



# UNITED STATES PATENT OFFICE.

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## ELECTRIC RAILWAY.

SPECIFICATION forming part of Letters Patent No. 560,269, dated May 19, 1896.

Application filed March 11, 1895. Serial No. 541,235. (No model.)

*To all whom it may concern:*

Be it known that I, NICOLAUS LEIDGEN, a citizen of the United States, and a resident of Milwaukee, in the county of Milwaukee and State of Wisconsin, have invented certain new and useful Improvements in Electric Railways, &c.; and I do hereby declare that the following is a full, clear, and exact description thereof.

My invention relates particularly to trolley-wire supports for electric railways; and it consists in certain peculiarities of construction and combination of parts, as will be fully set forth hereinafter and subsequently claimed.

In the drawings, Figure 1 is a plan view of my improved device, partly in section, on the line 1 1 of Fig. 2. Fig. 2 is a side elevation of the same partly broken away to better illustrate details of construction. Fig. 3 is a detail view, partly in section, on the line 3 3 of Fig. 2 and with the weighted eccentric and wire removed.

The object of my invention is to provide a device for supporting the overhead trolley-wires of an electric railway in such a manner that should one of said wires break the entire section of wire in which the break occurs would immediately fall to the ground and become a dead wire, thus obviating the danger which now exists when a live trolley-wire breaks and falls with one end still connected to the source of power.

Referring to the drawings, A represents one of my improved hangers or supports, and B a section of the trolley-wire. These hangers are provided with suitable sockets *a* to receive the screw-threaded ends of bolts *b*, by which they are suspended from the cross-arms of the poles between the tracks of the railway in the ordinary manner. Instead of using continuous wires for the trolleys I propose to employ separate sections of the wire B, one section between each two successive hangers, each end of said section being curved upward, as shown at *c*, and terminating in a backwardly-projecting heel *d*. These curved ends *c* of the wire B rest within curved grooves *e* in the sides of the hangers, and the bottom edge of each hanger is rounded, as shown at *f*, to serve as a continuation of the wire, in effect, so that the trolley will have a smooth continuous horizontal path. Above the up-

per terminations of the described grooves *e e* the hangers are formed with upwardly and outwardly inclined surfaces (best indicated by the line *g* in Fig. 3) to aid in freeing the ends of the wire B from the hangers when a break occurs, as hereinafter explained.

On the rear or inner side of each hanger A is a horizontal plate, integral therewith and projecting from each side to form arms *h h*, terminating in bosses *i i* with forwardly-projecting studs *j j*, there being preferably a strengthening-web of metal *k* on the rear of said plate between the bosses.

D D represent eccentrics having weighted lever-arms E E, the heads of said eccentrics being perforated and mounted upon the described studs *j j* and secured in place thereon in any suitable manner, preferably by simply upsetting the projecting ends of said studs, as shown.

The operation of my device will be readily understood from the foregoing description of its construction, taken in connection with the accompanying drawings. As already stated, the trolley-wires are made in independent sections of a length just sufficient, when properly stretched, to extend between two successive hangers on the line. Each end of this wire section is then properly bent or shaped and slipped to place within the described groove *e*, with the heel *d* of the wire over the edge of the eccentric-head, as shown at the left in Fig. 2. In this position (the other end of the wire B being similarly supported in the hanger adjacent thereto) the wire B will be held firmly and securely in place and the described rounded lower edges of the hangers will, as stated, form practically continuous connections or continuations of said wire, so that jumping and sparking of the trolley will be avoided and the latter will find a continuous smooth path.

Should the trolley-wire break at any point the jar or shock occasioned by the fall of the broken ends will instantly start the weighted lever ends of the eccentrics into motion and these parts D E will at once assume the position shown at the right in Fig. 2. As each eccentric D commences to revolve on its stud *j* it lifts the adjacent end of the wire B with it, by reason of the described heel *d* on the extreme end of the wire, and carries it up

along the inclined or cam surface *g* of the hanger, which forces the curved end *c* of the wire out of the groove *e* and permits the wire to instantly drop to the ground, the space  
 5 between the said grooved wall of the hanger and the said eccentric increasing as the latter revolves, as clearly shown by the dotted arrow-lines at the right in Fig. 2, so that there  
 10 cannot be any possibility of the end of the wire clinging to the hanger.

Wire sections can be kept in stock of the proper lengths and suitably curved at their ends, if desired, so as to repair the trouble in the shortest possible time, while at the same  
 15 time the injury will necessarily be confined to a single section of the wire between two successively-disposed hangers.

Although particularly designed for electric railways, as stated, my invention is equally  
 20 well adapted to guard against injury occasioned by the breaking of other live electric wires—such as electric-light wires, for example—and hence I do not wish to be understood as confining myself to the trolley-wires  
 25 herein named.

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

1. A trolley-wire-supporting device for elec-

tric railways, comprising a hanger having 30 curved sides for receiving the ends of the wire sections, said sides terminating in upwardly-inclined cam-surfaces and weighted eccentrics pivoted to said hanger for clamp- 35 ing the ends of the wires against said curved sides.

2. A trolley-wire-supporting device for electric railways, comprising a hanger having curved sides provided with grooves for receiving the ends of the wire sections, said 40 sides terminating in upwardly and outwardly inclined cam-surfaces, and the bottom of said hanger being formed with a horizontal rounded edge to form a continuous path for the 45 trolley between the wire sections, and eccentrics pivoted to said hangers for clamping the ends of the wire sections against said curved grooved sides, and having weighted lever ends for freeing the wire ends from engagement 50 with said hangers on the breaking of said wire.

In testimony that I claim the foregoing I have hereunto set my hand, at Milwaukee, in the county of Milwaukee and State of Wisconsin, in the presence of two witnesses.

NICOLAUS LEIDGEN.

Witnesses:

H. G. UNDERWOOD,  
 CHARLES FORSYTH.