(No Model.)

L. McCARTHY.

TROLLEY WIRE SUPPORT.

No. 520,937. Patented June 5, 1894.

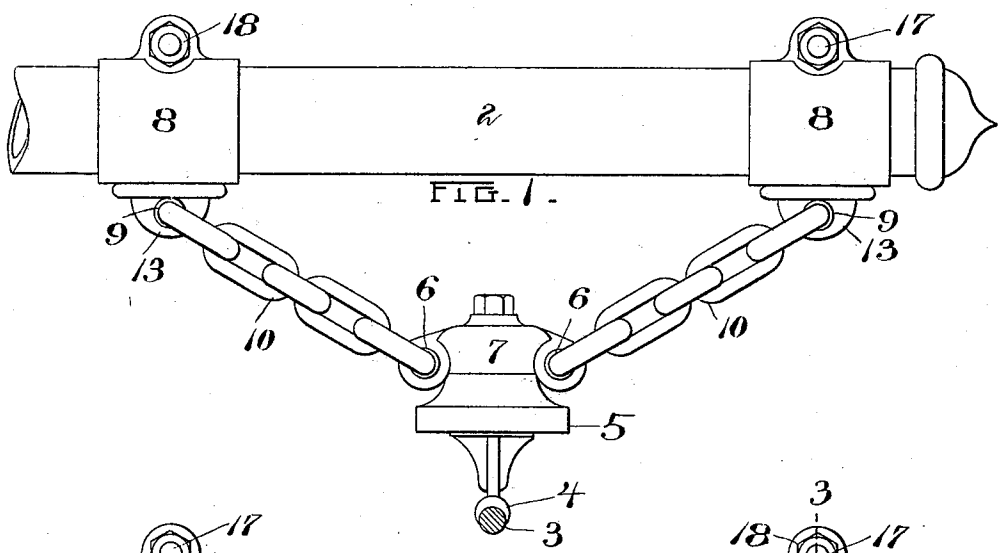

FIG. 1.

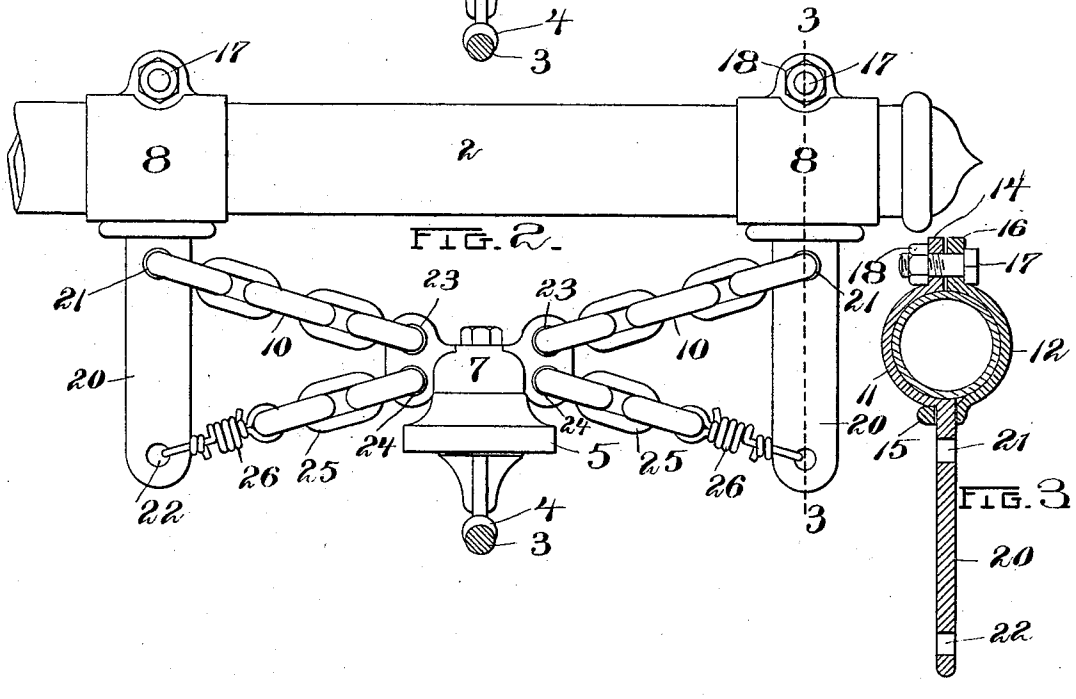

FIG. 2.

FIG. 3.

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TROLLEY-WIRE SUPPORT.

SPECIFICATION forming part of Letters Patent No. 520,937, dated June 5, 1894.

Application filed March 3, 1894. Serial No. 502,252. (No model.)

To all whom it may concern:

Be it known that I, LOUIS MCCARTHY, a citizen of the United States, residing at Boston, in the county of Suffolk and State of Massachusetts, have invented certain new and useful Improvements in Trolley-Wire Supports, of which the following is a specification, reference being had therein to the accompanying drawings.

It is frequently desirable in the construction of electrical railways in which an overhead trolley wire is employed, to employ only a single row of uprights or posts which are located at one side of the track and which are provided with bracket arms which extend over the track and by means of which the trolley wire is supported. These bracket arms are rigid and unyielding and when the trolley wire is supported from the bracket arm by means of an interposed insulator, which is rigidly secured to the said arm, a practically rigid support is obtained for the trolley wire. It has been found in practice that a rigid support for the trolley wire is undesirable since the vibrations to which the wire is subjected will act to cause a breakage of the wire or of some part to which it is directly connected. A rigid connection of the trolley wire with its supporting means is also objectionable for other reasons which are well-known to those skilled in the art and which it is not necessary to specify. To avoid a rigid connection between the trolley wire and its supporting means, namely the bracket arms, it has been proposed to secure the trolley wire insulator to a span wire stretched between downwardly projecting portions of the bracket arms. This has proved objectionable in that such a span wire is relatively short and if of sufficient size to be strong enough for its work and tightly stretched as it requires to be it is very rigid and does not afford the advantages of a yielding or non-rigid support such for example, as the ordinary span wire, which is stretched between posts which are on opposite sides of the street.

My invention has for its object to provide a bracket arm with a means for supporting a trolley wire and its insulator which shall be free from the objections above indicated, and it consists in a means of support for said trolley wire which is intermediate said wire and the bracket arm and which is of the construction hereinafter described.

The novel features of my invention are pointed out in the claims which are appended hereto and which form a part hereof.

I have shown my invention in the accompanying drawings, to which reference is made in the following description, and in which—

Figure 1 is a side elevation of a portion of a bracket arm with my device applied thereto. Fig. 2 is a similar view showing a modification which is hereinafter referred to. Fig. 3 is a section on line 3—3 Fig. 2.

Having reference to the drawings, the bracket arm which projects over the point at which the trolley wire is to be located is shown at 2, and the trolley wire is shown at 3. The trolley wire is supported directly by means of a clip or ear 4 which is secured to the insulator 5 in the well-known manner. The insulator 5 may be of any well-known construction and is provided at opposite sides thereof with eyes 6. The precise method of securing the eyes 6 to the insulator is immaterial to my present invention, but I prefer to form said eyes upon opposite sides of and integral with a cap or saddle 7 within which the upper portion of the exterior of the insulator proper fits, and which is secured thereto by means of a retaining screw or in any other well-known manner. The bracket arm 2 is provided with two collars or clips 8 which are set on the arm above the point at which the trolley wire passes the arm and on opposite sides of a point directly above said wire. These clips 8 are preferably of the peculiar construction hereinafter described and are each provided with an eye 9 which preferably projects downwardly underneath the arm 2. The insulator 5 is hung from the eyes 9 by means of two oppositely extending sections of chain 10 each of which engages at one end one of the eyes 9 and at the other one of the eyes 6, it being suspended by means of such sections of chain below the points of attachment of the said sections to the said arm. The insulator thereby is left unconstrained by its supporting devices and is free to respond to the vibrations of the wire which is attached thereto. For greater convenience

in effecting engagement of the ends of the chain connectors 10 with the eyes, said ends may be provided with hooks of S shape the hook portions of which are preferably closed to prevent accidental disengagement, or an open link or other well-known means of effecting engagement of the chain connectors with the eyes may be employed in place of the hooks. The precise number of links in each chain or the kind of link employed is not essential so long as the parts are jointed so as to permit of the free movement of one of the parts or links of the chain connector relative to the other part or parts thereof. The clips or collars 8 are constructed as follows: Each clip consists of two parts 11 and 12 each of which extends around substantially one half of the bracket arm 2. The part 11 of said clip is provided at its lower edge with a downward projection 13 in the lower end of which is formed the eye 9. The upper edge of the part 11 at the opposite side of the clip is provided with an upwardly projecting lip 14. The other part, or half, 12 of the clip is provided at its lower edge with a horizontally projecting eye 15 in which the downward projection 13 is inserted when the clip is in operative position; the upper edge of the part 12 is provided with an upwardly projecting lip 16 corresponding in shape to the lip 14 on the part 11. A securing bolt 17 is passed through the lips 14 and 16 and is held in place by means of a nut 18 which is screwed onto the said bolt. By this means the parts of the clip are firmly secured together and to the bracket arm. In securing the clip to the arm, it is only necessary to put the part 11 in position, pass the eye 15 over the downwardly projecting part 13, raise the part 12 into position against the bracket arm, insert the bolt 17 and screw home the nut 18. In like manner the clip may be readily removed from the bracket arm by removing the securing nut and bolt and striking the parts of the collars to loosen them in case they are rusted or for any reason refuse to separate readily from the arm. As there is considerable play between the eye 15 and the projection 13, the two parts of the clip may be connected and the chain connectors brought into engagement with the eyes 9, before the clips are secured to the bracket arm. In this way my device as a whole may be put together and shipped ready for use.

The form of my device which I have hereinabove described and which is shown in Fig. 1 is intended by me for use on straight lines where the tendency of the trolley in passing along the trolley wire is chiefly to press the wire upward. In such cases, the wire is held down by its weight which at any given point exceeds the upward pressure of the trolley springs so that the wire is held in position while at the same time it is permitted to yield, to accommodate itself to the vibrations or movements of the wire. When, however, the line is carried around a curve, the pressure of the trolley on the wire is somewhat changed in direction or is likely to be changed and I have therefore provided a slightly modified form of my device for use more especially on curves although as will be clear the modified form may also be used on straight lines. The modification is shown in Fig. 2. In that form of device I substitute in place of the eyes 9, a downwardly projecting arm or stem 20 which is provided with two eyes. The upper of these eyes shown at 21 is in substantially the same position as the eye 9 in the other form of my device. An additional eye 22 is formed at the lower end of each of the downwardly projecting arms 20. The eyes 6 of the insulator are replaced by the larger projections having two eyes shown at 23 and 24. The eyes 23 correspond with the eyes 6 of the other construction although they occupy a somewhat higher position relatively to the insulator. The eyes 24 serve to secure the insulator to the lower ends of the downward projections 20 by means of checks 25 which at one end engage the said eyes 24 and at the other are provided with springs 26 preferably of the coiled form shown. By this arrangement the insulator is held at four points and it is at the same time allowed to yield sufficiently to prevent all injury from the vibration of the trolley. In case the wire is subjected to lateral pressure, it is also permitted to yield by reason of the spring 26 as also by reason of the chain or link portion of the check each link of which forms a joint. After the pressure upon the trolley wire has passed the weight of the parts as also the action of the springs 26 insures its return to its normal position.

The device is strong and durable, readily put in place and while holding the wire securely and firmly admits of the necessary movement so that all danger to the wire or the connected parts from vibration of the wire or the like is reduced to a minimum.

What I claim is—

1. A trolley wire support comprising a supporting-arm, an insulator, and jointed connectors extending upwardly in opposite directions from the said insulator and suspending it below the points of attachment of the said connectors to the said arm, leaving the insulator unconstrained by its supporting devices and free to respond to the vibrations of the trolley wire, substantially as set forth.

2. A trolley wire support comprising a supporting arm an insulator, jointed connectors extending oppositely from the said insulator and suspending it from the said arm, and jointed checks connected at their inner ends with the said insulator and at their outer ends with projections from said arm, said checks being provided with springs, substantially as set forth.

3. An attaching clip comprising two halves or parts provided at one side of the clip with projections or lips for the reception of a retaining bolt, one of said halves or parts hav-

ing at the other side of the clip a second lip or projection and the other part having an eye which receives said second lip or projection to connect the parts at the opposite side of the clip and a retaining bolt passing through the projections or lips first mentioned, substantially as set forth.

In testimony whereof I affix my signature in presence of two witnesses.

LOUIS McCARTHY.

Witnesses:
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CHAS. F. RANDALL.