

(No Model.)

J. H. HOLMES.  
ELECTRIC CIRCUIT CLOSER.

No. 305,310.

Patented Sept. 16, 1884.

Fig. 2.

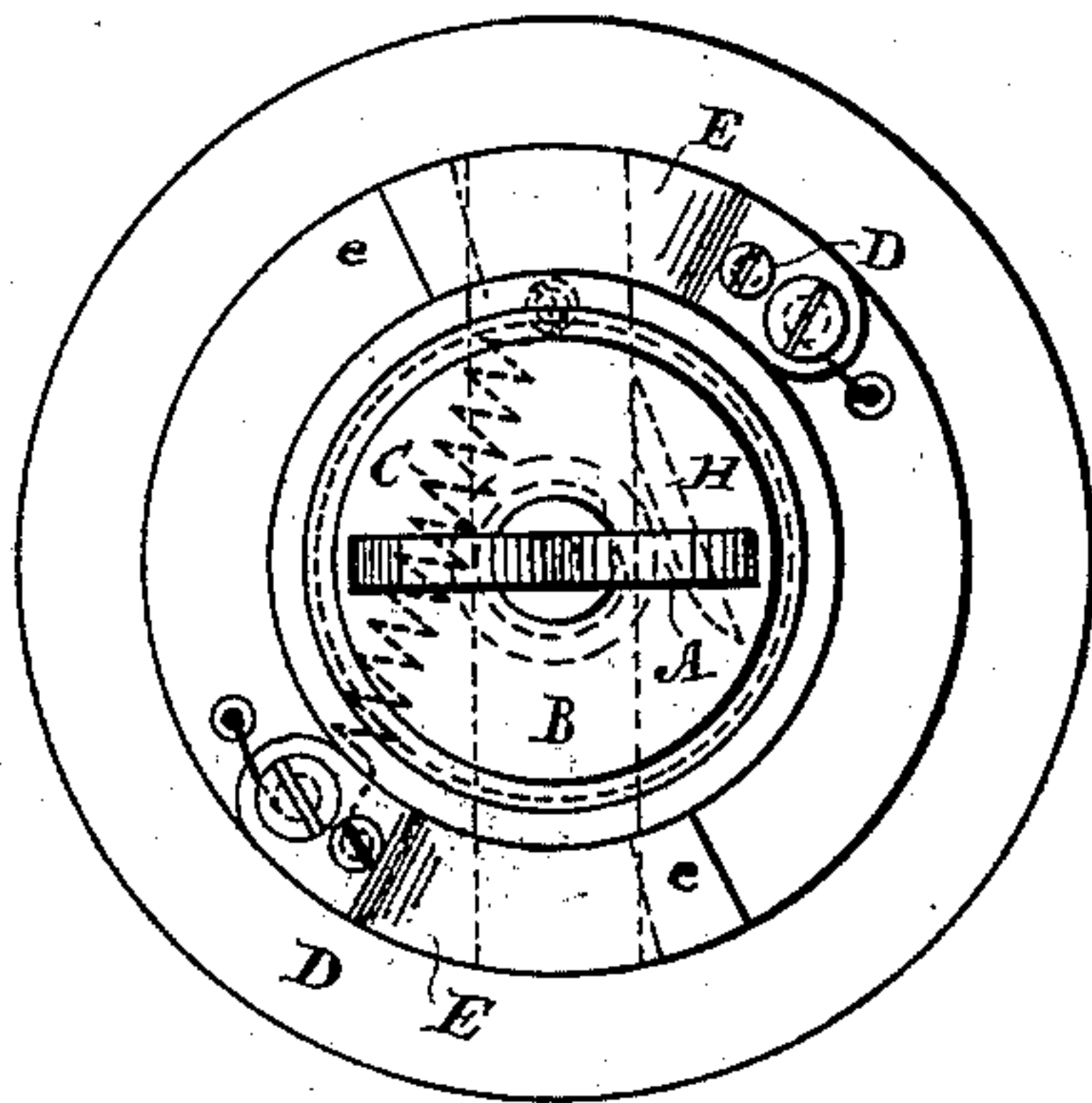
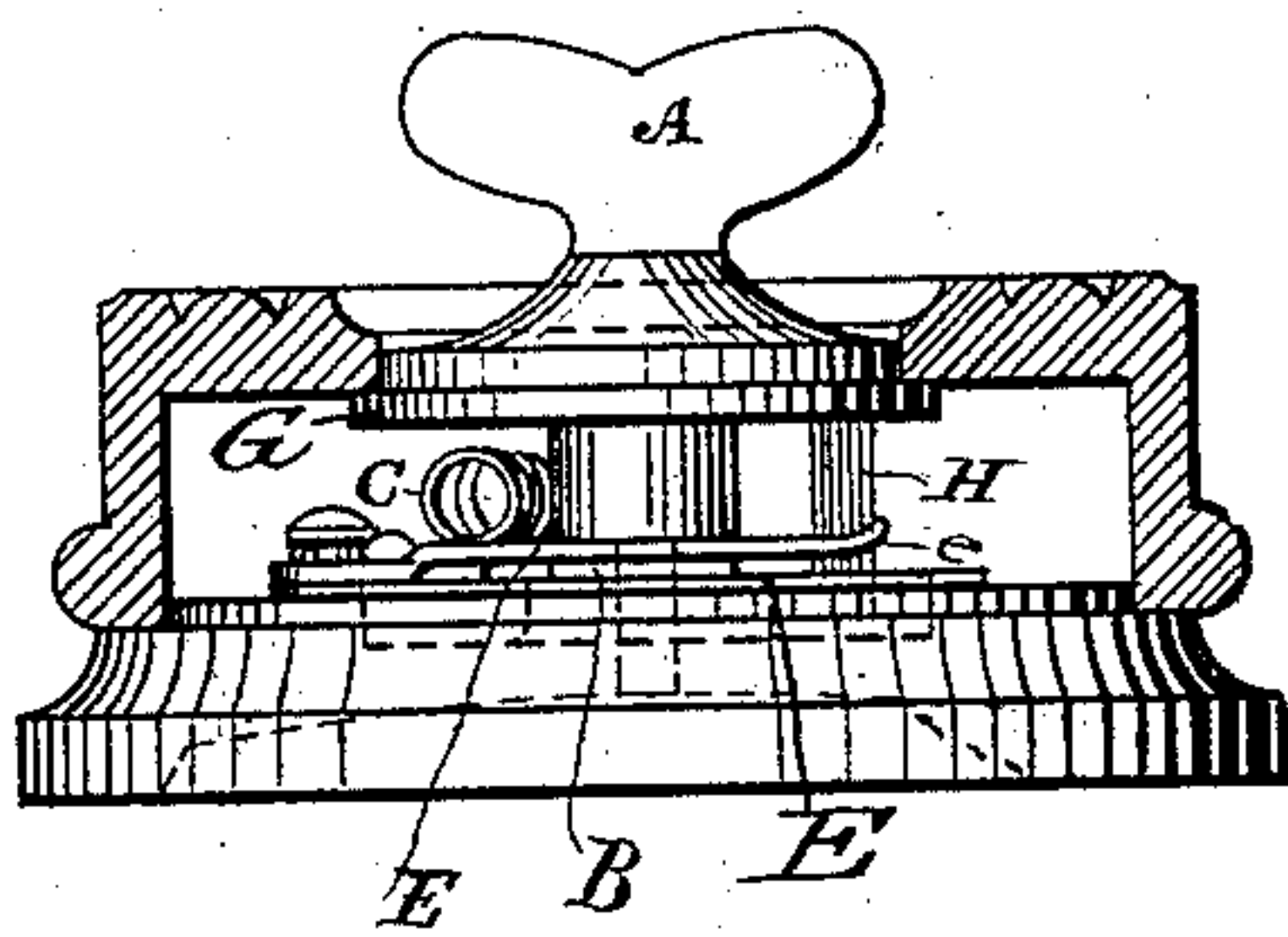


Fig. 1.



Witnesses.

Carrie E. Davidson  
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# UNITED STATES PATENT OFFICE.

JOHN H. HOLMES, OF NEWCASTLE-UPON-TYNE, COUNTY OF NORTHUMBERLAND, ENGLAND.

## ELECTRIC-CIRCUIT CLOSER.

SPECIFICATION forming part of Letters Patent No. 305,310, dated September 16, 1884.

Application filed May 28, 1884. (No model.) Patented in England February 14, 1884, No. 3,256.

*To all whom it may concern:*

Be it known that I, JOHN HENRY HOLMES, a subject of the Queen of Great Britain, residing at Newcastle-upon-Tyne, in the county of Northumberland, in the Kingdom of England, have invented certain new and useful Improvements in Switches or Circuit-Closers, (for which I have applied for Letters Patent in England, dated February 14, 1884, No. 3,256,) of which the following is a specification.

The object of the improvements hereinafter detailed is to prevent the formation of destructive "arc" when the electric current is broken by means of a switch or other arrangement.

In switches as hitherto designed there has, so far as I am aware, always been a continuous sliding contact during action, or a fast connection between the handle for moving the contact-piece, and the said contact-piece consequently, although there may be a trigger-spring and tumbler or spiral spring to prevent the switch being left in any position other than in perfect circuit or entirely broken circuit, yet a destructive arc has been formed when the handle was slowly turned for the purpose of breaking the circuit. With the object of overcoming this drawback I have designed an arrangement of switch which allows the contact-piece, or a portion of it, by the influence of an independent force, such as that of a spring or weight, to move through a certain distance independently of the handle. The spring or weight is so arranged as to tend to keep the movable contact-piece in the "off" position; but on turning the handle to complete circuit the contact-piece is moved in opposition to the force of the spring or weight, and is kept in the "on" position by a frictional or mechanical device. On turning the handle in the reverse direction to break circuit, its first action is to release the contact-piece from the frictional or mechanical devices and allow it to fly back suddenly under the influence of the spring or weight, thus causing the circuit to be broken so quickly that a dangerous arc cannot be formed.

In the drawings, Figure 1 represents a sectional view of my improved circuit-closer; Fig. 2, a plan view of the same.

The apparatus consists of an outer covering

or box of any suitable material, inclosing the mechanism, having a lid overlapping the disk, described further on, and from the center of which a handle, A, projects, whereby the connection can be made or broken, as required. The axis of this handle is supported in a bearing at the bottom of the box. The connecting-bar or contact-piece B swings loosely on the axis. A spring, C, keeps the bar B in the "off" position against stops D D when not prevented by force, or when the connecting-bar is not held tight on the friction catches or contacts E E. These contacts consist each of two flat metallic plates or jaws laid upon each other, and held together at one end by screws. Their other ends, *e e*, which face the contact-bar B, are somewhat wider apart, so as to admit of the bar being forced in between them and held tightly. They thus act as a frictional contact, holding the bar against the force of its spring C, which is also in such a position as to have little power on the bar. Above this arrangement the axis of the handle carries a disk, G, holding the contact-bar in place, and having a ward or flange, H, (or its equivalent, two pins,) placed eccentrically upon its lower surface, forming a sort of crank pin or lever, which, when standing in a direction approximately parallel to the direction of the bar, stands clear of the same. This ward is of such width and is so placed upon the disk that it can be rotated about thirty degrees of the circle without touching the bar B. When, however, the handle A is turned, the disk G revolves with it. One end of the projecting flange H comes against the contact-bar B and pushes it out from between the jaws *e e* of the contacts E E. As soon as the bar is thus released, the spring C draws it back until it is checked by the stops D D. Thus, however slowly the handle be turned, the contact-bar is rapidly propelled away the instant the contact is broken. When it is desired to again make contact, the handle is turned the opposite way. The opposite end of the flange H comes in contact with the connecting-bar B, and forces it forward and between the jaws of the contacts E E against the force of its spring C. A similar arrangement can be applied to various kinds of switches.

In place of the frictional device, a catch could



be substituted and a tappet placed on the flange or pins to lift the bar out of contact with the catch, or vice versa; but I prefer frictional contact, as shown.

5 I claim as my invention—

1. The herein-described mechanism for making and breaking contact suddenly, which consists in a contact-piece placed under spring-pressure tending to draw it strongly out of  
10 contact, and actuating mechanism independent of the contact-piece operating to push said contact-piece before it, both when making and breaking contact, whereby the moment the contact-piece is liberated the spring-pressure instantly breaks contact by drawing such contact-piece in advance of said actuating mechanism.  
15

2. The combination of the contact-bar B, pivoted in the center, the frictional contact device  
20 E E, and the spring C, strained to pull the contact-bar clear of the contact-piece, with the cranked handle A, by which means the contact is brought to the point of breaking by the handle, and then is suddenly drawn away from the  
25 contact-piece by spring-pressure, substantially as described.

3. The combination of a contact-bar, B, pivoted in the center, a pivoted device capable of

bearing on one side of the bar on either side of the center, and a pair of contact-pieces formed  
30 of friction-jaws, into or out of which the bar can be forced by the said crank as it bears on one side of the center or the other, substantially as shown.

4. The handle A, having a disk, G, holding  
35 the contact-bar in place, and armed with a segmental eccentric flange, H, projecting so as to come against the side contact-bar at either end as turned, substantially as and for the purposes described.  
40

5. The combination of the cover holding all in position, the handle with a ward or crank like a key, the contact-bar pivoted at or near the axis of the handle, the contact catching device holding the bar, the spring strained to  
45 press the bar away from the contact, and the stops arranged to prevent the bar traveling too far, all substantially as described.

In testimony whereof I have signed my name to this specification in presence of two sub-  
50 scribing witnesses.

JOHN H. HOLMES.

Witnesses:

W. P. THOMPSON,  
I. O. O'BRIEN.