

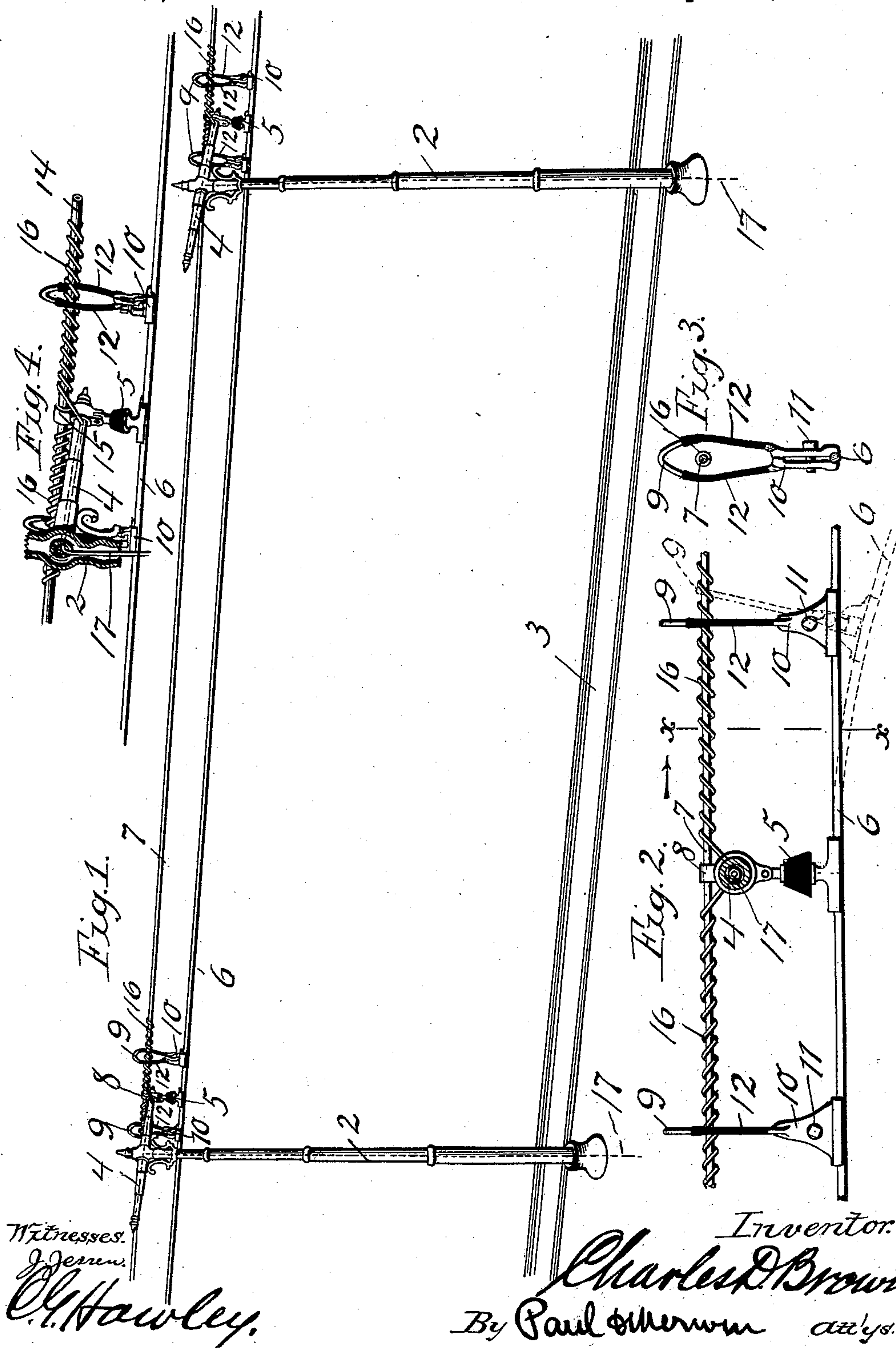
(No Model.)

C. D. BROWN.

SAFETY ATTACHMENT FOR OVERHEAD ELECTRIC WIRES.

No. 472,784.

Patented Apr. 12, 1892.





# UNITED STATES PATENT OFFICE.

CHARLES D. BROWN, OF MINNEAPOLIS, MINNESOTA.

## SAFETY ATTACHMENT FOR OVERHEAD ELECTRIC WIRES.

SPECIFICATION forming part of Letters Patent No. 472,784, dated April 12, 1892.

Application filed January 8, 1891. Serial No. 377,189. (No model.)

*To all whom it may concern:*

Be it known that I, CHARLES D. BROWN, of Minneapolis, in the county of Hennepin and State of Minnesota, have invented certain Improvements in Safety Attachments for Overhead Electric Wires, of which the following is a specification.

My invention relates to a short-circuiting device for use in connection with overhead electric wires, and especially with the overhead conductors or trolley-wires of electric street-railways; and the object of the invention is to provide means for instantly short-circuiting the current to ground when a trolley-wire breaks, and thereby leaving the broken ends of the wire dead, and consequently harmless, to a person touching the same when they are on the ground or near the same.

To this end my invention consists in the combination, with the electric conductor and the hanger and support thereof, of a rigid overlying wire or rod and a loop or loops arranged on the trolley-wire and surrounding the overlying wire or rod, but normally out of contact therewith. When the trolley-wire breaks or bends down, the top of this loop is drawn into contact with the overlying wire and current is immediately shunted through the loop and said wire and through a conductor leading therefrom to ground.

My invention will be more readily understood by reference to the accompanying drawings, in which—

Figure 1 is a perspective view showing the trolley-wire and its supports in connection with devices embodying my invention. Fig. 2 is an enlarged detail elevation of the cross-arm, the hanger, trolley-wire, and my safety attachments. Fig. 3 is a vertical cross-section on the line *x x* of Fig. 2. Fig. 4 is a perspective view showing in particular the disposition of the ground-wire.

As shown in the drawings, 2 2 represent the poles arranged between the tracks, one of which 3 is shown. On the tops of the poles are the usual cross-arms 4, from the ends of which depend the usual hangers 5, by means of which the trolley-wire 6 is suspended. The guard-wire 7 passes over the tops of the cross-arms, being fixed thereon by the lugs 8 or in any other convenient manner. On each side

of every hanger 5 I arrange a copper-wire loop 9, having its ends fixed upon the brass clamping-plate 10, clamped upon the trolley-wire 6 by the bolt 11. The top of each loop extends above the guard-wire, and the sides of the loop are insulated, as shown at 12, to a point above the guard-wire to prevent a contact being made when the loop is borne against the guard-wire, either by the twisting of the conductor-wire or by wind-pressure. The top of the loop, however, is bare, and upon the breaking or parting of the trolley-wire at a point between the hangers the bare top of the loop is drawn down into good contact with the guard-wire by the dropping or bending down of the trolley-wire, as indicated in Fig. 2.

In places where a guard-wire is not employed I substitute therefor a short length of strong rod or pipe 14, the same being secured on the end of the cross-arm and in line with the trolley-wire by the eye 15. As the guide wire or rod is usually made of iron, I prefer to wrap a copper wire 16 about the same. The ends of the two wires 16 connect with the ground-wire proper 17, which passes back on or in the arm 4 and into the inside of the hollow metal post 2. This ground-wire 17 (shown plainly in Figs. 2 and 4 and in dotted lines in Fig. 1) extends to a good ground connection, and it will be seen, therefore, that upon the breaking of the trolley-wire a short-circuit will be instantly established from the trolley-wire through the loop and through the guard or the wire wound upon the same and to ground through the insulated wire 17. This action taking place at each pole, it will be seen that the broken ends of the wire will be left dead, and may therefore be touched or handled by persons upon the ground without danger of their receiving a heavy shock.

Having thus described my invention, I claim as new and desire to secure by Letters Patent—

1. The combination, with the trolley-wire and the supports thereof, of an overlying guard and a loop extending from the trolley-wire above and surrounding said guard, said guard being electrically connected with the ground, substantially as described.

2. The combination, with the overhead wire,



of supports therefor, a loop arranged in proximity to a support, and an overlying guard surrounded by but normally insulated from said loop, said loop adapted to make electric  
5 contact with said guard and with the ground upon the falling of the said overhead wire, substantially as described.

3. The combination, with a suspended electric wire and the hanger therefor, of an over-  
10 lying guard, a ground connection extending therefrom, and a loop extending from the wire on each side of the said hanger and electrically connected with the wire, the sides of said loops being insulated and the said guard  
15 being surrounded by the same, substantially as and for the purpose specified.

4. The combination, with the pole and the cross-arm thereof, of a hanger depending therefrom, a conductor-wire suspended from  
20 said hanger and insulated from said arm, a

guard-wire overlying the same, a ground-wire leading therefrom down through said pole to ground, and electric conductor-loops projecting upward from the conductor-wire and surrounding the guard-wire, the sides of said  
25 loop being insulated and the top thereof bare, substantially as described.

5. The combination, with the conductor-wire, of the guard suspended above the same and insulated therefrom, a ground connection  
30 extending from said guard, and a loop surrounding said guard, the clamping-plates 10 of the loop, a bolt or bolts for securing the same on the conductor-wire, and means for insulating the sides of the loop, substantially  
35 as described.

CHAS. D. BROWN.

Witnesses:

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