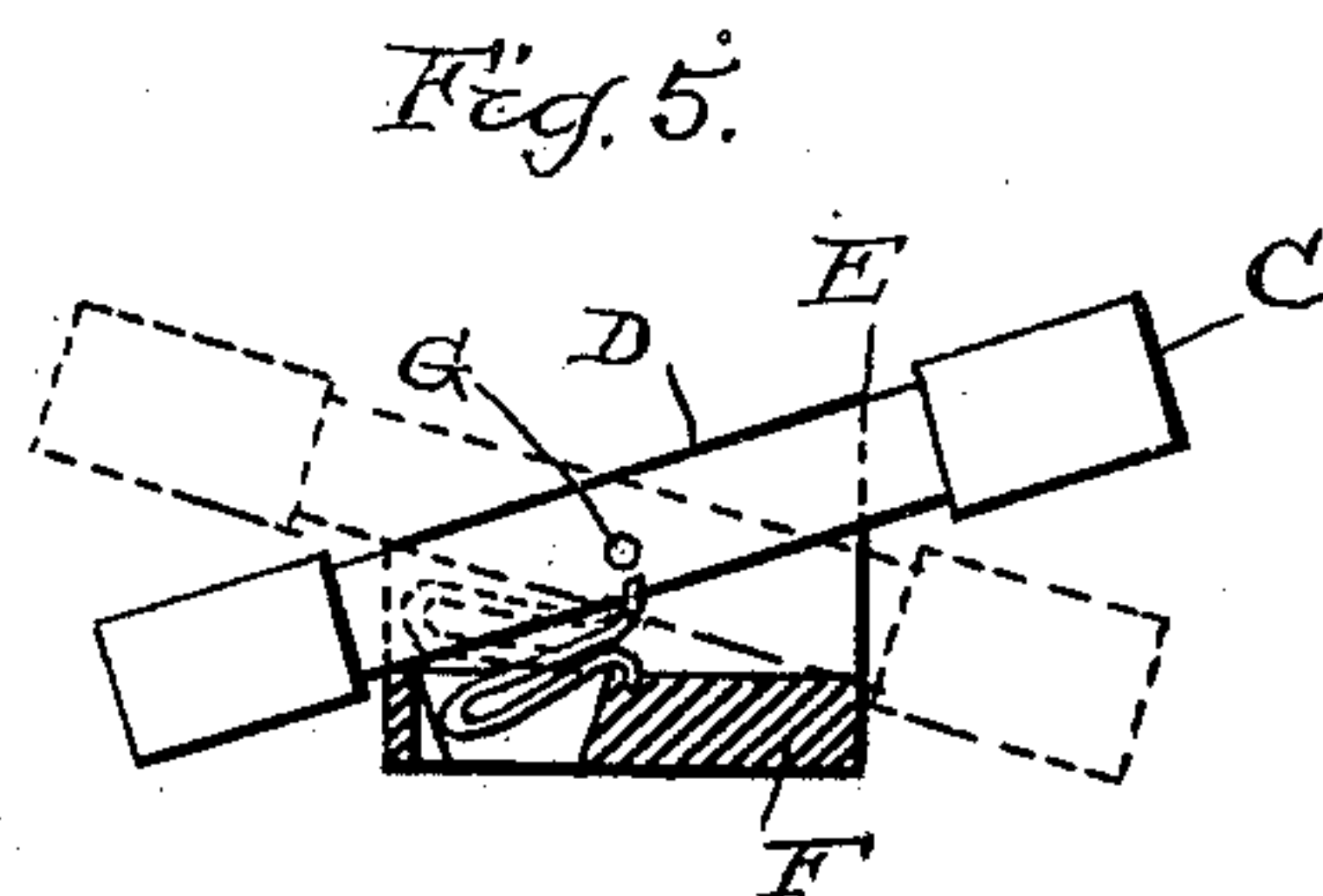
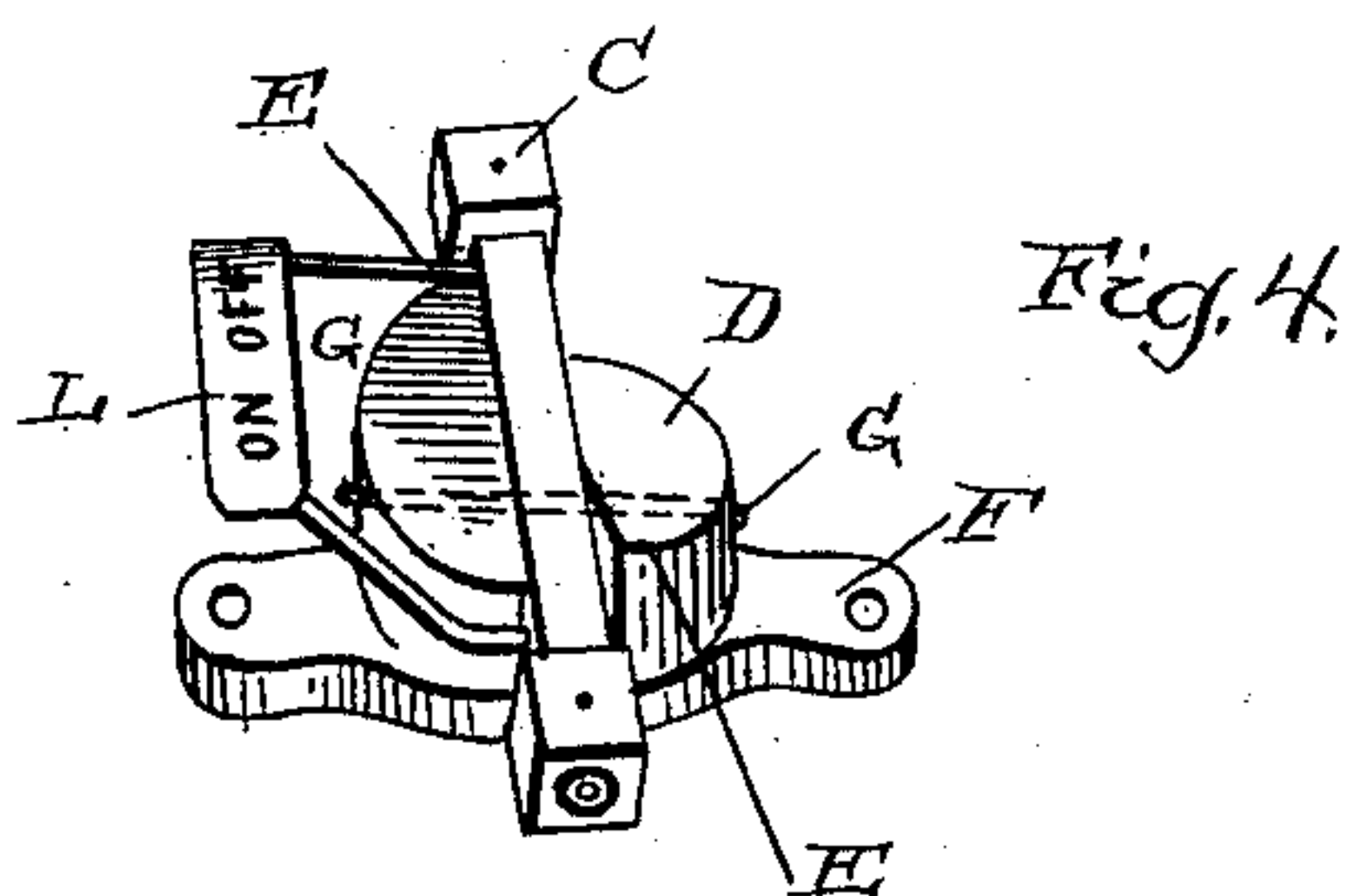
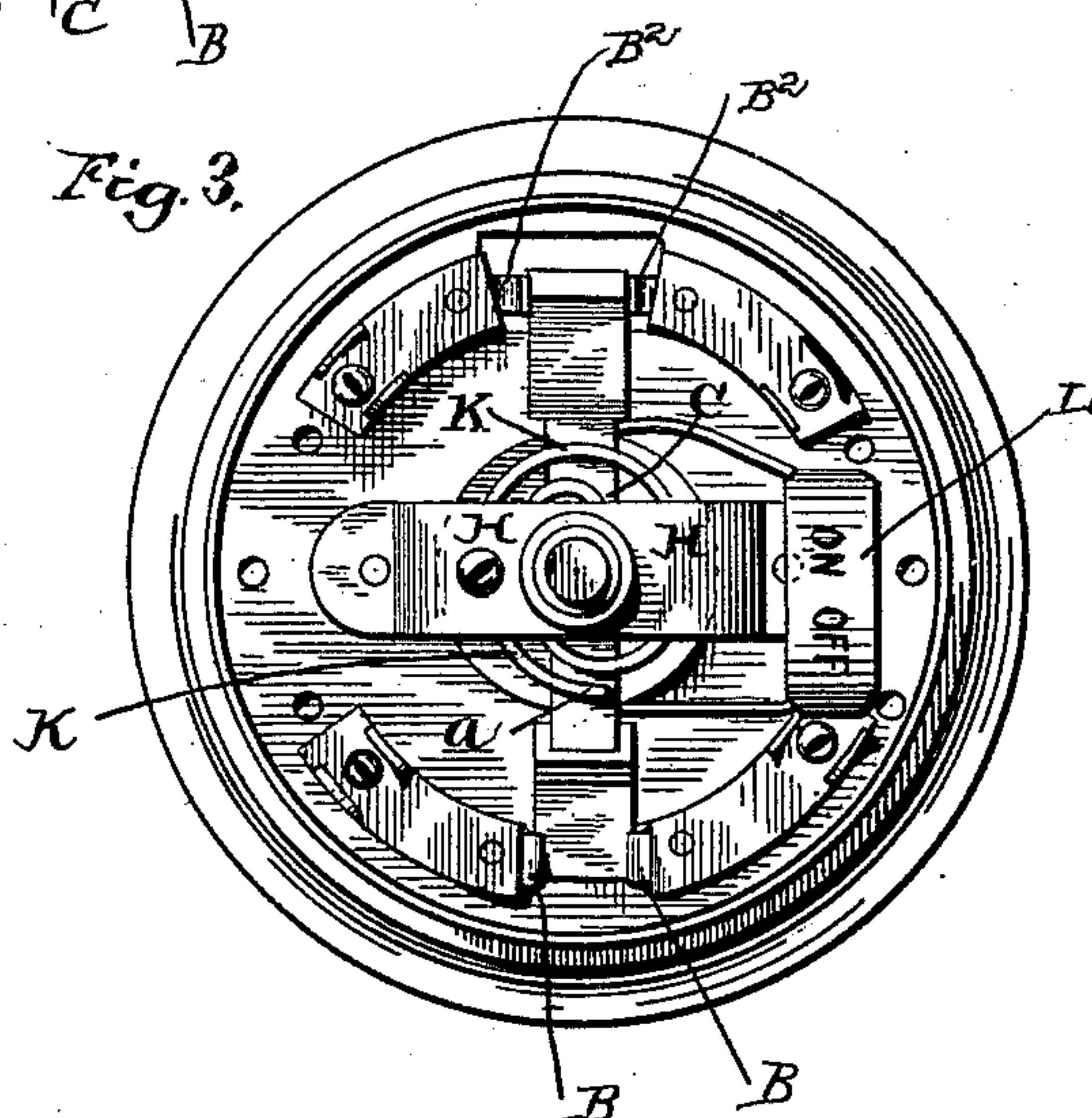
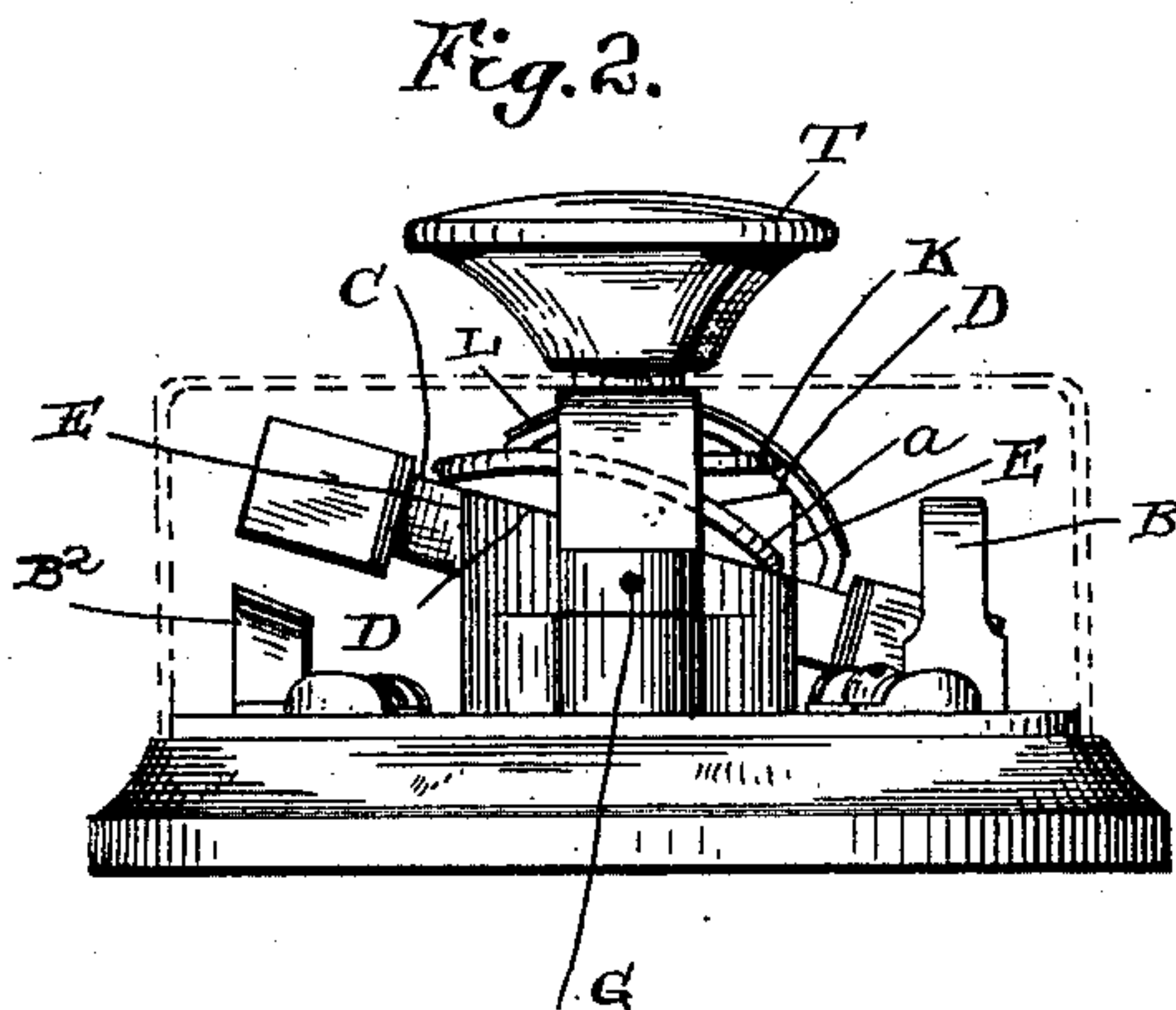
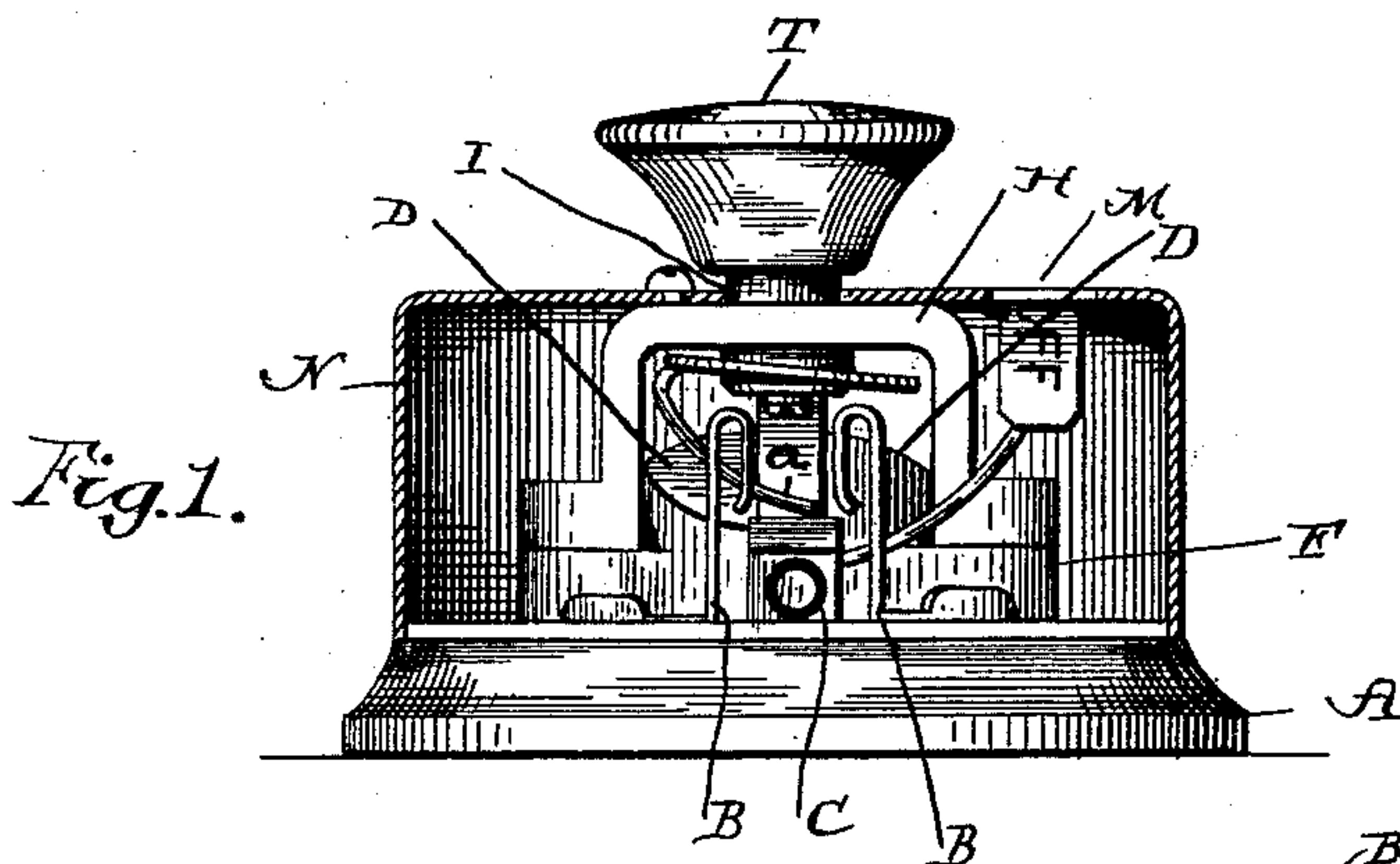


(No Model.)

G. H. ALTON.
DOUBLE POLE SWITCH.

No. 428,586.

Patented May 27, 1890.



Witnesses
Ira R. Steward.
H. H. Capel.

Inventor
George H. Alton.

By his Attorney
H. L. Townsend

UNITED STATES PATENT OFFICE.

GEORGE H. ALTON, OF LYNN, MASSACHUSETTS, ASSIGNOR TO THE THOMSON-HOUSTON ELECTRIC COMPANY, OF SAME PLACE.

DOUBLE-POLE SWITCH.

SPECIFICATION forming part of Letters Patent No. 428,586, dated May 27, 1890.

Application filed October 26, 1888. Serial No. 289,245. (No model.)

To all whom it may concern:

Be it known that I, GEORGE H. ALTON, a citizen of the United States, and a resident of Lynn, in the county of Essex and State of Massachusetts, have invented a certain new and useful Double-Pole Switch, of which the following is a specification.

My invention relates to electric switches or turn-offs of the class which is specially constructed to produce a quick or snapping action in opening or closing an electric circuit.

The object of my invention is to provide an electric switch adapted to operate in the manner stated, and of simple, cheap, and durable construction.

My invention consists in the special combinations and improvements in details of construction, to be more particularly hereinafter described in connection with the accompanying drawings, which form a part of this specification, and to be then more specifically defined in the claims.

In the accompanying drawings, Figure 1 is an elevation of a switch embodying my invention, the casing being shown in section. Fig. 2 is an elevation of the apparatus, the view being taken on a line at right angles to that of Fig. 1. Fig. 3 is a plan of the apparatus, the casing being removed. Fig. 4 is a perspective view of the cam-plate. Fig. 5 is a vertical section through the apparatus on the line of the switch-lever.

A indicates a base of wood or other suitable material, upon which are mounted the springs B B B² B², to which electrical connection is made by binding-screws or any other desired means.

C indicates a switch-lever that by making and breaking contact with said springs serves to open and close the electric circuit or circuits.

In the present instance we may consider the springs B B as forming one terminal or pole, and the springs B² B² as forming the other terminal or pole of the circuit, so that electric connection is closed by the lever C when the same makes contact with both sets of springs simultaneously. The free ends of the springs B B are elevated above the plane of the free ends of springs B², so that when

the lever is in the position shown in Fig. 2 the circuit will be open, while on tilting the lever into the other position the circuit will be closed through the impingement of the ends of the lever against the free ends of the springs by a sliding contact.

F indicates a plate of any suitable material—such as iron—having two cams D D, cast in one piece, preferably, with the said plate F, the latter forming a means for securing the double cam to the base-plate A. The cam-surfaces D D are arranged in the circumference of a circle and the offset or step between the upper end of one cam and the beginning or lower portion of the succeeding cam is indicated at E. The switch-lever C turns upon a pivot G in the cam-plate and is arranged with its ends at the step or offset, as clearly indicated.

I indicates a rotary spindle, which is mounted to turn in a yoke H, that is secured upon the top of the plate F. The spindle I carries the operating knob or handle T, and also a spring K, which may be made as a spiral spring and which has one end fixed in the spindle, while its other or free end is arranged to ride upon and press with considerable force against the surface of the cams D D. The pivot-lever C carries also an indicating-plate L, mounted on arms projecting from the plate and provided with characters or indications, as shown, which move behind an opening M in the casing N for the devices, and which, being alternately exposed at said opening, serve to indicate the position of the switch—that is, whether on or off.

In order to assist the switch-lever in moving from one position to the other, I combine with the same a suitable spring, as clearly indicated in Fig. 5. Said spring consists of a blade-spring, one end of which enters a notch in the lever, as clearly shown, while the other end enters a notch in the base-plate. The base-plate has a notch or opening to receive the bent portion of the spring when the lever tilts.

In the drawings the devices are shown in the position which they assume just after the operation of the switch-lever C by the spring K, the free end *a* of which is shown as just

having passed the step between the two cams. On turning the spindle the free end *a* of the spring rides up the cam D, and on passing the step or offset of said cam engages with the end of the lever C, which by the previous operation of the spring has been tilted up into the position shown in Fig. 2. The spring, having been placed by its rotation under considerable compression, strikes forcibly upon said lever and turns the same into the opposite position, where the circuit will be closed. On continuing the motion of the spindle the spring will ride up the second cam-surface D, and finally passing the step or offset will assume the position shown in the figures, thereby tilting the lever back into its original position. In the tilting operation the indications upon the plate L will be moved backward and forward into and out of position for observation at the opening end in obvious manner.

In the foregoing description and in my claims I use the term "switch-lever" as meaning that element of an electric switch that operates upon or in conjunction with suitable electric contacts or terminals so as to produce the desired changes in the condition of the electric circuit, and it is to be understood, therefore, that wherever such term is used by me the ordinary or suitable co-operating electric terminals are included by implication.

What I claim as my invention is—

1. In a snap-switch, the combination, with the two cams, of the switch-lever arranged with its ends at the offset between the end of each cam and the beginning of the other, and a rotary propelling-spring engaging with said cam-surfaces and adapted to engage directly with said lever as the spring leaves one cam to engage with the beginning of the other.

2. The combination, substantially as described, with a rotary spindle or shaft, of the two cams, the impelling-spring carried by the spindle and engaging the cams with its free end, and an oscillating switch upon which the said free end of the spring impinges directly when the spring passes from one cam to the other.

3. The combination, with the tilting switch-lever, of the double cam, the controlling-spring engaging with the cams and adapted to strike the tilting switch-lever as the spring leaves one cam to engage with the next, and a tilting or rocking indicator carried by the switch-lever and provided with indicating marks or signs moving behind an opening in the case.

4. The double cam-plate cast in one piece and having the switch-lever pivoted in it, in combination with the rotary spindle carrying the actuator which moves over the cams and impinges upon the lever at the offsets or steps.

5. The combination, with the double cam-plate secured to a suitable base-plate, of a switch-lever pivoted in the cam-plate itself, a yoke or frame fastened upon and supported by said cam-plate, an operating-spindle mounted on and borne by the yoke, and an actuating device rotated thereby and adapted to ride upon the cam-plate.

Signed at Lynn, in the county of Essex and State of Massachusetts, this 16th day of October, A. D. 1888.

GEORGE H. ALTON.

Witnesses:

J. W. GIBBONEY,
G. F. CURTISS.