3 Sheets—Sheet 1.

T. SHARER.
Street-Car.

No. 211,060. Patented Dec. 17, 1878.

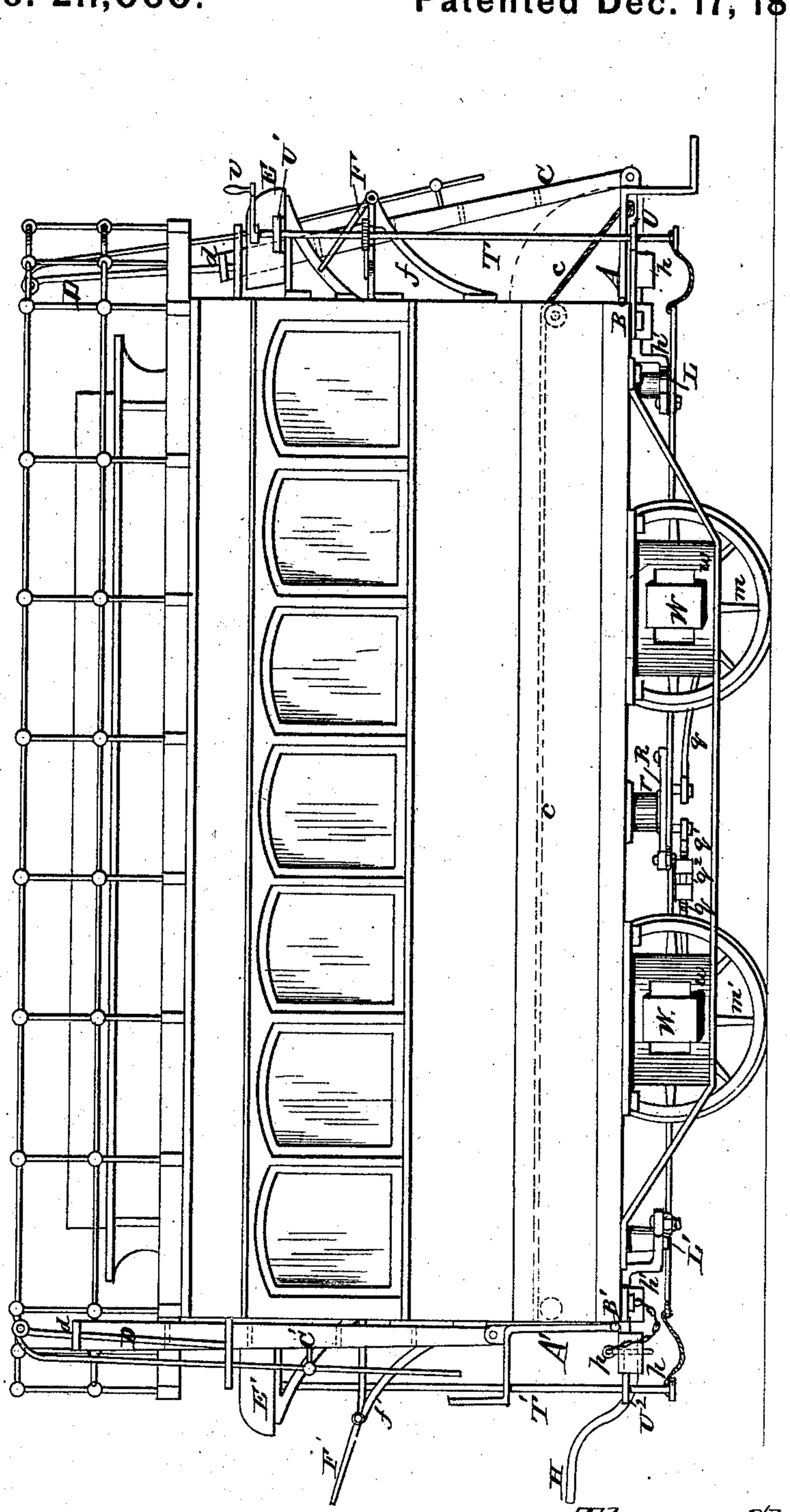


Fig. 1.

Attest
H. C. Perrine
J. A. Rutherford

Thomas Sharer.
Inventor.
By. James L. Norris.
Atty.

3 Sheets—Sheet 2.

T. SHARER.
Street-Car.

No. 211,060. Patented Dec. 17, 1878.

Fig. 2.

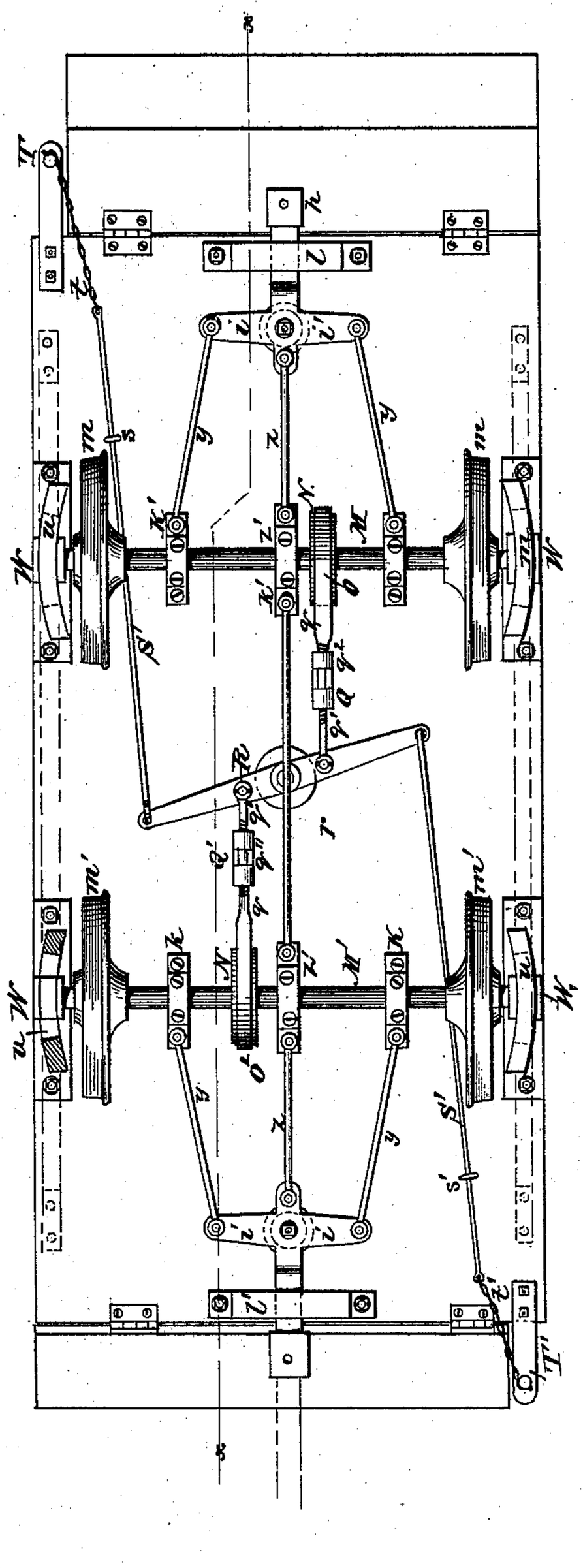
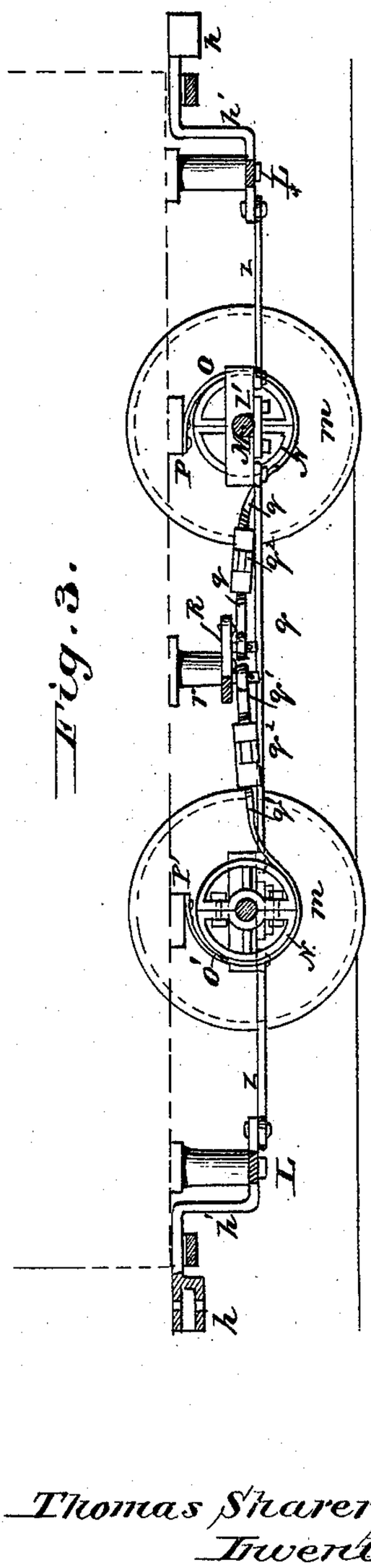


Fig. 3.



Attest:
H. L. Perrine
J. A. Rutherford.

Thomas Sharer:
Inventor.
By. James L. Norris
Atty.

3 Sheets—Sheet 3.

T. SHARER.
Street-Car.

No. 211,060. Patented Dec. 17, 1878.

Fig. 4.

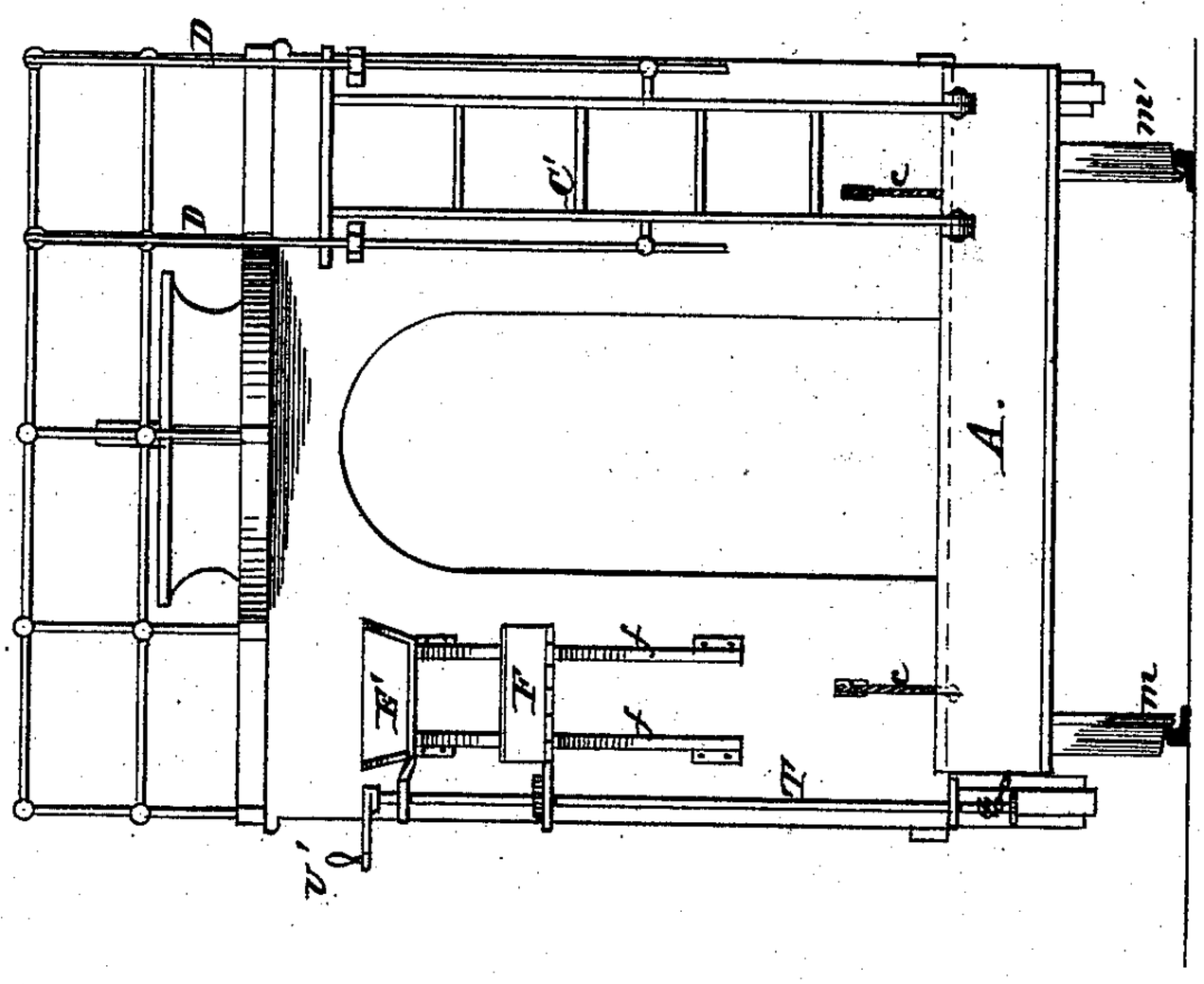
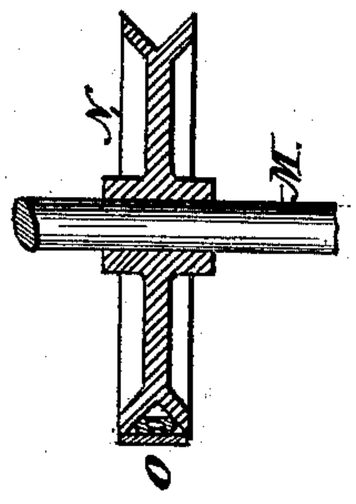


Fig. 5.



Attest:
H. L. Perrine,
J. A. Rutherford

Thomas Sharer:
Inventor.

By. James L. Norris.
Atty.

UNITED STATES PATENT OFFICE.

THOMAS SHARER, OF LONDON, ENGLAND.

IMPROVEMENT IN STREET-CARS.

Specification forming part of Letters Patent No. **211,060,** dated December 17, 1878; application filed December 6, 1878.

To all whom it may concern:

Be it known that I, THOMAS SHARER, of 17 Gracechurch street, in the city of London, England, have invented Improvements in Tramway-Cars and Brakes therefor, of which the following is a specification:

My invention relates to an improvement in street railway or tramway cars; and consists, first, in the attachment to both ends of a street-railway or tramway car of hinged platforms, suitably connected by a cord or chain, so that when one platform is thrown down in position for use the other platform will be raised by said cord or chain and the car adapted to travel either end foremost, so that it is not required to be turned; second, in the combination, with the hinged platform, of hinged ladders, the tops of which have ears or eyes embracing vertical guide-rods at the top of the car, whereby, when one of the platforms is raised, the ladder is thrown up against the end of the car out of the way.

In the drawings, Figure 1 is a side elevation of a street railway or tramway car constructed with my improvements. Fig. 2 is a bottom view, showing the brakes. Fig. 3 is a sectional view of the lower portion of a car, taken on the line *x x* of Fig. 2; Fig. 4, an end elevation of the car. Fig. 5 is a diametric section of a modified form of brake-wheel.

A indicates one platform of the car, hinged at B, and in position for use. A′ is the platform at the opposite end of the car, hinged at B′, and turned up out of position for use as a platform, but in which position it serves as a kicking-board, and also to prevent ingress or egress. To these platforms, on one side of each, are hinged ladders C C′, that marked C shown in position for use in reaching the top of the car, and that marked C′ shown as it appears when out of use. The upper ends of these ladders are provided with outward-turned ears *d*, having apertures, which embrace the vertical rods D, upon which they slide up and down.

On the opposite sides of the car-doors from the ladders are arranged the driver's seats E E′, the foot-boards F F′ for which are hinged to brackets *f f′*, and when not in use may be turned back out of the way, as shown at F.

The ladders C C′ serve as supports for the platforms, which may also be connected with each other by chains or cords *c*, so that when one platform is let down for use the other will thereby be drawn up against the end of the car, as shown, and secured in that position.

The pole H fits in the sockets *h*, formed on the outer ends of bent arms *h′*, pivoted at L L′ under the opposite ends of the car, and supported by bars *l l′*, upon which they slide toward either side of the car.

The pole is secured in the sockets by pins *p*, and may be changed from one end of the car to the other. The bent arms *h′* have lateral extensions *i i i i*, which are connected to riders *k* upon the axles by connecting-rolls *y*, and said bent arms have also longitudinal extensions connected by a rod, *z*, which passes under the car, and is provided with loops *z′ z′*, which surround but do not touch the axles.

The car-axles are indicated by M M, (shown in Figs. 2 and 3,) upon which are rigidly fixed the wheels *m m′*, and N N′ are friction-wheels keyed at the centers of the axles, and having V-grooves formed in their peripheries, as shown in Fig. 5, and covered with leather or other suitable material for increasing the friction between said drums and the concave faces of correspondingly-shaped wooden facings *o* of curved metallic bars O O′, which facings may also be lined with leather or other suitable material for increasing friction. These curved bars are hinged at their upper ends at P P and jointed at their lower ends to rods Q Q′, each composed of two parts, *q q′*, screw-threaded at their ends, and coupled by the double nuts g^2 g^2, by which the length of the rods may be regulated. The other ends of these rods are pivoted to a cross-lever, R, which is pivoted to a stud, *r*, projecting downward from the center of the car. From the ends of the lever R extend two rods, S S′, toward opposite ends of the car, passing through guides *s s′*, and terminating in chains *t t′*, which are also attached to spindles T T′, having bearings in brackets U U^1 U^2 U^3, and provided with cranks V in convenient reach of the driver's seat, and by which the spindle may be turned to wind the chains thereon for pressing the curved bar O or O′ against the friction-drum N or N′, for the purpose of retarding or stopping the car.

The axle-boxes W are arranged to move in horizontal and slightly-curved guides *w w*, suitably supported at the sides of the car. When the pole deviates from a straight line in order to take the car around a curve, or in taking a switch, the lateral extension of the arm *h'* (at either end of the car) will be thrown into an oblique position with respect to the body of the car, and, by means of the rods *y y*, will cause the axle to assume a similar position corresponding to the course which the car is to take.

The axle-boxes may be provided with springs for supporting the bearings, and which move with the boxes; or the springs may be fixed to the car, and suitably supported by casings, into the lower portions of which and under the springs project extensions of the lower bearing, which move under the springs as the axles are deflected to turn the car.

By the arrangements and combinations hereinbefore described, I have produced a car which dispenses with turn-tables, as by the change of the platforms and pole, as explained, the car is adapted to travel with either of its ends in front, and such a car requires only the services of a driver in attendance, instead of both a driver and conductor, as required by the ordinary double-end car, my improved brake placing the car under easy control of the driver on his seat.

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

1. The combination, with a tramway or street railway car, of a hinged platform at each end, substantially as described.

2. The combination, with the hinged platforms at opposite ends of the car, of a connecting chain or cord, whereby the throwing down of one of said platforms causes the elevation of the other, substantially as described.

3. The combination, with the hinged platforms, of hinged ladders or stairs leading to the top of the car, and suitable guides for the tops of said ladders, substantially as set forth.

THOMAS SHARER.

Witnesses:

A. BROWNE,
5 *Southampton Buildings.*

FRED. PRIME,
5 *Southampton Buildings, W. C.,*
London, England.