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F. B. COREY.

HIGH TENSION CIRCUIT BREAKER.

APPLICATION FILED FEB. 19, 1903.

900,708. Patented Oct. 13, 1908.

Fig. 1.

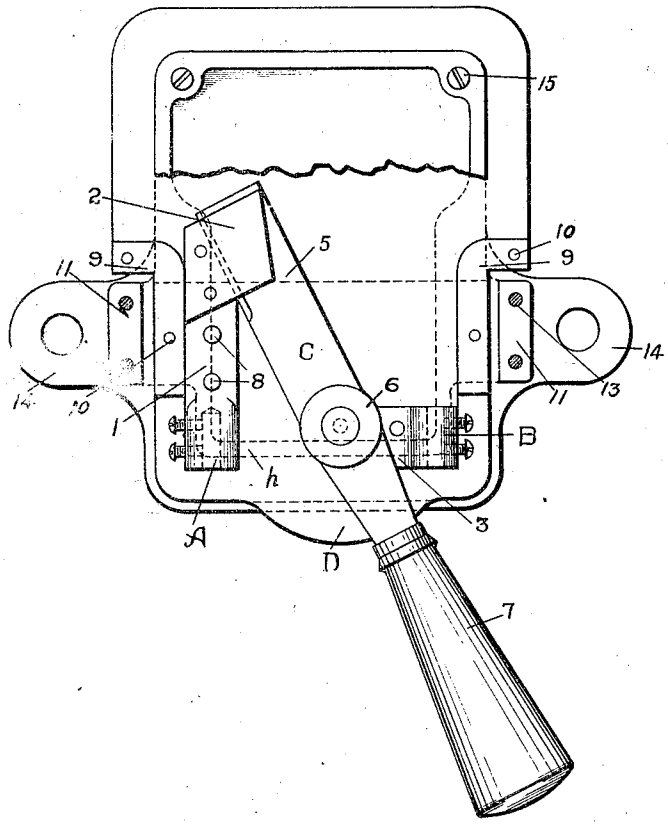
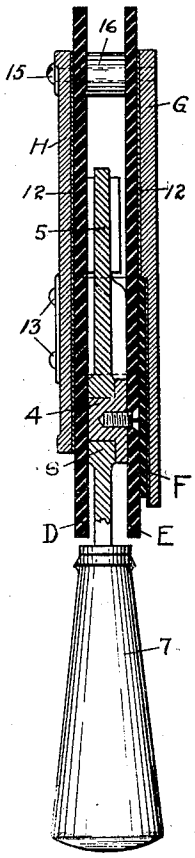


Fig. 2.



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UNITED STATES PATENT OFFICE.

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HIGH-TENSION CIRCUIT-BREAKER.

No. 900,708. Specification of Letters Patent. Patented Oct. 13, 1908.

Application filed February 19, 1903. Serial No. 144,049.

To all whom it may concern:

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

The present invention relates to electric circuit breakers, and more especially to electric switches designed for use in connection with high tension circuits.

As high tension switches have been constructed heretofore they have been provided with arc-disrupting means comprising either an oil reservoir in which the terminal contacts are immersed or a large magnet coil whereby magnetic lines of force are generated to act upon the arc and break it before the metal contacts become injured by the arc. Because of these arc-disrupting adjuncts, high tension switches have been relatively expensive to manufacture and the great space occupied by them has, moreover, been found in practice to be seriously objectionable.

The object of my invention is to provide an electric circuit breaker which shall be very efficient in breaking high tension circuits and at the same time be of low cost to manufacture, and which will not occupy appreciably greater space than the ordinary low tension switches, or switches having no provisions for disrupting the electric arc.

The invention consists in an arrangement of current conducting and interrupting means with simple means for localizing and distributing the magnetic field of the current, whereby the field is rendered dense at one side of the path of the current, or the arc which forms between the severed ends of the conductor, and rarefied upon the opposite side to thereby create an expulsive effect upon the arc according to well known phenomena.

My invention will be more readily understood by reference to the accompanying drawing forming a part of this specification, in which Figure 1 is an elevation, with parts broken away, of a high tension switch embodying one form of my invention, and Fig. 2 is a vertical cross section of the same.

The current conducting and interrupting parts of the switch consist of a binding post A having a vertical shank 1 carrying at its upper end the stationary contact 2, a binding post B having a horizontal shank 3 provided at its end with a stub shaft 4 upon which the movable member C of the switch is journaled, and the movable member C consisting of a metallic blade 5 provided at its middle with a hub 6 having a bearing for the reception of the stub shaft 4 and adapted to contact at its upper end with the stationary contact 2, and carrying at its lower end an insulating handle 7. The binding posts A and B are mounted in the same horizontal plane upon a sheet E of tough fibrous insulation, and held in position thereon by screws 8 extending through the sheet and engaging tapped holes in the shanks 1 and 3. A second insulating sheet D is placed in front of the conducting parts A, B and C, and a third smaller sheet F is placed back of sheet E to protect the heads of the screws 8.

The sheets D and E are substantially rectangular with their lower halves made slightly narrower than the upper halves, but of a sufficient width to project beyond the metallic conducting parts A and B. Blocks of insulation 9 of L-shape are located between and secured by rivets 10 to the sheets D and E at their points of contraction to act as separators of the sheets and to protect the conducting parts A and C from metallic parts 11 which connect plates G and H of the magnetic field localizing means.

The plates G and H are of magnetic material and for economy of manufacture are preferably made of cast iron with facings 12 of soft sheet steel to increase their permeability. The back plate G is substantially rectangular and has formed integral therewith at points on its opposite sides below its middle line posts 11 to which the plate H is connected by screws 13, and projecting outwardly in the plane of the plate G and in line with the posts 11 are ears 14 by means of which the switch may be secured in place, being provided in its front face with a recess for the reception of the insulating sheet F. The front plate H is of substantially the same contour as the back plate G above the line of the posts 11, and below said line it is contracted somewhat both in width and length as indicated by the dotted line *h* in order to insure ample creepage surface.

The insulating sheets D and E and the parts carried thereby are secured to the field plates G and H by means of screws 15 pass-

ing through the upper corners of the sheets and plates and spacing blocks 16 located between the sheets D and E.

In the construction above described it is to be noted that the space between the upper portion of the insulating sheets D and E is substantially open on all sides and that the metallic connections 11, 13 and 15 between the field plates G and H, by means of which magnetic lines of force are short-circuited from one plate to the other, are all located on the outside of the path of the current as it passes from one binding post through the switch blade to the other post. In consequence of this arrangement it is apparent that the magnetic field of the current passing through the switch will be dense at the inner side of the bent or looped path and practically short-circuited on the outside thereof, so that when an arc forms between the stationary contact 2 and the switch blade 5, the unbalanced magnetic fields on the opposite sides thereof, in whatever position it may be, operate to force the arc upwardly until it is broken.

My invention is not restricted to the construction shown, but is capable of being changed and modified in many respects without departing from its spirit and scope.

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

1. The combination of stationary and movable electric contacts, an insulating support to which said contacts are connected, and means for unequally distributing the magnetic field accompanying a current traversing said contacts consisting of two connected plates of magnetic material disposed upon opposite sides of said contacts and to which said insulating support is connected.

2. The combination with stationary and movable contacts, of connected plates of magnetic material located on opposite sides of said contacts, and sheets of insulation secured to the inner surfaces of said plates and to which said contacts are secured.

3. The combination of stationary and movable contacts and their metallic connections arranged to form a bend or loop in the electric circuit, a sheet of insulation to which said contacts are secured, and connected plates of magnetic material between which said sheet and the parts carried thereby are secured.

4. The combination of stationary and movable contacts and their metallic connections arranged to form a bend or loop in the electric circuit, sheets of insulation between which said contacts and connections are secured, plates of magnetic material between which said sheets are secured, and magnetic conductors connecting said plates at one or more points outside said bend or loop.

In witness whereof I have hereunto set my hand this 14th day of February, 1903.

FRED B. COREY.

Witnesses:
BENJAMIN B. HULL,
HELEN ORFORD.