

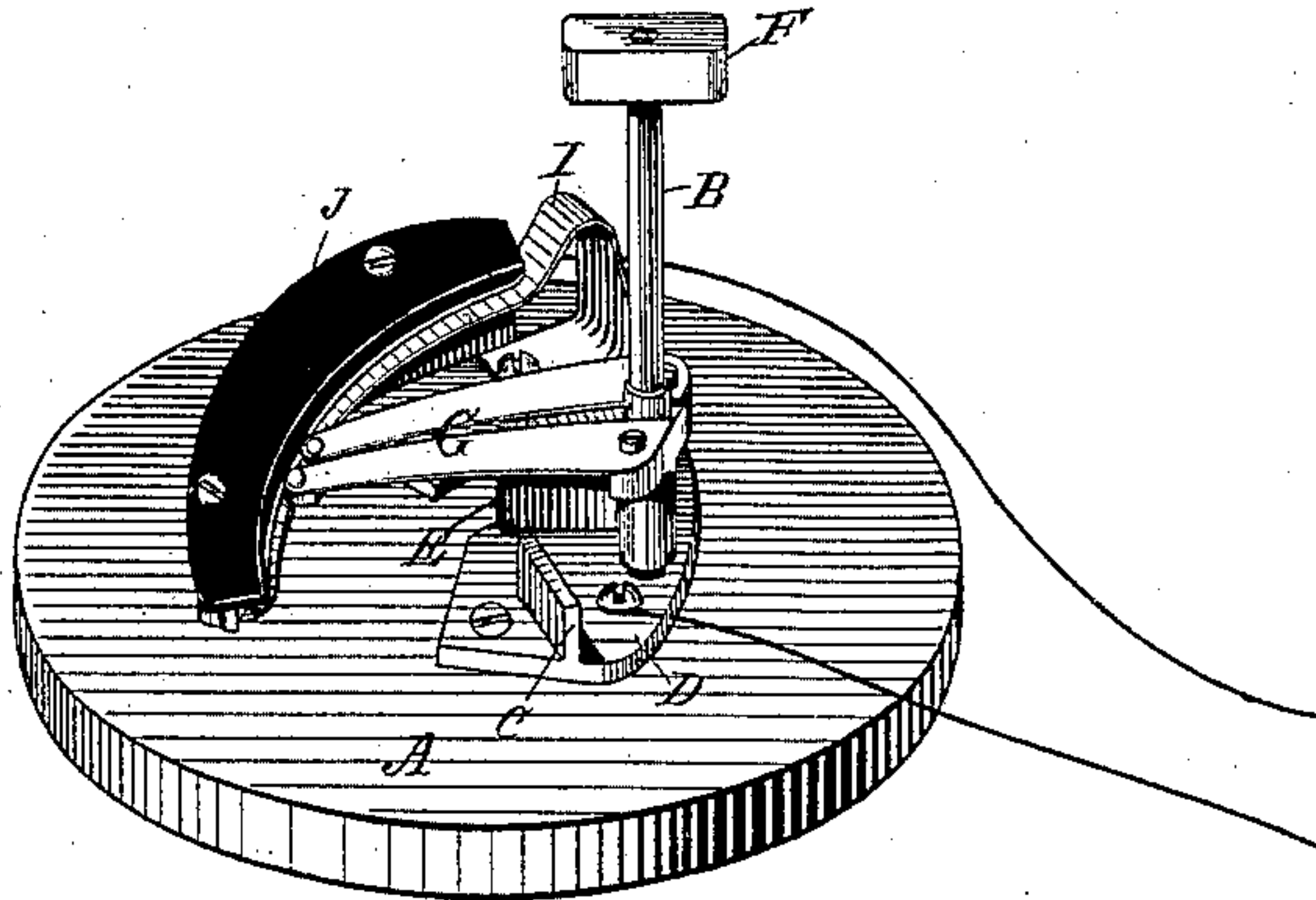
(No Model.)

O. B. JOHNSON.  
ELECTRICAL SWITCH.

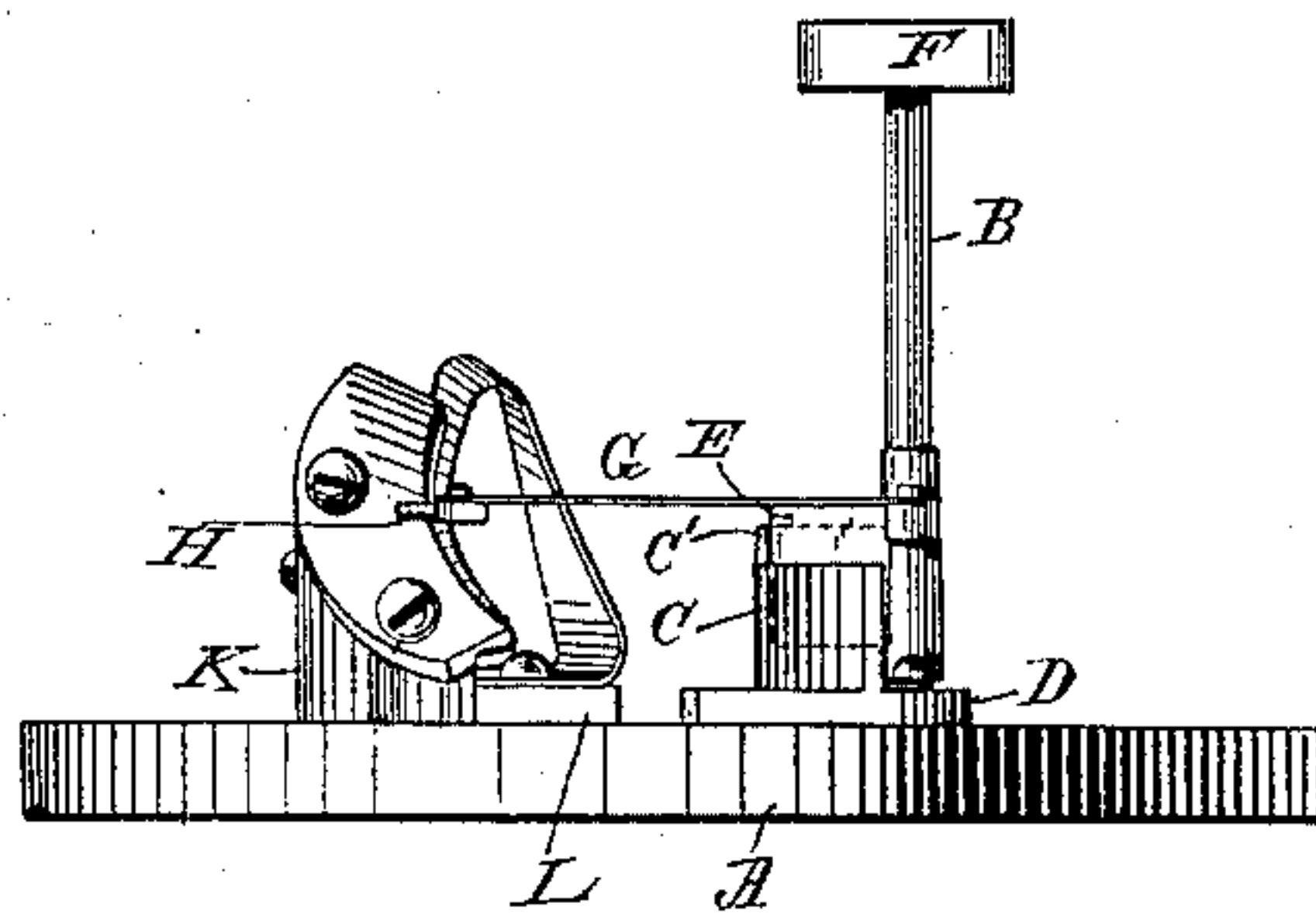
No. 392,034.

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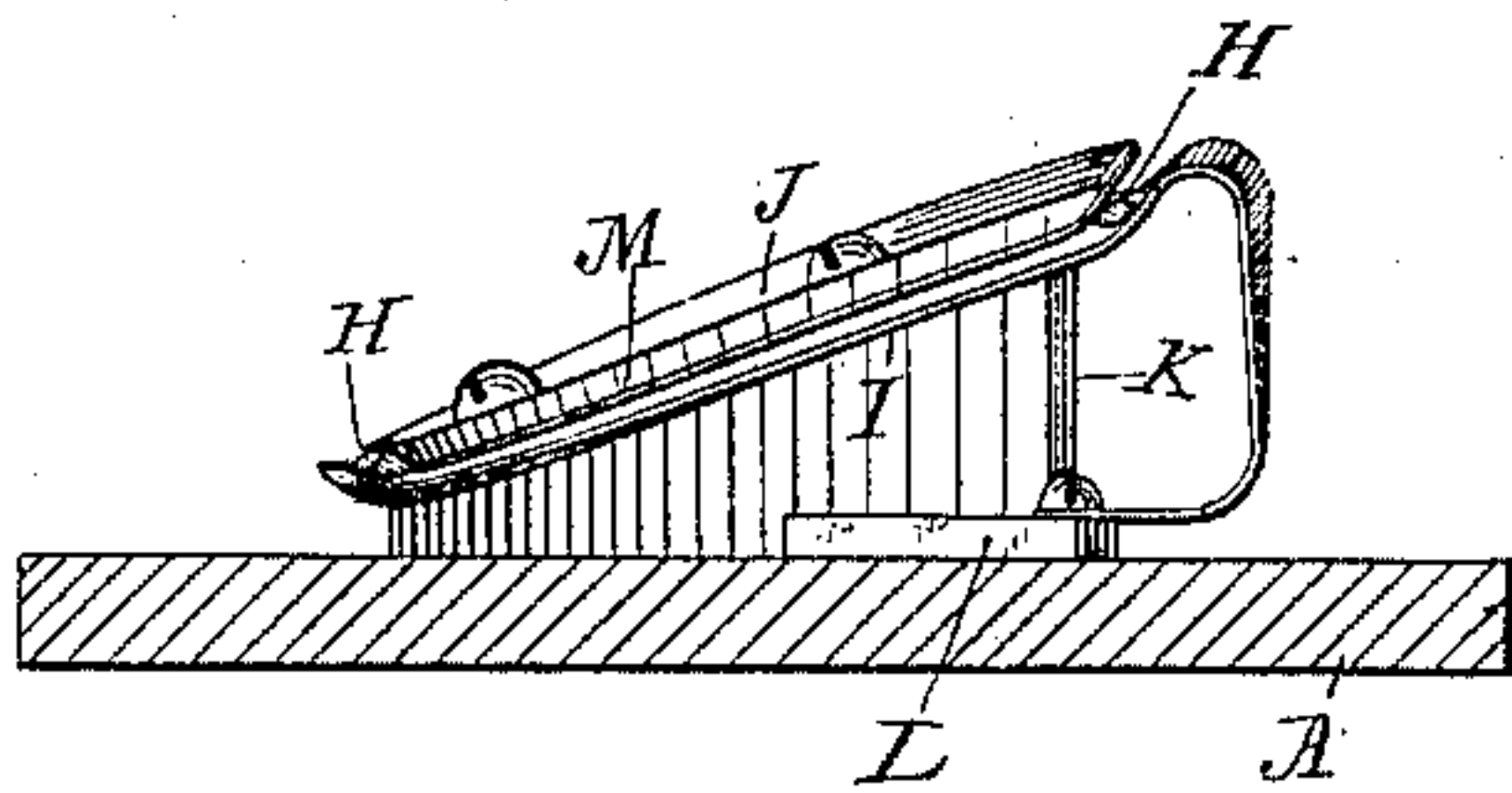
*Fig. 1*



*Fig. 3*



*Fig. 2*



WITNESSES:

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# UNITED STATES PATENT OFFICE.

ORVILLE B. JOHNSON, OF ST. JOHNSBURY, VERMONT.

## ELECTRICAL SWITCH.

SPECIFICATION forming part of Letters Patent No. 392,034, dated October 30, 1888.

Application filed August 4, 1888. Serial No. 231,983. (No model.)

*To all whom it may concern:*

Be it known that I, ORVILLE B. JOHNSON, a citizen of the United States, now residing at St. Johnsbury, in the county of Caledonia and State of Vermont, have invented certain new and useful Improvements in Electrical Switches, of which the following is a specification, reference being had to the drawings accompanying and forming a part of the same.

This invention is an improvement in electrical devices for making and breaking an electric circuit, and belongs to the class of instruments commonly called "electrical switches." There are certain well-recognized properties which such devices, particularly those used with electric lighting and power circuits, should possess. For example, the meeting of the points of contact, as well as their separation in the operation of making and breaking circuit, should be effected by an instantaneous movement or action. Moreover, this action should to a certain extent be beyond the control of a person using the switch, in order that no careless person may deliberately restrain the movement of separation of the two parts of the switch. These and other features I have secured in a simple form of switch, which I shall describe in detail by reference to the accompanying drawings.

Figure 1 is a view in perspective of a switch embodying my invention. Fig. 2 is a view in central section, and Fig. 3 is a side elevation of the same.

The operative parts of the switch are mounted on an insulating-base, A, which in practice is to be secured to any suitable support and covered by a box or casing, as is usual in such devices. It may, however, be stated that the switch mechanism proper may be used under any other of the conditions commonly met with, as in the socket of an incandescent lamp.

B is any proper spindle arranged to have a limited movement, which in the present case is secured by two stops, C C', extending up on opposite sides of the spindle from a metal plate, D, in which the spindle is mounted, and a lug, E, carried by the spindle, which encounters the stops C C'. There is a button or knob, F, secured to the end of the spindle, and it also carries a spring-actuated contact-

arm, G, which normally extends at right angles to the spindle. At the end of this arm is a contact-point, H, the special character of which will be hereinafter more fully described.

I is a curved spring or spring-actuated plate mounted on the base A, and is substantially concentric with the spindle and at such distance that the contact-point H may be carried over and in contact with its exposed or upper surface by turning the spindle.

The spring I is inclined to the plane of movement of the contact H, and immediately over it is an inclined guide, J, of insulating material in whole or on its ends and upper surface only. This guide I secure to a metal block, K, to the foot-piece L of which the spring I is secured. The spring I or casting K forms one terminal of the switch, the spindle B the other. When, therefore, the spindle is turned so as to bring the point H into contact with spring I, the circuit is completed.

In further explanation of the details of the device, I will describe the mode of operation. That end or portion of the spring I which the contact H encounters in the operation of completing circuit is above the normal level of the spring-arm G. The other portion is below it. If, therefore, the spindle be turned so as to move the contact up along the edge of the inclined guide J, the spring G is brought under tension, so that as soon as it leaves the end of the guide J it falls, by reason of its resilience, with a snap upon the spring or plate I. The point upon which the contact falls is a sharp incline, and as the contact does not slip from the end of the guide until the lug E on the spindle comes nearly or quite up against the lug or stop C' the spindle may not be turned farther in that direction nor the spring-arm G carried back over the guide J. Having thus made contact and completed the circuit, it is broken by turning the spindle back until the lugs E and C encounter one another and the contact H slips out from under the lower end of the guide J. In moving to this point the contact H is held against the plate I, or in contact with a metal strip, M, on the under side of the insulating-guide, and the spring G brought under tension to produce the requisite snap when the surfaces in contact separate.

There is a detail made easily obtainable by



this form of switch which is of importance. It will be observed that the contact H moves vertically in both making and breaking circuit with the strip, spring, or plate I. I now  
5 flatten somewhat the contact, or give it an approximately elliptical cross-section, and by forming in the plate I at the points where the said contact encounters it in making and leaves it in breaking circuit sharp inclines in  
10 opposite directions the circuit will be made through one part of the contact H and broken through another. For instance, the highest point of the plate I being inclined or bent downward, the edge only of the contact H  
15 will come into contact with the said plate. As the arm G is turned back, the surfaces of the parts H, I, and M, by sliding one over the others, are kept clean and good contact maintained. The lower end of the plate I is bent  
20 upward, so that the opposite edge only of the contact H encounters it. Between this edge and the bent end of the plate I final separation takes place, so that if there be any oxidation it occurs at a point which does not im-  
25 pair the contact-surfaces, which encounter one another in the subsequent closing of the circuit.

The contact H in the two positions described is shown in Fig. 2.

30 I do not limit myself to the details of construction herein shown; but

What I regard as my invention is—

1. The combination, with a spring-actuated contact capable of being moved in opposite  
35 directions through a given space, of a terminal

plate or spring and a guide, the terminal and guide being inclined to the normal path of movement of the contact, whereby the contact at or near its limits of motion will pass under and over the opposite ends of the guide 40 and into and out of contact with the terminal, respectively.

2. The combination, with a spring-actuated contact and a spindle having a limited range of movement carrying the same, of a terminal 45 plate or spring and a guide, the terminal and guide being inclined to the normal path of movement of the contact and substantially concentric with the spindle, whereby the contact at or near its limits of movement will 50 pass under and over the opposite ends of the guide and into and out of contact with the terminal, respectively.

3. The combination, with the spindle B, the movement-limiting stop or lugs and the spring- 55 arm G, of the curved and inclined terminal I and the guide or plate J, as herein described.

4. The combination, with the spindle B, the movement-limiting stops or lugs, and the spring-arm G, carrying a flattened or elliptical 60 contact-piece, H, of the curved and inclined terminal plate I, with bends in opposite directions at the points at which the contact-piece encounters and leaves it, and the guide plate or piece J, as set forth.

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Witnesses:

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GEO. P. IDE.