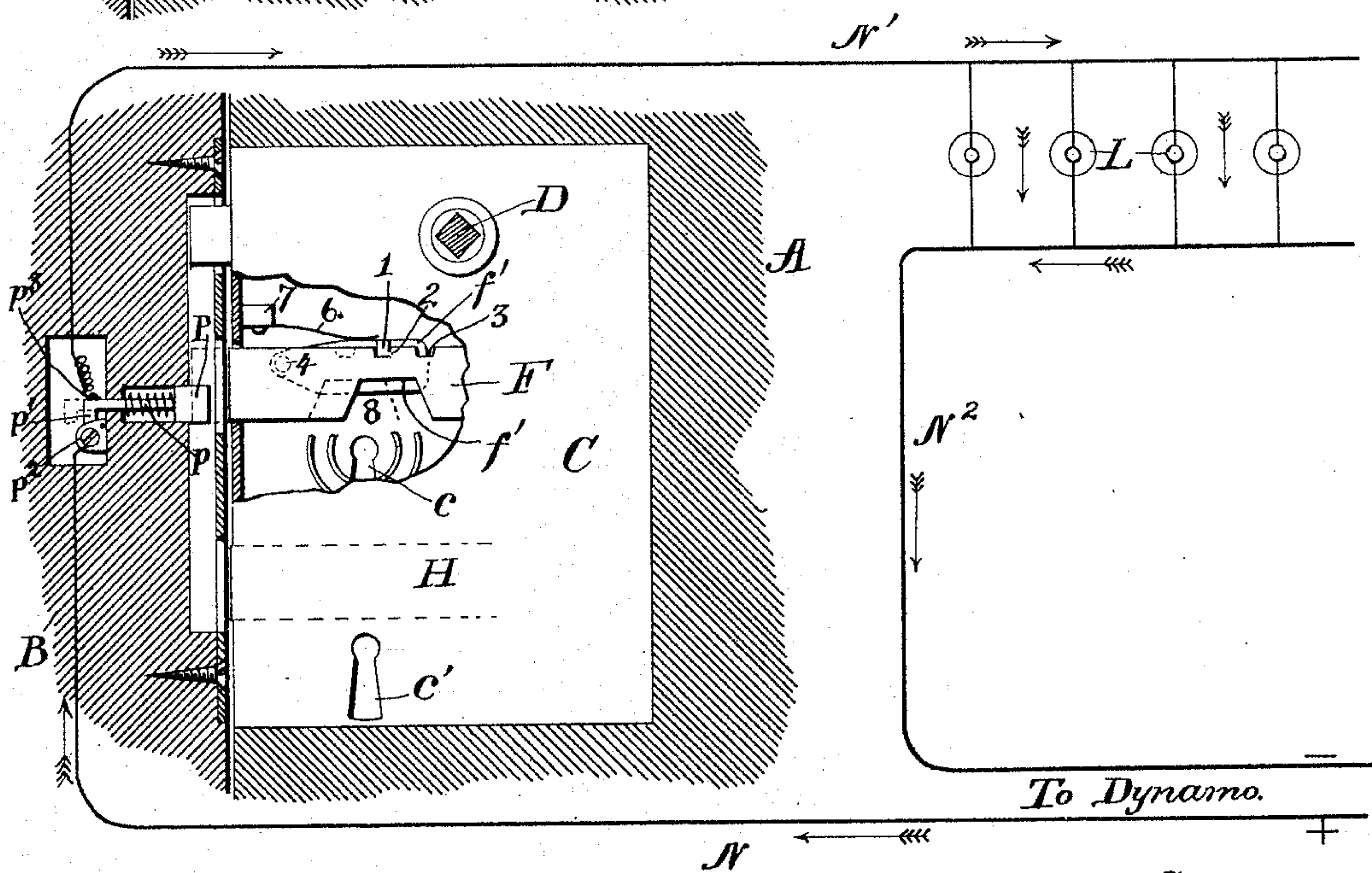
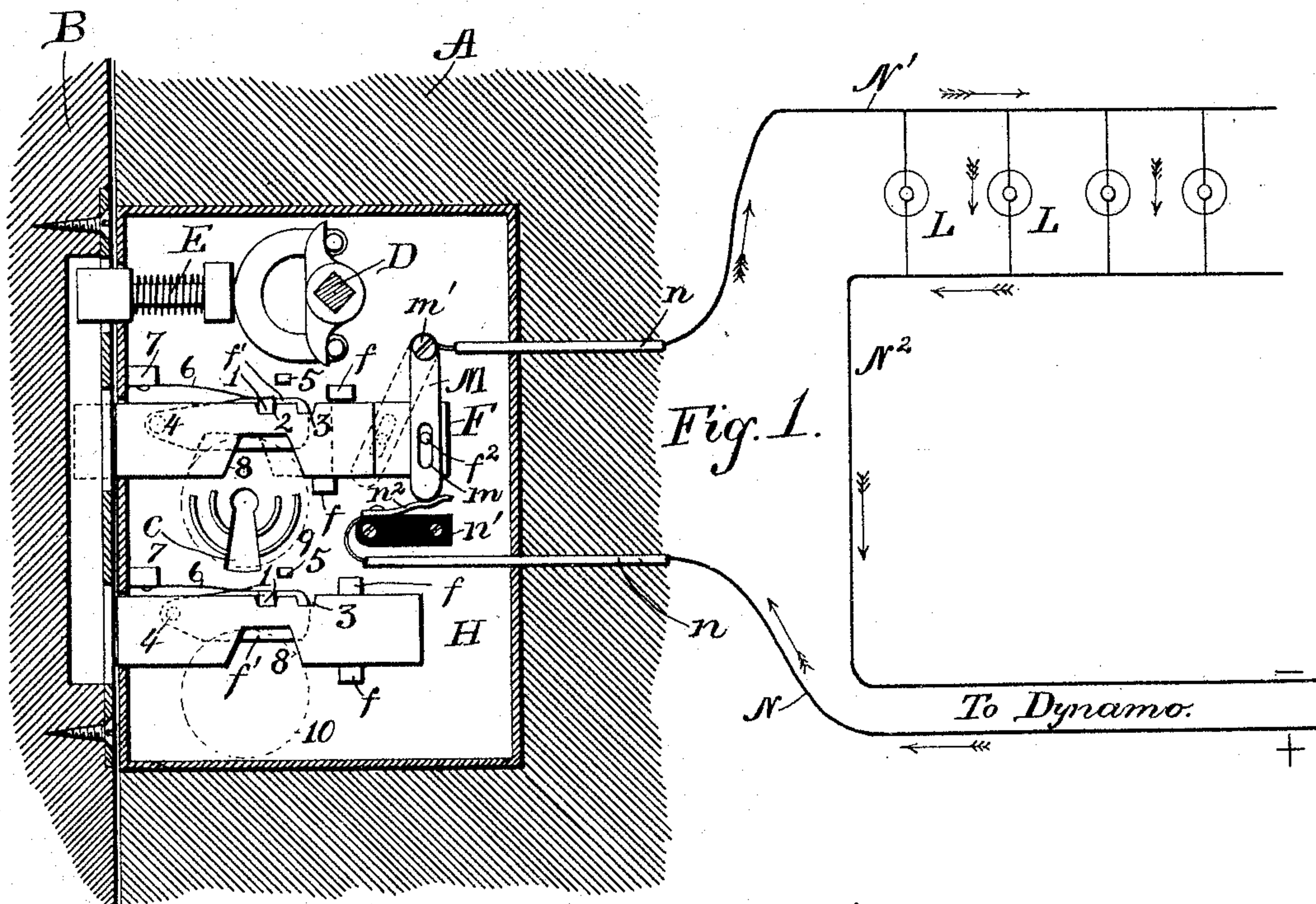


J. H. L. HOLCOMBE.
COMBINED ELECTRIC SWITCH AND DOOR LOCK.

No. 491,426.

Patented Feb. 7, 1893.



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UNITED STATES PATENT OFFICE.

JOHN H. LEE HOLCOMBE, OF THE UNITED STATES NAVY.

COMBINED ELECTRIC SWITCH AND DOOR-LOCK.

SPECIFICATION forming part of Letters Patent No. 491,426, dated February 7, 1893.

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To all whom it may concern:

Be it known that I, JOHN H. LEE HOLCOMBE, a lieutenant in the United States Navy, a citizen of the United States, residing at Washington, in the District of Columbia, have invented certain new and useful Improvements in a Combined Electric Switch and Door-Lock; 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 it appertains to make and use the same.

My invention relates to certain improvements in combined electric switches and door locks, intended for use in connection with an electric light plant; and it consists essentially of an electric switch so connected to the door lock that when the door is locked from the outside the electric current is cut off from one or all of the lights in the room, while if the door be locked from the inside, the electric current passing through the lamps is not disturbed.

It also consists of certain novel parts and combinations thereof hereinafter described and claimed.

Reference is had to the accompanying drawings, wherein corresponding parts are indicated by similar letters and numerals throughout the several views.

Figure 1 represents a longitudinal section through a door lock, and the parts of the door and door-frame adjacent thereto, together with a diagrammatic view of the arrangement of the electric lights in the room. Fig. 2 represents an interior view of the door and lock, parts being broken away, together with a diagrammatic view of the lamps, and represents another method of cutting out the lights according to my invention. Fig. 3 represents a longitudinal section of the door lock where only one bolt is used, and illustrates a method of cutting out the lights when the key is turned from the outside, but of allowing them to remain in circuit when the key is turned from the inside, together with a diagrammatic view of the electric connections. Fig. 4 represents a section of the lock along the line xx of Fig. 3, looking upward in the direction of the arrows. Fig. 5 represents a side elevation of the key adapted for use with the device shown in Figs. 3 and 4.

In the devices shown in Figs. 1 and 2, two separate bolts are shown, the bolt F being actuated by a key from the outside, and the bolt H being actuated by the same key from the inside of the door, there being two separate keyholes c and c' . This form of lock with various modifications thereof, is most commonly in use in the large hotels, and other places where the locks are likely to be tampered with.

In the device shown in Fig. 3 but one bolt is used, which is fitted with a tumbler operated from either side of the lock in the usual way. This form of lock, with various modifications thereof, is generally in use upon doors of every description.

To enter into the details, A represents the lock-style of the door, and B represents the door-frame, to which the lock and its keeper are secured in the usual way.

C represents the lock.

D represents the spindle for the door knob, and E represents the latch, which parts not being a part of or related to my invention, will not be further described.

F represents the locking-bolt which is operated from the outside of the door, by a key inserted through the keyhole c , and H represents a second locking-bolt which is operated by the same key inserted through the keyhole c' , shown in Fig. 2. Each of the said bolts has guide lugs f , one or more tumblers f' pivoted to the side of the lock at 4, and having a lug 1 adapted to engage in one or the other of the grooves 2 and 3 on the upper side of the bolts. A spring 6 attached to the lug 7, normally presses the said tumbler down in place, until the said tumbler is raised by the key passing up into the recess 8 on the lower side of the said bolt. A guard-lug 5 as shown in Fig. 1, is sometimes provided to prevent the tumbler from being thrown too far out of position, as might happen in case of accident to the spring 6. The key moves in the dotted circles 9 and 10, as shown in Fig. 1.

In the device shown in Fig. 1, a switch M is pivoted at m' and is provided with a slot m through which a stud f^2 connected to the bolt, passes. When the bolt F is unlocked, the switch M bears against a spring n^2 , connected at the binding post n' to the wire N which leads to one pole of the dynamo. The wire

N' is connected to the switch M at m' , and the said wires are insulated as shown at n . It will be seen that when the bolt F is turned to the left, as shown in dotted lines, that the switch M will be removed from contact with the spring n^2 , and the electric lamps L will be cut out of circuit. The binding-post n' should be made of insulating material, and insulation may be applied between the switch M and the bolt F, and the pivot m' and the side of the lock, if that be desired, but for ordinary purposes it will be sufficient that only one of the wires be insulated from the conducting parts of the lock.

In the device shown in Fig. 2 a plunger P is normally pressed forward by a spring p , the said plunger and spring being placed in the door jamb in the wake of the bolt F. To this plunger the wire N' is connected as at p^3 , and the inner end of the said plunger is bent as at p' to normally press against a contact piece p^2 electrically connected to the wire N. As long as the bolt F is unlocked the circuit through the lamps will be closed, but as soon as the bolt is locked it will press the said plunger clear of the said contact piece, and will break the circuit, cutting out the lights.

It will be seen from an inspection of Figs. 1 and 2, that the bolt H may be turned from the inside without affecting the electric circuit in any way.

In the device shown in Figs. 3 and 4, but one bolt F' is used, which is provided with a tumbler f^3 capable of being raised by inserting the key from either the inside or outside of the door. In order to prevent the lights from being extinguished when the lock is turned from the inside, I make use of the hereinafter described device. To the insulated posts n' the wire N' and spring n^2 are connected, and to suitable lugs on the lock, springs n^3 and n^4 are attached, either or both of which are electrically connected to the wire N. The switch M' is in the form of a double bell-crank lever pivoted at m^6 , and having arms m^2, m^3, m^4 , and m^5 . The said springs n^2, n^3 , and n^4 are bent as indicated at 11, to allow the arms m^2 and m^3 to pass, and over the points of the spring, and to hold the same against any ordinary jars, such as slamming the door &c. The key K has its part k cut away as at k' and k^2 , as in Fig. 5, so that when inserted from the inside of the lock, as shown in dotted lines in Fig. 4 the surface k^2 will pass over the arms m^4 and m^5 of the switch, but when inserted from the outside of the door the part k will strike the said arms m^4 and m^5 of the said switch M', and will break the circuit as shown in dotted lines in Fig. 3, immediately before the bolt is locked. The curved portion 11 of the spring n^4 will hold the said switch in the position shown in the dotted lines until the key is reinserted and the bolt unlocked. In this way it will be seen that the electric lights will be turned off when the bolt is locked from the outside, and will not be disturbed when the bolt is locked from

the inside. Thus it will be seen that it will be impossible to leave the room and lock the door from the outside without turning out all the electric lights operated through the switch attached to the lock, and hence the great waste of electricity caused by the neglect of the occupants of the room to turn out the lights, will be obviated.

It will be evident that auxiliary switches in the room, may be used to make and break the circuit, but all or nearly all the lamps in the room should preferably be attached to the automatic lock switch, so that it would be impossible to leave the lights burning when the room is unoccupied and locked.

It will be evident that should it not be desired to pass all the current through the automatic lock-switch, a shunt circuit through the lock may be arranged to make and break the main circuit through the lamps. It will also be obvious that only a certain proportion of the lamps in each room may be connected to the automatic lockswitch, and that consequently the remaining lights not so connected will not be affected by its operation.

Although the circuit is represented as closed by unlocking the door from the outside, and broken by locking from the outside, it will be evident that by a simple transposition of parts the reverse might be made to take place, as would be required in banks, jewelry stores and other places where it is desired to keep one or more lamps burning all night. Again by another simple transposition of parts, the circuit might be operated entirely from the inside, or from the inside as well as from the outside.

In the drawings some of the simplest forms of locks now in use are shown, but the mechanical details of the lock, and of the switch, may be varied at will. Moreover the insulation, and other mechanical details which can be readily supplied by any skilled mechanic, have been omitted for the sake of clearness in the drawings.

Having thus described my invention, what I claim, and desire to secure by Letters Patent of the United States, is:—

1. In a device of the character described, the combination with an electric light circuit and electric lights therein, of a door lock provided with keyholes on either side of said lock, an electric switch controlling the current admitted to lights in said circuit, and a key for said lock adapted to move said switch when turned in the keyhole at one side of said lock, and not to move said switch when turned in the keyhole at the other side of said lock, substantially as and for the purposes described.

2. In a device of the character described, the combination with an electric light circuit and electric lights therein, of a door lock adapted to be operated from either side, a contact making and breaking device connected to said circuit and to said lock, and means for operating said lock from one side

without affecting said contact making and breaking device, and for operating said lock from the other side and moving said contact making and breaking device, substantially as 5 and for the purposes described.

3. The combination with an electric light circuit and electric lights therein, of a door lock provided with keyholes on either side of said lock, a bolt within said lock adapted to 10 be moved from either side thereof, an electric switch connected to said circuit and in proximity to said bolt, and a key for said lock adapted to engage said switch, when entered and turned from one side of said lock, and 15 not to engage said switch when entered and turned from the opposite side of said lock, substantially as and for the purposes described.

4. The combination with an electric light 20 circuit and electric lights therein, of a door lock provided with keyholes on either side of said lock, a bolt within said lock adapted to be moved from either side thereof, a double bell crank lever pivoted within said lock and 25 normally closing said circuit, and a key for said lock adapted to pass over said lever when inserted and turned from one side of said lock and so leave said circuit undisturbed, and to engage in said lever and break said circuit 30 when inserted and turned from the opposite side of said lock, substantially as and for the purposes described.

5. The combination with an electric light circuit and electric lights therein, of a door 35 lock provided with keyholes on either side of said lock, a bolt within said lock adapted to be moved from either side thereof, a double

bell crank lever M' pivoted with said lock, terminals for the electric circuit in the form of spring bearings engaging two of the arms 40 of said bell crank lever, and so closing said circuit, and a key for said lock adapted to pass over the opposite arms of said lever when inserted and turned from one side of said lock and to leave said circuit undisturbed, and to 45 engage in said levers and break said circuit when inserted and turned from the opposite side of said lock, substantially as and for the purposes described.

6. The combination with an electric light 50 circuit and electric lights therein, of a door lock provided with keyholes on either side of said lock, a bolt within said lock adapted to be moved from either side thereof, a double bell crank lever M' pivoted with said lock, 55 terminals for the electric circuit in the form of spring bearings engaging two of the arms of said bell crank lever, and so closing said circuit, an insulated clip for holding said lever when detached from said spring bearings, 60 and a key for said lock adapted to pass over the opposite arms of said lever when inserted and turned from one side of said lock and to leave said circuit undisturbed, and to engage in said levers and break said circuit when in- 65 serted and turned from the opposite side of said lock, substantially as and for the purpose described.

In testimony whereof I affix my signature in presence of two witnesses.

JOHN H. LEE HOLCOMBE.

Witnesses:

JOHN C. WILSON,
PERCY C. BOWEN.