

T. S. TAYLOR.
Car-Starter.

No. 221,629.

Patented Nov. 11, 1879.

Fig. 7.

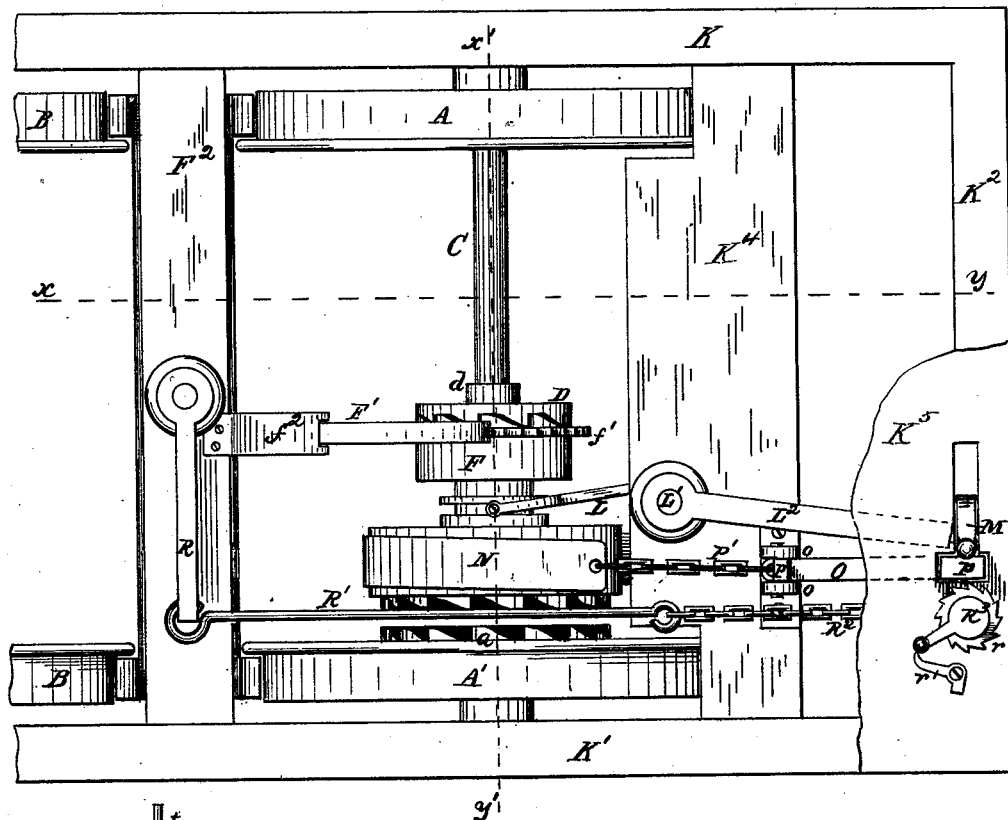
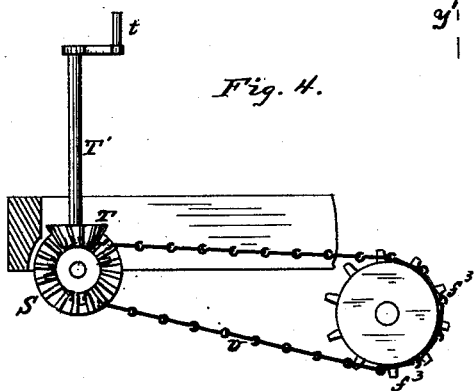


Fig. 4.



Witnesses:

N. K. Low.

J. S. Barker

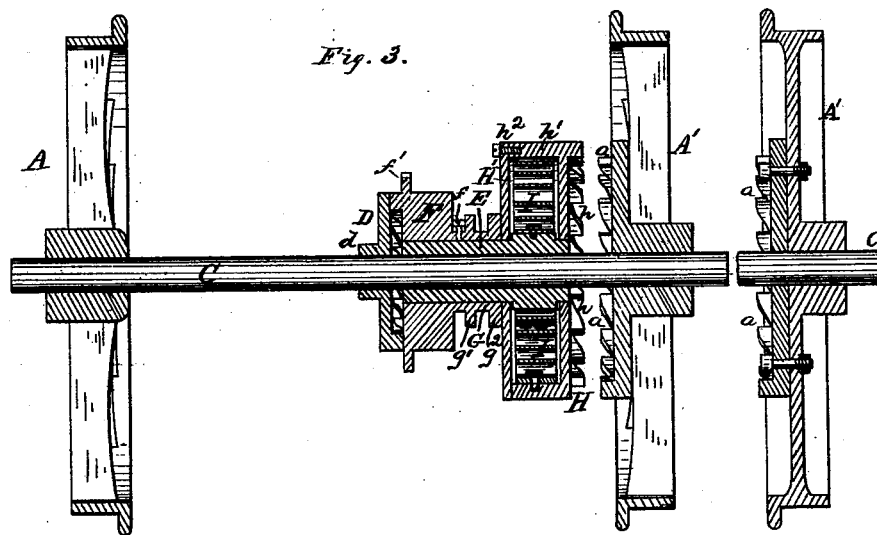
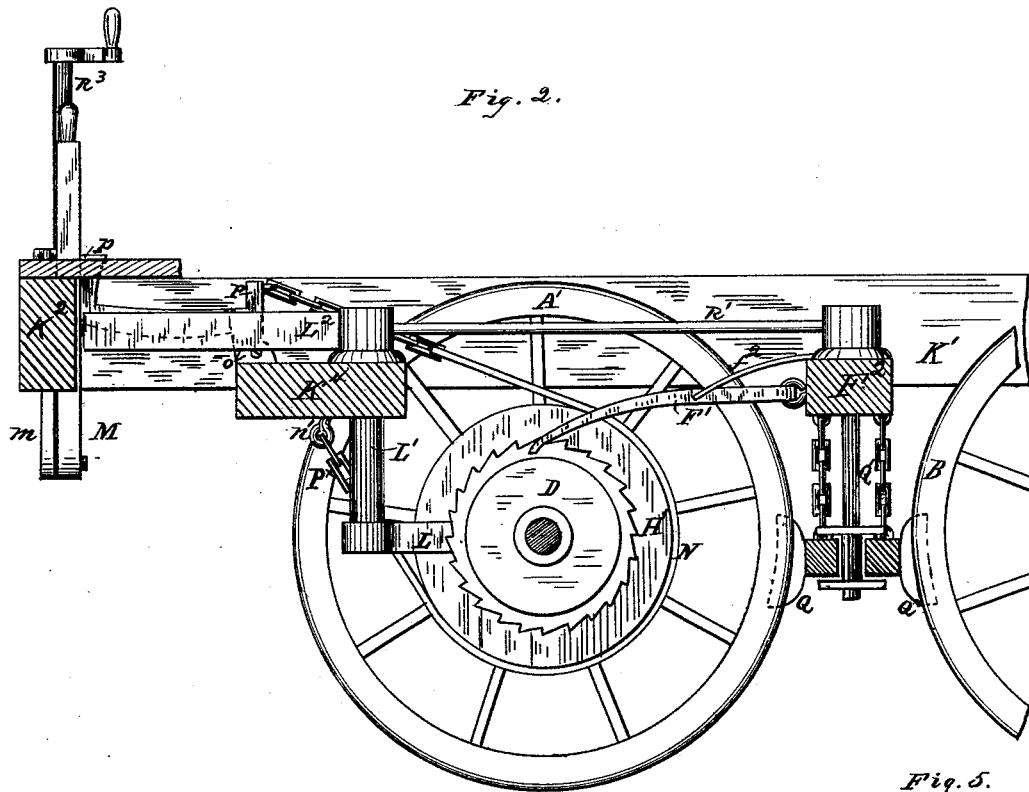
Inventor:

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Thomas S. Taylor
by A. H. Bliss
att'y

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UNITED STATES PATENT OFFICE

THOMAS S. TAYLOR, OF FORT WAYNE, INDIANA.

IMPROVEMENT IN CAR-STARTERS.

Specification forming part of Letters Patent No. 221,629, dated November 11, 1879; application filed September 23, 1879.

To all whom it may concern:

Be it known that I, THOMAS S. TAYLOR, of Fort Wayne, in the county of Allen and State of Indiana, have invented certain new and useful Improvements in Car-Starters; and I do hereby declare that the following is a full, clear, and exact description of the invention, which will enable others skilled in the art to which it appertains to make and use the same, reference being had to the accompanying drawings, and to letters of reference marked thereon, which form a part of this specification.

Figure 1 is a top-plan view of my car-starter. Fig. 2 is a longitudinal section on line *xy* of Fig. 1. Fig. 3 is a vertical transverse section on line *x'y'* of Fig. 1. Fig. 4 is a detached view of devices for winding the spring. Fig. 5 illustrates a modified method of attaching the clutch-plate to the car-wheel.

In the drawings, A A' represent the front wheels of a car, and B B' the rear wheels. C is the front axle, to which the front wheels, A A', are keyed or otherwise firmly secured. D is an annular clutch-plate surrounding the axle C, and provided with a short hub or collar, *d*, through which passes a set-screw for screwing the clutch-plate tightly upon the axle. E is a sleeve situated between the clutch-plate D and the front driving-wheel, A, and placed around the axle. At the inner end there is a wheel, F, mounted around this sleeve E, and rigidly attached thereto by means of a set-screw, *f*. This wheel is provided with a series of ratchet-teeth, *f'*, with which teeth a dog, F', is arranged to engage, the dog being pivoted to the cross-beam F² of the main frame. The dog is held down by means of a flat spring, *f*². The dog F' prevents backward rotation of the wheel.

The wheel F is cast or formed with a comparatively long hub or sleeve, G, which is mounted upon and rotates with the inner sleeve, E.

*g' g*² are annular flanges around the sleeve G, adapted to engage with a forked shipping-lever, to be hereinafter described.

The front driving-wheel, A', is provided upon its inner side and around its hub with a series of clutching-teeth, *a*, adapted to engage with a sliding clutch-plate, H, having teeth *h* corresponding to the teeth *a* on the wheel

A'. *h'* is a circular flange projecting inwardly from the clutch-plate H, and H' is an annular plate bolted to the flange *h'*, as shown at *h*², and said plate H', flange *h'*, and clutch-plate H form a casing, as clearly shown in Fig. 3, which is mounted upon the sleeve E, and forms an annular chamber around the sleeve and the axle.

It will be seen that the wheel F, the shipping-flanges *g' g*², and the casing H H' *h'* can all be shifted longitudinally together upon the axle between the driving-wheel A' and the clutch-plate D.

I is a coiled spring arranged within the chamber formed by the casing H H' *h'*. One end of the spring is firmly secured to the sleeve E, and the other end is bolted or otherwise attached rigidly to the cylindrical wall *h'* of the casing.

The casing H H' *h'* is mounted loosely upon the sleeve E, so that it can rotate thereon independently of the sleeve, and so that the sleeve and wheel F can rotate independently of the casing.

The wheel F may be formed without the ratchet-teeth, and a ratchet-wheel cast separate from the wheel F may be attached thereto in place of the ratchet-teeth *f'*, if desired. The parts F and E may, if preferred, be cast in one piece, in which case it will be necessary to form the plate H' in two pieces, in order that the spring-casing may be properly placed around the sleeve E.

The frame-work of the car is represented by the side sills K K', the front cross-beam, K², and middle cross-beam, F². K⁴ represents a supplemental cross-piece, arranged to support some of the operative devices of the car-starter. L represents the forked shipping-lever, the ends of which are adapted to engage with the flanges *g' g*². The shipping-lever is provided with an upwardly-projecting pivot or shaft, L', which passes through the cross-piece K⁴, and has its bearing therein. L² is a crank-arm secured to the upper end of the shaft L', whereby the shipping-lever L is caused to thrust the parts E, F, G, and H back and forth upon the axle C.

The crank-arm L² may be operated by any desired or convenient devices. I prefer to pivot the forward end of the crank-arm to a hand-lever, M, which is, at its lower end, piv-

oted to the frame of the car or to a bracket, *m*, depending therefrom. By thrusting the hand-lever *M* in one direction the parts *E*, *F*, *G*, and *H* will be thrust into engagement with the driving-wheel *A'*, and by thrusting the hand-lever in the opposite direction said parts will be thrust into engagement with the clutch-plate *D*.

N is a friction-band, formed of any suitable material, and placed around the spring-casing *H H' h'*. This friction-band is preferably made somewhat greater in length than the circumference of the wall *h'* of the casing, and is permanently secured at one end to an eyebolt, *n'*, beneath the frame of the car. From this bolt it passes downward under the said wall *h'* of the casing, around the same, and forward a part of the distance from the casing to the front end of the car.

The following devices serve to compress the band *N* tightly against the spring-casing and to release the same and remove its friction therefrom at will: *O* is a lever, pivoted in ears or standards *o o*, and provided with a short arm, *P*, substantially at right angles to the lever *O*. *P** represents one or more chain-links between the band *N* and the bolt *n'*, and *P'* is a chain attached to the upper end of the friction-band *N* and to the short arm *P* of the lever. The lever runs forward to, or nearly to, the front cross-beam, *K²*, of the car, and is curved so as to project upwardly through the floor *K³* of the car, there being a suitable aperture to receive it.

The upturned end *p* of the lever *O* may be provided with any ordinary foot rest or pedal. The car also may be provided with any ordinary brake device, said brake forming no part of my invention.

By means of the chains *P'* and *P** I provide a flexible connection between the band and its points of support, and this flexible connection readily permits the band to be shifted laterally with the spring-casing.

In the drawings ordinary friction-brakes are shown at *Q Q*, which are operated by a shaft, *Q'*, which is oscillated by means of a crank-arm, *R*, and link *R'*, a short chain, *R²*, and crank-shaft *R³*, provided with the ordinary ratchet *r* and pawl or dog *r'*.

The operation of the devices that have been described, is as follows: When it is desired to wind up the spring *I*, the operator places his foot upon the upturned end *p* of the lever *O*, and bears downwardly upon the same. This action throws forward the arm *P* of the lever *O*, which, through the chain *P'*, draws forward the friction-band *N*, and presses it tightly around the cylindrical wall *h'* of the spring-casing which stops the rotation of said spring-casing. At the same time that the operator presses upon the lever *O* with his foot, he thrusts the parts *E*, *F*, *G*, *H'*, *I*, and *H* inwardly until the part *F* engages with the clutch-plate *D*, by means of the hand-lever *M*, crank-arm *L²*, and shipping-lever *L*. The clutch-plate *D* being securely fastened to the axle, it

is, of course, always in rotation when the car is moving forward, and therefore, as soon as the part *F* engages with said clutch-plate *D*, the parts *F* and *E* are rotated with the driving wheels of the car, and, if the friction-band *N* be operated to stop the spring-casing *H H' h'*, it will be readily seen that the coiled spring *I* will be wound within the casing, and that said winding can continue without rotating the casing *H H' h'* itself, until the friction of the band is equalized by the tension of the spring.

Before the operator raises his foot from the end *p* of the lever *O*—that is to say, before he releases the friction-band *N* from the spring-casing, the car is stopped by means of the brake devices described, or any other convenient brake. After the car is stopped and locked by the brake, the operator through the lever *M*, and forked lever *L* thrusts the parts *F E* and the spring-casing into engagement with the clutch upon the driving-wheel *A'*, the dog *F'*, operating to prevent any backward rotation of said parts by means of the spring *I*.

When the teeth *h* are engaged with the teeth *a*, the operator can raise his foot from the lever *O*, and release the friction-band *N*. The car is then ready to be pushed forward by the spring *I*, and immediately after the car is unlocked from the friction-brakes *Q*, the tension of the spring tends to thrust it forward.

Inasmuch as the operative parts of this car-starter are mounted loosely upon the axle, it will be seen that in whatever position said operative parts may be relative to the clutch-plate *D* and the wall *A'*, the car can go forward or backward without interfering with, or being interfered with, by said operative parts of the starter. But in order to prevent accidental engagement of the parts, *I*, in practice, provide a stop for the hand-lever *M* in such position that the sliding parts shall be held at an intermediate point between the plate *D* and the wheel *A'*, where it shall not engage with either said plate or wheel.

If desired, devices of a nature similar to those described may also be mounted on the other end of the axle to engage with the opposite wheel *A*, and devices similar may be mounted upon the rear axle, so that the car may be conveniently operated when the power is applied at either end thereof.

Instead of the friction-band *N*, I propose, under some circumstances, to employ a ratchet and dog for the purpose of preventing the rotation of the spring-casing when the spring is being wound up, which ratchet and dog can be operated by devices substantially similar to those which I have described for operating the friction-band *N*.

In Fig. 4 I have shown supplemental devices, whereby the operator can at will wind up the spring *I*.

f³ f³ are sprocket-teeth upon the wheel *F*. *S* is a beveled wheel mounted upon a short horizontal shaft near the front end of the car-frame, and carrying upon one face a series of

sprocket-teeth; or a sprocket-wheel may be attached to the face of the beveled wheel S. T is a beveled pinion mounted upon the lower end of a crank-shaft, T', and arranged to engage with the beveled wheel S. U is a sprocket-chain connecting the wheel F and the sprocket-wheel S.

By means of a crank, t, on the upper end of the shaft T, the operator is enabled to wind up the spring I, as will be readily seen.

What I claim is—

1. The combination of the spring I mounted loosely on the axle, the clutch-plate fixed permanently on the axle in one position, the friction-band N, and the casing arranged to move the spring longitudinally on the axle away from said clutch-plate, substantially as set forth.

2. In a car-starter, the combination, with the spring I, arranged to be shifted on the axle of the carrying-wheel A', arrange to engage di-

rectly with the spring at one end thereof, and the dog F' continuously engaging with the spring at the other end, substantially as set forth.

3. The combination, with the friction-band N, of the chains P^x and P', the lever O, and the sliding spring-casing, substantially as set forth.

4. In a car-starter, the combination, with the rotating devices, of the shipping-lever L, the shaft L', crank-arm L², and the foot-lever M, pivoted to the car-frame and to the crank-arm L², substantially as set forth.

In testimony that I claim the foregoing as my own I affix my signature in presence of two witnesses.

THOS. S. TAYLOR.

Witnesses:

JAMES LAWRENSON,
GEO. F. PAGE.