(No Model.)

B. B. KEYES.

ELECTRIC SWITCH.

No. 445,146. Patented Jan. 20, 1891.

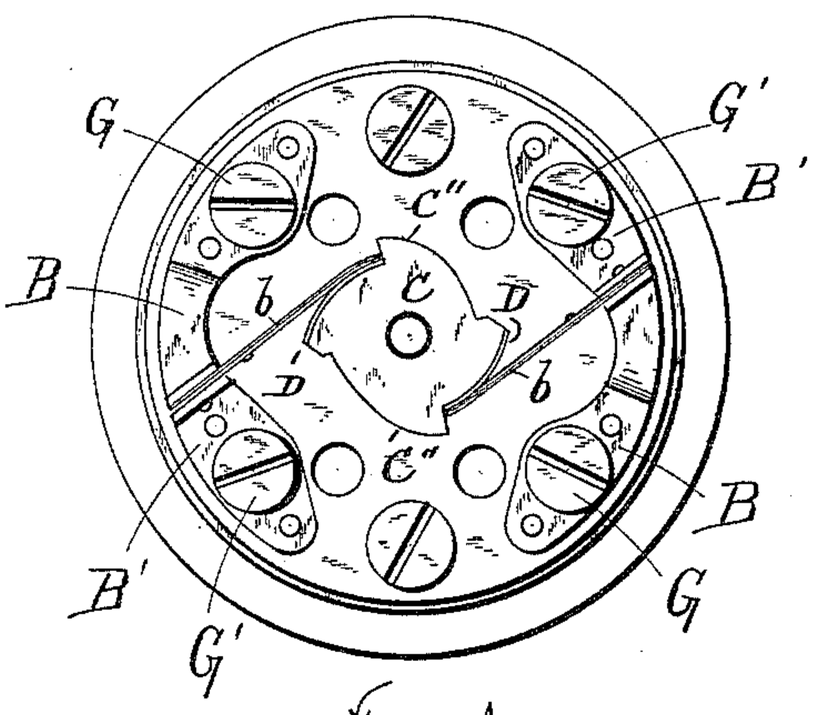

Fig. 1.

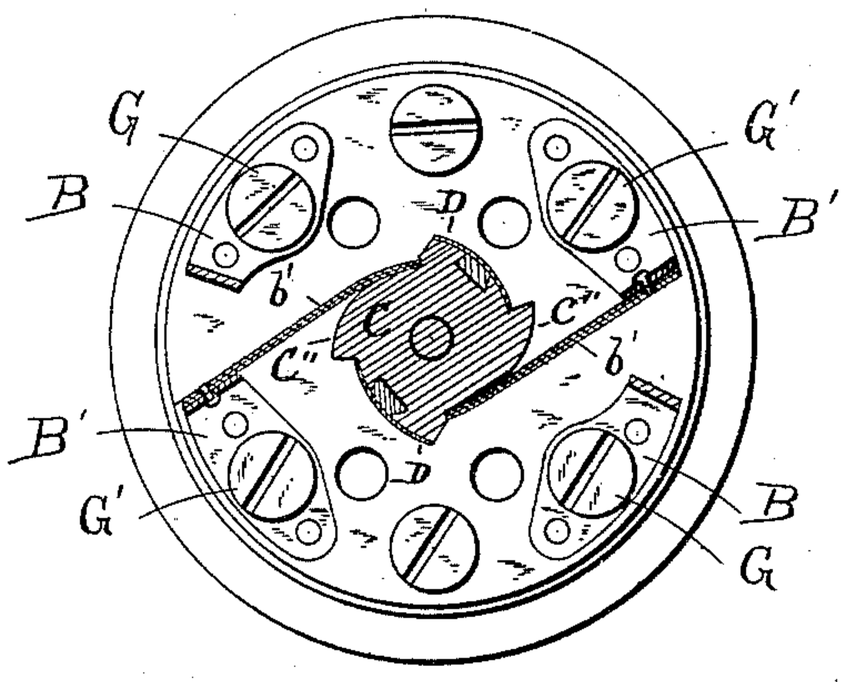

Fig. 3.

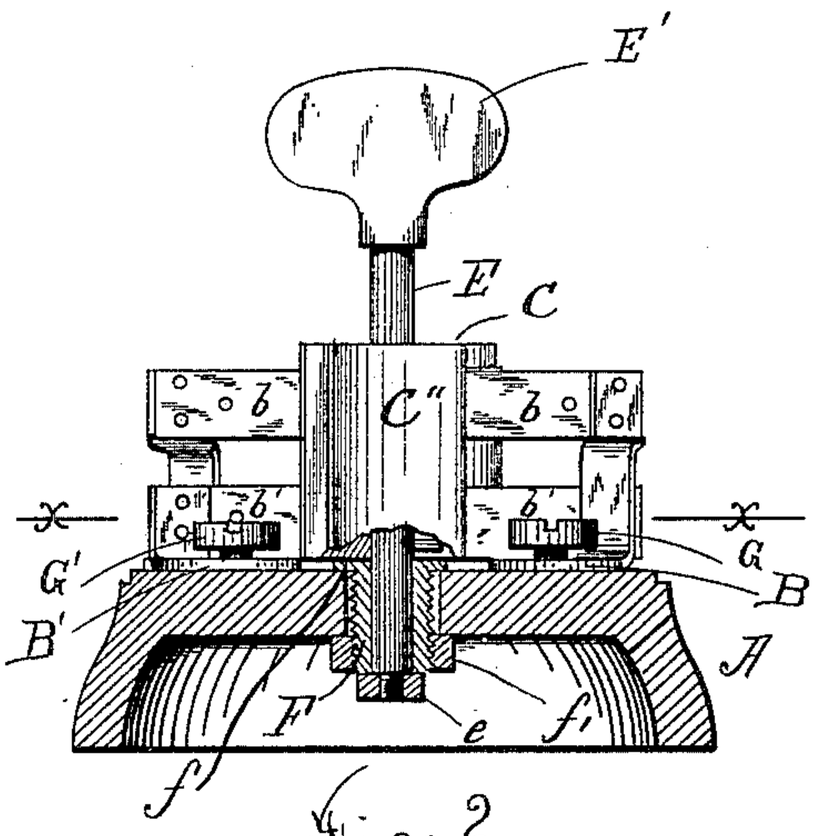

Fig. 2.

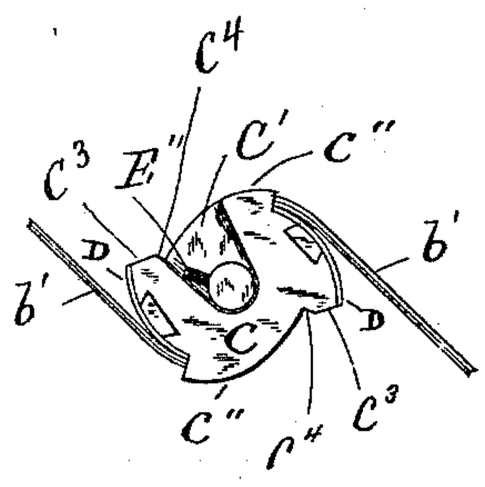

Fig. 4.

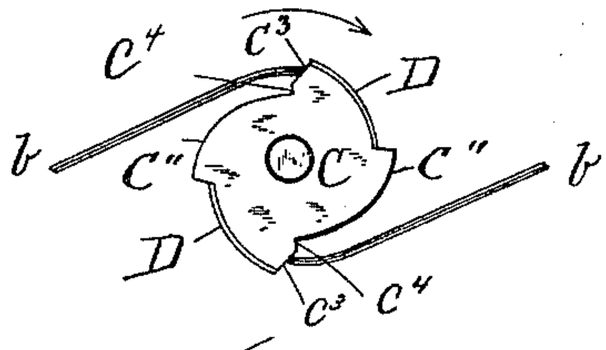

Fig. 5.

WITNESSES

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ELECTRIC SWITCH.

SPECIFICATION forming part of Letters Patent No. 445,146, dated January 20, 1891.

Application filed August 16, 1890. Serial No. 362,189. (No model.)

To all whom it may concern:

Be it known that I, BENJAMIN B. KEYES, a citizen of the United States, and a resident of Chelsea, in the county of Suffolk and State of Massachusetts, have invented new and useful Improvements in Circuit Breakers and Closers, of which the following, taken in connection with the accompanying drawings, is a specification.

This invention relates to improvements in circuit breakers and closers for electrical devices; and it is carried out as follows, reference being had to the accompanying drawings, wherein—

Figure 1 represents a plan view of the invention, showing the circuit as closed. Fig. 2 represents a side elevation of the same, showing the base in section. Fig. 3 represents a horizontal section on the line X X in Fig. 2, showing the circuit open. Fig. 4 represents a bottom view of the commutator and its springs or brushes; and Fig. 5 represents a top view of the commutator-block, showing it and its springs in position at or about the time of breaking the circuit.

Similar letters refer to similar parts wherever they occur on the different parts of the drawings.

A represents the base, preferably made of porcelain or similar insulating material, as usual. To the base A are secured in a suitable manner the metallic posts or brackets B B B′ B′, to which are attached the respective yielding springs or brushes *b b b′ b′*, the free ends of which are held against the commutator, as is common in devices of this kind.

C is the commutator-block, preferably made of porcelain or other suitable insulating material, having secured to its two opposite faces in a suitable manner the curved metal contact-plates D D.

E is the key-spindle, having a key E′ in its upper end, as shown. Said spindle passes loosely through a vertical perforation in the block C, its lower end being preferably journaled in a bushing F, passing through a vertical perforation in the base A and secured therein by means of a collar *f* and nut *f′*, as shown in Fig. 2. Below the said nut *f′* is arranged on the lower screw-threaded end of the key-spindle E a nut *e* for the purpose of preventing the said spindle from being detached from the bearing-sleeve F.

G G and G′ G′ are binder-screws, as usual, on the respective brush-holding brackets B B B′ B′, to which the circuit-wires are connected, as usual.

The commutator-block C has a recess C′ in its lower end, in which works a pin or projection E″ on the key-spindle E, as shown in Figs. 2 and 4. The brushes *b b′ b b′* are preferably slightly curved, as shown in the drawings.

C″ C″ are the naked surfaces of the commutator-block, which are preferably curved or cam-shaped, each such surface having at the junction with its contact-plate D an incline C^3, terminating as a shoulder or offset C^4, where it joins the surface C″, as shown in Figs. 1, 3, 4, and 5. The object of said inclines C^3 C^3 is to cause the spring-brushes to act thereon as soon as their free ends pass by the highest portions of the curved contact-plates D D, when the commutator is moved by the key-spindle and its projection E″ in the direction of arrow shown in Fig. 5. Thus a quick motion is imparted by said brushes to the commutator in the same direction until the free ends of the brushes are brought against the shoulders C^4 C^4, which then serve as stops to prevent the commutator from being turned in the opposite direction.

In devices of this kind an auxiliary spring is used on the spindle projection E″ for the purpose of causing the free ends of the brushes to recede quickly from the contact-plates while in the act of breaking the circuit. By the use of the inclines C^3 C^3 on the block C, I am able to dispense with such auxiliary spring and causing the brushes to turn the commutator quickly onto the naked surfaces C″ C″ the moment the highest points of the contact-plates on the commutator-block are moved by the free ends of the brushes. As the key-spindle projection E″ is narrower than the width of the recess C′ in the block C, it will readily be understood that the said block C is free to move by the action of the spring-brushes in the direction of the arrow shown in Fig. 5 after the commu-

tator-block has been turned by the key-spindle and its projection sufficiently to disengage the brushes from the contact-plates on the commutator-block C.

Having thus fully described the nature, construction, and operation of my invention, I wish to secure by Letters Patent, and claim—

1. In a circuit breaker and closer, a commutator-block made of porcelain or suitable non-conducting material, said block having metal contact-plates and intermediate naked surfaces, combined with the inclines C^3 C^3 at the junction of said plates and naked surfaces, a key-spindle having a projection working in a recess in the commutator-block, and brushes adapted to bear against the surface of the latter, substantially as and for the purpose set forth.

2. In a circuit breaker and closer, an insulating commutator-block having metal contact-plates and intermediate naked surfaces, combined with inclines C^3 C^3 and stop-shoulders C^4 C^4 at the junction of said plates and naked surfaces, a key-spindle working in a recess in the commutator-block, and brushes adapted to bear against the surface of the latter, substantially as and for the purpose set forth.

In testimony whereof I have signed my name to this specification, in the presence of two subscribing witnesses, on this 13th day of August, A. D. 1890.

BENJAMIN B. KEYES.

Witnesses:

ALBAN ANDRÉN,

DAVID J. CARTWRIGHT.