

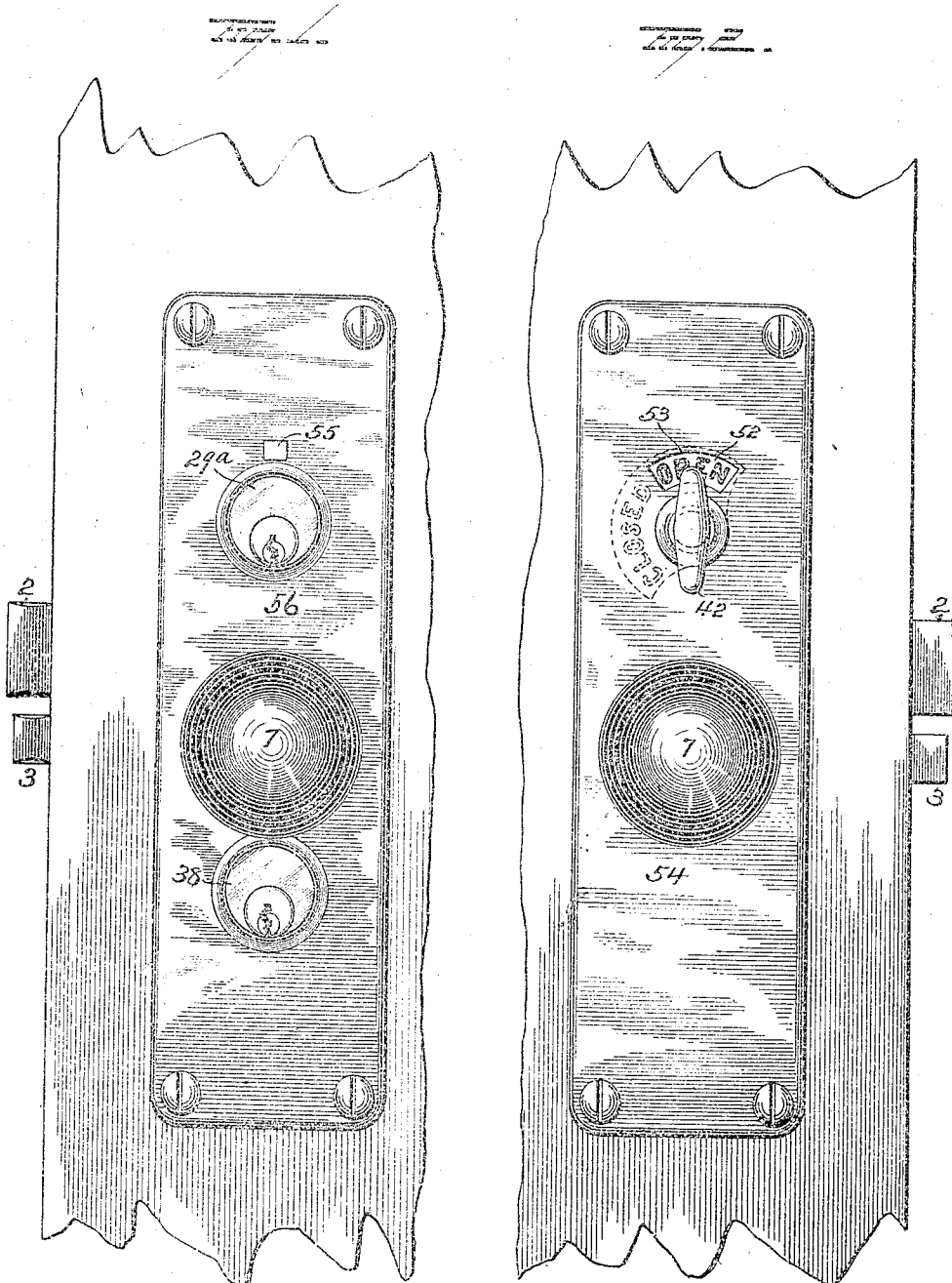
R. SCHOELL.
LOCK.

APPLICATION FILED MAR. 24, 1909.

943,637.

Patented Dec. 14, 1909.

4 SHEETS—SHEET 1.



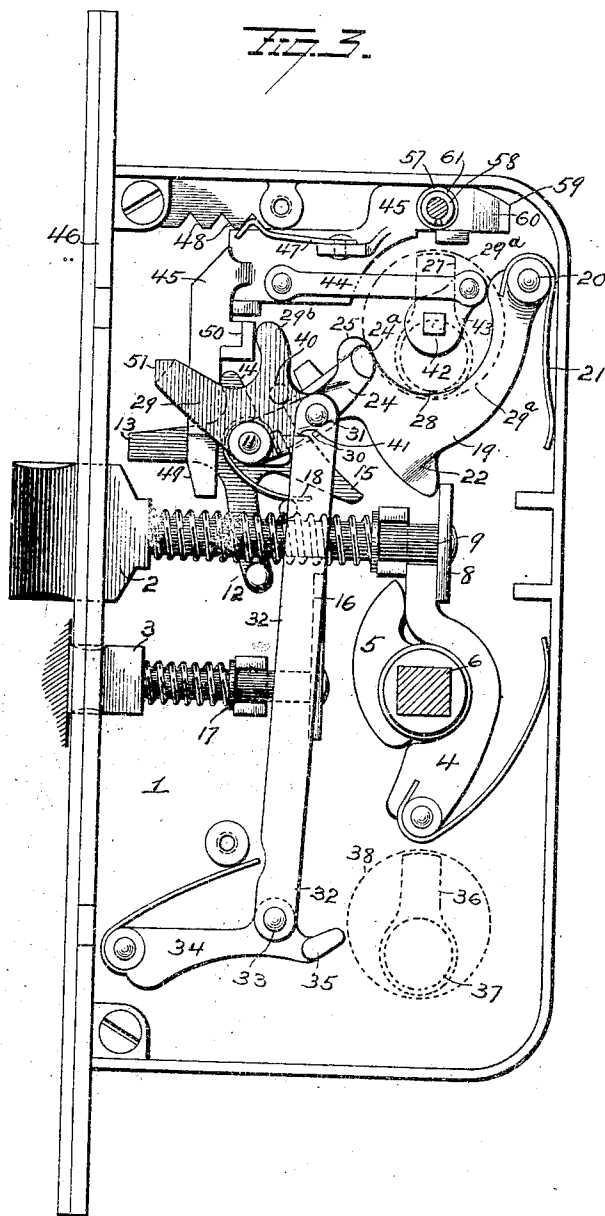
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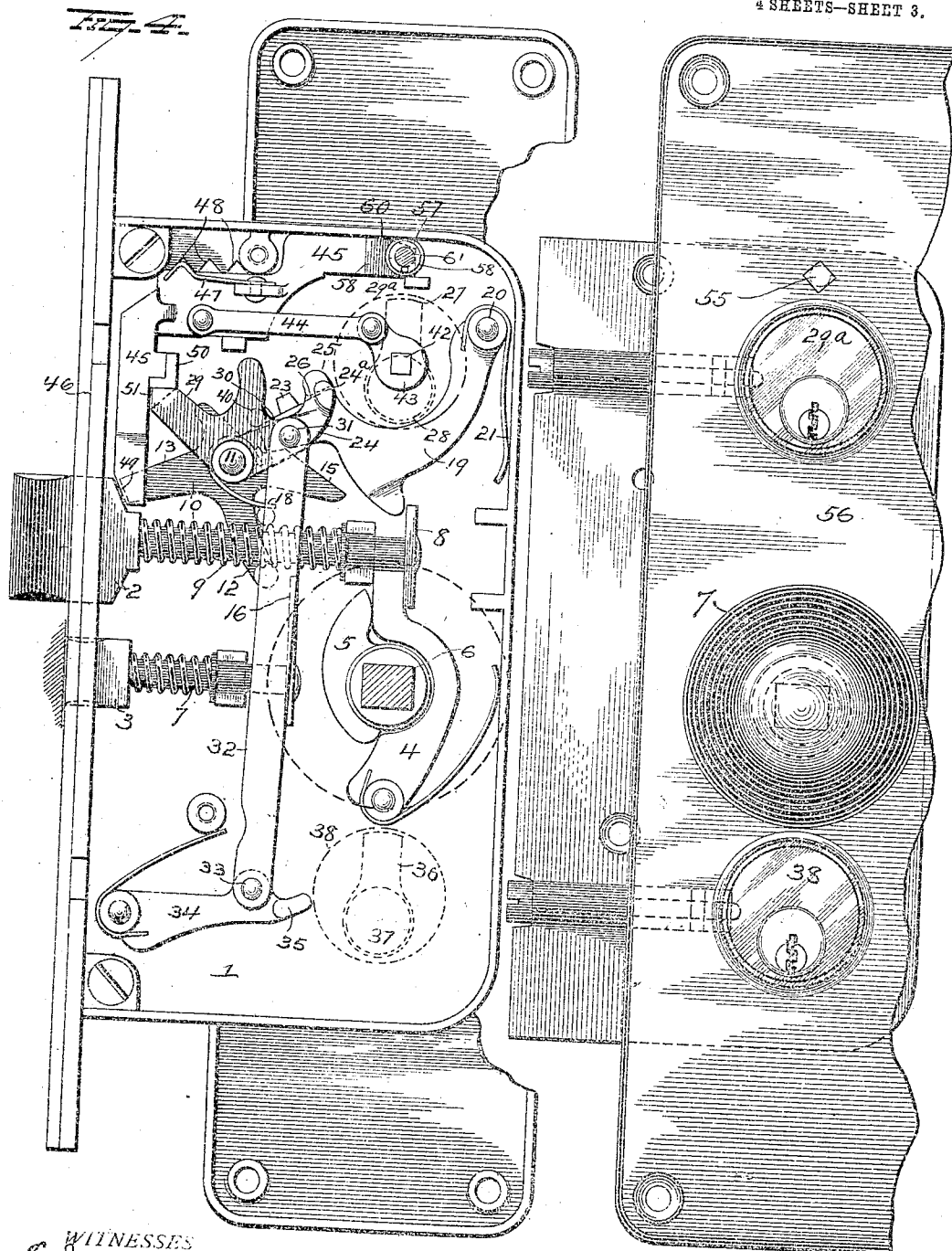
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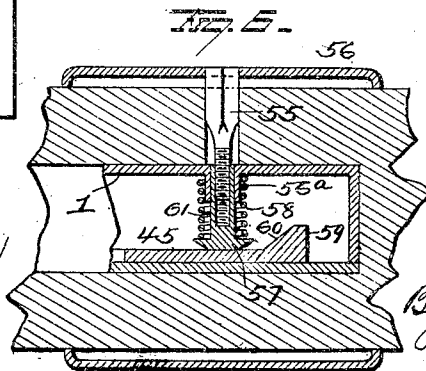
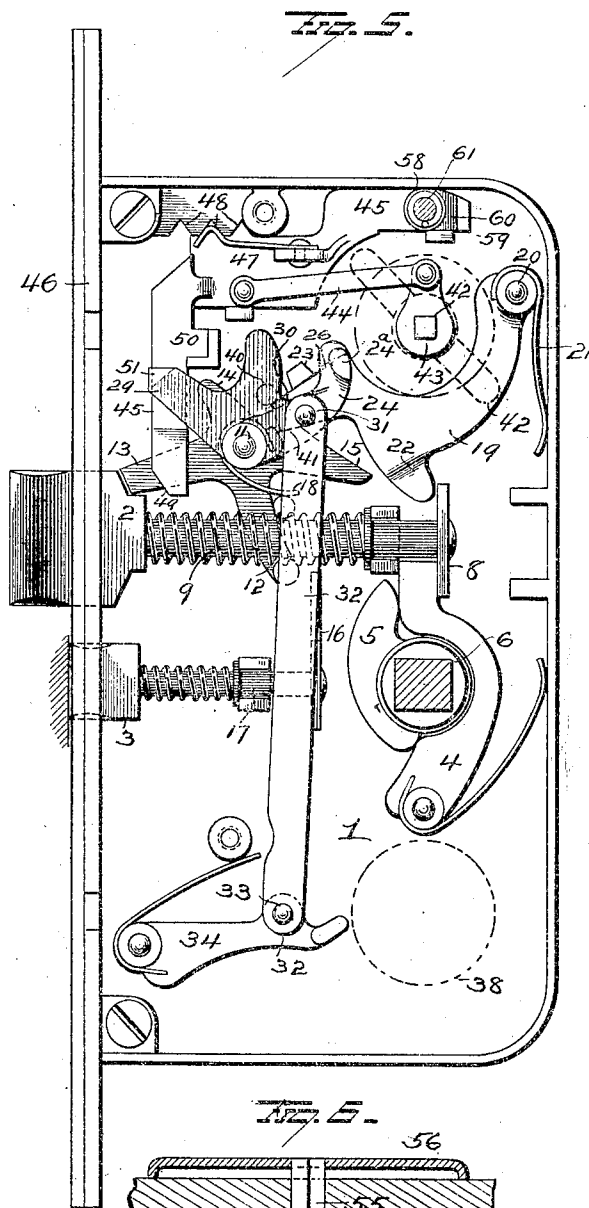
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4 SHEETS—SHEET 4.

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UNITED STATES PATENT OFFICE.

REINHOLD SCHOELL, OF STAMFORD, CONNECTICUT, ASSIGNOR TO THE YALE & TOWNE MANUFACTURING COMPANY, OF STAMFORD, CONNECTICUT.

LOCK.

943,637.

Specification of Letters Patent.

Patented Dec. 14, 1909.

Original application filed August 19, 1908, Serial No. 449,317. Divided and this application filed March 24, 1909. Serial No. 485,446.

To all whom it may concern:

Be it known that I, REINHOLD SCHOELL, of Stamford, in the county of Fairfield and State of Connecticut, have invented certain new and useful Improvements in Locks; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which appertains to make and use the same.

My invention relates to an improvement in locks, and is a division of application No. 449,317, filed by me August 19th, 1908.

The object of this invention is to provide improved means for indicating both on the inside and outside, the condition of the lock, and it consists in the parts and combination of parts as will be more fully described and pointed out in the claims.

In the accompanying drawings, Figure 1 is a view of the lock from the outer side showing two key cylinders and an indicator. Fig. 2 is a similar view from the inner side showing the thumb piece by which the latch bolt is locked from the inside. Fig. 3 is a view of the lock with the cover plate removed, showing the auxiliary bolt retracted and the latch bolt unlocked and free to be retracted by the knob or by either the upper or lower cylinder lock. Fig. 4 is a similar view showing the parts in their positions when locked from the inside by the thumb piece the face plate of the lock case and its outer escutcheon being removed and shown to the right of the lock case. Fig. 5 is a view showing the slide 45 in its intermediate position, and Fig. 6 is a view in section of the outside indicator.

1 represents a lock case, 2 the latch bolt and 3 the auxiliary bolt, the latch bolt and the auxiliary bolts being forced outwardly by springs in the ordinary manner.

4 is a lever actuated by the hub or roll back 5, through which the spindle 6 of the knob 7 passes, the free end of lever 4 engaging cross head 8 on the inner end of the stem 9 of the latch bolt.

10 is a deadlocking lever mounted on the pin 11 secured to the case 1. This lever is provided with four arms or members 12, 13, 14 and 15, the first of which lies in the path of cross head 16 on the stem 17 of the auxiliary bolt 3, and when the bolt is projected,

is engaged by said cross head and bolts deadlocking member 13 of lever 10 out of the path of bolt 2, thus leaving the latter free to be forced inwardly as the door is closed. In the operation of the lock, the auxiliary bolt 3 is adapted to engage the strike plate and be held retracted when the door is closed, and when in such retracted position, it releases the deadlocking lever 10, thus permitting the spring 18 to turn the latter in a direction to bring the end of the arm 13 in rear of the bolt 2, (which when the door is closed, has entered its seat in the strike plate) thus deadlocking the bolt against retraction, by a thin instrument inserted against the bevel face of the bolt intermediate the face and strike plates of the lock.

19 is the actuating lever of the upper cylinder lock. This lever is pivotally mounted on the pin 20, and is provided with a spring 21 which tends to hold shoulder 22 of the lever 19 away from the cross head 8 of bolt 2, its movement away from said cross head, being limited by the fixed stop 23.

Mounted on pin 11, and resting in front of and against the deadlocking lever 10, is the cam lever 24, provided at its free end, on its inner side with a lug 25 resting in contact with the inclined face 26 at the free end of bolt actuating lever 19, and at its free end, on its outer side with an integral lug 24^a, adapted to be engaged by the cam 27 on the inner end of the revolving plug 28 of the upper cylinder lock 29^a, hence when the plug 28 is turned by its proper key, its cam 27 engages lug 24^a and turns cam lever 24, thus moving its lug 25 in contact with the inclined face 26 of lever 19. This engagement of the lever 24 with lever 19, turns the latter on its pivot 20 in a direction to cause its shoulder 22 to engage and move the cross head 8 rearwardly in a direction to retract bolt 2.

Mounted on pin 11, in contact with and in front of cam lever 24, is the auxiliary deadlocking lever 29. This lever 29 is provided with three arms or members, the arm 30 of which is provided with a pintle 31 carrying one end of the connecting bar 32, the opposite end of said bar being pivotally connected to pintle 33 on cam lever 34, pivoted near the lower end of the lock case 1, and in a

position where its free end 35 may be engaged, and the lever moved, by the cam 36 carried by the plug 37 of the lower cylinder lock 38. Lever 29 is also provided with a lug 40, which rests above and in contact with the upper edge of cam lever 24.

The upper cylinder lock 29^a together with the lower cylinder lock 38, are accessible only from the outside of the door, the upper lock being operable by one or a plurality of keys, such as guests or change key and an emergency key, and the lower lock being operable by one or a plurality of keys, such as maids' and master keys.

From the foregoing it will be seen that the bolt 2 may be retracted by the lower lock 38 through lever 34, bar 32, auxiliary deadlocking lever 29, lug 40, cam lever 24 and bolt actuating lever 19, while the bolt 2 may be retracted by the upper lock through cam lever 24 and bolt actuating lever 19. When the bolt 2 is not deadlocked, it may also be retracted by the knobs from either side of the door.

When the door is closed, and the bolt deadlocked by the lever 10, the latter must, in order to release the bolt, be moved out of the path of the latter by mechanism actuated by the thumb piece from the inside, or by the keys of the cylinder locks 29^a or 38, from the outside. This is accomplished by the key locks from the outside through the arm 15, on lever 10, normally resting in the path of the free end of the bolt actuating lever 19. This lever 19 as previously explained, is actuated by both locks, and as it is turned its free end engaging shoulder 41 on arm 15 of lever 10, turns the latter in a direction to elevate the deadlocking arm 13, and holds it in such position until the lever 19 has been released.

The bolt is actuated from the inside by the knob, and is locked from the inside by the thumb piece 42. This thumb piece is connected to the hub 43, to which is pivotally connected one end of the link 44, the opposite end of said link being connected to the slide 45. This slide 45 is mounted in the lock case above the bolt 2 and is adapted to be moved toward and away from the face plate 46 of the lock, by the thumb piece 42, and is yieldingly held in its several positions by the spring catch 47 engaging the notches 48 formed in the lock case near the top thereof. There are three notches 48 in the lock case, and when the toothed end of the spring 47 is in the notch farthest removed from the face plate 46, the arm 13 of deadlocking lever 10, will be held out of the path of the bolt 2 by the engagement of the slide 45 with the arm 14 of the deadlocking lever 10 thus holding arm 13 of the latter out of the path or bolt 2 and permitting the latter to be freely actuated by the knob from either side of the door; when the toothed end of

the spring is in the second notch, which is the position into which it will be moved from its innermost position by a key from the outside, the deadlocking lever 10 rests in its deadlocking position, but may be actuated as above explained, by either the upper or lower cylinder locks, and when the toothed end of the spring is in the notch nearest the face plate of the lock, which is the position into which the parts are moved by the thumb piece when locking the door from the inside, the shoulder 50, to be hereinafter referred to, on the slide 45 rests in the path of arm 51 on lever 29 thus deadlocking the latter and preventing the bolt from being actuated by the lower cylinder lock, which as previously explained, is adapted to be actuated by the inside key and by a master key. This last position described, represents the position of the parts when the guest is in his room and the door locked.

When the door is closed and the slide 45 is in its position against the face plate 46 of the lock, the bolt will be deadlocked against the knobs and also against the lower lock 38, but may be opened by the guest's key or emergency key in the upper lock. When the door is open, the auxiliary bolt, as before explained, holds the deadlocking arm 13 of lever 10, out of the path of the bolt 2. If, when the door is open, the slide 45 be moved by thumb piece 42, either through accident or design, into its position adjacent the face plate 46, and the door be then closed, the direct pressure of the head of the bolt against the slide, will overcome the friction of the spring 47 and forcibly push the slide rearwardly to its innermost position. The slide in its inward movement, makes contact with the short arm 14 of deadlocking lever 10, thus turning the latter in a direction to carry its arm 13 out of the path of the bolt 2 so that when the door reaches its closed position, the bolt will be unlocked or free to be retracted by the knob.

The bolt is locked from the inside solely by the thumb piece and is locked from the outside by turning the plug of either cylinder lock in one direction, and is unlocked from the outside by turning the plug of the lock in the opposite direction.

It will be seen that when the door is closed and the slide 45 is in its position farthest removed from the face plate 46, the deadlocking arm 13 of the deadlocking lever 10 will be held out of the path of the bolt 2, by the engagement of the slide 45 with the arm 14 of the deadlocking lever 10, thus leaving the bolt 2 free to be actuated by the knobs. If the door be closed with the parts in the position last described, and the guest's, maid's or other key be inserted and turned to the left, a whole revolution, or in the direction opposite to that which it is turned to unlock

the lock, the arm 29^b of the auxiliary deadlocking lever 29, shifts the slide 45 toward face plate 46 in center notch, a distance sufficient to release the arm 14 and thus permit the deadlocking lever to turn until its arm 13 is in a position to deadlock the bolt.

When the door is locked from the inside by the thumb piece 42, the shoulder 50 on the slide forms an abutment for the arm 51 on the auxiliary deadlocking lever 29, and as the lower lock 38 transmits motion to bolt actuating lever through lever 34, bar 32, auxiliary deadlocking lever 29, and cam lever 24 in the order named, it follows that if the auxiliary deadlocking lever be dogged by the slide plate, the bolt cannot be retracted by the lower lock, but is free to be retracted by an emergency key or the guest's key introduced in the upper lock, which operates directly through cam lever 24 and bolt retracting lever 19.

For the purpose of indicating on the inside and also on the outside, the condition of the lock, I have provided two indicators one of which is a plate 52 attached directly to the spindle of the thumb piece, and showing through a slot 53 in the escutcheon plate 54 of the lock, and having thereon the words "Locked" and "Open," the words being so located as to show through the slot 53 and correctly indicate the condition of the lock to the guest or person within the room, and the other indicator is a plug 55 mounted in the outer escutcheon plate 56 above the upper lock 29. This plug has an angular outer end which rests in a correspondingly shaped opening in escutcheon plate 56, the shape of the plug and the opening in the escutcheon plate, preventing the plug from rotating after the parts have been assembled. The plug passes through the door in rear of the escutcheon plate 56, and its inner screw threaded end is screwed into the plunger 61 mounted in the sleeve 56^a carried by and projecting inwardly from the lock case. This plunger 61 is provided at its inner end with a head 57 against which one end of the spring 58 bears, the spring tending to normally hold the plug 55 retracted with its outer end approximately flush with the outer face of the escutcheon plate 56 which is its normal position when the door is not locked. The slide 45 is provided with a tail piece 59 provided at its rear end with a cam 60 adapted when the slide 45 is moved to its position adjacent to the face plate 46 of the lock to engage the plunger 61 and move the latter outwardly causing the outer end of plug 55 to project beyond the escutcheon plate, and indicate by its position, which can be seen by the chambermaid or other person on the outside, that the room is locked from the inside.

By making the indicator of two parts extensible by reason of their threaded connec-

tion, the indicator may be adjusted as to length so as to be accurately fitted to doors of different thicknesses.

When the door is locked from the outside by a key, the slide 45 is only pushed one tooth, which is not sufficient to cause the cam to engage the plunger, consequently when the indicating plug is in, and the door locked, it indicates at once to the maid that the room is empty.

It is evident that changes in the construction and relative arrangement of the several parts might be made without avoiding my invention and hence I would have it understood that I do not restrict myself to the particular construction and arrangement of parts shown and described, but—

Having fully described my invention what I claim as new and desire to secure by Letters-Patent, is:—

1. In a lock, the combination with a bolt and a deadlocking lever, of a slide for shifting said lever; a thumb piece operable from the inner side of the door for shifting said slide and an indicator actuated by the thumb piece and showing through a slot in the outer escutcheon plate.

2. The combination with a bolt, a deadlocking lever, a slide for shifting said lever, and means operable from the inside of the door for actuating the slide, of an indicator plug actuated by the slide, the said plug normally projecting into the outer escutcheon plate, and adapted to have its outer end projected beyond the outer face of said escutcheon plate, when the slide is in one position.

3. In a lock, the combination with a bolt, a dogging lever therefor and means for shifting said lever, of a thumb piece operable from the inside of the door for actuating said lever shifting means, an indicator movable in a slot in the outer escutcheon plate, and means intermediate the thumb piece and indicator whereby the latter is actuated by the former.

4. In a lock, the combination with a bolt, a dogging lever therefor and means for shifting said lever to a position to release the bolt, of a longitudinally movable indicator plug passing through the outer escutcheon plate, and actuated in one direction by the dogging lever shifting means.

5. In a lock, the combination with a bolt, a dogging lever for same, means for shifting said lever to a position to release the bolt and a thumb piece for operating said shifting means, of inside and outside indicators actuated by said thumb piece for indicating on both sides of the door the condition of the lock.

6. In a lock, the combination with a bolt, a dogging lever for same, means for shifting said lever to a position to release the bolt and means, including a finger piece, for

operating said shifting means, of a rotary indicator visible through one escutcheon plate, a longitudinally movable indicator in the other escutcheon plate, and means operably connecting both indicators with said finger piece whereby they are actuated by the latter.

7. In a lock, the combination with a bolt, of an inner indicator and an outer indicator, and devices connecting them with the lock mechanism whereby they indicate the condition of the lock.

8. In a lock, the combination with a bolt, of a rotary movable indicator visible at one side of the door, and a longitudinally movable indicator visible from the other side of the door and devices connecting them with the lock mechanism whereby they indicate the condition of the lock.

9. In a lock, the combination with two indicators one visible from the inner side of the door and the other visible at the outside, of a thumb piece operatively connected with both indicators for actuating same.

10. In a lock, the combination with two indicators, one visible from the inner side of the door and the other visible at the outer side, of a bolt, deadlocking means for same, means for dogging the deadlocking means and a thumb piece for actuating both indicators and the dogging means.

11. An extensible indicator for locks mounted in the lock casing, in combination with a cam for moving same longitudinally, and means operable from the inner side of the door for actuating the cam.

12. The combination with an indicator composed of sections adjustably secured together, and mounted in the lock case and a spring for normally holding same inwardly, of a cam engaging said indicator for moving same outwardly and means operable from

the inner side of the door for actuating said cam.

13. The combination with a bolt, outer key actuated mechanism for retracting the bolt, means for dogging the bolt and means for dogging said outer key actuated mechanism, of an outer indicator and means for actuating the dogging means for the key actuated mechanism and for setting the indicator.

14. The combination with a bolt, bolt retracting means and deadlocking means for the bolt, of an outside indicator and means independent of the bolt retracting means for actuating the deadlocking mechanism of the bolt and for setting the indicator.

15. The combination with a bolt and deadlocking means for same, of an outside indicator and means operable from the inner side of the door for actuating the bolt deadlocking means and also the indicator.

16. The combination with a bolt and means for retracting same, of bolt deadlocking means, an outside indicator and means for successively actuating the bolt deadlocking means and the indicator.

17. In a lock, the combination with a lock case, a slide located within said case and having a cam surface, and means operable from the inner side of the door for shifting said slide, of a spring actuated plunger located in the plane of movement of the cam face of the slide and adapted to be projected outwardly thereby when the slide is moving to one position.

In testimony whereof, I have signed this specification in the presence of two subscribing witnesses.

REINHOLD SCHOELL.

Witnesses:

WARREN H. TAYLOR,
J. A. GAYLOR.