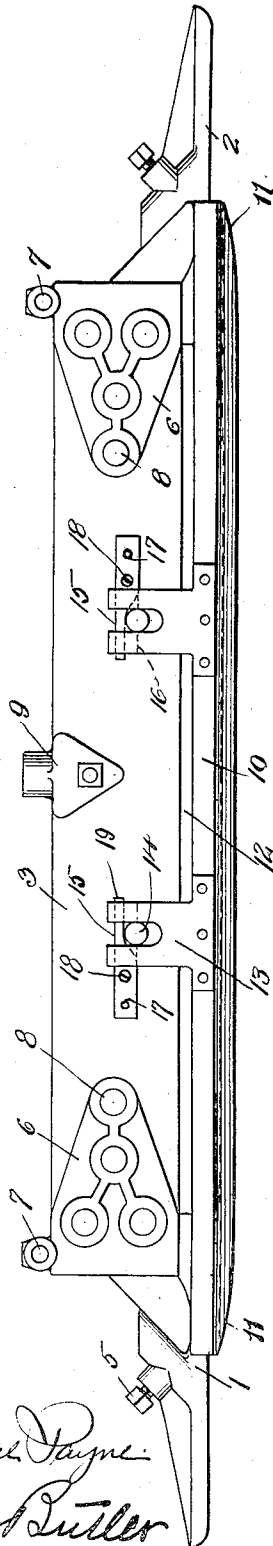


932,863.

Witnesses

Witnesses
Samuel Payne.
H. H. Butler



1. *Styl*

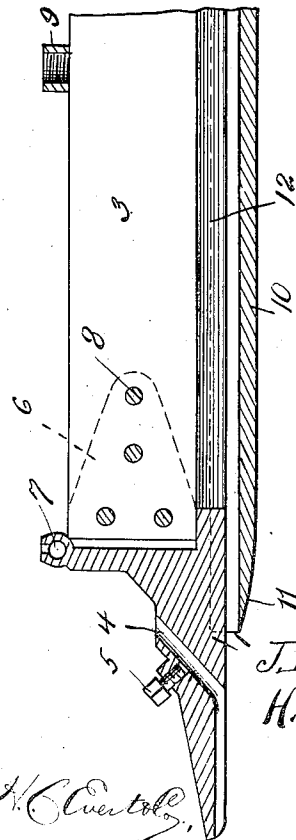


Fig. 2.

 $\mathbb{B}_y$

H. C. Overton

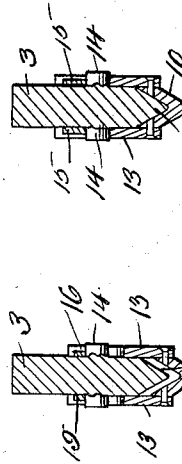


Fig. 3.

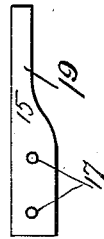


Fig. 5.

Inventors
J. B. Howe and
H. E. Howe

Attorneys,

UNITED STATES PATENT OFFICE

JOHN B. HOWE AND HARVEY E. HOWE, OF WINDBER, PENNSYLVANIA.

CIRCUIT-BREAKER.

932,863.

Specification of Letters Patent.

Patented Aug. 31, 1909.

Application filed March 19, 1909. Serial No. 484,397.

To all whom it may concern:

Be it known that we, JOHN B. HOWE and HARVEY E. HOWE, citizens of the United States of America, residing at Windber, in the county of Somerset and State of Pennsylvania, have invented certain new and useful Improvements in Circuit-Breakers, of which the following is a specification, reference being had therein to the accompanying drawing.

This invention relates to a circuit breaker, particularly designed for the trolley systems of mines, and the invention has for its primary object to provide a circuit breaker with a novel connecting piece for establishing a circuit between the confronting ends of two wires when a trolley wheel is passing from one wire to the other.

A further object of this invention is to provide a circuit breaker with a connecting piece for establishing a circuit, said connecting piece being adjustable and provided with means whereby said piece can be locked to normally establish a circuit irrespective of the circuit breaker.

It has been the practice in connection with the trolley systems of mines to employ circuit breakers, which are used for connecting the confronting ends of two trolley wires, and providing a non-conductive gap for a trolley wheel, said gap being completed by a piece of insulation, as wood or fiber and the current from one trolley wire to the other conveyed around the piece of insulation. Considerable trouble has been experienced by gathering locomotives and haulage locomotives becoming stalled, with heavy loads, at the circuit breakers, the electrical current in proportion to the load stalled by the locomotive not being sufficient to carry the locomotive past the circuit breaker, and in a great many instances it has been necessary to provide auxiliary means to carry the locomotive past the circuit breaker, while in other instances, it has been necessary to reduce the load.

It is the principal object of our invention to obviate the above difficulties by providing a circuit breaker with a connecting piece that will immediately establish an electrical circuit and conductor for the passage of a trolley wheel from the end of one trolley wire to the end of another, the connecting piece being dormant except when a trolley wheel contacts with the same, or when the connecting piece is set to provide an electric

conductor independent of the conductor wire of the circuit breaker.

Our invention will be hereinafter considered in detail and then specifically claimed, and reference will now be had to the drawing forming a part of this application wherein there is illustrated the preferred embodiments of our invention, but we would have it understood that the detail construction thereof can be varied or changed without departing from the spirit of the invention.

Referring to the drawings:—Figure 1 is an elevation of a circuit breaker constructed in accordance with our invention, Fig. 2 is a longitudinal sectional view of a portion of the same, Fig. 3 is a cross sectional view of the circuit breaker with the connecting piece thereof in a dormant or inactive position, Fig. 4 is a similar view with the connecting piece in an active position, and Fig. 5 is an elevation of a wedge used in connection with the circuit breaker.

In the drawings, the reference numerals 1 and 2 designate metallic coupling pieces for the confronting ends of two trolley wires, (not shown) said coupling members being connected by an insulated breaker piece 3, preferably made of wood or fiber.

Each member 1 is provided with a socket 4 for the end of a trolley wire, and a set screw 5 for retaining the end of the wire in the socket. Each member is also provided with parallel clamping plates 6 having wire sockets 7 for a wire (not shown) adapted to convey electrical current from one member to the other around the insulated breaker piece 3. The parallel clamping plates 6 are connected to the ends of the insulated breaker piece 3 by rivets 8, and said breaker piece intermediate the ends thereof is provided with a hanger socket 9, all of these parts being common to the present type of circuit breaker used in connection with the trolley systems and mines.

Our invention resides in providing the insulated breaker piece 3 with a metallic connecting piece 10, V-shaped in cross section and provided with tapering ends 11, whereby a trolley wheel can easily pass from the member 1 on to the connecting piece 10 and on to the member 2, and vice versa. The metallic connecting piece 10 is V-shaped in cross section to conform to the V-shaped lower edge 12 of the breaker piece 3, and for holding the connecting piece 10 in po-

sition to coöperate with the circuit breaker, the sides of said piece are provided with vertical bifurcated straps 13 extending upwardly upon the sides of the breaker piece

5 3. These straps embrace outwardly projecting pins 14 carried by the sides of the breaker piece, and for holding said straps in engagement with said pins wedges 15 are adjustably mounted in longitudinal alining
10 grooves 16 provided therefor in the faces of the straps 13 confronting the piece 3, and to retain the wedges in engagement with the piece 3, said wedges are apertured as at 17, and set screws 18 extend through said aper-
15 tures and into the breaker piece 3. The end of each wedge is reduced, as at 19, whereby, when the reduced portions 19 of said wedges engage the pins 14, the connecting piece 10 will be suspended from the breaker piece 3,
20 and in such position is inactive for the purpose for which the circuit breaker is intended.

By adjusting the wedges 15, the connecting piece 10 can be elevated into engagement
25 with the breaker piece 3, and as the ends of the connecting piece contact with the members 1 and 2 when in an elevated position, a circuit will be normally established between said members irrespective of the wire
30 connecting the sockets 7. This position of the connecting piece 10 is very seldom necessary unless it is desired to dispense with the circuit breaker, and in actual practice the connecting piece 10 will be normally sus-
35 pended, as shown in Fig. 1 of the drawings.

It is apparent that immediately upon a trolley wheel engaging the connecting piece 10 that said piece is elevated and provides an
40 electrical conductor sufficient for the passage of a trolley wheel from the member 1 to the member 2 and vice versa. With a trolley wheel out of engagement with the connecting piece 10, the circuit breaker serves for the purposes for which it is intended.

45 Besides our improvement being applicable to the trolley systems of mines, it is obvious that the same can be used in connection with circuit breakers of overhead electrical systems.

Having now described our invention what we claim as new, is:—

1. In a circuit breaker, the combination with wire coupling members, and an insulated breaker piece connecting said mem- 55
bers, of a connecting piece suspended from said breaker piece, said connecting piece being V-shaped in cross section and provided with tapering ends, straps carried by the sides of said connecting piece, and means in connection with said straps for holding
60 said connecting piece in engagement with said breaker piece.

2. In a circuit breaker, the combination with coupling members, and an insulated breaker piece connecting said members and 65
having a lower edge V-shaped in cross-section, of a movable connecting piece substantially V-shaped in cross-section suspended from said breaker piece and adapted to be elevated by a trolley wheel providing a con- 70
ductor between said members, and adjustable means carried by said breaker piece for locking said connecting piece in engagement therewith.

3. In a circuit breaker, the combination 75
with coupling members, and an insulated breaker piece connecting said members and having a lower edge V-shaped in cross-section, of a movable connecting piece substantially V-shaped in cross-section suspended
80 from said breaker piece and adapted to be elevated by a trolley wheel providing a conductor between said members.

4. In a circuit breaker, the combination 85
with coupling members and an insulated piece connecting said members and having a lower edge V-shaped in cross-section, of a movable conductor piece substantially V-shaped in cross-section normally supported
90 out of engagement with said coupling members by said insulated piece.

In testimony whereof we affix our signatures in the presence of two witnesses.

JOHN B. HOWE.

HARVEY E. HOWE.

Witnesses:

J. H. HUMMEL,

EDWARD MILES.