(No Model.)

S. H. SHORT.

MAGNETIC SWITCH LOCK.

No. 588,489 Patented Aug. 17, 1897.

Fig. 1.

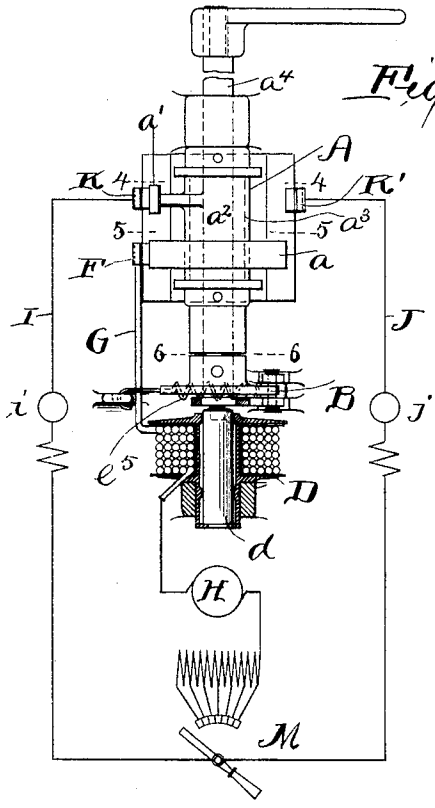


Fig. 2.

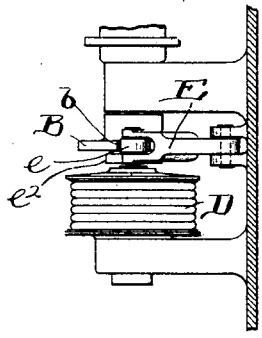


Fig. 3.

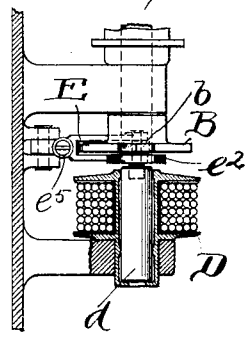


Fig. 4.

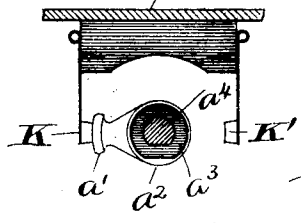


Fig. 5.

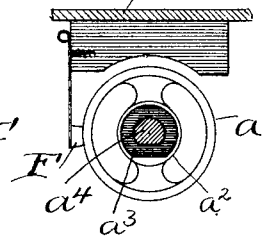
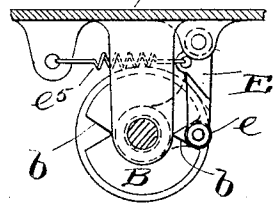


Fig. 6.



Witnesses
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By his Attorney
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THE NORRIS PETERS CO. PHOTO-LITHO., WASHINGTON, D. C.

UNITED STATES PATENT OFFICE.

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MAGNETIC-SWITCH LOCK.

SPECIFICATION forming part of Letters Patent No. 588,489, dated August 17, 1897.

Application filed December 22, 1896. Serial No. 616,640. (No model.)

To all whom it may concern:

Be it known that I, SIDNEY H. SHORT, a citizen of the United States, residing at Cleveland, in the county of Cuyahoga and State of Ohio, have invented certain new and useful Improvements in Magnetic-Switch Locks; 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 a novel lock for an electric switch, the object being to compel the current itself to prevent the movement of a switch, whose function is to change the path of said current, thereby making it necessary to shut off the current by means of another switch before the locked switch can be moved.

The drawings show, and I will describe in detail, a simple but effective embodiment of the invention; but it will be apparent to all electricians that the primary invention may be embodied in many different specific forms.

In the drawings, Figure 1 is a front elevation of a switch associated with one form of my magnetic-switch lock. Fig. 2 is a right side view of the switch shown in Fig. 1. Fig. 3 is a sectional left side view thereof. Fig. 4 is a sectional plan view thereof on line 4 4. Fig. 5 is a sectional plan view on line 5 5, and Fig. 6 is a sectional plan view on line 6 6, of Fig. 1.

The switch A shown is a rotary switch; but that is not an essential characteristic. It consists of a contact-ring a and a contact-arm a', which are electrically connected. As shown, they are parts of a metallic sleeve a^2, which is secured upon, but insulated by, a sleeve a^3 from the shaft a^4. The contact-ring a contacts at all times with a spring contact-finger F, which is connected by a suitable conductor G with one pole of the generator H. The contact-arm a' may contact with either of two spring-fingers K K', which are respectively connected with the other pole of the generator by two independent lines I and J. The function of the switch A is to change the path of the current from one of the lines I and J to the other. Any suitable translating devices—as, for example, the motors i and j—may be connected in the lines I and J.

Secured to the shaft a^4 is an indicator-wheel B, having two notches b, which correspond with the two positions of the switch. A latching-arm E, which is pivoted to a fixed support, has at or near its end a stud or pin e, upon which a friction-roller may be mounted, which is adapted to engage in either of the notches b. This arm may be moved to effect this engagement by a spring e^5, as shown in Figs. 1 and 6. So long as this engagement is maintained by preventing the movement of said arm the movement of the switch is impossible. The unlatching movement of this arm is prevented by the action of an electromagnet D, which is connected in the main circuit between the generator and the finger F. This magnet in the form shown is a solenoid, the armature d of which is drawn upward by the magnetic force.

Rigidly secured to the arm E is a second arm e^2, with which the armature d engages when drawn up, as described, thereby preventing the unlocking movement of the arm E.

So long as the current flows through the coils of the magnet the switch A will be locked, and the only way to unlock the switch is to entirely shut off the current, which may be done by means of a switch M. When this is done, the solenoid-armature d will fall, thereby releasing lever E. Then, and not till then, may the switch A be moved.

Although I have shown and described only one form of the invention, it will be clear to electricians that the form of the switch to be locked is not an essential part of the primary invention. Nor is the particular form of mechanical latch, nor the particular form of the electromagnet essential to the primary invention. It is only essential that a suitable mechanical latch be provided for locking the switch in its different positions and that an electromagnet be connected in the main circuit between the generator and switch, and that such magnet be so constructed and arranged in any suitable manner that its magnetic force will prevent the unlatching movement of the mechanical latch.

Having described my invention, I claim—

1. The combination of an electric switch for changing the path of the current, a mechanical latch therefor adapted to lock the switch in at least two positions, and an elec-

tromagnet connected in the main circuit and exerting its magnetic force to prevent the unlatching movement of said latch, and susceptible to the ordinary current flowing through the same, substantially as and for the purpose specified.

2. The combination of an electric switch for changing the path of the current, a mechanical latch adapted to lock the same against movement causing any change of the path of the current, an electromagnet exerting its magnet force to prevent the unlatching movement of said latch, and electric conductors connecting said magnet with a source of supply and with said switch, said conductors and magnet forming a constant part of the circuit which the switch changes, whereby the switch is locked against any change of the path of the current when the current is passing, substantially as described.

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

SIDNEY H. SHORT.

Witnesses:
E. L. THURSTON,
E. B. GILCHRIST.