July 27, 1926. 1,593,667

E. O. MURMANN

DOORLOCK MECHANISM

Filed March 24, 1924

Fig. 2

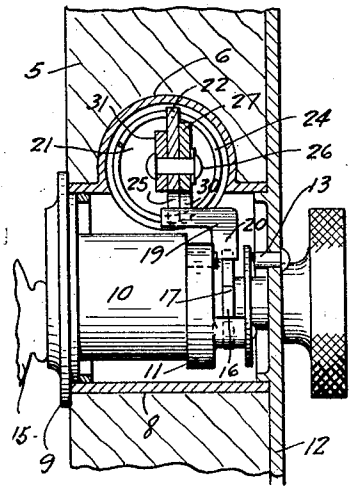


Fig. 1

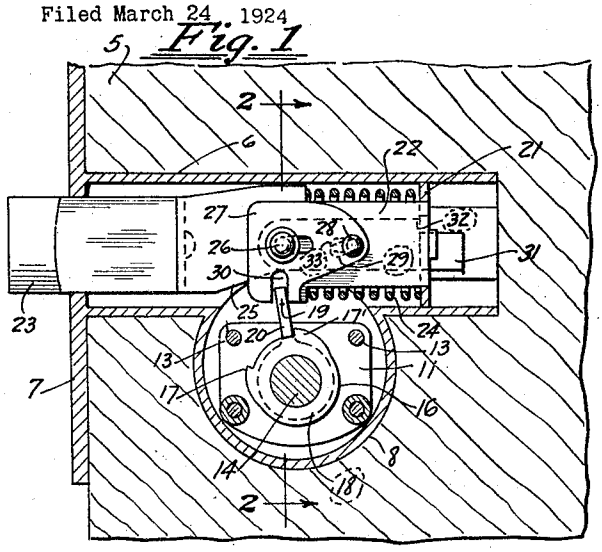


Fig. 3

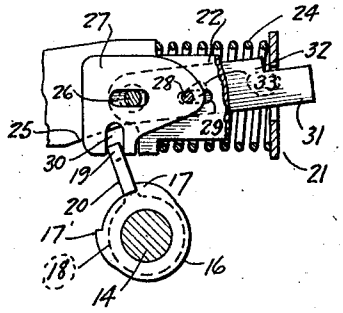
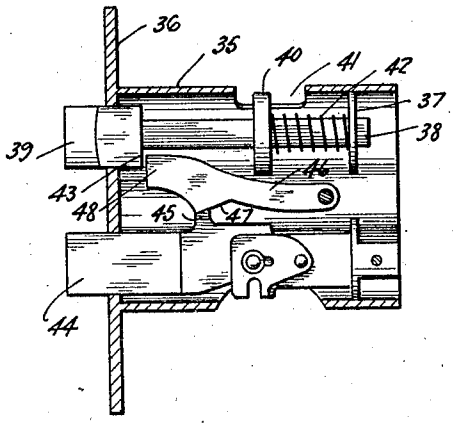


Fig. 4



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DOORLOCK MECHANISM.

Application filed March 24, 1924. Serial No. 701,382.

This invention relates to a door lock having means for deadlocking a bolt. The primary object of this invention is to provide a lock mechanism so arranged that a limited movement of a key or lock mechanism actuating member from its unlocking position toward its locking position will deadlock the bolt. Other objects of this invention are to provide a simple, durable, compact, easily installed, and easily manipulated mechanism.

These objects are obtained by means of the embodiment of my invention in which:

Fig. 1 is a section through a fragment of a door and through a key lock embodying my invention; Fig. 2 is a section as seen on the line 2—2 of Fig. 1; Fig. 3 is a view similar to Fig. 1 showing a fragment of the mechanism with parts thereof in deadlocking position; and Fig. 4 is a sectional view showing a modified form of my invention embodied in a lock having a key bolt and a latch bolt.

Referring more particularly to Figs. 1, 2, and 3, a lock is shown comprising a bolt unit and a bolt actuating mechanism unit. The bolt unit is housed in a cylindrical casing such that the door 5 may have a recess bored therein with a drill, and the bolt unit slipped therein. The bolt unit casing is indicated by 6 and is cut away to provide an opening for access thereto. Secured to the housing 6 is the selvage plate 7, whereby the bolt may be secured to the door. An opening is bored through the door transverse to the bolt recess and a bolt actuating unit mounted therein. This unit has a cylindrical housing 8 which fits into the recess and has an opening through which the interconnecting members of the bolt mechanism and the bolt actuating mechanism may project.

The bolt actuating member comprises a plate 9 adapted to cover one end of the recess, and a barrel body 10 preferably formed integral therewith. Formed on the other end of the body 10 is a flange 11. An escutcheon plate 12 is secured to the flange by means of screws 13. A cylinder plug 14 is disposed in a bore of the barrel. The plug and barrel are preferably of the well known cylinder lock type, the details of which are well known in the art and need not be further described. However, upon insertion of the proper key 15 in the keyhole of the lock, the plug is released from the barrel so that it may be rotated. The end of the plug is provided with a disk 16 having on its periphery spaced abutments 17 and 17′. Disk 16 is spaced from flange 11 so that the cylinder plug extends beyond the barrel. Pivotally mounted upon this extension is a rocker comprising a ring 18 and a roll-back arm 19 extending radially therefrom. Projecting inwardly from the side of the arm is a rib 20. At the end of the arm and extending laterally therefrom is a finger. The finger is adapted to engage the bolt mechanism. The lower shoulder of the rib 20 is disposed to be engaged by the abutments upon the ring 16 so that rotation of the cylinder plug 14 sufficiently far in either direction will swing the rocker, there being a lost motion connection between the plug and the idler arm.

Secured in one end of the housing 6 is a disk wall 21 having a slot through which extends the tail 22 of a lock bolt 23. The tail is provided with shoulders serving as abutments for a compression spring 24. The spring 24 tends to hold the bolt 23 in its protracted or locking position. A recess 25 is provided on the under side of the tail 22 so arranged that the finger 19 may be disposed therein and moved against the rear wall thereof so as to retract the bolt. Thus, by turning the key, the bolt may be retracted and the door unlocked.

A pin 26 is fixed to the tail and extends through an elongated slot in a slide plate 27. The slide plate has secured thereto a pin 28 riding in an elongated slot 29 formed in the tail.

On the lower side of the slide plate is a notch 30 in which the finger 21 is disposed so that rotation of the plug and swinging of the idler will cause movement of the slide plate. Pivotally mounted upon the pin 26 is a tumbler 31. The tumbler extends through the slot in disk 21 and is provided with a shoulder 32. An inclined slot 33 in the tumbler 31 is provided and extending therethrough is the pin 28. It is obvious that sliding the plate 27 forwardly on the tail of the bolt will cause the pin 28 to ride in the slot 33 and lift the tumbler 31 into the position shown in Fig. 3. In this position the shoulder 32 is disposed in front of the disk 31 and the bolt is deadlocked. Pressure upon the bolt 23 tending to re-

tract it will be met by the shoulder 32 engaging the disk 31 and preventing movement. In order to release the deadlock, plate 27 must be moved toward the rear on the tail. Pin 28 will then ride in slot 33, swinging the tumbler 31 downwardly so that shoulder 32 clears the wall of disk 21 and the bolt may be retracted.

Suppose the parts are in the position shown in Fig. 1 and it is desired to unlock the door. The key 15 is inserted in the plug and the latter turned clockwise. This causes disk 16 to be turned clockwise, shoulder 17 engaging the rib 20 and thereafter swinging the idler arm to the right. The finger of the idler arm engages the back wall of the notch 25 and moves the tail 22 and bolt against the action of spring 24, retracting the bolt from the keeper and unlocking the door. If it is desired to deadlock the bolt, the key is inserted in the plug and turned toward locking position. Abutment 17 engages ribs 20 and swings the idler arm 19 so that the finger moves slide plate 27 forwardly to the position shown in Fig. 3. This causes the tumbler 31 to be lifted so that shoulder 32 is in front of disk 21. Key 15 may be turned to a position such that it may be withdrawn from the keyhole. Due to the space between the abutments 17 and 17', the key may be rotated a limited distance before the idler arm would be moved. This limited distance is sufficient to position the key such that it may be withdrawn from the keyhole.

Referring more particularly to Fig. 4, a structure including a latch bolt and a key bolt which may be operated by suitable mechanism such as a key actuating mechanism of the character shown in Figs. 1, 2, and 3 may be employed therewith. The details of the key actuating unit and the mechanism for operating the latch bolt are not essential to the invention. A single housing for both the key bolt and latch bolt is indicated by 35. Secured to the housing is a selvage plate 36. A transverse extending abutment plate fixed in the housing is indicated by 37, and slidably extending through a slot therein is the tail 38 of the latch bolt head 39. Fixed to the tail is a collar 40 positioned to be reached through an opening 41 in the housing in such a manner that a knob mechanism may be engaged with the collar for moving the latch bolt. A compression spring 42 is disposed over the tail between plate 37 and collar 40 tending to hold the latch bolt in its forward position. The tail is joined to the latch bolt head in such a manner as to form a shoulder 43.

Disposed below the latch bolt is a key bolt 44. The key bolt is constructed in accordance with the key bolt shown in Figs. 1, 2, and 3, except that no compression spring for protracting the bolt is employed. The idler operated from the key is used both to protract and retract the bolt. Extending upwardly from the key bolt is a lug 45 having a bevelled upper face.

Pivotally mounted on the casing between the latchbolt and the key bolt is a tumbler 46. The tumbler has a bevelled under face 47 corresponding to the bevel on lug 45, and the tumbler rests against the same. An extension 48 on the tumbler is arranged to be opposed to shoulder 43 on the key bolt. When the key bolt is in its protracted or locking position, the lug 45 will position the tumbler 46 such that extension 48 is behind the shoulder 43 and will deadlock the latter. By moving the key bolt to its retracted or unlocking position, tumbler 46 will be depressed to its lower position, in which position the extension 48 is disposed below the shoulder 43 on the latch bolt head, and the latch bolt is free to be moved. In the construction just described, the tumbler for deadlocking is actuated indirectly from the key. By advancing the key or its equivalent towards locking position, the latch bolt is deadlocked.

What I claim is:

The combination of a lock casing, a latch bolt therein, a tumbler pivotally mounted on said bolt so as to be swung into position to engage said casing when said bolt is in protracted position and to obstruct the retraction of said bolt whereby to deadlock the latter, a key actuable mechanism for retracting said bolt having a roll-back arm engaging said bolt and movable longitudinally thereof whereby to retract the latter, a slide mounted on said bolt to be engaged by said roll-back arm and initially be moved thereby, means interconnecting said slide and said tumbler arranged so that initial movement of said slide toward protracted position will swing said tumbler into deadlocking position.

In witness that I claim the foregoing I have hereunto subscribed my name this 18th day of March, 1924.

EUGENE O. MURMANN.