(No Model.)

C. PETERSON.

TROLLEY WIRE SUPPORT.

No. 499,143. Patented June 6, 1893.

Fig. 1.

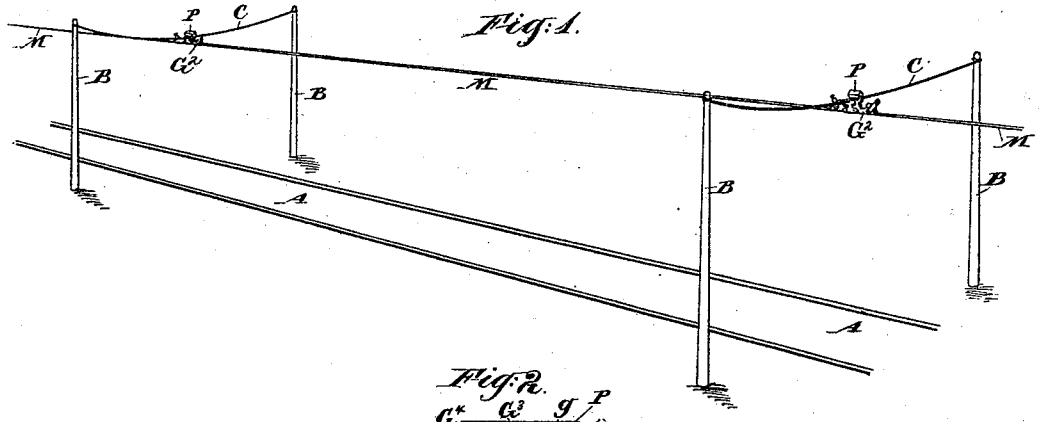


Fig. 2.

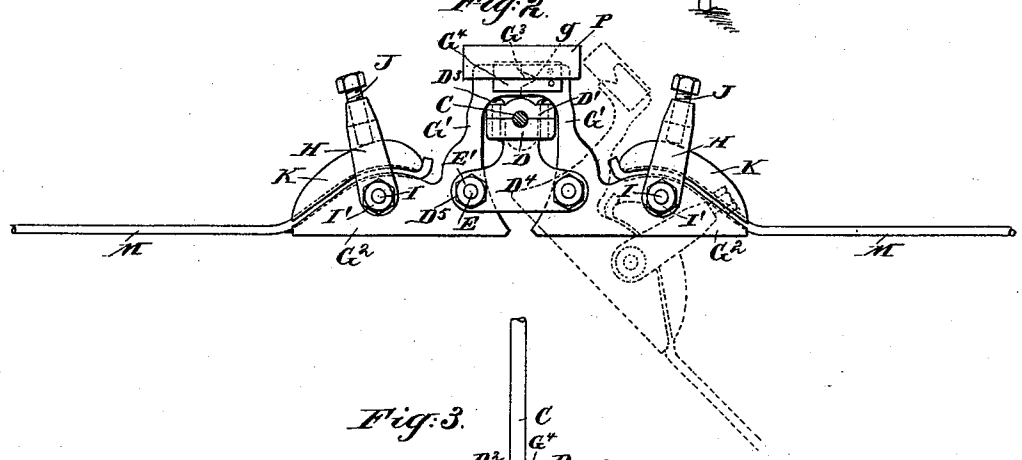


Fig. 3.

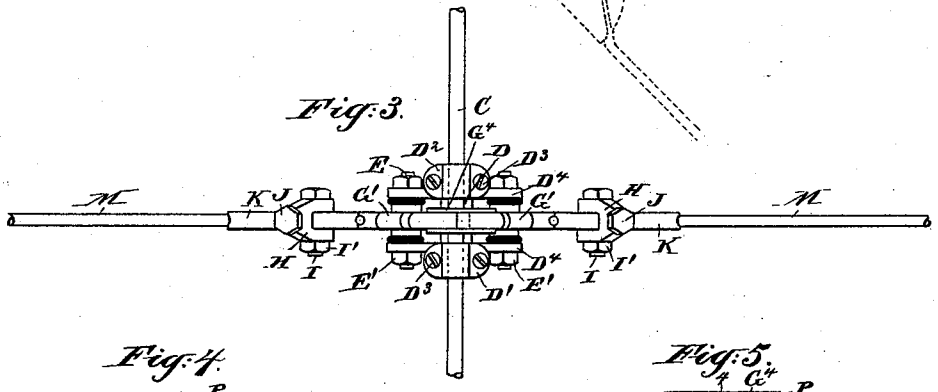


Fig. 4.

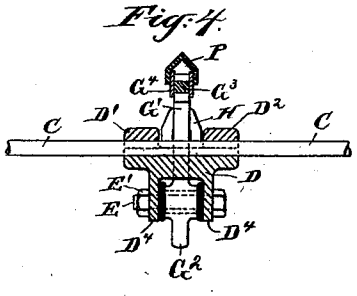


Fig. 5.

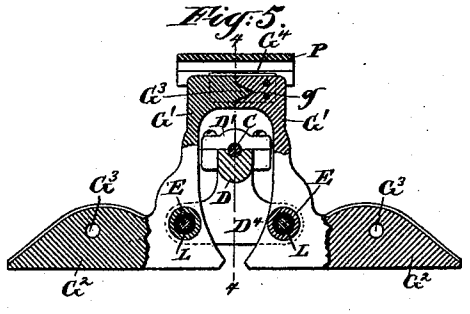
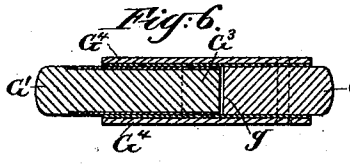


Fig. 6.



Witnesses:

Charles R. Searle.

M. F. Boyle

Inventor:

Carl Peterson

by his attorney

Thomas Drew Stetson

UNITED STATES PATENT OFFICE.

CARL PETERSON, OF BROOKLYN, NEW YORK.

TROLLEY-WIRE SUPPORT.

SPECIFICATION forming part of Letters Patent No. 499,143, dated June 6, 1893.

Application filed December 16, 1892. Serial No. 455,395. (No model.)

To all whom it may concern:

Be it known that I, CARL PETERSON, of Brooklyn, Kings county, in the State of New York, have invented a certain new and useful Improvement in Trolley-Wire Supports, of which the following is a specification.

I will describe the invention as applied to support a trolley wire in that class of trolley-wire ways in which the usual upright poles are set a considerable distance away from the road, with wires across, and the trolley wire is supported over the center of the road by such transverse wires.

The object of the invention is to reduce the danger of accidents from the communication of the current from the broken ends of the wire when a fracture occurs. It insures a prompt and complete breakage of the electrical connection through the wire at the support each side of the fracture. I provide at each supporting point two bell-crank levers oppositely arranged. I cut the wires into lengths only sufficient to extend from the lever at one support to the adjacent lever on the next support with means for firmly attaching them. The levers are arranged each with an arm extending upward, and the tension of the proper wire on the horizontal arm of each tends to hold the upper ends of the levers reliably in contact. The electric current flows from the wire to the lever and through the joined upper ends to the other member of the pair of levers, and thence through the clamp out again into the next wire. I provide for efficiently supporting the centers of the levers, using any ordinary or suitable means for insulating the levers from their supports and from each other except at the joined points at their upper ends. I provide for matching the upper ends one into the other so as to make a contact which is capable of sliding and in what I esteem the best form of the invention, face the contact surfaces with platina. When a fracture of a wire occurs, the broken ends being unsupported, descend by gravity and turning their corresponding bell-crank levers, disconnect their upper ends each from its adjacent lever, and the electrical current then ceases to be transmitted beyond the support.

The accompanying drawings form a part of this specification, and represent what I consider the best means of carrying out the invention.

Figure 1 is a perspective view. The remaining figures show parts on a larger scale. Fig. 2 is a side elevation, and Fig. 3 a plan view of the same with the top-cap removed. Fig. 4 is a vertical section on the line 4—4 in Fig. 5. Fig. 5 is a vertical longitudinal section of a portion. Fig. 6 is a horizontal section of a portion on a still larger scale.

Similar letters of reference indicate corresponding parts in all the figures where they appear.

A is the track, B B, &c., are the poles, and C the transverse wires extending across from the head of a pole on one side of the track to the head of a pole on the opposite side of the track. All these parts may be of the ordinary and long-approved construction.

Along the line where the trolley wheel is to traverse, I apply a casting D, having its upper side grooved transversely to receive about half the thickness of the wire C, to which it is secured at each side by narrow binders D′, D^2, correspondingly grooved, held by screws D^3. Below these extend wings D^4, each having two holes D^5, which receive transverse bolts E, held by nuts E′. On each of these bolts E, I mount a bell-crank lever, the upright arm of which is marked G′, and the lower arm is marked G^2. The upper arms are adapted to form a mechanical engagement each with the other and support to keep the parts in their places and also an efficient electrical connection. The lower arm G^2 of each I form with a straight and narrow under edge corresponding to the trolley wire, and these form, when the parts are in place for use, a nearly continuous track for the trolley wheel, not shown. The upper edge is formed to be engaged strongly by the bent end of the wire. Each lower arm is also provided with a hole which receives a bolt I which engages a loop or strap secured by a nut I′. The strap H is tapped and receives a strong screw J, which is set down firmly upon a clamping-piece K, curved to match the outline of the upper edge of the arm G′.

M M are lengths of the trolley wire, each bent near its end by compression between suitable cheeks, or otherwise, to correspond to the upper face of the arm G^2. Such face

and the adjacent under face of the clamp K, are each grooved, as indicated. At the outer end or terminal point the wire M extends horizontally in line with the lower edge of the arm G^2.

There are two of the bell crank levers mounted in reverse positions in each of the castings D, and it will be understood that the opposite end of each wire M is correspondingly secured to the next support, and so on. The upper end G′ of one lever is notched as indicated by *g*, and the adjacent end of the opposite lever is formed with a corresponding angular projection G^3. When the parts are in position for use the projection G^3 matches in the notch *g*, and locks the parts against a tendency to displacement vertically. On the upper ends of one lever of each pair, are riveted two thin cheeks G^4, which extend across the junction and lap upon the upper end of the adjacent lever, thus locking the upper arms G′ of each pair together against displacement laterally. The inner face of each cheek G^4 is faced with a thin layer of platinum. The adjacent surfaces of the inclosed arm G′ of the opposite lever is also faced with platinum.

The casting D is supported on the transverse wire C. It supports the two bolts E, E, and each of these supports a bell crank lever G′, G^2, which by means of their clamping pieces K and straps H, and screws J, firmly hold and support the wires M. The trolley wheel, not shown, which may be of the ordinary form and adapted to serve in the ordinary manner, rolls along under each length of wire M, and under the lower arms G^2, G^2, of each pair of levers and again off and under the next length of wire M. All these parts are in the circuit. Thimbles L, of hard rubber or analogous insulating material defend these levers against the communication of the current to the bolts E, and washers of similar material defend them against the communication of the current laterally to the casting D. I make the electrical contact between the clamping pieces K, and each corresponding arm G′, as complete as possible. The junctions at the upper ends of the two arms G′ of each pair are complete, and practically the current flows through my ample connections with about the same freedom as it would if the lengths of wire M were directly joined.

When a wire breaks the broken ends being unsupported will fall and tilt their attached levers G′ G^2, each drawing its upper end G′ out of engagement with the other arm of the pair. The strain remaining on the adjacent length of the trolley wire will pull the central casting D into an inclined position. Both movements will tend to insure the separation of the upper arms G′ and the complete insulation of the part of the wire which is broken. The dotted lines in Fig. 2 show the tilted position which will be assumed by the lever G′, G^2, and of the attached length of wire M, when such fracture has occurred.

The tilting of the casting D when one of the lengths of wire breaks, is due to the strong pull of the remaining length. So long as the tension on the two parts is practically equal, the casting D remains upright and the lower edges of the castings G and G are in a right line. When one part breaks, the pull of the other part not only tilts the lever G as shown in dotted lines in Fig. 2 but also tilts the casting D so that the lever G connected to the broken end is lower than the other. The form of the parts prevents their contact under these conditions, and the tilting of the part D aids materially to insure the complete stoppage of the current.

With my invention the ends of the wires which fall on the track are harmless and continue to be so whatever may be the condition of the current in the portion of the wire remaining in place. The repairs may be effected expeditiously by removing the broken parts and clamping the ends of a new length M in the proper levers.

I defend the tops of each pair of arms G′, G′, against the weather by applying a thin roof P of hard rubber, as shown in Figs. 2, 4 and 5. These are elastic, and grip the tops of the arms with sufficient force to hold themselves efficiently against the slight disturbing forces to which they are exposed while the parts are in condition for use. When a wire breaks and the lever arms G′ G′ pull apart, these roofs being open at each end offer no serious resistance to the movement.

Parts of the invention may be used without the whole.

The invention has been described as applied to trolley-wires, but it may be used with advantage in electric lighting systems and other situations where an electric current of such strength as to be dangerous is employed. For such uses the straightness and narrowness of the lower edges are not essential.

I claim as my invention—

1. A trolley wire made in separate lengths, two bell-crank levers attached to adjacent lengths, each with an arm extending upward detachably united so that when a wire breaks, the falling of the broken ends by gravity will effect such detachment and thus cut both of the broken ends out of the circuit, in combination with each other and with the supporting casting D, supported at the point C and pivoted to the levers G at the separate points E, adapted to tilt with the strain of the unbroken length of the wire, and thus increase the certainty of the disconnection of the upright arm of such bell-crank levers, all substantially as specified.

2. In combination with a trolley-wire made in separate lengths, an open ended roof P, applied as shown, over the upper ends of the levers and retained simply by its gravity and lateral friction and the pair of levers G G connected to adjacent lengths, each having an arm extending upward, these arms being

adapted to form electrical contact at their upper ends, and with provisions for causing them to separate when either length of wire breaks, all arranged for joint operation substantially as herein specified.

3. A trolley wire made in separate lengths, in combination with two bell-crank levers attached to adjacent lengths, each with an arm extended upward, detachably united, arranged substantially as herein shown, so that when a wire breaks the falling of the broken ends by gravity will effect such detachment and thus cut both the broken ends out of the circuit, one of the upright arms thus engaged being embraced between two cheeks carried on the other, substantially as herein specified.

4. A trolley wire made in separate lengths in combination with two bell-crank levers attached to adjacent lengths each with an arm extended upward detachably united substantially as herein shown, so that when a wire breaks the falling of the broken ends by gravity will effect such detachment, and thus cut both the broken ends out of the circuit, the upright arms thus engaged being interlocked by the projection G^3 on one arm, and the recess *g* on the other so as to support each other mechanically against displacement vertically while leaving them free to separate, all substantially as herein specified.

5. A trolley wire made in separate lengths in combination with two bell-crank levers attached to adjacent lengths, each with an arm extended upward detachably united substantially as shown, so that when a wire breaks the falling of the broken ends by gravity will effect such detachment and thus cut both the broken ends out of the circuit, the upright arms thus engaged being interlocked by the projection G^3 on one arm and the recess *g* on the other so as to support each other mechanically against displacement vertically, and also by side cheeks G against displacement laterally while leaving them free to separate by the drawing of the arms directly apart when the wire breaks, all substantially as herein specified.

In testimony that I claim the invention above set forth I affix my signature in presence of two witnesses.

CARL PETERSON.

Witnesses:
A. T. ROTH,
CHARLES BRIX.