(No Model.)

E. M. BOYNTON.

RAILWAY CAR.

No. 442,508. Patented Dec. 9, 1890.

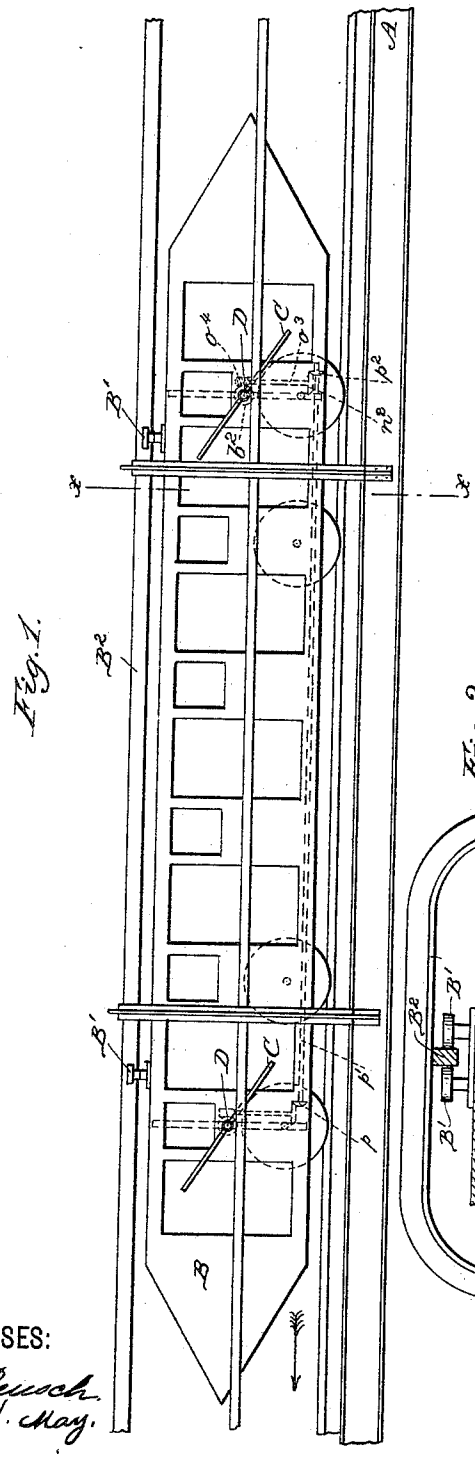


Fig. 1.

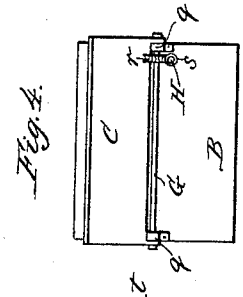


Fig. 4.

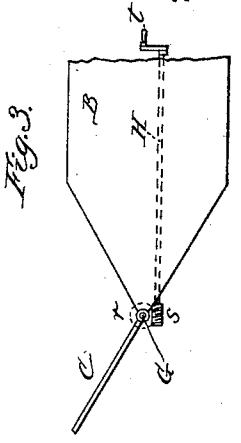


Fig. 3.

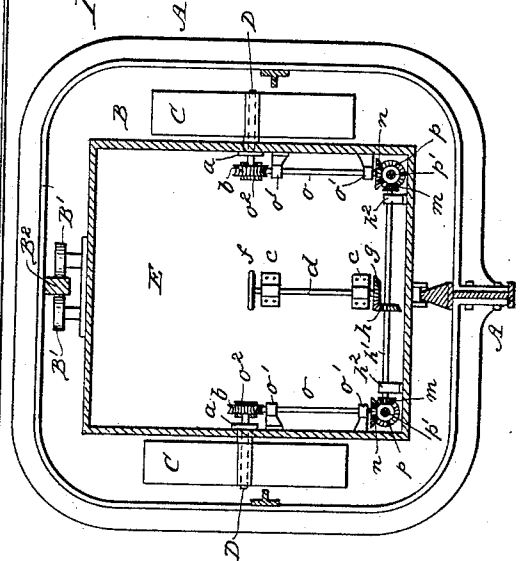


Fig. 2.

WITNESSES:

D. C. Reusch.

Charles H. May.

INVENTOR

E. Woody Boynton,

BY

Isaac L. Storer.

ATTORNEY

THE NORRIS PETERS CO., PHOTO-LITHO. WASHINGTON, D. C.

UNITED STATES PATENT OFFICE.

EBEN MOODY BOYNTON, OF WEST NEWBURY, MASSACHUSETTS.

RAILWAY-CAR.

SPECIFICATION forming part of Letters Patent No. 442,508, dated December 9, 1890.

Application filed May 10, 1890. Serial No. 351,354. (No model.)

To all whom it may concern:

Be it known that I, EBEN MOODY BOYNTON, of West Newbury, county of Essex, and State of Massachusetts, have invented certain new and useful Improvements in Railway-Cars, of which the following is a full, clear, and exact description, reference being had to the accompanying drawings, and to the letters of reference marked thereon.

This invention relates to the running of railway-cars at high speeds, and is especially applicable to electrically-propelled cars of bicycle-railways.

The invention consists of floats or wings adjustably attached to the sides or ends of a car, so that they may be inclined at any desired angle from the horizontal, so that they may offer resistance in a perpendicular direction to the atmosphere, so as to operate, when the car is running at high speed, to partly overcome the force of gravity of the car and to that extent sustain the weight thereof and reduce the pressure and friction on the track, so that the car may be run with a minimum of friction or track-resistance, all of which will be hereinafter fully set forth.

Reference is to be had to the accompanying drawings, forming part of the specification, in which similar letters of reference indicate corresponding parts in all the figures.

Figure 1 represents a sectional side elevation of a bicycle-car in position on a tubular bicycle-railway, said car having my improved side wings or floats attached. Fig. 2 is an enlarged cross-section on line $x\ x$, Fig. 1. Fig. 3 is a sectional side elevation of an end portion of a car with my improved end float or wing attached. Fig. 4 is an end elevation of the same.

In the drawings, A represents a tubular structure designed for an electric bicycle-railway of the Boynton system, and B is a car designed to be propelled thereon by electricity, having its guide-wheels B′ bearing on the opposite sides of the guide-rail B^2. This car has its ends tapered or wedge-shaped, so that it will when running at high speed present as little obstruction to the air as possible in its line of motion. The resistance to motion is chiefly frictional, because of the weight of the car on the track-rail, and this friction and weight are generally far in excess of what are required for the fulcrum or opposing force when sufficient power is applied to run the car at high speed.

In order to overcome the excess of the friction of the car-wheels on the track, I adjustably pivot to the sides of the car, as shown in Figs. 1 and 2, one or more pairs of floats or wings C, (in this instance two pairs,) of a length about equal to the height of the car and of a width of several inches.

As shown in Figs. 1 and 2, near each end of the car a rod D projects from each side thereof, and on the outer end of each rod D is firmly secured a float or wing C, that is designed to be normally held in a horizontal plane, as indicated in dotted lines, Fig. 1. These rods D are journaled in suitable bearings a in the sides of the car, and on their inner ends are gear-wheels b.

A vertical partition E is fixed in the forward end of the car, and on said partition are secured suitable boxes c, in which is journaled a vertical shaft d, having a hand-wheel f on its upper end and on its lower end a gear-wheel g, that engages in a corresponding wheel h, which is fixed midway on a horizontal shaft h', journaled in boxes h^2. On each end of this shaft h' is secured a bevel-wheel m, gearing with corresponding wheels p, that are on the forward ends of shafts p', which extend horizontally rearward and have on their rear ends like wheels p^2. The wheels p gear with wheels n, that are on the lower ends of the vertical shafts o, which are journaled in boxes o', secured to the inner sides of the car, and carry on their upper ends pinions o^2, that mesh in the wheels b, and the wheels p^2 gear with the wheels n^2, that are secured on the rear vertical shafts o^3, whose pinions o^4 engage in the gear-wheels b^2 of the rear wing-rods D. Hence it will be seen that the operator by turning the hand-wheel f is enabled simultaneously to adjust both pairs of the wings or floats C at any desired angle from the horizontal, to incline them, as shown in full lines, Fig. 1, to diminish the friction of the car on the track-rail when the car is running at high speed, to completely reverse such inclination, in order to press the running car down on the track, and thereby

increase the friction between wheels and track, or to set the said wings vertically to retard the movement of the car, all of which effects may be produced when the car is running at high speed by inclining the said wings or floats, as suggested, in opposition to the line of the greatest force of the atmospheric pressure. I do not confine myself to this particular wing-adjusting mechanism, as it may be greatly modified, and wing-adjusting levers and screws may be used without departing from my invention.

Another form of my improved car wing or float is shown in Figs. 3 and 4, wherein a broad wing C of the width of the car is fixed on a transverse rod G, journaled in boxes *q*, fixed on the extreme end of the car, and on this rod G is a gear-wheel *r*, with which is geared a worm *s*, that is on the forward end of a rod H, which extends inside of the car and has a crank-handle *t* on its inner end, by which handle the said rod may be turned and the wing C be thereby adjusted from its normal horizontal position to any desired angle therefrom. If these wings or floats are adjusted at the angles shown in the drawings in full lines, Figs. 1 and 3, when the car is running at high speed, it is evident that their pressure upon the atmosphere will give the car a tendency to rise and relieve the track-rail from much of its weight, so that, the friction between the track-rail and the car-wheels being greatly diminished, the car can be propelled at a given rate with less power or at a higher speed with equal power.

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

The combination, with a railway-car, of adjustable side or end wings or floats and suitable mechanism for adjusting the same, substantially as and for the purpose described.

In testimony that I claim the foregoing I have hereunto set my hand, in the presence of two witnesses, this 23d day of April, 1890.

E. MOODY BOYNTON.

Witnesses:
JACOB J. STORER,
CHAS. H. LOTT.