

G. W. HART.
SWITCH.

APPLICATION FILED OCT. 15, 1908.

926,001.

Patented June 22, 1900.

2 SHEETS—SHEET 1.

Fig. 1.

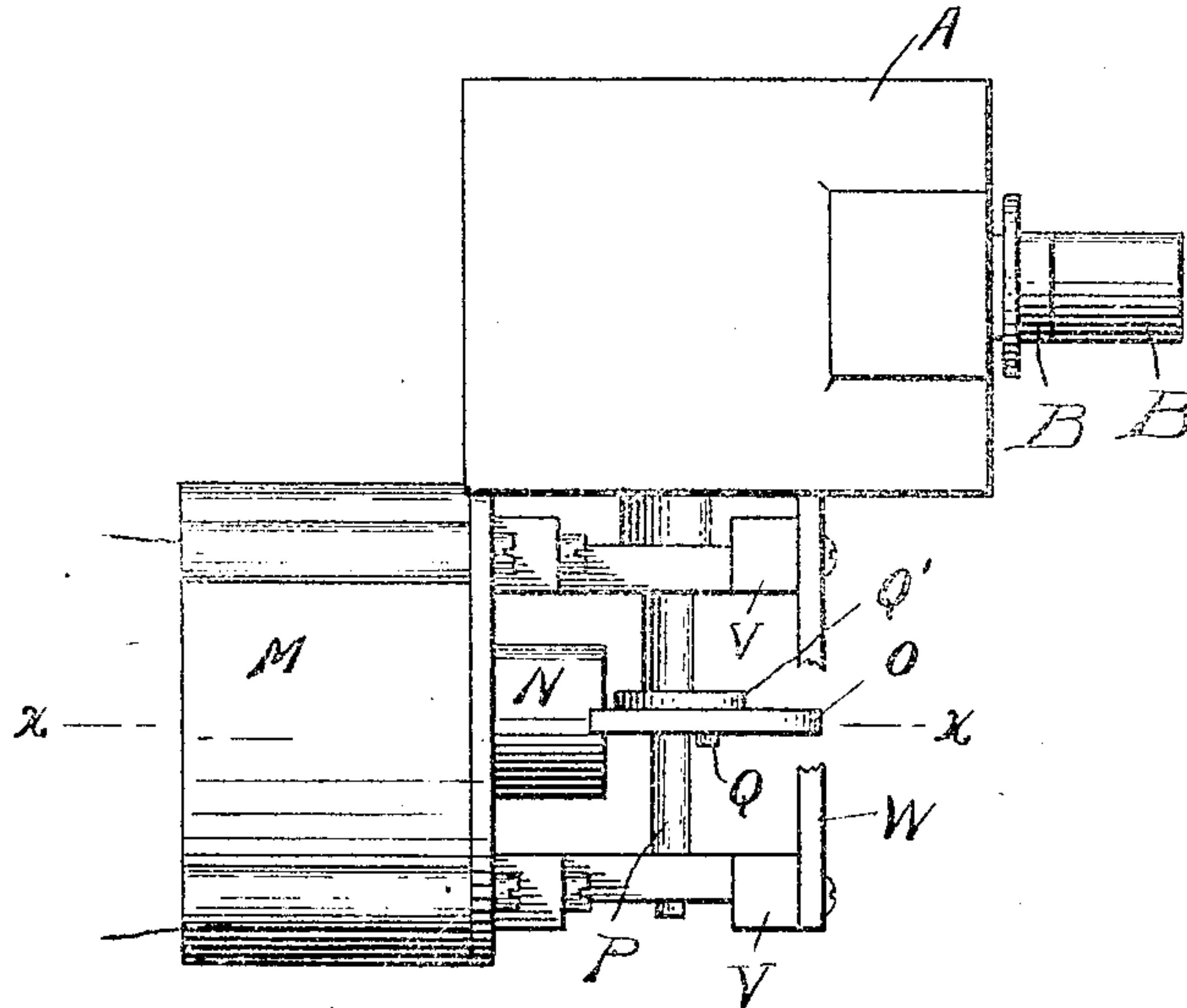
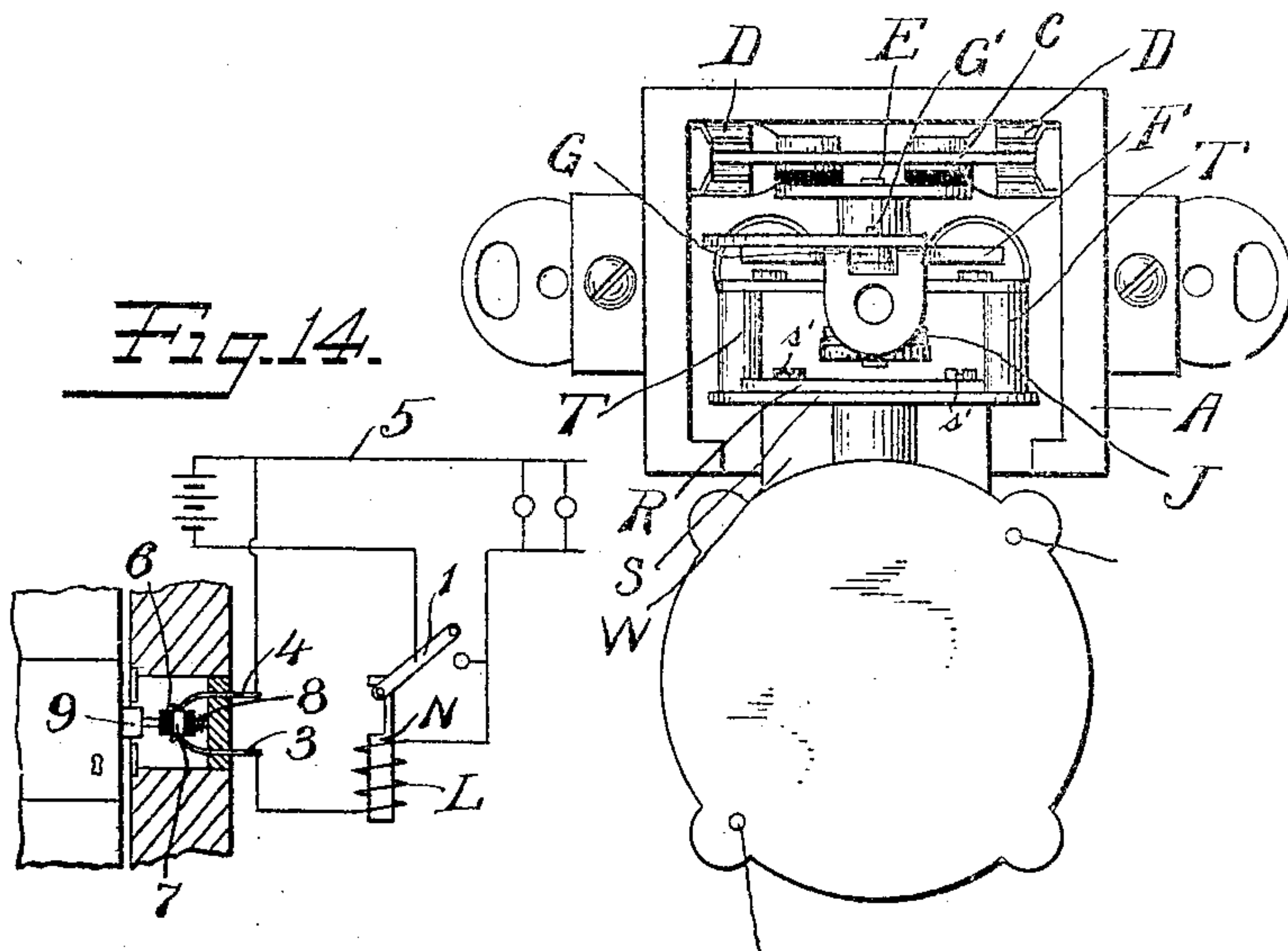


Fig. 2.



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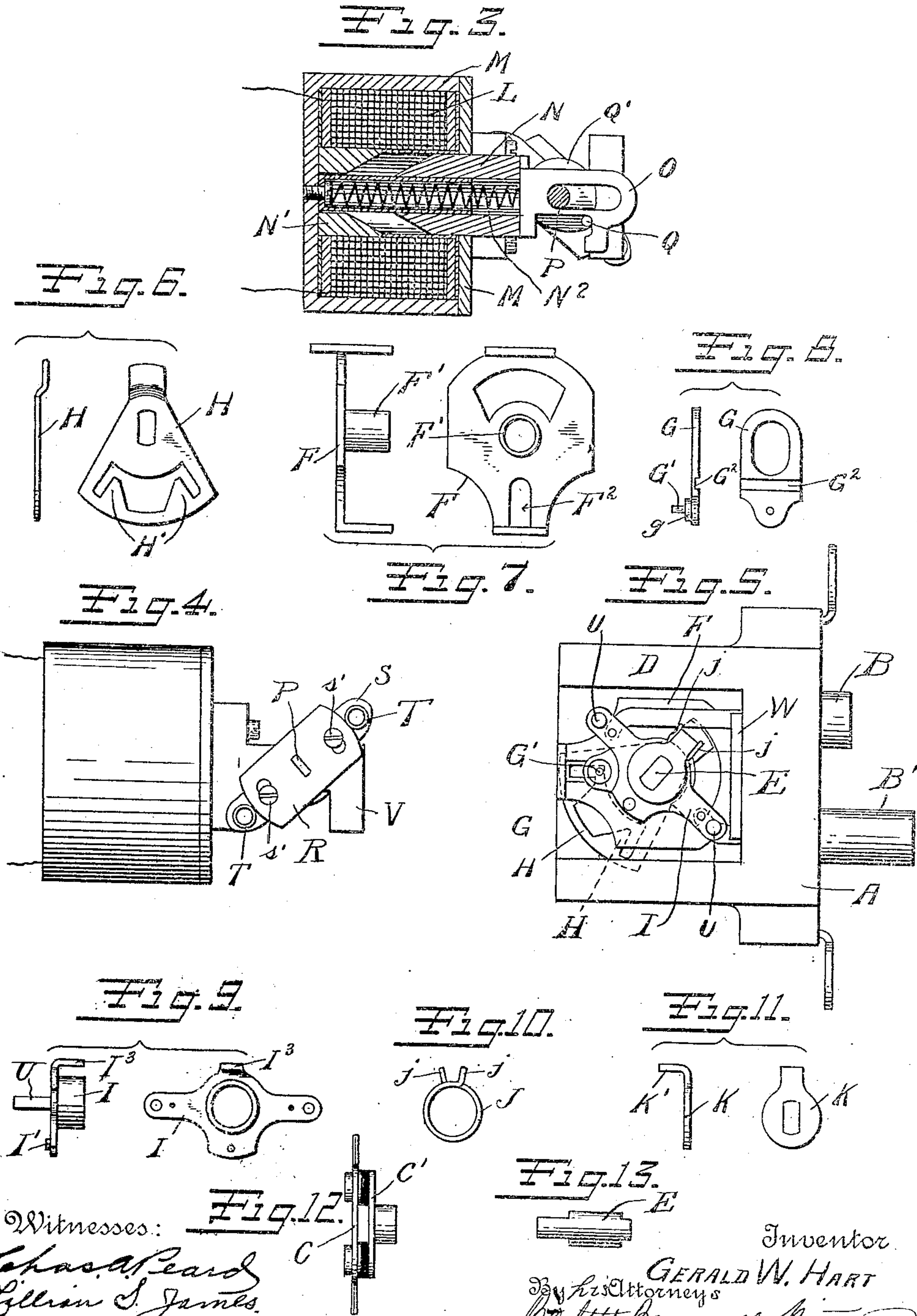
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2 SHEETS—SHEET 2.



UNITED STATES PATENT OFFICE.

GERALD W. HART, OF HARTFORD, CONNECTICUT, ASSIGNOR TO THE HART MANUFACTURING COMPANY, OF HARTFORD, CONNECTICUT, A CORPORATION OF NEW JERSEY.

SWITCH.

No. 926,001.

Specification of Letters Patent.

Patented June 22, 1909.

Application filed October 15, 1908. Serial No. 457,326.

To all whom it may concern:

Be it known that I, GERALD W. HART, a citizen of the United States, residing at Hartford, county of Hartford, State of Connecticut, have invented certain new and useful Improvements in Switches, of which the following is a full, clear, and exact description.

My invention relates to double-controlled switches, by which I mean switches which are subject to both manual and electro-magnetic control.

One of its objects is to produce a push button switch which can be operated manually at the switch and can also be operated electro-magnetically from a distance.

Another object of my invention is to make a switch mechanism controlled electro-magnetically by the bolt in a door, so that when the door is locked the circuit containing the translating devices will be automatically interrupted. The particular application of this last named feature is in connection with doors of hotel rooms, the arrangement being such that when the hotel door is locked from the outside all lights in the room within shall be automatically extinguished.

Another object is to make a door controlled push button switch.

The following is a description of apparatus embodying my invention, reference being had to the accompanying drawings, in which—

Figure 1 represents a side elevation of the switch mechanism. Fig. 2 represents an end elevation of the same, the end shown being the left hand end of Fig. 1. Fig. 3 is a horizontal section of the electro-magnetic device on the line X—X Fig. 1. Fig. 4 is a plan view of the electro-magnetic device of Fig. 1 detached from the switch proper. Fig. 5 is a view of the switch proper as shown in Fig. 1, looking upward. Figs. 6 to 13, inclusive, are detail views of various members of the switch. Fig. 6 is a side and front view of the stop plate. Fig. 7 is a side and front view of the support. Fig. 8 is a side and front view of a detent. Fig. 9 is a side and front view of the actuating member. Fig. 10 is a side view of the spring. Fig. 11 is a side and front view of a spring plate. Fig. 12 is a side view of the switch plate. Fig. 13 is a side view of the switch shaft. Fig. 14 is a diagram of circuits.

Referring more particularly to the drawings, A is an insulating porcelain base containing switch mechanism proper. This

switch mechanism consists of elements composing a snap switch manually actuated by the push buttons B—B'. The switch consists of a switch-plate C adapted to electrically connect and disconnect spring contacts D—D mounted on the base A. Through a carrier C', the switch-plate is insulated from and secured to a shaft E journaled in a support F, which support is secured to the base A. Guided by the support is a detent G, which surrounds the projection F' on the support F, and has a projection G' which passes through an opening F² in the support and comes into the path of projections H' on the stop plate H of the switch. The boss g engages the sides of the opening F². This stop-plate is rigidly mounted upon the shaft E between the switch-plate carrier and the support F. An actuating member I is also mounted upon the support F adjacent to the detent G. This actuating member carries a projection I' which fits in a groove or recess G² in the detent, with the result that as the actuating member is moved in one direction or the other through a portion of a circle, the detent G is caused to move to or from the axis of the shaft E. This movement causes the projection G' to move away from or toward the projections H' on the stop plate H, as hereinafter described. The movement of the detent is always rectilinear and the engagement between it and the actuating member is a sliding engagement.

Upon the hub of the actuating member, a coil spring J is placed, its two free ends j—j being on opposite sides of the projection I' carried by the actuating member. Rigidly secured to the end of the shaft is a spring-plate K having a projection K' which also passes between the two free ends of the spring. It will be noted that the shaft, together with the switch-plate, stop plate H and spring-plate K, are all rigidly secured together, and that the detent G and actuating member I are free to move relatively to the shaft. To the actuating member the push buttons B—B' are loosely pivoted. When the actuating member is moved by pressure upon one or the other of the push buttons, the detent G is first forced toward the projections H' and simultaneously the projection I' engaging the one end of the coil spring J, the other end being restrained by the projection K' upon the spring-plate, winds up the coil-spring J, putting the spring

under tension which will cause the spring-plate and parts connected therewith to move as soon as they are released. Upon a further movement of the actuating member the de-
 5 tent G is forced toward the shaft E until the projection G' is removed from the path of the projections H' on the stop plate. This permits the shaft E, together with the switch-plate, to revolve under the action of the
 10 spring J, with the result that the translating circuit is either opened or closed, according to the push button which has been actuated. The action is the same in both cases, which-
 ever button may be moved.

15 The electro-magnetic means for operating the switch consists of a coil L having a magnetic shell M. This coil has a two-part iron core, the part N being movable and the part N' being stationary, the whole constituting
 20 an iron-clad solenoid. A spring N² restoring the part N to normal position when the solenoid is deenergized is preferably used. Attached to the movable portion N is a pro-
 25 jection O which surrounds a shaft P to which a crank pin Q mounted upon the disk Q' is rigidly connected. The part O where it surrounds the shaft P is slotted so as to be free to move and yet be guided by the shaft
 30 P. The shaft P has secured to it a plate R, as shown in Fig. 4, and to this plate R a connecting plate S is secured by adjustment screws s-s'. The connecting plate S is pro-
 35 vided with two hollow projections T—T which are adapted to fit over projections U—U on the actuating member I. The shaft P is journaled in uprights V—V which are secured by screws to a plate W, carried
 40 by the base A. When the uprights V—V are detached from the plate W the electro-magnetic device can be easily separated from the switch proper by reason of the de-
 tachable connections T—T U—U.

Referring to the diagram shown in Fig. 14, 1 represents a switch-plate which can be
 45 manually actuated so as to make and break the circuit leading to the translating devices. N represents a movable solenoid core operatively connected to the switch member 1. L represents the solenoid coil which is adapt-
 50 ed to be connected to and disconnected from the mains, one terminal of said coil being connected to the switch contact on the translating side of the switch. 3 and 4 are
 55 spring terminals of a circuit controller, the terminal 3 being connected directly to the coil L, while the terminal 4 is connected to the main 5. The push button 6, having a
 60 bridge-plate 7, is adapted to electrically connect and disconnect the spring terminals 3 and 4. The push button is normally forced outward by the spring 8. 9 is a door-
 65 bolt which is actuated by a key inserted from the outside of the room only. When it is thrown so as to lock the door, as shown, it engages the push button 6 and forces it in-

ward against the action of the spring 8 until the bridge piece 7 electrically connects the spring terminals 3 and 4.

It will be seen from the foregoing that when the door is locked and the switch 1 70 closed, the bolt 9 causes the push button 6 to complete a shunt circuit through the coil L, thus energizing the solenoid and causing the core N to be drawn down, thereby mov-
 75 ing the switch member 7 so as to open the circuit. When the door is unlocked, the coil L is deenergized and the circuit can be made and broken by the manual movement of the switch member 1, as desired, the ac-
 80 tion being entirely unaffected by the presence of the electro-mechanical device. One terminal of the coil L is connected upon the translating device side of the switch proper, so that the circuit is never broken at the
 85 push button 6 when current is flowing through it, and thereby all sparking on the break between the spring contacts 3 and 4 and the bridge piece 7 is entirely avoided.

My invention not only provides means for automatically extinguishing the lights in a 90 room whenever the door is locked from the outside without interfering with the use of such lights when the door is unlocked or when it is locked on the inside by another bolt, but also provides means whereby such 95 a controlling mechanism applied to any hotel door in connection with locks already in place without in any way requiring those locks to be changed or altered.

My invention can be embodied in various 100 other arrangements without departing from its spirit or the principles involved therein.

What I claim is:

1. The combination of a main circuit containing translating devices, an electric switch 105 controlling the same and having a switch arm, an actuating member and a spring connecting said switch arm and said member, electro-magnetic means operatively connect-
 110 ed to said actuating member and adapted to move said actuating member positively to place said spring under tension and operate said switch, a local energizing circuit for the electro-magnetic means, a local controller in
 115 said local circuit, a door bolt actuating said controller, said controller being located in the door jamb in proximity to said bolt and said local circuit being connected to the main cir-
 120 cuit in parallel to said translating devices on the translating device side of said switch.

2. The combination of a push button switch having a quick acting mechanism, an oscillating actuating member, and push but-
 125 tons for moving said actuating member in both directions, with electro-magnetic means for moving said actuating member in one direction, a circuit for said electro-magnetic means, and a controller in said circuit, said circuit being connected in shunt across the
 130 mains controlled by said switch on the trans-

lating device side of said switch, and a door bolt actuating said controller.

3. The combination of a push button switch having a quick acting mechanism, an
5 oscillating actuating member and push buttons for moving said actuating member in both directions, with electro-magnetic means for moving said actuating member in one
10 direction, a circuit for said electro-magnetic means, and a controller in said circuit, said circuit being connected in shunt across the
mains controlled by said switch on the trans-

lating device side of said switch.

4. The combination of a push button

switch having a quick acting mechanism, an 15
oscillating actuating member, and push buttons for moving said actuating member in both directions, with electro-magnetic means
for moving said actuating member in one 20
direction, a circuit for said electro-magnetic means, and a controller in said circuit, and means for adjusting the operative relations
of said switch and said electro-magnetic means.

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Witnesses:

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