

G. W. MILTIMORE.

Car-Axle.

No. 222,833.

Patented Dec. 23, 1879.

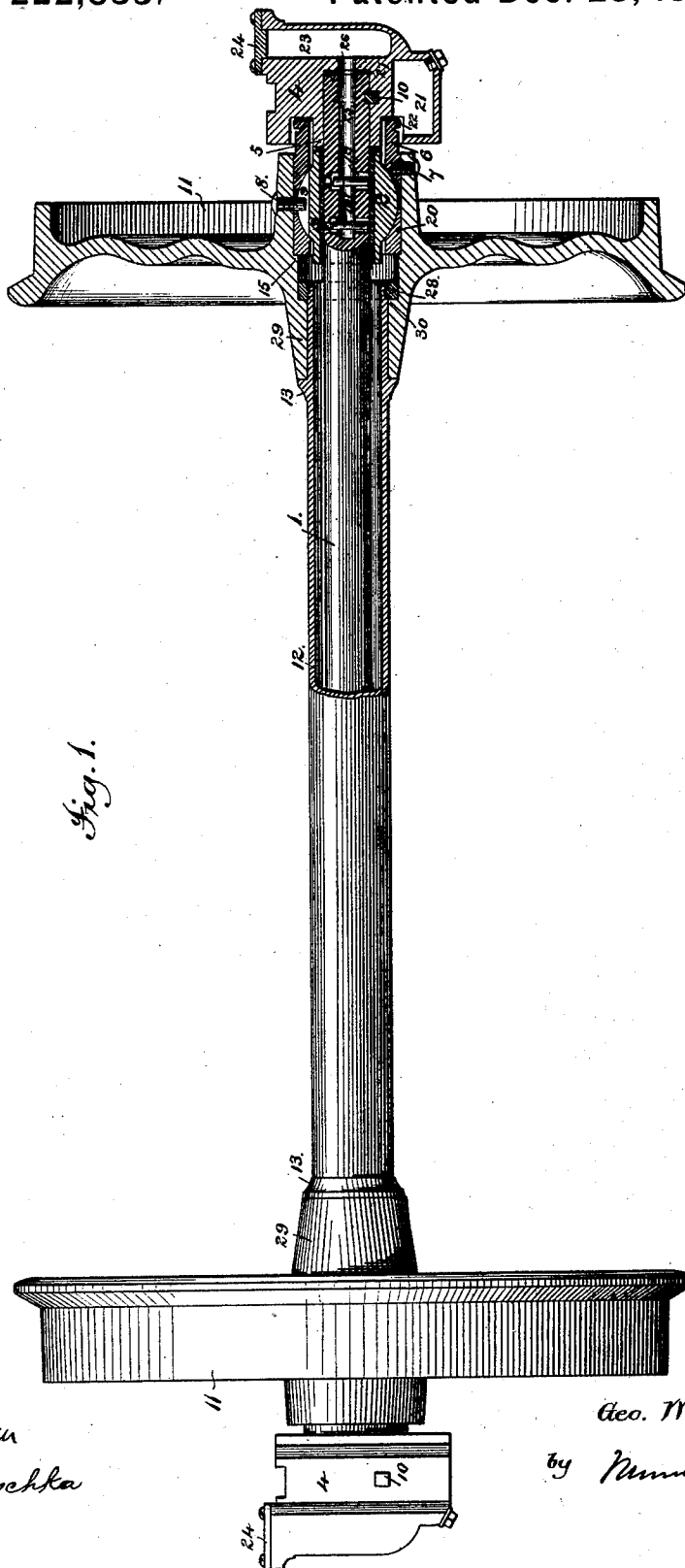


Fig. 1.

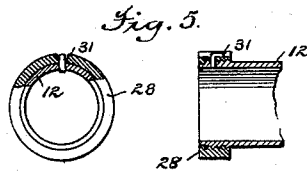
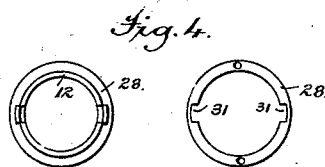
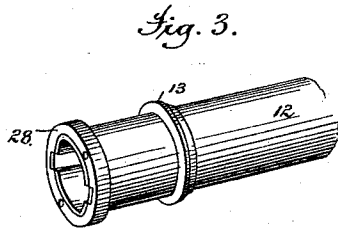
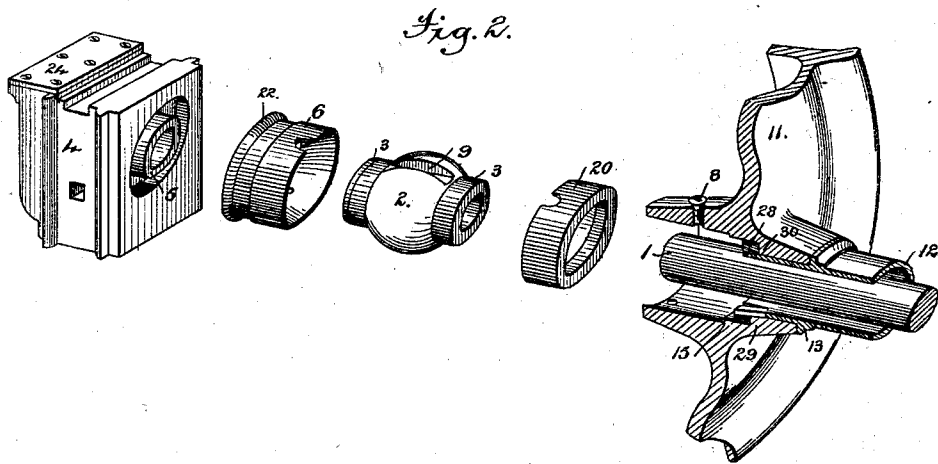
Attest,  
*L. M. Graham*  
*John Boleschka*

Inventor,  
 Geo. W. Miltimore,  
 by *Mason & Philip*  
 Attys.

G. W. MILTIMORE.  
Car-Axle.

No. 222,833.

Patented Dec. 23, 1879.



Attest,  
Geo. H. Graham  
John Boleschka

Inventor,  
Geo. W. Miltimore,  
by Messrs. Phillips  
Attys.

# UNITED STATES PATENT OFFICE.

GEORGE W. MILTIMORE, OF NEW YORK, N. Y., ASSIGNOR TO THE IMPROVED  
CAR AXLE COMPANY, OF SAME PLACE.

## IMPROVEMENT IN CAR-AXLES.

Specification forming part of Letters Patent No. **222,833**, dated December 23, 1879; application filed  
September 17, 1879.

*To all whom it may concern:*

Beit known that I, GEORGE W. MILTIMORE, of the city, county, and State of New York, have invented certain new and useful Improvements in Car-Axles; and I do hereby declare the following to be a full, clear, and exact description of the same, reference being had to the accompanying drawings, forming a part of this specification.

In the ordinary and almost universal construction of cars for railways, each axle is made in one piece, and the wheels are secured rigidly thereto. Great wear and loss, both to the axle, its wheels, and the rails of the road, result from this construction. This is caused by one wheel, in going around curves, traveling a greater distance than the other, which latter must slip, thus grinding and wearing itself and its rail away, and by retarding the free movement of the axle causing a torsional strain. This wear of the wheels, the rails, the destruction of the axle by torsional strain, and the waste of power are augmented when one wheel is of greater diameter than its companion on the same axle, as is often the case.

Efforts have been made to overcome the great loss incident to this construction of axles and wheels by making them so that the latter may revolve independently of the former and of each other. In this latter construction it was found necessary to make the axle stationary. Many difficulties were met with when this was done, owing to the spring of the axle near its center, caused by the load of the car, which was outside of the wheels; to the lateral motion or thrust of the axle; to the friction of the bearing-surfaces, their insufficient lubrication, and to the great weight of the axle and its various parts incident to constructions for overcoming these difficulties.

The object of my invention is to obviate said difficulties, and at the same time produce an axle much lighter than has been heretofore attained in those in which the wheels turn independently of the axle and of each other; and it consists in the parts of said axle in combination and alone, as will be now particularly described and distinctly claimed.

In the drawings, Figure 1 is a view, partly in plan, partly in section, of a car-axle and its adjacent parts containing my invention. Fig. 2 is a perspective view of various parts of the

same. Fig. 3 is a perspective view of one end of the tube for keeping apart and connecting the two wheels. Fig. 4 is an end view of the collars and one device for locking them on the ends of said tube; and Fig. 5 illustrates, in end and sectional views, a modification of the device shown in Fig. 4.

Referring to these figures, 1 represents the axle, of proper size and strength to sustain the load of the car, preferably made of steel or wrought-iron. The ends of this axle fit within the pedestal-supports 4, and are rigidly secured to the same by keys 10, fitting in grooves in the axle and pedestal-supports, as shown.

In practice, the jaws of the car-truck embrace the pedestal-block and confine both ends of the keys 10; but said keys may be prevented from being jarred or otherwise made loose by a jam-screw, or other well-known device for this purpose.

11 11 are wheels, each provided with a sleeve, 29, and a recess having shoulders 15 and 30, for a purpose to be explained.

On each end of the axle 1 is a box, 2, made convex about its middle, which convex portion is seated in a cavity having a corresponding concave portion in the wheel 11, and is caused to move with the latter by means of a pin, 8, secured to the wheel, and a groove, 9, in the box in which its projecting end rests. One portion of the concave part of the wheel is formed of a collar, 20, snugly fitting the recess in the wheel 11, and abutting against a shoulder, 15, therein, being held from turning by the pin 8. The other portion, which serves to keep the box 2 snugly in contact with the collar 20, is formed of a collar, 6, which has a bearing in the recess in the wheel 11, and is held rigidly in position with its inner concave portion resting against the convex portion of the box 2 by means of a screw, 7, or other suitable device. The outer portion of each collar 6 projects into a recess in the pedestal-supports 4, communicating with an oil-receptacle, 21, in each of said supports, and is provided with an annular rim or bead, 22, that conveys the waste-oil into said receptacle.

Each box 2 is preferably made of cast-iron, within which is driven a brass or suitable composition bushing having a collar on one end,

and thus forming a part of said box, and is provided with annular projections or ends 3, the exterior diameter of which is less than the interior diameter of the collars 20 and 6. By this construction each box 2 is allowed to move or oscillate if the weight of the car should cause the axle to spring, and always keeps its full journal-surface in contact with the portion of the axle 1 it embraces.

The pedestal-support 4 is provided with an annular projection, 5, against which one projection or end, 3, of the box 2 abuts and runs in contact. These two annular projections, in connection with their corresponding parts on the companion-wheel and pedestal-support, control the lateral motion of the axle, thus resisting the lateral thrust of the car.

The box 2 may be reversed when one annular projection, 3, has been worn away, so that the other projection may be used.

Although the box described is the most economical construction known to me, yet I do not confine myself to it in carrying out my invention, as it may be made entirely of brass or other suitable metal and have but one annular projection, 3, which must then be on the outside against the projection on the pedestal-support.

23 is a reservoir in the pedestal-support, supplied with oil through an aperture closed by a cap, 24.

Within each end of the stationary axle 1 is a channel, 25, communicating with the reservoir 23 by means of a channel, 26, in the pedestal-support 4. An oil-tight joint is formed between each end of the stationary axle 1 and the pedestal-support by means of a cork washer, 27, tightly clamped between the end of the axle 1 and the recess in the pedestal-support 4 by the keys 10.

Extending from the channel 25 to the surface of the axle 1 are holes 19, which are smaller in diameter at their upper portions than their lower.

In the largest part of these holes 19 loosely rest feeder-pins 18, which are jarred or moved by the motion of the car, and serve to allow the air to enter through the upper portion of the holes 19, and thus permit the oil to pass through the lower portion of said holes and lubricate the axle and box.

The vibratory motion of the feeder-pins 18 furnishes mechanically in this manner a small air-supply to the reservoir 23, and thereby allows the feeding of a corresponding quantity of oil, which increases or decreases in accordance with the speed of the car.

When the car is at rest the channels 25 26 and holes 19 are filled with oil; but the air-supply is discontinued, the feeding-pins 18 being at a state of rest, and the joint between the box and axle being close the oil is thereby prevented from running out.

12 is a tube, preferably made of wrought-iron, having collars 13, preferably formed by heating the ends of the tubes and then compressing the same in dies in the direction of

the length of the tube. The outside portions of these collars are turned, as are the portions of the tube extending at each end outward from them, to form a bearing for sleeves 29 on each wheel, and on which bearings the said sleeves can turn. On the outer ends of the tube are screwed collars 28 by a forked wrench, the ends of which enter holes in the collars, each collar resting snugly against a shoulder, 30, in the recess in each wheel 11.

Each collar may be locked in place by tongues swaged from the metal of the tube into slots 31 in the collars, as shown in Fig. 4 of the drawings.

I prefer, however, to make a small groove, 31, on the outer surface of each of said collars, and a hole extending from the same through each collar and the tube, and then insert a pin from the inside of the tube, and bend its end projecting into the groove 31 over, as shown in Fig. 5 of the drawings.

It is obvious that the collars 28 may be secured in a different manner from that described by a skilled mechanic without departing from my invention.

It is obvious that the collars 13 may be shrunk or welded on the tube 12, or the latter and collars 13 may be made of other metal than wrought-iron.

By this construction the wheels 11 are connected together, kept the proper distance apart, and so that each of a pair can turn independently of the other, their bearing-surfaces on the connecting-tube, when they do so turn, being at points where there is no pressure exerted by the load of the car, thus diminishing friction and consequent wear in so turning, and the construction enables the axle to be made much lighter than has been heretofore practicable with this class of axles.

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

1. The combination of a stationary axle, with wheels provided with boxes bearing directly on said axle, and with sleeves, with a tube to keep said wheels apart and allow each to turn independently of the other, substantially as described.

2. A tube provided with collars 13 28, in combination with wheels provided with sleeves 29, substantially as described.

3. The collars 28, screwed and locked to the ends of the tube, substantially as described.

4. The stationary axle provided with a channel, 25, communicating with an oil-reservoir in the pedestal-support, and with holes projecting from said channel, larger at the bottom than at the top, in which holes are loose pins, substantially as described.

In testimony whereof I have signed my name to this specification in the presence of two subscribing witnesses.

G. W. MILTIMORE.

Witnesses:

EDWD. B. ORNE,  
H. T. MUNSON.