Dec. 3, 1946. W. J. LEWIS 2,412,052

CURRENT COLLECTOR MOUNTING MEANS

Filed Aug. 26, 1944

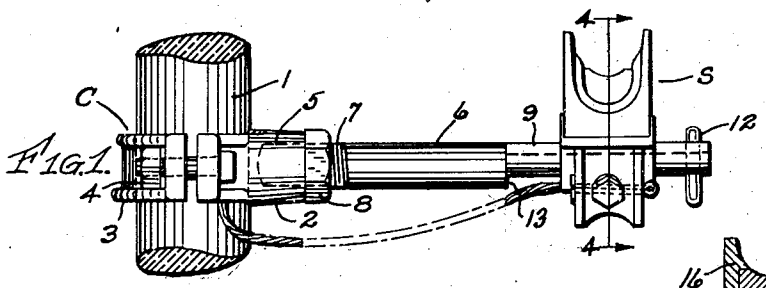


FIG. 1.

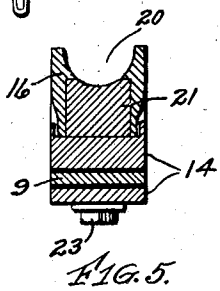


FIG. 5.

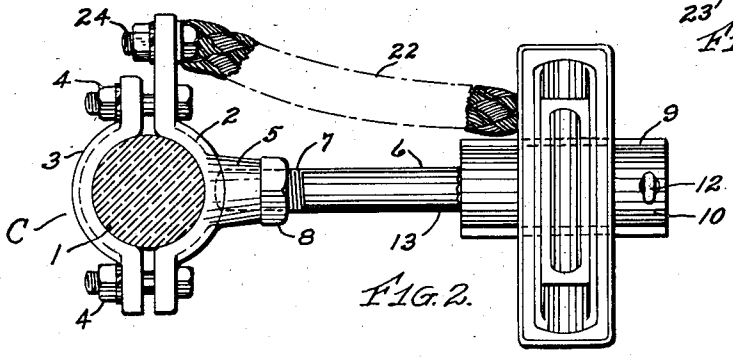


FIG. 2.

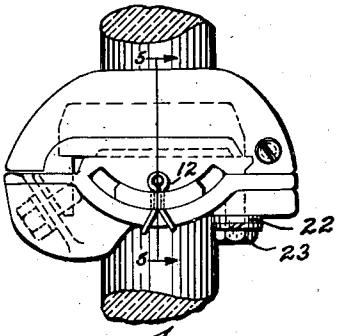


FIG. 3.

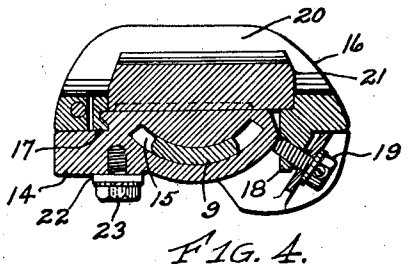


FIG. 4.

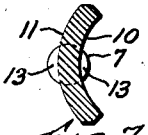


FIG. 7.

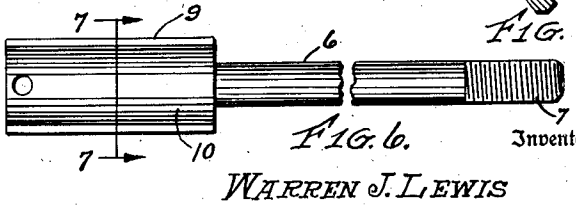


FIG. 6.

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Patented Dec. 3, 1946 2,412,052

UNITED STATES PATENT OFFICE

2,412,052

CURRENT COLLECTOR MOUNTING MEANS

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Application August 26, 1944, Serial No. 551,382

6 Claims. (Cl. 191—45)

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My invention relates to current collecting apparatus and has particular application for use in connection with traveling cranes and other analogous apparatus requiring current in the operation thereof.

A traveling crane may employ direct or alternating current requiring two supply wires or may employ two or three phase alternating current requiring four or three supply conductors. These conductors are usually installed on the structure supporting the crane and at one end of the crane and parallel to the path of travel of the crane. The conductors are spaced apart and may be installed in a vertical or horizontal plane. Other methods of installation may be used to meet requirements not described herein as my invention relates to the current collecting apparatus which is mounted on the crane in a manner to engage with the conductors.

The arrangement is, in general, similar to the operation of the trolley bus in which two current collectors are mounted in the vehicle to engage with a pair of overhead conductors and for that reason I have made use of the experience gained in such operation in my present inventions.

A complete description of my invention is set forth herein and shown in the accompanying drawing in which:

Fig. 1 is a side view of one form of my invention.

Fig. 2 is a top plan view of Fig. 1.

Fig. 3 is an end view of Fig. 1.

Fig. 4 is a view in section taken on the line 4—4 of Fig. 1.

Fig. 5 is a view in section of a portion of my invention taken on the line 5—5 of Fig. 3.

Fig. 6 is a plan view of one of the supporting elements shown in Fig. 1.

Fig. 7 is a sectional view taken on the line 7—7 of Fig. 6.

From the above outline of the manner of use of the current collectors, it will be appreciated that there will be as many collectors as there are supply conductors, while I have shown only a single collector. The collectors are independent except for their being mounted on a single insulated support member, as a rule.

In Fig. 1 is shown a support member 1 of insulating material and attached to the crane in any suitable manner, either horizontally or vertically depending upon whether the feeder conductors are arranged in a horizontal plan or a vertical plan respectively.

Secured to the insulating support 1 is clamping means C comprising the members 2 and 3 and

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the bolts and nuts 4. This clamp may be of any other construction or form suitable for the requirements. The member 2 is provided with a threaded socket 5.

Projecting from the member 2 is a support member 6 of metal having a threaded portion 7 entering the socket 5 and held in fixed relation by the jam nut 8.

By properly designing the connection between the clamping member 2 and the support 6, the amount of projection of the support 6 with respect to the support 1 may be altered due to the threaded connection also the angular position of the support 6 may be changed with respect to its longitudinal axis and the support 1 so that the support 1 may be installed in a horizontal position and the collectors engage conductors installed in a vertical plane.

The support 6 is also provided with a portion 9 having some length and also an arcuate upper surface 10 and an arcuate lower surface 11. These surfaces are concentric having a common center of radii (see Fig. 7) spaced from the longitudinal axis of the bar.

Maintained on the support portion 9 is a current collector shoe S which is free to move back and forth thereon to automatically adjust its position with respect to the variation between the crane and the conductor which may vary slightly as the crane travels along its track.

One end of the support portion 9 is provided with a hole and cotter 12 therein to limit travel of the collector S in one direction and shoulders 13 limit movement in the other direction.

The current collector S comprises a saddle member 14 having an arcuate slot 15 with surfaces conforming to the surfaces 10 and 11 of the support 6 and also having an extended length of opening to permit the collector to rock upon its support 9 about the common center of curvature of the surfaces 10 and 11. Secured to the saddle 14 is a shoe or insert holder 16 having a hook 17 at one end to interlock with the saddle and a threaded lug 18 at the other end to receive the cap screw 19, whereby the shoe is detachably secured to the saddle.

The shoe or holder is provided with an elongated groove 20 at right angles to the longitudinal axis of the bar whereby the collector is guided along the conductor. The shoe may be provided with a slot in which is positioned an insert 21 of carbon, steel or a soft metal or the shoe may be solid with no insert.

For a more complete description of the current

collector reference is made to U. S. Letters Patent 1,890,946 and 2,185,268.

It will be noted the collector may automatically adjust its position on the support **6** and the support **6** may be manually adjusted with respect to the support **1** as previously described.

In order to improve the conductivity of the device in view of the several joints, I provide a flexible jumper or shunt **22** preferably of woven copper wires. One end is secured to the saddle **14** by the cap screw **23** and to the clamp member **2** by the bolt **24**. A conductor to the crane apparatus may be secured to the bolt **24**.

As my invention, I claim:

1. A current collector comprising, an insulating support, clamping means to grip the support and having a threaded orifice, a supporting bar projecting from the clamping means and having a threaded engagement with the orifice, a portion of the bar having a concave bearing surface and an oppositely disposed convex bearing surface and both bearing surfaces having a common center of curvature, a current collector shoe mounted on the bar, the shoe having a saddle with a transverse opening there-through and having opposite walls conforming to the said bearing surfaces whereby the shoe may be positioned on the said portion of the bar and freely movable longitudinally thereon, spaced means on the bar at the ends of said portion to limit the longitudinal movement of the shoe, and contact members mounted on the saddle having a longitudinal slot to receive a trolley wire and guide the collector along the wire.

2. A support for a current collector comprising, an elongated bar, a supporting means to secure the bar to a support, means to secure the bar and supporting means together whereby the bar may be rotated relative to the support to change their angular relation, means to hold said relation after adjustment, the bar provided with a portion of extended length and having oppositely disposed concave and convex bearing surfaces forming an arc of a circle and having a common center of curvation, the said portion adapted to receive a current collector mounted on the said portion of the bar and having bearing surfaces conforming to those of the bar, the said portion being longer than the width of the collector whereby the collector is free to move along the portion, and means to limit the movement of the collector along the said portion.

3. A support for a current collector comprising, an elongated supporting bar having an end portion with oppositely disposed concave and convex bearing surfaces, upon which a current collector may be mounted and move freely along the said portion, the said surfaces having a common center of curvature, a supporting attachment for the bar provided with a threaded orifice, a threaded end on the bar to enter the orifice and cooperate with the threads therein whereby the bar may be adjusted rotationally and longitudinally relative to the said attachment, means to prevent rotation of the bar relative to the attachment after adjustment and spaced means on the bar at the ends of the said end portion to limit the free movement of the collector along the said portion.

4. A current collecting device comprising an elongated projecting bar, means at one end to secure the bar to a support, a current collector mounted on the bar and freely movable along a portion of the bar, means to limit the movement of the collector along the bar to said portion and to retain the collector on the bar, the collector provided with a saddle portion associated with the said portion of the bar and having a limited pivotal movement thereon at right angles to the longitudinal axis of the bar and a separately formed portion with a groove extending at right angles to the said axis of the bar to receive a trolley wire and to guide the collector along the wire, the said portion of the bar being provided with curved and spaced parallel bearing surfaces for the saddle and having their common center of curvature spaced laterally from the longitudinal axis of the bar.

5. A current collecting device comprising an elongated bar, an attachment to secure the bar to a support, the said attachment having an orifice in which the end of the bar is positioned, means at one end of the bar cooperating with means in the orifice whereby the bar is secured to the attachment and may be rotated relative thereto whereby their angular relation may be changed and also the projection of the bar relative to the attachment, means to hold said relations after adjustment has been made, the bar provided with a portion of extended length having parallel bearing surfaces of limited width and having a common center of curvature, a longitudinally slidable current collector mounted on the said portion of the bar and having bearing surfaces on the bar whereby the shoe may oscillate in a plane at right angles to the concentric bearing surfaces on the bar, the collector having means to receive a trolley wire at right angles to the said axis of the bar and means to limit the longitudinal movement of the collector.

6. A current collecting device comprising an elongated bar, means at one end of the bar to secure it to a support, other means to secure the bar to the said means, a curved bearing surface extending along a portion of the bar, a current collector mounted on the said bearing surface to engage a trolley wire and to move freely along the said portion as the result of side pressure between the collector and the trolley wire and having curved bearing surfaces cooperating with the said curved bearing surface on the bar and with a second curved surface on the said portion to maintain the collector on the said portion, the center of curvature of all the curved surfaces positioned at a point laterally spaced from the longitudinal axis of the bar and about which the collector may oscillate, and means to limit the movement of the collector along the bar to said portion.

WARREN J. LEWIS.