F. HUDNER.

Car Axle.

No. 99,195. Patented Jan. 25, 1870.

Fig. 1

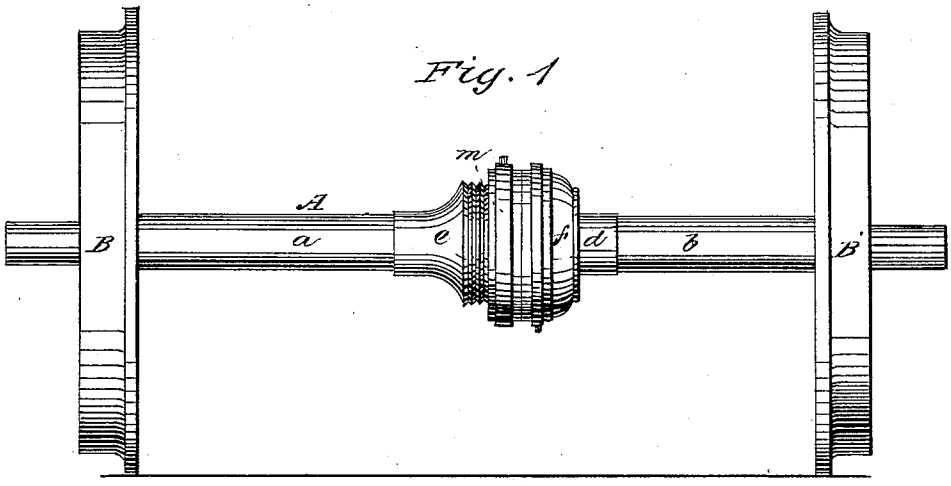
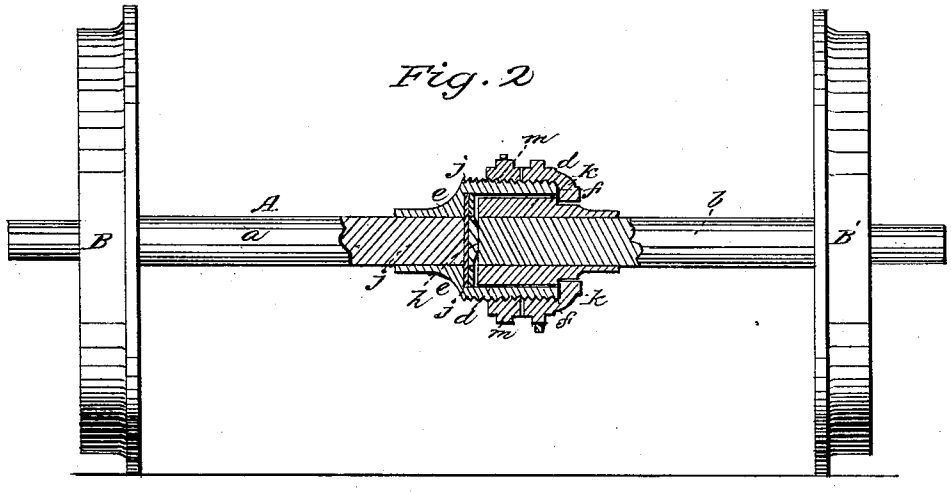


Fig. 2



Witnesses:

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FRANK HUDNER, OF NEW YORK, N. Y.

Letters Patent No. 99,195, *dated January* 25, 1870.

IMPROVED RAILWAY-CAR AXLE.

The Schedule referred to in these Letters Patent and making part of the same.

To all whom it may concern:

Be it known that I, FRANK HUDNER, of the city, county, and State of New York, have invented a new and improved Car-Axle; and that the following description, taken in connection with the accompanying drawings, hereinafter referred to, forms a full and exact specification of the same, wherein I have set forth the nature and principles of my said improvement, by which my invention may be distinguished from all others of a similar class, together with such parts as I claim, and desire to have secured to me by Letters Patent.

The object of this invention is to so construct a car-axle, particularly those intended for horse or street-cars, so as to enable the car to which the axle is attached to readily pass around curves, and avoid the wear and tear upon the rail and wheels and horses, consequent upon the increased friction that occurs at such times.

The nature of my invention is fully shown by the accompanying drawings, wherein—

Figure 1 represents a side view of my axle; and

Figure 2, a side view of the same, showing my invention in section.

Similar letters of reference indicate corresponding parts in the several drawings.

To enable others skilled in the art to make and use my invention, I will proceed to describe it.

A is a car-axle, of any desired size or proportion, to which is fixed, in the ordinary manner, the car-wheels B B'.

The axle A is divided in the centre of its length into two parts, *a b*.

On the inner end of the part *b* of the divided axle is fitted and securely keyed the one-half or male part *d* of the coupling, hereinafter described, and on the inner end of the part *a* is fitted and securely keyed the other half or female part *e* of said coupling, so that when the male part of the coupling *d* is inserted into the female part of the coupling *e*, the one part will freely turn within the other, and bring the divided ends of the axle together.

In order to keep the axle and coupling thus joined securely in position, the screw-collar *f* is slipped over the half-axle *b*, and then screwed on and over the female part of the coupling *e*, until the collar *k* of the male part of the coupling *d* is brought in contact with the inner surface of the screw-collar *f*, and thus the two parts of the axle and the coupling are confined and held firmly in position, while at the same time they are permitted to freely turn or revolve at the point of separation.

In order to keep the screw-collar *f* in position, whenever it may become necessary to adjust it, a jam-nut, *m*, is provided, and constructed to screw on and over the female part of the coupling *e*, until it abuts or jams against the outer edge or face of the screw-collar *f*.

When, from long use or otherwise, it is found that the divided ends of the axle, or the faces of the coupling, become worn away by friction, it is only necessary to drop into the female part of the coupling *e* one or more annular washers, *j*, of steel or iron, to preserve the proper gauge of the wheels, and to avoid any tendency to "backlash," the number of washers so applied depending upon the amount of wear at the ends of the axle and coupling; and in order to take the friction and wear from the inner faces of the coupling, and confine it as much as possible to the inner or divided end of the axle, a small "step" or disk, *n*, of steel or iron, of the same diameter as the end of the axle, is inserted into the female part of the coupling *e*, where it is kept in position by one or more of the surrounding annular washers *j*. The upper surface of this "step" or disk *n* is made slightly convex, so that the friction of the end of the axle upon it will be confined as much as possible to its convex surface, and thereby be materially lessened.

It will be seen, from the foregoing description, that a car-axle, provided with my invention, will admit of the car turning curves of short radius, for as the car turns the curve, the wheels that move around the inner side of the curve will act, in a measure, as pivots, while the wheels on the outer side of the curve will freely revolve around them, and carry with them the car, thus avoiding any tendency to jam, or grind between the wheels and rails, and, of course, diminishing the friction, and saving the strain upon the horses.

The coupling and divided axle, thus described, may be fully and easily lubricated, in many different ways not necessary here to mention.

Having thus described my invention,

What I claim as new, and desire to secure by Letters Patent, is—

A divided car-axle, when combined with a coupling composed of the male and female parts *d* and *e*, screw-collar *f*, jam-nut *m*, annular washers *j*, and "step" *n*, when constructed and operated as and for the purposes hereinbefore shown and described.

FRANK HUDNER.

Witnesses:

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