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THROW MECHANISM FOR PIN TUMBLER LOCKS

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INVENTOR
To all whom it may concern:

Be it known that I, FRANK ELLISON BEST, of Seattle, in the county of King and State of Washington, have invented certain new and useful Improvements in Throw Mechanisms for Pin-Tumbler Locks, of which the following is a specification.

My invention relates to improvements in throw mechanism for pin tumbler locks and the object of my invention is to provide throw mechanism of simple and efficient construction that is adapted for use in connection with pin tumbler lock cores of different lengths and that may be used without alteration in connection with many different forms of latch mechanism.

Another object is to provide throw mechanism for a pin tumbler lock that may be embodied in and become a part of the latch or secondary lock used in connection with the pin tumbler lock and that is arranged to make telescopic connection with pin tumbler lock cores having any desired number of tumbler pin barrels, thus making it possible to use pin tumbler lock cores of a greater or less number of tumbler pin barrels interchangeably in the same lock housing.

Another object is to provide lock throw mechanism in which the part that makes operative connection with the pin tumbler lock core is arranged to snap into engagement with a latch housing or with an equivalent part that forms a bearing for the same.

A further object is to provide throw mechanism of this nature in which the part that makes connection with the lock core is arranged to be connected with a throw member proper either directly or through the use of an intermediate member.

Other and more specific objects will be apparent from the following description taken in connection with the accompanying drawings.

In the drawings, Figure 1, is an exploded isometric view of a lock and a lock throw mechanism constructed in accordance with my invention showing the several parts separated a short distance from each other.

Figure 2 is a view partly in section and partly in elevation showing the several parts assembled in a lock housing and a latch housing.

Figures 3 and 4 are isometric views showing two different forms of a device that may be used for connecting the lock engaging member with the throw member proper.

Figure 5 is a view partly in section and partly in elevation showing an adaptation of this throw mechanism in which the lock engaging member and the throw member are connected directly with each other without the use of any third member of the form shown in Figures 3 and 4.

Figures 6, 7 and 8 are fragmentary sectional views illustrating the operation of a spring snap ring used in this device.

Figure 9 is a detached view in elevation of a staple having its bottom end bent at right angles to the main portion thereof.

Figure 10 is an isometric view of said staple in a lock throw.

Referring to the drawings, throughout which like reference numerals designate like parts, 10 is a pin tumbler lock core having the usual rotary key plug 11, provided on its inner end with a key stop 12 and having two holes or bores 13 extending lengthwise thereinto.

The core 10 is of the lock controlled assembly type disclosed in my prior Patent No. 1,384,002, issued July 5, 1919, and is adapted to be locked within its housing by means operated by the use of a key of the usual form in the lock.

The present invention consists in the provision of throw mechanism for use in connection with this invention, said throw mechanism, as shown in Figures 1 and 2, comprising three parts and as shown in Figure 5 comprising only two of said parts.

One of the parts common to both forms above referred to embodies a disc 14 having on one side two relatively long rigid pins 15 projecting therefrom and arranged to fit telescopically into the holes 13 in the key plug 11. Two shorter pins 16 project from the other side of the disc 14 on opposite sides of the center and are arranged to make an operative connection with a cylindrical throw member 17.

The disc 14 is provided with a peripheral groove 18 wherein is disclosed an expansible lock ring 19 preferably of spring wire that
is arranged to expand into an annular groove 20 in any latch housing or member 21 that is properly recessed to receive the disc 14.

5 The member 17 preferably has a head portion 22 of larger diameter on the forward end that is arranged to fit within a counterbore and against a shoulder 23 in the support 21 in which the member 17 is mounted and the forward end of said head portion 22 is preferably provided either with a diametrically arranged groove 24 into which the pins 16 project or with a diametrically arranged tongue 25 that may extend between said pins 16. Either the tongue 25 or groove 24 afford some lost motion between the disc 14 and member 17 which is a necessary feature in some instances in a lock of this nature but both forms of construction provide connections for rotating the cylindrical throw member 17 when the disc 14 is turned. The lost motion between disc 14 and member 17 is preferably only about fifteen degrees.

10 Two diametrically opposite pins 26 on the end of member 17 are adapted to be passed through countersunk holes 28 in a throw member 29 and then riveted or clinched to thereby secure the throw 29 and member 17 together.

15 In Figure 5, I show a form of construction in which the member 17 is dispensed with and the pins 16 on the end of disc 14 are caused to project directly into holes 30 in the hub 31 of a throw member 32. In this construction shown in Figure 5 the latch housing 33 is provided with a hub 34 forming a bearing for the hub portion 31 of the throw 32 and is also grooved to receive the snap ring 19 on the disc 14. This construction is especially well adapted for use in thin mortise doors 35 where two throws 32 are used in the same latch housing each holding the other in place and where a lock is used on each side of the door. In assembling a mortise lock of this type the latch housing with the throws 32 therein may first be inserted in the mortise opening in the door 36, the disc 14 with the pins 16 thereon may then be inserted from the sides through the openings prepared for the reception of the locks and snapped into place and the lock cores 10 may then be inserted and secured in place thus making a very simple and easy assembly and permitting the use of a very thin latch housing.

20 Figures 6, 7 and 8 show three different forms of grooves that may be made for the reception of snap ring 19, Figure 6 showing a V- or trough shaped groove 36 into which the ring 19 will snap but which may cause said ring to be crowded back into groove 18 in disc 14 if a pull is exerted on pins 16. Figure 8 shows an annular groove 37 less than a semicircle in cross section that may cause the ring 19 to be crowded back into groove 18 of disc 14 in response to a pull on said disc. The forms shown in Figures 6 and 8 thus act only as detents which permit the disc 14 to be withdrawn if a hard enough pull is exerted thereon. In Figure 7 I show a groove 38 that is substantially a semicircle or that may be greater, but must not be less than a semicircle in cross sectional shape and in which the expansion ring 19 will positively lock in such a manner that the disc 14 cannot be removed after it is locked in place it being apparent that, in this construction, a pull on the disc 14 will have no tendency to crowd the expansion ring 19 down into the groove 18 in the disc 14.

25 In Figures 9 and 10 I have shown an alternative manner of forming the telescopic pins that fit into the lock core. In the preceding figures these pins 15 are shown integral with throw part 14 but in Figures 9 and 10 the corresponding pins 41 are the two legs of a staple which is bent at right angles at its closed end as at 42 and is adapted to fit within a recess 43 in a throw 44 and to be secured to the throw 44 by crimping or swaging the edges of said throw 44 inwardly at 45 or over against the pins 41 or base 42 of said staple. The throw 44 may correspond to either the part 14 or the part 17 or the throw 29 shown in Figure 1. The use of the staple in this manner simplifies and reduces the cost of construction of certain locks of this type.

30 In the operation of the construction shown in Figures 1 to 4 inclusive the member 17 and throw 29 are assembled and riveted together in the latch housing 21 as shown in Figure 2; the disc 14 carrying pins 15 may then be snapped into position in the housing 21 and the lock core 10 may afterwards be inserted into its housing, making telescopic connection with pins 15.

35 In the structure shown in Figure 5 the throw 32 are inserted in the latch housing at the time the latch is assembled and after the latch housing has been inserted into its mortise the disc 14 carrying pins 15 are snapped into place. The lock cores 10 may then be inserted, preferably through escutcheon plates 40, so as to make operative connection with the pins 15. If only one lock is used in connection with this device, then one throw 32 may remain idle and inoperative in the lock.

40 This throw mechanism is simple and efficient in construction and is readily applied to very many different types of locks, the pins 16 being adapted to telescope into all cores of the type herein shown regardless of length or number of tumblers barrel and the disc 14 being adapted to snap into substantially any supporting structure with which a latch mechanism may be associated.

45 The foregoing description and accompany-
ing drawings clearly disclosed a preferred embodiment of my invention but it will be understood that this disclosure is merely illustrative and that such changes in the device may be resorted to as are within the scope and spirit of the following claims.

I claim:

1. Lock throw mechanism embodying a disc, expansible snap ring means on the periphery of said disc and key plug engaging means projecting from one side of said disc.

2. Lock throw mechanism including a disc, expansible locking means on the periphery of said disc and pins projecting from one side of said disc for telescopic engagement with a lock.

3. Lock throw mechanism embodying a disc having a peripheral groove, an expansion ring in said groove, two relatively long lock engaging pins projecting from one side of said disc and shorter throw pins projecting from the other side of said disc.

4. Lock throw mechanism embodying a disc having a peripheral groove, an expansion ring in said groove, relatively long lock engaging pins on one side of said disc, a throw member, and means on the other side of said disc for engaging with said throw member.

5. In a pin tumbler lock, a lock core, throw devices arranged to engage telescopically with said lock core and snap means on said throw devices arranged to engage with a latch housing.

6. In a pin tumbler lock, a lock core, a latch housing and throw devices arranged to snap into rotative engagement with said latch housing and to telescopically engage said lock core.

7. In a pin tumbler lock, a lock core having a key plug provided with longitudinally extending holes, a disc having a peripheral groove, an expansible snap ring in said groove, a latch housing having an opening for the reception of said disc and having an annular groove for the reception of said snap ring, throw pins on one side of said disc and longer pins on the other side of said disc arranged to enter said holes in said key plug.

8. In lock throw mechanism a disc, snap means on the periphery of said disc for engaging with a housing, means on one side of said disc for telescopically engaging with a rotatable lock member, a rotary throw member, pins on said disc engaging said rotary throw member and a throw bar secured to said rotary throw member.

9. In a pin tumbler lock, a lock core having a rotatable key plug, a latch housing, a throw member telescopically connected with said key plug, another cylindrical throw member mounted for rotation in said latch housing and connected with said first named throw member and a throw bar secured to said last named throw member.

10. In a lock of the class described, a latch housing having a counterbored hole therein, a cylindrical throw member rotatable in said hole and having a head fitting the counterbored portion thereof, a throw secured to the end of said cylindrical throw member and securing the same in assembled relation relative to said latch housing and lock controlled means for rotating said cylindrical throw member.

11. In a lock of the class described, a latch housing having a counterbored hole therein said counterbored having an annular circumferential groove, a cylindrical throw member rotatable in said hole and having a head portion fitting within said counterbore, another throw member arranged to fit within said counterbore, and make operative connection with said cylindrical throw member, a snap ring on said other throw member arranged to snap into said groove, lock controlled means for rotating said other throw member and a throw bar secured to the end of said cylindrical throw member and holding the same in assembled relation relative to said lock housing.

12. In an extension cylinder lock a throw member having a recess, and a staple having its closed end bent at right angles and arranged to fit within and be secured to said throw member, the legs of said staple forming outwardly projecting pins arranged to fit telescopically into a lock.

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