J. P. WEYER.
Car-Starter.

No. 214,857. Patented April 29, 1879.

Fig. 1.

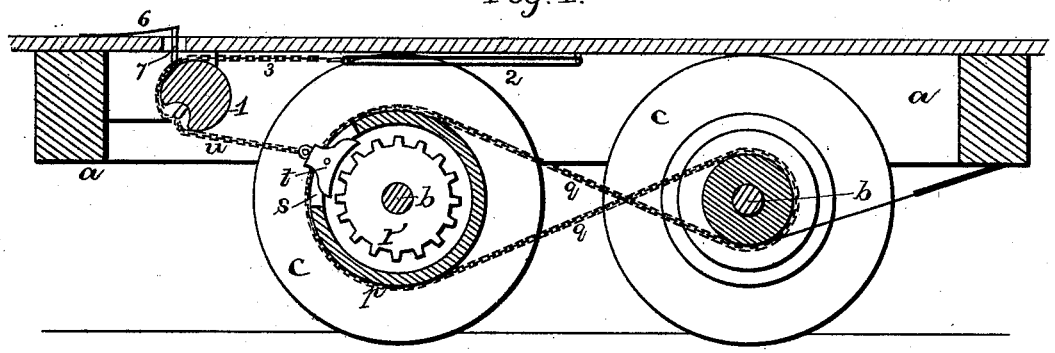
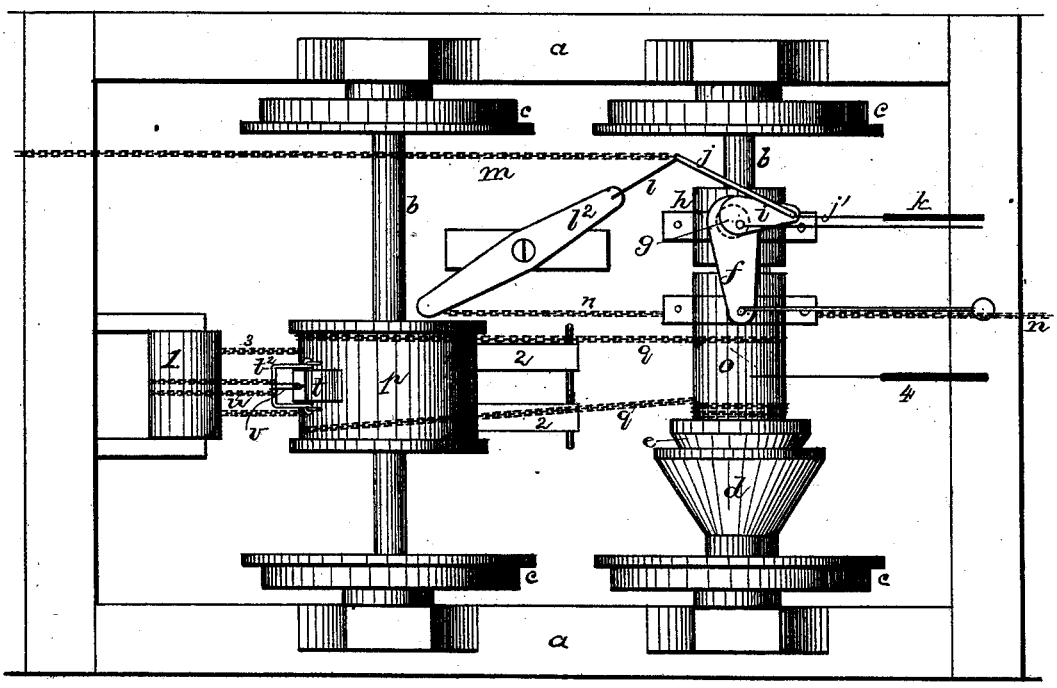


Fig. 2.



Witnesses:
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UNITED STATES PATENT OFFICE.

J. PHILIP WEYER, OF ELMIRA, NEW YORK.

IMPROVEMENT IN CAR-STARTERS.

Specification forming part of Letters Patent No. **214,857**, dated April 29, 1879; application filed March 21, 1879.

To all whom it may concern:

Be it known that I, J. PHILIP WEYER, of Elmira, in the county of Chemung and State of New York, have invented certain new and useful Improvements in Car-Starters; 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 pertains to make and use it, reference being had to the accompanying drawings, which form part of this specification.

My invention relates to an improvement in car-starters; and it consists in the arrangement and combination of devices, that will be more fully described hereinafter, whereby a frictional or other clutch is thrown in gear when it is desired to stop the car, and the forward motion of the car then made to stretch one or more rubber springs, which start the car forward as soon as the brake is released.

Figure 1 is a sectional elevation of a car with my invention applied thereto. Fig. 2 is an inverted view of the same.

a represents the frame of the car, *b* the axles, and *c* the wheels, all of which are made in the usual manner. On one of the axles is rigidly secured the hollow cone *d*, into which the cone *e* fits, and these two cones form a frictional clutch, which is used in stopping the car. The cone *e* slides back and forth on the axle, and has the connecting bar or rod *f* fastened to one end, which rod has its outer end perforated, so as to fit over the eccentric *g* on the collar *h*. To the end of the eccentric is fastened the lever *i*, which is connected to the lever l^2 by the curved rod *j* and chain *l*. Fastened to this rod by the rod *j'* is a spring, *k*, which keeps the eccentric so turned as to draw the cone *e* back out of contact with the cone *d*, and hold it in that condition until it is desired to stop the car and the brake is brought into use. To the other curved rod *j* is fastened a rod or chain, *l*, which connects it with the lever l^2 and one of the brake-chains, *m*. The second brake-chain, *n*, is fastened to the other end of the lever l^2, as shown.

By operating either one of the brakes the cone *e* is forced into the cone *d*, and then the forward motion of the car causes the two parts of the clutch to revolve together.

The movable part *e* of the clutch also forms a drum, *o*, around which are wrapped, in opposite direction, the two chains *q*. These two chains *q* cross each other and have their other ends passed around and fastened to the large drum, *p*, on the other axle of the car. This drum *p* turns loosely on the axle, and has placed inside of it, rigidly secured to the axle, a double ratchet-wheel, *r*. In one side of this drum is made an opening, *s*, in which is pivoted the double-ended pawl *t*, which never engages with the ratchet except when the drum is turned in one direction or the other.

Loosely fastened to the drum on each side of the opening *s* is the curved rod t^2, to which is fastened the spring *v*, the other end of the spring being fastened to the center of the back of the pawl *t*. Also, fastened to this curved rod t^2 are one or two chains, *u*, which have their outer ends fastened to either a roller, 1, or directly to the rubber springs 2.

As soon as the drum *p* begins to turn in either direction the draft of the chains *u* upon the bent rod t^2 causes it to incline in an opposite direction to that in which the drum is turning, thereby causing the spring *v* to pull upon the pawl *t* in such a manner as to make one end of it engage with the ratchet *r*. As soon as the pawl engages with the ratchet the drum is locked to the shaft and is made to turn with the axle while the car is being stopped, and as it turns in either direction the whole momentum of the car is employed in stretching the rubber springs 2. These springs may be fastened by their chains 3 directly to the roller 1, or be connected to the chains *u*. These springs are made of a double thickness of rubber, not only because they take up less room, but because they are cheaper and possess the necessary strength. Where coiled springs are used, they can be stretched safely only one-half of their length, while rubber will stretch one and one-half time its length, and is not so liable to break in cold weather.

As long as the brakes are kept locked the springs remain stretched; but as soon as the brakes are released the whole power thus stored up in the springs is exerted in moving the car forward. With three rubber springs—each one twelve inches long, three inches wide, and one-half inch thick—I have moved a heavy

car, tolerably well loaded, four feet up a hill that had an inclination of about two hundred and fifty feet to the mile.

It will be seen that the drum *o* is quite small, while the drum *p* is as large as can be conveniently made, thereby gaining great power. As the whole force of the springs 2 is exerted on one side of the axles, I use a counter-balancing-spring, 4, one end of which is fastened to the frame *a*, while the other is fastened to the drum *o*. No matter which way the drum *o* turns, this spring 4 exerts its pressure directly upon it, not only as a counter-balance, but to cause the drum *p* to move more quickly.

On the platform, where the driver stands, is placed a flat spring, 6, which has connected to its free end a pin, 7, which passes down through the platform and catches in a notch in the roller 1. In going downhill, should there be a tendency in the pawl to catch in the ratchet and stretch the springs, the driver has but to put his foot on the spring and force the pin 7 down into the notch in the roller, and this will prevent the roller from turning or the pawl from acting.

Having thus described my invention, I claim—

1. The combination of the clutch, rod *f*, eccentric *g*, lever *i*, rod *j*, spring, lever l^2, and the brakes, substantially as shown.

2. The drum *p*, placed loosely on the shaft *b*, provided with the double ratchet *r*, in combination with the double pawl *t*, bent rod t^2, and spring *v*, the spring being fastened to the middle of the pawl, and made to exert its pressure upon either end by the inclination of the rod t^2, substantially as described.

3. The combination of the roller 1, having a recess or catch in one side, with the spring 6 and rod 7, whereby the springs are prevented from being acted on when the car is going downhill, substantially as set forth.

4. The combination of the drum *p*, turning loosely on the axle, the ratchet secured to the axle, pawl, bent rod t^2, spring *v*, roller 1, connecting-chains, and springs 2, as set forth.

In testimony that I claim the foregoing I have hereunto set my hand this 21st day of March, 1879.

J. PHILIP WEYER.

Witnesses:
W. S. D. HAINES,
J. W. GARNER.