No. 668,924. Patented Feb. 26, 1901.

J. F. McELROY.

CAR TRUCK.

(Application filed Apr. 1, 1898.)

(No Model.) 2 Sheets—Sheet 1.

Fig 1

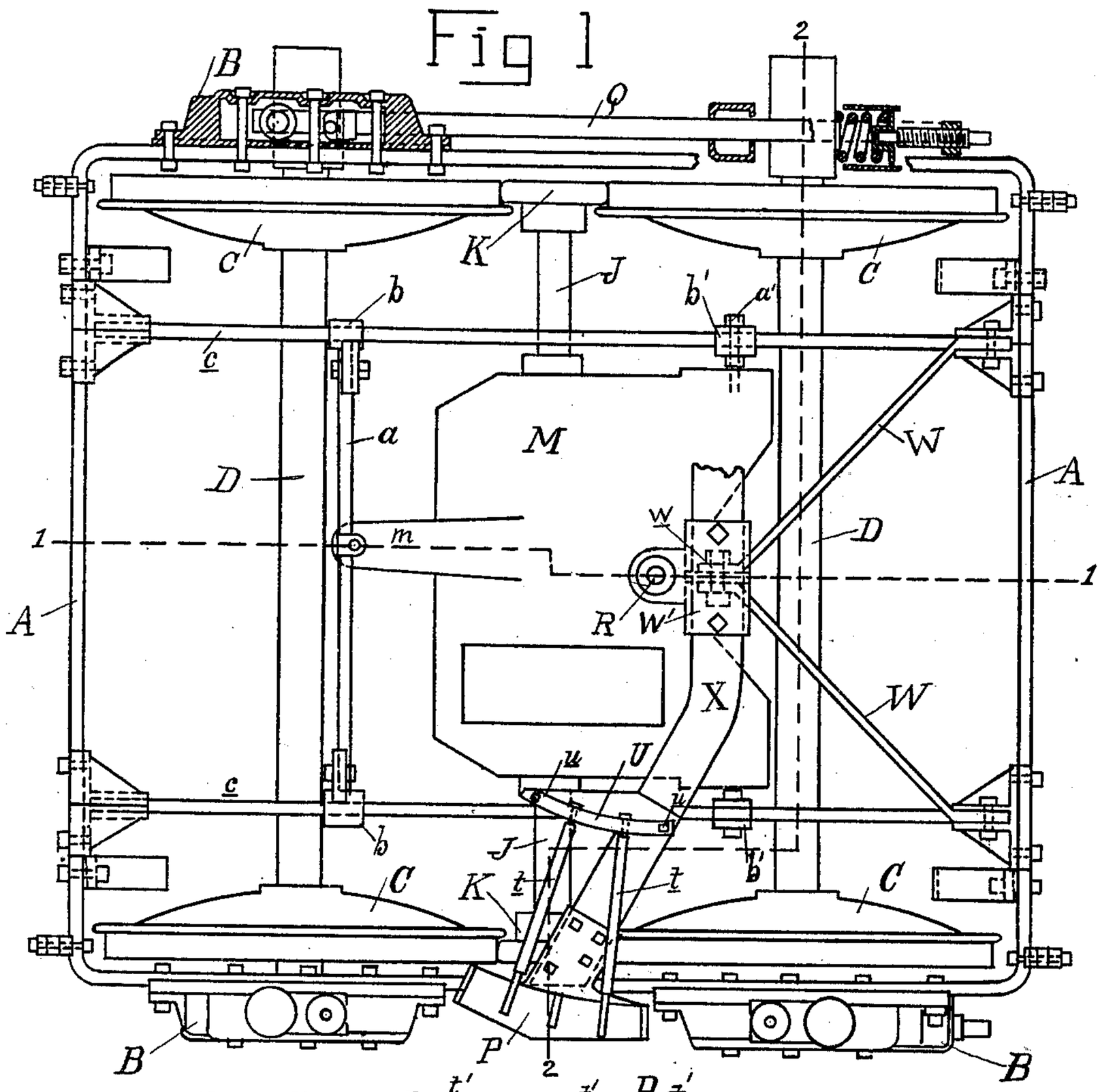

Fig 2

WITNESSES

W. C. Erwin.

Geo. A. Gregg

INVENTOR

James F. McElroy

by Ward & Cameron.

ATTYS.

No. 668,924.

Patented Feb. 26, 1901.

J. F. McELROY.

CAR TRUCK.

(Application filed Apr. 1, 1898.)

(No Model.)

2 Sheets—Sheet 2.

Fig 3

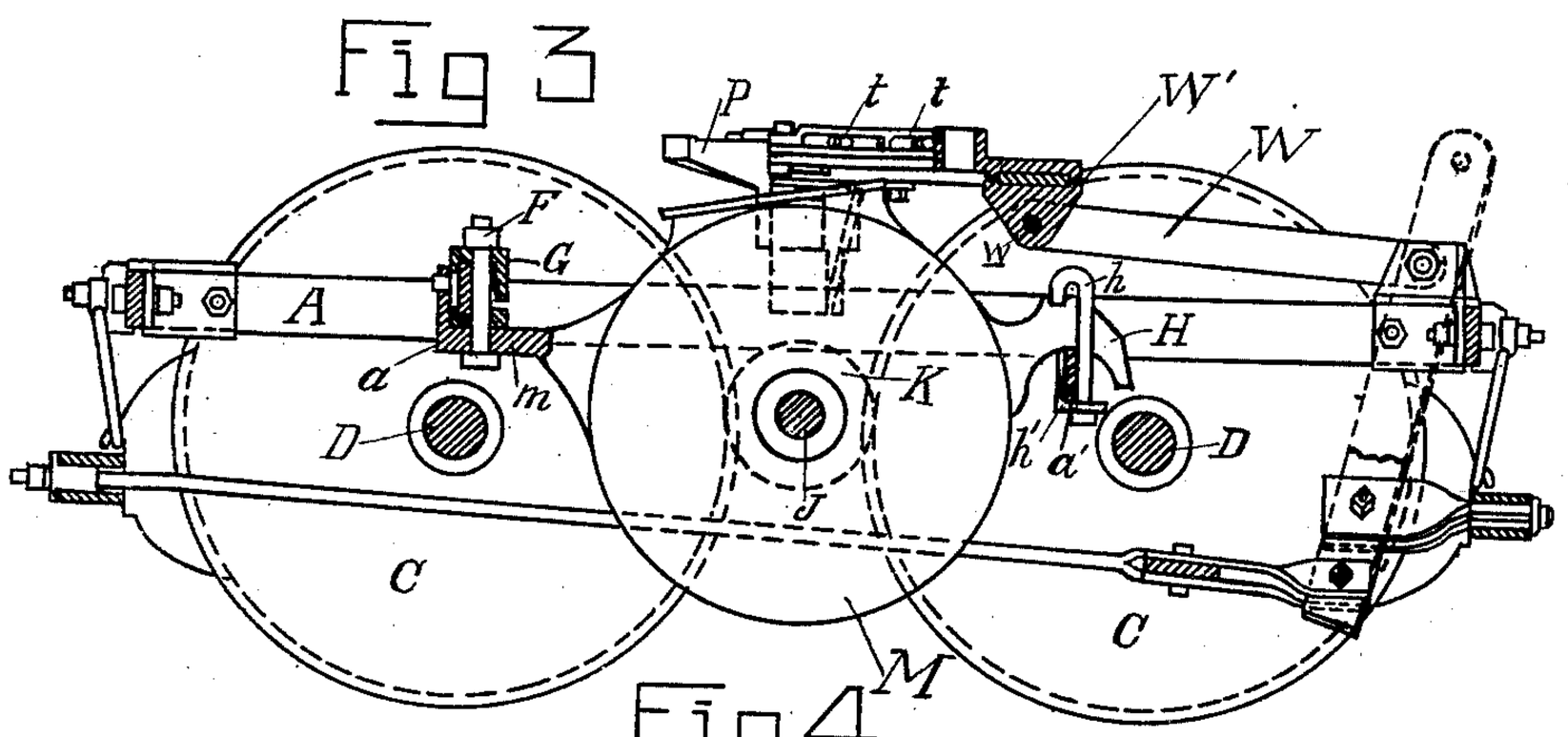

Fig 4

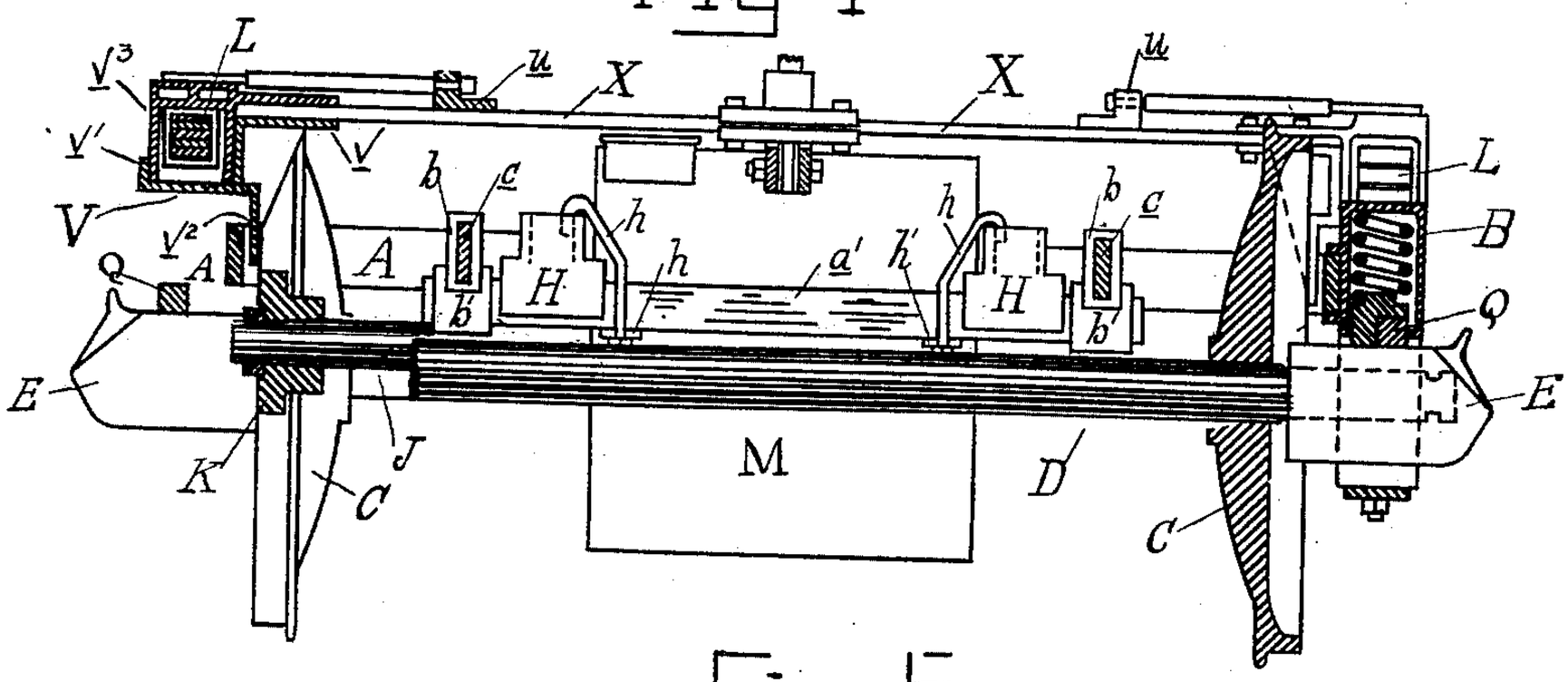

Fig 5

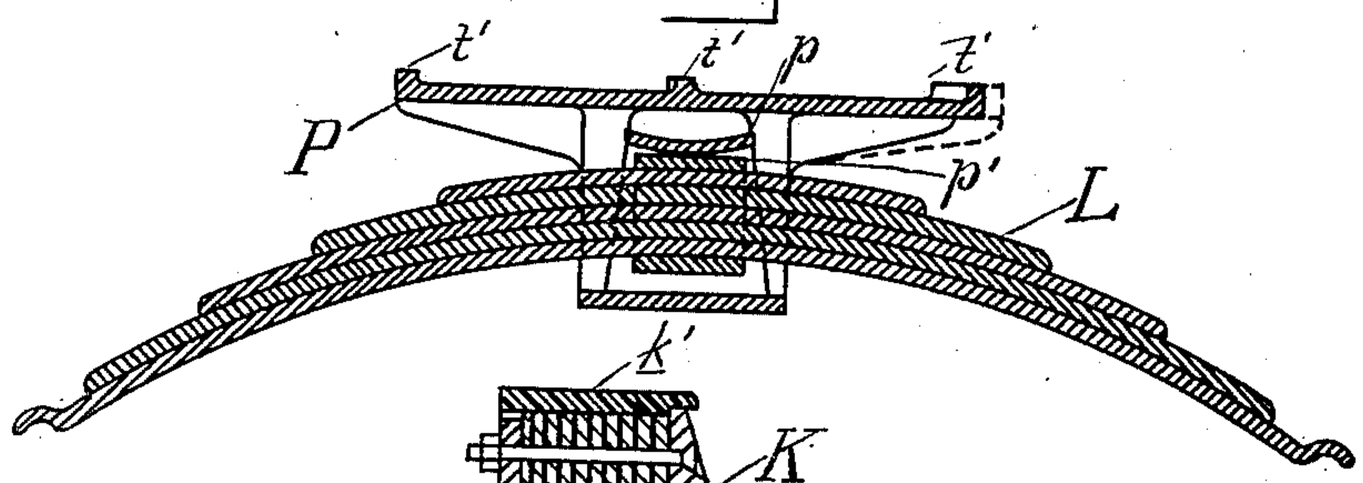

Fig 6

WITNESSES
Geo. Erwin
Geo. A. Gregg

INVENTOR
James F. McElroy.
by Ward & Cameron.
ATTYS.

UNITED STATES PATENT OFFICE.

JAMES F. McELROY, OF ALBANY, NEW YORK.

CAR-TRUCK.

SPECIFICATION forming part of Letters Patent No. 668,924, dated February 26, 1901.

Application filed April 1, 1898. Serial No. 676,066. (No model.)

To all whom it may concern:

Be it known that I, JAMES F. MCELROY, a citizen of the United States of America, and a resident of Albany, in the county of Albany and State of New York, have invented certain new and useful Improvements in Car-Trucks, of which the following is a specification.

My invention relates to improvements in car-trucks; and the objects of my invention are to provide, first, a car-truck in which power is applied to the drive-wheels by means of friction-rollers; second, a car-truck so constructed that the diagonal strain usually attendant upon rounding curves shall be removed from the frame of the truck; third, a car-truck so arranged that the weight of the car shall be placed on the pedestals rather than on the truck-frame, and, fourth, a means of driving a truck in such a manner that the vibration occasioned by the engagement of the drive-wheels with the friction-roller shall be taken up and the noise reduced to a minimum, and such other objects as are specified and claimed herein. I attain these objects by means of the mechanism illustrated in the accompanying drawings, in which—

Figure 1 is a plan. Fig. 2 is a side elevation, partly in section. Fig. 3 is a section along the lines 1 1 on Fig. 1. Fig. 4 is a section along the lines 2 2 on Fig. 1. Fig. 5 is a detailed sectional view of the supporting-spring, and Fig. 6 is a sectional view of a friction-roller.

Similar characters refer to similar parts throughout the several views.

The advantages to be gained by the use of two four-wheeled trucks on a street-railway car are apparent. The objections to such a method of mounting electrically-propelled street-railway cars have been that by the method usually employed for driving the cars with spur and gear it would be necessary to have two motors on each truck, making four motors on a car, or to drive with only two of the four wheels in each truck. By my construction of the truck I have one motor on each of the four-wheeled trucks, to the armature-shaft of which I connect a friction-roller arranged to engage with the drive-wheels of the truck, thus propelling the truck by frictional contact.

In order to make each of the trucks under the car light, so that the additional truck shall not add greatly to the weight to be propelled, I construct the frame A preferably of a single piece of metal, usually steel, extending around the truck, and bolt or otherwise secure to the sides thereof the pedestals B. I do not limit myself, however, to the frame A being of one continuous piece of metal, since two or more pieces may be used together, if desired.

The drive-wheels C C are suitably mounted on axles D D within journal-boxes E E′. The motor M, I preferably arrange in a frame by securing the same to tie-pieces *a a′*. This may be done by means of a bolt F, passing through the arm *m*, attached to the motor, and the grooved plate G, overlapping the tie-piece *a*, thus securely holding the arm *m* of the motor in contact with said tie-piece. Attached to the motor M, on the side opposite the arm *m*, I preferably arrange a hook H, adapted to rest upon the tie-piece *a′*, kept in position by means of a hook *h*, secured to the plate *h′* in contact with the under edge of said tie-piece *a′*. The tie-pieces *a a′* are provided with collars *b b* B′ *b′* at each end, respectively, which collars fit upon cross-pieces *c c*, and each of said tie-pieces is thus capable of horizontal motion on said cross-pieces *c c*. By this arrangement of the motor I can very quickly remove the same when desired, and by providing for a lateral motion of the motor I arrange for the adjustment of the drive-wheels in relation to the friction-roller attached to the armature of the motor.

To the armature-shaft J, I arrange a friction-roller K, constructed as hereinafter described. In the drawings I have shown one of these friction-rollers mounted on each end of the armature-shaft; but as it is obvious that my invention is not limited to such a construction I have described in the specification and claims the combination of a friction-roller with adjacent drive-wheels on the same side of the truck and may use this combination in connection with the other elements of my invention on either or both sides of the truck, as desired.

For the purpose of supporting the car I arrange a supporting-spring L, adapted to engage with bolts *l l* at the lower portion of each end of the spring, said bolts *l l* supported by

a spiral spring N N and mounted on the pedestal O. The spiral springs N N have a seat, preferably upon the pedestal at one end and against the plates l' l' at the other end and so arranged that the downward movement of the plates l' l' shall be against the tension of the springs N. On the supporting-spring L, I mount a plate P, provided with a bearing p, slightly convex in form, engaging with the bearing p' on the spring L, allowing for a rocking motion between the plate P and the spring L.

Upon the plate I place one or more rollers t t, said rollers also being supported upon the plate U, which plate U is attached to the brace X and arranged to keep a position substantially coincident with radial lines drawn from the king-bolt R to the plate P, thus being farther apart at the plate P than at the plate U. On the plate P, I arrange the stops t' t' to limit the movement of the rollers t t, and on the plate U, I arrange a series of stops u u. The bottom of the car rests upon the rollers t t, and it is apparent that in taking a curve the truck may be moved easily beneath the car to a certain extent, thus relieving the strain that would otherwise be made upon the car.

For the purpose of holding the drive-wheels in contact with the friction-roller and causing said drive-wheels to press against the friction-roller with sufficient force I preferably arrange a link Q, adapted to engage at one end with the spring q, which has its seat upon the journal-box E, the opposite end of said link provided with a lug r, through which a bolt S passes and engages with the plate s, said plate being in contact with the spring q, which rests against the journal-box E'. The journal-boxes E E' are movable, allowing for a lateral movement of the drive-wheels. By operating the bolt S, which is provided with threads meshing with threads in the lug r, the journal-boxes may be drawn toward each other, and thus the drive-wheels brought in contact with the friction-roller K between them. The link Q is so mounted that it may have a vertical motion, but is prevented from moving horizontally by the stop-plates 1 2.

In order to prevent disagreeable noise, I preferably construct the friction-roller in such a manner that it shall be yielding to a slight extent, which may be accomplished by making the core k of the friction-roller of paper, rawhide, wood, or other yielding substance with a comparatively thin or yielding tire k', as shown in Fig. 6, or of any construction or material which will allow for the yielding of the friction-roller to such an extent as to prevent the vibrations being conducted through it from one drive-wheel to the other. The same result may be attained by constructing the drive-wheels of paper or other sound-deadening material, the object being to prevent the vibrations attendant upon the irregular formation of the drive-wheels coming in contact with the friction-roller from being communicated through the friction-roller to the adjacent drive-wheel backward and forward, which necessarily results in making a loud and high-pitched sound.

The diagonal strain which usually comes upon the frame of a truck when the car is rounding a curve is prevented by the interlocking of the flanges of the drive-wheels with the friction-roller. The flanges on the wheels being on the inside, and therefore against the track, those on one side counteract those on the other and take up the strain between, thus relieving the truck-frame of any perceptible strain in making a curve. Because of this it is not necessary to make the frame of the truck of such heavy material as is advisable in the ordinary four-wheeled truck.

In a line midway between the sides of the truck and preferably nearer one end than the other I arrange the king-bolt R, making the connection between the truck and the car eccentric in reference to the length of the truck. I thus avoid interference with the motor, which is placed in the center of the truck, and provide for making a curve with less binding, and therefore less friction, than if the king-bolt were in the diametric center. The center of the car will incline to the center of the curve when the king-bolt is placed nearer the ends of the car than the center of the motors.

In order that the truck may move easily beneath the car, I have arranged the rollers as hereinbefore described. Near the forward end of the truck I pivotally secure for vertical motion the braces W W, connected together and with the plate W' by means of the bolt w or in any suitable manner. The king-bolt R passes through said plate, and the braces W W and the plate are beneath the car and are thus so arranged that any thrust which may be made on the car shall be taken up directly by the truck-frame to prevent the springs L L from being affected materially by said thrust. The pivotal connection of the braces allows for an up-and-down movement.

In order to protect the springs L L from the effects of side thrusts, I place a frame V, provided, preferably, with a portion v, secured to the brace X, and a portion v' in contact with the outer side of the housing v^3 of said springs and also provided with a portion v^2, engaging with the frame A.

What I claim as my invention, and desire to secure by Letters Patent of the United States, is—

1. A car-truck, consisting of a frame, two pairs of wheels mounted in said frame, an electric motor supported therein, a slightly-yielding friction-roller arranged to engage with adjacent drive-wheels on one side of the truck, said friction-roller mounted on the armature-shaft of said motor, substantially as described.

2. In an electrically-driven truck, a frame consisting of a metal strip extending around the truck, two pairs of drive-wheels, pedestals secured to said frame in which said drive-

wheels are mounted, a motor supported by said frame, and a yieldingly-constructed friction-roller connected to the armature-shaft of said motor and located between and in contact with two of said drive-wheels on the same side of the truck.

3. In a car-truck, a frame, drive-wheels mounted therein, means for supporting the car-body on said truck, consisting of two leaf-springs, one on each side of the truck, each of said leaf-springs supported by a bolt, each of said bolts mounted upon a spring, a plate on each of said leaf-springs, said plate having a bearing allowing said plate to have a rocking motion on said spring, with a means for preventing side thrust affecting said springs, substantially as described.

4. In a car-truck, a frame, two pairs of drive-wheels mounted therein, longitudinally-movable journal-boxes, a motor mounted in said frame, a yieldingly-constructed friction-roller mounted on the armature-shaft of said motor and placed between adjacent drive-wheels on the same side of the truck, with a spring-containing link connecting the journal-boxes on the same side of the truck and operating to maintain contact between the drive-wheels and the friction-roller, substantially as described.

Signed by me at Albany, New York, this 30th day of March, 1898.

JAMES F. McELROY.

Witnesses:
CHAS. B. MITCHELL,
GEO. A. GREGG.