

S. R. & A. C. BRADLEY.

Car-Starters.

No. 138,848.

Patented May 13, 1873.

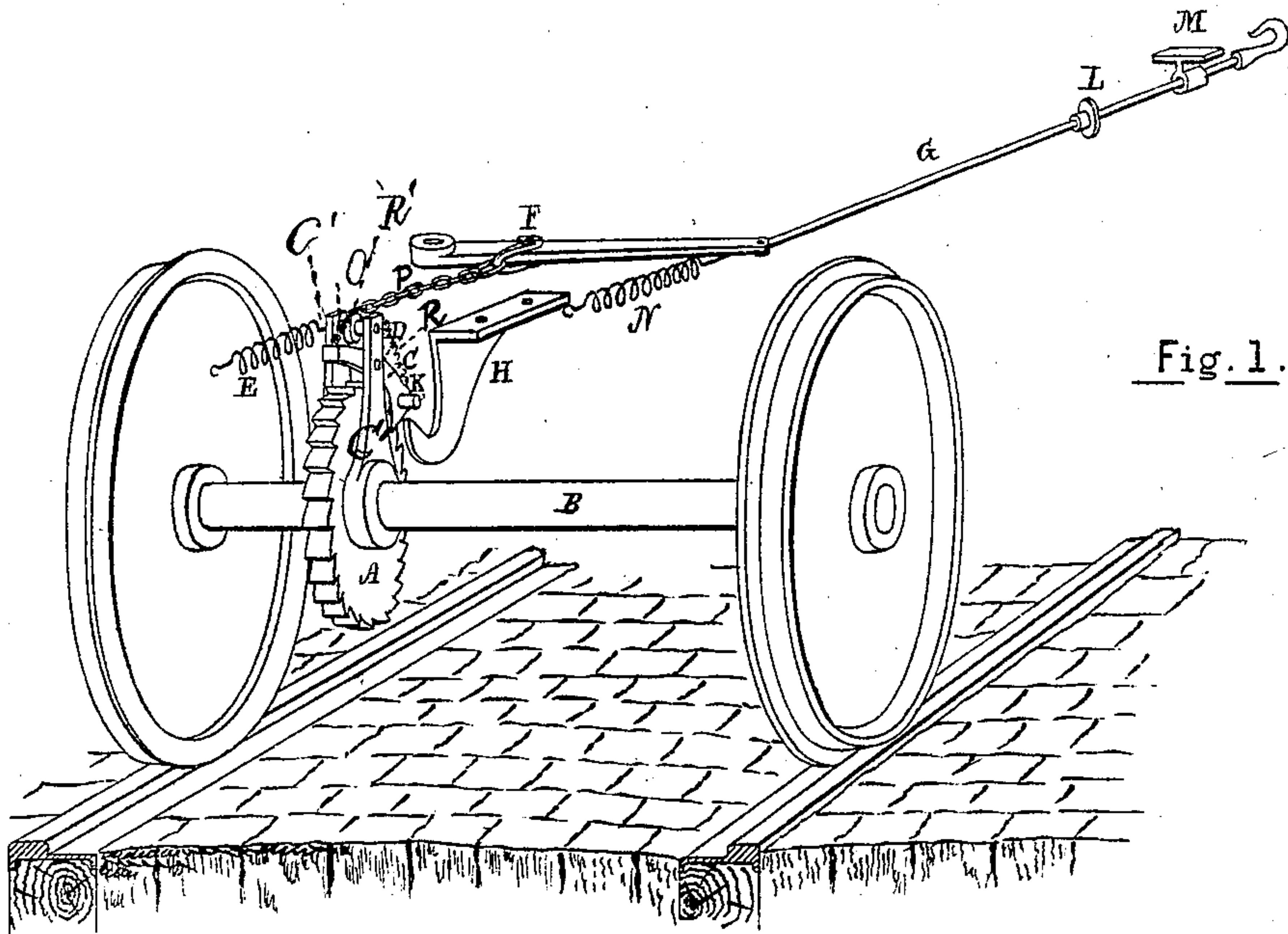
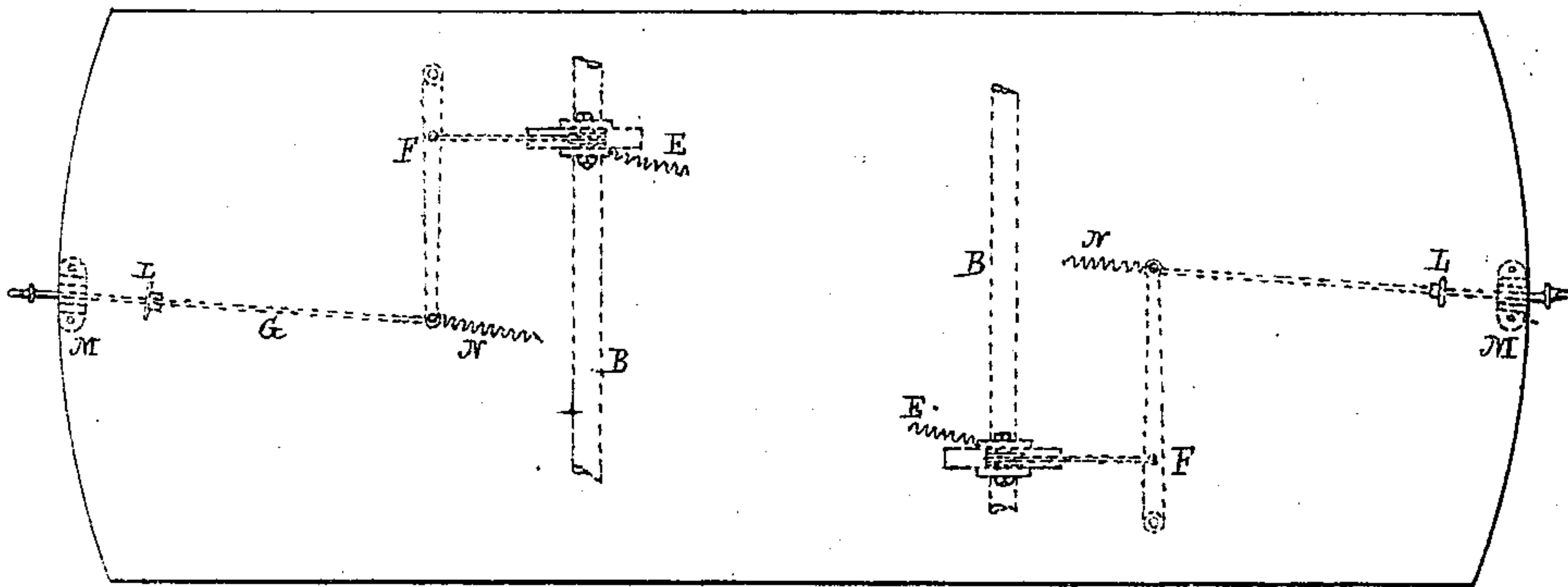


Fig. 1.

Fig. 2.



WITNESSES

Boyd Elist
J. W. Ripley

Stephen R. Bradley
Arthur C. Bradley

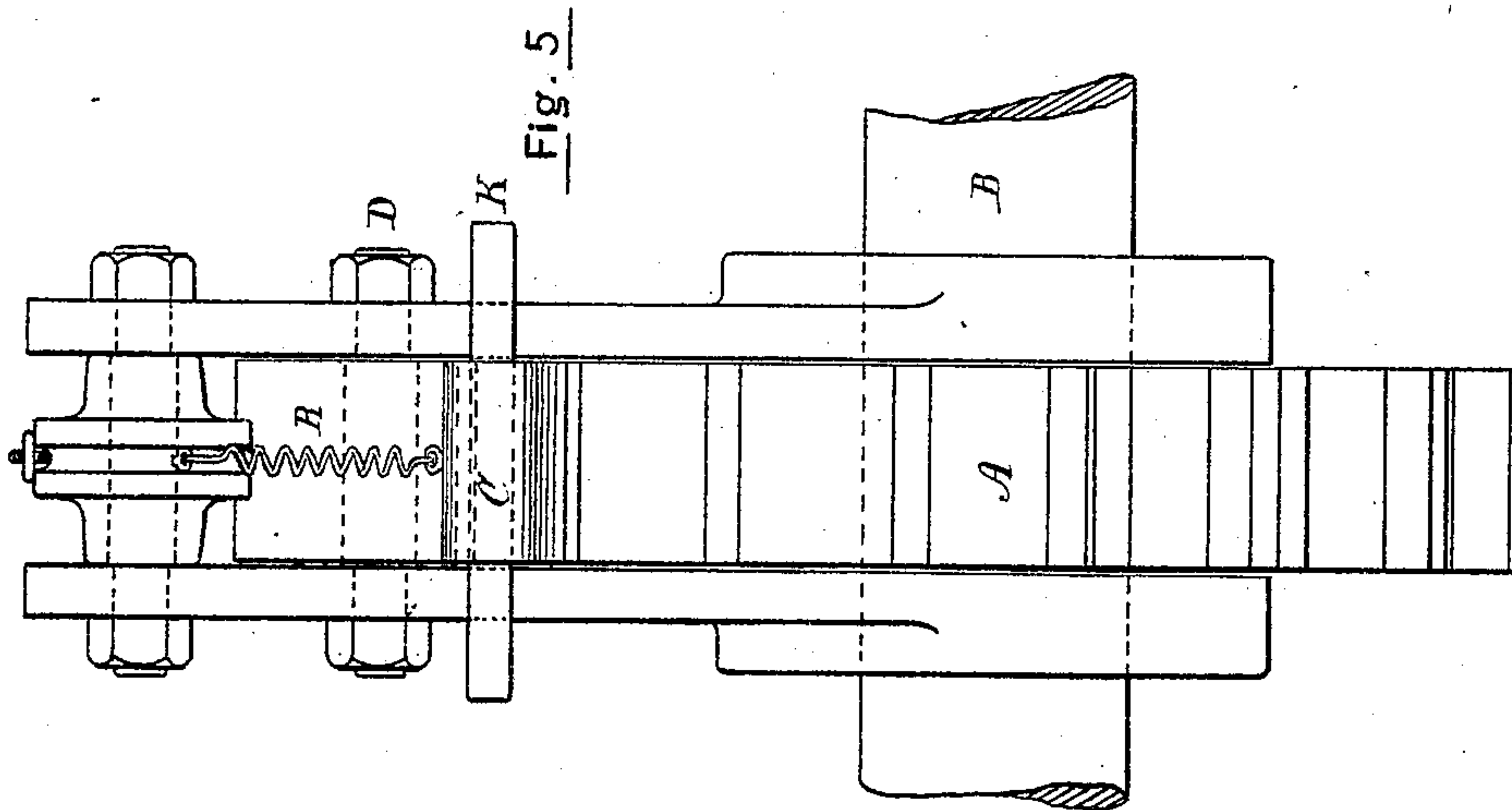
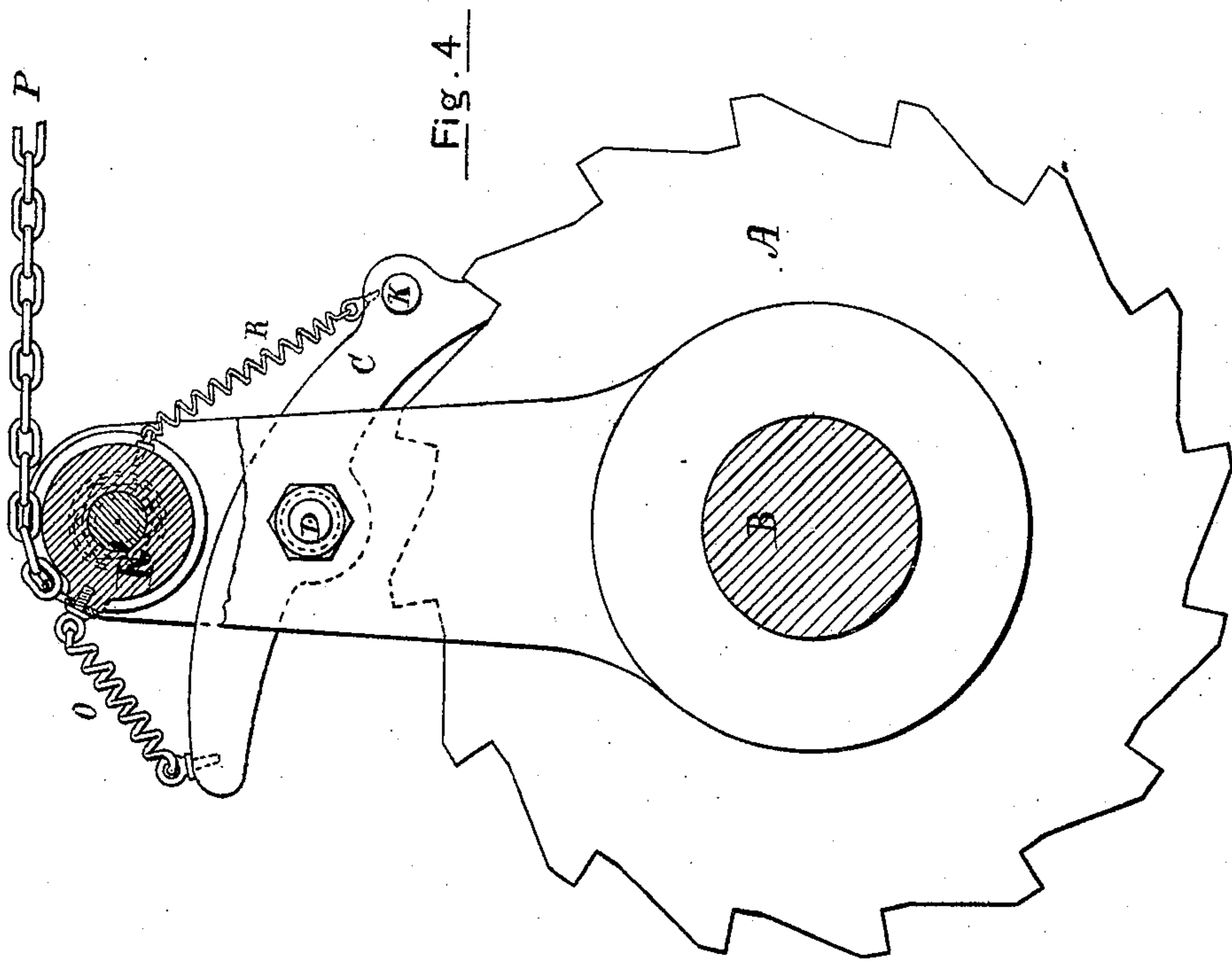
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UNITED STATES PATENT OFFICE.

STEPHEN R. BRADLEY AND ARTHUR C. BRADLEY, OF BROOKLYN, N. Y.

IMPROVEMENT IN CAR-STARTERS.

Specification forming part of Letters Patent No. **138,848**, dated May 13, 1873; application filed November 26, 1872.

To all whom it may concern:

Be it known that we, STEPHEN R. BRADLEY and ARTHUR C. BRADLEY, of the city of Brooklyn, county of Kings and State of New York, have invented certain Improvements in Starter for Horse-Cars, of which the following is a specification:

Nature and Object.

This invention belongs to that class of devices used for the purpose of assisting the horses in overcoming the inertia of a street-car when at rest; and it consists in the use of a pawl and ratchet-wheel upon the car-axle, in combination with the draft devices to which the horses are attached, by a system of leverage and devices hereinafter described, in such a manner that the injurious effects now produced upon the horses in moving an inert body are greatly diminished.

Drawing.

Figure 1 is a perspective view of the entire apparatus as relates to one pair of the car-wheels, but without the body of the car. Fig. 2 is a plan to show the relative position of the devices on the under side of the car. Figs. 3 and 4 are enlarged views of the pawl and ratchet-wheel.

The ratchet-wheel A, of any convenient size, is firmly fastened upon the axle B of one pair of the wheels, under the car, and upon a lever or arms, one end of which surrounds the axle or is concentric therewith, is mounted the pawl C, being pivoted as shown at D. The free ends of said arms extend upward to near the bottom of the car and are attached to a spiral spring, E, the other end of which is attached to the car. To the opposite side of said arms a connection is made with a lever, as at F, the short arm of which is pivoted to the bottom of the car, and the other end is attached to the draft-rod G, to which the horses are hitched.

By such a combination of mechanical devices it is very evident that, when power or the draft of the horses is applied to the rod G, the lever F will be moved forward, and the pawl C, engaged with the ratchet-wheel A, will tend to rotate the axle B of the car-wheels, and said

force will be exerted in the proportion of the difference between the long and short arms of the lever F—that is, the draft, being attached to the long arm of F, will exert a force as much greater as it is longer than the space between the link connecting the pawl-arms to the lever and its pivoted end. As shown in the drawing, this increase is about three to one, and the horses would therefore have a power of starting the car three times greater than if applied in the ordinary way, or directly to the car itself; but as soon as the inertia of the car has been overcome, or it has commenced to move, then the pawl C is no longer required, and it is therefore lifted from contact with the ratchet-wheel by the hooked bracket H, which is attached to the bottom of the car, the inclined end of said bracket raising a stud or pin that projects from the side of the pawl, as seen at K. Said bracket H is arranged to lift the pawl C from the ratchet-wheel A about the time the draft-rod G shall have moved forward far enough to bring the stop L on said rod in contact with the guide M fastened upon the bottom of the car. The stop L and the guide M then serve to hold the horses in connection with the car, or take the draft while it is continued; but as soon as it ceases to act the spiral springs at N and E reverse the draft-rod G, and lever F, and pawl C, and place them in position to act upon the ratchet-wheel as soon as the draft is again applied. The small spiral spring at O, Fig. 4, is connected at one end to the tail of the pawl C, and the other end is attached to a sheave in the upper end of the arms that carry the pawl so that when the draft is applied to the chain, at P, a partial rotation of the sheave R' takes place and the pawl is forced in contact with the ratchet-wheel; but when the draft ceases to act, as in the stopping of the car or running down the hills or inclines, then the small spring at R serves to raise the pawl and hold it clear of the ratchet-wheel, and thereby prevent any chattering or clanking noise, and also holds it free of the wheel when the car is reversed to return on its track.

As such cars are generally run back and forth without being turned on the truck, it is

evident that the devices already described must be applied at each end of the car, as shown in the plan at Fig. 2.

We do not claim, broadly, the combination, with the axle of a car, of a pawl and a ratchet operated by the draft mechanism to assist in overcoming the inertia of the car when at rest, for such is not new; but

We claim—

The vertical arms C' C' arranged upon the axle B and upon opposite sides of the ratchet-

wheel A, and carrying the sheave R' and pawl C, in combination with the chain or rod P, springs O R, lever F, draft-rod G, spring N, bracket H, and pin K, all constructed, arranged, and operating substantially as described.

STEPHEN R. BRADLEY.

ARTHUR C. BRADLEY.

Witnesses:

BOYD ELIOT,

J. W. RIPLEY.