C. C. BADEAU.

CIRCUIT BREAKER.

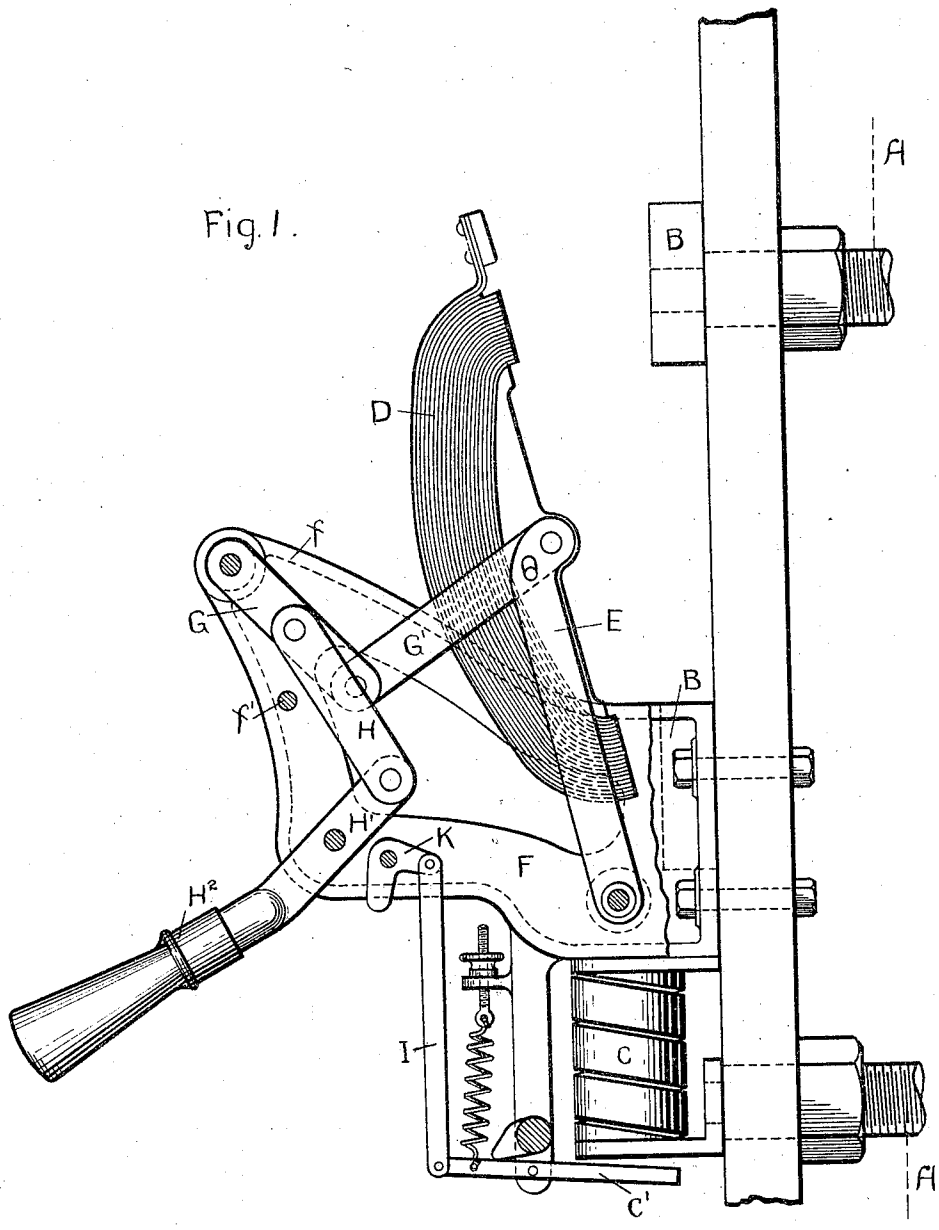
APPLICATION FILED SEPT. 16, 1901.

900,693.

Patented Oct. 13, 1908.

2 SHEETS—SHEET 1.

Fig. 1.



Witnesses:

Art't E. Chapman.

Alex. Macdonald

Inventor.

Charles C. Badeau.

by Albert G. Davis

Atty

C. C. BADEAU.

CIRCUIT BREAKER.

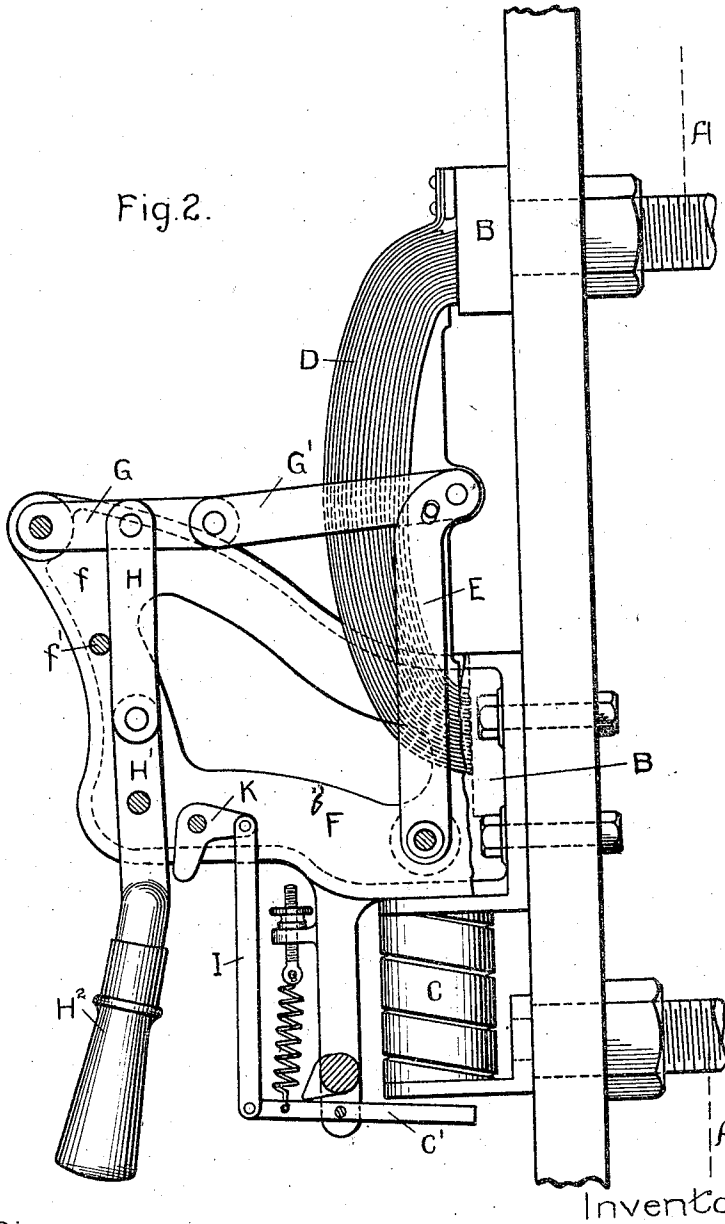
APPLICATION FILED SEPT. 16, 1901.

900,693.

Patented Oct. 13, 1908.

2 SHEETS—SHEET 2.

Fig. 2.



Witnesses:

Robt. B. Chapman

Alex. F. Macdonald

Inventor:

Charles C. Badeau.

by Allen & Davis

Atty

BEST AVAILABLE COPY

UNITED STATES PATENT OFFICE.

CHARLES C. BADEAU, OF SCHENECTADY, NEW YORK, ASSIGNOR TO GENERAL ELECTRIC COMPANY, A CORPORATION OF NEW YORK.

CIRCUIT-BREAKER.

No. 900,693. Specification of Letters Patent. Patented Oct. 13, 1908.

Application filed September 16, 1901. Serial No. 75,502.

To all whom it may concern:

Be it known that I, CHARLES C. BADEAU, a citizen of the United States, residing at Schenectady, in the county of Schenectady and State of New York, have invented certain new and useful Improvements in Circuit-Breakers, of which the following is a specification.

This invention relates to switches for controlling electric circuits, and its object is to provide improved means for effecting a good contact without undue exertion on the part of the person closing the switch. Some switches and especially automatic circuit-breakers have movable contacts composed of laminations of copper, which yield somewhat when closed upon the stationary contacts. When the contacts are large, considerable force is necessary to effect a good closure, owing to the slight resiliency of the laminations.

My invention aims to furnish mechanism by means of which such a closure can be easily accomplished.

The invention consists in a combination of toggles which exert their greatest power at the instant the switch closes. The switch is preferably provided with the usual overload coil to cause an automatic opening.

In the accompanying drawing, Figure 1 is a side elevation of my improved switch, open, Fig. 2 is a side elevation of it, closed.

The terminals of the line A are connected with the stationary contact studs B, one of which is in circuit with the overload coil C. The movable main contact D, consisting preferably of copper laminations, is carried on one or more radius bars E pivoted at one end to the main contact and at the other to the frame F of the switch. Said frame includes projecting brackets *f* in which is pivoted one link G of the main toggle, the other link G′ being pivoted to the main contact D. When the main toggle is straightened out, as shown in Fig. 2, the main contact is forced powerfully against the contact studs B. In order to effect this operation easily, I provide an auxiliary toggle, consisting of a link H pivoted to the link G of the main toggle, and a link H′ pivoted to the frame and extended beyond its stationary pivot to form a handle H^2. A stop *f′* limits the movement of the toggle H, H′ in straightening, permitting it to pass slightly beyond the center, so as to lock itself, as shown in Fig. 2. The main toggle preferably does not lock in this manner, but stops just before reaching the dead center. The point of connection between the links G and H may be varied to give greater or less purchase on the main toggle, to suit different conditions of service. It will be observed that both toggles reach their positions of greatest power at the instant the switch closes, so that by the expenditure of comparatively slight effort, a great pressure can be brought upon the main contact. This arrangement of main and auxiliary toggles is applicable to various forms of switches, but I regard it as especially useful in automatic circuit-breakers, which usually handle heavy currents and thus require large contacts. The overload coil of such a breaker is shown at C. Its pivoted armature C′ is connected, preferably by a rod I, with a lever K fulcrumed on the frame F adjacent to the handle H^2, so that when the switch is closed, the lever is close to said handle, and when the armature C′ is attracted by the coil C, the lever K pushes the handle far enough to trip the auxiliary toggle and allow the switch to open. The resilience of the main contact D and the weight of the main toggle G, G′, is sufficient to open the switch.

What I claim as new and desire to secure by Letters Patent of the United States, is,—

1. In an electric switch, the combination with fixed and movable contacts, of inter-operating toggles connected in tandem to multiply the force exerted on the movable contact one of said toggles being overset in the closed position of the switch to lock the contacts in engagement.

2. In an electric switch, the combination with coöperating contacts, of a main toggle and an auxiliary toggle connected in tandem for actuating one of said contacts, one of said toggles being slightly underset and the other slightly overset when the contacts are in engagement.

3. In an electric switch, the combination with coöperating contacts, of a main actuating toggle for one of said contacts slightly underset when the contacts are in engagement, and an auxiliary actuating toggle for the main toggle slightly overset when the contacts are in engagement.

4. In an electric switch, the combination with stationary movable contacts, of a main toggle connected with said movable contact, an auxiliary toggle for operating the main

toggle and slightly overset to lock the main toggle, and an operating handle rigidly connected with one of the links of said auxiliary toggle to increase the leverage of said handle on the main contact.

5. An automatic circuit-breaker comprising a main contact, a main toggle connected thereto, an auxiliary actuating toggle for multiplying the force of the main toggle slightly overset to lock the main toggle, an operating handle connected to said auxiliary toggle, and an electro-responsive tripping device for forcing the auxiliary toggle to underset position to release both toggles.

In witness whereof I have hereunto set my hand this 11th day of September, 1901.

CHARLES C. BADEAU.

Witnesses:

ALEX. F. MACDONALD,

MABEL N. EMERSON.