Dec. 30, 1952 C. L. LUCIUS 2,623,379

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FIG 1A

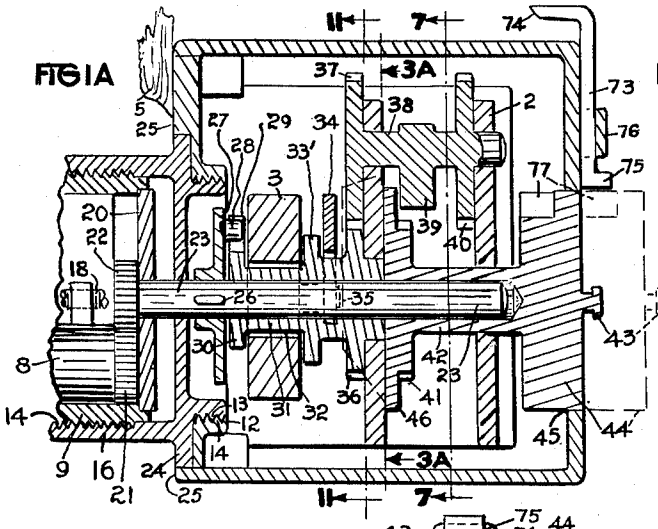


FIG 1

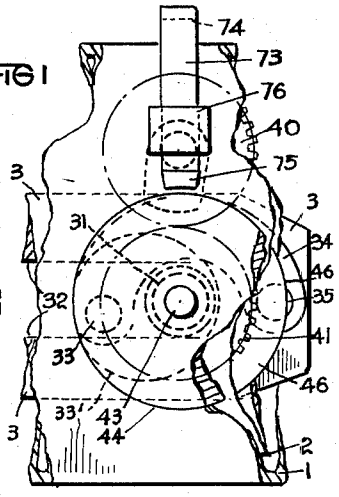


FIG 2

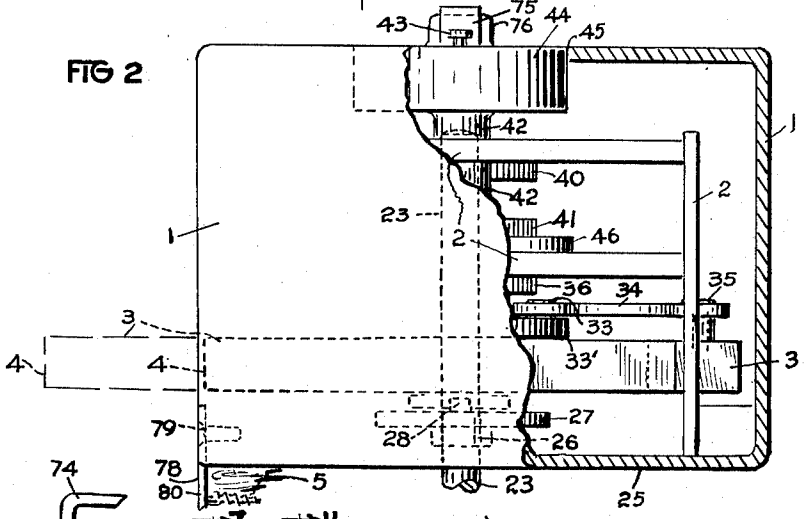
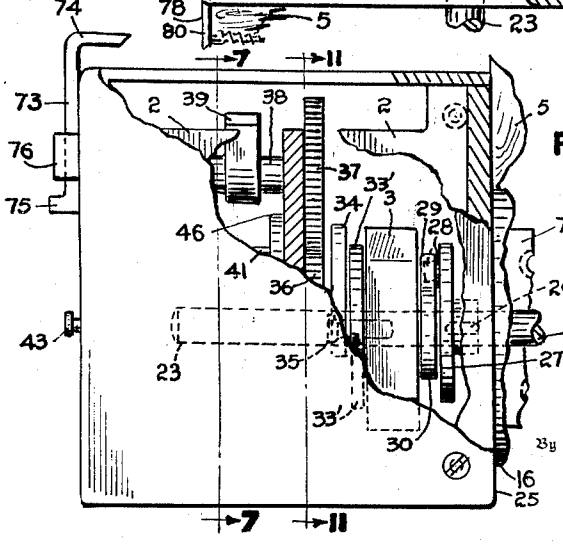


FIG 3



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FIG. 3A

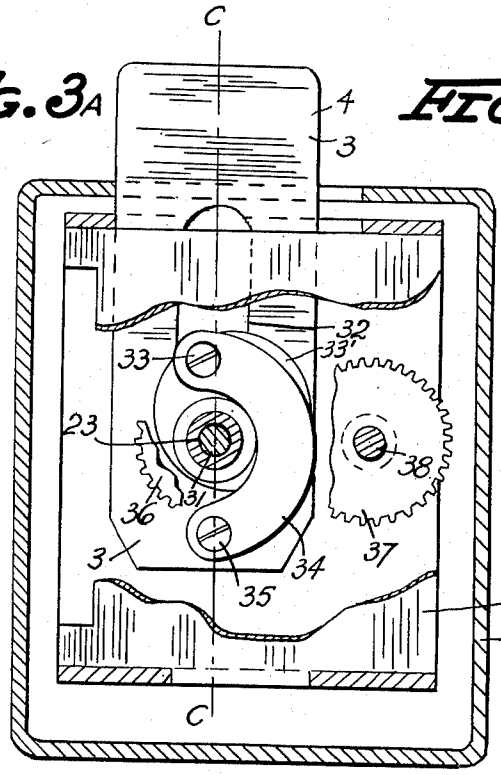


FIG. 4

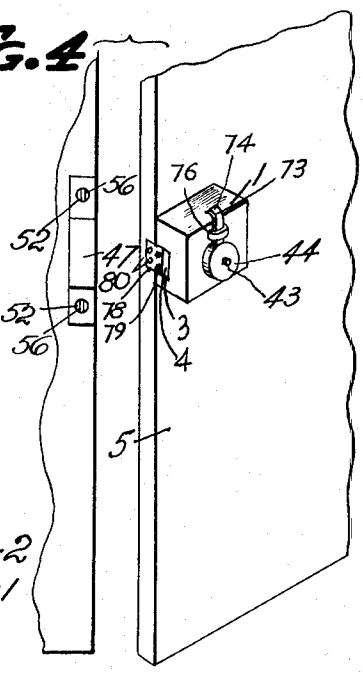


FIG. 5

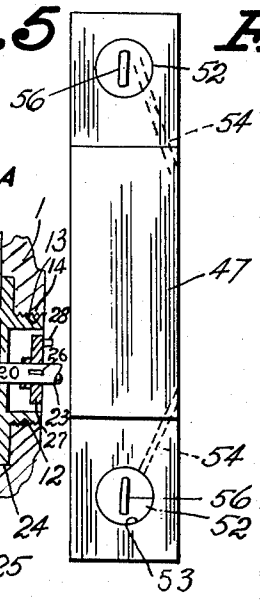


FIG. 6

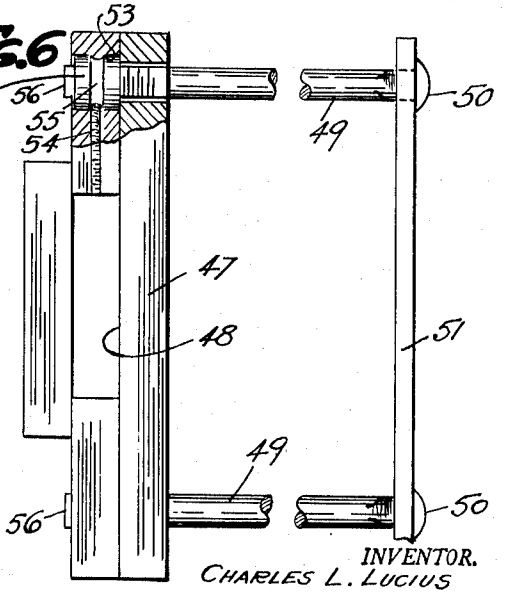


FIG. 6A

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FIG 7

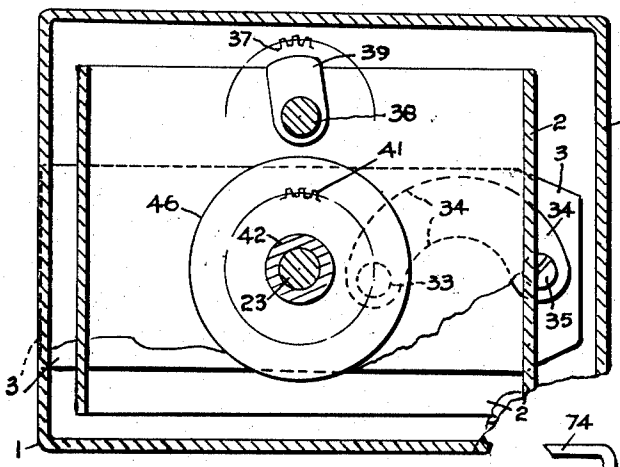


FIG 8

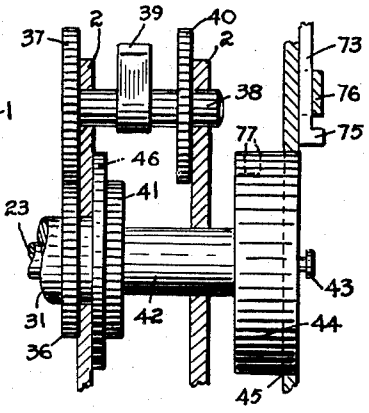


FIG 10

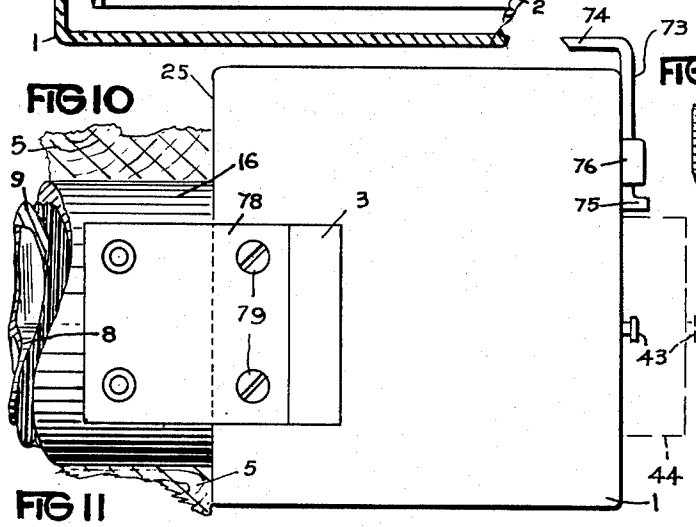


FIG 9

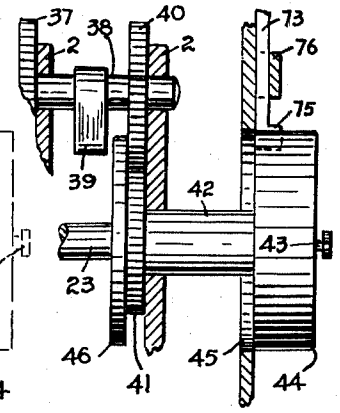
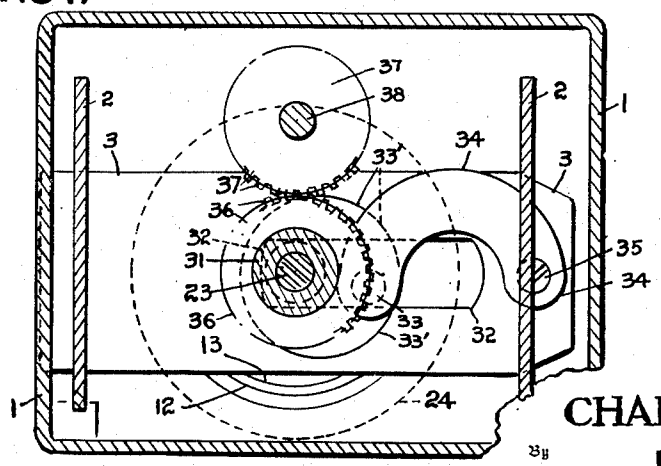


FIG 11



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FIG. 12

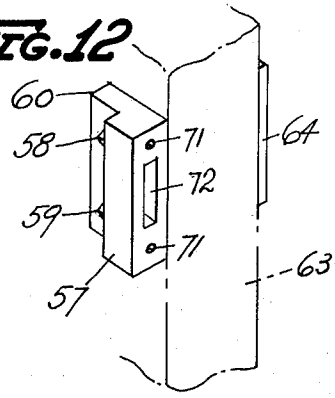


FIG. 13

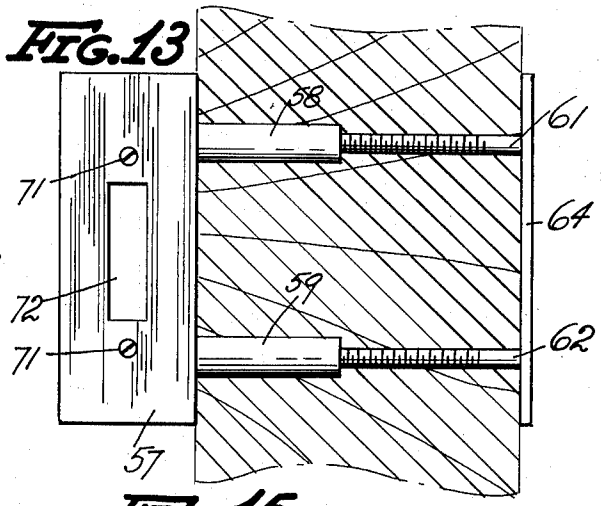


FIG. 14

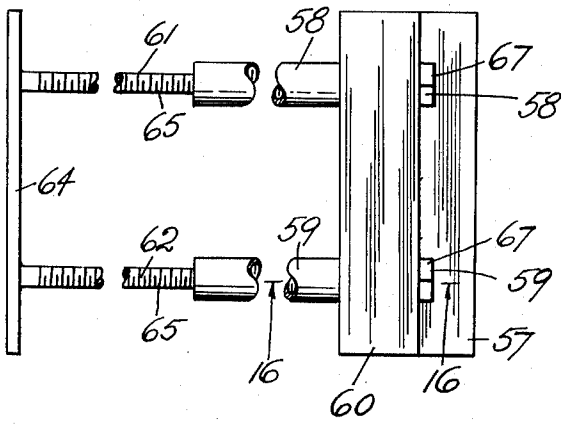


FIG. 15

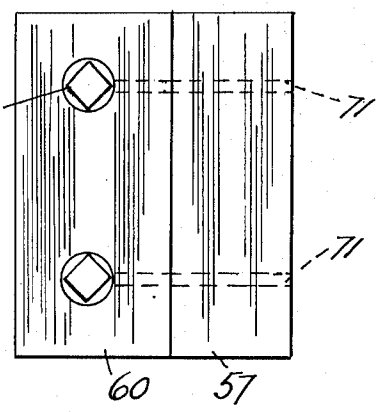


FIG. 17

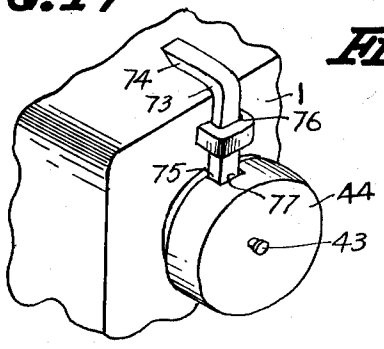
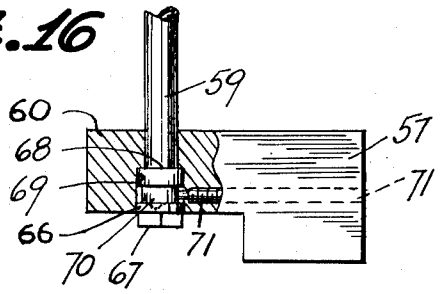


FIG. 16



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Patented Dec. 30, 1952 2,623,379

UNITED STATES PATENT OFFICE

2,623,379

LOCK

Charles L. Lucius, New York, N. Y.

Application May 28, 1948, Serial No. 29,693

6 Claims. (Cl. 70—134)

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My invention relates to a lock particularly of the bolt type which is locked by a key from the outside only and immovable from the inside except when unlocked.

Among the purposes and objects are to provide a lock in which the lock and moving parts are inaccessible from the outside of a door or the like.

Another object is to provide a lock which can only be unlocked from the outside and the bolt of the lock moved only by the key except when unlocked and set by withdrawing a knob and then only from the inside.

An object is to provide a burglar-proof lock which cannot be unlocked from the inside when locked by the key from outside.

Still another object is to provide a lock in which an inside operator knob can only be moved to its operating position when the lock is unlocked and the bolt retracted by the key and a night latch mechanism for holding the knob in operating position.

Another object is to provide a lock which cannot be removed from the door when closed or when locked.

I accomplish these and other objects by the construction herein set forth and shown in the drawings which form a part of this, my disclosure.

In the drawings:

Fig. 1A is a vertical section along the centerline of the lock operator in locked position.

Fig. 1 is a fragmentary rear or inside elevation of the bolt housing.

Fig. 2 is a bottom plan of the bolt housing.

Fig. 3 is an elevation at the opposite end from the bolt.

Fig. 3A is a section at 3A—3A, Fig. 1A in which the inner frame and gears are broken away to show the bolt action moved to its extended position, as when locked.

Fig. 4 is a perspective view from within the room.

Fig. 5 is a rear elevation of the latch or bolt plate.

Fig. 6 is a side elevation of the bolt plate and securing means.

Fig. 6A is a section of the door showing the tumbler barrel and bolt operator moved by the key.

Fig. 7 is a section at 7—7, Fig. 1A or Fig. 3, in which the bolt action is shown retracted, as when unlocked.

Figs. 8 and 9 are details showing the positions of the operating knob.

Fig. 10 is an elevation of the bolt end.

Fig. 11 is a section at 11—11, Fig. 1A or Fig. 3, in

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which the bolt action is shown in its retracted position, as when unlocked.

Fig. 12 is a perspective view showing a modification of the latch plate.

Fig. 13 is a front end elevation of the modified latch plate and section through the door frame.

Fig. 14 is a rear end elevation of the modification shown in Fig. 12.

Fig. 15 is a rear elevation of my modified latch plate.

Fig. 16 is a section at 16—16, Fig. 14.

Fig. 17 is a fragmentary perspective detail of the night latch.

Similar reference characters refer to similar parts throughout the several views of the drawings and in the specification.

Locks having their housing secured to the inside of the door by easily accessible screws and locks secured within the edge of the door are easily removed by any one and the parts of the lock and the parts of the door are too light and weak to eliminate the chance of their removal without much force or effort. These weaknesses and faults in principle are overcome by the construction and new principles which underlie my invention. The bolt housing is rotated to engage the tumbler barrel housing between which the door is clamped in such manner that the whole door has to be broken all around the lock before the lock can be detached by force and the surrounding parts of the door are not weakened by the installation of my lock but rather are reenforced to withstand great impact and pressure.

Other advantages over ordinary locks will be apparent to one skilled in the art of locks after a study of the construction of the preferred embodiment of my invention set forth in this disclosure.

I have not attempted to show all possible modifications but rather to show a detailed construction typical of my lock as adapted to use for dwellings, apartments, offices and homes. Modifications may suggest themselves to one skilled in the art, to suit my lock for a great variety of adaptations for very heavy as well as for very light doors.

The preciseness of the detailed description and the preciseness of the drawings is not intended to limit the scope of my invention which is set forth in the appended claims.

Referring to the drawings I have shown my lock as having an outer housing 1 which is preferably case hardened or constructed of material difficult to cut, break or drill and suitable to house the inner frame 2 which is detachably se-

cured to the housing and adapted to support the various moving parts for moving the bolt 3 and its free end 4 out beyond and back into the housing for locking and unlocking the door 5 to which my lock is secured.

The housing is positioned on the inside of the door and the key hole 6 which admits the key 7 to the barrel 8 for moving the bolt is disposed on the opposite or outside of the door.

The barrel may be of any well known make and thus suited for keys for operating typical tumbler combinations (not shown) to permit the key to rotate the barrel which is secured within a cylindrical auxiliary housing 9 having a head 10 and washer 11 to engage the outside of the door to cooperate with the housing 1 which is provided with the conforming threaded recess 12 which receives the threads 13 on the auxiliary housing to clamp the door between the washer 11 and housing 1.

This construction strengthens the door and makes the removal of the lock impossible without destroying the door.

The sleeve 16 comprises internal threads 14 engaging the threads 15 on the auxiliary housing 9 provided with the outward flange or head 19 which engages a conforming recess 17 in the washer 11. The conventional barrel is secured within the auxiliary housing 9 by the screws 18.

The end 19 of the auxiliary housing 9, opposite the head 10, is recessed to receive the bearing plate 20 through which the screws 18 pass. The barrel is provided with the pinion 21, which is turned with the key, and meshes with the pinion 22 to rotate the lock operator 23 thus to impart rotary motion to the lock operator which is disposed axially in relation to the auxiliary housing 9 and sleeve 16. The barrel and pinion 21 are on an axis parallel with, but spaced apart from the axis of the sleeve 16 and housing 9 which is provided with the flange 24 which is disposed and held flush with the front face 25 of the housing 1 by the threads 13 which engage the threads 14 in recess 12.

The lock operator 23 is provided with the key 26 which engages and rotates the operator disc 27 which is provided with the crank pin 28 which engages the lug 29 projecting outwardly from the head 30 of the sleeve 31 which passes through the slot 32 in the bolt 3 and rotates the crank disc 33' and crank pin 33 which engages the apertured connecting link 34 which is swingingly connected to the bolt 3 by the pin 35 which reciprocates the bolt in locking and unlocking the door.

Secured to and rotated with the sleeve 31 I have provided the gear 36 which meshes with the gear 37 to rotate the shaft 38 to which is secured the lug 39 and the gear 40 which meshes with the gear 41 secured on and rotated by the knob sleeve 42 which is slidably moved axially by the finger nail operator 43 to move the knob 44 out of the recess 45 in the housing 1 which normally conceals the knob and renders it inoperative.

When the knob is withdrawn from its recess the gear 41 engages the gear 40 to turn the sleeve 31 and to move the bolt which, when in the lock or extended position, causes the lug 39 to extend inwardly thereby engaging the disc 46 on the knob sleeve to prevent its axial movement to prevent the movement of the knob from its recess thereby preventing the movement of the bolt except by the key. The knob and sleeve are permitted to move only when the lug is disengaged from the disc as when the bolt is withdrawn or in the unlocked position.

The gears 40 and 41 are out of mesh when the knob is within its conforming recess thus preventing movement of the bolt by the knob unless withdrawn from the recess which is impossible when the bolt is extended or in its "lock" position.

The link 34 is so formed that the crank 33 may be rotated by and beyond the centerline *c*—*c* or the dead center of its outward travel in moving the bolt 3 to its "lock" position as may be seen by comparing the position of the link in Fig. 3A with its position in Fig. 11 where the bolt is shown withdrawn to its "unlock" position.

In Figs. 12, 13, 14, 15 and 16 I have shown a modification of my latch and bolt plate 57 in which the securing nuts 58 and 59 are disposed in the apertured rearwardly extending flange 60 and thus permitting the through bolts 61 and 62 to pass through the door frame 63 at a substantial distance from the inner edge of frame.

The bolts are preferably secured to or formed integral with the outer member 64 which is disposed on the outside to clamp the door frame between the plate 57 and the member 64.

The bolts are preferably provided with the threads 65 which extend substantially the full length thereof to accommodate door frames of various thicknesses. The nuts which receive the threads of the bolts are also threaded substantially their entire length except the capped ends 66 which are provided with the turning means 67 for turning the nuts which are provided with the shoulders 68 which engage the end of the counterbores 69 in the flange 60.

Annular grooves 70 are provided in the capped ends 66 which receive the ends of the set screws 71 which lock the nuts in place when tightened and prevent their withdrawal unless removed from the grooves.

The bolt plate 57 is provided with the bolt aperture 72 which receives the end of the bolt 3 to lock the door.

To lock the door so that it cannot be unlocked from the outside or opened except from the inside I have provided a slidable night latch 73 which is provided with a lift 74 on its upper end for moving the latch which is formed with a latch end 75 at its opposite end and a guide 76 disposed between the ends, the end 75 engaging the notch 77, when lowered, and when the latch is lifted out of the notch 77, the knob 44 is permitted to turn, the knob being withdrawn from the housing 1.

To prevent the housing from being turned and to lock it in position on the door I have provided the keeper 78 which is removably secured to the housing by the screws 79 and removably secured to the door by the screws 80.

The bolt plate 47 which is apertured at 48 to receive the end 4 of the bolt 3 is preferably provided with the through bolts 49 for securing the plate to the door frame. The heads 50 of the bolts are provided with square necks and round heads similar to carriage bolts and are prevented from turning in the outer member 51. The cap nuts 52 are free to turn in their counterbore 53 and are locked in place, when tightened, by the screws 54 which engage the annular grooves 55 to make the removal of the bolt difficult from the interior of the room unless the bolt is withdrawn from the aperture 48 through which the screws

are turned in locking the nuts. Turning means 56 are provided for turning the nuts.

The size of the parts and materials used may vary to suit the use of my lock to many types of doors and the like for which it may be adapted.

Having thus described a preferred embodiment of my invention what I claim as new and desire to secure by Letters Patent is set forth in the following claims.

I claim:

1. In a door lock having a housing and a bolt movable therein by key operating means, from the exterior of the door, and a knob and knob operating means for moving said bolt, from the interior of the door, said housing having a recess for receiving the knob of said knob operating means, whereby it may be rendered inoperative in moving the bolt, and means operable by the key operating means, to prevent the movement of the knob out of said recess, to prevent the bolt from being operated from the interior, when the door is locked.

2. In a door lock having a housing and a bolt movable therein by key operating means from the exterior of the door and a knob and knob operating means for moving said bolt from the interior of the door, said housing having means for slidably mounting the bolt, a lock operator rotatable by said key operating means and a crank rotatable by said operator for sliding said bolt in said housing to lock or unlock the door by said key operating means, a sleeve mounted on said operator rotatable by said crank and a second crank secured to said sleeve and a means secured to said second crank and to said bolt to move said bolt and to lock said bolt against movement at its extremes of travel, and means operable by said key operating means for preventing the operation of said bolt by said knob operating means.

3. In a door lock having a housing and a bolt movable therein by key operating means, from the exterior of the door, and a knob and knob operating means for moving said bolt, from the interior of the door, said housing having a recess for receiving the knob of said knob operating means, whereby it may be rendered inoperative in moving the bolt, and means operable by the key operating means, to prevent the movement of the knob out of said recess, to prevent the bolt from being operated from the interior, when the door is locked, night latch means, said knob having a notch for engaging said night latch means, whereby said bolt may be locked from the interior when said night latch means is set, and rendered inoperative by said key operating means.

4. In a door lock having a housing and a bolt movable therein by key operating means, from the exterior of the door, and a knob and knob operating means for moving said bolt, from the interior of the door, said housing having a recess for receiving the knob of said knob operating means, whereby it may be rendered inoperative in moving the bolt, and means operable by the key operating means, to prevent the movement of the knob out of said recess, to prevent the bolt from being operated from the interior, when the door is locked, night latch means, said knob having a notch for engaging said night latch means, whereby said bolt may be locked from the interior when said night latch means is set, and rendered inoperative by said key operating means, and an operator for removing said night latch means from said notch to permit the operation of said bolt by said key operating means.

5. In a door lock having a housing and bolt movable therein by key operating means, from the exterior of the door, and a knob and knob operating means for moving said bolt, from the interior of the door, said housing having a recess for receiving the knob of said knob operating means, whereby it may be rendered inoperative in moving the bolt, and means operable by the key operating means, to prevent the movement of the knob out of said recess, to prevent the bolt from being operated from the interior, when the door is locked, a gear movable axially by said knob into and out of mesh with a bolt operating gear for sliding said bolt when said gears are in mesh and said knob is turned, and means movable by said key operating means to prevent the axial movement of said axially movable gear when said bolt is extended out of said housing, as when the door is locked.

6. In a door lock having a housing and bolt movable therein by key operating means, from the exterior of the door, and a knob and knob operating means for moving said bolt, from the interior of the door, said housing having a recess for receiving the knob of said knob operating means, whereby it may be rendered inoperative in moving the bolt, and means operable by the key operating means, to prevent the movement of the knob out of said recess, to prevent the bolt from being operated from the interior, when the door is locked, a gear movable axially by said knob into and out of mesh with a bolt operating gear for sliding said bolt when said gears are in mesh and said knob is turned, and means movable by said key operating means to prevent the axial movement of said axially movable gear when said bolt is extended out of said housing, as when the door is locked, said means to prevent axial movement holding said knob in said recess or out of said recess only after the bolt has been extended out of the housing.

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