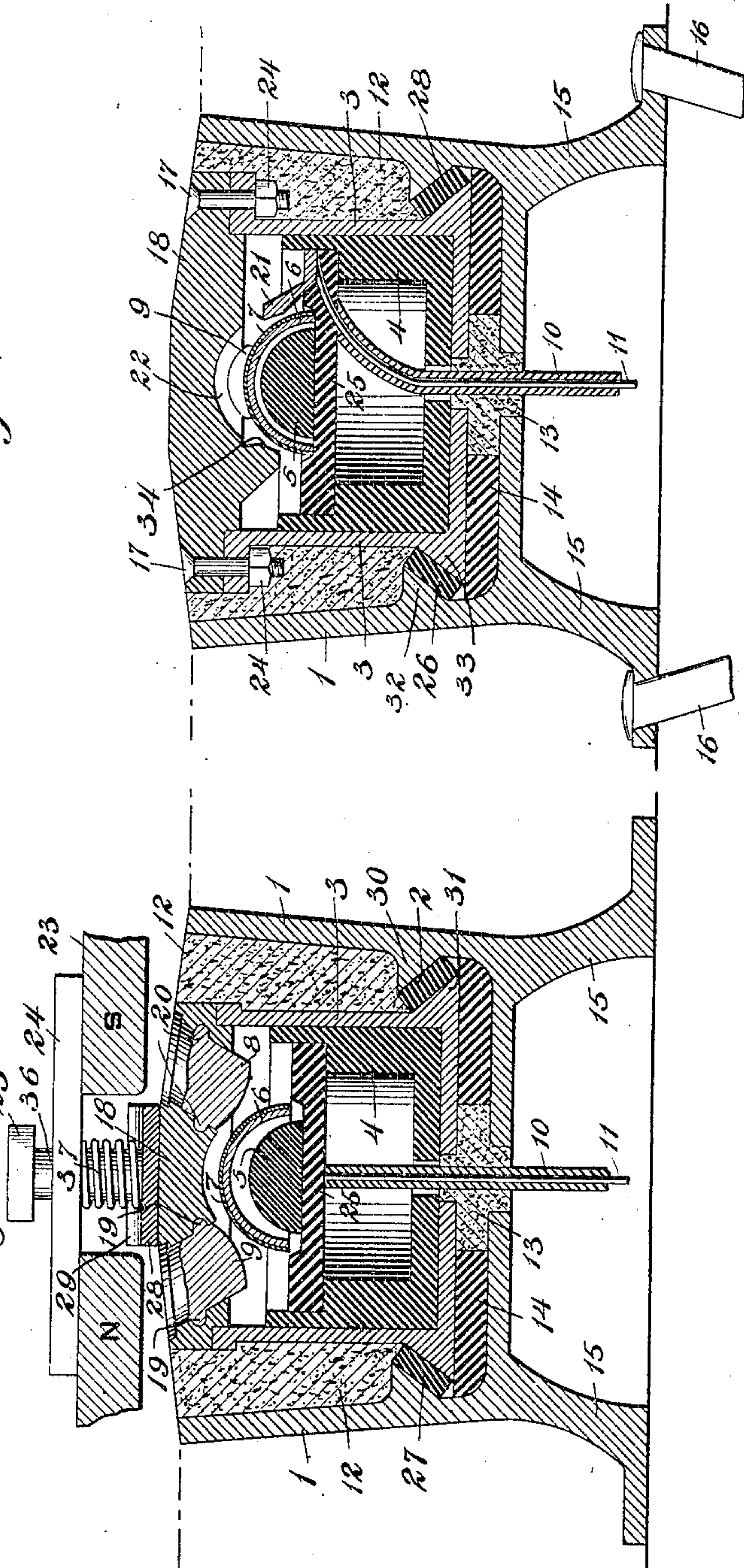


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G. L. CAMPBELL.
CONTACT BOX FOR ELECTRIC RAILWAY SYSTEMS.
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Fig. 1, 25



WITNESSES:

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TO RAILWAYS SURFACE CONTACT SUPPLIES COMPANY, A CORPORATION OF DELAWARE.

CONTACT-BOX FOR ELECTRIC-RAILWAY SYSTEMS.

No. 812,164.

Specification of Letters Patent.

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To all whom it may concern:

Be it known that I, GEORGE L. CAMPBELL, a citizen of the United States, and a resident of Williamsport, in the county of Lycoming and State of Pennsylvania, have invented certain new and useful Improvements in Contact-Boxes for Electric-Railway Systems, of which the following is a specification, taken in connection with the accompanying drawings, which form a part of the same.

This invention relates to contact-boxes for electric-railway systems which employ a series of contact-boxes set along the line of the railway and having their tops slightly projecting above the surface of the ground for engagement with the contact-shoe of the car in order to supply electricity thereto.

In the accompanying drawings, in which the same reference-numerals refer to similar parts in both figures, Figure 1 is a transverse section of an embodiment of this invention. Fig. 2 is another vertical section of the same, the plane of this section being taken along the line of the railway.

In the illustrated embodiment of this invention, 1 is the outer casing, preferably formed of metal, so as to give the required strength and rigidity, and this casing may be provided with the feet 15 for attachment to the ties or similar supports by the spikes 16 or otherwise, so as to rigidly hold the casing with its upper edge substantially flush with the surface of the roadway, as indicated by the dotted lines. Within this casing is mounted the box 3, preferably of non-magnetic metal, this inner box being insulated from the outer casing, within which it is rigidly mounted. The box is preferably provided with a cover 18 of non-magnetic material, which may be rigidly attached to the box by suitable bolts 17 and nuts 24, the joint between the box and cover being preferably located at a suitable distance within the casing and below its upper edge. This box is adapted to contain and protect the contact devices by which the electricity may be at the proper intervals supplied through the cover of the contact-box to the car, all the exposed parts of the box at other times when the car is not in contact therewith being preferably entirely deenergized and not charged by electricity. As indicated, the box is rigidly and securely mounted within the casing and effectually insu-

lated therefrom. This may be effected by placing the insulating-pieces 14, which may be of wood, fiber, or similar material, in the bottom of the casing and allowing the box to rest upon them, the box being inserted into the casing, while the lugs 31 on the box are out of alinement with the lugs 30 on the casing, so as to readily pass them. The box is then rotated slightly, so as to bring the two series of discontinuous lugs into alinement, so that they cooperate, as indicated in the drawings. The box may be firmly held down by any desired means, the arrangement of wedges indicated being very effective for this purpose. As is shown in the drawings, the box may be provided with a series of lugs 33, which when angularly disposed, as is preferably the case, serve to hold the box down firmly and also to secure its proper lateral position within the protecting-casing. The casing is also preferably formed with cooperating lugs 30 and 32, having inclined lower faces adjacent the bottom of the casing, and with this arrangement after the box has been adjusted any desired number of clamping members or wedges 2, 27, 26, and 28 may be forced laterally between the cooperating inclined faces of the lugs, thus firmly holding the box and casing in proper relative position. A suitable insulating sealing medium is preferably introduced into the spaces between the box and casing, so as to more firmly hold the parts in position and also to prevent the access of moisture or other foreign material which might interfere with the proper operation of the device. This sealing medium 12 is preferably viscous and may take the form of a suitable asphaltic or other insulating cement, which may be softened to the desired extent by heating and then poured into the spaces between the upper face of the casing and box, so as to completely fill the same. A similar sealing medium 13 may be used to fill the spaces at the lower part of the device.

Any desired mechanism may be used for intermittently energizing the exposed portion of the contact-box. In the illustrated embodiment of this invention the cover 18 is formed with several cores 8 and 9, of magnetic material, such as iron, preferably projecting inwardly to some extent and being firmly supported in the non-magnetic cover

of the contact-box by the lugs or projections 19 20 on these cores, which enable them, if desired, to be readily cast into the cover and thereafter rigidly supported thereby. As is indicated in Fig. 1, these cores are inductively energized and made magnetic by the poles 23 of the car-magnet, which is preferably a heavy electromagnet carried on the under part of the railway-car and so supported as to closely approach, but preferably remain out of contact with, the cores of the contact-box. As indicated, the shoe 29 is preferably supported by the studs 36, passing through the yokes 24, mounted on the car, the springs 37 tending to hold the shoe down in firm electrical contact with the contact-box, this vertical movement of the shoe being, however, limited by the heads 25 on these studs. The feed-wire 11, provided with the usual heavy insulation 10, may connect with a suitable feed-main along the railway-track. This feed-wire passes into the box and may be connected electrically with the contact 21, this contact being preferably mounted upon a suitable insulating-support, which may be formed of the pieces 25 and 4, of treated wood, fiber, or similar material. A movable magnetic closer or armature is preferably used in the contact-box to be actuated by the magnetic cores and to electrically energize the cover at the proper intervals. A spherical closer, preferably formed hollow of magnetic material, may be used for this purpose, and, if desired, the closer may be given the hemispherical form indicated, the inner shell 6 being indicated as of magnetic material, while the outer shell or skin 7 of this closer is preferably of copper or similar metal to give increased electrical conductivity. The guide 5 may be employed, if desired, to more effectually secure the alinement of the closer during its operation.

As will be understood, the parts of this contact-box when the car is not adjacent thereto are in the position indicated in Figs. 1 and 2, the closer 6 being down upon its support and there being no electrical connection between the feed-wire 11 and the box-cover 18, all the exposed parts of the contact-box being therefore entirely uncharged and harmless. As the car moves over the box the car-magnet 23 magnetizes the cores 8 and 9 and forcibly draws the closer 7 up into the recess 22, forming a good electrical connection between the contacts 21 and 34, (see Fig. 2,) thus putting the cover 18 of the contact-box into electrical connection with the feed-wire 11. This electrical connection continues as long as the car is over the box, and thereafter as soon as the car-magnets move away from the box the cores are deenergized and the closer falls, thus cutting off the supply of electricity to the cover of the contact-box.

It is of course understood that those familiar with this art may make many varia-

tions in the form, size, proportion, and numbers of parts of this device, parts of the same may be used without employing the whole, and parts may be used in connection with other devices without departing from the spirit of this invention or losing the advantages of the same. I do not, therefore, desire to be limited to the details of the disclosure which has been made in this case; but what I claim as new, and what I desire to secure by Letters Patent, is set forth in the appended claims.

I claim—

1. In contact-boxes for electric-railway systems, a metallic casing formed with internal lugs having inclined lower faces adjacent the bottom of said casing, a box within said casing and provided with lugs having inclined upper faces cooperating with the lugs on said casing, an insulating supporting member between said box and casing, insulating wedging members between the cooperating lugs on said box and casing, the spaces between said box and casing being filled with insulating-cement, said box being provided with a projecting conducting-cover of non-magnetic material, magnetic cores in said cover and projecting within said box, an insulated contact within said box to be connected with a feed-wire, a cooperating electrical contact on said cover and a hollow spherical closer of magnetic material normally out of contact with said cover and adapted to be magnetically actuated by said cores under the influence of the car-magnet to close electrical connection between said contacts.

2. In contact-boxes for electric-railway systems, a metallic casing formed with internal lugs, a box within the casing and provided with lugs cooperating with the lugs on said casing, wedging insulating members between said box and casing, the spaces between said box and casing being filled with an insulating sealing medium, said box being provided with a conducting-cover of non-magnetic material, magnetic cores in said cover, an insulated contact within said box to be connected with a feed-wire, a cooperating electrical contact on said cover, and a hollow hemispherical closer of magnetic material normally resting on an insulated support within said box and adapted to be magnetically actuated by said cores under the influence of the car-magnet to close electrical connection between said contacts.

3. In contact-boxes for electric-railway systems, a casing formed with internal lugs having inclined faces adjacent the bottom of said casing, a box within said casing provided with lugs having inclined upper faces cooperating with the lugs on said casing, insulating members, including wedging members engaging said lugs between said box and said casing, the spaces between said box and casing being filled with an insulating sealing

medium, said box being provided with a projecting conducting-cover and means to electrically connect said cover with a feed-wire.

4. In contact-boxes for electric-railway systems, a casing formed with internal lugs, a box within said casing and separated therefrom by insulating members, means on said box cooperating with said lugs to hold said box and casing in relative position and insulate them from each other, the spaces between said box and casing being filled with an insulating sealing medium, said box being provided with a cover of conducting material and means to electrically connect said cover with a feed-wire.

5. In contact-boxes for electric-railway systems, a casing formed with internal lugs, a box within said casing and insulated therefrom, said box having means cooperating with said lugs to hold said box and casing in proper relative position and the spaces between said box and casing being filled with an insulating viscous sealing medium.

6. In contact-boxes for electric-railway

systems, a casing formed with internal lugs having inclined lower faces, a box within said casing and provided with lugs having inclined upper faces cooperating with the lugs on said casing and insulating members comprising wedging members between said lugs to separate said box and said casing.

7. In contact-boxes for electric-railway systems, a box having a conducting non-magnetic cover, magnetic cores in said cover, an insulating-support within said box, a contact on said support to be connected with a feed-wire, a cooperating inclined laterally-disposed contact on said cover, a hollow closer-shell loosely fitting over a guide formed on said support and adapted to make electrical connection between said contacts when drawn upward by said cores under the influence of a car-magnet.

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Witnesses:

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