To all whom it may concern:

Be it known that I, FRANK ELLISON BEST, a citizen of the United States, residing at Seattle, in the county of King and State of Washington, have invented a new and useful Stop Means for Locks, of which the following is a specification.

My invention relates to improvements in stop pin means for use on pin tumbler locks to limit the rotary movement of a key plug and the object of my invention is to provide a movably mounted stop pin that may be engaged by a key stop or throw member on the end of a key plug to limit the movement of the key plug to substantially one complete revolution.

A further object is to provide a stop pin that is mounted for swinging or wobbling movement in the end of a pin tumbler lock core.

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

In the accompanying drawings, Figure 1 is a view in end elevation, with parts broken away, of a pin tumbler lock core constructed in accordance with my invention a fragment of a core housing being shown around the core.

Fig. 2 is a detached view in side elevation of the core.

Fig. 3 is a view in end elevation of a similar lock core showing a modified form of key stop and throw means.

Fig. 4 is a view in side elevation of the core shown in Fig. 3.

Fig. 5 is a fragmentary view partly in section and partly in elevation substantially on broken line 6—6 of Fig. 1.

Fig. 6 is a view partly in section and partly in elevation substantially on broken line 6—6 of Fig. 5.

Like reference numerals designate like parts throughout the several views.

The drawings show a pin tumbler lock core 8 provided with a rotatably mounted key plug 9 having on its inner end a key stop 10 and a flow member 11 which may both be rigidly secured to the plug 9 in overlapping relation by two rivets 12 on the end of the key plug.

Surrounding the key plug 9 is a sleeve, not shown, to which is secured a locking gate 13 that is movably disposed in a recess 14 in the lock core 8 and that is arranged to be projected from one side of the lock core as shown in Figs. 1 and 2 to lock said lock core into any suitable housing 15.

The invention resides in the provision 60 on the end of the lock core and in the path of a lug 16 on the key stop 10 of a swingingly mounted stop pin 17. The stop pin 17 is disposed within a recess 18 in the peripheral portion of the gate 13 and said stop pin 17 has an inner end 19 bent at right angles thereto and arranged to project into a perforation 20 in the gate member 13 to form a pivot about which the stop pin 17 may oscillate.

The walls of the recess 18 are inclined as shown in Fig. 3 and serve to limit the swinging movement of the stop pin 17 which pin is arranged to swing far enough to compensate for the thickness of the lug 16 so that the key stop 10 and key plug 9 may be turned through one complete revolution in locking or unlocking any secondary mechanism that may be connected therewith, thus always properly aligning the tumbler pins within the lock to permit removal of the key. For instance, if the stop pin 17 and lug 16 are in the position shown by full lines in Fig. 5 the key plug may be turned to the right a full three hundred sixty degrees causing lug 16 to engage the opposite side of stop pin 17, and move it over into the position shown by dotted lines thus stopping the key plug in exactly the same position that it started from.

In certain types of locks utilizing a lock core of the form herein shown it is necessary to provide for a limited movement of less than one complete revolution with a positive stop at each end of the movement and it is further necessary to keep all stop mechanism within the limits of the external dimensions of the end of the lock core so that the core may be removed from its housing in the usual manner. This is accomplished as shown in Figs. 3 and 4 by providing an additional stop pin 21 on the end of the lock core and by providing a key stop 22 having a stop lug 23 that projects between the swingingly mounted stop pin 17 and the stop pin 21.

The lug 23 may be shaped as shown, with an indentation 24 on one side to receive the
stop pin 17 and an indentation 25 on the other side to receive the stop pin 21 thus affording the maximum amount of movement of the key plug between the two stops. The overhang of the outer end of lug 26 is limited to substantially the amount shown in Fig. 3 due to the fact that said lug 33 must be within the limiting dimensions of the lock core when the gate 13 is retracted for removing the lock core from its housing. The gate 13 is moved approximately fifteen degrees in retracting the same and it is obvious that the key stop will be moved with the gate.

In the structure shown in Figs. 3 and 4 the usual throw member is omitted and two outwardly protruding rivets 28 having sleeves 27 thereon are provided for securing the key stop 22 to its key plug 9 and for operating any suitable latch mechanism.

The swingingly mounted stop pin 17 as used in Figs. 1 and 2 provides for a positive stop that will permit a full three hundred and sixty degrees movement of the key plug, the swinging movement of the stop pin 17 compensating for the size of the stop pin and the thickness of the lug 16.

The foregoing description and accompanying drawings clearly disclose a preferred embodiment of my invention but it will be understood that this disclosure is merely illustrative and that numerous changes in the invention may be made within the scope and spirit of the following claims.

I claim:

1. In a lock, a lock core, a swingingly mounted stop pin protruding from the inner end of said lock core, a rotatable key plug and means on said key plug engageable with said stop pin to limit the rotary movement of said key plug to one complete revolution.

2. In a lock, a lock core, a rotary member on the inner end of said lock core and a swingingly mounted stop pin protruding from the end of said lock core in the path of said rotary member.

3. In a lock, a lock core, a groove in the inner end of said lock core extending longitudinally thereof, a stop pin having one end pivoted in said groove and the other end projecting from the inner end of said core, said groove permitting said pin to swing sidewise, and rotary stop means arranged to engage said stop pin and be limited thereby to substantially three hundred sixty degrees angular movement.

4. In a lock, a lock core, a movable gate member at the inner end of said lock core, a stop pin mounted for swinging movement in said gate member and a key stop mounted for rotation at the inner end of said lock core and having means for engaging said stop pin to limit the rotary movement of said key stop to substantially three hundred sixty degrees.

5. In a lock, a pin tumbler lock core having a recess at its inner end, a gate member in said recess movable transversely of said lock core, an expanding groove in the outer side of said gate member, a stop pin pivoted at one end in said groove and having its other end projecting outwardly from the inner end of said lock core a rotatable key plug in said lock core and means on said key plug for engaging with opposite sides of said stop pin to limit the angular movement of said key plug to substantially one complete revolution.

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