May 15, 1923. 1,455,577

E. EPSTEIN

CYLINDER LOCK

Filed Jan. 26, 1923

Fig. 1.

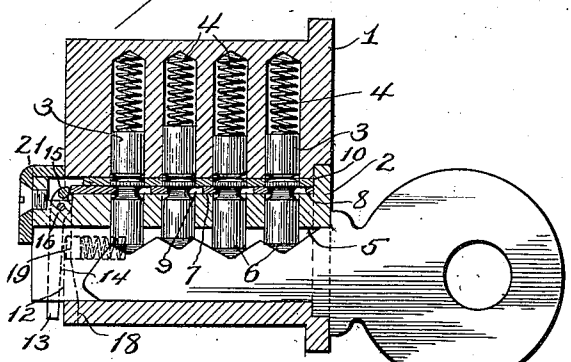


Fig. 2.

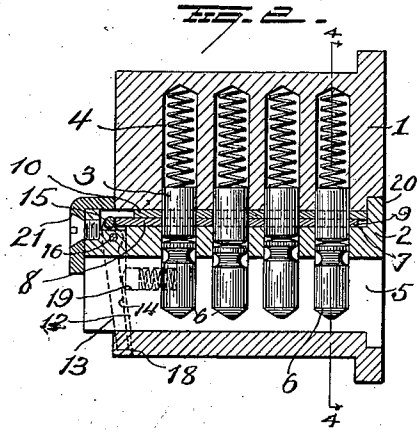


Fig. 3.

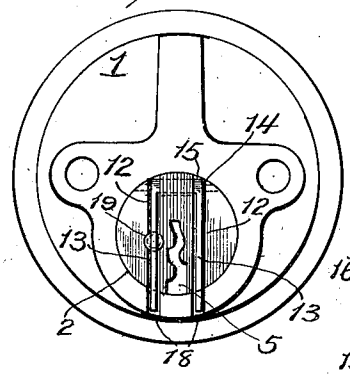


Fig. 4.

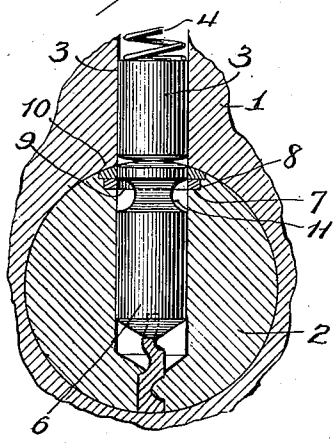


Fig. 5.

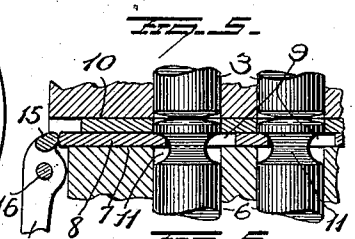


Fig. 6.

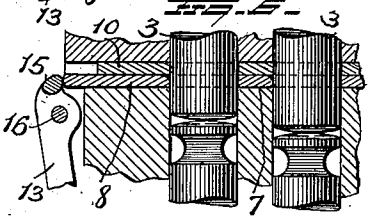


Fig. 7.

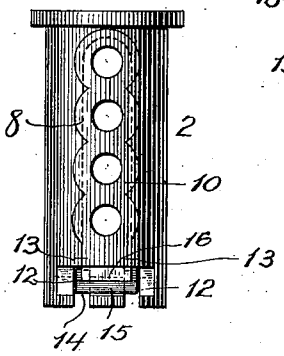


Fig. 8.

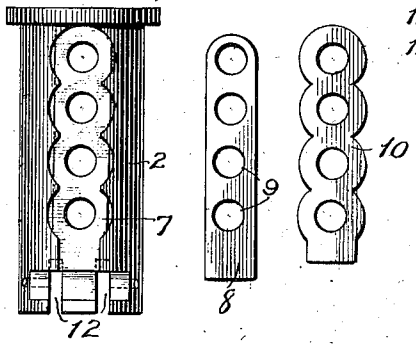
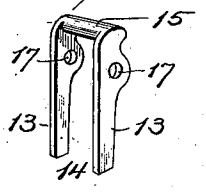


Fig. 9.



Inventor

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UNITED STATES PATENT OFFICE.

ELI EPSTEIN, OF STAMFORD, CONNECTICUT, ASSIGNOR TO THE YALE & TOWNE MANUFACTURING COMPANY, OF STAMFORD, CONNECTICUT.

CYLINDER LOCK.

Application filed January 26, 1923. Serial No. 615,098.

To all whom it may concern:

Be it known that I, ELI EPSTEIN, a citizen of the United States, and a resident of Stamford, in the county of Fairfield and State of Connecticut, have invented certain new and useful Improvements in Cylinder Locks; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same.

This invention relates to improvements in cylinder locks and particularly to those of the pin tumbler type, one object of the invention being to provide simple and efficient means to prevent operation of a lock without the use of a proper key.

A further object is to provide, in a pin tumbler lock, means which will effectually secure the plug of the lock against turning movement and thus prevent such rotary movement of the plug which is necessary to obtain the side pressure on the pins while attempting to pick the pins up to their unlocking position with the use of a picking tool.

With these and other objects in view, the invention consists in certain novel features and combinations of parts as hereinafter set forth and pointed out in the claims.

In the accompanying drawings,—

Figure 1 is a sectional view of a pin tumbler lock embodying my improvements, with the parts in the positions which they will assume when a proper key is inserted into the plug.

Figure 2 is a similar view showing the parts in the positions which they assume normally when the key is not in place.

Figure 3 is a rear end view.

Figure 4 is an enlarged fragmentary transverse section on the line 4—4 of Figure 2.

Figure 5 is an enlarged fragmentary view in section illustrating positions which the parts assume when the pin are in unlocking relations.

Figure 6 is a view similar to Figure 5 showing normal positions of the parts when the pins are in locked relation.

Figure 7 is an enlarged view in elevation showing the plug of the lock with the locking lever mounted therein.

Figure 8 is an enlarged view showing the plug, slide plate and cover plate for the latter, separated, and

Figure 9 is an enlarged perspective view of the locking lever.

The shell of a cylinder lock is represented at 1 and the plug thereof at 2,—the former being provided with sockets for the accommodation of driver pins 3 and their springs 4, and the plug 2 is made with openings communicating with the key-slot 5 for the accommodation of pin tumblers 6.

The plug 2 of the lock is provided with an elongated recess 7 which receives a slide plate 8 having holes 9 for the accommodation of the pin tumblers 6 and their drivers 3. This slide plate is guided between the bottom of the recess and a cover plate 10, the latter being fitted in a suitably shaped recess in the plug. In the present instance the pin tumblers are provided near their upper ends with annular grooves 11, the walls of which are curved transversely as clearly shown in Figures 4, 5 and 6.

The rear end of the lock plug 2 is provided at respective sides of the key-slot 5 with parallel grooves 12 for the accommodation of the parallel legs 13 of a lever 14, the lever legs being connected at their upper ends by a cross-bar 15 which latter, when the lever 14 is pivotally connected with the plug by means of a pin 16 passing through perforation 17 near the upper ends of the lever legs 13, will be in position to engage one end of the slide plate 8 as clearly shown in Figures 1, 2, 5 and 6. The lower end portions of the lever legs are adapted, under certain conditions, to enter notches 18 in the lock shell 1, as shown in Figure 2. A spring pressed plunger 19 mounted in the plug bears against one leg of the lever 14 and tends normally to press the lower portion of the lever backwardly.

When the parts are in normal unlocking positions as shown in Figure 2, the tumbler drivers 3 will extend through the holes in the plates 8 and 10 and the slide plate 8 will be prevented from longitudinal movement and the lever legs 13 will be held, when the slide plate is thus immovable, with their lower ends in the notches 18 of the lock shell 1 and the plug 2 will be in locked position. By reason of engagement of the lever 14 with the lock shell 1, it will be impossible to so turn the plug 2 (without the use of a proper

key) as to prevent side pressure on the pins necessary to hold them back when attempt is made to force them back, one by one, with the use of a picking tool inserted into the key-slot 5 of the plug.

When a proper key is inserted into the plug, the tumblers will be so actuated as to cause their upper ends to come in the aligned unlocking positions as shown in Figure 1 and the circular grooves of said tumblers will be disposed in the perforations of the slide plate 8. The slide plate 8 is now free to be moved longitudinally and such movement is caused by pressure of the upper end of the spring pressed lever 14 against said plate. The unlocking of the slide plate when the pin tumblers are aligned enables the spring pressed plunger 19 to force the lever 14 backwardly and move the lower end of the lever legs 13 out of the notches 18 of the lock shell or casing 1, as shown in Figure 1, and thus permit the turning of the plug with the use of a key. When the key is withdrawn the pin tumblers will be forced to the unlocking positions shown in Figure 2 and in moving to such positions, the walls of the annular grooves 11 near the upper ends of the pin tumblers will engage walls of the openings 9 in the slide plate, thus causing the latter to move longitudinally and impart motion to the locking lever 14 against the resistance of the spring plunger 19 and force the lower ends of the locking lever legs 13 into the notches 18 in the lock shell or casing 1, and thus the plug will be locked against rotation.

In order to prevent longitudinal displacement of the plug, the latter is provided at one end with a flange 20 entering a suitable recess in the lock shell or casing 1 and to the other end of said plug, a cap or stop 21 is secured and adapted to engage the rear end of the lock shell or casing.

Various changes might be made in the details of construction of my invention without departing from the spirit of the latter or limiting its scope and hence I do not wish to restrict myself to the precise details herein set forth.

Having fully described my invention what I claim as new and desire to secure by Letters Patent, is:

1. In a pin tumbler lock, the combination with a shell or casing, a plug and pin tumblers, of a lever carried by the plug and adapted to lie normally in locked engagement with the shell or casing, a slide cooperable with said lever and with the pin tumblers, and a spring device carried by the plug and normally tending to move the lever out of locked relation to the shell or casing.

2. In a pin tumbler lock, the combination with a shell or casing and a plug, of pin tumblers carried by the plug and provided with annular grooves, spring pressed drivers for said tumblers, a slide having holes through which said drivers pass when the parts are in locked positions, a locking lever pivoted to the plug and engaging said slide, the shell or casing being notched to receive said lever to lock the plug against rotative movement, and spring pressed means engaging said lever and adapted to move the same out of locked relation to the shell or casing when the grooved portions of the tumblers are brought into alignment in the holes of said slide.

In testimony whereof, I have signed this specification in the presence of two subscribing witnesses.

ELI EPSTEIN.

Witnesses:
ERNEST SIEFERT,
CHARLES A. BERRY.