

No. 668,057.

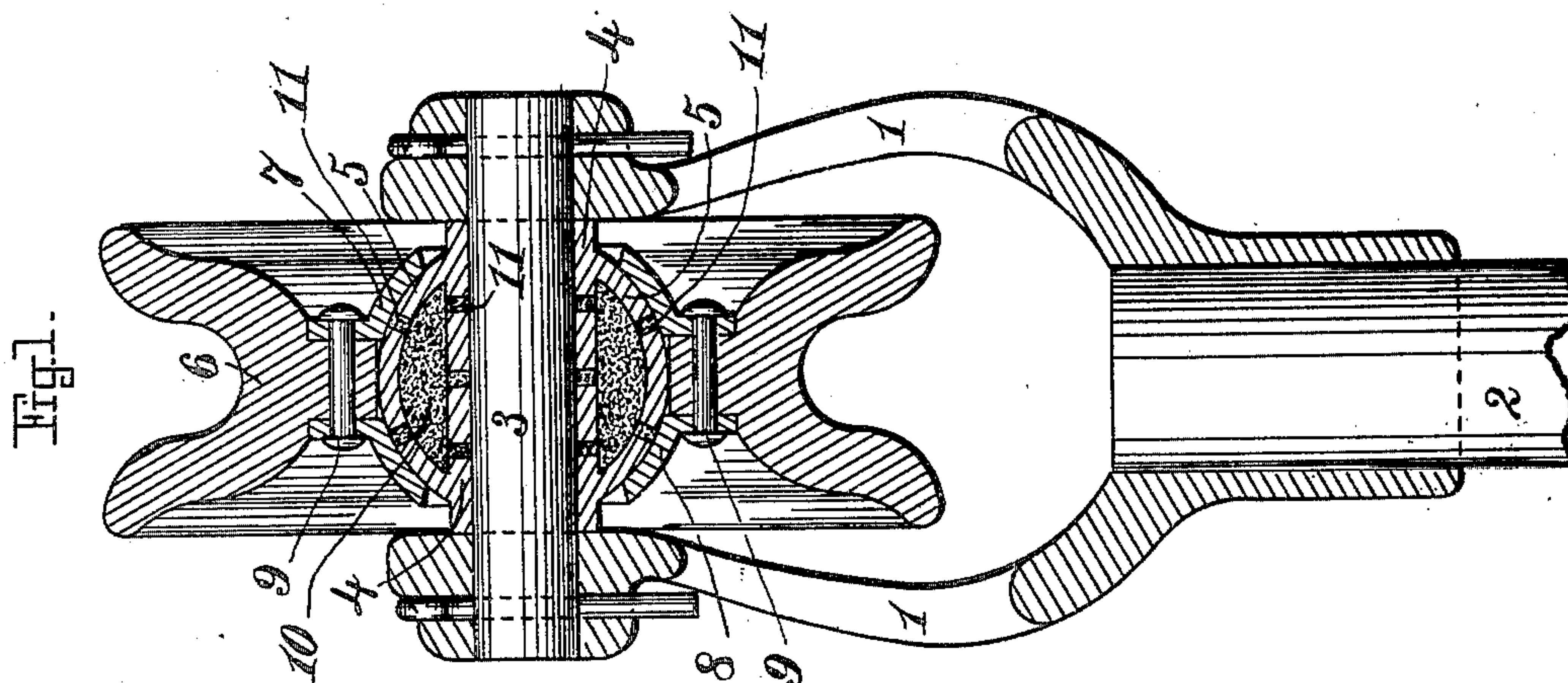
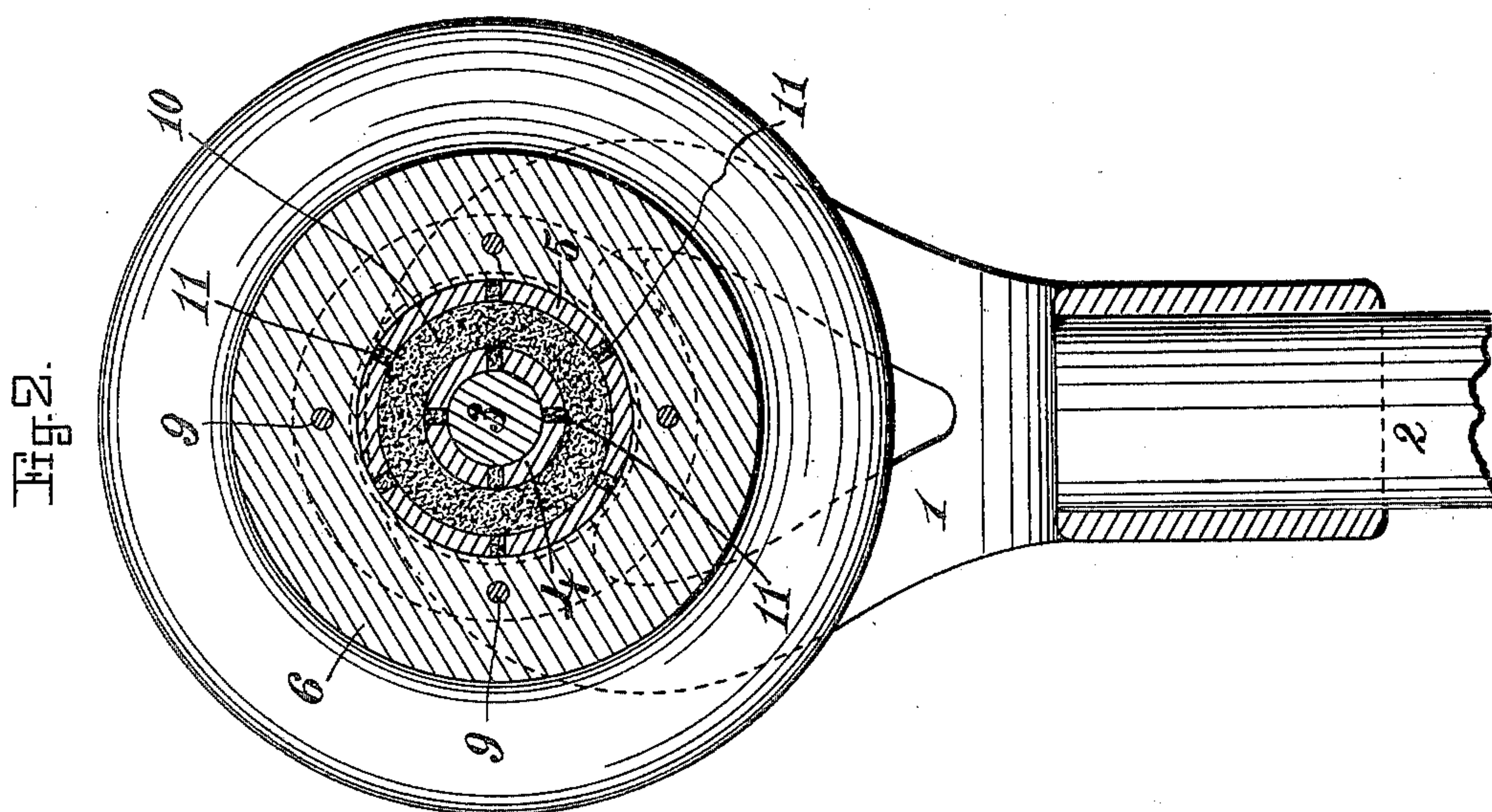
Patented Feb. 12, 1901.

F. E. SHAUGHNESSY & G. J. THOMAS.

TROLLEY WHEEL.

(Application filed July 17, 1899.)

(No Model.)



Witnesses

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Inventors

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# UNITED STATES PATENT OFFICE.

FRANCIS E. SHAUGHNESSY AND GEORGE J. THOMAS, OF NEWTON, MASSACHUSETTS; SAID SHAUGHNESSY ASSIGNOR TO THOMAS C. KNOWLES, OF SAME PLACE.

## TROLLEY-WHEEL.

SPECIFICATION forming part of Letters Patent No. 668,057, dated February 12, 1901.

Application filed July 17, 1899. Serial No. 724,193. (No model.)

*To all whom it may concern:*

Be it known that we, FRANCIS E. SHAUGHNESSY and GEORGE J. THOMAS, of Newton, in the county of Middlesex and State of Massachusetts, have invented certain new and useful Improvements in Trolley-Wheels, of which the following is a specification.

This invention relates to improvements in trolley-wheels more especially designed for use on electric street-railroad cars; and it has for its objects to provide novel and effective means to reduce the wear upon the wheel and wire, to reduce the noise when the wheel is running upon the trolley-wire, to lessen the liability of arcing and thereby lessening the liability of melting the trolley-wire from its supports, to lessen the repairs upon the trolley, and to prevent friction when the trolley is moving upon a curve.

The invention consists in the novel construction and arrangement of parts, as will be fully described hereinafter and claimed.

The invention is carried out substantially as illustrated on the accompanying drawings, whereon our improved wheel has been shown as applied to the end of the trolley-arm of an electric car, and whereon—

Figure 1 represents a longitudinal section of the end of the trolley-arm in the plane of the axis of rotation of the trolley-wheel carried thereby and showing the same provided with our improved trolley-wheel. Fig. 2 represents a longitudinal section of the end of a trolley-arm in a plane at right angles to that shown in Fig. 1, also showing the same provided with our improved wheel.

Similar characters of reference refer to similar parts wherever they occur on the different parts of the drawings.

When a trolley-wheel is rigidly mounted upon a shaft which is itself rotatably mounted in bearings upon a trolley-pole or on its attached harp or when said trolley-wheel is loosely mounted upon a fixed shaft attached to the trolley-pole or its harp, said wheel rotates in a plane at right angles to its axis or the axis of the shaft upon which it is mounted and is held rigidly in that plane, being prevented from tipping sidewise in either direction from its plane of rotation, and therefore

the wheel has been caused to bound from one side to the other whenever coming into contact with any slight curve or projection on the trolley-wire. This bounding of the wheel would cause a frequent arcing of the current of electricity conveyed from the wire to the wheel, which arcing tends to melt the wire from its supports, and thereby to allow the wire to drop and cause repairs, if not serious consequences. Our improved trolley-wheel is designed to overcome these defects, and it is constructed substantially as follows:

Within the harp or forked end 1 of the trolley-arm 2 is firmly mounted the shaft or spindle 3, which supports our improved wheel. Upon the shaft 3 is mounted the bushing 4, which is free to rotate thereon. The outer surface of the bushing is made with the spherical portion 5, upon which the wheel proper 6 is loosely mounted and freely rotatable. In order to remove the wheel from the bushing, we provide the wheel with two cup-shaped collars 7 and 8, one on either side of the wheel, which collars embrace the spherical portion of the bushing, as shown, and are firmly secured to the wheel, preferably by means of the rivets 9 or by any other suitable means. It will thus be seen that the wheel and attached collars, in connection with the spherical portion of the bushing, form a universal joint between the bushing and wheel, whereby the wheel is free to be rotated upon said bushing at various angles, and that the bushing is free at all times to be rotated upon the shaft 3. By means of this universal joint it will be seen that the wheel will yield sidewise and automatically adjust itself to any curves or irregularities in the trolley-wire. Consequently it will keep in close contact with the same and prevent arcing of the current, as well as any unnecessary friction tending to melt the wire from its supports or to wear the wheel or wire. By this universal connection of the wheel to the bushing all unnecessary scraping of the wheel upon the wire and consequent noise or squeaking is prevented.

By constructing the wheel in sections, as shown, it will be seen that it is not necessary to discard the entire wheel when the bushing is worn or when the groove in the outer rim

has worn out, as either of said parts may be replaced without replacing the other, and the same is true of the cup-collars.

Having thus fully described the nature, construction, and operation of our invention, we wish to secure by Letters Patent and claim—

5 A trolley-wheel, and a bushing with a spherical portion on which the wheel is loosely mounted and freely rotatable, combined with  
10 a trolley-arm and a supporting-shaft firmly mounted upon said arm, said bushing loosely mounted and freely rotatable, upon said shaft, whereby the wheel can rotate at various angles upon said bushing and automatically ad-

just itself to any curves or irregularities in 15 the trolley-wire on which it runs and the bushing can rotate upon the shaft freely and independent of the angle at which the wheel is rotating in relation to the axis of its supporting-shaft, for the purpose set forth. 20

In testimony whereof we have affixed our signatures in presence of two witnesses.

FRANCIS E. SHAUGHNESSY.  
GEORGE J. THOMAS.

Witnesses:

HENRY CHADBURN,  
HUGH BLUE.