

(No Model.)

J. M. CRONIN.
ELECTRIC SWITCH.

No. 530,472.

Patented Dec. 4, 1894.

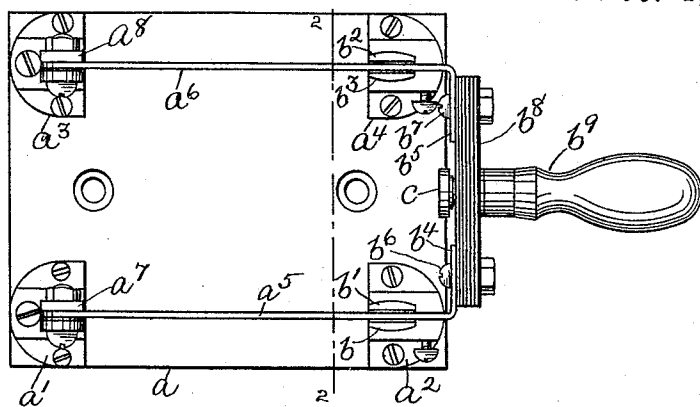


Fig. 1.

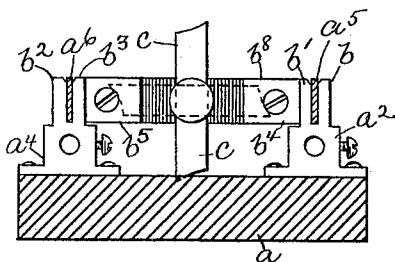


Fig. 2.

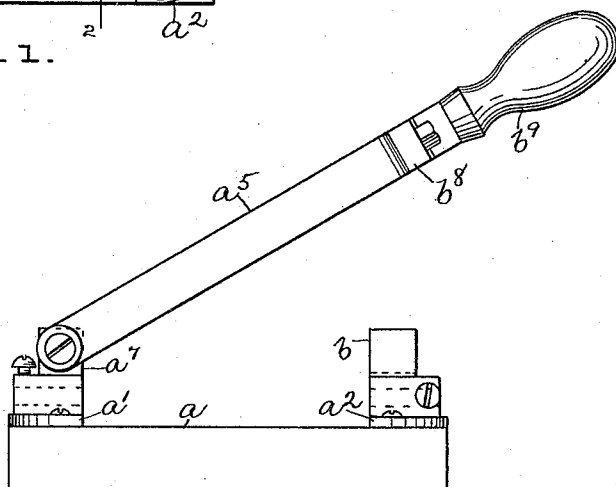


Fig. 3.

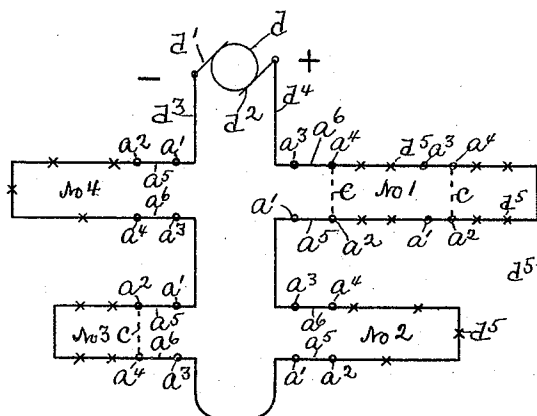


Fig. 4.

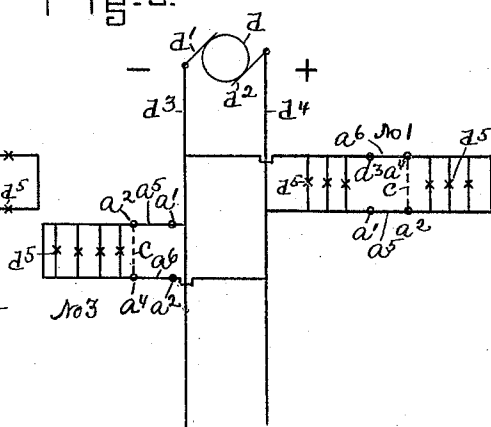


Fig. 5.

WITNESSES.

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UNITED STATES PATENT OFFICE.

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ELECTRIC SWITCH.

SPECIFICATION forming part of Letters Patent No. 530,472, dated December 4, 1894.

Application filed September 22, 1894. Serial No. 523,764. (No model.)

To all whom it may concern:

Be it known that I, JOHN M. CRONIN, residing in Cambridge, county of Middlesex, and State of Massachusetts, have invented an Improvement in Electric Switches, of which the following description, in connection with the accompanying drawings, is a specification, like letters on the drawings representing like parts.

10 This invention relating to electric switches or circuit controllers is herein shown as embodied in a switch of that class commonly known as a double pole single throw-switch, consisting of two sets of terminals or stationary members and two intermediate movable members, adapted in one position to electrically connect the said terminals to complete the circuit, and in another position to disconnect the said terminals and open the circuit.

15 Electric switches of the class referred to, as now commonly constructed, are designed for the purpose of placing the electric circuit in two conditions, viz: either in a closed condition or in an open condition, and when in its closed condition, the translating devices, which may be arc or incandescent lamps are included in the circuit, and which in its open condition, interrupts the circuit for the said translating devices.

20 In many places and especially in buildings employing a large number of lights, it is oftentimes desirous to maintain the lights burning in one or more sections of the building, as for instance, on different floors or in different rooms on the same floor, while at the same time, it may not be desired to use the lights in other sections of the building.

25 This invention has for its object to provide a switch of the class referred to, capable of effecting this result, and in accordance with this invention, the switch is provided with an auxiliary switch or controller co-operating with the movable members of the main switch, whereby a series or group of translating devices or lamps may be retained in circuit with the source of supply, while other lamps normally in circuit therewith, may be shunted out of circuit as will be described. These and other features of this invention will be pointed out in the claims at the end of this specification.

Figure 1 is a top or plan view of one form of double pole switch embodying this invention, the movable member being shown in its closed position and the auxiliary or shunt controller being shown in its normal or open position; Fig. 2, a transverse section of the switch shown in Fig. 1 looking toward the right, the auxiliary or shunt controller being represented by full lines in its open position and by dotted lines in its closed position; Fig. 3, a side elevation of the switch shown in Fig. 1 with the movable member raised into its open position, and Figs. 4 and 5 diagrammatic views to more clearly illustrate the operation of the invention.

This switch herein shown as embodying this invention consists of a base *a* preferably of insulating material, upon which are mounted two sets *a'* *a*², *a*³ *a*⁴ of line terminals, constituting stationary members of the double pole switch and with which co-operate the movable members shown as metallic strips, knives or blades *a*⁵ *a*⁶, the movable member *a*⁵ co-operating with the stationary members *a'* *a*², and the movable member *a*⁶ co-operating with the stationary members *a*³ *a*⁴.

In the present construction, the movable members *a*⁵ *a*⁶ are pivotally secured to uprights *a*⁷ *a*⁸, and are made of sufficient length to pass between separated uprights or jaws *b* *b'*, *b*² *b*³ on the stationary members *a*² *a*⁴, the said movable members as herein shown, being bent at their ends to form arms *b*⁴ *b*⁵, secured as by screws *b*⁶ *b*⁷ to a tie bar *b*⁸ preferably of insulating material, which in the present instance, is provided with a handle *b*⁹ having its shank extended through the tie bar.

The switch thus far described is and may be of the ordinary construction, the movable members *a*⁵ *a*⁶ being electrically separated from each other, so as to establish the circuit, in the closed position of the switch, between the stationary members *a'* *a*² to complete one side of the line, and between the stationary members *a*³ *a*⁴ to complete the other side of the line.

As now commonly practiced, the switch thus far described is interposed in the line circuit containing the lamps, or other translating devices, and when the movable members *a*⁵ *a*⁶ are withdrawn from engagement

with the jaws $b\ b'$, $b^2\ b^3$ of the stationary members $a^2\ a^4$, the said circuit is opened.

In order to enable switches of this construction to be employed in circuits containing a plurality of translating devices or lamps arranged in different parts of the circuit, so as to be utilized in different parts of the building, as for instance, in a manufacturing establishment having a number of floors and different rooms on the said floors, whereby the translating devices in one part of the building may be lighted while the translating devices in the other parts of the building may be cut out of circuit, I have provided an auxiliary switch or controller adapted to remain inactive when it is desired that the circuit on both sides of the switch should remain intact, but which is adapted to be rendered active, so as to maintain the circuit on one side of the switch and open the circuit on the other side of the switch, whereby translating devices or lamps on one side of the switch may be maintained in circuit and, therefore, lighted, while those on the other side of the switch may be cut out of circuit and therefore unlighted, until the main switch is restored to its normal or closed position.

In the present instance, the auxiliary switch or shunt circuit controller comprises a single member herein represented as a metallic bar c mounted upon the shank of the handle b^9 and adapted to be turned by said handle into contact with the arms $b^4\ b^5$ of the movable members $a^5\ a^6$, so as to electrically connect the movable members $a^5\ a^6$ and establish a shunt for that part of the circuit connected with the stationary members $a^2\ a^4$.

In the present embodiment of this invention, the auxiliary shunt controller c normally occupies the position indicated by full lines in Fig. 2, when the main switch is in its closed position and all the lights or translating devices in the circuit are supposed to be in use, but when it is desired to use some of the lights and not others, the auxiliary circuit controller c may be brought into engagement with the arms $b^4\ b^5$ of the movable members $a^5\ a^6$, so as to complete an electric circuit from the movable member a^5 to the movable member a^6 .

The position of the auxiliary controller c is represented by dotted lines in Fig. 2 and by dotted lines in the diagram Figs. 4 and 5.

The operation of my improved circuit controller or switch may be readily understood by reference to Figs. 4 and 5. In Fig. 4, d represents a dynamo or other source of supply, and $d'\ d^2$ the usual brushes to which the line wires $d^3\ d^4$ are connected. In Fig. 4, the circuit is arranged to represent four different branches from the main circuit, which may be supposed to correspond to different floors of a building. To better enable this invention to be understood, let it be supposed that the branch marked "No. 1" corresponds to the first floor; No. 2 to the second floor;

No. 3 to the third floor, and No. 4 to the fourth floor, the translating devices or lamps being represented by the crosses d^5 .

From an inspection of Fig. 4, it will be seen that all the lamps included in the circuit are in series with each other, and that if the main switch line shown in Fig. 1 should be interposed in any one of the branches and should be opened, the complete circuit would be broken and all the lights included in the circuit would be put out.

In Fig. 4, I have represented the switch shown in Fig. 1 by the small circles, which represent the terminals a' , a^2 , a^3 , a^4 , and the circuit line representing the movable members $a^5\ a^6$, while the dotted line connecting the terminals $a^2\ a^4$ represents the controller c and the arms $b^4\ b^5$ with which it co-operates. In the branch marked No. 1 in Fig. 4, eight lamps d^5 are represented as arranged in two groups of four each. For purpose of illustration, one group may be supposed to be located in one or more rooms on the floor No. 1, or on one side of the floor, and the other group may be supposed to be located in one or more different rooms on the floor or on the other side of the floor. In order to control these two different groups of lamps, I prefer to interpose in the branch No. 1 two of my improved switches, so that one group of lamps in the branch may be cut out of circuit and rendered inoperative, while the other group in the same may remain in circuit, and when it is desired to cut out both groups or all the lamps in the branch No. 1, the controller interposed between the lamps and the source of supply may be operated. In Fig. 4, I have represented the auxiliary or shunt controller c of both switches as in its active position, but it will be understood that when the controller c of the switch in the branch No. 1 most remote from the dynamo d is in contact with the movable members $a^5\ a^6$, the controller c of the switch nearest the dynamo may be at such time, in its open or full line position, Fig. 2, and, therefore, the circuit will be maintained through the first group of lamps, but the second group will be shunted out of circuit. If now, it is desired to positively open the branch No. 1 and thereby cut out all the lamps included in it without destroying the continuity of the circuit throughout the remaining portion of the building, the circuit controller c of the switch nearest the dynamo will be brought into its dotted line position, Fig. 2, and the movable members may then be withdrawn from contact with the stationary members $a^2\ a^4$ and render the branch No. 1 absolutely dead, while at the same time, the remaining portion of the circuit is maintained intact. In the branches Nos. 2 and 4, the switches are shown in their closed position with the shunt controller in its normal position, which is represented by the absence of the dotted line c , while in the branch No. 3, the lights are represented as cut out of circuit.

In Fig. 5, I have represented the switch in use with the multiple arc arrangement of the lamps, and have represented two branches from the main line $d^3 d^4$, which branches may be supposed to be Nos. 1 and 3 of the diagram Fig. 4. In Fig. 5, the controller c is represented as shunting out the group of lamps beyond it, while the group of lamps between it and the dynamo are in circuit and the group of lamps in the branch No. 3 are represented as cut out.

By means of the auxiliary controller co-operating with the movable members of the main line switch, sparking of the switch between the movable members $a^5 a^6$ and their co-operating terminals $a^2 a^4$ is prevented, when the said movable members are withdrawn from engagement with the stationary members and also when brought in contact therewith.

In the present instance, I have shown the auxiliary controller co-operating with the movable members of the main switch, as a single bar co-operating with the bent arms $b^4 b^5$, and while I may prefer this construction, I do not desire to limit my invention in this respect, as the auxiliary controller may itself be made in other forms, so as to complete the circuit between the said movable members when the latter are removed from engagement with the terminals $a^2 a^4$, and to open the circuit thus formed when the movable members

are brought into engagement with the terminals $a^2 a^4$.

I have herein shown this invention as embodied in a double pole single throw switch, but I do not desire to limit my invention in this respect, as it is equally well adapted to be used with a double pole double throw switch.

I claim—

1. The combination with a double switch provided with movable members $a^5 a^6$ insulated from each other, a tie bar connecting said members, a handle carried by said tie bar, and an auxiliary circuit controller co-operating with the members $a^5 a^6$ and adapted to be rendered operative by the said handle to electrically connect the said members, substantially as described.

2. The combination with a double pole switch provided with movable members $a^5 a^6$, a tie bar b^8 connecting the said members, a handle carried by said tie bar, and an auxiliary controller adapted to be brought in contact with the movable members by operation of the said handle, substantially as described.

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

JOHN M. CRONIN.

Witnesses:

JAS. H. CHURCHILL,
J. MURPHY.