

Sept. 4, 1928.

1,682,988

J. H. SHAW

LOCK

Original Filed April 25, 1924 2 Sheets-Sheet 1

Fig. 1.

Fig. 2.

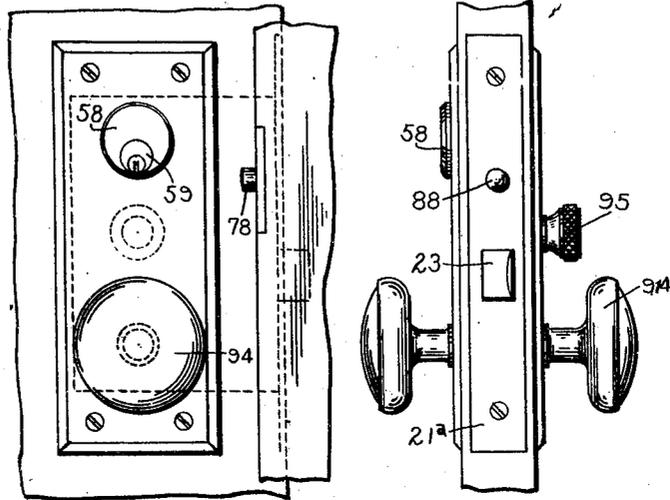
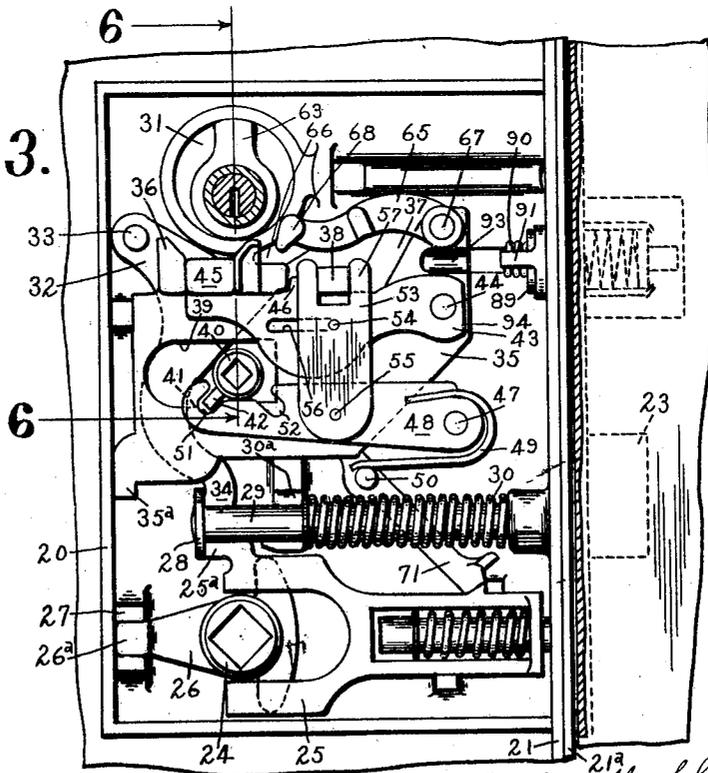


Fig. 3.



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Fig. 4.

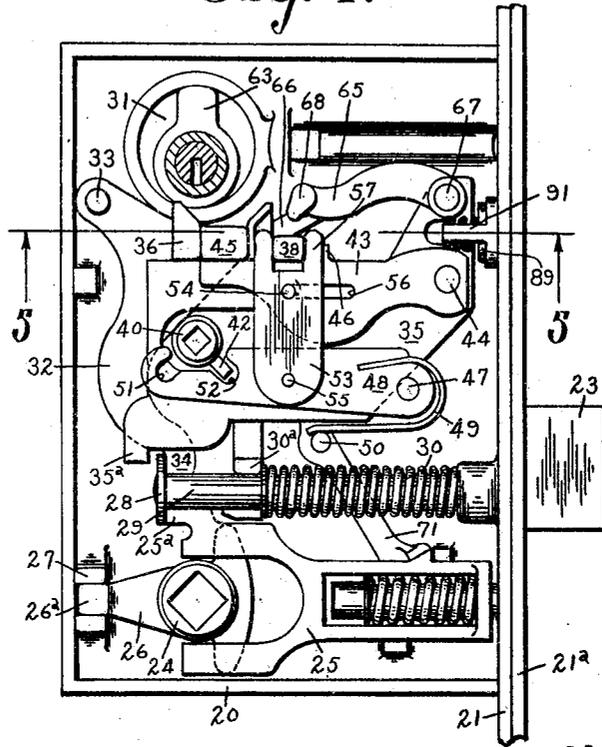


Fig. 5.

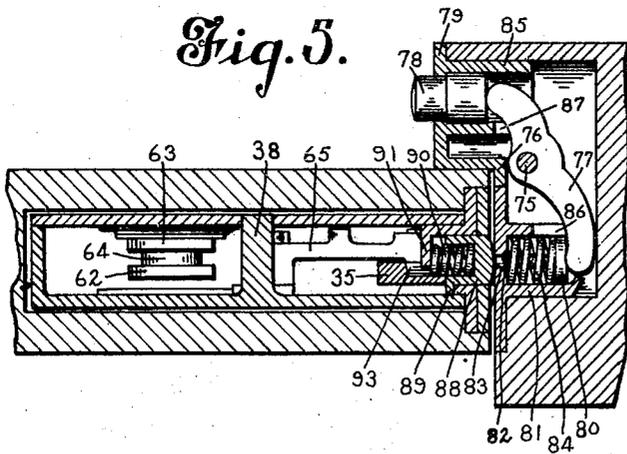
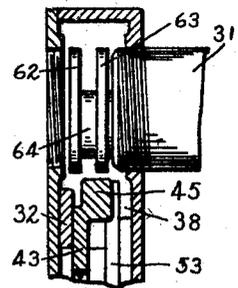


Fig. 6.



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# UNITED STATES PATENT OFFICE.

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## LOCK.

Original application filed April 25, 1924, Serial No. 708,918. Divided and this application filed January 26,  
1927. Serial No. 163,726.

This application is a division of my pending application, Serial No. 708,918, filed April 25, 1924, having issued as Patent 1,645,298, dated Oct. 11, 1927, and the invention described herein relates to locks which are especially adapted for use on hotel corridor doors, having means to indicate to a chambermaid, or other person on the outside of the door, whether or not the room has been locked against unauthorized intrusion, and it applies more especially to a lock of this character having an indicator which can be read by feeling or touch so that it is useful at night as well as in the daytime.

While in some of its aspects my invention relates more particularly to an indicator for a lock provided with a dead locking device for the latch bolt, it is not necessarily restricted to this use, but may also be used in connection with a lock provided with a dead bolt.

One object of my invention, therefore, is to provide indicating means by which the position of the dead locking device of the lock may be denoted.

A further object of my invention is to provide a lock of this character with an indicator device designed to be mounted upon the door frame or jamb.

A further object of the invention is to provide a lock having a latch bolt and dead-locking means for this bolt with an indicator mounted upon the door jamb, the indicator comprising a button normally depressible when the dead-locking means is in an inoperative position but held against depression when the dead-locking means is in position to dead-lock the latch bolt.

A still further object of the invention is the provision of an indicator member upon the door jamb and means carried by the face-plate of the lock case upon the door to cooperate with said indicator to give an indication of the position of the dead-locking mechanism of the lock.

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

In the accompanying drawings:—

Fig. 1 is a fragmentary front elevational view of a door and door frame upon which is mounted an indicator lock embodying my improvements;

Fig. 2 is an edge view of a door having mounted thereon a lock embodying my invention;

Fig. 3 is a side view of the lock case with the cover plate removed to show the lock mechanism;

Fig. 4 is a view similar to Fig. 3, but showing the dead-locking mechanism in operative position;

Fig. 5 is a sectional view on line 5—5 of Fig. 4, showing the position of the parts when the indicator is held against depression; and

Fig. 6 is a sectional view on line 6—6 of Fig. 3.

In the drawings I have shown my improvements applied to a lock having the usual mortise case 20 provided with a front plate 21, which may be covered by an ornamental face-plate 21<sup>a</sup>. In the lower part of the lock case is mounted a latch bolt 23. While the latch bolt mechanism per se forms no part of the present invention, it may be stated that this bolt is retractable from the inside by the usual knob spindle acting on a hub 24 to draw back a retracting shoe or yoke 25, and in the particular case illustrated, the outside knob which is connected by its spindle to a hub member 26 is permanently dogged against movement by a portion 26<sup>a</sup> on the hub member extending between the lugs 27 on the case. The knob shoe 25 has a shoulder 25<sup>a</sup> disposed in front of the cross-head 28 on the rear end of the latch bolt stem 29, which stem is surrounded by the usual spring 30 reacting against the guide lugs 30<sup>a</sup> of the case to normally urge the bolt 23 to protracted position.

In the upper part of the case a cylinder lock 31 is screwed in at the outer side and this lock through keys to be hereinafter described is adapted to actuate a latch retracting member 32 pivoted in the upper part of the case at 33 and having its lower extremity 34 disposed in front of the cross-head 28.

In the form of my invention shown, the usual dead-bolt has been omitted, and instead there is provided a flat slide member or blind bolt 35 provided with talons 36 adjacent the lock 31 and a cut away portion 37 between these talons at the forward end of the slide. As shown more particularly in Fig. 6, the talons are offset laterally with reference to the body portion of the slide so

that, as will be described hereinafter, one of the roll-backs of the lock 31 may operate above the body portion of the slide behind these talons, while the other roll-back is disposed in the plane of the talons. A fence or stump 38 formed rigidly with the lock case is received in a cut away portion of the slide between these talons and the forward edge. This fence guides the slide in its reciprocating movement in the lock, and it is also guided in a similar manner at its lower side by one of the lugs 30<sup>a</sup>. Below the talons the slide has a cut-away portion 39 to receive a thumb-turn hub 40, which is journaled in the case in a suitable manner. In the lower part of the cut-out or aperture 39 a gate 41 is formed to cooperate with a wing 42 on the thumb-turn hub.

The slide is provided with a tumbler 43 pivoted on a post 44 at the forward part of the slide so as to be carried by the latter, and this tumbler is formed with a projection 45 extending between the talons 36 in a position to co-operate with the roll-backs of the cylinder lock 31. This tumbler 43 is provided intermediate its ends with a lug 46 to co-operate with the post 38 in locking the slide either in its retracted or advanced position. Below the tumbler 43 and pivoted to the lock case at 47 is a second tumbler 48 which co-operates with the thumb-turn hub when the latter is actuated to move the dead-locking mechanism. This tumbler is provided with a spring 49 reacting against a post 50 rigidly formed with the lock case. The main part of the tumbler 48 overlies the body of the slide 35, and at its free end the tumbler is provided with notches 51 and 52 which converge toward the upper edge of the tumbler. The spring 49 exerts an upward thrust upon the tumbler so as to keep it firmly seated against the thumb-turn hub with the wing 42 engaged in one or the other of the notches 51 and 52. The tumbler in this manner exerts such an upward thrust on the wing 42 as to hold it, in co-operation with the edge of the gate 41, in such a manner that the slide will be locked in either its retracted or protracted position and can not be moved out of such position, except by the actuation of the thumb-turn hub or the lock 31 by means of the proper key.

The two tumblers are joined by means of a connector 53 which may take the form of a small plate, as shown in the drawings. This plate is provided with upper and lower pins 54 and 55 projecting rearwardly therefrom, the pin 54 being received in a slot 56 in the upper tumbler 43, and the lower pin 55 being secured in the lower tumbler. It will be apparent that the slotted connection between the connector-plate 53 and the tumbler 43 is necessary due to the fact that relative movement of the tumblers must be permitted as one is mounted upon and moves

with the slide, while the other is pivotally carried by a post rigid with the lock case. In the construction shown, the slide 35 may be shifted together with the tumbler 43 without disturbing the connection with the upper movable tumbler with the lower tumbler mounted upon the fixed post. The upper part of the connector-plate is preferably notched or bifurcated, as shown at 57, to receive between its forks the post 38. The post thus guides the plate properly in its vertical movements when the tumblers are depressed preparatory to shifting the dead-locking slide 35.

The slide 35 is provided at its lower side with a finger 35<sup>a</sup> disposed rearwardly of the cross-head 28 upon the end of the latch bolt stem 29. As shown in Fig. 4 when the slide 35 is moved forwardly to its dead-locking or operative position this finger is moved to a position to engage behind this cross-head to prevent retraction of the latch bolt.

The cylinder lock 31, preferably of the kind shown in the patent to H. G. Voight, No. 1,243,016, granted October 16, 1917, is provided with the usual case 58 and key plug 59, the latter being controlled by the usual pin tumblers (not shown) cooperating with the key plug in the manner described in the patent referred to, and a pair of roll-backs 62 and 63, the former being rotated alone by all of the keys to the lock, except the emergency key which rotates both roll-backs. These roll-backs are spaced apart by parallel planes by means of a washer 64, and it will be apparent that while the operating projection 45 on the upper tumbler 43 is disposed in the plane of the roll-back 63 it is without the plane of the roll-back 62, the latter turning idly behind this projection, and thus not being capable of advancing or retracting the slide 35.

The latch-retracting lever 32, previously described, may be actuated from the cylinder lock by means of a lever 65 pivoted on the slide 35 at 67 and carried by the slide in its movement to and fro within the lock case. The free end 66 of this lever bears upon the upper edge of the lever 32 when the slide is in retracted position, so that by depressing the lever 65 the lever 32 may be actuated to retract the latch. For this purpose the lever 65 is provided adjacent the cylinder lock with a comparatively deep operating projection 68 close to and having portions in substantial alignment with both roll-backs 62 and 63, so that this lever may be operated by either of the roll-backs. It will be observed, however, that when the slide is in advanced position, as shown in Fig. 4, the lever 65 is not only out of contact with the latch-retracting lever 32, but is also without the range of movement of the roll-backs 62 and 63, so that with the slide in this position it is impossible to operate the

latch-retracting lever by means of the lock 31. If, when the parts are in this position, the lock is operated by any key but the emergency key, the roll-back 62 rotates freely and idly back of the talons 36 and clearing the end of the lever 68 so that no effect whatever will be produced on the lock mechanism. The emergency key, however, causes the rotation of both roll-backs and if used at this time will serve through the roll-back 63, first to move the slide rearwardly to the position shown in Fig. 3, in which the part 68 is again in position to be engaged by either roll-backs, and a continued rotation of the lock by the emergency key, or the rotation of the roll-back 62 by any of the keys, will serve to retract the latch through the levers 68 and 32.

In order to dog the knob when the latch bolt is dead-locked, I have shown a lever 71 pivoted upon the post 50 and engaged at its upper end with the slide 35, so that as the slide is moved forwardly the lower end of this lever will be moved downwardly and rearwardly behind a projection on the shoe 25 to prevent movement of the latter.

In order to indicate to a person without the room whether or not the door has been locked from the inside, or has been locked with a proper key (in this case the emergency key) from the outside, I have provided upon the door jamb an indicating mechanism similar to that shown in my Patent, No. 1,604,947, dated October 26, 1926, of which this application is a continuation in part. Pivoted at 75 to the rear face of the strike-plate 76 is a lever 77, one end of which co-operates with a push button 78 mounted in an extension 79 in the strike-plate, the other end of this lever co-operating with the head 80 of a spring-pressed indicator controller plunger mounted in a cylinder 81 in the strike-plate and provided with a shank 82 which is adapted to be projected through an opening 83 in the face of the plate. A coil spring 84 is mounted within the cylinder 81 and reacts against the rear of the face of the strike-plate and against the head 80 of the plunger to normally hold the plunger in its retracted position within the strike-plate, and by means of the lever 77 to normally hold the push button 78 in its outer position as shown in Fig. 5. The push button is also mounted in a cylinder 85 in the strike-plate, and both this cylinder and the cylinder 81 are provided with side notches 86 and 87 to permit the ends of the lever 77 to follow the push button and plunger in their movements in the cylinders.

Mounted in and extending through openings in the front face and the face-plate of the lock case is a stop member 88 generally cylindrical in shape, and provided with a shoulder or flange 89 at its rear end to con-

tact with the lock case and limit the outward movement of the stop member under the tension of a compression spring 90 mounted within a cavity within this member and reacting at its rear end upon an L shaped arm 91 secured to the front plate of the lock case. It will be obvious that under the tension of the spring 90 the stop member will be held in a position shown in Fig. 3, where it is substantially flush with the face-plate 21<sup>a</sup> of the lock. Pressure upon the push button 78, however, will cause the shank 82 of the plunger 80 to retract the stop member against the tension of its spring, so that a person at the outside of the door can readily tell by pressure upon the push button whether or not the door has been locked.

As shown in Fig. 3, the front portion of the slide 35 is provided with a recess 93 to receive the end of the L shaped arm 91, so that the edge 94 of the slide may pass below this arm and engage against the shoulder 89 upon the stop member when the slide 35 is moved forwardly to dead-lock the latch bolt. When the parts are in this position, as shown in Fig. 5, the stop member 88 will be held against retraction by the front edge of the slide, and the push button will be effectively blocked against depression. Thus an indication will be given to any one trying the push button that the door has been dead-locked.

The operation of my lock may be briefly described as follows: The parts of the lock normally stand in the position shown in Fig. 3, wherein the latch may be freely retracted either by the knob 94 upon the inside of the door acting upon the retracting shoe 25, or by any of the keys from the outside, as all of the keys rotate the roll-back 63 which engages the projection 68 upon the lever 65 which in turn engages the latch-retracting lever 32. If the guest wishes to lock the door from the inside, he uses the thumb-turn 95 which serves to move the dead-locking slide 35 forwardly to the position shown in Fig. 4, wherein the finger 35<sup>a</sup> is disposed behind the cross-head upon the stem of the latch bolt. It will be noted also that with the parts in this position the lever 65 has been moved forwardly until it is no longer engaged by either of the roll-backs 62 and 63, and at the same time the indicator mechanism is set so that it is impossible to depress the push button 78. If it is attempted to open the door by any except the emergency key the roll-back 63 alone will be rotated, and will not disturb the mechanism in any way as it turns freely behind the offset talons 36 upon the slide and as the lever 65 is now without the range of movement of either of the roll-backs. The emergency key, however, if used at this time, since it operates both of the roll-backs, will first cause the

slide to be retracted by the roll-back 62 to the position shown in Fig. 3, wherein a continued rotation of the lock will cause the roll-backs to engage the projection 68 upon the lever 65 and through the latch-retracting lever 32 the latch will be retracted and the door opened. The feature of so arranging the parts of the lock that when the door is locked the usual keys will merely rotate idly is a very important one, as keys are very often broken or twisted when their movement is resisted.

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

20 What I claim is:—

1. In combination, a door lock provided with a bolt and a face-plate having an opening therein, a strike-plate cooperating with the lock, an indicator on the strike-plate provided with a controlling member protractable from this plate into the face-plate opening, and a member movably mounted upon and entirely supported by the front face of the lock case and adapted to contact with said protractable member to prevent movement thereof.

2. In combination with a lock mounted on a door and indicating means upon the door jamb, a stop member projecting through an opening in the front face of the lock case

to cooperate with said indicating mechanism, a spring mounted upon the front face of the lock normally urging said stop member to protracted position, and means to limit movement of the stop member when the door is locked.

3. A lock comprising a bolt, controlling means for said bolt, and means for indicating the position of said controlling means comprising a stop member mounted in an opening in the face of the lock case, a supporting member secured to the case, and a spring supported by said member resiliently maintaining said stop member in position.

4. A lock comprising a bolt, controlling means for said bolt, and means for indicating the position of said controlling means comprising a stop member mounted in an opening in the face of the lock case, a spring supporting member secured to said face plate, and a spring supported by said member and resiliently maintaining said stop member in position.

5. A lock comprising a bolt, controlling means for said bolt, and means for indicating the position of said controlling means comprising a stop member mounted in an opening in the face of the lock case, an L-shaped spring supporting arm secured to said face plate, and a spring supported by said member and resiliently maintaining said stop member in position.

In witness whereof, I have hereunto set my hand this 24th day of January, 1927.

JOHN H. SHAW.