primary tumblers 6 have been first released and the barrel 4 turned a sufficient distance, by a proper key, to release said supplementary tumblers.

In operation, the key 20 is inserted in the usual manner within the key-slot 7, whereby the primary tumblers 6 are aligned, in the usual manner, and the barrel 4 is thus released. If a key is used which is not cut to actuate the supplementary tumblers, the barrel 4 may only be rotated a short distance when one end of the segmental groove 5 therein will engage one edge of the segmental sleeve 9, and as said sleeve 9 is locked, by the supplemental tumblers 12 in engaging relation with the longitudinal groove 3 of the cylinder 1, further movement of the barrel 4 will be prevented.

When, however, a key properly cut to release the supplementary tumblers 12 has been inserted, the edge of said key opposite the primary tumbler releasing edge will engage the beveled extensions 14 of the supplementary tumblers 12 and move said tumblers 12 to releasing position into the transverse slots 8 of the sleeve, but only after the barrel 4 has been moved a sufficient distance to release the extreme ends of said tumblers 12, the recesses 18 of said key 20 readily passing the lugs or obstructions 17 mounted within the segmental sleeve 9, said lugs 17 normally traversing the said slots 8 of the barrel 4 when said barrel is first rotated.

When the supplementary tumblers 12 have been released from the groove 3 of the cylinder 1, the barrel 4 and the segmental sleeve 9 may be rotated through a full unlocking movement of said barrel.

When the rotation of said barrel 4 is reversed, the supplementary tumblers will be actuated by the attraction of gravity to reengage the groove 3 of the cylinder 1, and the edges 19 of the slots 8 of the said barrel 4, when moved to normal position, will lock the supplementary tumblers 12 into such engaging relation, thereby preventing picking of the lock.

Having thus described my invention what I claim as new and desire to secure by Letters Patent is—

1. The combination with a cylinder lock and the barrel and tumblers thereof, of a segmental sleeve mounted upon the barrel of said lock to limit rotation of said barrel; and means mounted upon said sleeve and normally engaging said cylinder to prevent movement of said segmental sleeve and barrel.

2. The combination with a cylinder lock and the barrel and tumblers thereof, of a segmental sleeve mounted upon said barrel to limit rotation thereof; and means mounted upon said segmental sleeve and normally engaging said cylinder to prevent movement of said sleeve and barrel, said means being positioned to be engaged and released by the key of said lock only after said key has released said tumblers, whereby full unlocking movement of said barrel may be obtained.

3. The combination with a cylinder lock and the barrel and tumblers thereof, of means mounted upon said barrel to limit rotation thereof; and locking means mounted upon said limiting means to prevent movement thereof, said locking means being arranged to be unlocked by the key of said lock after said key has released the tumblers thereof, whereby full unlocking movement of said barrel may be obtained.

4. The combination with a cylinder lock and the barrel and tumblers thereof, of a segmental sleeve movably mounted upon said barrel and arranged to limit rotation of said barrel within said cylinder; and locking means mounted upon said sleeve and normally engaging the cylinder to limit rotation of the barrel therein, said locking means being releasable by the opposite side of a key of said lock only after the tumblers have been released by the other side of said key.

5. The combination with a cylinder lock and the barrel and tumblers thereof, of a segmental sleeve mounted for movement upon said barrel and arranged to limit the move-

ment thereof; and supplementary tumblers mounted upon said sleeve and normally engaging the cylinder to prevent movement of said sleeve, said supplementary tumblers being arranged to be released by the key of said lock after said key has released the primary tumblers thereof, whereby a full unlocking movement of said barrel may be obtained.

6. The combination with a cylinder lock and the tumblers thereof, of a barrel having a segmental groove in the periphery thereof; a segmental sleeve mounted within said groove and within the barrel bore of said lock, said sleeve being shorter than its groove to permit limited rotation of said barrel within its bore; and supplementary tumblers mounted upon said sleeve and normally engaging the cylinder to prevent movement of said sleeve and thereby a full unlocking movement of said barrel, said tumblers being arranged to be released by one side of a key for said lock only after the opposite side of said key has released the primary tumblers of said lock, whereby a full unlocking movement of said barrel may be obtained.

7. The combination with a cylinder lock and the tumblers thereof, of a barrel having a segmental groove in the periphery thereof; a segmental sleeve mounted within said groove and within the barrel bore of said lock, said sleeve being shorter than its groove to permit limited rotation of said barrel within its bore; and supplementary tumblers mounted upon said sleeve and normally engaging the cylinder to prevent movement of said sleeve and thereby a full unlocking movement of said barrel, said tumblers being arranged to be released by one side of a key for said lock only after the opposite side of said key has released the primary tumblers of said lock, whereby a full unlocking movement of said barrel may be obtained, said supplementary tumblers being held in locked position by the barrel when said barrel is in normal position.

In witness whereof, I hereunto set my signature.

WAINO A. THOR.