Dec. 9, 1930. E. L. TEICH 1,784,208

LOCK

Filed March 15, 1929 2 Sheets-Sheet 1

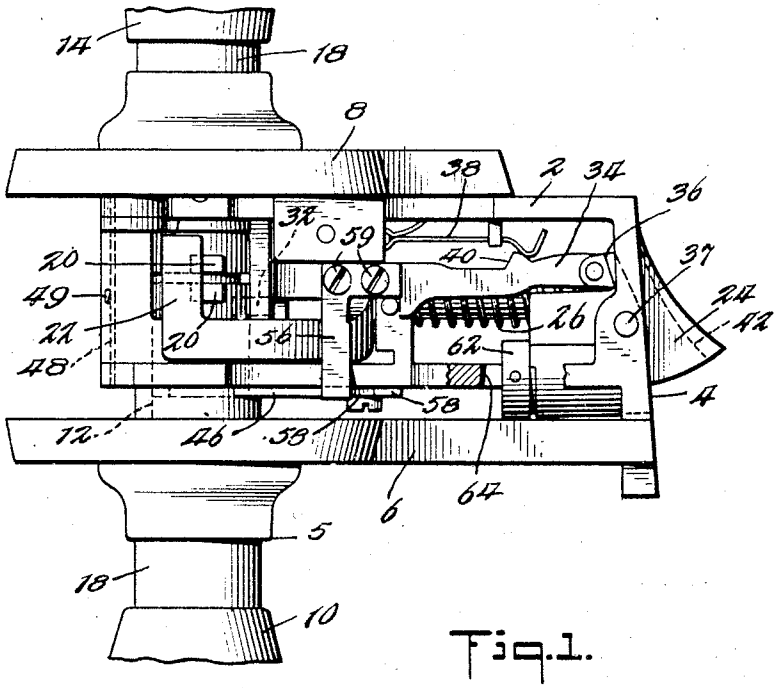


Fig. 1.

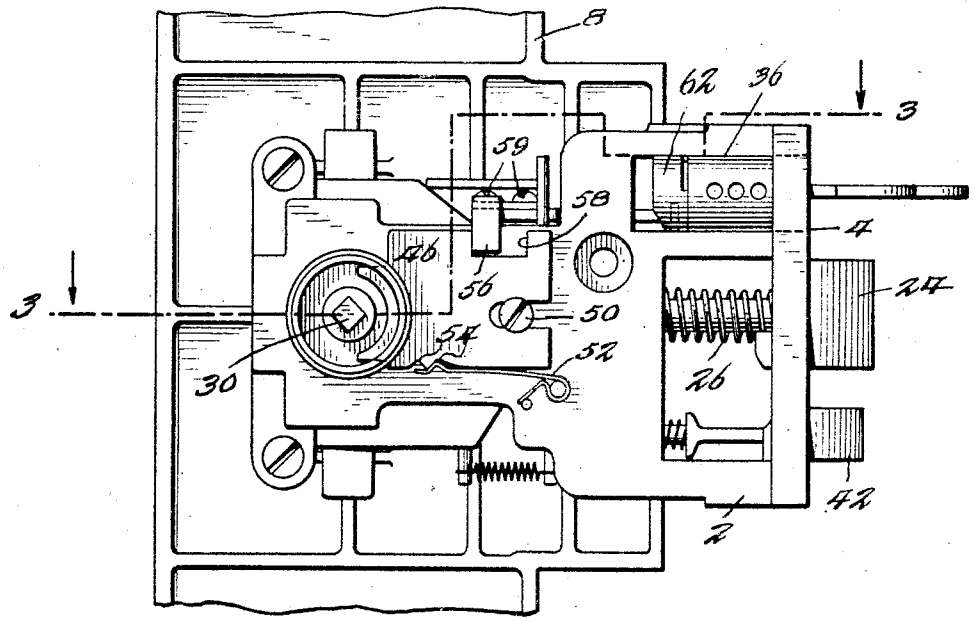


Fig. 2.

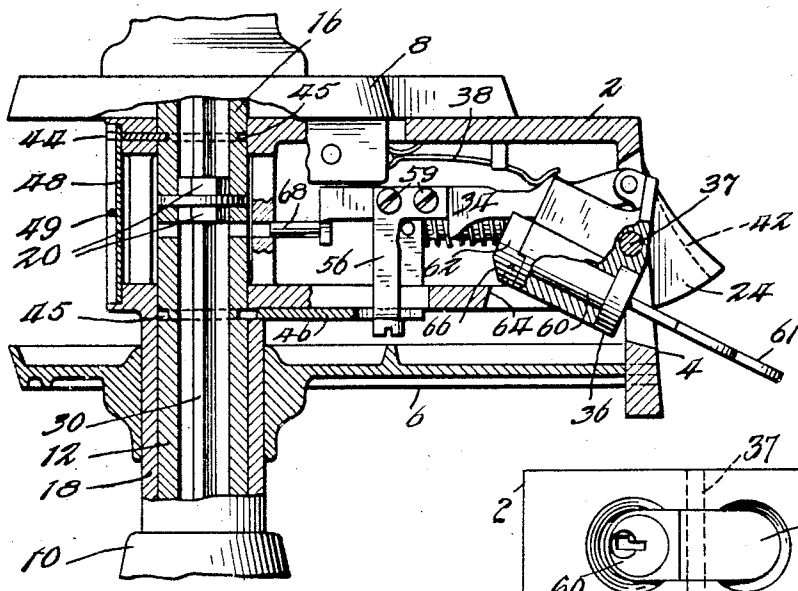
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Filed March 15, 1929 2 Sheets-Sheet 2

Fig. 3.



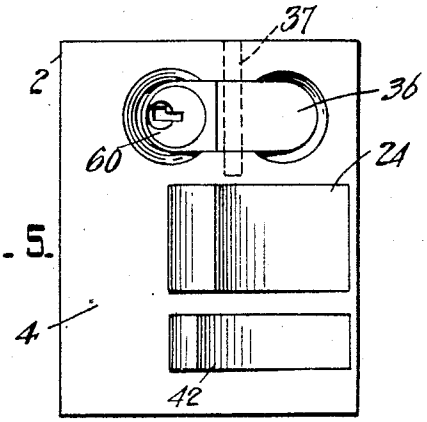


Fig. 5.

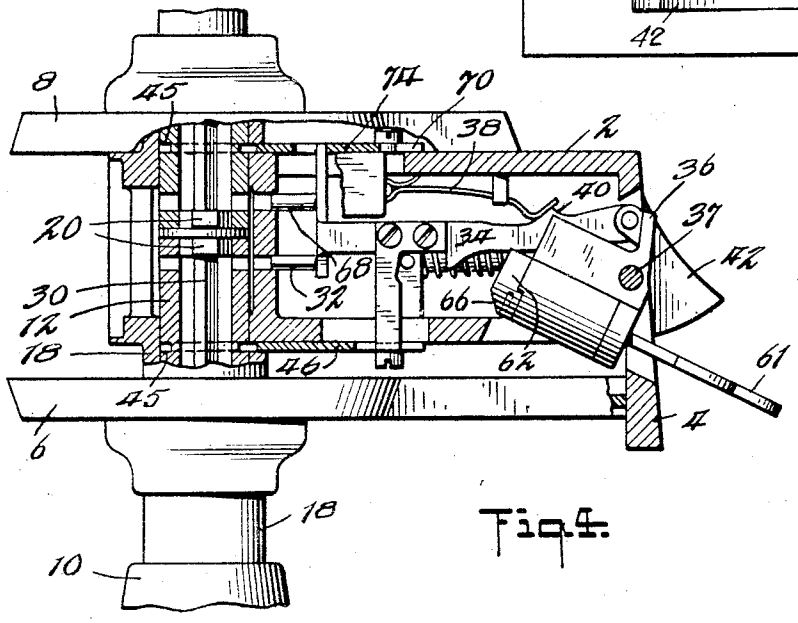


Fig. 4.

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Patented Dec. 9, 1930

1,784,208

UNITED STATES PATENT OFFICE

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LOCK

Application filed March 15, 1929. Serial No. 347,331.

My invention relates to locks, and has special reference to locks in which pin tumbler or other lock mechanism is located in one or both of the knobs of the lock.

Heretofore it has been common practice to secure one or both knobs of the lock by means of keeper plates which extend into annular grooves in the inner end portions of the knob shanks and are held in place by cotter pins or similar means. Such keeper plates and their securing means, however, are not accessible when the lock is installed so that in order to change one or both knobs of the lock it is necessary to remove the lock from the door. The necessity for removing the knob and shank of a lock arises especially in connection with locks of the type in which the lock mechanism is located in the knob of the lock. If for instance a tenant loses his key or believes that a key has fallen into unauthorized hands, it becomes desirable to change the lock mechanism which in the case of so-called "knob locks" may be done by substituting another knob and shank having a different lock mechanism.

One of the objects of the present invention is to provide means for securing the knob and shank which is capable of being released while the lock is installed in the door, it thus being unnecessary to remove the lock from the door in order to remove the knob and shank.

Another object of the invention is to provide a novel and improved lock having its pin tumbler or other lock mechanism mounted in the knob thereof.

A further object of the invention is to provide securing means for the knob and shank which is capable of being released only when the door to which the lock is attached is in open position.

A still further object of the invention is to provide securing and releasing means for the knob and shank which is controlled by an auxiliary lock mechanism so that the knob and shank cannot be removed without first unlocking said mechanism, thus ensuring against operation except by an authorized person.

These and other objects of the invention and features whereby they may be attained, will be clearly understood from the following description and accompanying drawings, in which:

Figure 1 is a plan view of a lock embodying the features of my invention in their preferred form;

Fig. 2 is a side view of the same with the outer knob and shank and escutcheon plate removed;

Fig. 3 is a sectional plan view taken on the line 3—3 of Fig. 2;

Fig. 4 is a view corresponding substantially to Fig. 3 but unlike the preceding figures shows securing and releasing means for the shanks of both of the knobs of the lock; and

Fig. 5 is a face view of the lock.

My improved lock as illustrated in the drawings is of the type of the one illustrated and described in the patent to August Arens, No. 1,057,795 dated April 1, 1913. As shown this lock is provided with a frame 2 having a face plate 4 and side plates or escutcheons 6 and 8 secured to the frame. The lock is further provided with an outside knob 10 having a shank 12, and an inside knob 14 having a shank 16 (Fig. 3), the shanks being arranged in axial alinement and being mounted to turn in bearings 18 integral with frame 2. One or both of the knobs has a pin tumbler lock mechanism (not shown) mounted therein. Where only one such mechanism is employed it is of course usually mounted in the outer knob.

The inner ends of the knob shanks operate roll-backs 20 which are adapted to act on a yoke 22 to retract a latch bolt 24 pivotally mounted in an opening in the face plate 4, the latch-bolt being projected by means of a spring 26 coiled about a portion of the yoke.

A roll-back 28 is secured on the inner end of a rod 30 which has its other end connected with the key-operated plug of the pin tumbler mechanism in the outer knob so that upon turning the plug the latch-bolt may be retracted.

The outer knob may be dead-locked by means of a pin 32 (Fig. 3) which is adapted to be moved into and out of an aperture in the shank of the outer knob. This pin is secured on the inner end of a carrier bar 34 having its outer end pivotally connected with one end of a walking beam 36 pivoted on a pin 37 in an opening in the face plate 4. Upon moving the walking beam in opposite directions, by pressing on opposite ends thereof, the dead-locking pin may be projected and retracted. The pin is yieldingly held in the position moved by means of a leaf spring 38 having its free end bent to engage opposite sides of a projection 40 on the carrier bar.

The lock is also provided with an actuator 42 and suitable connections for preventing retraction of the latch-bolt by insertion of an implement between it and the striker-plate on the door case. Also, suitable means is provided for preventing the dead-lock from being released when the door is locked.

The shanks of the inner and outer knobs are respectively secured by keeper-plates 44 and 46 that project into annular grooves 45 in said shanks. In Figs. 1, 2 and 3 the keeper-plate 44 for the inner knob shank is held in place by means comprising an abutment strip 48 and a cotter pin 49.

Except as hereinafter described, the parts above referred to may be and preferably are substantially the same as the corresponding parts of the lock of said patent to August Arens, No. 1,057,795, to which reference may be had for a more complete description of the same.

In accordance with my invention, the keeper-plate 46 for the outer knob is arranged in front of the shank and mounted to slide horizontally on the side of the frame 2 into and out of the annular groove in the shank. The plate is supported and guided by means of a screw 50 which extends through a slot in the plate, and the inner or rear end of the plate extends through a guiding slot in the sleeve 18 that surrounds the shank. This keeper-plate is held in the positions moved by means of a spring 52 having one end secured to the side of the frame 2, and its other end bent so as to permit it to snap into suitably positioned notches 54 on the under edge of the plate.

The keeper-plate is adapted to be thus moved by means of a bar 56 having a depending end which extends downwardly into a slot 58 in the upper edge of the keeper-plate. This bar 56 is secured to the dead-lock carrier bar 34 by means of screws 59. The slot 58 is of suitable length so that during the normal actuation of the carrier bar to move the dead locking pin 32 into and out of dead-locking position, the keeper-plate is unaffected. When it is desired, however, to retract the keeper-plate to permit removal of the outer knob and shank the walking-beam 36 is moved a sufficient distance in a direction to retract the dead locking pin 32 to cause the depending end of the actuating bar 56 to engage the forward end wall of the slot 58 in the keeper-plate and retract the plate from the knob shank. In order, however, that the dead-locking pin 32 may be retracted without moving the keeper-plate 46, means is provided for normally limiting the movement of the walking-beam in a direction to retract said pin, such means being adapted to be controlled when the door is open to permit movement of the walking-beam a sufficient distance to also retract the keeper-plate. In the illustrated construction the means for thus normally limiting the retracting movement of the walking-beam is controlled by an auxiliary pin tumbler lock mechanism. As shown, this lock mechanism is mounted in the walking beam and comprises a key-operated plug 60 having an abutment collar 62 secured on the inner end thereof, the key for operating the plug being indicated at 61. Normally this abutment collar, upon tilting the walking-beam 36 to retract the dead-locking pin, strikes against an abutment shoulder 64 on the lock frame 2 and thus prevents the walking-beam from being tilted a sufficient distance to retract the keeper-plate. The abutment collar 62, however, has a chamfered off portion 66, and when it is desired to retract the keeper-plate, the key operated plug is turned a distance of ninety degrees which positions the chamfered portion 66 opposite the abutment shoulder 64 so as to permit the abutment collar 62 to clear the abutment shoulder, thus permitting the walking beam to be tilted a sufficient distance to retract the keeper-plate. When the knob and shank have been removed and another substituted, the walking-beam may be tilted in the opposite direction to dead-lock the shank and to project the keeper-plate into holding engagement with the shank, whereupon the key-operated plug may be turned to return the abutment collar to its normal or effective position.

From the foregoing it will be apparent that means is provided for releasing one of the knobs and its shank from the lock without removing the lock from the door. Also, such releasing means can only be operated when the door is open and after the key-operated plug of the auxiliary lock mechanism has been turned to position the portion 66 of the abutment collar opposite the abutment shoulder 64. When a new knob and shank has been substituted, the keeper-plate

may be projected and the parts restored to their initial positions.

In Fig. 4 of the drawings the carrier bar, in addition to the dead-locking pin 32 for the shank of the outer knob, is provided with a locking pin 68 for the shank of the inner knob so that the shanks of both knobs may be dead-locked. Also, a keeper-plate 70, for the shank of the inner knob, is mounted on the inner side of the frame 2. This keeper-plate is operated by means of an arm 72 projecting from the inner end of the carrier bar 34 and extending through a slot 74 in the keeper-plate. It will be apparent that with this construction the two keeper-plates may be projected and retracted simultaneously into and out of holding engagement with the shanks of both knobs.

As will be evident to those skilled in the art, my invention permits various modifications without departing from the spirit thereof or the scope of the appended claims.

What I claim is:

1. A lock having, in combination, a face plate, a knob having a shank, a member in engagement with said shank for holding the shank from outward movement but permitting turning movement thereof and adapted to be retracted to permit removal of the knob and shank, and means accessible through said face plate for moving said member into and out of such holding engagement with said knob shank and for retaining said member in the position thus moved.

2. A lock having, in combination, a frame, a knob having a shank, a member in engagement with said shank for holding the shank from outward movement but permitting turning movement thereof and adapted to be retracted from said frame to permit the knob and shank to be removed, and key-controllable means for thus retracting said member.

3. A lock having, in combination, a face plate having an opening, a walking-beam mounted in said opening, a knob having a shank, a member in engagement with said shank for holding said shank from outward movement but permitting turning movement thereof and adapted to be moved out of engagement with said shank to permit removal of the knob and shank, and connections between said member and said walking-beam for moving said member into and out of engagement with said shank upon said walking-beam being moved in opposite directions, respectively.

4. A lock having, in combination, a face plate, a walking beam mounted in the face plate, a knob having a shank, a member in engagement with said shank for holding the shank from outward movement but permitting turning movement thereof and adapted to be retracted to permit removal of the knob and shank, connections between said member and said walking-beam for thus retracting said member upon movement of said walking-beam in one direction a predetermined number of degrees, means for limiting the movement of said walking-beam in said direction to less than said predetermined number of degrees, and a key-controllable device accessible through said face plate for rendering said means ineffective to thus limit the movement of said walking-beam.

5. A lock having, in combination, a face plate having an opening, a knob having a shank, a member in engagement with said shank for holding the shank from outward movement but permitting turning movement thereof and adapted to be retracted to permit removal of the knob and shank, a walking-beam mounted in said opening, connection between said walking-beam and said member for thus retracting said member upon movement of the walking-beam in one direction a predetermined number of degrees, means comprising a stop carried by said walking-beam serving when in one position to limit the movement thereof in said direction to less than said predetermined number of degrees and adapted to be moved out of said position to render it ineffective to thus limit said movement of the walking-beam, and key controllable pin tumbler lock mechanism carried by said walking-beam for effecting said movement of the stop.

6. A lock having, in combination, a face plate having an opening, a knob having a shank, a member in engagement with said shank for holding the shank from outward movement but permitting turning movement thereof and adapted to be retracted to permit removal of the knob and shank, a walking-beam mounted in said opening, connection between said walking-beam and said member for thus retracting said member upon movement of the walking-beam in one direction a predetermined number of degrees, a key-controlled pin tumbler lock mechanism having a key-operated plug adapted to be turned into and out of a predetermined angular position, and an abutment carried by said plug and a fixed abutment serving when the plug is in said predetermined position to limit the movement of the walking-beam to less than said predetermined number of degrees and when the plug is turned to another position being ineffective to thus limit the movement of the walking-beam.

7. A lock having, in combination, a face plate, knobs having their shanks in axial alinement, a member in engagement with each of said shanks for holding the shank from outward movement but permitting turning movement thereof and adapted to be retracted to permit removal of the shank and associated knob, and means accessible through said face plate for respectively moving said

members into and out of holding engagement with said shanks.

8. A lock for a door having, in combination, knobs having their shanks in axial alinement, a member in engagement with each of said shanks for holding the shanks from outward movement but permitting turning movement thereof and adapted to be retracted to permit removal of the shank and associated knob, and means for simultaneously moving said members into and out of holding engagement with said shanks without removing the lock from the door.

In testimony whereof, I have signed my name to this specification this ninth day of March, 1929.

ERNEST L. TEICH.