Nov. 5, 1929. J. A. RYMER 1,734,149

DOORLOCK

Filed Dec. 6, 1927 2 Sheets-Sheet 1

Fig 1

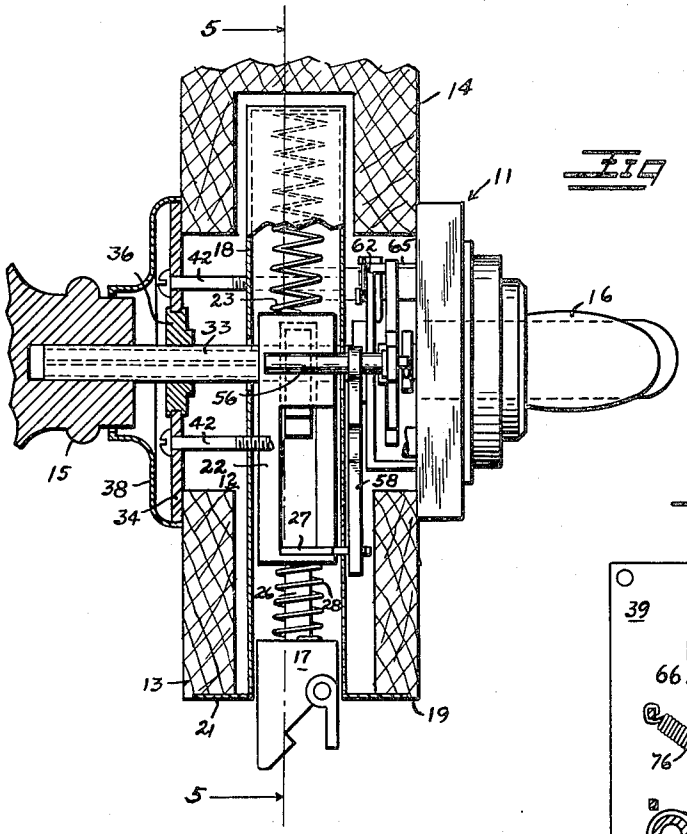


Fig 4

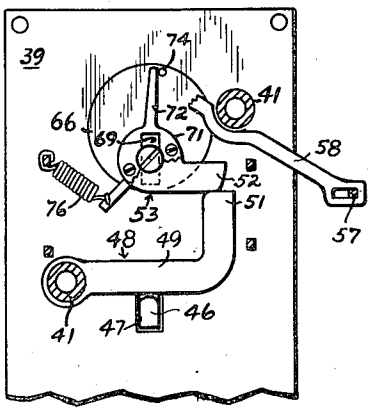


Fig 2

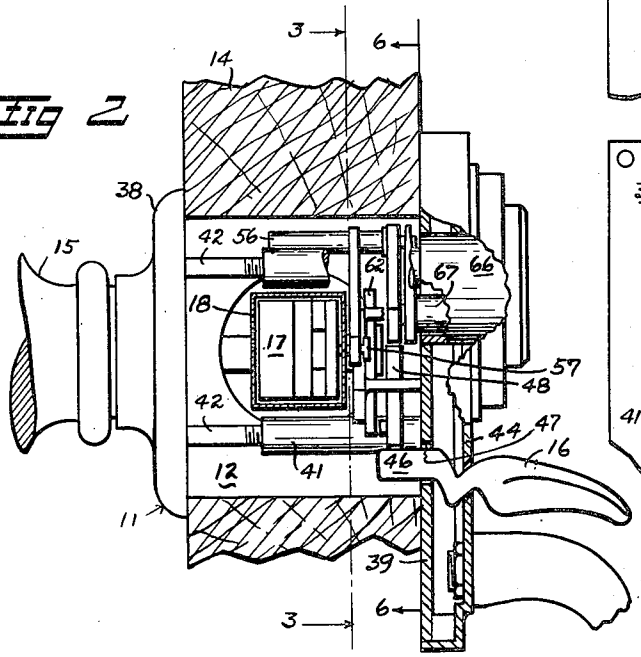
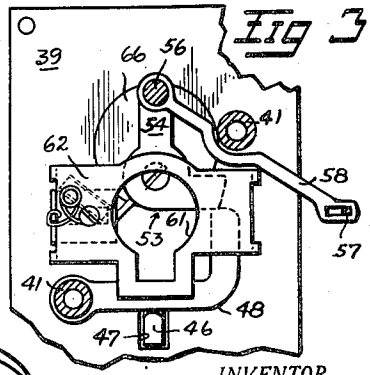


Fig 3



INVENTOR.
JOHN A. RYMER.
BY Joseph B. Gardner
ATTORNEY

Nov. 5, 1929. J. A. RYMER 1,734,149

DOORLOCK

Filed Dec. 6, 1927 2 Sheets-Sheet 2

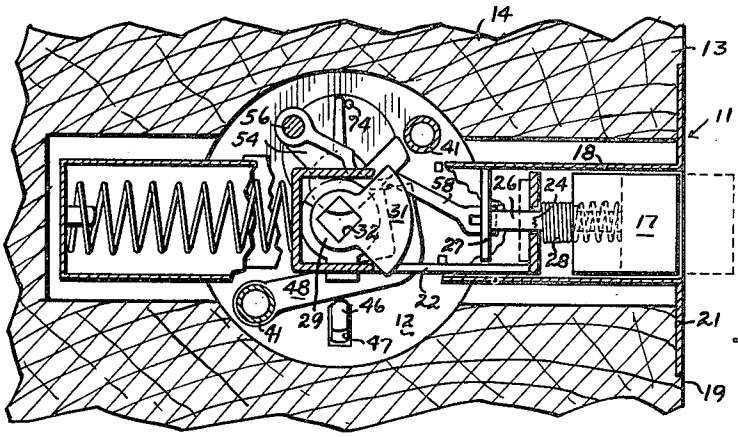


Fig 5

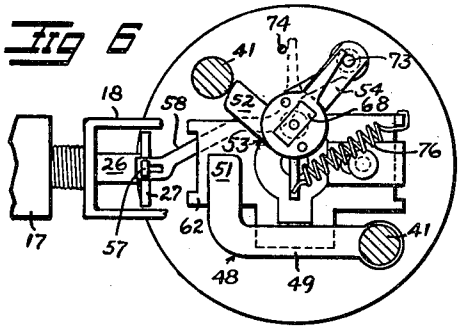


Fig 6

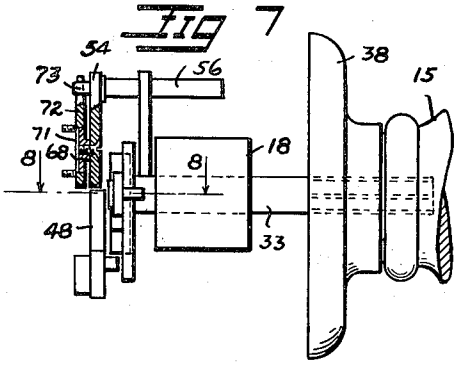


Fig 7

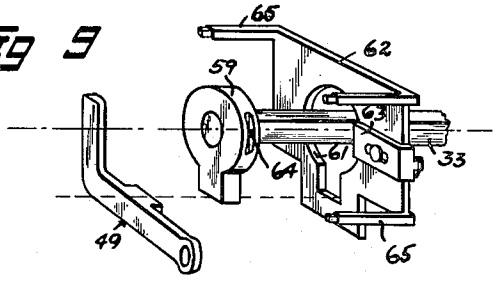


Fig 9

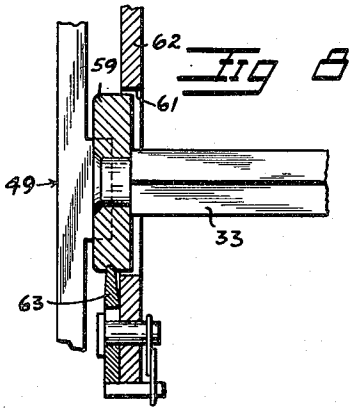


Fig 8

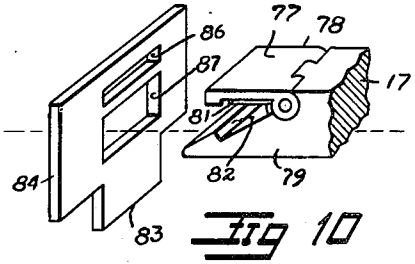


Fig 10

INVENTOR.
JOHN A. RYMER
BY Joseph B. Gardner
ATTORNEY

Patented Nov. 5, 1929 1,734,149

UNITED STATES PATENT OFFICE

JOHN A. RYMER, OF BERKELEY, CALIFORNIA, ASSIGNOR TO PRATT-RYMER COMPANY, OF SAN LEANDRO, CALIFORNIA, A CORPORATION OF CALIFORNIA

DOORLOCK

Application filed December 6, 1927. Serial No. 238,079.

My invention relates to locks particularly designed for use on outside doors.

An object of the invention is to provide a simplified and generally improved lock of the class described in which a member operable from the inner side of the door for effecting a withdrawal of the latch bolt is also arranged to be set for preventing an opening of the door from the outside.

Another object of the invention is to provide a lock of the class described providing improved and simplified connecting means between a thumb latch and the latch bolt.

A further object of the invention is to provide in the lock key operated means for withdrawing the latch bolt independently of the other means provided.

A still further object of the invention is to provide an improved bolt and striker plate for a lock of the class described.

The invention possesses other objects and features of advantage, some of which, with the foregoing, will be set forth in the following description of the preferred form of the invention which is illustrated in the drawings accompanying and forming part of the specification. It is to be understood, however, that variations in the showing made by the said drawings and description may be adopted within the scope of the invention as set forth in the claims.

Referring to said drawings,

Figure 1 is a fragmentary plan section taken through the lock and a door on which the lock is mounted.

Figure 2 is an edge view of the lock mechanism as it appears when viewed from the free edge of the door, portions of the structure and door being broken away.

Figure 3 is a view of the lock structure taken on the line 3—3 in Figure 2.

Figure 4 is a view similar to Figure 3, but with portions of the former showing removed.

Figure 5 is a sectional view of the lock and installation taken generally on the line 5—5 in Figure 1, an intermediate portion of the latch bolt housing being broken away and the bolt being shown in retracted position.

Figure 6 is a view of the lock mechanism taken generally on the line 6—6 in Figure 2, but with the bolt retracted.

Figure 7 is a fragmentary edge view taken from the right side of the structure disclosed in Figure 6, portions of the showing being in section.

Figure 8 is an enlarged fragmentary plan view taken on the line 8—8 in Figure 7.

Figure 9 is a perspective elevation of the parts shown in Figure 8, such parts being shown separated.

Figure 10 is a fragmentary perspective view of an improved bolt for the lock and a striker plate therefor, the bolt and plate being axially separated.

As herewith particularly shown, the improvements of my invention are incorporated in a lock 11 disposed in a suitable cavity 12 provided in the free edge portion 13 of a door 14, and which is arranged to be operated from the inner side of the door by means of a knob 15, and from the outer side of the door by means of a thumb latch 16. The bolt 17 of the lock is arranged to normally extend from the outer end of a bolt casing 18 mounted in the door edge face 19, such casing being provided adjacent the point of emergence of the bolt therefrom with a flange 21 whereby it may be fixed to the door edge 19, it being noted that the flange 21 is also arranged to conceal the mouth of the portion of the cavity 12 which extends to the edge 19.

Slidably mounted in the casing 18 is a bolt yoke or latch plate member 22 for actuating the bolt 17, such member being here shown hollow and of generally rectangular outline and being urged to assume and maintain an outer position by reason of a spring 23 operatively engaged behind it. The forward end of the latch plate 22 is perforated as at 24 for the sliding reception of a shank 26 extending inwardly from the bolt, such shank being provided at its inner extremity with an enlarged head 27 which is arranged to limit the outward movement of the bolt shank through the opening 24. A compression spring 28 is disposed about the shank 26 and between the inner end of the bolt head and the outer end of the latch plate 22

whereby the bolt is arranged to be normally held extended from the latch plate for retraction therewith, and at the same time may be retracted independently of the latch plate. Journaled in the casing 18 to extend horizontally therethrough is a latch actuator 29 having extending therefrom intermediate the casing walls an arm 31 arranged for engagement with the latch plate 22 in such manner that a rotation of the actuator from the normal position shown in Figure 5 will effect a retractive displacement of the latch plate. Preferably, and as shown the actuator arm 31 is arranged for engagement with the latch plate both at the upper and lower sides thereof whereby a rotation of the actuator in either possible direction may retract the latch plate.

Extending axially through the actuator is a perforation 32 in which a spindle 33 is arranged to be disposed. Means are provided for preventing a rotation of the spindle in the perforation and as here shown the perforation and spindle are of like and polygonal cross section whereby the spindle may be utilized for effecting a rotation of the actuator. The spindle 33, it is noted, is arranged to extend through the actuator 29 and protrudes from the door only at the inner side thereof. Arranged for mounting at and against the inner side surface of the door is a plate 34 having rotatably journaled therein a sleeve 36 arranged to slidably receive the spindle 33 therethrough for rotation therewith—as here shown, the spindle and the bore of the sleeve are of like polygonal cross-section. The knob 15, it is noted, is mounted at the inner end of the spindle for effecting a rotation thereof. An escutcheon plate 38 is provided, such plate being arranged to conceal the plate 34. It will be noted that a certain amount of axial reciprocation of the spindle 33 is permitted and that such spindle provides the sole actuating means for the latch plate 22.

Means are provided for effecting a withdrawal of the bolt 17 from the outer side of the door independently of the spindle 33, and as here shown such means are carried on a plate member 39 arranged for disposal at and against the outer side surface of the door. It will now be noted that the plates 34 and 39 are not secured directly to the door but are arranged to be fixed in proper position on the door by clamping the door between them. Extending inwardly from the outer plate 39 toward the plate 34 are posts 41 provided with threaded axial bores for the reception of clamp screws 42, which screws are disposed through suitable perforations provided in the plate 34 opposite the posts 41 whereby the plates 34 and 39 may be forcibly drawn together against the opposite sides of a door for fixedly securing them to the door in proper relation to the bolt mechanism and the lock cavity.

A withdrawal of the bolt from the outer side of the door is, in the present embodiment, arranged to be effected by means of the thumb latch 16. As shown, the thumb latch 16 is of a usual lever form and is fulcrumed in an outer escutcheon plate 44 enclosing and carried by the plate 39, with an inner end portion 46 thereof extending inwardly through a vertically directed slot 47 in the plate 39. Mounted on the inner side of the plate 39 for movement in a plane parallel to the plate is a lever 48, such lever having an end thereof pivotally secured to the plate 39, an intermediate portion 49 generally horizontal and bearing on the upper side of the thumb latch portion 46, and a free end portion 51 arranged for engagement with one arm 52 of a bell crank lever 53 carried on the plate 39 for rotation about an axis perpendicular to said plate. The other arm 54 of the bell crank lever 53 carries a pin 56 protruding inwardly therefrom in a direction parallel to the pivotal axis of the bell crank lever, while protruding inwardly from the bolt shank head 27 through the bolt casing 18 is a headed pivot pin 57 which is arranged for reciprocation with the bolt, it being noted that the pivotal point of the bell crank lever 53 and the pivot pin 57 are horizontally offset by an appreciable distance. Mounted on and connecting the pins 56 and 57 is a link 58, such link being arranged when the bell crank lever 53 is rocked from its normal position to effect a withdrawal of the bolt 17. In this manner, a withdrawal of the latch bolt is arranged to be effected by means of the thumb latch 16 independently of any actuation of the spindle 33 or the latch plate 22.

Preferably, and as shown, the pin 56 is cylindrical and is slidably engaged in an eye provided at the cooperating end of the link 58. In this manner the link may be variably engaged along the pin 56 when the plates 34 and 39 engage doors of different thickness between them, so that the one lock structure may be installed on doors of different thickness without alteration or special fitting. It will of course be obvious that the latch bolt and its casing are supported independently of the various lock operating mechanisms provided, the latter being supported by and between the plates 34 and 39.

The spindle 33, it will now be noted, is provided at the outer, and free, end thereof, with a stop member 59, such member being arranged to be disposed in the path of movement of the lever 48 when the spindle is in its axially outward position with respect to the inner side of the door to prevent an operative displacement of said lever. As here shown, the stop member 59 is reciprocable in a like shaped bore 61 provided in

a plate member 62 fixed to the outer lock plate 39 in inwardly spaced relation therefrom and between it and the bolt casing 18. Preferably, the stop member 59 is swivelled to the spindle and is arranged to maintain a non-rotatable engagement in the bore 61 at and between its two extreme positions. Mounted on the plate 62 is a spring pressed detent 63, such detent being engageable in a V-shaped notch 64 provided in the side of the stop member and against the outer end of the member 62 when the latter is respectively disposed in its locking and withdrawn positions, the engagement of the detent 63 with the stop member 59 being such that it may be displaced upon the exertion of a slight, but marked, axial force on the spindle 33. In this manner, the stop is arranged to be positively and releasably held in either one of its set positions. As here shown, the plate member 62 is provided with integral posts 65 which are riveted in suitable perforations provided in the outer clamp plate 39. It will now be clear that the spindle 33 is operable at all times to retract the latch bolt and that the rotative operation thereof for retracting the bolt does not effect the setting of the stop 59.

As is usual with locks for outside doors, key controlled means operable from the outside of the door are provided in the lock structure. Mounted in the clamp plate 39 and its associated escutcheon-plate 44 to extend therethrough is a tumbler barrel casing 66, such casing carrying a key controlled tumbler barrel 67 of a usual structure. The inner end of the barrel 67 provides the pivotal mounting for the bell crank lever 53, the latter being swivelled thereto. As here shown, the bell crank lever 53 is swivelled to a polygonal block 68, which block is in turn arranged to be secured in a socket 69 formed in a member 71 fixed to the inner end of the tumbler barrel and providing an arm 72. The arm 72, it will be noted, normally lies operatively against and behind a pin 73 extending outwardly from the bell crank lever arm 54 and in front of and against a stop pin 74 carried by the casing 66. Means are preferably provided for resiliently urging the pin 73 of the bell crank lever 53 to be normally maintained against the arm 72, and the latter arm against the pin 74, and as here shown such means comprises a tension spring 76 operatively connected between the lever 53 and a fixed point on the plate 39. In this manner, the bell crank lever 53 is arranged to be independently rocked for withdrawing the lock bolt either by an actuation of the thumb latch 16 or the rotation of the tumbler barrel 67.

As herewith particularly shown, the bolt 17 is particularly designed to prevent a wedging forcing back thereof through use of a flat pointed instrument between the door edge and the usual striker plate disposed on the door jamb. Accordingly, and as here shown, a portion 77 of the striking face of the bolt is provided on a tongue 78 hinged at its inner end to the remaining portion 79 of the bolt and normally extending longitudinally of the bolt, a spring 81 being provided for yieldingly holding the tongue 78 in extended position. The tongue 78 is arranged to be deflected into a recess 82 provided in the bolt portion 79 whereby a continuous striking surface may be presented against the striking edge 83 of a striking plate 84 as the bolt moves against the latter. The striking plate 84 is provided with spaced perforations 86 and 87 arranged respectively for the reception of the extremities of the bolt portions 78 and 79, the tongue portion 78 of the bolt being arranged to enter the perforation 86 only when and after the bolt portion 79 has partly entered the perforation 87. In this manner, a flat object inserted between the door and striker plate 84 with the intention of wedging the same inwardly would strike the surface of the tongue 78 at right angles, and since the tongue is held from being forced back against the bolt portion 79 by reason of its engagement in the perforation 86, the wedging back of the bolt is positively prevented.

It will be noted that the door cavity 12 for the reception of those lock portions which are disposed within the door space is arranged to be formed by providing intersecting cylindrical holes in the door, one of which holes extends transversely through the door and the other of which extends from the door edge 19. No other cavities are necessary, since the tumbler barrel and its casing are disposed in line with the transverse hole. In this manner, the necessary door cavity for the lock may be quickly and simply provided by the use of a carpenter's bit and a minimum amount of fitting of the lock to a door is required.

I claim:

1. In a lock, a latch bolt and a spindle whereby it is actuated, means independent of said spindle for compelling the latch bolt to move into and out of operative engagement, and means carried by the spindle disposable to render said first means inoperative.

2. In a lock, a latch bolt and a spindle whereby it is actuated, a thumb latch operative independently of said spindle for actuating the latch bolt, and means carried by the spindle disposable upon an appropriate manipulation of the spindle to render said thumb latch inoperative.

3. In a lock, a latch bolt, a spindle for operating said latch bolt by and upon a rotation thereof and axially movable between a pair of limiting positions, a thumb latch operative independently of said spindle for actuating the latch bolt, and means carried by the spindle operative in one of said limiting po-

sitions thereof to prevent an operative actuation of said thumb latch.

4. In a lock, a latch bolt and a spindle whereby it is actuated, means operative independently of said spindle for actuating the latch bolt, and stop means carried by the spindle disposable to prevent an operative actuation of said first means, said stop means leaving the spindle free to turn.

5. In a lock, a latch bolt, a latch plate carrying said bolt, a spindle for actuating said latch plate, a thumb latch operative to retract said bolt independently of said latch plate, and normally inoperative stop means carried by said spindle and disposable by and upon an axial displacement of the spindle to prevent the operation of said thumb-latch.

6. In a lock, a latch bolt, a spindle for operating said latch bolt from one side of the lock by and upon a rotation thereof and axially movable between a pair of limiting positions, a thumb latch operative from the other side of the lock, means including a lever operatively connecting said thumb latch with said latch bolt whereby said thumb latch is arranged for effecting the actuation of said latch bolt independently of said spindle, and a stop member carried by said spindle and arranged to be disposed in the path of said lever when the spindle is in one of said limiting positions whereby the actuation of said lever is prevented.

7. In a lock, a latch bolt, a spindle for operating said latch bolt from one side of the lock by and upon a rotation thereof, said spindle being axially movable between a pair of limiting positions, means including a lever operative from the other side of the lock for effecting the actuation of said bolt from the other side of the lock independently of said spindle, a stop member carried by said spindle and arranged to be disposed in the path of said lever when the spindle is in one of said limiting positions and out of said path when the spindle is in the other of said positions, said stop means leaving said spindle free to turn at all times.

8. In a lock, a latch bolt and a spindle whereby is arranged to be actuated from a side of the lock, a tumbler controlled barrel arranged to be actuated from the other side of the lock by means of a key inserted therein, a lever member pivoted at the inner end of said barrel, means on said barrel engageable with the lever upon a rotation of the barrel for effecting a rotation of said lever, and a link connecting said lever and bolt whereby the latter may be actuated by and upon a rotation of said barrel independently of any actuation of said spindle.

9. In a lock, a latch bolt and a spindle whereby it is arranged to be actuated from a side of the lock, a tumbler controlled barrel arranged to be actuated from the other side of the lock by means of a key inserted therein, a lever member pivotally mounted on the inner end of said barrel, an arm on said barrel engageable with said lever upon a rotation of the barrel to effect a rocking of said lever, link means directl connecting said lever and bolt for the actuation of the latter by the former independently of said spindle, a second means operative from said last side of the lock for rocking said lever independently of said barrel, and means on said spindle disposable from said first side of the door to render said last means inoperative.

10. In a lock, a latch bolt and a spindle whereby it is arranged to be actuated from a side of the lock, said spindle being axially movable between a pair of limiting positions, a tumbler controlled barrel arranged to be actuated from the other side of the lock by means of a key inserted therein, a lever member pivotally mounted on the inner end of said barrel, an arm fixed on said barrel and engageable with said lever upon a rotation of the barrel to effect a rocking of said lever, means connecting said lever and bolt for the actuation of the latter by the former independently of said spindle, a second means operative from said second side of the door independently of said tumbler barrel for operatively rocking said lever, said last means including a second lever, and a stop member carried by said spindle disposable in the path of said second lever and when said spindle is in one of said limiting positions thereof whereby said second means for rocking said lever may be rendered inoperative.

11. In a door lock of the class described, a normally extended latch bolt, a casing for said bolt adapted for fixed positioning in a door to dispose said bolt in extending relation from an edge of the door, a bolt operating mechanism arranged to be supported independently of said bolt and casing, plate members arranged to engage opposite sides of the door in opposed relation and cooperative to carry said operating mechanism, and means cooperating between said plates for clamping the door between them.

In testimony whereof, I have hereunto set my hand at Oakland, California, this 2nd day of December, 1927.

JOHN A. RYMER.