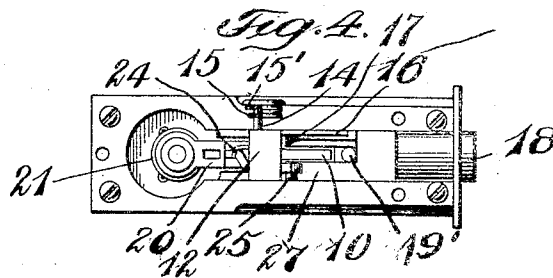
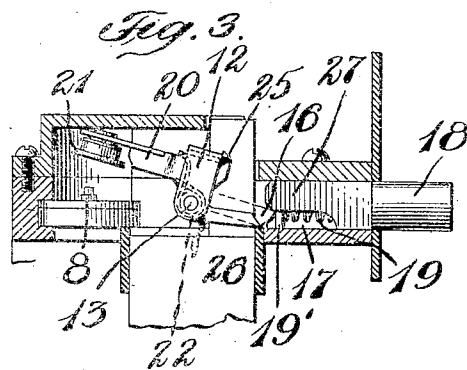
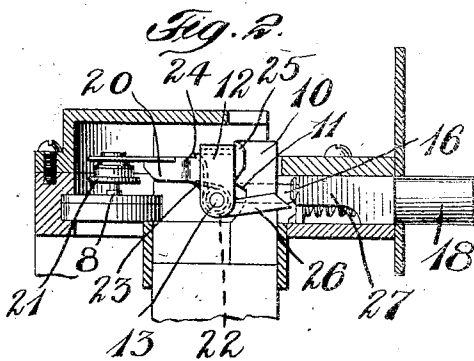
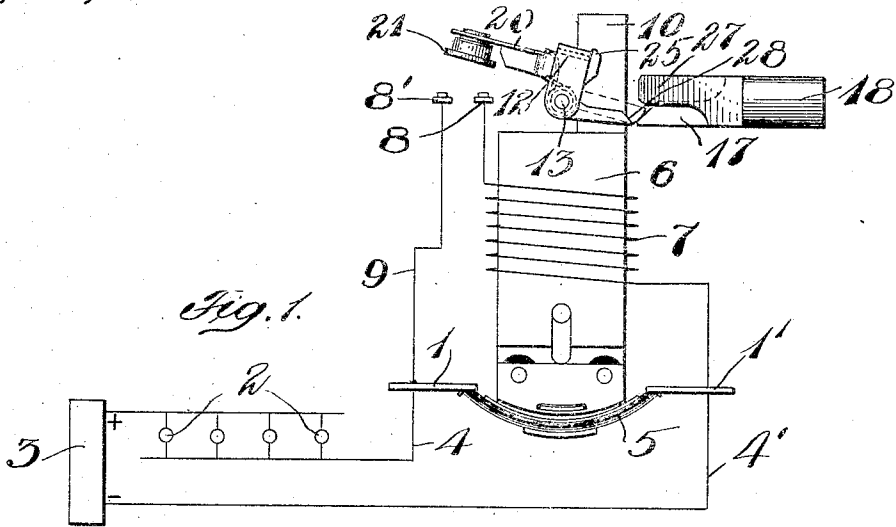


G. W. HART.  
SWITCH.

APPLICATION FILED JULY 29, 1912.

1,058,179.

Patented Apr. 8, 1913.



Witnesses:  
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# UNITED STATES PATENT OFFICE.

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NEW JERSEY.

SWITCH.

1,058,179.

Specification of Letters Patent.

Patented Apr. 8, 1913.

Application filed July 29, 1912. Serial No. 711,963.

To all whom it may concern.

Be it known that I, GERALD W. HART, a citizen of the United States, residing at West 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 improvements in switches, and has for its object to provide means whereby the switch mechanism shown and described in my application Serial No. 668,997, filed January 2d, 1912, can be used in connection with old lighting installations where a potential wire is not readily accessible to extinguish the lights within a hotel room when the outer door is locked by one leaving.

In old installations a single pole switch is commonly employed for controlling all the lights within a hotel room, which single pole switch is usually located near the outside door, so that the circuit is accessible near the door, although no potential circuit is usually accessible at that point. I have discovered that if the local circuit containing the solenoid and local circuit controller of the switch described in the application above mentioned is electrically connected to the main switch terminal, so as to be in shunt to the main switch arm, that said switch mechanism can be used to control the lamps of such old installations without the use of a potential circuit.

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

Figure 1 shows a side elevation of the switch embodying my invention, partly in diagram. Fig. 2 shows a side elevation of the upper part of the switch, with the casing shown in section. Fig. 3 shows a similar view with the parts in different positions. Fig. 4 shows a plan view, with the cap removed.

Referring more particularly to the drawings, 1—1' are the main switch terminals connected in series with translating devices 2, such as lamps, and a source of current 3 by the conductors 4—4'.

5 is a main switch arm carried by but insulated from a core 6, which is surrounded by a solenoid 7. One terminal of the solenoid is connected to the terminal plate 1', while the other is connected to a contact 8. A con-

tact 8' is connected by the conductor 9 to the terminal plate 1, forming parts of a local circuit in shunt to said switch arm. The upper end of the core is provided with a projection 10, having an abutment 11 formed by the upper surface of a notch in the projection 10.

12 is a U-shaped detent movably mounted in the switch casing by a pin 13. This detent on one of its limbs has a stud 14 with which one end 15 of a spring surrounding the pin 14 engages, the other end 15' engaging with the casing so that the spring tends to cause the detent 12 to move toward the projection 10 and into engagement with the abutment 11 when the core is raised to its uppermost position, as shown in Figs. 1 and 3. The detent 12 is provided with a tail piece 16, which projects into the path of a portion 17 of an actuator 18. The actuator, when free to move, returns to the position shown in Fig. 3, by reason of the spring 19 bearing against the pin 19'. When the actuator 18 is pushed inward to the position shown in Fig. 4, the portion 17 thereof passes beneath the tail piece 16, lifting it into the position shown in Fig. 2. This moves the detent 12 out of engagement with the abutment 11, so as to permit the core, together with the switch arm 5, to fall, with the result that its electrical connection between the terminal plates 1—1' is broken. The detent then bears against the vertical surface of the projection 10, so that the detent is held in vertical position, as shown in Fig. 2. Mounted upon the pin 13 between the limbs of the U-shaped detent 12 is a local circuit controller 20, carrying a contact plate 21 insulated therefrom and adapted to electrically connect and disconnect the terminals 8—8'. A spring 22 surrounding the pin 13 has one end 23 bent so as to bear against the left hand vertical face of the detent 12, while the other end 24 bears against the upper surface of the controller, with the result that a yielding connection between the two is afforded, so that the detent 12 can be moved out of engagement with its abutment 11, even if the controller is restrained from moving, and the controller tends to move to closed position. The controller has on its rear upper end a projection or hook 25, which engages the right hand face of the detent 12, so that when the detent 12 is in engagement with the abutment 11, the con-

troller 20 is always retracted thereby, so as to be out of engagement with the contacts 8—8'. The controller 20 has a tail piece 26, which, when the detent 12 is in engagement with the abutment 11, lies beneath the path of a projection 27 of the actuator. When the actuator is moved to release the detent, the projection 27 passes above the tail piece 26, so as to prevent it from rising, and therefore prevents the controller 20 from engaging the contacts 8—8' so long as the actuator is in actuated position. The tail piece 26 and the end of the opposing face of the actuator are slightly beveled, as shown at 23, so that if the controller is in engagement with the contacts 8—8', when the actuator is actuated, the face 23 will be engaged by the actuator so as to forcibly remove the controller from engagement with the contacts 8—8'.

The operation of the apparatus is as follows: Assuming that the parts are as shown in Fig. 3, this being their positions when the switch arm 5 is closed, so as to complete the circuit through the translating devices 2, and that some of the lamps are in use, pressure upon the end of the actuator 18 moves the detent 12 toward releasing position, by reason of the action of the projection 17. At the same time, the projection 27 passes above the tail piece 26, so as to hold the controller 20 away from the contacts 8—8', the spring 22 permitting this independent motion of the detent 12. When the actuator 18 has moved sufficiently, it causes the detent 12 to release the core 6, so that the switch arm 5 falls away from the terminal plates 1—1' and the circuit through the translating devices 2 is opened. The controller 20, however, is kept out of contact with the terminals 8—8' by reason of the engagement of the projection 27 with the tail piece 26, so that whenever the actuator 18 is in actuated position, the solenoid 7 is not energized. As soon as the actuator 18 is released and returns to normal position under the influence of the spring 19, the tail piece 26 is released, whereupon the spring 22 causes the controller 20 to bring its plate 21 into engagement with the terminals 8—8', completing the circuit through the solenoid 7 and the translating devices 2. This energizes the solenoid 7, so that it raises the core 6 and switch arm 5 into engagement with the terminal plates 1—1', in which position they are locked by the detent 12 engaging the abutment 11, the movement of the detent 12 into engagement with the abutment 11 causing the controller 20 to disconnect the contacts 8—8', the controller being removed by the engagement of the detent with the hook 25. These actions, therefore, when the translating devices 2—2 are turned on, cause only a momentary engagement of the contact plate 21

with the terminals 8—8', that being sufficient to draw the core 6 upward and cause the switch arm 5 to engage the plates 1—1'. If, however, no translating devices 2 are in circuit when the actuating member 18 is actuated, the action heretofore described is the same, except that when the actuator 18 returns to normal position, the circuit through the solenoid 7 being opened at the translating devices 2, the solenoid is not energized and the core 6 is not returned to its normal position, and, the controller 20 being released by the actuator 18, makes engagement with contacts 8—8' and maintains that engagement until one of the translating devices 2 is turned on. As soon as one of the translating devices 2 is turned on, the circuit is completed through the solenoid 7, drawing up the core 6 and establishing connections between the plates 1—1' through the switch arm 5, whereupon the controller 20 is moved so as to disconnect the terminals 8—8' by reason of the locking movement of the detent 12. The result is, that if any lights 2 are burning when the actuator 18 is actuated, they are extinguished, and as soon as the actuator 18 returns to normal position, they are again lighted, while if none of the lights 2 are burning when the actuator 18 is actuated, no lights will be lighted upon the mere return of the actuator 18 to normal position. The parts, however, will be in such relation that if one of the lights 2 is turned on, the circuit will immediately be reestablished through the switch plate 5 and the local or solenoid circuit simultaneously broken. On account of the beveled surface on the tail piece 26, the parts are returned to proper position when the actuator is moved during a period when the current from the source has failed for any reason.

In order to insure the proper action of this apparatus with a varying number of lamps 2, I preferably make the resistance of the solenoid 7 high, such, for instance, as 400 ohms, so that whatever the number of lamps the circuit may be, the resistance of the solenoid will be the greater part of the resistance of the circuit, including both lamps and solenoids, thus insuring the coil against burning out during the switch closing action, even when all lamps have been left burning at the time of locking the door.

My invention permits of various modifications without departing from the principle thereof or the scope of the appended claims, as will be evident to those skilled in the art.

What I claim is:

1. In a device of the character described, the combination of switch terminals, of a switch arm tending to move out of engagement therewith, a solenoid core connected to said switch arm, a solenoid for said core, a

local circuit controller for said solenoid, said solenoid and said local circuit controller being in shunt with said switch arm, a circuit controller normally tending to close said local circuit, a detent for holding said switch arm in engagement with said terminals and normally tending to move toward holding position, and actuating means, said actuating means when actuated engaging said detent so as to cause it to release said arm and holding said circuit controller in open position, and when in non-actuated position releasing said circuit controller and being out of operative engagement with said detent.

2. In a device of the character described, the combination of circuit terminals, a switch arm for electrically connecting the same normally tending to move out of engagement therewith, a core connected to said switch arm, a solenoid for said core, a local circuit controller in series with said solenoid and in shunt with said switch terminals, a detent for holding said switch arm in closed position, and an actuator for simultaneously

releasing said detent and restraining said controller in open position when in actuated position and free from said detent and controller when in non-actuated position.

3. In a device of the character described, the combination of circuit terminals, a switch arm for electrically connecting the same normally tending to move out of engagement therewith, a core connected to said switch arm, a solenoid for said core, a local circuit controller in series with said solenoid and in shunt to said switch terminals, a detent for holding said switch arm in closed position, an actuator for simultaneously releasing said detent and restraining said controller in open position when in actuated position and free from said detent and controller when in non-actuated position, and translating devices, said switch arm and controller being in series with said translating devices but not with each other.

GERALD W. HART.

Witnesses:

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