C. H. THOMAS.

PIN TUMBLER LOCK.

APPLICATION FILED AUG. 10, 1909.

946,710. Patented Jan. 18, 1910.

Fig. 1.

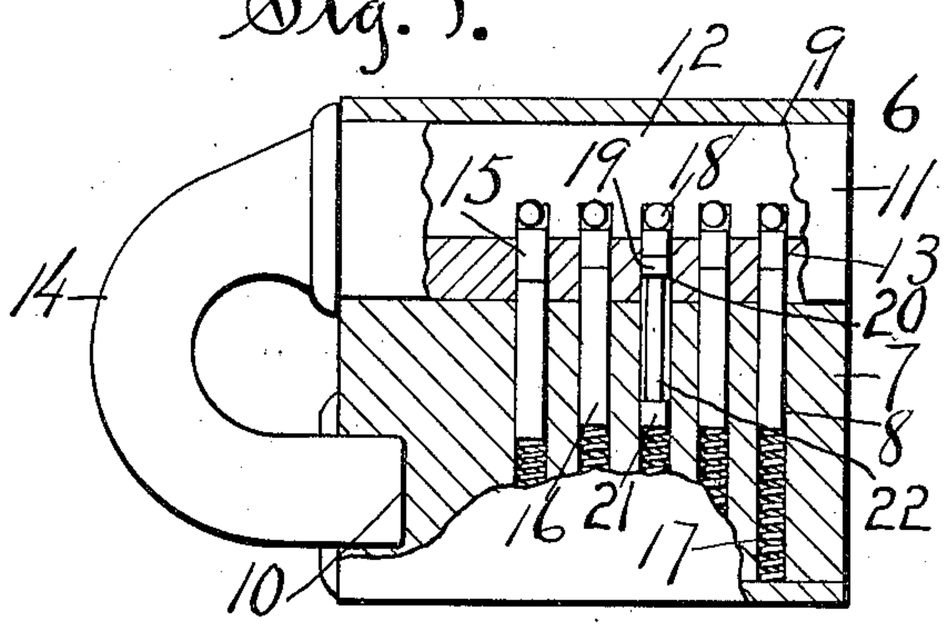


Fig. 2.

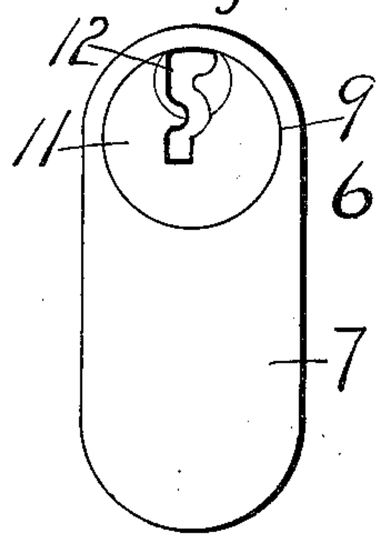


Fig. 3.

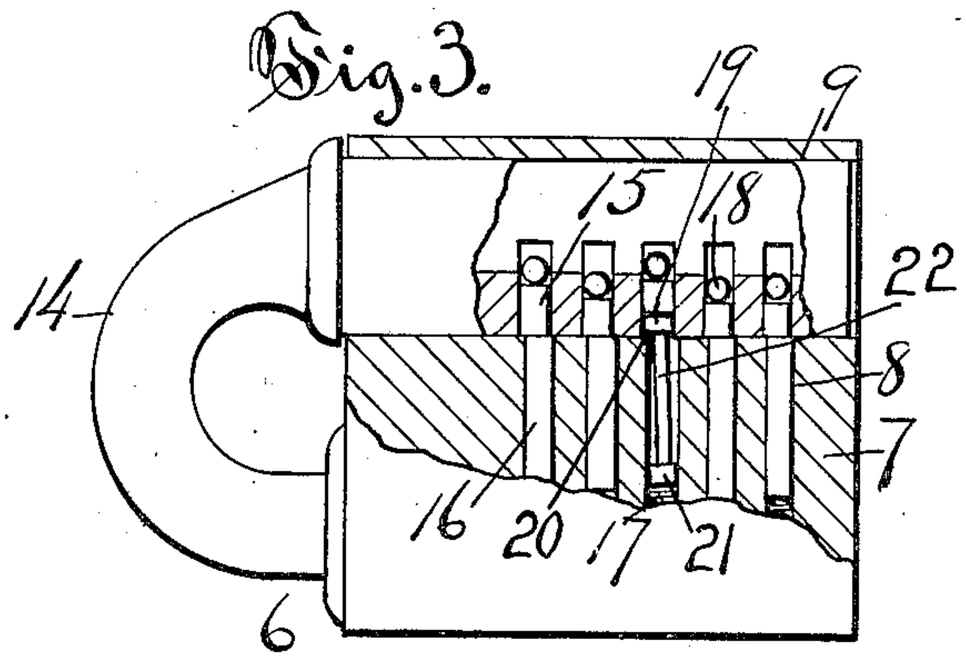
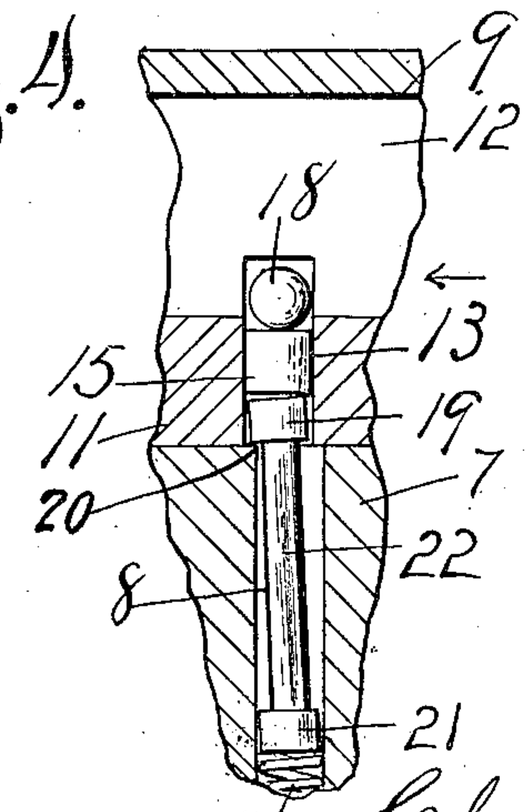


Fig. 4.



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PIN-TUMBLER LOCK.

946,710. Specification of Letters Patent. Patented Jan. 18, 1910.

Application filed August 10, 1909. Serial No. 512,247.

To all whom it may concern:

Be it known that I, CHARLES H. THOMAS, a citizen of the United States, and a resident of New Britain, in the county of Hartford and State of Connecticut, have invented a new Improvement in Pin-Tumbler Locks, of which the following is a specification.

My invention relates to the class of locks in which a movable part, usually a cylinder to receive a key, and a stationary part each contain pins the meeting ends of which are brought into line by the insertion of the key to allow movement of said cylinder to operate the lock mechanism, and the object of my invention is among others to provide a device of this class so constructed that the lock may be operated only through the agency intended.

One form of device in the use of which the objects sought may be attained is illustrated in the accompanying drawings, in which—

Figure 1 is a side view of a lock partly in section embodying my invention. Fig. 2 is an end view of the same. Fig. 3 is a view similar to Fig. 1 but showing the position of the parts with the guard driver in position to prevent movement of the cylinder. Fig. 4 is a detail view on enlarged scale showing the operation of the guard driver.

While my invention is applicable to any construction of lock in which pins are employed as tumblers, I have selected a padlock of the cylinder type for the purpose of illustrating and describing the invention herein. I have found that a lock of this kind having the usual form of cylinder with pin tumblers of uniform shape from end to end may be opened without the use of a key by otherwise bringing the points of separation between all of the pins into line so that the cylinder may be moved to unlock the lock. In my improved lock herein illustrated and described I have provided means whereby such illegitimate operation of the tumblers and opening of the lock is prevented.

In the accompanying drawings I have shown only such parts of the lock mechanism as are necessary to an understanding of my invention, the omitted parts being such as will be readily apparent to those skilled in the art, such omitted parts forming no part of the invention herein. In said drawings the numeral 6 denotes a padlock having a solid or immovable part 7 with driver recesses 8, a cylinder recess 9 and a shackle recess 10. A cylinder 11 is located within the recess 9, this cylinder having a key-slot 12 and pin recesses 13. A shackle 14 is rigidly secured to the cylinder and is of the usual bow form with its free end arranged to engage within the shackle recess 10. The cylinder and shackle under certain conditions may be rotated and moved longitudinally as is common in locks of this class, the above construction in fact being common and well known to those skilled in the art.

A series of pin tumblers 15 are located in the recesses 13 in the cylinder and a series of coöperating drivers 16 are located in the driver recesses 8 in the solid part of the lock. Springs 17 are located back of the drivers to force them toward the pins and therefore the pins into the bottom of the pin recesses. These drivers are of various lengths as are also the pins, but the length of all are so proportioned that when a key is inserted in the cylinder and the pins rest in the notches in the key the line of separation between all of the drivers and their companion pins will be coincident with the line of separation between the cylinder and its inclosing wall, so that said cylinder may be rotated or moved lengthwise. Balls 18 may be placed underneath the pins if desired, as is usual in this form of construction of lock, although this is not material.

In order to prevent surreptitious operation of the cylinder I provide one or more of the drivers with a shoulder or stop which under certain conditions will engage the inner surface of the wall of the cylinder recess and thus prevent movement of the driver to bring its end flush with the wall of said recess. Such an engagement of the shoulder with the wall of the cylinder recess will occur should an effort be made to unduly operate the lock by means other than a key or like agency. This shoulder may be formed in various ways to allow a slight lateral movement of the driver to permit said shoulder to engage the wall of said recess.

In the preferred form of construction and as shown herein a head 19 is formed at that end of the driver which engages the tumbler pins, this head forming the shoulder 20 to engage with the wall of the cylinder recess. The driver is preferably reduced equally on all sides back of this head and a head form-

ing a spring support 21 may also be located at the other end of the driver to receive the thrust of the spring and thus prevent the driver from protruding into the spring. In the preferred construction a cylindrical piece is first produced and this is turned down between the ends forming the heads at each end as hereinabove described. A single driver of the series may, as herein shown, be provided with this shoulder and it will be found to accomplish the desired result, but more of the drivers may be so constructed if desired.

In an effort to open the lock by means other than a key or its equivalent it will be found practically if not quite impossible to move the shouldered driver or drivers so that the shoulder or shoulders will not catch against the wall of the cylinder recess and thus prevent movement of said driver or drivers sufficiently to permit the lock to be thus illegitimately opened. These shoulders will not, however, interfere with the operation of the lock mechanism in the ordinary way to open the lock.

While I have shown and described herein a preferred form of construction of the shoulder and driver, such driver may be variously constructed to provide a shoulder to prevent its movement under abnormal conditions, and I do not therefore limit myself to the form of construction herein shown and described.

In Fig. 4 of the drawings the guard driver 22 is shown enlarged to clearly bring out the action of the shoulder 20 in catching against the solid part of the lock to prevent movement of the driver, and thus operation of the lock by means other than those intended.

I claim—

1. A lock including a case having an opening, a movable member in said opening, said movable member having tumbler sockets, a series of tumblers in said sockets, a series of parts in the case to coöperate with said tumblers in the operation of the lock, at least one of said parts being constructed for lateral movement and a shoulder upon a coöperating part arranged in a lateral movement thereof to engage the wall of the opening for said movable member and obstruct the movement of the former under abnormal conditions.

2. A lock including a case having a cylindrical opening, a member movably placed in said opening and having a series of tumbler sockets extending in line lengthwise thereof, a series of tumblers in said sockets, a series of parts movable in the case to coöperate with said tumblers in the operation of the lock, and a shoulder upon a coöperating part arranged to engage the inner surface of the opening for said movable member in a line extending along said inner surface across the centers of said tumbler sockets whereby movement of said coöperating member under abnormal conditions is prevented.

3. A padlock including a case having a cylinder opening, a cylinder in said opening having a longitudinal unlocking movement, said cylinder having tumbler sockets arranged in line lengthwise thereof, tumblers in said sockets, drivers located in the case to coöperate with said tumblers in the operation of the lock, a driver being constructed to move laterally and a shoulder on a driver arranged in a lateral movement thereof to engage the inner surface of the cylinder opening on initial movement of said cylinder to prevent movement of the driver under abnormal conditions.

4. A lock including a case having an opening, a member movable in said opening, said movable member having tumbler sockets, a series of tumblers in said sockets, a series of parts to coöperate with said tumblers in the operation of the lock, and a coöperating part having a shoulder and being formed to move laterally under abnormal conditions to engage said shoulder with the inner surface of said opening and prevent movement of the shouldered part to its unlocking position.

5. A lock including a case having a cylinder opening, a cylinder movable in said opening and having a series of tumbler sockets, tumblers located in the sockets, coöperating drivers located in the case, a driver having a head formed at one end to permit lateral movement of the driver, and a shoulder at the opposite end formed to engage the surface of said opening in a lateral movement of the driver under abnormal conditions to prevent its movement to unlocking position.

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