Sept. 23, 1924. 1,509,522

S. S. MATTHES

CURRENT COLLECTOR

Filed March 1, 1922

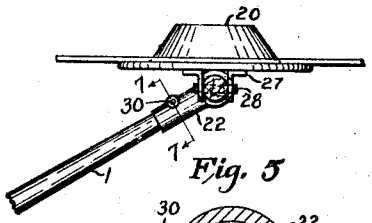


Fig. 5

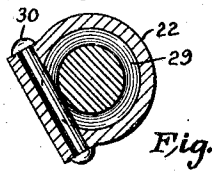


Fig. 7

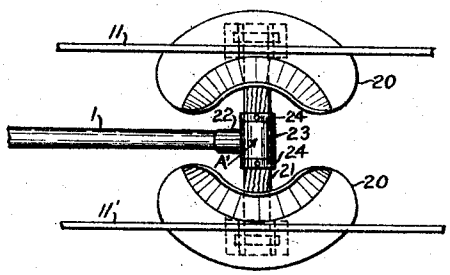


Fig. 4

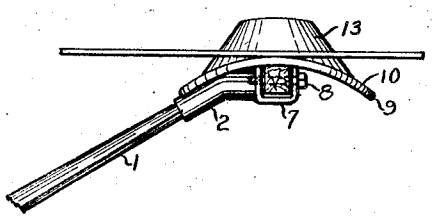


Fig. 2

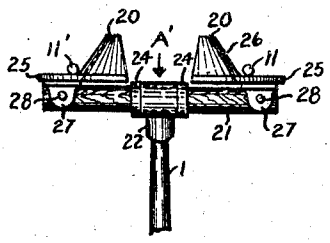


Fig. 6

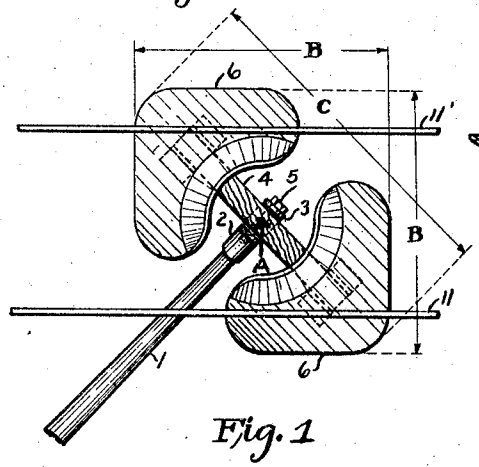


Fig. 1

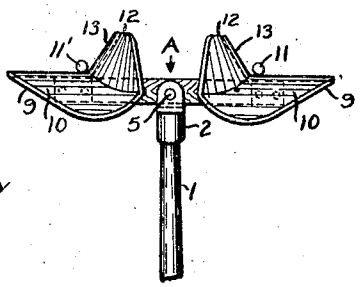


Fig. 3

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Patented Sept. 23, 1924. 1,509,522

UNITED STATES PATENT OFFICE.

SAMUEL S. MATTHES, OF MANSFIELD, OHIO, ASSIGNOR TO THE OHIO BRASS COMPANY, OF MANSFIELD, OHIO, A CORPORATION OF NEW JERSEY.

CURRENT COLLECTOR.

Application filed March 1, 1922. Serial No. 540,147.

To all whom it may concern:

Be it known that I, SAMUEL S. MATTHES, a citizen of the United States of America, residing at Mansfield, in the county of Richland and State of Ohio, have invented certain new and useful Improvements in Current Collectors, of which the following is a specification.

My invention relates to electric current collectors for moving vehicles and more particularly to that class of vehicle which operates not only below and in line with the overhead conductors, but to either side and in line with the conductors and free to change their distance of operation toward or away from the overhead conductors at the will of the operator. Such operation is known as trackless trolley operation and the vehicle is a trolley-bus.

The object of my invention is to provide a device which will collect current from two overhead conductors of different polarity and permit the vehicle or trolley-bus to move about freely relative to the conductors within reach of the trolley pole and maintain contact with the conductors. To the attainment of this end and the accomplishment of other new and useful objects as will appear, the invention consists in the novel features of construction, combination of parts and in the unique relations and disposition of the various parts hereinafter more fully described and claimed and shown in the accompanying drawing which illustrates several employments of the invention, and in which:—

Figure 1 is a top plan view of my invention engaging the overhead conductors when the trolley-bus is operating to one side of the conductor.

Fig. 2 is a side view of my invention engaging the overhead conductors and when the trolley-bus is operating below and in line with the conductors.

Fig. 3 is an end view of Fig. 2.

Fig. 4 is a top plan view of a modification of my invention shown as engaging overhead conductors and in which the trolley-bus is operating below and in line with the conductors.

Fig. 5 is a side view of Fig. 4.

Fig. 6 is an end view of Fig. 4.

Fig. 7 is a detail of the swivel joint taken on line 7—7 of Fig. 5.

In my preferred form I employ a trolley pole or support 1 mounted upon the trolley-bus in the usual manner well known in the art and to the upper end of the support is secured a member 2 provided with a clevis 3. Mounted in the clevis is an insulating member 4 and secured to the clevis by the bolt and nut 5. To each end of the insulating member 4 is secured a current collecting element 6 and secured to the insulating element by means of integrally formed yoke 7 and the bolt 8.

The member 2 is rigidly secured to the member 1, but the insulating member 4 is pivotally mounted in the yoke 3.

The current collecting members 6 each comprise a horizontally disposed element 9 the upper surface of which forms a convex surface 10 adapted to engage the conductors 11—11′ respectively, and also having an upstanding flange 12, the outer surface 13 of which is of circular formation, all points of which in any single horizontal plane are equally distant from the pivoted point A. The surface 13 is preferably obliquely disposed in order that interference with the trolley clamps, ears, etc. used in supporting the trolley conductor may be avoided.

The members 9 are so shaped that the distance B is less than the distance C which is preferable on account of the convex formation of the surface 10. It will be observed that if the pole 1 is caused to take an angular formation to either side of the longitudinal direction with respect to the trolley conductor, that the flanges 13 will maintain the center A substantially midway between the conductors 11 and 11′, and that since the exterior surface of the flange 13 is formed with equal radii in any single horizontal plane about the point A that the trolley-bus to which the device is secured can readily swing from one side to the other from a direct line of operation below the trolley wire and without bringing any undue strain upon the conductors in tending to throw them toward or away from each other. It is also necessary to meet conditions where the angularity of the support member 1 changes with respect to the conductors due to variations in the height of the conductors above the ground, I meet this condition by having the surface 10 of

a convex formation relative to the conductors as already pointed out above and this permits me to mount the insulating member 4 to the pole with only a single motion relative thereto; namely, the pivoting of the member 4 about the axis of the member 5 which pivotal motion is necessary in order to allow for variations in height of one conductor relative to the other.

In the modification shown in Figs. 4, 5 and 6 I have shown the current collecting elements 20—20 as mounted upon an insulating bar 21 which in turn is mounted upon the member 22 which is secured to the support 1. In this modified construction I provide for a pivotal motion of the member 21 about its longitudinal axis, and I also provide a pivotal motion of the member 22 relative to the member 1 about its longitudinal axis. I have shown the member 21 as a circular cross section and passing through the collar 23 which forms a part of the member 22 and the insulating member 21 is held in the position against longitudinal movement by means of the collars 24 which are pinned to the member 21.

The current collecting members 20—20 have a horizontally formed element 25, the upper surface of which is plain and adapted to engage the conductors 11—11′ respectively. The collectors 20—20 are also provided with an upstanding flange provided with a surface 26, all points of which in a common horizontal plane are equally distant from the central points of mounting A′. The collectors 20—20 are secured to the insulating member 21 by means of the integrally formed lugs 27 and the bolt 28.

The member 22 is arranged to pivot upon the member 1 by means of the groove 29 extending around the member 1 engaged by the pin 30. This construction not only permits of a swivel of the member 22 relative to the member 1, but prevents the member 22 from removal from the member 1.

To the best of my knowledge all previous constructions of this class have employed the small, so called trolley wheel or sliding shoe of limited size engaging each conductor, but these devices are very readily thrown from the conductors, and I have attempted to overcome this difficulty by the construction herein set forth and beyond doubt many modifications will suggest themselves to one skilled in the art:

I claim:

1. A current collecting device comprising a support member, a head adapted to swing in a substantially vertical plane transverse of the longitudinal axis of the support member, a pair of current collecting members supported by the head and means to insulate the current collecting members from each other; each collecting member comprising a substantially horizontally disposed surface and an upstanding flange the outer surface being convex to a substantially vertical plane.

2. A current collecting device comprising a support member, a transversely disposed head secured to the support in pivotal relation thereto about the axis of the support, a pair of current collecting members supported by the head and means to insulate the collecting members from each other; each collecting member comprising a horizontally disposed flange and an upstanding flange of curved formation, the two upstanding flanges forming segments of a circle.

3. A current collecting device comprising a support member, a transversely disposed head secured to the support in pivotal relation thereto about the axis of the support and about an axis at right angles to the support axis, a pair of current collecting members supported by the head and means to insulate the collecting members from each other; each collecting member comprising a horizontally disposed flange and an upstanding flange of curved formation, the two upstanding flanges forming segments of a circle the center of which is the point of support of the transverse head on the support.

4. A current collecting device comprising a support member, a head secured to the support in pivotal relation thereto about a horizontal axis at right angles to the axis of the support, a pair of current collecting members supported by the head and arranged to engage overhead conductors, and means to insulate the collecting members from each other; each collecting member comprising a horizontally disposed flange and an upstanding flange having a circular face, the circular faces so positioned that they form a portion of a complete circle the diameter of which is approximately that of the right angle distance between the conductors.

5. A current collecting member to engage an overhead conductor comprising a flange, a flange projecting from the face of the first flange and forming a segment of a circle and an angle with the first flange adapted to receive the overhead conductor and means to secure the collector to a support and in pivotal relation thereto in a plane substantially at right angles to the axis of the support.

6. A current collecting device comprising a support member, a pair of current collecting members mounted on the support in pivotal relation thereto and insulated therefrom; each collecting member comprising a flange positioned in a common plane and arranged to engage an overhead conductor and a flange projecting from the first mentioned flange and having a face to

engage the overhead conductor to maintain the collecting device in engagement with the conductors against lateral displacement.

7. A current collecting device to engage a pair of parallel conductors comprising a support and a pair of collecting members mounted on the support in pivotal relation thereto and insulated therefrom and from each other; each collecting member comprising a means to engage one of the conductors from below and a projecting means forming a segment of a circle to engage the inner face of the conductor to prevent lateral displacement of the collector.

8. A current collecting device arranged to engage a pair of parallel conductors comprising a support member, a transverse member pivotally mounted on the support member to swing in a plane pierced by the axis of the support and a pair of collecting members rigidly mounted on the transverse member, means on each collecting member to engage a conductor and permit the transverse member to change its angular relation with the parallel conductors.

9. A current collecting device to engage a pair of parallel spaced conductors comprising a supporting member, a cross-head pivotally mounted thereon to swing in a plane pierced by the axis of the support, a pair of collecting members mounted on the cross-head to move therewith and engage the conductors; each collecting member provided with a member 9 and a member 12 substantialy as shown and described.

10. A current collecting device to engage a pair of parallel conductors comprising a support member, a head pivotally mounted on the support member, a pair of current collecting members secured to the head and means to insulate the collecting members from each other; each collecting member comprising a member to engage one of the conductors and a member projecting therefrom and forming a segment of a circle to engage the conductor to prevent lateral displacement.

11. A current collecting device to engage a pair of parallel spaced conductors comprising a supporting member, a cross-head pivotally mounted thereon, a pair of current collecting members mounted on the cross-head each to engage one of the conductors and means to permit the current collecting members to rotate in a substantially horizontal plane about an axis passing through the point A or A′ due to lateral angular movement of said supporting member and maintain said point A or A′ substantially equal distance from each conductor.

12. The combination with a plurality of parallel disposed and spaced conductors of a collecting member engaging each conductor, means to support the collecting members from a vehicle, each collecting member comprising a member parallelly disposed to its conductor and to engage the same and having means projecting substantially at right angles thereto and forming a segment of a circle to maintain the collecting members against lateral displacement and permit the collecting members to rotate in a plane parallel to the conductors and means to secure the collecting members to the supporting means and permit the collecting members to pivot relatively to the supporting means.

In testimony whereof I affix my signature.

SAMUEL S. MATTHES.