

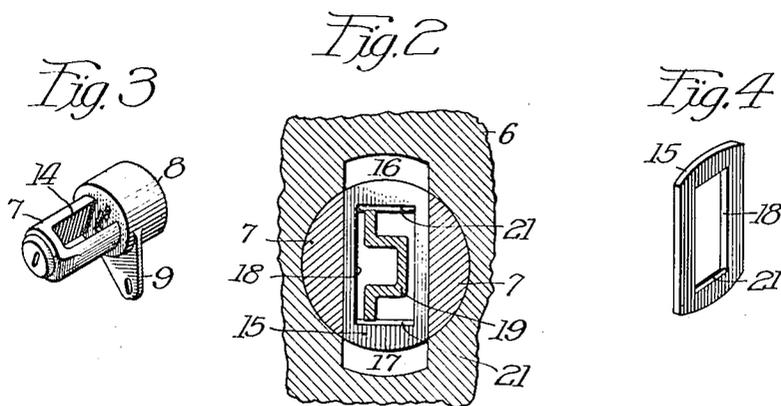
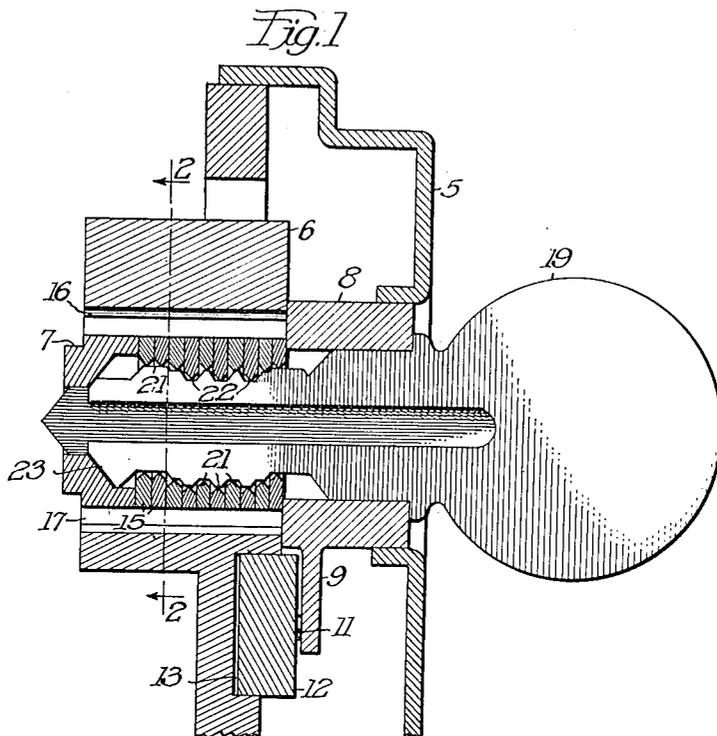
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LOCK.

APPLICATION FILED MAR. 19, 1917.

1,298,224.

Patented Mar. 25, 1919.



WITNESS

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LOCK.

1,298,224.

Specification of Letters Patent.

Patented Mar. 25, 1919.

Original application filed June 2, 1916, Serial No. 101,212. Divided and this application filed March 19, 1917. Serial No. 155,737.

To all whom it may concern:

Be it known that I, ROY D. KING, a citizen of the United States, residing at Chicago, in the county of Cook and State of Illinois, have invented certain new and useful Improvements in Locks, of which the following is a specification.

This invention relates in general to locks of the cylinder type adapted for use as door locks, cabinet locks, or, in fact, in any place where a cylinder lock is suitable or desirable, this application being a division of my application, Serial No. 101,212, filed June 2, 1916.

One of the primary objects of my invention is to provide a lock of the cylinder type which will be simple in construction and cheap to manufacture, and positive and certain in its operation.

Another object of my invention is the provision of tumblers of novel and improved construction which shall be so constructed that they will be positively moved into and out of alinement by the insertion and withdrawal of a key, so that no dependence is placed for the operation of the lock upon springs or other mechanisms for operating the tumblers.

Still another object of my invention is to provide tumblers which will present only inclined or rounded surfaces to the operating edges of the key, so that longitudinal movement of the key into and out of operative position will be greatly facilitated.

A further object of my invention is to provide a key which will positively move the tumblers into and out of operative position, and which when the key is in operative position in the cylinder will present parallel, flat supporting surfaces to the tumblers at right angles to their axes, so that danger of the tumblers becoming misplaced or improperly positioned is entirely eliminated.

To facilitate an understanding of my invention, I have illustrated on the accompanying drawings one preferred embodiment thereof, from an inspection of which, when considered in connection with the following description, my invention and many of its attendant advantages should be readily appreciated. Referring to the drawings,—

Figure 1 is a longitudinal plan view through a lock embodying my invention;

Fig. 2 is a transverse sectional view on the line 2—2 of Fig. 1;

Fig. 3 is a detail perspective view of my improved cylinder; and

Fig. 4 is a perspective view of one of my improved tumblers.

On the drawings, reference character 5 indicates generally the front of a lock-casing which may be of any approved shape and construction, and in which is securely mounted, by screws, bolts or other suitable means (not shown), a housing 6 provided with a transverse bore in which the cylinder 7 is rotatably mounted. It will be observed from Fig. 1 that the cylinder 7 has a shank or extension 8 disposed between the housing 6 and the front casing wall 5, but the length of this shank may vary depending upon the size and construction of the lock, also upon the form and configuration of the housing and the casing. In the present instance this shank is provided with a downwardly projecting arm 9, which is connected by means of a pin 11 with a locking bolt 12 slidably mounted in a guideway 13 formed in the lower portion of the housing 6. This bolt is adapted to be reciprocated into and out of locking position upon oscillation of the key-cylinder.

The cylinder is provided, as shown in Fig. 3, with an elongated slot 14 extending transversely therethrough, and in which are slidably arranged a series of flat tumblers 15. The housing is provided above and beneath the bore in which the cylinder 7 is mounted with grooves 16 and 17 adapted to receive the ends of the tumblers 15, whereby the cylinder is locked against rotation. Each tumbler is provided with a key-receiving aperture 18, the apertures in the various tumblers being disposed in different positions longitudinally of the tumblers when their ends are in alinement, as shown in Fig. 1. The operating key 19 is serrated on both edges, and it will be observed that the corresponding faces on opposite edges are parallel, that is, any point on one edge of the key is equi-distant from a corresponding point on the opposite edge, and the distance between corresponding points on opposite edges of the key is substantially equal to the length of each of the apertures 18 in the tumblers. My improved double-edged key,

so constructed that corresponding faces on opposite edges are parallel and are spaced apart so as to just pass through the apertures in the tumblers, serves to positively
 5 move the tumblers longitudinally in both directions upon insertion and withdrawal of the key, so that the tumblers are positively positioned with their ends in alinement when the key is inserted and are positively
 10 moved out of alinement upon withdrawal of the key, without depending upon the action of springs or gravity to position the tumblers.

In order to facilitate withdrawal and insertion of the key, the top and bottom edges of the apertures 18 in the tumblers are beveled or reduced in thickness, as indicated by reference character 21. This construction of the tumblers, presenting inclined faces to the serrations of the key when the key is
 20 being moved longitudinally, facilitates the movement of the tumblers and insures easy insertion and withdrawal of the key. In order to prevent binding of the tumblers
 25 against each other and to insure that they will always be in the proper position when the key is fully inserted in the lock, the key is constructed so as to provide flat tumbler-supporting surfaces disposed at right angles
 30 to the axes of the tumblers and upon which the tumblers rest when the key is turned. These flat surfaces will be best seen in Fig. 1, in which reference character 22 indicates
 35 some of these surfaces, and from an inspection of this figure it will be apparent that both the top and bottom edges of all of the tumblers rest upon flat surfaces. These flat
 40 surfaces extending parallel with the longitudinal axis of the key, while relatively short, are of sufficient length to permit slight variation in the longitudinal position of the key without disarranging the tumblers.

When the key is fully inserted, as shown in Fig. 1, the ends of all the tumblers are
 45 withdrawn from the locking grooves 16 and 17 and alined within the perimeter of the cylinder so that the cylinder may be turned within the housing. When the lock is in unlocked position, the tumblers will prevent
 50 withdrawal of the key, as they are held against longitudinal displacement by the surrounding walls of the housing. When, however, the lock is in locked position, the key may readily be withdrawn, since the
 55 tumblers will be forced either up or down into the groove 16, or 17, as the case may be,

as the key is withdrawn, and the engagement of the ends of the tumblers in these grooves will prevent turning movement of the cylinder until the tumblers have all been realined
 60 by re-insertion of the proper key.

In order to insure a positive movement of all the tumblers out of alinement upon withdrawal of the key, the key is provided near its inner end with a tooth 23 which is longer
 65 than any of the other serrations on the key so as to engage with the tumblers in succession and positively move each of them out of alinement with the periphery of the cylinder as the key is withdrawn. 70

It should be manifest that a lock made in accordance with my invention is very difficult to pick, since each of the tumblers must be positively alined and positively held
 75 in alinement before the cylinder can be turned. The tumblers and the key are so constructed that each tumbler is positively moved into alinement on insertion of the key and is positively moved out of alinement
 80 upon withdrawal of the key, and, furthermore, the flat surfaces on each edge of the key upon which the tumblers rest when the key is fully inserted permit of slight variations in the longitudinal position of the key
 85 without disturbing the alinement of the tumblers.

While I have illustrated and described one preferred embodiment of my invention, it should be obvious that the size, shape and proportion of the various structural details
 90 are capable of considerable modification and variation without departing from the spirit of my invention as set forth in the following claim.

I claim: 95

In a lock, the combination of endwise movable parallel tumblers disposed face to face in successive mutual engagement and provided with alined key openings, opposite
 100 edges of each key opening being beveled, and a key having opposite serrated complementary edges, the crest of each serration being of appreciable length and substantially parallel with the longitudinal axis of the key,
 105 the ends of each serration being beveled for engagement with the beveled edges of the tumblers to move the same, and the crests of the serrations permitting slight longitudinal movement of the key without moving the tumblers.

ROY D. KING.