

(No Model.)

S. A. STEWART.  
ELECTRIC SWITCH.

No. 570,068.

Patented Oct. 27, 1896.

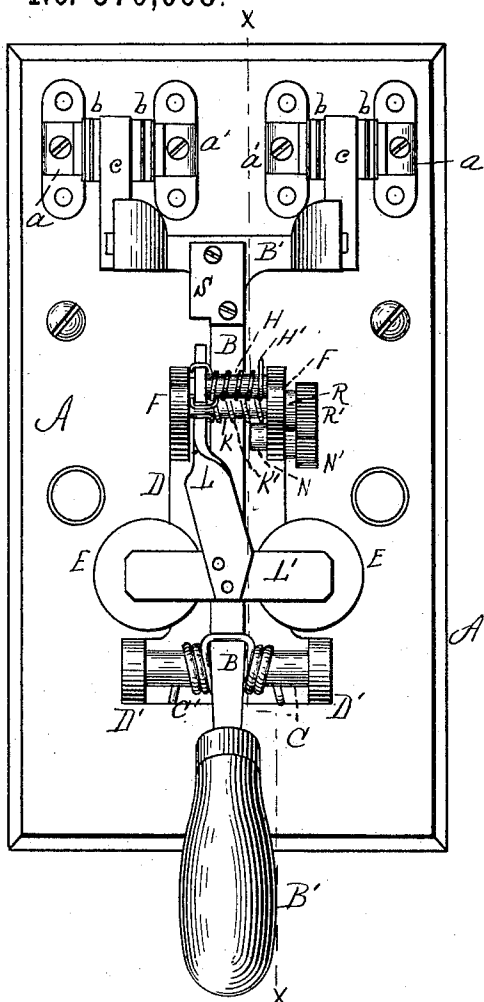


FIG. 1.

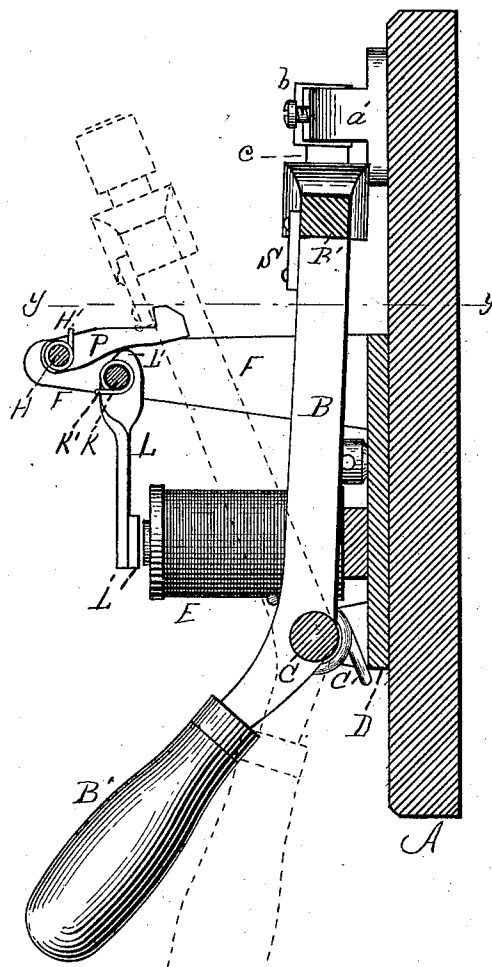


FIG. 2.

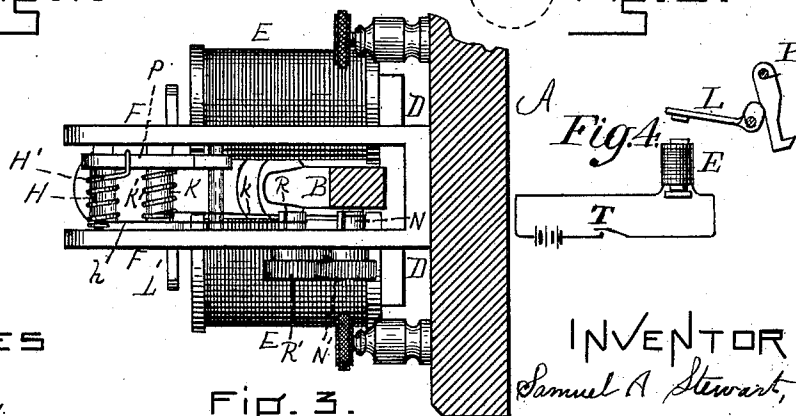


FIG. 3.

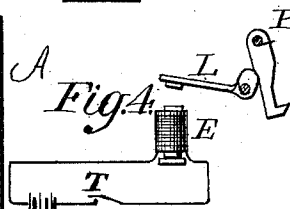


Fig. 4.

WITNESSES

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# UNITED STATES PATENT OFFICE.

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## ELECTRIC SWITCH.

SPECIFICATION forming part of Letters Patent No. 570,068, dated October 27, 1896.

Application filed March 12, 1896. Serial No. 582,858. (No model.)

*To all whom it may concern:*

Be it known that I, SAMUEL A. STEWART, a citizen of the United States, residing at Waltham, in the county of Middlesex and State of Massachusetts, have invented a new and useful Improvement in Electric Switches, of which the following is a specification.

This improvement relates to that class of electric switches in which an electromagnet and suitable means are employed to make or break the circuit. It is preferably employed, however, on a closed circuit, the pressure upon the button breaking the circuit and releasing the armature, and thus switching on the current, as, for example, for the purpose of turning on the electric light in a building.

The nature of the invention is fully described below and illustrated in the accompanying drawings, in which—

Figure 1 is a plan view of an electric switch embodying my invention. Fig. 2 is a section taken on line *x*, Fig. 1. Fig. 3 is a section taken on line *y*, Fig. 2. Fig. 4 is a small diagram illustrating a normally open circuit with the detent and switch-lever in position, the other figures illustrating a normally closed circuit.

Similar letters of reference indicate corresponding parts.

A is the base, of suitable non-combustible insulating material. Mounted on this base are two pairs of binding-posts, each consisting of the post *a*, connecting with the source of electricity, and the post *a'*, connecting with the delivery. The main and delivery binding-posts are adapted to be connected electrically by the contacts *b* on the outer ends of the arms *c*, made of non-conductive material and extending from the cross-bar *B'*, integral with the arm or lever *B*, provided with the handle *B''* and sustained by the rock-shaft *C*, supported by the ears *D'*, extending from the frame *D*, which is secured to the base *A*. The arm or lever *B* is held normally down in the position indicated in full lines in the drawings by means of the spring *C'*. An electromagnet *E* is mounted on the frame *D*. Thus far there has been nothing new described in the device.

Extending at right angles from the portion *D* and making a part of the frame are the two parallel bars *F*. Supported loosely at their

opposite ends by these bars are the rock-shafts *H* and *K*. Fast on the rock-shaft *K* is the arm *L*, to whose outer end is secured the armature *L'*. This armature is held normally down upon the magnet by the spring *K'*, one end of which is secured to the arm *L* and which, after coiling around the shaft *K*, has secured to its other end a cord *k*, which extends to and is adapted to be wound around a pin *N*, held by friction and adapted to be rotated in one of the uprights *F* by a suitable thumb-piece *N'*. Rotating this pin regulates, by means of the cord *k*, the tension of the spring *K*, and hence the pressure of the armature upon the magnet, in addition to the power exerted by the magnet itself. Fast on the rock-shaft *H* is a hook or trip *P*, which extends toward the base and whose plain portion is held against the projection *L''* on the hub of the armature-arm *L* by means of a spring *H'*, which coils around the rock-shaft *H*, has one end engaged with the trip *P*, and has the other end connected by means of a cord *h* with the regulating-pin *R*, held in one of the bars *F* in manner similar to the pin *N* and adapted to be rotated by the thumb-piece *R'*. By this means the tension of the spring *H'* is regulated.

The practical operation of the device is as follows: Suppose the parts *a a' b* to be on an electric circuit for lighting a building. Now, if the lights are to be extinguished, the handle is pressed against the power of the spring *C'*, so that the parts *B B' c* are in the position indicated by broken lines in Fig. 2. When the parts are in such position, of course the electric lights are turned off. When the parts are in this position, the power of the magnet over the armature *L'* is, in connection with the power of the springs *H' K'*, sufficient to hold said armature down against the magnet, thus causing the portion *L''* of the hub of the armature-arm *L* to force the hook portion of the trip *P* under a projecting plate *S*, which is secured to the arm or lever *B*. If the circuit with which the magnet is connected is broken by pressing an ordinary button, the armature is released and the parts *B B' b* fly into the position indicated by full lines, thus turning on the lights, the power of the spring *C'* being sufficient to overcome the power of the springs *H' K'* and cause the plate *S* to ex-

ert sufficient pressure upon the hook portion of the trip P to swing said trip back against the power of said springs H' K', raising the armature. As soon as the parts are in the position thus described the armature resumes its position against the magnet and the portion L'' and trip P resume their original positions.

The tension of the springs H' K' with relation to each other and with relation to the armature is regulated by the friction tension-pins N R, as above intimated.

Having thus fully described my invention, what I claim, and desire to secure by Letters Patent, is—

1. In an electric switch of the character described, the combination of the arm or lever B carrying the contacts, and adapted to hold said contacts in circuit by a suitable spring; an electromagnet supported by a suitable frame; the rock-shaft K supported by said frame; the armature-arm L fast on said rock-shaft and supporting the armature and provided with the projection or cam L''; the rock-shaft II supported by said frame; the trip P on said shaft, bearing against said projection or cam and adapted to catch in a suitable projection extending from the arm or lever B; and a spring of sufficient power to hold said

trip in engagement with said arm or lever by the aid of the power of the magnet upon the armature, but of insufficient strength to support the trip in such engagement without the aid of said magnet, substantially as described.

2. In an electric switch of the character described, in combination, the arm or lever B provided with the projection S and held normally in circuit by a spring; an electromagnet supported by a suitable frame; the armature-arm L supporting the armature, provided with the projection or cam L'', and supported by a shaft sustained by the frame; the spring K' acting on said armature-arm, and the tension-adjusting pin connected with said spring by a suitable cord; the trip P supported by the shaft II and adapted to catch under the said projection S and with its opposite sides bearing against the cam on the armature-arm; and a spring holding said trip normally against said cam and provided with a tension-adjusting mechanism comprising a suitable pin and connecting-cord, substantially as set forth.

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Witnesses:

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