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PATENTED DEC. 5, 1905.

G. B. PICKOP.
PIN TUMBLER LOCK.
APPLICATION FILED MAY 7, 1904.

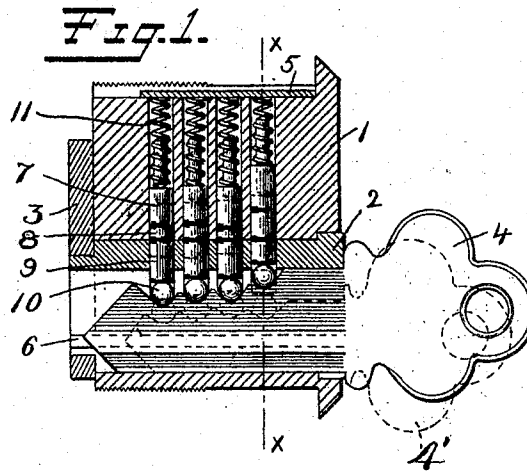


Fig. 3.

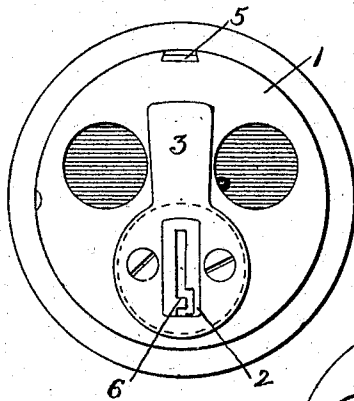


Fig. 2.

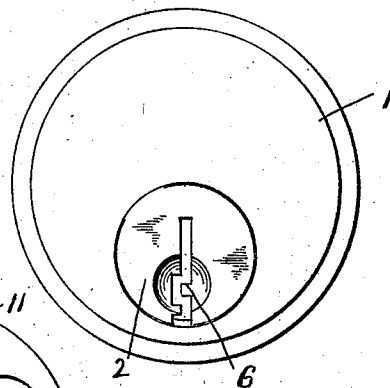
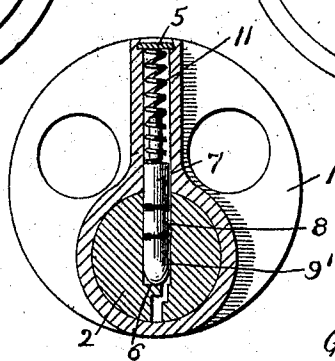


Fig. 4.



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PIN-TUMBLER LOCK.

No. 806,361.

Specification of Letters Patent.

Patented Dec. 5, 1905.

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To all whom it may concern:

Be it known that I, GEORGE B. PICKOP, a citizen of the United States, residing at New Britain, in the county of Hartford, State of Connecticut, have invented certain new and useful Improvements in Pin-Tumbler Locks, of which the following is a full, clear, and exact description.

My invention relates to locks, and particularly to a cylinder-lock employing what is known as "pin-tumblers."

The object of my invention is to construct a lock which may be manufactured economically, which shall be of compact form, as simple as possible, contain as few parts as possible, and with which a broad master-key or an ordinary key may be employed, as desired. I have done away with all unnecessary parts and construct a lock which is universally efficient and yet adapted to uses of locks already known. It is operable by either one of two keys of different over-all heights.

The parts of a lock embodying the improvements of my invention are shown in the accompanying single sheet of drawings.

Figure 1 is a longitudinal sectional view of those portions of a lock which embody the improvements of my invention. Fig. 2 is a front elevation of the lock. Fig. 3 is a rear elevation. Fig. 4 is a cross-section on the plane of the line X X of Fig. 1 with the key withdrawn and showing a slightly-different form of tumbler.

The main body 1 of the lock is usually termed the "cylinder." This in the form shown is provided with a screw-threaded portion to the rear and a flange at the front. The plug 2 is mounted in the cylinder 1 and eccentric with relation thereto. A roll-back 3 is attached in a suitable manner to the rear end of the plug and adapted for operating the latch slide or bolt, as is common in constructions of this general class. The key 4 is provided for insertion in a longitudinal slot in the plug and rotating the plug and roll-back. The body of the cylinder and the plug are provided with a series of chambers or recesses parallel to each other and substantially at right angles to the axis of the plug for containing the tumblers. The slide 5 is provided for sealing the tops of these chambers.

6 is a ledge extending longitudinally of the plug and at one side of the slot forming a seat for the tumblers when the key is withdrawn,

as well as a spline or guide for the key when the same is inserted.

The tumblers are independent of each other, provided with two lines of division, so that they may be operated to release the plug by either one of two different keys. For this purpose the tumblers are divided into three parts—the driver 7, the intermediate part 8, and the lower part 9. In some cases a ball 10 is provided, forming a suitable bearing for the lower end of the tumblers and facilitating the entrance of the key and rendering picking difficult. In Fig. 4 I have shown the lower part 9' as integral and combining the parts 9 and 10 of the construction of Fig. 1. The tumblers are preferably held in their normal operating position by suitable springs 11, which contract and expand, according to the position of the tumblers.

The tumblers are divided up transversely into parts of various sizes and by permutations and combinations afford a vast variety of possible key-bitings. In the form herein shown a key 4 is indicated to act as a master-key. Its insertion in the slot of the plug raises the tumblers so as to make the line of division between the lower portions 9 and the intermediate portions 8 correspond with the line between the plug and the cylinder. The insertion of a key 4' of the form shown dotted in Fig. 1 will arrange the tumblers so that the lines of division between the drivers and the intermediate members will concur with the line of division between the plug and the cylinder. In either case the plug may be rotated upon the insertion of the proper key. A large number of varieties of master-keys may be employed as well as a large variety of ordinary keys. It will be obvious from an inspection of the drawings that with a given form of master-key as shown a large number of varieties of ordinary keys may be designed by varying the lengths of intermediate members 8. With the form of my lock as shown it is easier to distinguish between the master and ordinary key.

The particular advantages of my construction are lightness of weight, reduction in size and number of parts as compared to other master-key locks, reduction in size of the plug, so as to minimize the wear due to surface friction between the plug and the cylinder, ease of action, freedom from lost motion, and greater security.

In the use of the lock it will be understood that the key indicated by the dotted lines 4' is ordinarily the service-key, while the key 4 is the master-key. There is always a substantial difference in the over-all height of these two keys. For example, the key 4' is of such a height as to only partially fill the slot in the plug 2, sufficient clearance being provided above the upper edge of the key 4' so that when the same is withdrawn a key of greater over-all height may be introduced. In the preferred form of course the spline 6 is provided, so that it will hold the key 4' down in the bottom of the slot, insuring the proper positioning of the tumblers when the key is fully inserted. Were it not for this spline 6, of course the narrower key could be raised and lowered in the slot and would not be capable of operation with that ease and certainty which the presence of the guide or spline 6 insures. The bittings in both of the keys may be approximately of the same gradation—that is, the deepest bitting in the master-key may be approximately the depth of the deepest one in the service-key—the difference in the over-all height of the larger key being relied upon to raise the tumbler to the higher elevation necessary to bring the second breaking-point therein coincident with the breaking-line between the plug and the cylinder.

Heretofore master-key pin-cylinder locks have ordinarily been provided with an intermediate shell between the plug and the cylinder. This construction involves much labor and expense. Another form is to provide split pins or double sets of pins, which also involves added labor and expense. It will be apparent that in my invention the expense of producing the lock is no more than in producing an ordinary pin-cylinder lock, and yet by reason of providing the widened slot having a capacity for receiv-

ing a key of greater over-all height I am able to combine with it all the advantages of a master-key combination.

What I claim is—

1. In a master-key pin-tumbler lock, a body portion, a plug rotatably mounted directly therein and having a longitudinal key-slot, said body and plug having a series of chambers all arranged in a single plane substantially coincident with the axis of the plug, pin-tumblers in said chambers, two or more of said tumblers being divided transversely into three parts, a lower operating part, an upper locking part, and an intermediate part providing a breaking-line at each end so that said plug may be rotated by either one of two keys of different over-all heights by arranging all of said tumblers in different ways, the tumblers in all of said chambers being independent of one another.

2. The combination of a lock having a body portion, a plug rotatably mounted directly therein and having a longitudinal key-slot, said body and plug having a series of chambers all substantially parallel to each other and at right angles to the axis of the plug, pin-tumblers in said chambers divided transversely into three parts, the tumblers in each chamber being independent of all the other tumblers, together with two keys with different bittings, each bitting of one key being lower than the corresponding bitting of the other key, the difference in height of said bittings being equal to the length of the intermediate parts of said tumblers.

Signed at New Britain, Connecticut, this 3d day of May, 1904.

GEORGE B. PICKOP.

Witnesses:

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