

(No Model.)

C. MITCHELL.  
TROLLEY WHEEL.

No. 543,042.

Patented July 23, 1895.

Fig. 1.

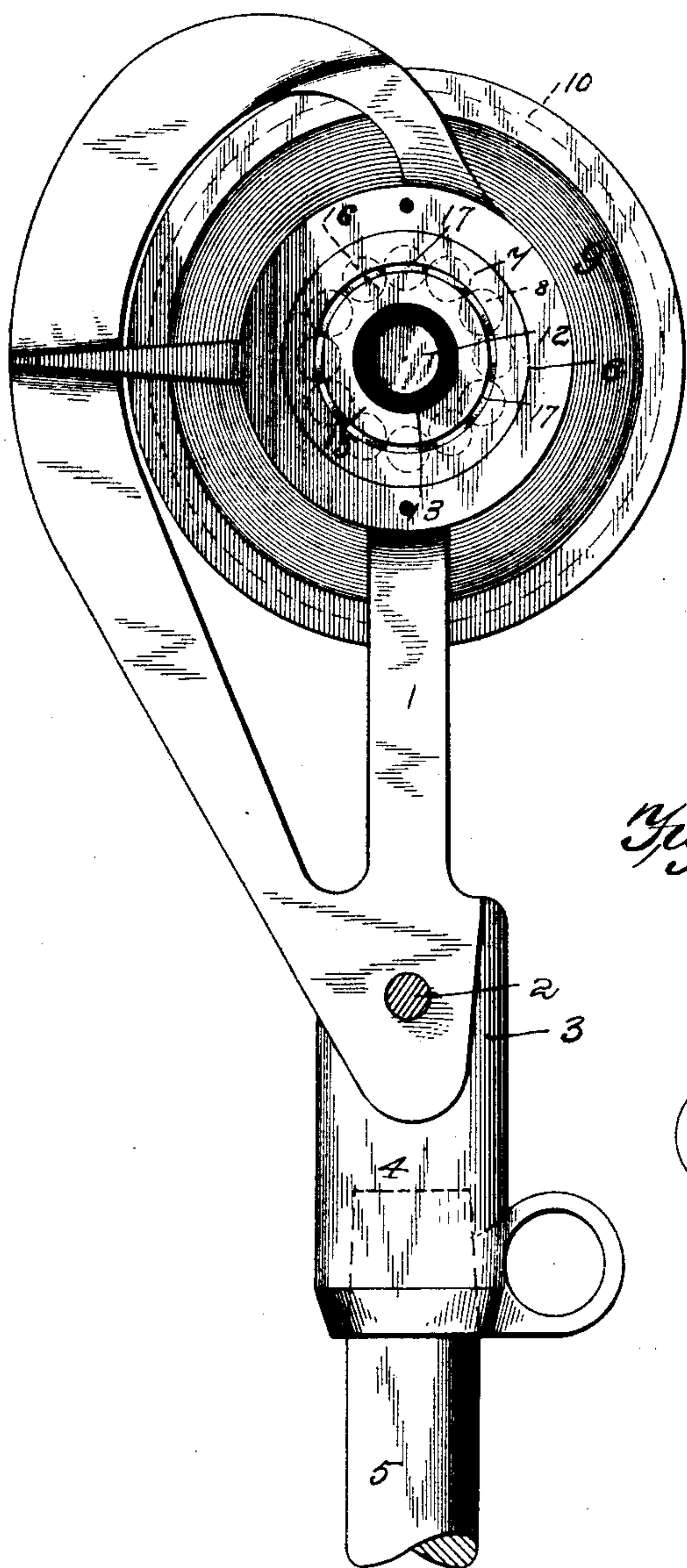


Fig. 2.

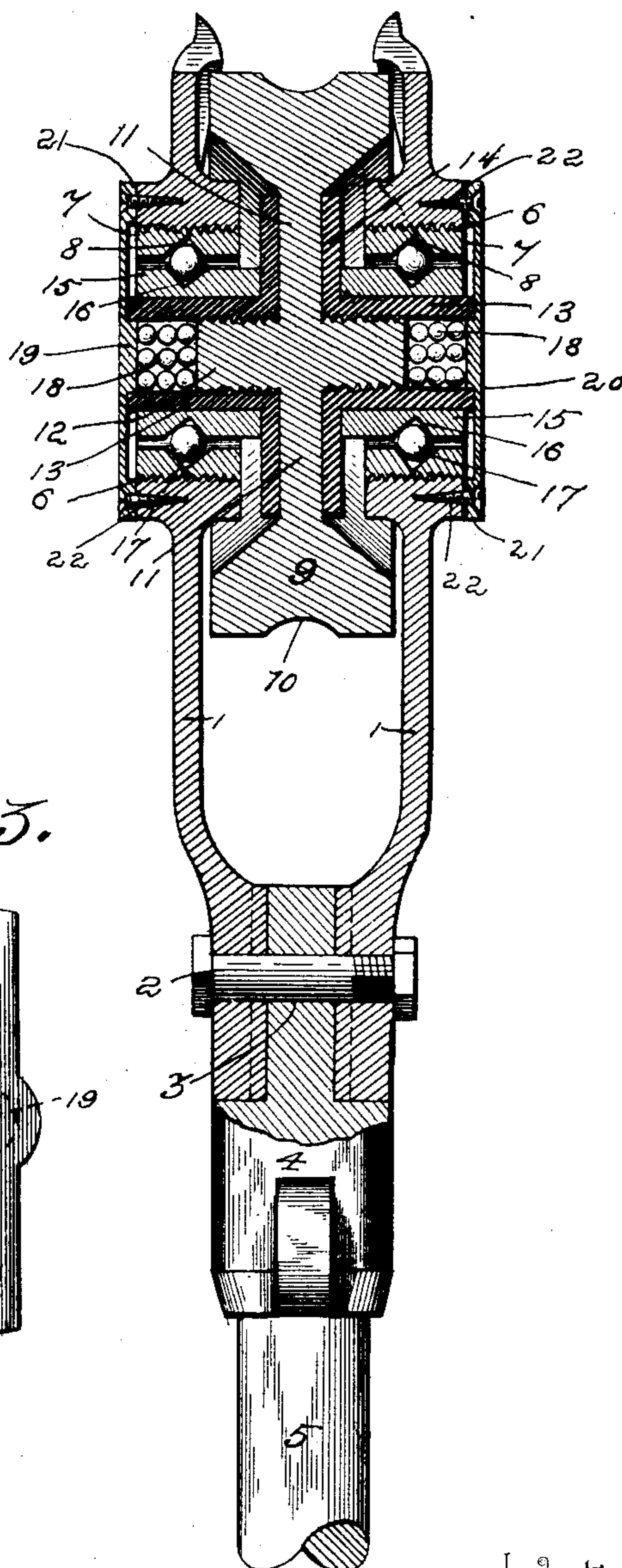
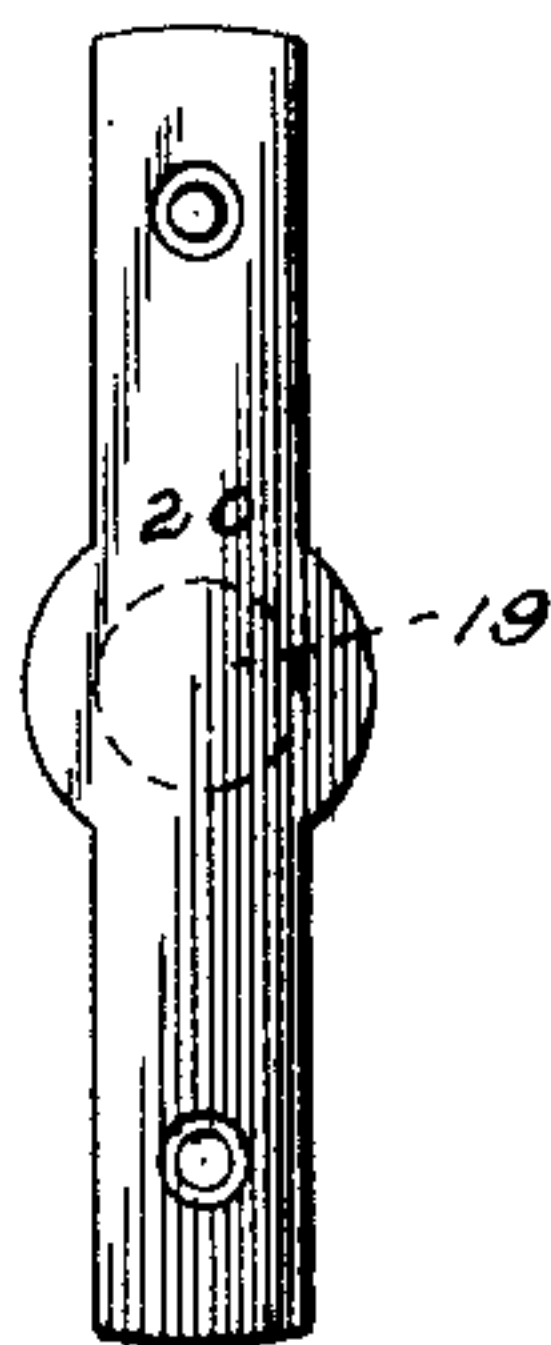


Fig. 3.



Inventor  
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Witnesses.

E. H. Moore.  
D. P. Hallam.

By his Attorneys.

C. A. Snow & Co.



# UNITED STATES PATENT OFFICE.

CHARLES MITCHELL, OF YONKERS, NEW YORK, ASSIGNOR OF FIVE-EIGHTHS TO HARRY A. ARCHIBALD, OF SAME PLACE.

## TROLLEY-WHEEL.

SPECIFICATION forming part of Letters Patent No. 543,042, dated July 23, 1895.

Application filed December 20, 1894. Serial No. 532,450. (No model.)

*To all whom it may concern:*

Be it known that I, CHARLES MITCHELL, a citizen of the United States, residing at Yonkers, in the county of Westchester and State of New York, have invented a new and useful Trolley-Wheel, of which the following is a specification.

This invention relates to trolley-wheels for electric cars; and it has for its object to provide a new and useful construction of trolley-wheel that shall be very durable, while at the same time possessing exceptional qualities for easy running without requiring any lubricant whatever.

With these and other objects in view, which will readily appear as the nature of the invention is better understood, the same consists in the novel construction, combination, and arrangement of parts hereinafter more fully described, illustrated, and claimed.

In the drawings, Figure 1 is a side elevation of a trolley-wheel and its bearing-support constructed in accordance with this invention. Fig. 2 is a vertical transverse sectional view of the same. Fig. 3 is a detail plan view of one of the side contact-plates.

Referring to the accompanying drawings, 1 1 designate opposite parallel side bearing-frames that are connected together at their lower ends by means of a connecting-bolt 2, passed through bolt-openings in the lower ends of said side bearing-frames and also through the shank 3 of a socket-casting 4, clamped in position between the lower ends of said side bearing-frames and adapted to have fitted therein the upper end of the ordinary trolley-pole 5. The opposite side bearing-frames 1 are provided with oppositely-aligned circular threaded bearing-openings 6, in which are removably and adjustably fitted the exteriorly-threaded sectional bearing sleeves or bushings 7, that are preferably made of case-hardened steel and are provided in their inner sides with annular V-shaped bearing-grooves 8.

Arranged to work between the opposite side bearing-frames 1 is the contact-wheel 9, that is provided with the usual peripheral recess or groove 10 to fit the trolley-wire with which the wheel makes the usual contact. The wheel 9 is provided with a straight inter-

mediate web portion 11, from opposite sides of which are projected the integral central axle projections 12. The opposite axle projections 12, extended from both sides of the wheel 9, are exteriorly threaded and are adapted to have fitted thereon the interiorly-threaded insulator-collars 13. The collars 13 are made of any suitable insulating material and are slightly longer than the axle projections 12 on which they are fitted, and at their inner ends the said collars are provided with the inner end flanges 14, that are adapted to fit flat against the sides of the intermediate web portion of the wheel 9.

The insulator-collars 13 have fitted exteriorly thereon bearing-collars 15, that fit loosely within the sleeves or bushings 7 of the side bearing-frames 1, and the collars 15 are also made of case-hardened steel and are provided with exterior annular V-shaped bearing-grooves 16, that are opposed to and are located directly opposite the grooves 8 of the sleeves or bushings 7, and the said opposite grooves 8 and 16 are adapted to accommodate therein a series of bearing-balls 17, that complete a ball-bearing for the wheel 9 and reduce the friction incident to the running thereof to a minimum, so that no lubrication of the bearings for the wheel is required.

Beyond the outer ends of the axle projections 12 of the wheel the outer open ends of the collars 13 are adapted to receive therein the contact-balls 18, that contact with the ends of the axle projections 12 and are held in place by the central bearing-bosses 19 of the fixed side contact-plates 20. The bosses 19 fit snugly in the outer projecting ends of the collars 13, and the plates 20 are provided at their ends with side bosses 21, that fit against the side frames 1 at the side of the bearing-openings 6 therein and serve to hold the said contact-plates off from the bushings 7 and collars 15. Screws 22 pass through the ends of the plates 20 and into the frames 1 and complete connections for conducting the current from the wheel to the pole.

The construction and many advantages of the herein-described trolley-wheel will be readily apparent to those skilled in the art; but at this point attention is directed to the



special advantages that exist in the present invention. In the first place, it will be observed that the herein-described bearing for the wheel is not only simple in construction, but at the same time is of such a character as to require no lubricant of any description, thereby allowing the metal contacts to be always clean, so that no material resistance will be offered to the passage of the current from the wheel to the pole, as is the case in trolley-wheels where large quantities of oil or other lubricant are required to insure the easy running of the wheel.

By reason of the specific construction of the bearings for the wheel the said wheel may laterally adjust itself to be accommodated to the conductor on which it runs, and by employing the insulator-collars 13 between the metal parts of the bearings the bearings will not become heated when arcing takes place, as is generally the case when the wheel leaves the conductor, and, furthermore, the absence of oil or grease from the herein-described wheel obviates the danger of the wheel flashing along the line or burning, as is quite common.

Further attention is directed to the specific construction of the bearings for the wheel, which, by reason of being located in the bearing-frames, renders it unnecessary to take the bearings apart to put in a new wheel, as the bearings will outwear the wheels, and by employing the sleeves 7 and collars 15, with grooves cut therein at an angle of about forty degrees, the friction incident to the running of the wheel is reduced to a minimum and the balls within the grooves act as collars as well as bearings.

Changes in the form, proportion, and the minor details of construction may be resorted to without departing from the principle or sacrificing any of the advantages of this invention.

Having thus described the invention, what is claimed, and desired to be secured by Letters Patent, is—

1. In a trolley wheel, the combination with

the side bearing frames; of the wheel having opposite axle projections and spaces beyond the ends of said axle projections, contact balls arranged in said spaces in contact with the ends of the axle projections, and side contact plates attached to the side bearing frames and fitting over said spaces in contact with the contact balls therein, substantially as set forth.

2. In a trolley wheel, the combination of opposite side bearing frames having threaded bearing openings, exteriorly threaded bearing sleeves fitted in said bearing openings and provided with interior annular V-shaped bearing grooves, the wheel arranged between the bearing frames and provided with central axle projections extended from both sides thereof and exteriorly threaded, interiorly threaded flanged insulator collars fitted on said axle projections, bearing collars fitted exteriorly on the insulator collars and provided with exterior annular V-shaped bearing grooves arranged opposite the grooves of the bearing sleeves, and bearing balls arranged in the space confined within the grooves of the bearing sleeves and collars, substantially as set forth.

3. In a trolley wheel, the combination with the side bearing frames, of the wheel having opposite central axle projections, insulator collars fitted on the axle projections and of a greater length than the same, contact balls arranged within the insulator collars in contact with said axle projections, and side contact plates attached to the side bearing frames and provided with central contact bosses fitting in the outer open ends of the insulator collars and contacting with said contact balls, substantially as set forth.

In testimony that I claim the foregoing as my own I have hereto affixed my signature in the presence of two witnesses.

CHARLES MITCHELL.

Witnesses:

A. A. HUBBARD,

WM. H. GREENHALGH.