

No. 632,772.

Patented Sept. 12, 1899.

R. WHITE.
TROLLEY.

(Application filed May 25, 1899.)

(No Model.)

Fig-1-

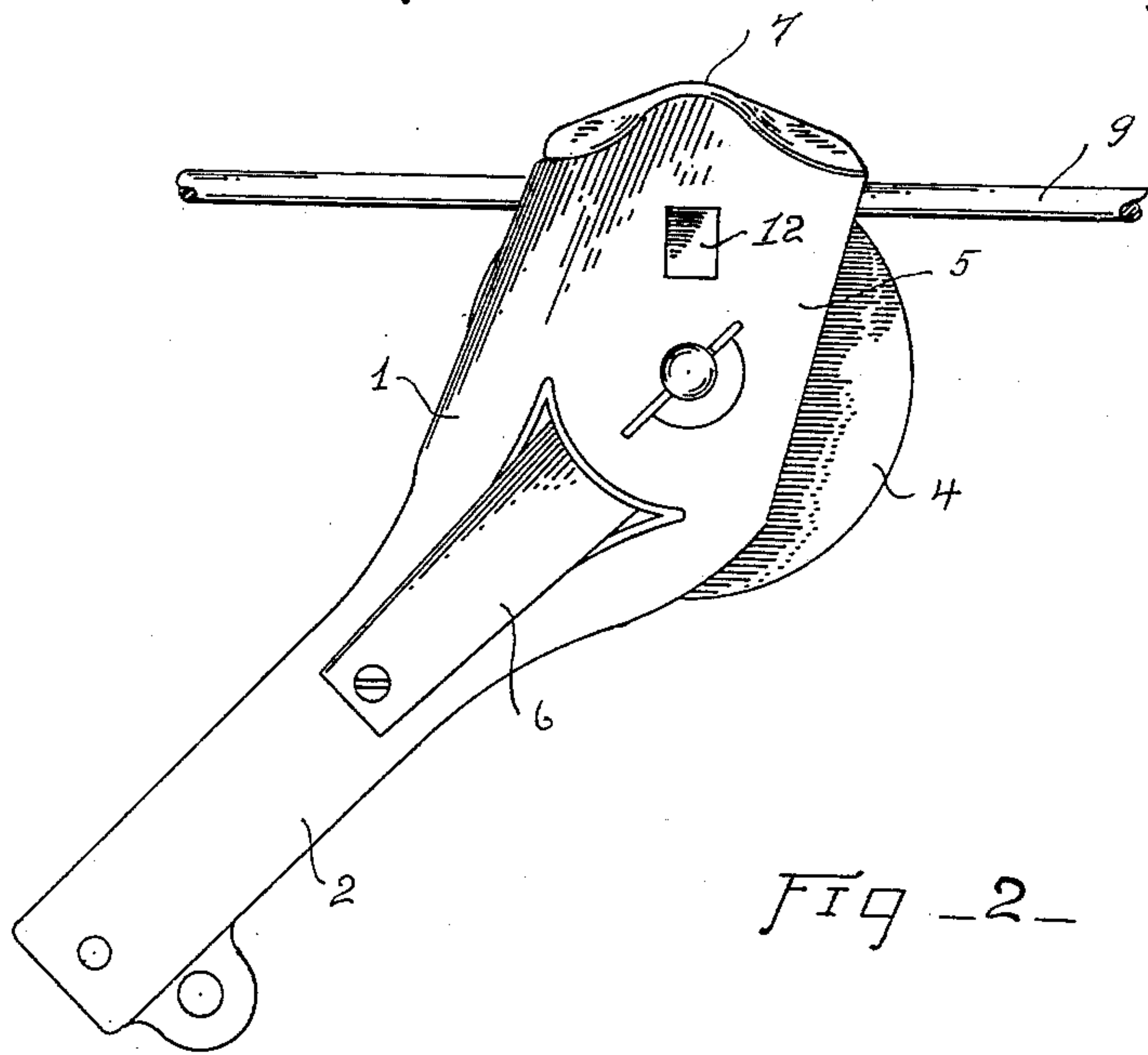


Fig-3-

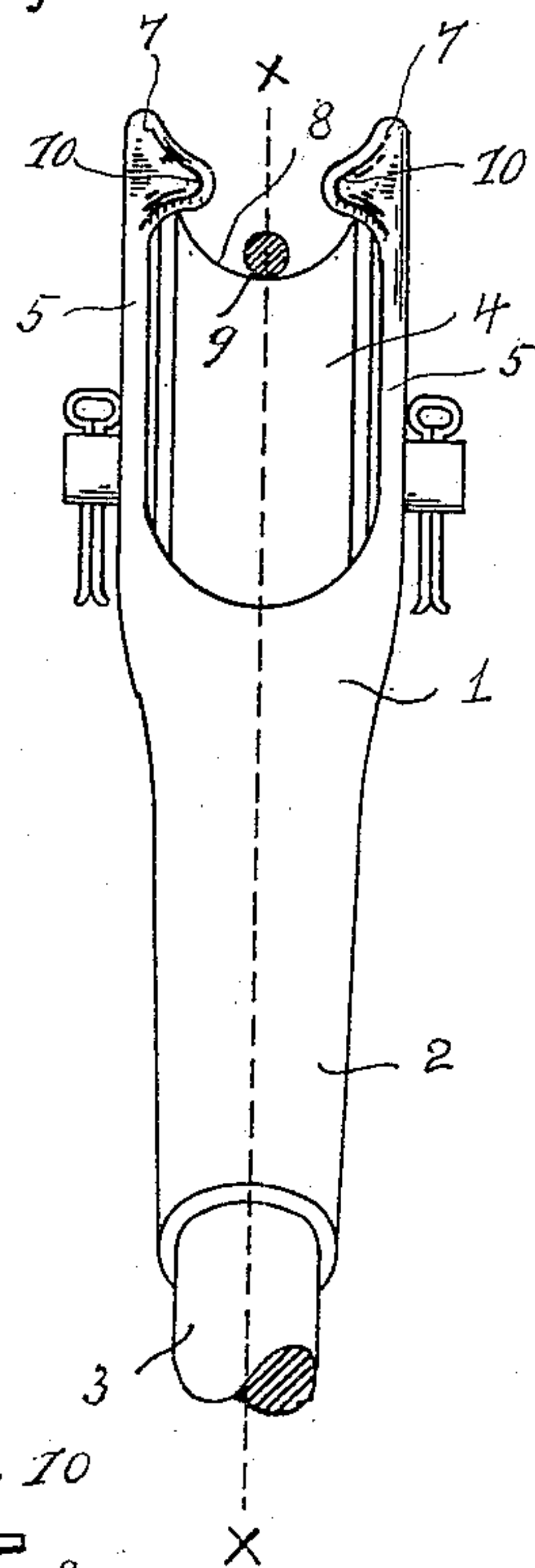


Fig-2-

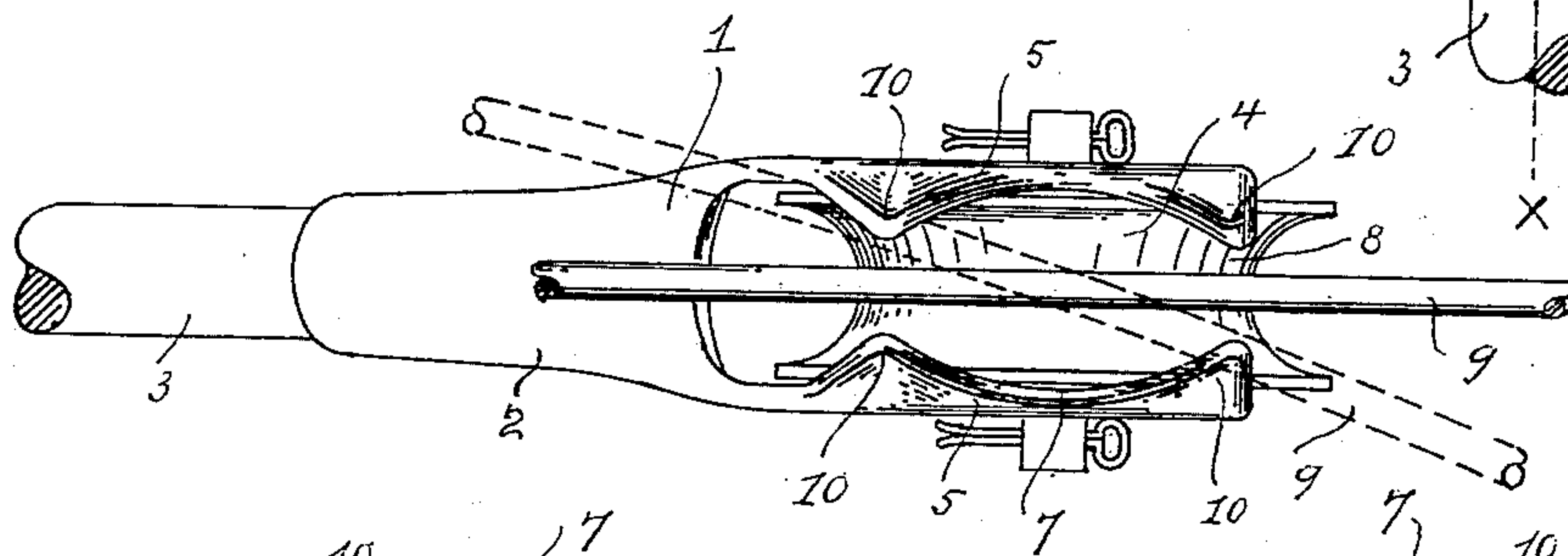


Fig-4-

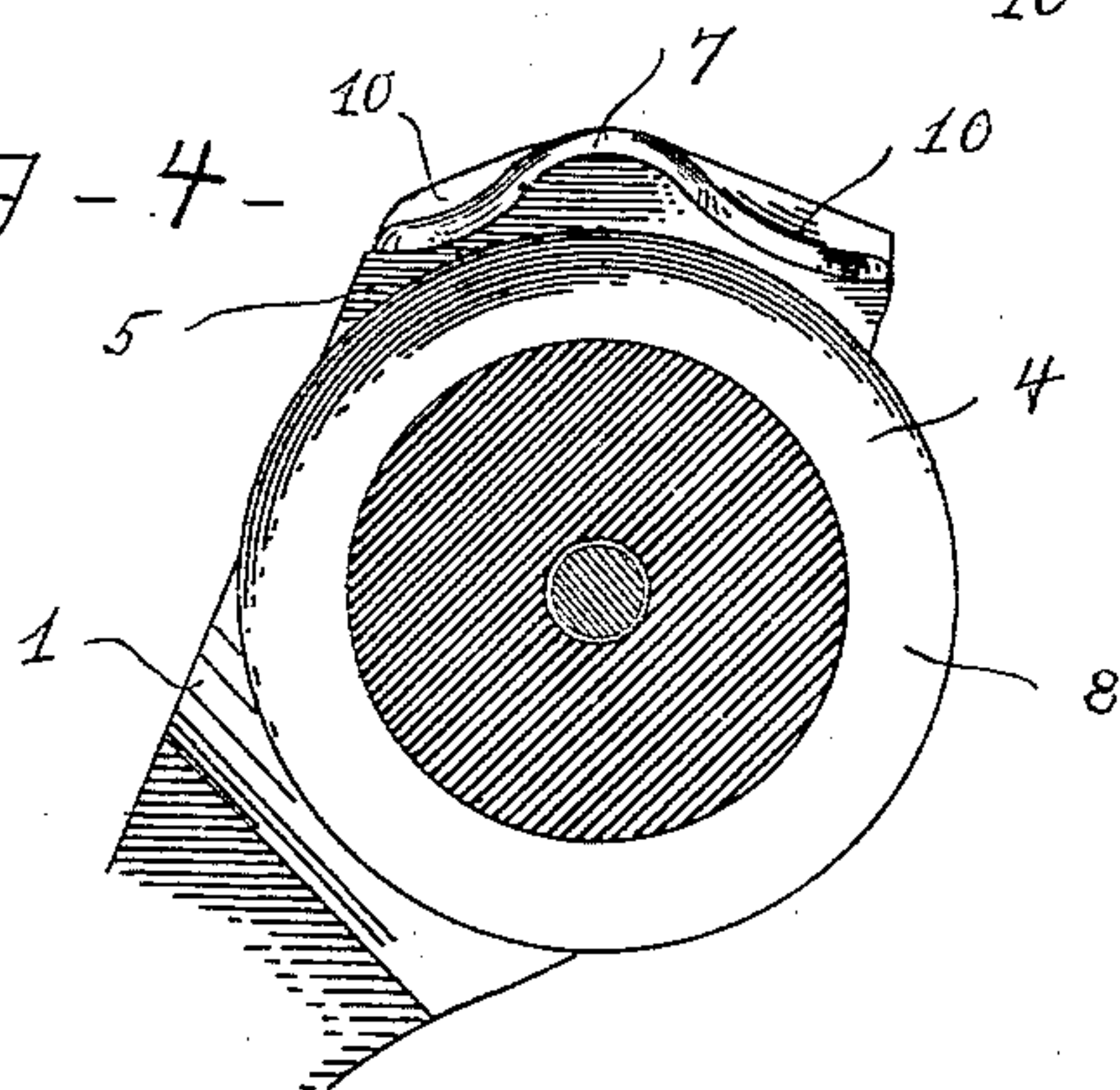
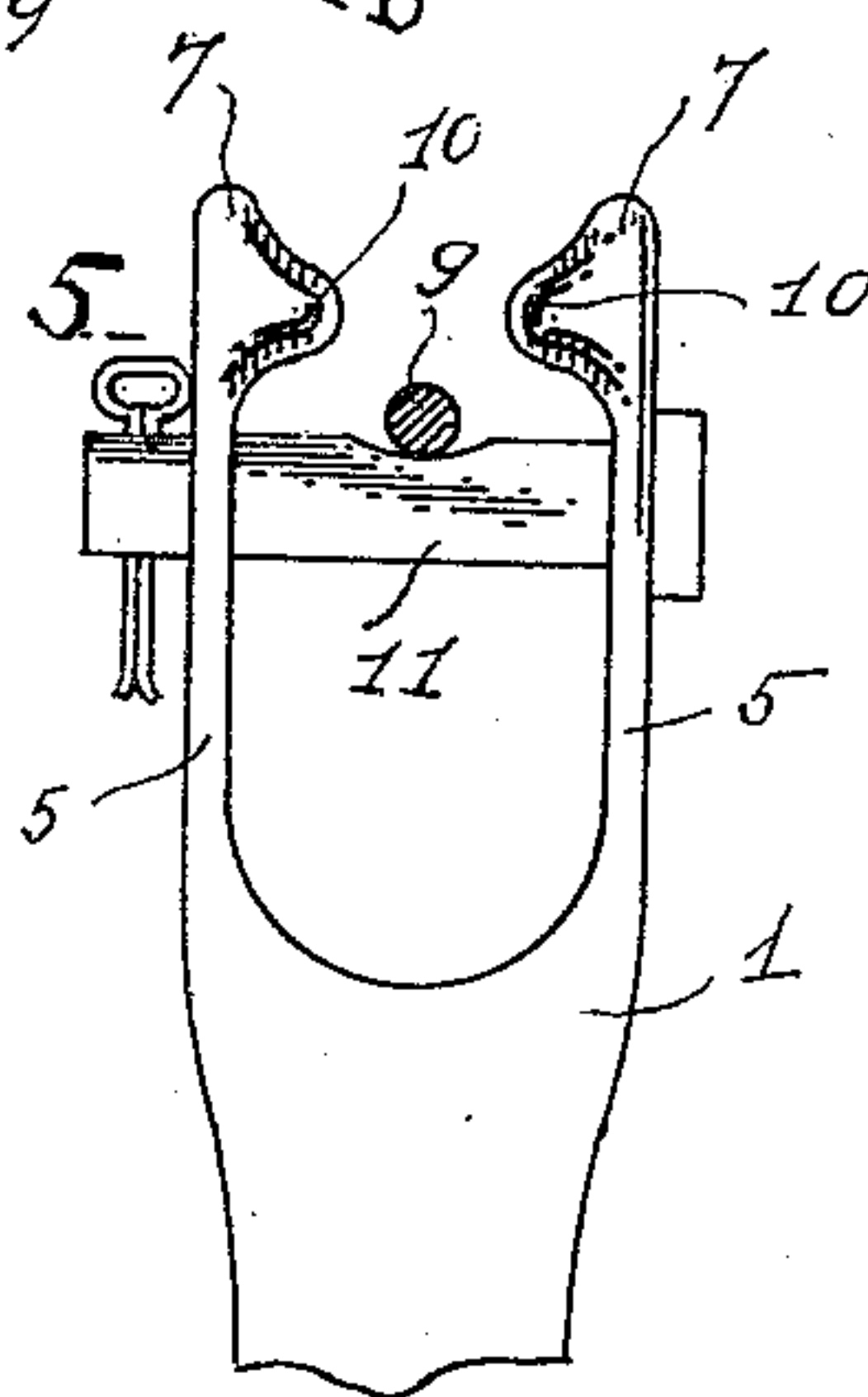


Fig-5-



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ROBERT WHITE, OF TOLEDO, OHIO.

TROLLEY.

SPECIFICATION forming part of Letters Patent No. 632,772, dated September 12, 1899.

Application filed May 25, 1899. Serial No. 718,149. (No model.)

To all whom it may concern:

Be it known that I, ROBERT WHITE, a citizen of the United States, residing at Toledo, in the county of Lucas and State of Ohio, have invented a new and useful Improvement in Trolleys for Electric Cars, of which the following is a specification.

My invention relates to an improvement in trolleys for electric-railway cars employing overhead electric conductors, and has for its object to provide a trolley with means to prevent the breaking of the contact of the trolley with the electric conductor and the trolley becoming detached therefrom while the car to which it is attached is turning curves or passing switches and turnouts and that will permit the trolley being readily placed in or out of contact with the conductor, as desired. Furthermore, to provide such a trolley with means whereby an ice-scraper may be temporarily substituted for the trolley-wheel, adapted to remove ice from the conductor when it becomes coated therewith and also serve the purpose of making electrical contact therewith. I attain these objects by the means illustrated in the accompanying drawings, in which—

Figure 1 is a side view of my invention. Fig. 2 is a top view of the same. Fig. 3 is a front view thereof. Fig. 4 is a view in cross-section through line *xx* of Fig. 1, and Fig. 5 is a front elevation with the trolley-wheel removed and an ice-scraper substituted therefor.

In the drawings, 1 is the trolley-head, which for the most part is of like form and construction as those in common and general use on electric railways that employ overhead electric conductors, having a hollow cylindrical neck 2 to receive the trolley-pole 3 and secure it thereto, broadened and flattened as to the main body thereof and bifurcated at the top and adapted to receive within the fork the grooved trolley-wheel or sheave 4, which is journaled in the flat sides 5 of the fork. The trolley-wheel 4 is provided with flat springs 6, secured to the head 1, having suitable shallow mortises to receive them and terminating in slots through the base of the fork, through which the springs pass upward from opposite sides of the head to contact, respectively, with opposite sides of the trolley-wheel 4, and adapted to allow a limited

flexible lateral movement of the wheel 4 between the sides 5 of the fork and to maintain continuous electrical contact therewith when the wheel is in electrical contact with the conductor-wire. To attain the objects of the invention, the flattened sides 5 of the fork are extended an equal distance longitudinally beyond the periphery of the sheave or trolley-wheel 4, and have their ends rounded nearly concentric with an arc of the wheel, and are each provided with an arched inwardly-projecting lip 7, integral with the ends of sides 5 and extending at each end partially over and above the groove 8 of the wheel 4, with the central portion curved upwardly and outwardly from the projecting ends of the lip to the central point of its connection with its side 5, the two lips, oppositely disposed, forming an open-mouth-shaped opening over groove 8 of the wheel 4, slightly wider at the center than the groove of the wheel and diminishing toward the ends of the lips, where the opening is narrowest, but is wide enough to freely admit access or exit of conductor 9 to or from the groove 8 of the wheel 4 when the conductor 9 is in alinement with the plane of revolution of the wheel, (in position as shown in full lines in Fig. 2,) the central portions of the lips thus formed being adapted to serve as guides directing the groove of the wheel to its contact with conductor 9. Sides 5 are projected at such angle from the pole 3 and lips 7 are placed in such position thereon that their ends 10 are respectively in horizontal alinement, slightly above and parallel with conductor 9, when the trolley-wheel 4 is raised by its pole 3 in contact therewith, with the plane of its revolution coinciding with the vertical plane of the conductor. It is apparent from Fig. 2 of the drawings that when in such position the trolley-wheel 4 may be freely moved into and out of contact with conductor 9 without interference of the projecting ends 10 of lips 7. It will also be apparent that when the car supporting the trolley is passing around a curve or diverging onto a switch, turnout, or siding the trolley will be temporarily out of alinement with the central longitudinal vertical plane of the car, thereby bringing the groove of the trolley-wheel temporarily at an angle more or less acute across the conductor 9 in similar position to that shown in dotted

lines in Fig. 2, whereby diagonally opposite projecting ends 10 of lips 7 respectively will be brought directly over conductor 9 and will intercept and prevent the lifting of the conductor 9 from the groove of wheel 4, to which there is a constant tendency—produced by the revolving of the wheel when in contact therewith at such angle—thereby preventing the breaking of contact under such conditions, as very frequently occurs with the form of trolley now in general use.

When the trolley-head is passing the electrical bridge-plates or devices commonly used at crossings, switches, and curves for connecting the diverging conductors and the car is on the diverging track, the rounded edges of diagonally opposite ends 10 of lips 7 engage the sides of the pendent flanges of the bridges to which the conductors 9 are secured and the trolley passes easily and smoothly from its contact with the wire to contact with its supporting-flange, and upon reaching the openings between the inner ends of the diverging flanges of the bridge the forward part of the trolley-head, as soon as the forward end 10, engaging the flange, has passed its inner end, naturally turns under its strain in the direction of alinement with the car, the central upward and outward curve of the lip being adapted to permit such change of direction, and without any tendency to loss of contact the trolley is thus naturally and easily directed to alinement and contact with the diverging flange and its conductor. In passing under the conductor-flanges of these bridge-plates the contours of the lips 7 are adapted to prevent loss of contact of the trolley therewith and also to overcome, as with the wire, the tendency of the wheel to roll from under it when revolving at an angle thereto, in this connection, however, not by the restraining action of ends 10 of the lips, but by the outward and upward inclination of the central portions thereof, the climbing tendency of which is the reverse of that of the revolving wheel, and tends constantly to maintain the contact.

When the electric conductor 9 becomes coated with ice, as sometimes occurs during winter storms, causing imperfect electrical contact of the trolley-wheel with conductor 9, wheel 4 may be removed and scraper 11

substituted therefor, which is secured in position across the fork through angular openings 12 in sides 5 of the fork, the scraper 11 being adapted in size to fit closely therein and provided with a head at one end and any suitable means at the other to secure it in such position, in which it serves both to scrape and remove the ice coating from the conductor 9 as the trolley moves along it and to make electrical contact therewith, while lips 7 operate with it, as with wheel 4, to prevent loss of such contact on curves, switches, and turnouts.

While the lips 7 are preferably made integral with the ends of fork sides 5, it is manifest that they may be made separate therefrom and secured thereto by rivets or the like. I therefore do not desire to be limited to the exact form or construction shown.

Having thus fully described my invention, what I claim to be new, and desire to secure by Letters Patent, is—

1. In a trolley for electric cars, the combination, with the trolley-pole, of a forked head adapted to be secured thereto, provided with a grooved trolley-wheel journaled within the fork and having fork sides projecting longitudinally beyond the periphery of the wheel and provided with oppositely-disposed arched lips, the end portions whereof respectively project inwardly above and partially over the groove of the wheel, with the center portion opening outward from the end portions in a curve, forming together an open-mouth-shaped opening for access to the groove of the wheel, substantially as shown, and for the purpose described.

2. In a trolley for electric cars, the combination of a trolley-pole with a forked head adapted to be secured thereto, provided with an ice-scraper secured within and across the fork, and arched lips at the ends of the fork sides, having end portions projecting inwardly, above and partially over the crotch of the fork, with the center portions opening outward therefrom in a curve, forming together an open-mouth-shaped opening for access to the scraper, substantially as shown, and for the purpose described.

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