No. 647,454. Patented Apr. 10, 1900.

G. N. MOORE.

ELECTROMAGNETIC TRACTION APPARATUS FOR STREET CARS.

(Application filed May 24, 1899.)

(No Model.)

Fig. 1.

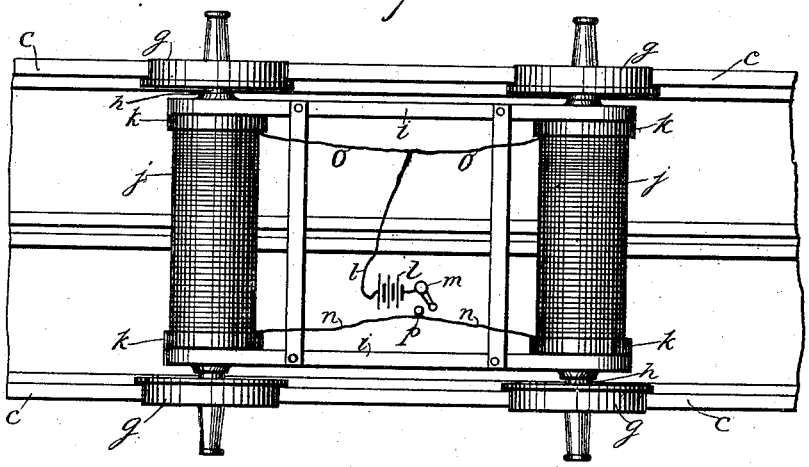
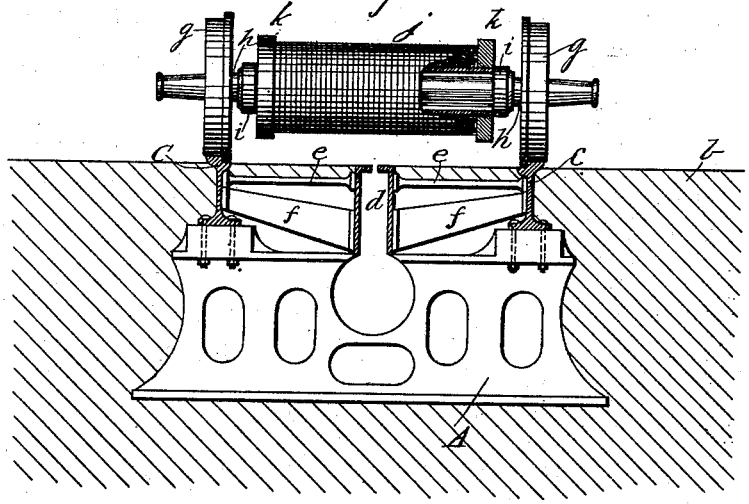


Fig. 2.



WITNESSES

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ELECTROMAGNETIC TRACTION APPARATUS FOR STREET-CARS.

SPECIFICATION forming part of Letters Patent No. 647,454, dated April 10, 1900.

Application filed May 24, 1899. Serial No. 718,065. (No model.)

To all whom it may concern:

Be it known that I, GEORGE NICKOLS MOORE, a citizen of the United States of America, and a resident of New York city, county and State of New York, have invented certain new and useful Improvements in Electromagnetic Traction Apparatus for Street-Cars, of which the following is a specification.

My invention relates to means for increasing the traction of the wheels of motor-cars, and has for its object to utilize the massive metallic rail-supporting iron yokes of the underground conduit systems in the magnetic circuits employed to increase the traction, such massive bodies being conducive to more powerful magnetic effect, as hereinafter described, reference being made to the accompanying drawings, in which—

Figure 1 is a plan view of part of a railway-track of the kind in which the massive iron yokes mentioned are used, with two pairs of wheels and axles thereon equipped with means for causing traction-increasing magnetic circuits in accordance with my invention. Fig. 2 is a transverse section of the roadway, showing one of said pairs of wheels and its axle and helix in front elevation, with part of the helix broken out.

A represents a massive yoke such as now commonly used in the conduit systems of roadways, being sunk to a considerable depth in the ground *b* and supporting the rails *c*, slot-plates *d*, and the pavement-supporting plates *e*, with stays *f*, in the usual form of construction.

g represents two pairs of car-wheels, with axles *h*, on which the car is to be mounted in any approved way. The axles are coupled by a truck-frame *i* of any approved construction, and around each axle is a helix *j*, said helices being wound on spools *k*, which are supported by the frame *i* or other suitable support.

The helices are simply coils of wire arranged about the axles of the car, forming paths through which a current of electricity is passed about the axles. While the currents of electricity are passing through the coils the tendency is to set up in the axles and wheels, rails, and yokes a high state of magnetism, which has for its path the wheels, rails, and iron yokes, the paths from wheels to wheels through the rails being closed by the coils being so wound as to produce like and therefore opposing poles in the rails between the wheels, and thus preventing the short circuits through the rails, in which, owing to the smaller masses than the masses of the yokes, the magnetic currents will be less effective than if the currents are wholly directed through the yokes.

For energizing the helices any suitable source of current may be employed; but in this example I have represented a battery *l*, which is in circuit with the helices, respectively, through the switch *m* and wires *n* and *o*, so that whenever it is desired to increase the traction the energizing-currents of the battery may be turned on by setting the switch *m* in connection with the contact *p*, thereby closing the circuits through the helices, magnetizing the axles and the massive yokes, the ends of which are converted into pole-pieces of opposite polarity, forming complete and unbroken magnetic circuits through the helices, axles, wheels, and yokes and causing powerful attraction or adhesion at the points of contact between the wheels and rails.

In electric cars operated by a motor the energizing-current for the helices may be taken from the motor-circuit in any well-known way.

What I claim as my invention is—

Magnetic circuits for increasing the traction of car-wheels consisting of two pairs of car wheels and axles, rails and massive iron yokes supporting the rails in combination with a coil or stationary helix about each axle, said coils being wound for producing like and therefore opposing poles in the rails between the wheels, to confine the circuits to the yokes.

Signed by me at New York, N. Y., this 15th day of May, 1899.

GEORGE NICKOLS MOORE.

Witnesses:
A. C. SCHWEIZER,
H. B. CHANNEL.