J. B. & H. E. HOWE.

SECTION BREAKER.

APPLICATION FILED JUNE 17, 1909.

949,537.

Patented Feb. 15, 1910.

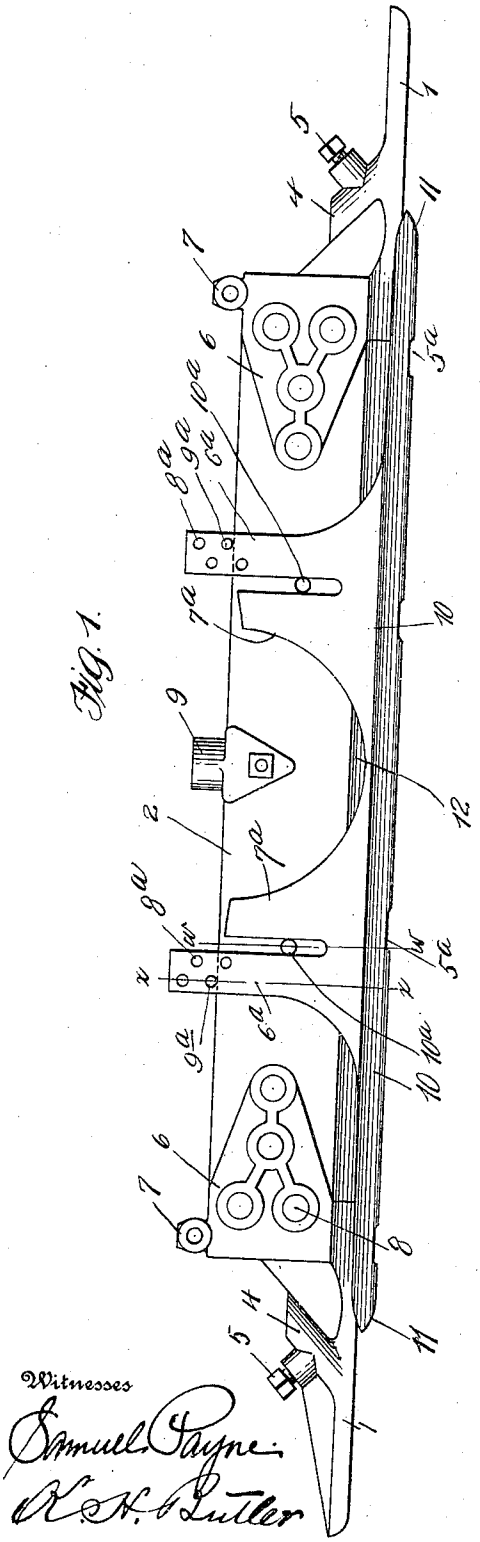

Fig. 1.

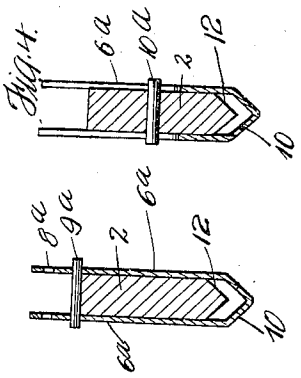

Fig. 4.

Fig. 3.

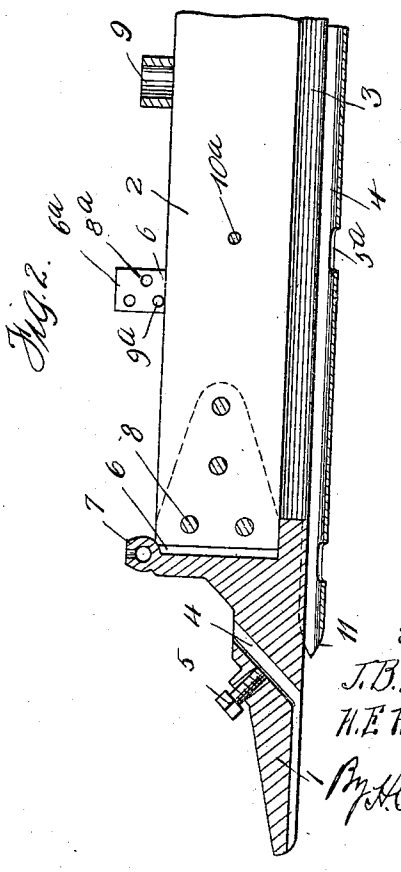

Fig. 2.

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UNITED STATES PATENT OFFICE.

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SECTION-BREAKER.

949,537. Specification of Letters Patent. Patented Feb. 15, 1910.

Application filed June 17, 1909. Serial No. 502,776.

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 Section-Breakers, of which the following is a specification, reference being had therein to the accompanying drawing.

This invention relates to a section breaker, particularly designed for the trolley systems of mines, and the invention has for its primary object to provide a section breaker in a manner as hereinafter set forth with a bridge element for establishing a circuit between the confronting ends of two wires when a trolley wheel is passing from one wire to another.

A further object of this invention is to provide a section breaker with a bridge element for establishing a circuit, said bridge element 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 section 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 section breakers, the electrical current in proportion to the load stalled by the locomotives not being sufficient to carry the locomotive past the section breaker, and in a great many instances it has been necessary to provide auxiliary means to carry the locomotive past the section 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 matter by providing a section breaker with a bridge element 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 bridge element being dormant except when a trolley wheel contacts with the same, or when the bridge element is set to provide an electric conductor independent of the conductor wire of the section 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 a preferred embodiment 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 section 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 section breaker taken on the line *x*—*x* of Fig. 1, and, Fig. 4 is a similar view taken on the line *w*—*w* of Fig. 1.

In the drawings, the reference numeral 1 designates metallic coupling members for the confronting ends of two trolley wires, (not shown) said coupling members being connected by an insulated breaker piece 2, 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 2. 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 section breaker used in connection with the trolley system in mines.

Our invention resides in providing the insulated breaker piece 2 with a metallic bridge element or shoe 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 bridge element 10 and on the member 1 at the opposite end, and vice versa. The metallic bridge element 10 is V-shaped in cross section to conform to the V-shaped lower edge 12 of the breaker piece 2, and for holding the bridge

element 10 in position to coöperate with the section breaker, the sides of said piece are provided with vertical bifurcated arms, extending upwardly upon the sides of the breaker piece 2, the bifurcated arms providing suspension members 6^a and guide members 7^a, the former being of a greater height than the latter. The suspension members 6^a have the upper ends thereof provided with transversely alining staggeredly arranged openings 8^a to accommodate detachable pins 9^a adapted to engage the upper edge of the breaker piece 2 and hold the bridge element or shoe 10 either in or out of engagement with the breaker piece 2 and the coupling members 1. The breaker piece 2 is provided with transverse pins 10^a, the ends of said pins protruding from the sides of the breaker piece 2 into the bifurcations of each arm to guide the members 6^a and 7^a.

The bridge element or shoe 10 is provided with a plurality of openings 5^a to permit water to drain from said shoe. As shown in the drawings, the bridge element or shoe 10 is normally supported out of engagement with the coupling members 1 and when in such position, the section breaker serves functionally the same purpose as the present type of section breaker. When a trolley wheel (not shown) rides onto the bridge element or shoe 10, said shoe is immediately elevated to engage the breaker piece 2 and the members 1 and provide a transferring and guiding element for the trolley wheel, said element establishing a direct circuit for the current of the members 1. Should it be desired to normally maintain a direct circuit between said members, the bridge element or shoe 10 can be elevated to engage the breaker piece and then the pins 9^a positioned in the lowermost openings 8^a to hold the shoe 10 fixed relative to the breaker piece 2.

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 section breaker, the combination with coupling members, and a breaker piece connecting said members, of a metallic shoe movable with relation to said breaker piece and adapted to connect said members, said shoe having openings formed therein, and means in connection with said breaker piece and said shoe for guiding the movement of said shoe.

2. In a section breaker, the combination with a pair of coupling members and a breaker piece connecting said members together, of a vertically shiftable and adjustable shoe straddling and suspended from said breaker piece and adapted when shifted in one direction to engage said coupling members for bridging the space therebetween.

3. In a section breaker, the combination with a pair of coupling members and a breaker piece connecting said members together, of a vertically shiftable and adjustable shoe straddling and suspended from said breaker piece and adapted when shifted in one direction to engage said coupling members for bridging the space therebetween, said shoe having tapering ends to facilitate the passage of a trolley wheel thereon.

4. In a section breaker, the combination with a pair of coupling members and a breaker piece connecting said members together, of a vertically shiftable and adjustable shoe straddling and suspended from said breaker piece and adapted when shifted in one direction to engage said coupling members for bridging the space therebetween, and laterally-extending guiding means carried by the breaker piece for said shoe.

5. In a section breaker, the combination with a pair of coupling members and breaker piece connecting said members together, of a vertically shiftable and adjustable shoe straddling and suspended from said breaker piece and adapted when shifted in one direction to engage said coupling members for bridging the space therebetween, said shoe having its lower end provided with a series of openings.

6. In a section breaker, the combination with a pair of coupling members and a breaker piece for connecting said members together, of a vertically shiftable shoe straddling said breaker piece and adapted when shifted in one direction to engage said coupling members for bridging the space therebetween, and means carried by said shoe and in connection with said breaker piece for adjustably suspending the shoe.

7. In a section breaker, the combination with a pair of coupling members and a breaker piece for connecting said members together, of a vertically shiftable shoe straddling said breaker piece and adapted when shifted in one direction to engage said coupling members for bridging the space therebetween, and means carried by said shoe and in connection with said breaker piece for adjustably suspending the shoe and laterally-extending means carried by the breaker piece for guiding said shoe.

8. In a section breaker, the combination with a pair of coupling members and a breaker piece for connecting said members together, of a vertically shiftable shoe straddling said breaker piece and adapted when

shifted in one direction to engage said coupling members for bridging the space therebetween, and means carried by said shoe and in connection with said breaker piece for adjustably suspending the shoe, said shoe having its bottom provided with a series of openings and further having each end tapering.

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

JOHN B. HOWE.
HARVEY E. HOWE.

Witnesses:
G. S. R. MILLER,
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