(No Model.)

P. J. TRACY.

ELECTRIC SWITCH.

No. 385,023. Patented June 26, 1888.

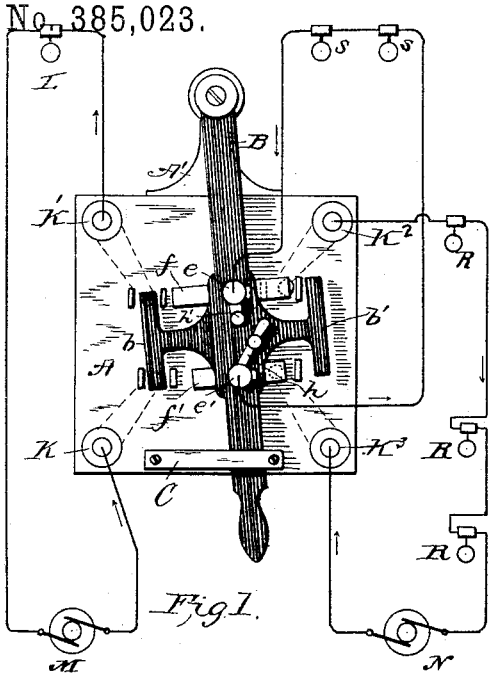

Fig. 1.

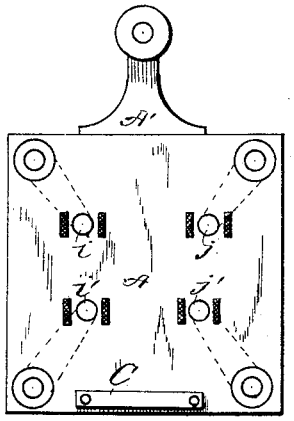

Fig. 2.

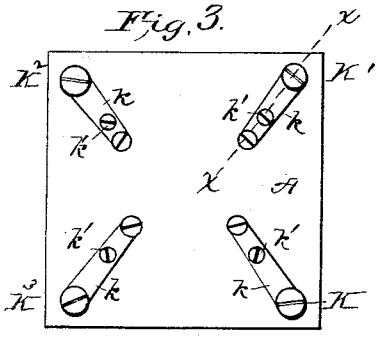

Fig. 3.

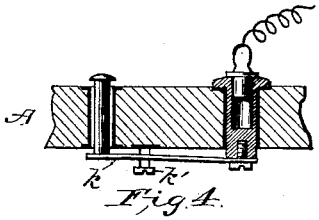

Fig. 4.

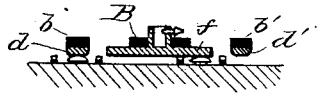

Fig. 5.

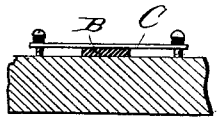

Fig. 6.

WITNESSES:

Wm. A. Rosenbaum

G. H. Stockbridge

INVENTOR.

Patrick J. Tracy.

BY W. J. Johnston.

ATTORNEY.

UNITED STATES PATENT OFFICE.

PATRICK J. TRACY, OF RACINE, WISCONSIN.

ELECTRIC SWITCH.

SPECIFICATION forming part of Letters Patent No. 385,023, dated June 26, 1888.

Application filed March 23, 1887. Renewed May 17, 1888. Serial No. 274,197. (No model.)

To all whom it may concern:

Be it known that I, PATRICK JEROME TRACY, a citizen of the United States, residing in Racine, in the county of Racine and State of Wisconsin, have invented certain new and useful Improvements in Electric Switches; and I do hereby declare that the following is a full, clear, and exact description of my invention, such as will enable others skilled in the art to which it appertains to make and use the same.

My invention has reference especially to electric switches such as are used in connection with electric systems.

The object of my invention is to provide a switch by means of which it shall be possible to disconnect one or more electric lamps from the circuit of a given generator and connect the same lamp or lamps with another generator without any perceptible change in the burning of the lamps. My switch is capable of application to other uses besides the one specified, and I do not wish to limit myself to that single use. I have shown it, however, applied to such a purpose in the accompanying drawings, in which—

Figure 1 is a front view of my switch, showing also a diagram of the circuits. Fig. 2 is the same view of the switch with the switch-lever removed. Fig. 3 is a rear view. Fig. 4 represents a section through line *x x* of Fig. 3; Fig. 5, a similar section through line *y y* in Fig. 1, and Fig. 6 shows a detail.

Referring to the drawings, A represents the base of my switch, which may be made of wood or other good insulating material, or may be constructed of metal and have the parts properly insulated from it. When it is made of metal, I propose to cover it with a veneer of some good insulating substance, preferably mica. At one end of the base A, or upon an extension, A′, thereof, is pivoted a lever, B, which constitutes my switch-lever. This lever is made of hard rubber or some equivalent material, and is provided centrally with T-shaped lateral projections *b b′* on each side. This lever can be swung across the face of the base A, its motion being limited in either direction by a cleat, C, through which the free end of the lever passes. The cleat is secured to the base by screws, which are provided with soft-rubber washers, so as to exert a yielding pressure upon the lever-arm. Upon the inner surface of the projections *b b′*, and extending along the whole head of the T-head, are conducting-strips *d d′*, the purposes of which will be explained hereinafter. The lever B carries upon its outer surface binding-posts *e e′*. Electrically connected therewith and supported upon the inner surface of the lever are conducting-strips *f f′*. Between the binding-posts *e e′* is located a normally-open switch, *h h′*.

The parts above described as forming part of or attached to the lever B partake of course of its motion. Within the range of its motion and permanently attached to the base A are located contacts which correspond to those which are carried by the switch-arm. These stationary attachments consist of two pairs of connecting-posts, *i i′* and *j j′*, on opposite sides of the switch-lever. The space between the strips *d d′* is greater than that between the opposite pairs of posts; but the posts of each pair are at such a distance apart as to be pressed upon by one of the strips when it is brought into the proper position.

When, for example, the lever is in its extreme right position, as shown in Fig. 1, the strip *d* will span the space between the posts *i i′* and make contact with both. When the lever is in its extreme left position, this contact will be broken and a new one will be made between the strip *d′* and the posts *j j′*. In the former position the conducting-strips *f f′* are in contact with the posts *j j′*, and in the latter position the said strips are in contact with the posts *i i′*.

Now the connecting-posts above mentioned are insulated posts which extend through the base A and are pressed outward by conducting-springs *k* behind the said base. The said springs are attached to the rear portion of binding-posts K K′ K² K³, and each spring is adjustable as to tension by means of a screw, *k′*, which bears against the rear of the base, or against a piece of insulating material thereon. The posts K K′ K² K³ form the main binding-posts of my switch. The two former are connected up, as shown in Fig. 1, through an electric lamp, L, with a dynamo-electric generator, M. The other two are connected, through the lamps R R, with a similar generator.

The lamps above mentioned are in the above arrangement constantly connected with their respective generators. I connect, however, with the binding-posts *e e′* on the switch-lever the lamps which I wish to transfer from

one circuit to the other. These lamps are represented at S S in the drawings. The number of lamps in the different circuits may of course be varied at will and according to circumstances.

Tracing now the circuit of the generator M, it passes to the binding-post K, thence by spring *k* to the post *i'*, along the strip *d* to the post *i*, by the spring *k* to the post K', and back through the lamp to the generator. This represents the course of the current when the switch is in the position shown in Fig. 1. The circuit of generator N passes through the following course: The binding-post K^2, contact-spring *k*, connecting-post *j*, conducting-strip *f*, post *e*, lamps S S, post *e'*, conducting-strip *f'*, connecting-post *j'*, conducting-spring *k*, binding-post K^3, and back to the generator.

It is apparent that under the conditions illustrated in Fig. 1 the generator N is supplying five lamps while the generator M is supplying but one. Now the simple reversal of the switch-lever will cause the relations to be so changed that both generators will be supplying the same number of lamps. It is not thought necessary to trace the circuits in detail. It is only necessary to call attention to the fact that, so far as the circuit of the generator M is concerned, the direct connection between the posts *i* and *i'* is broken by the turning of the switch, and the loop containing the lamps S S is switched in between the two posts. On the other hand, the said loop has been cut out of the circuit of the other generator and a direct-connection has been furnished from the post *j* to the post *j'*—that is to say, the two lamps S S have been cut out of the circuit of the generator N and cut into the circuit of the generator M.

It may be desirable at times, in view of an accident, or for some reason, to cut out altogether the loop containing the lamps S S. In that case it is only necessary to close the switch *h h'*, when a short circuit will be formed between the posts *e e'*, cutting out the loop.

It will be observed that the posts *i i'* and *j j'* are held out into the path of the switch-lever by springs, and that, on the other hand, the lever itself is held to its work by the elastic washers acting on the cleat C. Thus there is throughout a spring-contact between the different electrical contact-pieces tending to secure certain electrical connection. I prefer to make the springs *k* of copper or of good spring metal plated with copper. In general, the parts which make contact will be faced with copper or with some good conducting material. To insure a broad and clean surface of contact, I place on the insides or on each side of the posts *i i'* and *j j'* metallic strips *o*, having their outer surfaces roughened. The roughened strips act as files for keeping contact-surfaces bright and clean. The strips are supported upon pieces of soft rubber attached to the base A, so that the contact-surfaces carried by the switch-lever B rub across them whenever the switch is reversed. In this way I make it certain that all corrosion of the contact-surfaces will be prevented or removed.

It is obvious that I may carry the circuit of either generator direct to the switch-binding posts without passing through any lamps or other translating devices, and that all the lamps may be inserted in the loop-circuit. In that case I can connect the loop with either generator, and when that generator is disabled and in need of repair, or when I wish to employ it for other purposes, I can disconnect the loop and connect it up with the other generator; or I can, as in the system illustrated in the drawings, transfer a portion only of my translating devices from one circuit to another.

The movement of my switch-lever from one side to the other being practically instantaneous, there will be no perceptible effect upon the lamps transferred.

Having now described my invention, what I claim is—

1. The combination, with two electric generators, of a switch-board supporting the terminals of the generator-circuits, and a switch-arm carrying a bridge for each pair of terminals, and also conducting-strips which form the terminals of a loop circuit containing translating devices, the arrangement of the parts being such that when one pair of terminals is bridged the other pair will be in contact with the conducting-strips, whereby the loop can be cut out of the circuit of one generator and into that of the other at will.

2. The combination, with the generators M and N, their circuits, and the circuit-terminals *i i'* and *j j'*, of the switch-lever B, the loop-circuit connected therewith, the binding-posts *e e'*, the strips *f f'*, and bridges *d d'*, whereby the loop can be switched into and out of either circuit at will.

3. The combination, with a loop circuit containing translating devices and a switch carrying the loop-terminals, of a cut-out, as *h h'*, for making a direct connection between the terminals, as set forth.

4. The combination, with a moving contact-terminal, of a cleaner or polisher located in the path of motion of the said terminal, the said cleaner being elastically supported, as and for the purpose set forth.

5. In an electric switch, the combination, with the switching-lever having bridge-pieces, as described, and a spring-supported cleat tending to force the lever toward contact-pieces, of contact-pieces provided with springs to force them toward the lever, whereby the contacts are continually pressed toward each other to insure good connections, substantially as described.

In witness whereof I have hereunto affixed my seal and signed my name in the presence of two subscribing witnesses.

PATRICK J. TRACY. [L. S.]

Witnesses:
CHAS. J. SKOW,
WILL H. PERRY.