July 26, 1938. J. H. SHAW 2,124,897

DOOR LOCK

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Fig.1.

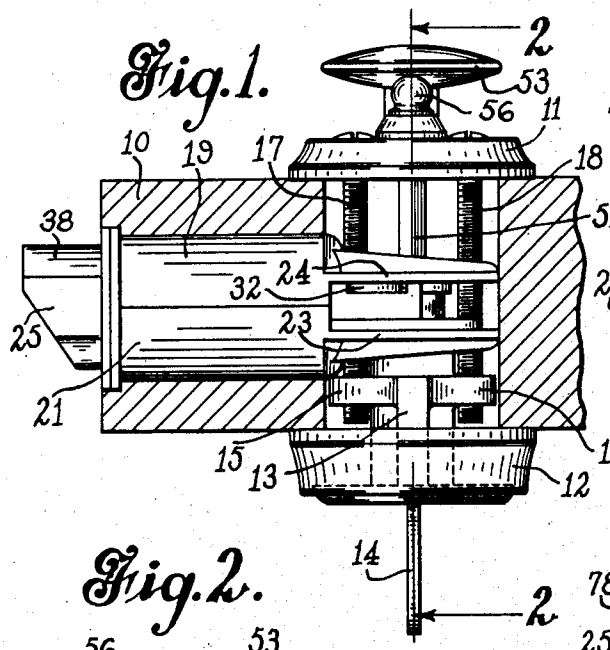


Fig.3.

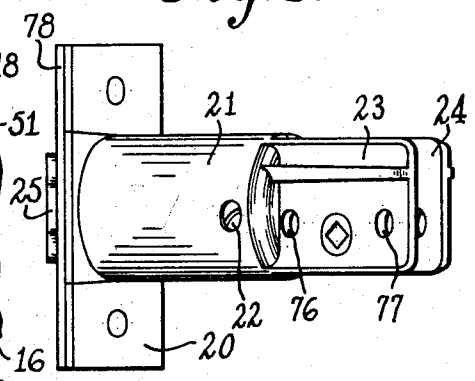


Fig.2.

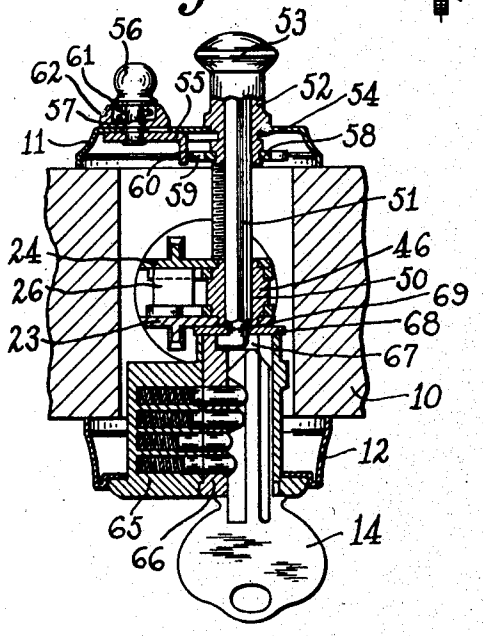


Fig.4.

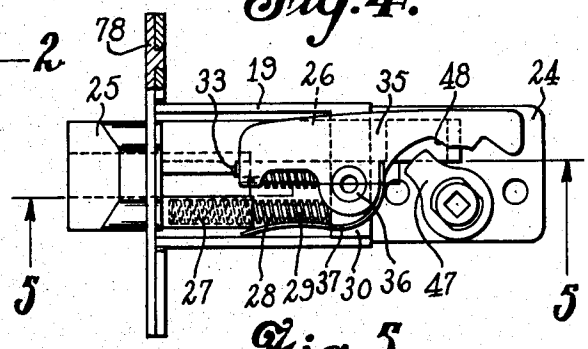


Fig.5.

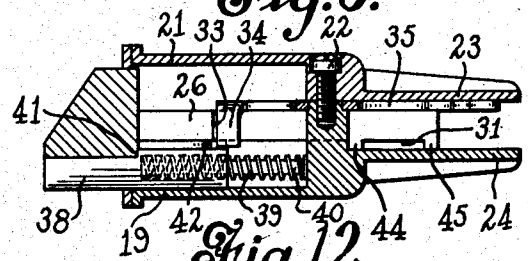
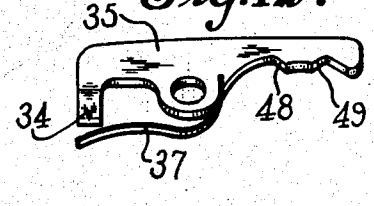


Fig.12.



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Fig.6.

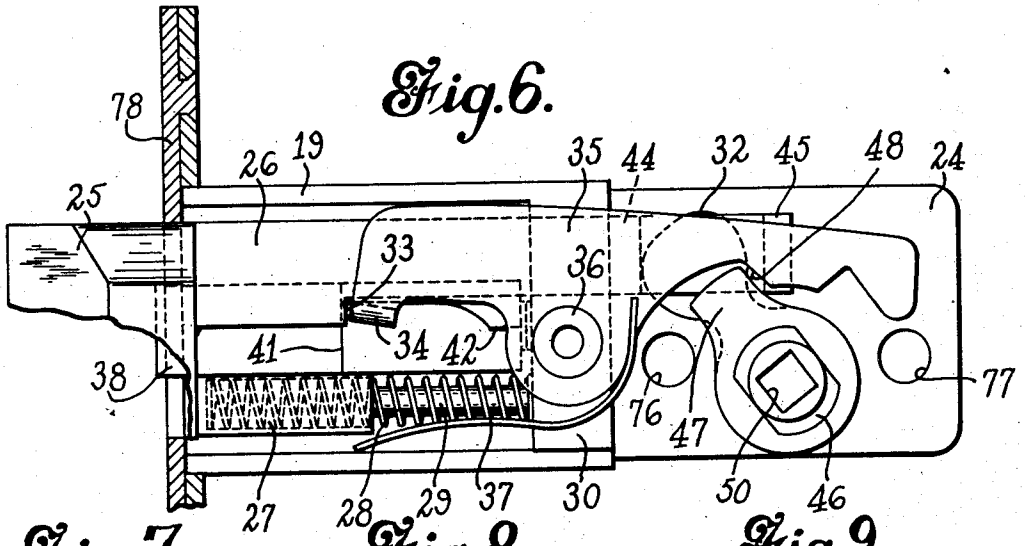


Fig.7.

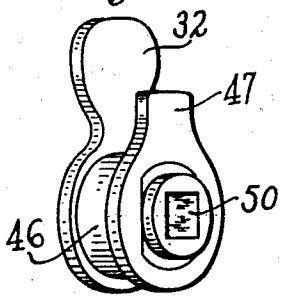


Fig.8.

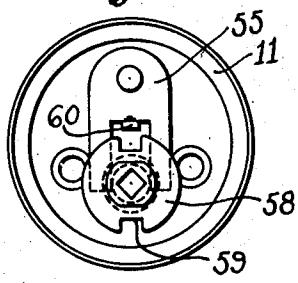


Fig.9.

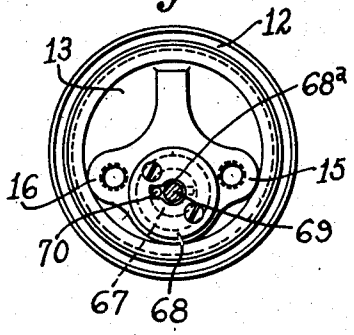


Fig.10.

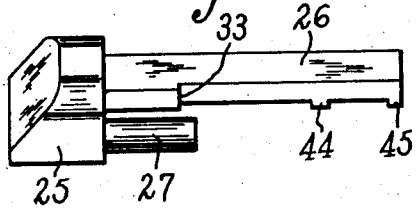
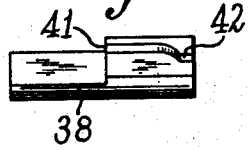


Fig.11.



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Patented July 26, 1938

2,124,897

UNITED STATES PATENT OFFICE

2,124,897

DOOR LOCK

John H. Shaw, Daytona Beach, Fla., assignor to Sargent & Company, New Haven, Conn., a corporation of Connecticut

Application September 26, 1936, Serial No. 102,638

2 Claims. (Cl. 70—151)

This invention relates to door locks or latches, and more particularly to a door fastener which may be provided with a so-called latch bolt or a dead bolt, and which may be mounted in the door in bored openings, thus eliminating a considerable amount of labor necessary to form the usual mortised openings for a lock of the mortise type. I have illustrated a lock provided with a latch bolt, which is to say, a bolt with a beveled edge such that it will be retracted by engagement with the usual strike plate when the door is closed. It will be understood, however, that a dead bolt, or bolt which is not provided with a beveled edge, may be employed as well with the present type of lock without material change.

Locks of the character herein illustrated are sometimes called tubular locks, as the bolt mechanism is sometimes mounted in a cylindrical or tubular casing which will fit an opening of circular cross-section which may be bored in the edge of the door. Likewise, the bolt actuating mechanism, whether a knob or lock, may be placed in position through a circular opening bored transversely through the door and intersecting the opening for the lock case.

One object of the present invention is to provide a lock of the character described which shall be of very simple structure, and at the same time will possess all the advantages of the more complicated types of locks, so that the lock may be very easily and readily installed, and at the same time manufactured at a relatively low cost.

Another object of the invention is the provision of a lock of the character described which will be provided with a latch bolt and a novel mechanism for dogging the latch bolt against retraction by being forced with an instrument inserted between the door and door casing.

A still further object of the invention is to provide a lock of this character which may be very economically installed in a door, and which may be provided with a casing of such character that it may be used in connection with either a latch bolt or dead bolt.

To these and other ends the invention consists in the novel features and combinations of parts to be hereinafter described and claimed.

In the drawings:

Fig. 1 is a sectional view through a door casing upon which is mounted a lock embodying my invention;

Fig. 2 is a sectional view through the lock on line 2—2 of Fig. 1;

Fig. 3 is a perspective view of the lock or latch case detached from the door;

Fig. 4 is a view of the lock mechanism when the cover of the casing is removed to expose the concealed structure;

Fig. 5 is a sectional view on line 5—5 of Fig. 4;

Fig. 6 is an enlarged view similar to Fig. 4 but showing the parts in a different position;

Fig. 7 is a detail perspective view of the rollback and associated parts;

Fig. 8 is an inner face view of the escutcheon attached to the inner face of the door;

Fig. 9 is an inner face view of the outer escutcheon and lock cylinder attached thereto;

Fig. 10 is a perspective view of the latch bolt;

Fig. 11 is a perspective view of the dog-controlling plunger; and

Fig. 12 is a perspective view of the dogging lever.

As shown in Fig. 1, the door 10 has mounted thereon an inner escutcheon 11 and an outer escutcheon 12, the latter carrying a lock cylinder 13 which may be operated by the usual key 14. The lock cylinder may be provided with lugs 15 and 16 having threaded perforations therein to receive the screws 17 and 18 passing through the escutcheon 11 to hold the two escutcheons with associated parts in place upon the door.

The lock mechanism is contained within a case, shown particularly in Fig. 3, of generally tubular form or circular in cross-section. This casing comprises a lower portion 19 having a face plate 20 thereon, and a cover 21, which will consist of substantially one half of the casing, the cover being detachably secured to the casing by means of the screw 22. The cover and the body of the casing are provided with projecting ends 23 and 24, which are brought together to positions somewhat closer to each other than the extreme width of the casing, and which serve to carry some of the actuating mechanism of the lock, as will be explained hereinafter.

Within the casing is provided a bolt 25, shown more especially in Fig. 10 as a latch bolt with a beveled face. This bolt is provided with a stem 26 and a hollow post 27 to receive a spring 28 which surrounds a post 29 secured to the rear end 30 of the lock case. The stem 26 is designed to project slidably through an opening at the rear of the case so as to lie between the members 23 and 24, the stem at this point being recessed, as shown at 31, to receive a bolt-actuating rollback 32.

Toward its forward end the stem 26 is provided with a shoulder 33 with which cooperates

the laterally turned end 34 of a dogging lever 35 pivoted at 36 upon a post within the case. Secured to this dogging lever is one end of a spring 37, the other end of which reacts against the lock case, as shown in Fig. 6, to normally keep the forward end of this lever in upper position, that is, in position to engage behind the shoulder 33 and dog the bolt against retraction.

The dog-controlling plunger 38 is provided adjacent the flat side of the bolt head 25, this plunger projecting through an opening in the face plate of the case, as shown in Fig. 5. The rear end of this plunger is hollow to receive a spring 39 mounted upon a post 40 within the case, which spring normally keeps the plunger in protracted position. The plunger is provided with a shoulder 41 abutting the rear face of the bolt head 25, so that this plunger is retracted by the bolt head when the latter is retracted by engagement with the strike plate upon the closing of the door. The plunger 38 is also provided with a cam surface 42 which is designed to engage and disengage the laterally turned end 34 of the dogging lever 35. When this dogging plunger is in its forward or protracted position, as shown in Fig. 5, the cam surface 42 engages the part 34 of the dogging lever 35, and holds this dog out of engagement with the shoulder 33 of the bolt stem. When, however, the plunger is in retracted position, as shown in Fig. 6, the cam surface 42 has been moved rearwardly out of engagement with the member 34 and permits the spring 37 to move the dogging lever about its pivot post 36 until the member 34 lies behind the shoulder 33 and prevents the bolt being forced rearwardly.

As has already been described, the bolt 25 is moved rearwardly by the rollback 32 which lies between front and rear shoulders 44 and 45 on the bolt stem 26. This rollback member is non-rotatably mounted upon a hub 46, which hub is rotatably mounted in and carried by the members 23 and 24 projecting at the rear end of the lock case. Also mounted upon the hub 46 is a second rollback or actuating member 47, which is designed to engage a cam surface 48 upon the dogging lever 35 to move this dogging lever out of engagement with the bolt just prior to retraction of the bolt by the rollback 32. It will be observed that the rollback 32 has a certain amount of clearance between the shoulders 44 and 45, and, as shown in Fig. 6, the rollback 47 will strike the cam surface 48 prior to the engagement of the rollback 32 with the shoulder 45. The dogging lever 35 is also provided with a similar and oppositely disposed cam surface 49 to be engaged by the member 47 upon its return movement.

The hub 46 has a non-circular opening 50 therein through which extends an operating spindle 51 of non-circular cross-section, the outer end of which is mounted within the stem 52 of a thumb turn 53, which stem is rotatably mounted in the escutcheon 11 at the inside of the door. The stem 52 is provided with a reduced portion 54, and is held in place in the escutcheon by means of a forked or bifurcated slide 55 operated by the button 56 disposed on the outside of the escutcheon plate and provided with a stem 57 which passes through the plate and is engaged with the slide 55. The arms of the slide 55 lie upon opposite sides of the stem 52 and engage the opposite sides of this stem within the reduced portion 54. This stem may be conveniently dogged against rotation by means of a disk 58 having oppositely disposed slots 59 formed therein, which slots are adapted to receive a laterally turned lug 60 on the slide 55. Thus this slide serves a double purpose, that of holding the stem in the escutcheon plate 11, and that of serving as a dogging slide to dog the thumb turn 53 against rotation. The slide may be frictionally held in place by means of a spring 61 mounted between the button 56 and a small cup-shaped member 62 surrounding the stem 57.

As shown in Fig. 2, the outer escutcheon 12 carries a key-operated lock mechanism shown herein as a pin tumbler lock having the usual cylinder 65 and key barrel 66. The inner end of the key barrel is provided with a well or recess 67 covered by a perforated plate 68. This plate is provided with an opening 68a of keyhole shape, within the round portion of which extends the rounded end portion 69 of the square or non-circular spindle 51. This end of the spindle is turned at right angles to the body thereof so that it is retained by the plate against withdrawal. This end is of such a length, however, that, if not prevented from so doing, the spindle would rotate freely relatively to the key barrel 66. To prevent such free rotation, however, and to provide for the rotation of the spindle by the key plug, a pin 70, shown in Fig. 9, is driven into the key plug through the eccentric portion of the opening 68a, the end of this pin standing in the recess 67 in position to engage the laterally turned end of the spindle.

It will be apparent from this construction that the key barrel will have a considerable free rotative movement in one direction or the other prior to the engagement of the turned end of the spindle by this pin. This free movement will be, in the construction shown, substantially three fourths of a complete revolution. This permits the spindle to have substantially three fourths of a revolution relatively to the key barrel, so that the spindle may be turned by the thumb turn at the inside of the door to a sufficient extent to retract the latch bolt without any movement of the key plug. In other words, a person at the inside of the door may always retract the bolt even though the key plug is restrained from movement.

The members 23 and 24 are provided with openings 76 and 77 to permit the passing of the screws 17 and 18 therethrough, so that these screws may extend to and be threaded into the lugs 15 and 16. If desired, an ornamental face plate 78 may be secured to the plate 20 by being riveted thereto.

It will be apparent that the mechanism illustrated and described is of relatively simple construction, and may be mounted in place in a door merely by drilling an opening through the face edge of the door for the tubular lock case 21, and a second opening transversely through the door to receive the actuating mechanism carried by the escutcheons. It will also be apparent that the mechanism will have all the advantages in operation possessed by the more complicated locks or latches. When the door is closed the latch bolt 25 will be cammed to retracted position by engagement with the usual strike plate upon the door, and will, owing to the engagement of the shoulder 41 on the plunger 38 with the rear side of the bolt head 25, also retract the plunger. When the bolt reaches the opening in the strike plate, it will be protracted by its spring 28, but the plunger will be

held in retracted position owing to its engagement with a solid part of the strike plate. The parts are now in the position shown in Fig. 6, wherein the dogging lever 35 will be rocked about its pivot by the spring 37, and the laterally turned end 34 of this lever will engage behind the shoulder 33 on the bolt stem 26, this movement of the dogging lever being permitted by reason of the movement of the cam surface 42 on the plunger 38 rearwardly to a position where it no longer engages the member 34. It will be understood that when the plunger is in protracted position, as it is when the door is open and as illustrated in Fig. 5, the cam surface 42 engages the member 34 and holds this member downwardly against the action of the spring 37 so as to prevent the dogging of the latch bolt at this time.

It will be seen, therefore, that when the door is closed the parts are in the position shown in Fig. 6, and owing to the engagement of the dogging lever 35 with the shoulder 33, it is impossible to force the latch bolt rearwardly by means of a member inserted between the door and door frame. The bolt may be retracted, however, by means of the thumb turn 53, which rotates the spindle 51, the hub 50, and rollbacks 32 and 47. As stated, the rollback 47 will engage the cam surface 48 upon the dogging lever 35, and throw the laterally turned end 34 of this member downwardly out of engagement with the shoulder 33, so that when the rollback 32 engages the shoulder 45, it may freely retract the bolt. The same operation may, of course, be performed by means of the turning of the key plug 66 by means of a properly fitting key. If it is desired to dog the bolt against retraction by the key from the outside of the door, the button 56 is moved downwardly to engage the member 60 in the slot 59 of the disk 58, which will prevent the turning of the spindle 51. Owing to the connection of the spindle with the key barrel, the former can be rotated to a sufficient extent to retract the bolt without any movement of the key barrel.

While I have shown and described a preferred embodiment of my invention, it will be understood that it is not to be limited to all of the details shown, but is capable of modification and variation within the spirit of the invention and within the scope of the appended claims.

What I claim is:

1. In a door lock, a case having a pair of spaced supporting members at the rear end thereof, a bolt reciprocably mounted in the case and having a stem extending through the rear end of the case between said members, a dogging lever pivoted in the case and adapted to engage the bolt to dog the same against retraction, a dog-controlling plunger projecting from the front of the case beside the bolt, a hub rotatably mounted between said members, and a pair of rollbacks carried by said hub, one of said rollbacks being adapted to engage and retract the bolt stem and the other engaging the dogging lever to move it to inoperative position.

2. In a door lock, a case having a pair of spaced supporting members at the rear end thereof, a bolt reciprocably mounted in the case and having a stem extending through the rear end of the case between said members, a dogging lever pivoted in the case and adapted to engage the bolt to dog the same against retraction, a dog-controlling plunger projecting from the front of the case beside the bolt, a hub rotatably mounted between said members, and a pair of rollbacks carried by said hub, one of said rollbacks being adapted to engage and retract the bolt stem and the other engaging the dogging lever to move it to inoperative position, and said dogging lever rollback making engagement with said lever prior to the engagement of said other rollback with the bolt stem.

JOHN H. SHAW.