

Aug. 6, 1929.

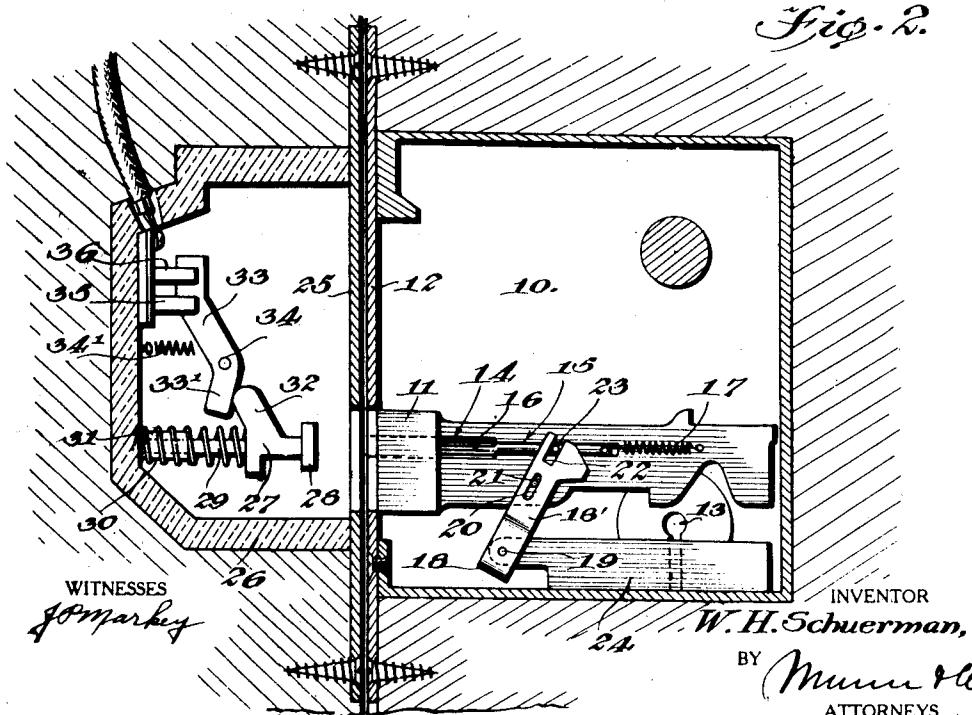
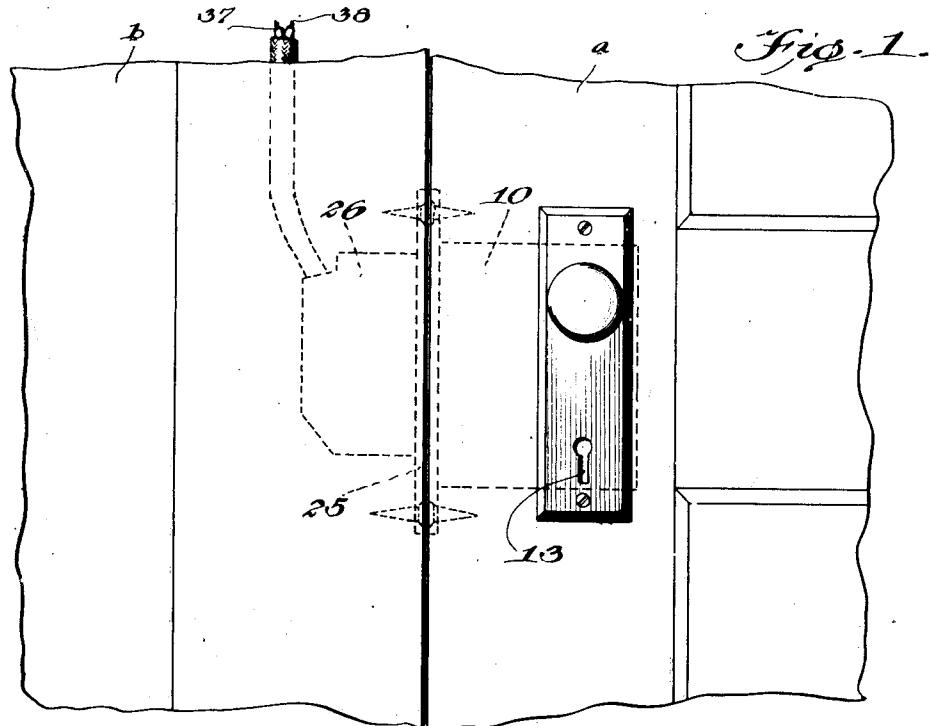
W. H. SCHUERMAN

1,723,956

LOCK MECHANISM

Filed June 3, 1927

2 Sheets-Sheet 1



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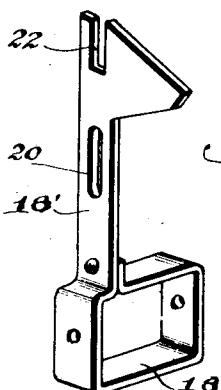
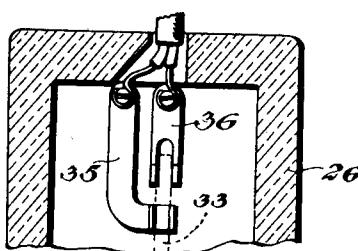
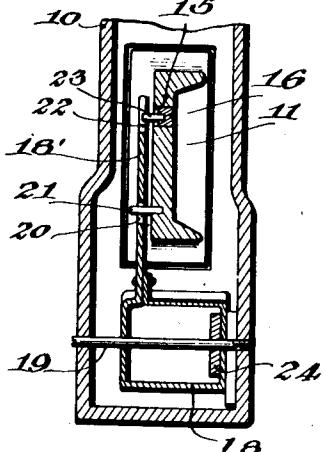
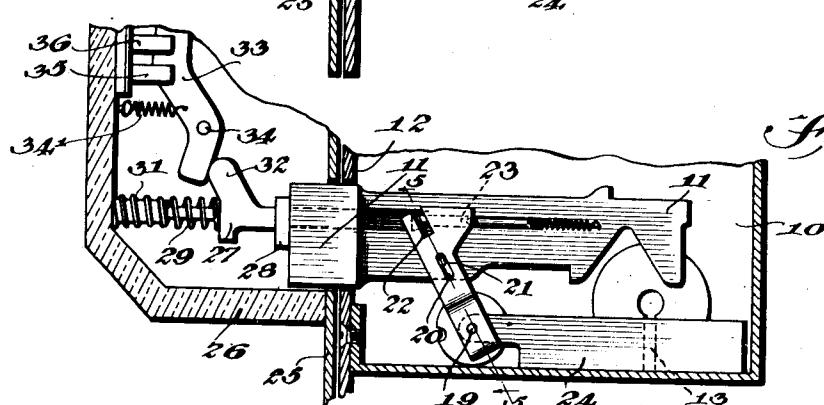
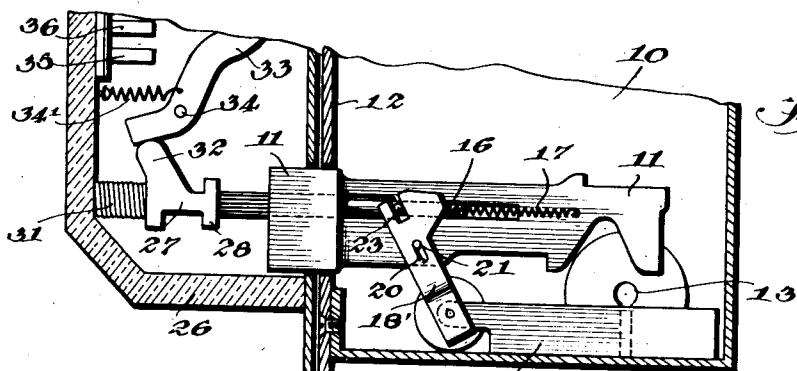
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LOCK MECHANISM

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UNITED STATES PATENT OFFICE

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LOCK MECHANISM.

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This invention relates to improvements in locking mechanisms generally, and more particularly to types of the same as are usually employed for securing doors of buildings, and apartments or rooms of buildings, such as hotels and the like, against unauthorized or unlawful entry.

In hotels, and other buildings given over to use by temporary occupants or transients, it very often happens that the electric lights are left on closed circuit upon the departure of a person from an apartment or room, and oftentimes remain so for long periods of time and until the fact is discovered and the circuit is broken by an attendant. This carelessness or thoughtlessness on the part of guests, servants and other occupants of these classes of buildings is a constant source of worry and trouble to operators of the same, and greatly adds to the otherwise high cost of upkeep and maintenance thereof.

It is, therefore, the principal object of the present invention to provide for a locking mechanism in combination with a lighting circuit controlling or switching device, whereby, when an occupant of a building, or an apartment or room of a building, as the case may be, leaves the premises without having first extinguished the electric lights, and closes the door and locks the same, the lighting circuit is immediately broken to extinguish the lights by the actuation of the locking mechanism to locked position.

Another object of the invention is to provide for a mechanism of the character mentioned, wherein, when the lock has been released to its inoperative condition, the lighting circuit will be again closed so that the person now entering the building, apartment or room will observe the lights and will then, if desired, operate the usual control switch to break the circuit and extinguish the same.

A further object of the invention is to provide for a device as hereinbefore characterized, and one wherein, when the occupant is within the building, apartment or room, and actuates the locking mechanism to a locked condition, the switching device associated therewith will not be actuated, but will remain in its normally circuit closing position, and the lights, if not already on,

can be lighted by the closing of the circuit from the usual control switch.

With the foregoing and other equally important objects in view, the invention resides in the certain new and useful combination, construction and arrangement of parts as will be hereinafter more fully described, set forth in the appended claims, and illustrated in the accompanying drawings, in which:

Figure 1 is a fragmentary elevation of a door and door frame, and showing a practical application of the combined locking and circuit controlling devices thereto,

Figure 2 is an enlarged vertical section through the locking and switching mechanisms and the cooperative control switch in position on a door and door frame, showing the same in nomally inoperative positions,

Figure 3 is a fragmentary sectional view, but otherwise similar to that of Figure 2, showing the locking mechanism and the cooperative control switch in their respective positions of operation,

Figure 4 is a view similar to that of Figure 3, but showing the locking mechanism in its operative locked position, with the control switch in its normal or inoperative position,

Figure 5 is a vertical transverse section taken on the line 5—5 of Figure 4,

Figure 6 is an enlarged fragmentary sectional detail showing the arrangements of the switch contacts and the circuit connections as attached thereto, and

Figure 7 is a perspective view of the auxiliary bolt actuating lever.

Referring to the drawings, wherein similar characters designate corresponding parts throughout the several views thereof, *a* indicates a door and *b* its frame. Mounted on the door *a*, or mortised inwardly of its free vertical edge is a lock casing or housing 10 in which is mounted a sliding bolt 11 arranged for movements outwardly and inwardly of an opening formed in its forward or outer vertical end wall 12. This bolt 11 is to be actuated to and from locked position by the cooperation with the same of a key (not shown) to be inserted into the key hole 13 from either one side or the other of the casing or housing 10.

The bolt 11 is of any usual construction generally, but, in carrying out the present invention, a circular bore 14 is drilled inwardly through the outer end of the same 5 and connects at its inner end with a slotway 15 cut inwardly of one side wall of the bolt 11, the width of which slotway 15 is equal to the diameter of the bore 14 for a portion of its length inwardly from the 10 connected end of the latter, but is narrower for the remainder of its length, substantially as shown. Mounted in this bore 14 and slotway 15 is an auxiliary bolt or rod 16, which has a forward portion corresponding to the 15 circular formation of the bore 14, and a rear portion of a size corresponding to the form of the narrower portion of the slotway 15, whereby the same is supported in position for free movements relative to the 20 bolt 11. The narrower rear portion of the slotway 15 is preferably rectangular in cross section, and the rear reduced end of the auxiliary bolt 16 is correspondingly formed so as to prevent this bolt from rotating in 25 any of its positions of use. A coiled spring 17 is connected at one end to the rear end of the auxiliary bolt 16, and at its other end to the bolt 11 at a point rearwardly of the extreme rear end of the slotway 15, and acts 30 to retain the bolt 16 in its rearmost position.

An actuating lever for the auxiliary bolt 16 comprising a lower open loop portion 18, and an upwardly directed arm portion 18' projecting from one side of the portion 18, 35 is mounted within the lock casing 10 for pivotal movements on a pivot rod 19 extending between the opposite side walls of the latter. This pivot rod 19 passes through the opposite sides of the lower looped portion 18 of the actuating lever and medially of the opening therethrough. A longitudinally directed slotway 20 is formed in the arm portion 18' of the actuating lever adjacent its point of connection with the lower 40 looped portion 18, and is engaged over a pin 21 projecting outwardly from one side of the sliding bolt 11 of the lock. The upper end edge of the arm portion 18' of the actuating lever is inwardly slotted as at 22, 45 and cooperates with a pin 23 projecting outwardly through the slotway 15 from the side of the auxiliary bolt 16 for the purpose. Positioned within the lock casing 10 and supported on its lower wall is a member or 50 bar 24, which extends between the key holes formed in opposite side walls of the said casing, and has its forward end projected within the looped portion 18 of the actuating lever and slidably engaged on the pivot 55 rod 19. A usual keeper plate 25 is secured on the door frame *b* for cooperation with the sliding bolt 11 of the lock casing, when the parts are disposed in their operative 60 positions.

65 Mounted within the door casing *b* behind

the keeper plate 25 is an electrical circuit outlet box or casing 26, in which is positioned a detent 27 having an outer head portion 28 disposed in alignment with the bolt opening of the keeper plate 25, and a guide 70 projection or stud 29 arranged at its inner side and in engagement with the open end of a guide member or socket 30 projecting inwardly of the inner or rear wall of the outlet box or switch casing 26. A coil spring 75 31 is positioned within the bore of the guide socket 30, and has its outer end engaged over the guide stud 29 and bearing against the inner face of the detent 27, so as to normally tension the latter in its outward position. An arm 32 projects from one side of the detent 27, and bears against an adjacent angular portion 33' of a switch blade 33, the latter having its intermediate portion pivoted on a pivot member 34 projecting 85 between the opposite side walls of the box or casing 26. The opposite end of the switch blade 33 is arranged to be moved into and out of contacting engagement with a pair of circuit terminals 35 and 36 to which the 90 circuit conductors 37 and 38 are respectively connected.

In the operation of the locking and switching mechanisms as thus constructed and installed, and with the switch contacts 95 35 and 36 electrically connected to the conductors 37 and 38 of the electric circuit within a building, apartment or room, as the case may be, and the parts as shown in Figure 2, the lighting circuit will be closed 100 at the contacts 35 and 36, and the lock bolt 11 disposed in its inoperative position. Now should a person desire to lock the door *a* from the outside, he or she will insert a key in the outer key hole 13 for the 105 purpose and in the usual manner. As the key enters the hole 13, it will contact the member or bar 24, and move the same toward the inner wall of the lock casing 10. As the member or bar 24 moves inwardly, 110 its forward end will engage the inner wall of the looped end 18 of the auxiliary bolt lever and move it inwardly to cause the slotted opening 22 in the upper end of its arm portion 18' into engagement with the 115 pin 23 projecting from the auxiliary bolt 16. Now, when the key is turned in the proper direction, the bolt 11 will be projected outwardly of the lock casing 10, and into engagement with the opening of the keeper plate 25. At the same time, and as the bolt 11 moves to locked position, it will swing the lever 18 on its pivot 19, through the medium of the slot 20 and pin 21 connection between the bolt 11 and the lever 120 arm 18'. As the upper end of the lever arm 18' swings toward its forward position, the auxiliary bolt 16 will be projected outwardly of the forward end of the bolt 11, against 125 the tension of the coiled spring 17, and its 130

free end will abut the head 28 of the detent 27 forcing the latter inwardly of the box or casing 25, and against the tension of the coiled spring 31. In the inward movement 5 of the detent 27 its arm portion 32 will be forced against the angular portion 33' of the switch blade 33 to swing the latter on its pivot 34 and withdraw its opposite end outwardly from contact with the circuit terminals 35 and 36, thus opening the lighting circuit of which the conductors 37 and 38, connecting the contacts 35 and 36, are a part. When the key is turned in the opposite direction, the locking bolt 11 will be withdrawn from engagement with the keeper 25 to normal position within the lock casing 10, and, in this movement, the lever 18 will be swung backwardly on its pivot 19, by the pin 21 being engaged in 15 the slot 20 in the arm portion 18', and return the auxiliary bolt 16 to its normal position inwardly of the locking bolt 11. In this return movement of the parts, the spring 17 will aid the lever 18 in such movement of the auxiliary bolt 16; the spring 25 31 will act, at the same time, to return the detent to normal position, and the spring 34' will act to swing the switch blade 33 back into circuit closing contact with the 30 terminals 35 and 36. Now, should the previous occupant of the apartment or room have left the lights turned on when he or she locked the door, as above explained, the lights will have been extinguished during 35 the period in which the door was locked, and, with the unlocking of the door thereafter, the lights will again be lighted, when, if desired, the usual control switch will now be actuated to open the circuit to extinguish 40 them. Now referring particularly to Figure 4, when it is desired to lock the door from the inside of the apartment or room, the key is inserted into the inner key hole 13, when its inserted end will push against 45 the member or bar 24 and move the latter toward the outer side of the lock casing 10. In its outward movement, the forward end of the member or bar 24 will push against the outer wall of the looped portion 18 of 50 the actuating lever, and will move the same so that the slotted opening at the upper free end of the arm portion 18' will disengage from the pin 23 of the auxiliary bolt 16. Now, when the key is turned in the proper 55 direction to move the locking bolt 11 outwardly of the locking casing 10, and into locked engagement with the opening of the keeper 25, the lever 18 will be swung in the same direction, but the free end of the 60 arm portion 18' thereof will clear the pin 22 so that the auxiliary bolt 16 remains in its inoperative position, and hence the detent 27 and the switch blade 33 remain undisturbed in their normal positions of operation.

It will be understood that, while a mortise form of lock and a particular form of control switch has been illustrated and described herein, the essential features of the present invention reside mainly in the use of the auxiliary sliding bolt in connection with any one of the numerous makes and types of sliding bolt door locks and latches, and also in conjunction with any desired or necessary form of electric control switch other than that as shown.

Without further description, it is thought that the features and advantages of the invention will be readily apparent to those skilled in the art, and it will of course be understood that changes in the form, proportion and minor details of construction may be resorted to, without departing from the spirit of the invention or its scope as claimed.

Having thus fully described the invention, what is claimed is:

1. In combination with a door lock including a key actuated primary sliding bolt, a secondary bolt slidably carried by said primary bolt, an electric circuit control switch adapted to be actuated by said secondary bolt after the primary bolt is actuated to locking position by the insertion and turning of the key in the lock from one side only of the latter, and means for causing said secondary bolt to remain inoperative when the key is inserted into the lock at the opposite side thereof.

2. In combination with a door lock including a key actuated primary sliding bolt, a secondary sliding bolt mounted for relative movement to and with said primary bolt, an electric circuit control switch adapted to be actuated to an open circuit position by said secondary bolt simultaneously with the movement of the primary bolt to a locking position when the latter is actuated by the key from one side only of the lock, and means for operatively connecting said secondary bolt to said primary bolt when the key is inserted into the lock from the side thereof aforesaid, said means being adapted to be actuated by the key to disconnect said secondary bolt from the primary bolt when the key is inserted into the lock from the opposite side thereof.

3. In combination, a door lock including a key actuated sliding primary bolt, a secondary bolt slidably mounted for movement in and relatively to said primary bolt, a normally closed electric light switch, and a detent adapted to connect said bolts for simultaneous operation upon the insertion of the key inwardly of one side of the lock, said detent being moved to disconnected position upon the insertion of the key inwardly of the opposite side of the lock so that the primary bolt only will be moved to full operative position.

4. In combination, a door lock including a key actuated sliding primary bolt, a secondary bolt slidably mounted for movement on and relatively to said primary bolt, a normally closed electric light switch, and a laterally movable detent adapted to connect said bolts for simultaneous operation upon

the insertion of the key inwardly of one side of the lock, said detent being moved to disconnected position upon the insertion of the key from the opposite side of the lock so that the primary bolt only will be moved to full operative position.

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