

No. 819,024.

PATENTED APR. 24, 1906.

B. PHELPS.
LOCK.

APPLICATION FILED DEC. 15, 1904.

2 SHEETS—SHEET 1.

Fig. 1.

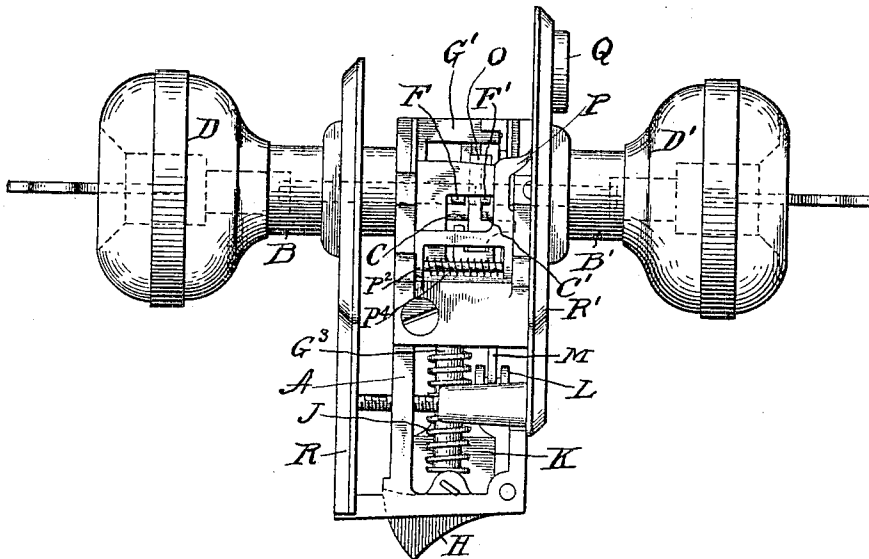
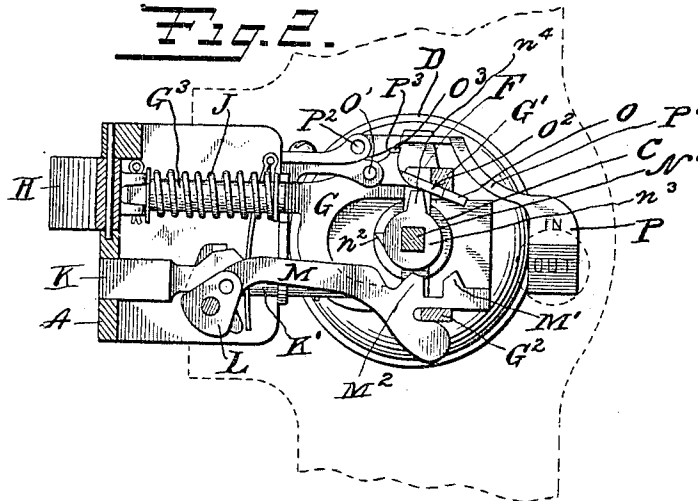


Fig. 2.



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2 SHEETS—SHEET 2.

Fig. 3.

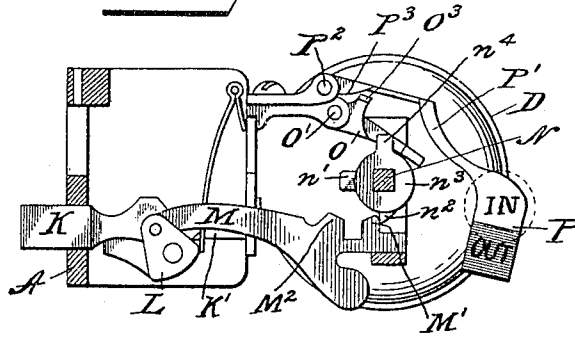


Fig. 4.

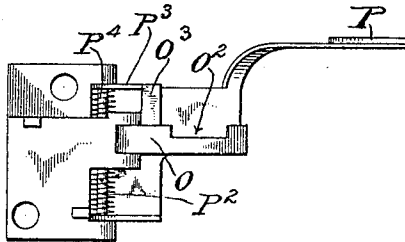


Fig. 5. Fig. 6.

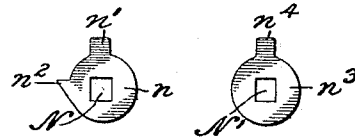
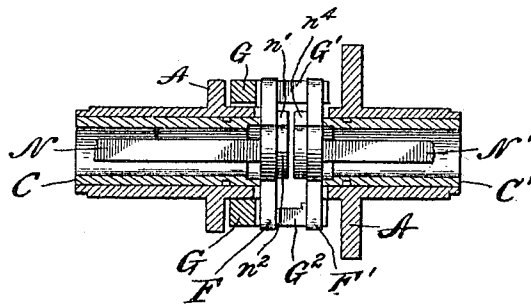


Fig. 7.



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UNITED STATES PATENT OFFICE.

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LOCK.

No. 819,024.

Specification of Letters Patent.

Patented April 24, 1906.

Original application filed April 29, 1904, Serial No. 205,445. Divided and this application filed December 15, 1904. Serial No. 236,930.

To all whom it may concern:

Be it known that I, BYRON PHELPS, a citizen of the United States, residing at Seattle, King county, Washington, have invented certain new and useful Improvements in Locks, of which the following is a full, clear, and exact description.

My invention relates to locks and latches, and this application is a division from application Serial No. 205,445, filed by me on April 29, 1904, in the United States Patent Office, on which Letters Patent No. 785,228 issued to me March 21, 1905.

The main object of this invention is to provide in a lock indicating means whereby any one on the outside of a door to which the lock is applied may be warned if the room is occupied. This warning is effected by means of a suitable signal visible at the outer side of the lock and which may be set by any one within the room by the mere turning of a key introduced in the lock at the inner side. This device is of great benefit in case the lock is employed on the door of a hotel-room. In such a case the hotel attendants may thus be advised if the room is occupied and need not annoy the occupant by any effort to unlock the door or try the latch. It insures absolute privacy to the occupant of the room, even though the door is not locked, for it is not essential that the locking-bolt or dogging device shall be moved in order that the indicator may be displayed. In the particular form shown the first movement of the key throws the indicator and the continued movement of the key operates the bolt.

In explaining my invention I will describe the same in connection with the same lock set forth in my above referred to original application.

In the accompanying drawings, Figure 1 is a plan view of a lock fitted with my improved indicating apparatus. Fig. 2 is a side elevation of the lock shown in Fig. 1, the face-plate arranged to bear against the outer side of the door being removed to show the indicator and indicator-actuating means. In this figure the parts are in the position indicating that the room is empty. Fig. 3 is a view similar to Fig. 2 with some of the parts removed, the apparatus being in position to indicate that the room is occupied. Fig. 4 is a view of the under side of certain details detached. Figs. 5 and 6 are detail views. Fig. 7 is a vertical section of the knob-spindles and bearings therefor, showing key-controlled

spindles, the knob-shanks, the various roll-backs, and a portion of the latch-slide.

The lock shown in the accompanying drawings is constructed as to its main operative features in a manner very similar to that shown in my former patent, No. 722,620, and therefore as to such parts as are common to the two locks they need not be described at unnecessary length.

A is a frame such as is made the subject-matter of my former patent, No. 631,432. This frame A supports the various parts of the lock mechanism.

B B' are journals carried by the frame A and arranged to support the knobs.

C C' are knob spindles or shanks each carrying, respectively, the knobs D D'.

D is the inside knob.

D' is the outside knob. Each knob preferably carries a cylinder-lock of the pin-tumbler type.

F is a roll-back carried by the spindle C.

F' is another roll-back carried by the spindle C'.

G is a yoke having the arms G' G², connected with the latch-bolt H. These arms and shank constitute the latch-slide.

J is a spring on shank G³, which is arranged to normally force the latch-slide outwardly, thus keeping the arms G' G² of the yoke bearing normally against both ends of the roll-backs F F', whereby the latter are held in a normal operative position. When either knob is rotated, that motion is transmitted to its corresponding roll-back, and by means of the latter the latch-slide is retracted, retracting the latch H.

K is a locking-bolt.

K' is the shank thereof. This locking-bolt is suitably connected with the rocking member L, journaled in the frame A in such a manner that when it is rocked from the position indicated in Fig. 2 to the position indicated in Fig. 3 the bolt K will be advanced, and vice versa. The preferred form of connection is more fully shown and described in detail in my original application, of which this is a division, and in my former patent, No. 722,620.

M is a slide or reach rod one end of which is attached to the rocking member L, while the other end has projections M' M².

N N' are key-control spindles or rods which pass freely through the knob-spindles C C' and roll-backs F F', respectively. One end of the key-spindle N is engaged by the hub

(indicated in dotted lines) of a pin-tumbler lock within the knob D. Hence when this key-hub is rotated the spindle N will be rotated. The spindle N' is engaged and operated in a similar manner by key-controlled mechanism in the outer knob D', whereby rotation of a key in the outer lock will rotate the spindle N'. At the inner end of the key-spindle N is a roll-back or plate n , carrying the two dogs n' and n^2 . The spindle N' also has at its inner end a roll-back or plate n^3 , carrying a single dog n^4 . The dogs n' and n^4 when all of the parts are located in their normal positions and the locking-bolt K is retracted register with each other or stand side by side, the dog n^2 standing to the left of the center as viewed in Fig. 2. In this position the projection M^2 stands directly opposite the dogs n' and n^4 . When one or the other of the key-spindles N or N' is rotated clockwise, as viewed in Fig. 2, its roll-back, with dog n' or n^4 , as the case may be, will engage with the projection M^2 on the slide M and advance the bolt K. If the door is to be locked from the outside, the operator will introduce a key into the lock in the knob D' and rotate the spindle N', which in turn will move the roll-back n^3 , with dog n^4 , to a position to engage the projection or shoulder M^2 on the slide M, thus advancing the bolt K. When the slide M reaches its forward position, the dog n^4 will clear the same and may be revolved until it completes the circle, whereupon the key may be withdrawn from the outer knob. To unlock the door, the operation is reversed.

When a person enters the room and desires to lock the door from the inside, a key is introduced into the lock in knob D. The spindle N is rotated with the roll-back n . The dog n' engages the shoulder M^2 on the slide M and extends the bolt K. This movement brings the shoulder or projection M' into the position shown in Fig. 3, in which the same stands in the path of movement of the second dog n^2 on the spindle N and checks further rotation, stopping the key-hub before it can be turned to a position where the key can be removed from the lock. The result is the operator must leave the key in the lock after he has locked himself in, in which position the key must remain until he unlocks the door. The advantages of this means for preventing the withdrawal of the key when the door is locked from the inside have been fully pointed out in my original application, from which this is a division. The same need not be recited herein, as this part of the invention is made the subject-matter of the claims in the original case.

Means for locking the dog n^4 , and hence the outside key against rotation, when the door has been locked from the inside comprises a tongue O, pivoted at O' to a stationary part of the frame. This tongue O has a notch O² in its side, which notch when the dogs are ar-

ranged as shown in Fig. 3 is located over the dog n^4 . The solid portion of the tongue O adjacent to the notch is supported upon the dog n' . When the door is to be locked from the inside, a very slight turning of the key will remove the dog n' from beneath the tongue O, which will then move to the position shown in Fig. 3, in which the dog n^4 will extend or project into the notch O² and cannot be turned to any substantial degree in either direction by any effort to unlock the door from the outside. By this means the occupant of the room is secure against intrusion.

P is an indicating member which may have thereon suitable means to indicate that the room is vacant or occupied. For example, different colors or the words "In" or "Out," or both, may be used.

In Fig. 2 I have shown in dotted lines a portion of the outside escutcheon-plate of the lock. In this escutcheon-plate a small window Q is located, through which the indicator may be seen. When the key is turned at the inner side of the lock, the indicator shifts from the position indicated in Fig. 2 to the position indicated in Fig. 3.

The preferable construction of the indicating apparatus is as follows: P' is the shank pivoted at P² on the frame A. P³ is an incline on shank P'. O³ is an offset shoulder on the member O. This offset shoulder supports the indicator by bearing under the incline P³. When the member O is elevated to the normal position indicated in Fig. 2, being supported by dog n' on the roll-back n , the support O³ is correspondingly elevated and raises the indicator to show that the room is not occupied or that the occupant is out. When the occupant enters the room and inserts and turns the key at the inside even very slightly, the member O descends in the manner previously described, and the support O³ and indicator P also descend to the position indicated in Fig. 3 and indicates that the room is occupied. This indication occurs independently and in advance of the operation of the locking-bolt, which operation does not occur until the dog n' is rotated between M' and M². Thus a person outside of the door is warned that the room is occupied, even though the door is not locked. I preferably provide a suitable spring P⁴, which normally causes the shank P' of the indicator to press against and follow the support O³. This spring-pressure in turn causes the end of the member O to press toward the dog n' . The presence of the spring insures the quick and certain action of the indicator, particularly if the lock is inverted. The usual escutcheon-plates R or R' may be employed. In the particular form of lock herein illustrated the plate R' is secured rigidly to the frame A, which frame extends across the front edge of the door and overlies the forward edge of the plate R. The plate R may be adjusted to

and fro, being slidably mounted on the tubular support B.

What I claim is—

1. In a lock mechanism, the combination of a bolt operable by means of a key, an indicating device independent of said bolt, and connections for operation of said indicating device to exposed position by means of said key independently of and in advance of the extension of the bolt.

2. In a lock, a bolt, key-controlled bolt-actuating mechanism normally operative from either side of the lock, an indicator arranged at the outer side of the lock, means for normally holding said indicator in one position and connections between said actuating mechanism and said indicator operable only from the inner side of the lock to permit said indicator to automatically move to another position when the bolt-operating key is introduced into the lock and turned.

3. In a lock, a bolt, a bolt-actuating device operable by means of a key, an indicating device adapted to be set in motion by said key, means moving with said indicating device arranged to prevent the removal of the key when said indicating device is exposed to indicate that the key is inserted and has been partly turned.

4. In a lock, a bolt, key-controlled bolt-actuating mechanism, a signal arranged at the outer side of the lock, means for moving said signal, said means being operable by a key inserted at the inner side of the lock and means operable by the turning of said key for preventing the operation of a key from the outside of the lock when said indicating device is exposed to indicate that the room is occupied.

5. In a lock, a bolt, independent key-controlled bolt-actuating mechanism on the outer and inner sides of said lock, a signal or indicator arranged for display at the outer side of the lock, means of connection between said signal and the key-operated means at the inner side of the lock only whereby the turning of said key will display said indicator and means for preventing the withdrawal of the key so long as the indicator is exposed.

6. In a lock, key-controlled bolt-operating means, a hinged signal arranged to be displayed at the outer side of the lock, means set in operation by the movement of the key for tilting said signal to normally move the same to one position and means between the key-controlled mechanism and said signal for moving the latter to an opposite position.

7. In a lock mechanism, the combination of a bolt, bolt-operating mechanism accessible from the outer side of the lock, independent bolt-operating mechanism accessible from the inner side of the lock, an indicating device normally in position indicating "out," mechanism for throwing said indicating device into position indicating "in" when the bolt-operating mechanism accessible from the inner side of the lock is operated to extend the bolt, and returning said indicating device to its "out" position when said bolt-operating mechanism accessible from the inner side of the lock is operated to retract the bolt, said indicating device being independent of the action of said bolt-operating mechanism accessible from the outer side of the lock.

8. In a lock mechanism, an indicating device arranged to be visible at the outer side of the lock, key-controlled means operable from the inside of the lock for causing the movement of said indicating device, means for permitting independent movement of the key after the indicating device is moved and means for preventing the removal of the key while the indicating device shows "in."

9. In a lock, the combination of independent bolt-operating mechanisms accessible from the opposite sides of the lock, an indicating device, means for normally holding it in the "out" position, key-controlled means for releasing said holding means, and a spring for throwing said indicating device to the "in" position when said holding means is released.

10. In a lock mechanism, the combination of a bolt, a key-controlled operating-spindle, a roll-back on said spindle, a slide for said bolt whose operation is controlled by the movement of said roll-back, an indicating device normally held in the "out" position by said roll-back, but adapted to be released to move to the "in" position when said roll-back is turned.

11. In a lock mechanism, the combination of a key-operable locking-bolt, an indicator-carrier with connections for operation by the key and means for preventing the withdrawal of the key from the lock except when the carrier is in its normal position.

Signed at New Britain, Hartford county, Connecticut, this 13th day of December, 1904.

BYRON PHELPS.

Witnesses:

F. R. KENT,
H. S. PARSONS