

(No Model.)

E. WESTON.

ELECTRICAL SWITCH OR CIRCUIT CONTROLLER.

No. 316,096.

Patented Apr. 21, 1885.

Fig. 1.

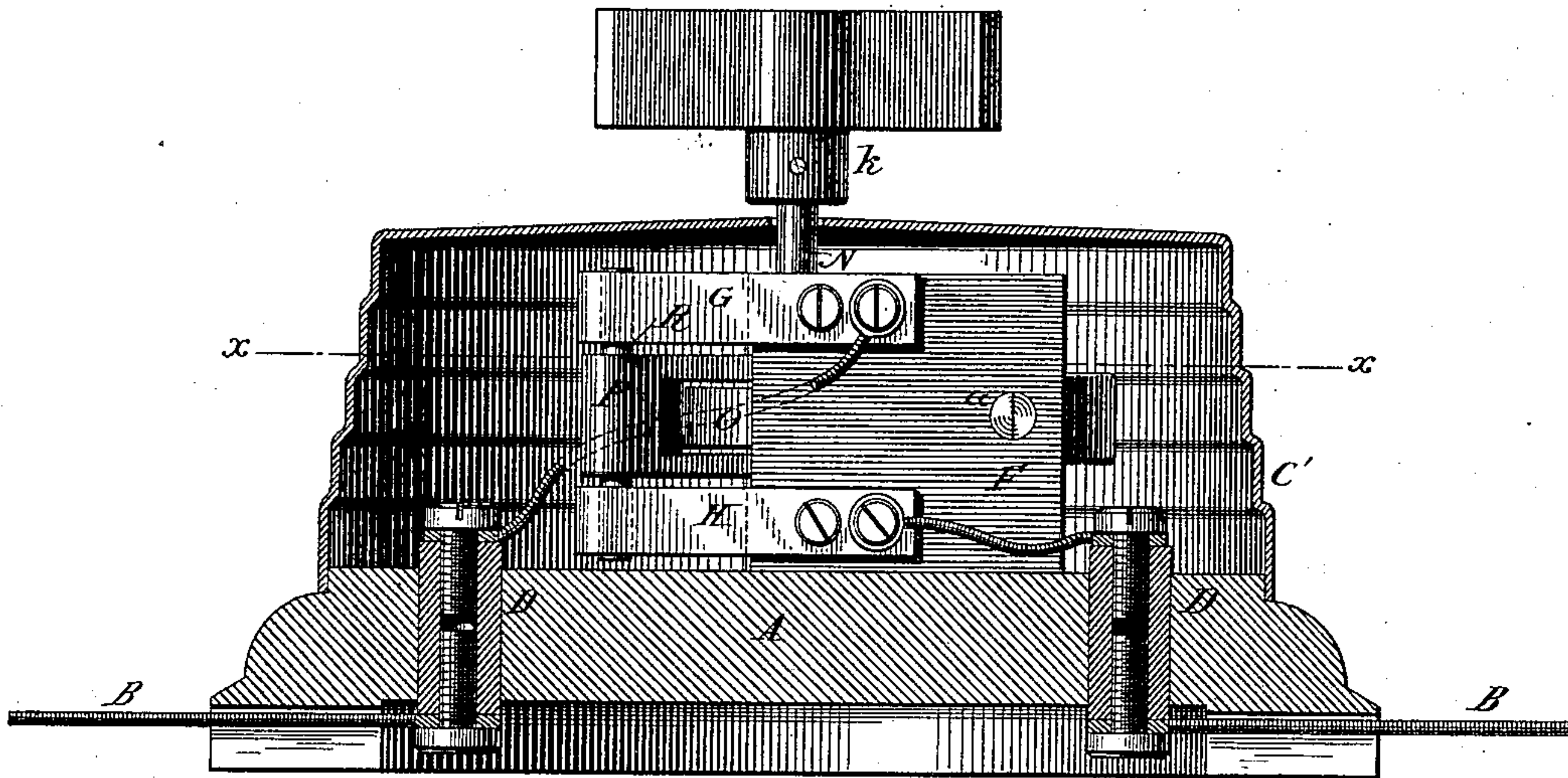
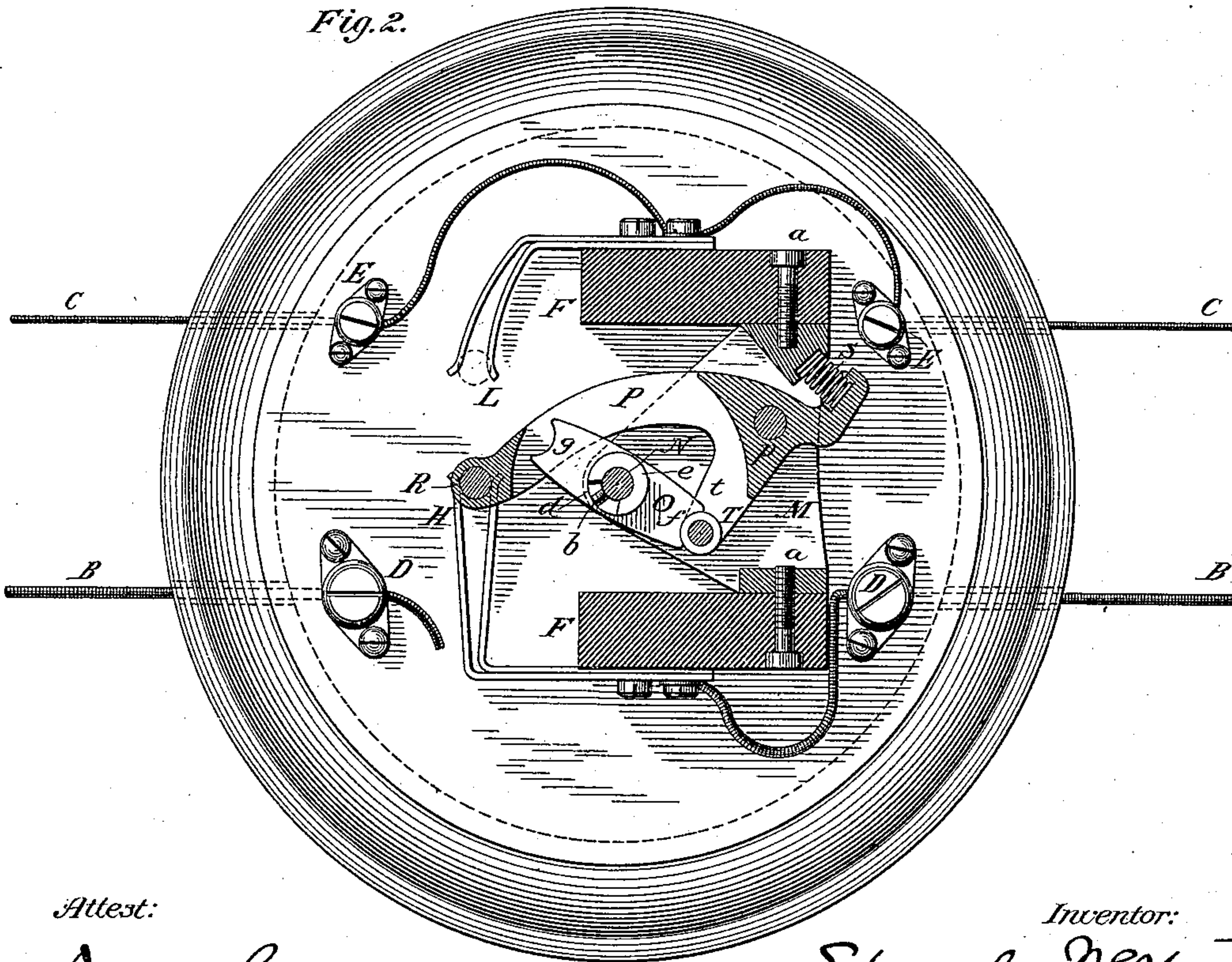


Fig. 2.



Attest:

Raymond H. Barst.
W. Frisby.

Inventor:

Edward Weston
By Parker W. Page
att'y.

UNITED STATES PATENT OFFICE.

EDWARD WESTON, OF NEWARK, NEW JERSEY, ASSIGNOR TO THE UNITED STATES ELECTRIC LIGHTING COMPANY, OF NEW YORK, N. Y.

ELECTRICAL SWITCH OR CIRCUIT-CONTROLLER.

SPECIFICATION forming part of Letters Patent No. 316,096, dated April 21, 1885.

Application filed September 26, 1884. (No model.)

To all whom it may concern:

Be it known that I, EDWARD WESTON, a subject of the Queen of Great Britain, and a resident of Newark, in the county of Essex and State of New Jersey, have invented certain new and useful Improvements in Electrical Switches or Circuit-Controllers, of which the following is a specification, reference being had to the drawings accompanying and forming a part of the same.

In certain systems of electric lighting it is often desirable to make use of circuit-controlling devices that are capable of closing a break in one circuit at the instant of interrupting another. This would be necessary, for instance, in cases where a manual switch is employed to cut a lamp or other device out of circuit, and at the same time close a shunt with or without a resistance, through which the circuit may be maintained around the lamp; or it is necessary in such a system as that described by me in Letters Patent No. 304,882, dated September 9, 1884, in which a certain number of lamps are run in series in cross or multiple-arc circuits, and controlling-circuits used for interrupting the cross or lamp circuits when all the lamps in the same have been extinguished.

In all cases, but more particularly so in the system just referred to, where currents of considerable strength are used, certain capabilities of the switch or circuit controlling mechanism are extremely desirable. For example, provision must be made for preventing the formation or continuance of an arc between the separating-points of contact. The switch should be so organized that the operation of breaking one circuit shall infallibly effect the closing of a break in the other, while it is hardly less desirable that the device should be capable of but one mode of operation, in order that unskilled persons in using it will not injure the operative parts or cause any derangement of the system.

I have devised a switch embodying these qualities and distinguished by certain novel features, which I will describe by reference to the accompanying drawings, in which—

Figure 1 is a side elevation of the switch mechanism with the case and supports in sec-

tion. Fig. 2 is a horizontal section of the same on line *x x*, the cover or case being omitted.

The switch mechanism is mounted on an insulating-base, A. The wires B B of one circuit and C C of the other are connected to the binding-posts D D and E E.

F F are two blocks of insulating material secured to base A. To these blocks are secured the contact-springs G H K L in the following manner—that is to say, the springs are bent at right angles and laid together in pairs. The pairs G H are secured to one block and the pairs K L to the other. The free ends of the springs are slightly spread, as shown.

Between the blocks F F, and secured there to by means of screws *a a*, is a metal frame or support, M. Passing up through this frame and the cover C', that is employed to inclose the switch, is a spindle, N, turned by a key, *k*. On spindle N is a button or cam, O, fitting loosely on the spindle, but limited in its movement thereon by the screw or pin *b*, set in the spindle and projecting through the slot *d* in the sleeve *e*. The object of this construction is attained, as will more fully appear hereinafter, by having the button fixed to the spindle, but making the key *k* movable with respect to the spindle, or in any well-known way equivalent to this.

P is a lever pivoted at *p*, near one end. R is a metal bar fixed at right angles to the lever, and near the extremity of the long end, so that by the oscillations of the lever the bar will be brought between the ends of the contact-springs, secured to either block. Between the short end of lever P and the frame M is a stout spiral spring, S, that exerts a force tending to keep the bar R in contact with the springs K L. A horizontal projection, *t*, from the lever P carries a roller, T, on a short vertical spindle, and upon this the cam O operates.

From the binding-posts D D connections are made to the springs G H, respectively, and similar connections are also made from posts E E to springs K L.

The following is the mode of operation of this device: Assuming the pin or bar R to be held by the force of spring S between springs K L, the circuit C C will thus be completed

through the switch, but the circuit B B interrupted. If the spindle N be now turned in either direction, the cam O is brought into contact with the roller T, and by the movement thereby imparted to the lever P the spring S is compressed and bar R brought over into contact with the springs G H. When the parts have reached this position, the roller T enters a notch, *f* or *g*, in the button O and locks the switch. The circuit B B is now completed through the switch and the circuit C C interrupted. To break the circuit B B, the spindle N is turned in either direction by a slight application of force. The roller T, on leaving the notch *f*, drops along the side of the button O, throwing the same backward. This is done instantly by the force of spring S, as the button O, being free to make a partial turn around the spindle N, offers no opposition to the movement of lever P. The interruption of circuit B B is thus effected instantaneously and the formation or continuance of an arc prevented. It is easy to see that the exact construction and relation of the parts described may be somewhat modified without departure from the invention. I have, however, shown the relative proportions and arrangement which I believe to be best adapted to practical purposes. The roller T, or, in general, the part of the lever upon which the cam O acts, has a much shorter range of movement than the long end of the lever P, and the spindle N and cam O are so located with respect to the rollers that by turning the spindle in either direction, so as to bring the cam against the roller, the spring S will be compressed.

It is obvious that the same principle of construction might be extended, and devices of similar character to those here shown employed to make more than one circuit on breaking another, or conversely, and, in general, that the switch may be used for a variety of purposes. Inasmuch, however, as the application of this principle to what are known as "gang-switches" involves certain features of novelty, the same will be made the subject of another application for patent.

In Patent No. 298,144, of May 6, 1884, I have shown and described a switch in which a spring-actuated lever is moved by a spindle and cam; and this feature I do not therefore claim herein.

The present form of switch is not only devised for a special purpose, but it is in certain respects an improvement on that shown in the patent referred to. The location of the spindle with reference to the lever P, which is slotted or cut away to permit the button or

cam O to be turned in it, secures great compactness of construction and makes a considerable range of movement of the contact-bar R possible.

What I claim as my invention is—

1. The combination, with circuit-terminals and a spring-impelled contact-lever, of a spindle and loose cam or button with limited range of movement around the spindle for operating the contact-lever in substantially the manner described.

2. The combination, with opposed sets of contacts constituting terminals of independent severed circuits, and a spring-impelled contact-lever pivoted in position to close one of said circuits or breaking the other, of a spindle carrying a cam or button adapted to impart movement to the lever in substantially the manner set forth.

3. The combination of opposed contacts constituting the terminals of independent severed circuits, a contact-lever pivoted in position to move from one set of contacts to the other, a spring tending to keep the lever in engagement with one set of contacts, and a spindle and cam for imparting movement to the lever by engaging with a projection therefrom in substantially the manner set forth.

4. The combination, with the pivoted lever carrying the bar or pin R, and formed with a projection, *t*, of the spiral spring S, the opposed contacts G H K L, and a spindle and cam for engaging with a roller carried by the projection *t* and imparting movement to the lever, substantially as and for the purpose set forth.

5. The combination, with the slotted lever carrying the contact-pin R, and formed with a projection, *t*, of the spiral spring S, the opposed contacts G H K L, and a spindle and a cam or button arranged to turn in the slot in the lever and to engage with a roller carried by the projection *t*, as and for the purpose specified.

6. The combination, with opposed sets of circuit-terminals, of a lever pivoted in position to be moved from contact with one set of terminals into contact with the other, a spring acting upon said lever in one direction, and a spindle with a notched cam or button for engaging with a projecting part of the lever and moving the same in substantially the manner set forth.

In testimony whereof I have hereunto set my hand this 15th day of September, 1884.

EDWARD WESTON.

Witnesses:

W. FRISBY,

RAYMOND F. BARNES.