

(No Model.)

S. H. SHORT.

GEARLESS PROPELLING MECHANISM FOR ELECTRIC RAILWAY CARS.

No. 473,368.

Patented Apr. 19, 1892.

FIG. II.

FIG. I.

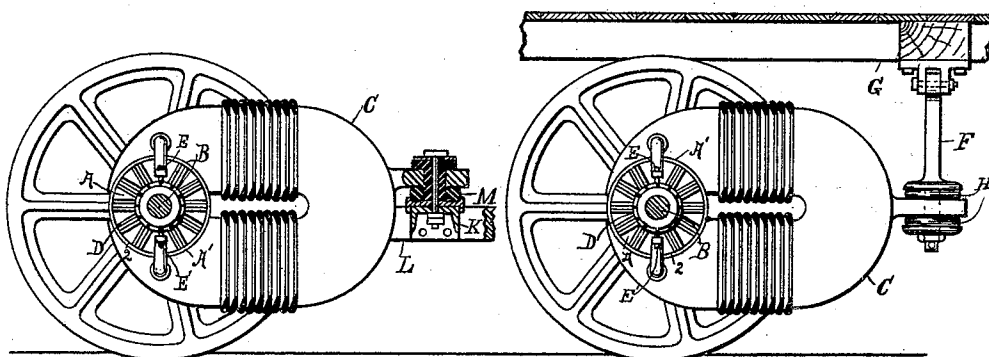


FIG. III.

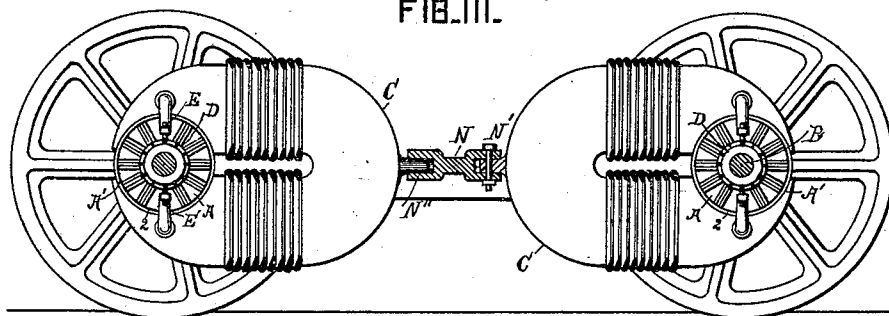
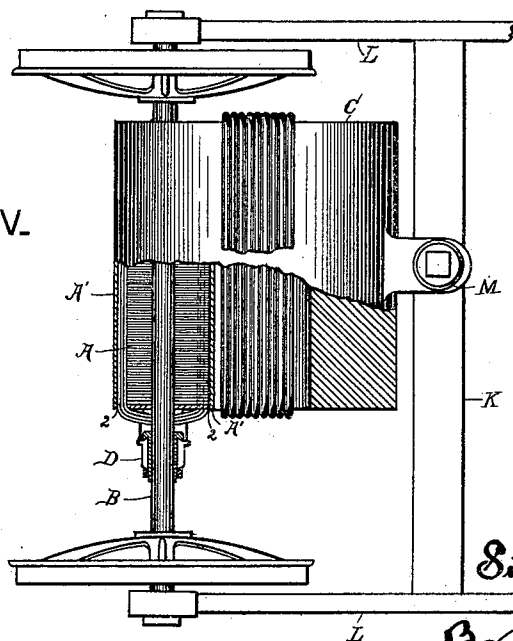


FIG. IV.



Witnesses

R. E. Auld.
H. F. Downing

Inventor
Sidney H. Short.
By H. A. Downing
Atty.

UNITED STATES PATENT OFFICE.

SIDNEY H. SHORT, OF CLEVELAND, OHIO.

GEARLESS PROPELLING MECHANISM FOR ELECTRIC-RAILWAY CARS.

SPECIFICATION forming part of Letters Patent No. 473,368, dated April 19, 1892.

Application filed July 6, 1891. Serial No. 398,571. (No model.)

To all whom it may concern:

Be it known that I, SIDNEY H. SHORT, of Cleveland, in the county of Cuyahoga and State of Ohio, have invented certain new and useful Improvements in Gearless Propelling Mechanism for Electric-Railway Cars; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same.

This invention relates to the propelling mechanism for electric cars in which the motor-armature is mounted on and directly connected with a driving-axle of the car.

In accordance with the present invention the armature is mounted on and keyed or otherwise secured to the driving-axle, so as to rotate therewith, and the field-magnets are journaled on the periphery of the armature and connected with another part of the car to prevent their being carried around with the armature. Further, the armature mounted on the car-axle is arranged to work in contact with the field-poles, which may be peripherically placed, so that the bearing-surface for the armature as a journal is constituted by the polar surface of the field-magnets.

In the accompanying drawings, which form part of this specification, Figures I, II, and III are views in side elevation, partly in section, illustrating gearless propelling mechanisms in accordance with the invention; and Fig. IV is a plan view, partly in horizontal section, of the arrangement of Fig. II.

In all the views the same motor is represented. The only difference is in the means to hold the field-magnets from being carried around with the armature.

The armature A is mounted fast on the car-axle B. The armature is of the drum type and is composed of a number of toothed plates of soft iron fastened together and wrapped with the bobbin-wire. On the periphery of the armature is an annular iron shell A', which is insulated at 2 from the toothed armature-core which it surrounds. The outer surface of this shell is turned off, so that it may constitute the journal. It turns in the polar extensions of the field-magnets C in contact with the poles of said magnets. By utilizing the outside of the armature for the journal-bearing not only is a long bearing se-

cured, but no space for bearings need be left between the armature and the car-wheels. The advantage of an actual contact between the armature and the field-poles in diminishing the magnetic resistance between the poles is also secured in the construction shown.

The commutator D is mounted, as shown, on the car-axle at the side of the armature, the brushes E and E' being carried by the field-poles.

Any known or suitable means may be used to hold the field-magnets from rotating with the armature. As shown in Fig. I, there is a link F connecting the field-magnets with the car-body G, springs or buffers H being interposed to lessen the jars.

In Figs. II and IV the field-magnets are upheld by a cross-bar K, whose ends rest upon the side bars L of the truck-frame. At M are springs or buffers.

In Fig. III the field-magnets of the two motors of a car are connected with each other by means of the link N, hinged at N' to the field-magnets of one motor and swiveled at N'' to the field-magnets of the other. Other known or suitable arrangements for holding the field-magnets from partaking of the rotation of the armature may be adopted.

Instead of having the field-magnets all on one side of the car-axle, as shown, they may be placed on both sides, and they may be provided with supports on both sides.

Instead of using a drum-armature a ring-armature may be used, and various modifications in the disposition of the field-magnets (which may be four or more pole as well as two-pole) may also be made without departing from the invention. The reverse arrangement of having the field-magnets fast on the car-axle could be used and is intended to be included hereby as a substitute for that particularly described.

As shown, the magnetic attraction is relied upon to hold the armature and field-magnets in proper position and to restrain movement of the field-magnets lengthwise of the car-axle.

The current may be supplied to the motor in any ordinary or suitable way.

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

1. Propelling mechanism for an electric-

5 railway car, comprising, in combination with a driving-axle, an armature mounted on said axle and rotating therewith and field-magnets provided with journal-bearings at the periphery of the said armature, substantially as described.

10 2. Propelling mechanism for an electric-railway car, comprising, in combination with a driving-axle, an armature mounted on said axle and rotating therewith and field-magnets provided with journal-bearings at the periphery of the said armature and with supporting and holding means for the said field-magnets, substantially as described.

15 3. Propelling mechanism for an electric-railway car, comprising, in combination with a driving-axle, an armature mounted on said axle and rotating therewith in contact with the poles of the field-magnets, substantially as described.

20 4. Propelling mechanism for an electric-railway car, comprising, in combination with a driving-axle, an armature mounted on said axle and rotating therewith in contact with the poles of the field-magnets and field-magnets provided with journal-bearings at the periphery of the said armature and with supporting and holding means for the said field-magnets, substantially as described.

25 5. Propelling mechanism for an electric-railway car, comprising, in combination with a driving-axle, an armature mounted on said axle and rotating therewith in peripheral contact with the field-poles and field-magnets provided with journal-bearings at the periph-

ery of the said armature and with supporting and holding means for the said field-magnets, substantially as described.

6. Propelling mechanism for an electric-railway car, comprising, in combination with a driving-axle, a laminated armature mounted on said axle and rotating therewith and field-magnets provided with journal-bearings at the periphery of the said armature, substantially as described.

7. Propelling mechanism for an electric-railway car, comprising, in combination with a driving-axle a laminated armature with insulated iron shell mounted on said axle and rotating therewith and field-magnets provided with journal-bearings at the periphery of the said armature, substantially as described.

8. Propelling mechanism for an electric-railway car, comprising, in combination with a driving-axle, a drum-armature mounted on said axle and rotating therewith in peripheral contact with the field-poles and field-magnets provided with journal-bearings at the periphery of the said armature and supporting and holding means for the said field-magnets, substantially as described.

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

SIDNEY H. SHORT.

Witnesses:

JAS. F. HUGHES,
J. C. BELL.