April 2, 1929. L. PEPPER 1,707,922

LOCK

Filed Jan. 12, 1928

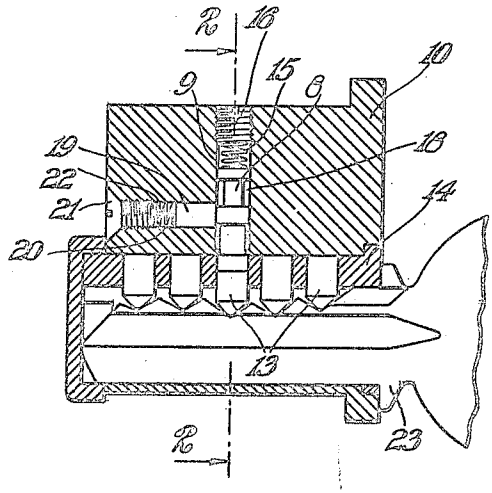


Fig. 1.

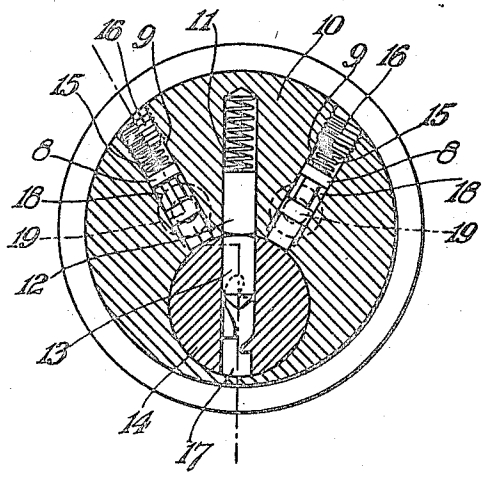


Fig. 2.

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UNITED STATES PATENT OFFICE.

LEONARD PEPPER, OF LONDON, ENGLAND.

LOCK.

Application filed January 12, 1928, Serial No. 246,205, and in Great Britain November 25, 1927.

This invention relates to locks of the type known as cylinder locks in which pin tumblers are employed which enter the plug and prevent its rotation until the pins are moved to an inoperative position by the insertion of a key. Devices have been proposed which enable this type of cylinder lock to be opened, the procedure consisting in the employment of a key having serrations along one edge which, when inserted in the plug and tapped at its end, will cause the tumbler pins to be jarred momentarily into a position to allow the plug to be rotated.

The object of the present invention is to prevent unauthorized opening of locks of the type referred to, and according to the invention means are provided for detecting and preventing the unauthorized opening of cylinder locks consisting in the provision of additional movable pins adapted, on insertion of an unauthorized key, to engage such key or the rotary plug or barrel to prevent complete movement of the movable elements for the opening of the lock.

In carrying the invention into effect, a lock casing is provided with one or more sliding plungers disposed radially relatively to the plug and adapted to engage in one or more of the pin tumbler sockets to prevent further movement when an attempt is made to rotate the plug with an unauthorized key.

Reference will now be made to the accompanying drawings which illustrate, by way of example, a construction according to the invention and in which:—

Figure 1 is a longitudinal sectional view of a lock provided with means for preventing operative rotation by an unauthorized key.

Figure 2 is a cross section on the line 2—2 of Figure 1.

Referring to the drawings the locking means take the form of plungers or auxiliary pin tumblers 8 slidably mounted in sockets 9 extending through the fixed cylinder or casing 10 of the lock at an angle to the sockets 11 in which the upper and lower pin tumblers 12 and 13 are housed. The plungers 8 are held in engagement with the periphery of the rotary barrel or plug 14 by springs 15, and the outer ends of the sockets 9 are closed by grub screws 16 which are inaccessible when the lock is operatively mounted on a door, window or the like. The plug 14 is provided with the usual key slot 17 on either side of which a plunger 8 is arranged so as to prevent turning of the plug in either direction should an unauthorized key be inserted. At least two plungers 8 are thus employed, but others may be disposed at or near the rear portion of the plug 14.

It is preferred to form the plunger 8 with a portion of reduced diameter as shown at 18, and adjacent this portion is disposed an auxiliary locking plunger 19 disposed in a socket 20 extending in a direction parallel to the axis of the plug 14 and accessible from the rear of the casing 10 where it is closed by a grub screw 21 between which and the plunger 19 is disposed a coiled spring 22.

In the operation of the lock shown, an unauthorized key can be inserted and used to jar the tumbler pins 12 and 13 out of engagement with the plug 14 but as an unauthorized key, such as 23, will not maintain all of the lower pins 13 with their heads flush with the periphery of the plug 14, at least one of the plungers 8, under the action of its spring 15, will enter one of the sockets for the pins 13 when the plug 14 has made a short partial rotation and prevent further movement thereof so that the device as a whole is locked absolutely, even against the insertion of the correct key. In this manner, any attempt to tamper with a lock can subsequently be detected by the person holding the correct key. The plungers 19 constitute an additional safeguard to prevent the locking plungers 8 from being jarred outwardly by tapping the key, as movement of one of the plungers 8 towards locking position brings the recessed portion 18 into the path of the locking plunger 19 which immediately engages in the recess 18 under the influence of its spring, so that the locking plungers are themselves locked in operative position. By duplicating this arrangement on either side of the pin tumblers 12 and 13 locking of the parts against operation occurs in either of the two directions in which the plug 14 can be turned.

It is to be noted that the correct key for any particular lock will bring all the pins 13 into a position in which their outer ends are maintained flush with the surface of the plug 14 so that they pass the plungers 8 without affording the latter any opportunity for inward and locking movement.

The invention possesses the further advan-

tage that it can, without difficulty, and at small cost, be applied to any existing lock of the pin tumbler type.

I claim:—

1. A pin tumbler lock including a casing, a key plug provided with a key slot mounted for rotation in the casing, a plurality of main pin tumblers mounted in the casing for holding the key plug from rotation, two auxiliary pin tumblers one upon each side of the row of main pin tumblers for coaction with the key plug to limit the rotation of the key plug in either direction and to be released only by a key formed to properly release all of the main pin tumblers, and an auxiliarly locking plunger for each auxiliary pin tumbler mounted in the casing.

2. A pin tumbler lock including a casing, a key plug provided with a key slot mounted for rotation in the casing, a plurality of main pin tumblers mounted in the casing for holding the key plug from rotation, two auxiliary pin tumblers one upon each side of the row of main pin tumblers for coaction with the key plug to limit the rotation of the key plug in either direction and to be released only by a key formed to properly release all of the main pin tumblers, said auxiliary pin tumblers being spring projected, and an auxiliary locking plunger for each auxiliary pin tumbler mounted in the casing.

In witness whereof I affix my signature.

LEONARD PEPPER.