

R. CROCKER & W. H. LYTLE.
Car-Starter.

No. 195,987.

Patented Oct. 9, 1877.

Fig. 1

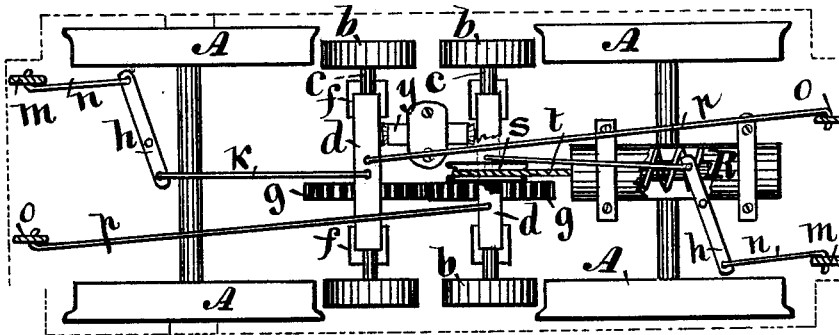
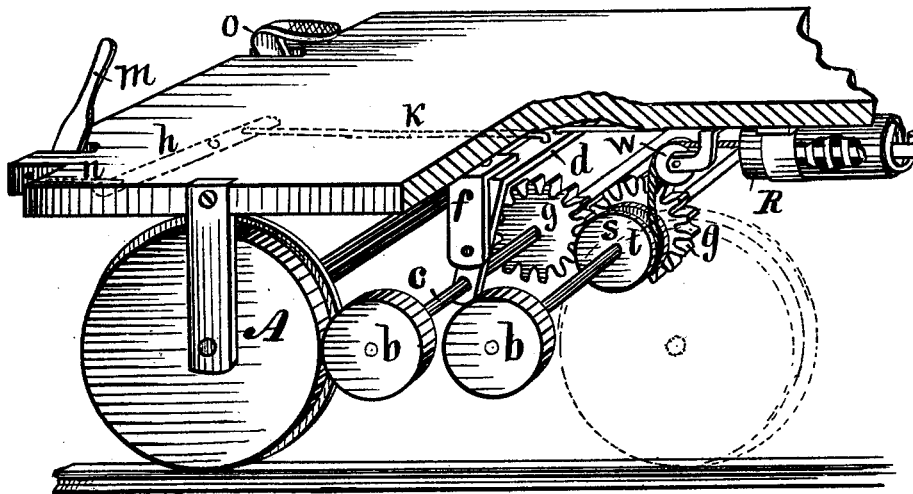


Fig. 2



Witnesses:
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Richard Crocker,
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By Thomas G. Orrig,
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UNITED STATES PATENT OFFICE.

RICHARD CROCKER AND WILLIAM H. LYTLE, OF DES MOINES, IOWA.

IMPROVEMENT IN CAR-STARTERS.

Specification forming part of Letters Patent No. **195,987**, dated October 9, 1877; application filed April 30, 1877.

To all whom it may concern:

Be it known that we, RICHARD CROCKER and WILLIAM H. LYTLE, of Des Moines, in the county of Polk and State of Iowa, have invented a Car Brake and Starter, of which the following is a specification:

The object of our invention is to provide a simple, durable, and effective means of applying a brake-force to a street-car in such a manner that it will promptly arrest the speed and motion of the car, and at the same time aid in accumulating a power that can be retained, controlled, and applied at the will of the operator to start the car again, or accelerate its motion, if not at rest.

It consists in mounting, arranging, and combining friction-rollers with the car-wheels and a spring-motor in such a manner that the operator from either end of the car can, by operating a hand-lever and also a foot-lever, apply the rollers to simultaneously act as brakes upon the wheels, and also to transmit the applied power, together with the resisting force overcome thereby, to compress the spring and retain therein the cumulated force to be utilized in the further onward movement of the car, all as hereinafter fully set forth.

Figure 1 of our drawings is a plan-view of our invention. Fig. 2 is a perspective view, showing a part of a car and a portion of the duplicated parts required on a complete car. Together they illustrate the construction, application, and operation of our complete brake and starter.

A represents a car-wheel. *b b b b* are the four friction-rollers designed to engage the four wheels of a car. They are rigidly fixed on the ends of the revolving axles *c*. *d d* are axle-carriers, pivoted to the fixed bearers *f*, depending from the under side of the floor of the car. *g g* are mating pinions, rigidly fixed to the revolving axles *c*, to be carried with the rollers *b*. *h h* are horizontal vibrating levers, pivoted to the under side of the car floor or platform, and connected with the suspended and vibrating axle and roller-carriers *d d* by means of connecting-rods *K K*. *m m* are vertical and pivoted hand-levers at the opposite ends of the car, connected with the horizontal levers *h* by connecting-rods *n n*. *O O* are foot-levers in parallel positions to the hand-levers

m, and each connected with the axle and roller carrier *d* most distant by means of the long connecting-rods *p*.

R represents a coiled spring, secured to the under side of the car in a suitable case or boxing, in such a manner that it can be readily compressed by applied power.

s represents a drum rigidly secured to one of the axles *c* at the side of its pinion *g*. *t* is a chain, connecting the spring *R* and drum *s*. It passes over a directing-pulley, *u*. *y* represents a spring and buffer, placed between the carriers *d* in such a manner as to retain the carriers in a vertical normal position, as required, to hold the rollers *b* away from the car-wheels *A*.

In the practical operation of our invention, when it is desired to diminish the speed of a car, or to stop it entirely, the driver, by pulling the hand-lever *m* and pressing the parallel foot-lever *o*, can readily bring the four friction-rollers *b* into contact with the revolving car-wheels *A*. The hand-lever being connected with the nearest rollers *b* by the parts *n h k*, the rollers are thereby brought to bear against the nearest car-wheels. The foot-lever *o*, being connected with the other and most distant rollers by means of the rod *p*, serves to aid in forcing the most distant rollers against the most distant car-wheels. The four friction-rollers *b* are thus simultaneously brought into contact with the four revolving car-wheels *A*, to impede or arrest the motion of the car.

By operating either the hand-lever *m* or the foot-lever *o* independently of each other, the power applied to impede or arrest the motion of the car will affect two car-wheels only, and their resisting force, together with the applied force, will be transmitted through the rollers *b* to the spring *R*.

The axles *c*, carrying the rollers *b*, are constantly connected by their pinions *g*, and by means of the drum *s* and chain *t* the power that is imparted to either pair of rollers *b* from either end of the car, and from either the hand-lever or the foot-lever, will be transmitted to the spring to compress it, and to accumulate therein a reserve force that will, when released, return through the rollers *b* to the car-wheels to start the car onward again if at rest, or to accelerate its speed if in motion.

We are aware that springs have been used in brakes; but we claim that our manner of mounting rollers on revolving axles carried by vibrating bearers, and arranging and combining them with duplex and compound levers and a spring, so as to be able to operate from either end of the car to apply the four rollers simultaneously as a brake, or each pair alternately as a combined brake and starter, is a novel and greatly advantageous improvement.

We claim as our invention—

1. The suspended vibrating and revolving axles *c c*, each having fixed friction-rollers *b* and fixed pinions *g*, in combination with the drum *s* fixed on one of the same axles, the chain *t*, and the spring *R*, substantially as and for the purposes shown and described.

2. The combined spring and buffer *y*, in combination with the suspended and vibrating axle-carriers *d*, substantially as and for the purposes shown and described.

3. The fixed bearers *f*, the suspended axle-carriers *d*, the revolving axles *c*, having rollers *b* and pinions *g*, the drum *s*, chain *t*, spring *R*, and the operating mechanism *h k m n o p*, arranged and combined on a car to operate as a combined brake and starter, substantially as shown and described.

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Witnesses:

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