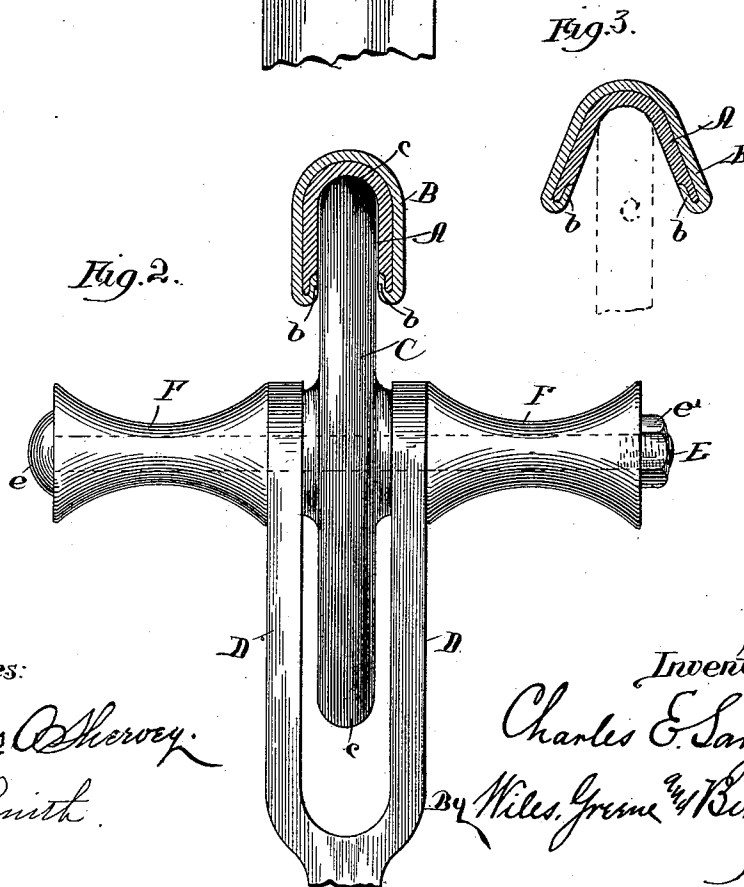
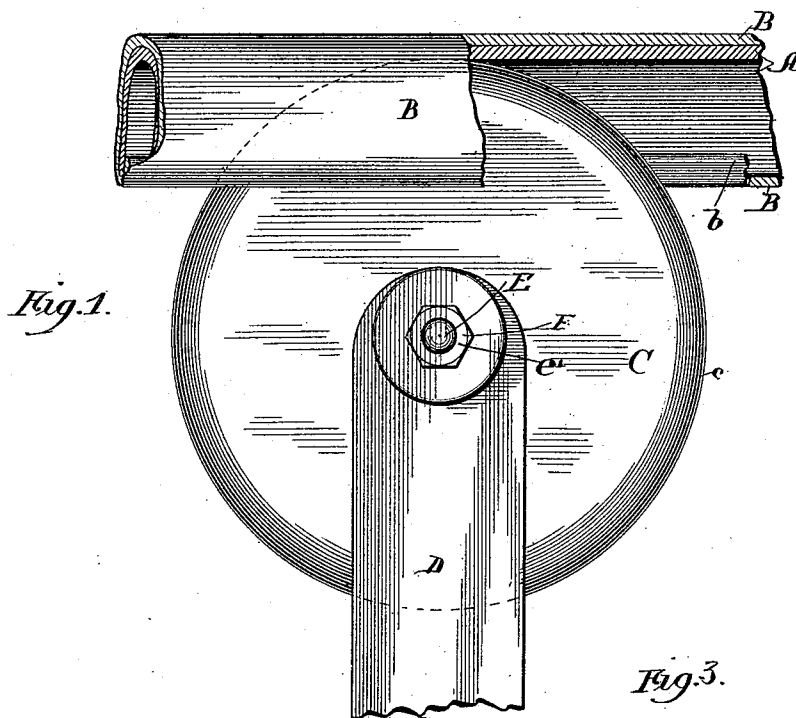


(No Model.)

C. E. SARGENT.
ELECTRIC CONDUCTOR FOR RAILWAYS.

No. 463,760.

Patented Nov. 24, 1891.



Witnesses:

Charles A. Sherway.
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UNITED STATES PATENT OFFICE.

CHARLES E. SARGENT, OF CHICAGO, ILLINOIS.

ELECTRIC CONDUCTOR FOR RAILWAYS.

SPECIFICATION forming part of Letters Patent No. 463,760, dated November 24, 1891.

Application filed July 10, 1891. Serial No. 399,013. (No model.)

To all whom it may concern:

Be it known that I, CHARLES E. SARGENT, a citizen of the United States of America, residing at Chicago, in the county of Cook and State of Illinois, have invented certain new and useful Improvements in Electric Railways, of which the following is a specification.

My invention relates to improvements in electric railways, and particularly to improvements in overhead wires used as electrical conductors for such railways and in the trolleys adapted to run in contact with such overhead wires, in the manner and for the purpose well known in the art.

The invention is fully described and explained in this specification and shown in the accompanying drawings, in which—

Figure 1 is a view showing a wire and trolley embodying my invention, the trolley being shown in side elevation and the wire partly in side elevation and partly in longitudinal vertical section. Fig. 2 is a view of the same parts shown in Fig. 1, the trolley being shown in elevation and the wire in transverse section. Fig. 3 is a transverse section of a modified form of wire.

In Figs. 1 and 2, A is a bar or wire of suitable conducting metal, U-shaped in cross-section, and intended to be used in the position shown in the drawings, in which the open or concave edge of the bar or wire is turned downward. This metallic bar has a permanently attached external covering B of suitable insulating material, covering the entire outer or exposed surface of the bar throughout its entire length, and preferably lapped about its lower edges, as shown at b, the inner faces of such lower edges being preferably recessed for that purpose, as shown.

C is a trolley-wheel, of suitable conducting metal, supported between the forks D D of a suitable arm by means of a bolt E or other form of axle. The edge c of the pulley C is rounded to conform substantially to the curved portion of the inner concave surface of the bar or wire A, with which it forms an electrical contact, and it is of course understood that the wire and trolley-wheel co-operate in the same way and for the same purpose as the corresponding elements in the devices already in use in those electric-railway systems in which an overhead wire sup-

plies the current for operating the motors that run the cars.

On the bolt E are mounted two spools F F, 55 of insulating material, lying on opposite sides of the fork d d and held in place upon the bolt by means of a head e and nut e', of ordinary construction. These spools are intended to strike against the lower surface of the wire 60 and limit the upward movement of the free end of the trolley-arm when the trolley-wheel misses the wire as the operator on the car attempts to bring the wheel in working contact with the wire. This limitation of the upward 65 movement of the trolley-wheel is a great convenience and saving of time, and it is evident that the use of the spools F F or other similar stops is not limited to the use of the trolley with the particular form of wire shown and described herein, but is equally advantageous with any other form of wire.

Fig. 3 shows a form of wire substantially the same as that shown in Figs. 1 and 2, the only difference being that the edges or plain 75 faces of the wire shown in this figure diverge considerably from the close toward the open edge, instead of being parallel, as in the form shown in Fig. 2. This is, perhaps, the preferable form in which to make the wire for actual 80 use, as the greater opening at the lower side of the wire offers a greater space for the reception of the edge of the trolley-wheel, and renders it easier to bring the wheel into working contact with the wire. In the use of either 85 form it is my intention that only the rounded edge of the trolley-wheel shall come in contact with the surface of the wire, and where the form shown in Fig. 2 is used the thickness of the wheel should always be somewhat 90 less than the space between the two parallel faces of the wire, in order to allow a certain amount of play and prevent binding of the edge of the wheel between said faces.

All the drawings illustrate a conductor 95 combining in a single structure a wire substantially U-shaped in cross-section and a permanent insulating-layer covering the external surface of the wire and preferably overlapping its edges. This insulating-layer 100 extends throughout the entire length of the wire and forms an integral part of the conductor, the entire structure being coiled, carried from place to place and suspended for use

the same as a wire of a single material similarly used. When a wire thus insulated is suspended and in use, it is protected throughout its entire length from accidental electrical contact with other wires that may fall across it, and, on the other hand, if the insulated wire itself breaks and falls across other wires the insulation prevents electrical contact. This construction therefore obviates the necessity for the guard-wires that are now usually placed above the electric wires in structures of this class, and at the same time effectually removes a serious source of trouble and danger in the management and maintenance of wiring for electric roads. The wire having either of the forms illustrated must evidently have greater rigidity than a solid cylindrical wire of the same weight; but this rigidity is not so great as to prevent the coiling of the wire upon spools of sufficient size without impairment of its form or insulation.

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

25 1. An insulated conductor for electric railways, made up of a wire substantially U-shaped in cross-section and a permanently-attached layer of insulating material covering the external surface of the wire throughout its entire length, substantially as and for the purpose set forth.

35 2. An insulated conductor for electric railways, made up of a wire substantially U-shaped in cross-section and a permanently-attached layer of insulating material covering the external surface of the wire and over-

lapping its edges throughout its entire length, substantially as and for the purpose set forth.

3. The combination, with the conductor A, formed substantially as described and having its edges internally recessed, as shown, of the insulating material B, covering the external surface of the conductor and having marginal portions *b* extending about the edges of the conductor and into the recesses therein, substantially as shown and described.

4. The combination, with a metallic conductor substantially U-shaped in cross-section, of a trolley-wheel supported from the car in the usual manner and having its edge of such cross-section as to conform substantially to the curved inner surface of the conductor, substantially as shown and described.

5. The combination, with a trolley-wheel and an arm provided with a terminal fork, in which the wheel is supported, of insulating spools or fingers projecting laterally from the fork and adapted to strike an overhead wire and limit the upward movement of the trolley-wheel, substantially as and for the purpose set forth.

6. The combination, with the fork D D, of the trolley-wheel C, mounted between the arms thereof, the bolt E, passing through said fork and wheel, and the insulating-spools F F, mounted on said bolt, substantially as shown and described.

CHARLES E. SARGENT.

Witnesses:

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