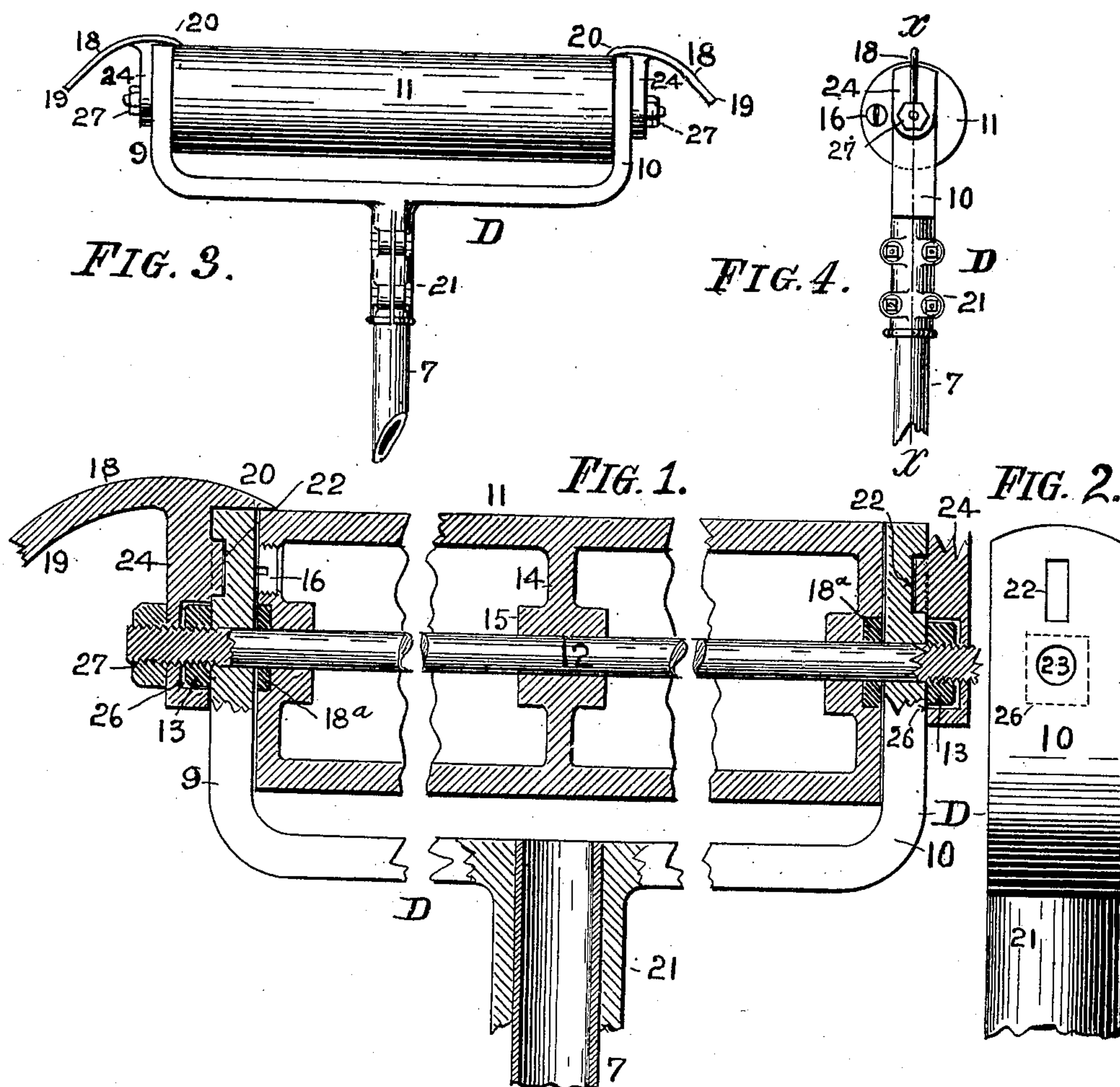


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TROLLEY.  
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920,427.

Patented May 4, 1909.



Witnesses:

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# UNITED STATES PATENT OFFICE.

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## TROLLEY.

No. 920,427.

Specification of Letters Patent.

Patented May 4, 1909.

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*To all whom it may concern:*

Be it known that I, HENRY BURKHARD, resident of Chicago, in the county of Cook and State of Illinois, subject of the Emperor of Germany, have invented certain new and useful Improvements in Trolleys; and I do hereby declare that the following description of my said invention, taken in connection with the accompanying sheets of drawings, forms a full, clear, and exact specification, which will enable others skilled in the art to which it appertains to make and use the same.

This invention has general reference to trolleys for electrically operated railway cars; and it consists, essentially, in the novel and peculiar combination of parts and details of construction, as hereinafter first fully set forth and described, and then pointed out in the claim.

Figure 1 is a longitudinal sectional elevation of my improved trolley taken on line  $x-x$  of Fig. 4. Fig. 2 is an end-elevation of the fork detached. Fig. 3 is a side-elevation of the trolley, and Fig. 4 is an end-elevation of the same.

Like parts are designated by corresponding symbols and characters of reference in all the figures.

The object of this invention is the production of an efficient, serviceable and durable trolley for electrically-driven railway cars. In existing devices the usual grooved trolley-wheel is rapidly worn out and requires very frequent renewals. They are difficult to keep in order because insufficient lubrication of these wheels is a continuous source of rapid wear. These wheels are, furthermore, giving considerable trouble owing to their jumping the overhead conductor, especially at crossings and branches. All these objections are overcome by the construction which I shall now proceed to describe.

The reference-numeral 7 designates a trolley pole of any suitable construction upon the upper end of which there is mounted a fork or yoke D, which in this present construction has considerable spread so that between its parallel members 9, 10, Figs. 1 and 3 I place a roller 11 of considerable length and somewhat larger in diameter than the usual grooved trolley wheel. This roller is journaled upon a fixed shaft or axle 12, which shaft passes through the members 9, 10, of the fork D and is screw-threaded on both of its ends to receive lock-nuts 13.

I prefer to make the roller 11 hollow and provide the same, centrally, with a spider-web 14 having a hub 15, to afford a central journal bearing for said roller 11 upon its axle 12. In the end or ends of this roller I provide removable plugs 16, Figs. 1 and 4, through which lubricating oil or grease may be introduced to the interior of the roller to lubricate the same, felt-washers 18<sup>a</sup>, being placed into recesses in the ends of the rollers to prevent the lubricant escaping from the interior of the roller. While I prefer felt for this purpose owing to its porosity and quality of retaining the lubricant, I do not, however, wish to confine myself to this particular material for the purpose specified, since other means may be employed to prevent the escape of the lubricant. I also prefer to produce this roller 11 in the process of casting in aluminum, for the reason that this metal is a very good conductor of electricity, has a very low specific gravity and is less costly than copper or copper-alloys, but if desired other known and approved metals or compositions may be employed without departing from my invention.

18 are two horns; secured to the outside of the parallel members 9, 10, of the fork D. They are of substantially T-shape, the member 19 of which is downwardly curved while the member 20 which is shorter than the member 19 overlaps the members 9, 10, of the fork D and reaches a short distance upon the roller 11. The object of thus causing the horns 18 to overlap the roller 11 with its members 20 is to prevent the overhead electrical conductor, not shown, from wearing grooves at the extreme ends of said roller and the inner surfaces of the upper ends of the parallel members 9 and 10 of the fork D, which might prevent the said electro-conducting wire from passing from the roller upon the horns, and vice versa; and in order to assist this overhead wire in this passage, the extreme ends of the members 9 and 10 are brought to a sharp edge as clearly illustrated in Fig. 1.

The fork D has centrally a downwardly-projecting clamping socket 21, to receive the upper end of the pole 7 and to securely retain its position upon said pole. In the faces of the parallel members 9, 10, of the fork D there is a longitudinal recess, 22, above the hole 23 for the passage of the shaft 12, and on the member 24 of the horns 18



there is a projection 25 which engages the slot or recess 22 and thereby retains the horns 18 in their proper position. The inner face of these members 24 has a square or hexagonal recess 26 to receive the lock-nuts 13 and thereby to prevent said lock-nuts from turning, while additional locks-nuts 27, placed on the outside of the members 24 of the horns 18 securely fastens the horns 18 to the fork D.

The introduction of the downwardly-curved horns add a feature of convenience to the trolley since should by any means the overhead conductor leave the roller, it will be guided back upon the roller by the downwardly-curved laterally-projecting members of said horns.

It is evident that the wiring of the pole and the means for conveying the current from the overhead conductor through the trolley-roller, the pole, &c., to the motors and other electrical appliances in the car does not differ from the methods now in general use and is so well known as not to require description and illustration in the present instance.

A trolley-roller of considerable length so as to compensate for the varying positions of the overhead conductor and the body of the car or the range of lateral movement thereof, possesses the advantage that the line of contact of the trolley-wire with the trolley-roller shifts more or less continually

and, therefore, transfers the wear along the entire periphery and length of said roller, thus contribute materially to the life and durability of said roller.

Having thus fully described my invention I claim as new and desire to secure to me by Letters Patent of the United States—

In a trolley for electrically-operated cars, a pole; a fork at the upper end of said pole having a clamping socket embracing said pole and having parallel members, said fork having recesses in the outer faces of the parallel members of said fork; a longitudinal axle passing through the parallel members of said fork; a roller adapted to revolve upon said axle; lock-nuts on said axle bearing upon the outer surface of said fork-members; horns attached to the faces of the said parallel members, said horns being provided with projections engaging the recesses, and with recesses adapted to engage the lock-nuts, and fastening-nuts on the outer ends of said axle and bearing against the outer faces of said horns.

In testimony that I claim the foregoing as my invention I have hereunto set my hand in the presence of two subscribing witnesses.

HENRY BURKHARD.

Attest:

H. LEVINSON,  
MICHAEL J. STARK.