Jan. 22, 1924. 1,481,729

H. T. NAFZIGER

ELECTRICAL COLLECTOR FOR LOCOMOTIVE CRANES AND THE LIKE

Filed Jan. 11, 1922 2 Sheets-Sheet 1

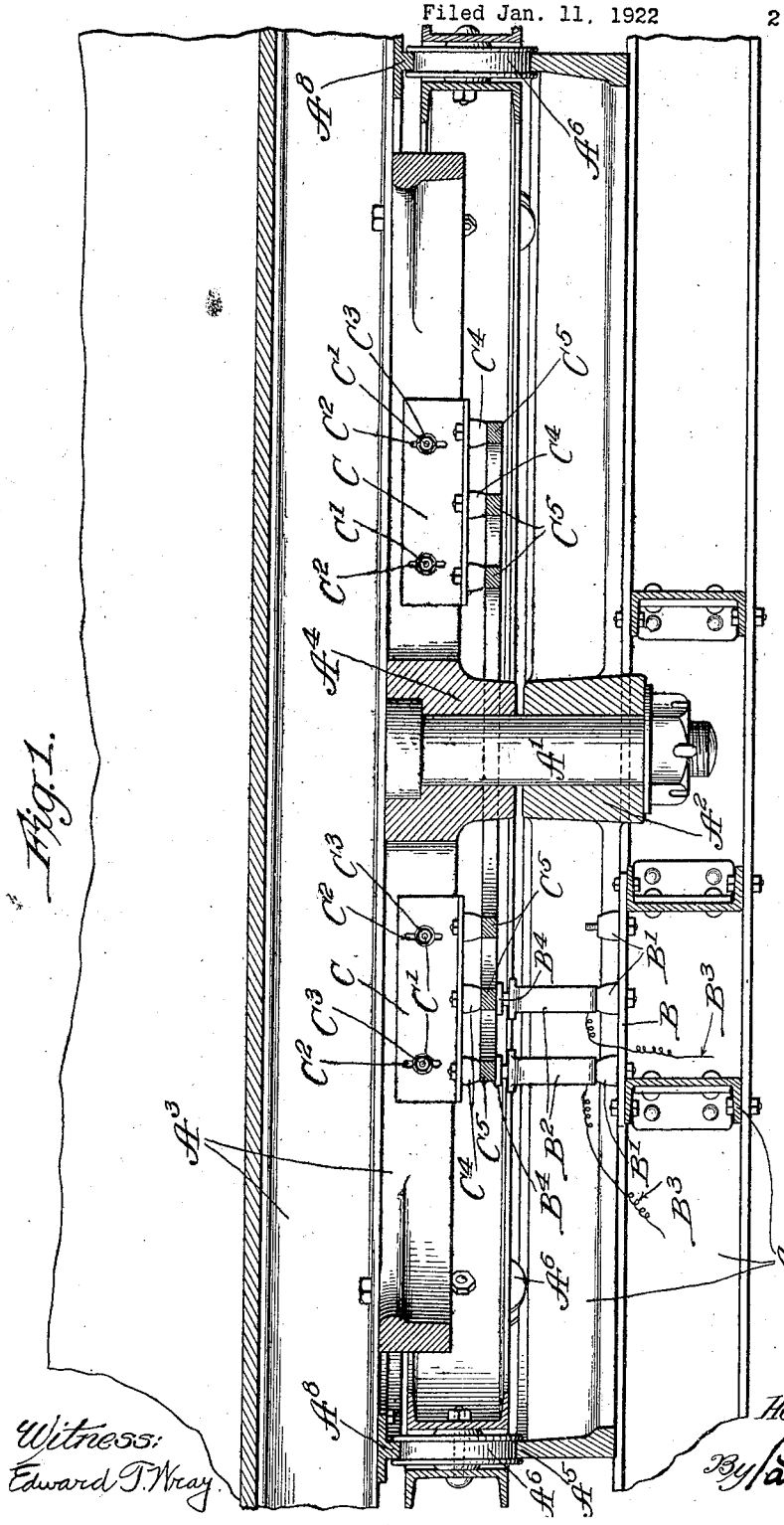


Fig. 1.

Witness:
Edward T. Wray.

Inventor:
Henry T. Nafziger.
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Fig. 2.

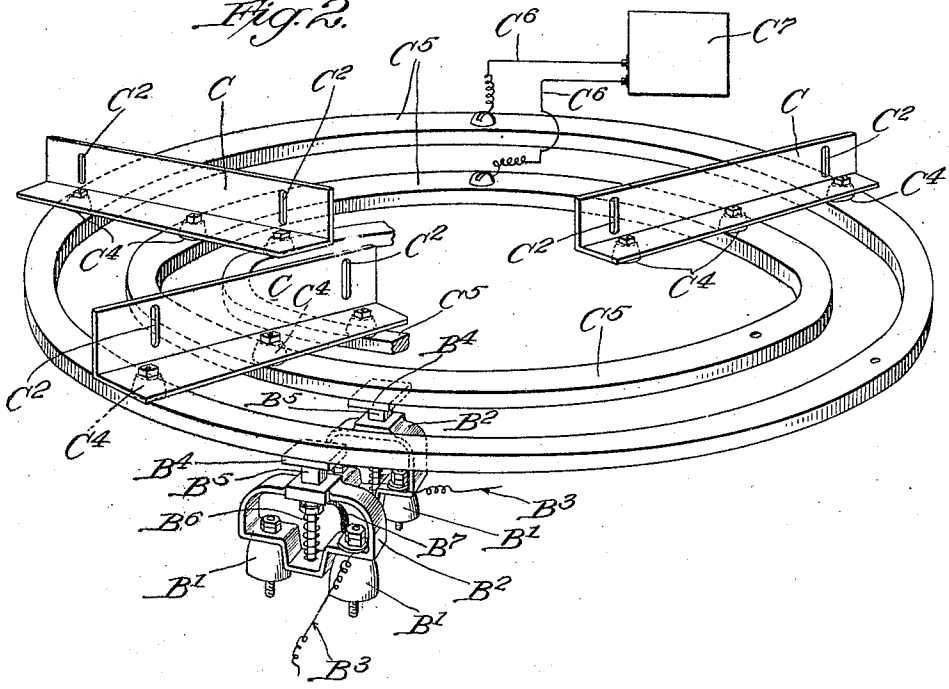
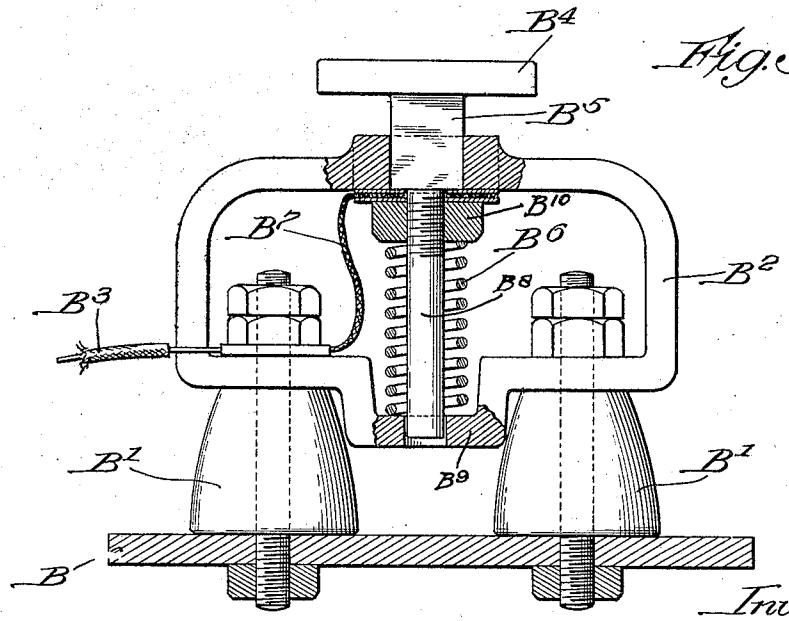


Fig. 3.



Witness:
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Patented Jan. 22, 1924. 1,481,729

UNITED STATES PATENT OFFICE.

HENRY T. NAFZIGER, OF CHICAGO, ILLINOIS, ASSIGNOR TO LINK BELT COMPANY, OF CHICAGO, ILLINOIS, A CORPORATION OF ILLINOIS.

ELECTRICAL COLLECTOR FOR LOCOMOTIVE CRANES AND THE LIKE.

Application filed January 11, 1922. Serial No. 528,556.

To all whom it may concern:

Be it known that I, HENRY T. NAFZIGER, a citizen of the United States, residing at Chicago, in the county of Cook and State of Illinois, have invented a certain new and useful Improvement in Electrical Collectors for Locomotive Cranes and the like, of which the following is a specification.

My invention relates to an electrical connecting and power transmitting device for locomotive cranes, derricks and the like, wherein a rotating operating body is mounted on a fixed platform and wherein means must be provided for maintaining electrical power or contact between the rotating body or platform and the fixed platform under all conditions.

My invention relates in general terms to means for accomplishing this purpose and at the same time protecting the electrical contact members so that they will always be free from foreign material and so that the possibility of short circuiting or interrupting a circuit by waste, dust, water, oil and the like is impossible. This is accomplished by means of shoes in contact with rings adjustably positioned on the under side of the rotating platform. These rings rotate in engagement with fixed yielding supporting shoes on the fixed platform, the shoes being at all times covered by the rings and the contact surfaces of the rings being at all times downwardly opposed and the rings themselves normally covered by the rotating platform.

My invention is illustrated more or less diagrammatically in the accompanying drawings, wherein:

Figure 1 is a detailed section through that part of a locomotive crane necessary to the illustration of my invention;

Figure 2 is a perspective of the rings and contact shoes;

Figure 3 is a detail elevation of one of the collector shoes with parts in section.

Like parts are designated by like characters throughout.

A is a lower supporting frame. It may be fixed or mounted on a roller truck or any other suitable supporting mechanism. It is arranged so that it does not normally rotate in operation. A′ is a pivot post projecting upwardly through the boss A^2. A^3 is the upper rotating or swinging frame or a platform having downwardly projecting hub A^4 on the post A′. A^5 is a supporting roller track on the frame A, and A^6 are roller wheels carrying the frame or platform A^3, on the track A^5.

The means for operating or moving the roller truck or frame and the means for rotating the upper rotating frame are not herein shown as they form no part of my invention. The platform A^3 carries, of course, the usual working mechanism such as a shovel, dipper, crane or the like, but none of these parts are shown.

B is a rigid shoe supporting plate bolted to the frame A. It has mounted on it a plurality of insulating lugs B′, B′, which, in turn, carry contacting and supporting yokes B^2, B^2, in circuit with electrical power cables B^3, B^3. These yokes are preferably made of steel, but might be made of other material. B^4, B^4, are flat contact shoes on the shanks B^5 mounted for vertical displacement in the yokes B^2. B^8 is a guide or stem downwardly projecting from the shank B^5 of the contact shoe B^4, its lower end penetrating through the lower bend B^9 of the yoke B^2. At its upper end it has mounted upon it the nut B^{10} between which and the shank B^5 is compressed the upper end of the flexible conductor B^7. B^6 is a spiral spring coiled about the stem B^8, which is compressed between the bend of the yoke B^9 and the nut B^{10} and thus tends upwardly to thrust the contact shoe B^4.

C, C, are a series of adjusting plates, slotted at C^2, mounted on the frame A^2 and so arranged that they may be vertically adjusted on the screws C′. Nuts C^3 are provided to lock the plates C in position. Each of these plates has one or more downwardly projecting insulating lugs C^4, C^4, and these lugs carry the roller rings C^5, C^5, one ring being in opposition and in engagement with each of the shoes B^4, B^4. The adjustment of the plate C is provided so that the collector rings may be trued up so that they will always remain in contact with the shoes independent of the rotation of the upper frame. Conductors C^6, C^6, lead from the rings C^5, C^5, to the junction box C^7 on the upper frame from which power is taken to operate the various electrical motors on that frame.

Under some conditions a single ring might be used and the return circuit would be through the frame itself. Preferably,

however, for a D. C. job two rings will be used and for a three phase system, three rings might be used or for a two phase system, four might be used.

It will be evident that while I have shown in the drawings an operative device, still many changes might be made in size, shape and arrangement of parts without departing materially from the spirit of my invention, and I wish, therefore, that my drawings be regarded as in a sense diagrammatic.

I claim:

1. In an electrically operated mechanism, a supporting base, a platform rotatably mounted thereon, a flat surfaced collector ring mounted beneath said platform and adapted to rotate therewith, a flat surfaced shoe mounted upon said frame, and yielding means for pressing it upwardly against said ring.

2. In an electrically operated crane, a supporting frame, a platform rotatably mounted thereon, a collector ring mounted beneath the platform, a shoe mounted on the frame, yielding means for pressing it upwardly against the ring, and means for adjusting the ring on the platform so as to maintain it in a plane perpendicular to the axis of rotation.

3. In an electrically operated mechanism, a supporting base, a platform rotatably mounted thereon, a flat surfaced collector ring mounted beneath said platform and adapted to rotate therewith, a flat surfaced shoe mounted upon said frame, and yielding means for pressing it upwardly against said ring, and supporting means therefor comprising a yoke mounted upon the supporting frame and insulated therefrom, a downwardly depending shank passing through said yoke, and a flexible electric connection between said shank and said yoke.

4. In an electrically operated crane, a supporting frame, a yoke mounted thereon, and insulated from the frame, a shoe having a shank slidable in the yoke, yielding means for pressing the shoe and shank upwardly, a platform rotatably mounted on the frame, a collector ring in opposition to the shoe, the collector ring being adjustably mounted on the platform.

5. An electrical connection comprising a base, insulating blocks thereon, a closed yoke mounted on the blocks, a collector shoe having a downwardly depending shank slidable in the upper branch of the yoke, a guide bit projecting downwardly from the shank and in slidable engagement with the lower branch of the yoke, yielding means interposed between the shank and the lower branch of the yoke for thrusting the shoe upwardly.

6. An electrical connection comprising a base, insulating blocks thereon, a closed yoke mounted on the blocks, a collector shoe having a downwardly depending shank slidable in the upper branch of the yoke, a guide bit projecting downwardly from the shank and in slidable engagement with the lower branch of the yoke, yielding means interposed between the shank and the lower branch of the yoke for thrusting the shoe upwardly, and a permanent flexible electric connection between the shank and the yoke.

7. In an electrically operated crane, a rotating platform, a flanged supporting element carried thereby, the flanges having a plurality of guide arms, slotted angular members mounted for vertical adjustment on said arms, insulating blocks on the under sides of said members and a collector ring mounted on said blocks and having contact surfaces downwardly exposed.

8. The combination with a supporting carriage and a platform mounted for rotation thereon about a vertical axis of a collector ring beneath the platform, supporting members therefor adapted for vertical adjustment, collector shoes mounted on the frame of said supporting carriage and yielding means for thrusting them upwardly against the rings.

9. In an electrically operated crane, a supporting frame, a platform rotatably mounted thereon, a collector ring mounted beneath the platform and adapted to rotate therewith, a shoe mounted on the frame and slidable along an axis perpendicular thereto, yielding means for pressing it against the ring and a flexible electric connection between said shoe and the supporting frame.

10. In an electrically operated crane, a fixed element and a rotating element thereupon, adapted to rotate about a substantially vertical axis, a flat surfaced collector ring mounted upon one of said elements, a flat surfaced shoe mounted upon the other and adapted to contact the surface of said ring, said shoe being slidable along an axis substantially perpendicular to said surface, yielding means for pressing said shoe against said ring, and a flexible electric connection between said shoe and the element upon which it is mounted.

Signed at Chicago, county of Cook and State of Illinois, this 7th day of January, 1922.

HENRY T. NAFZIGER.