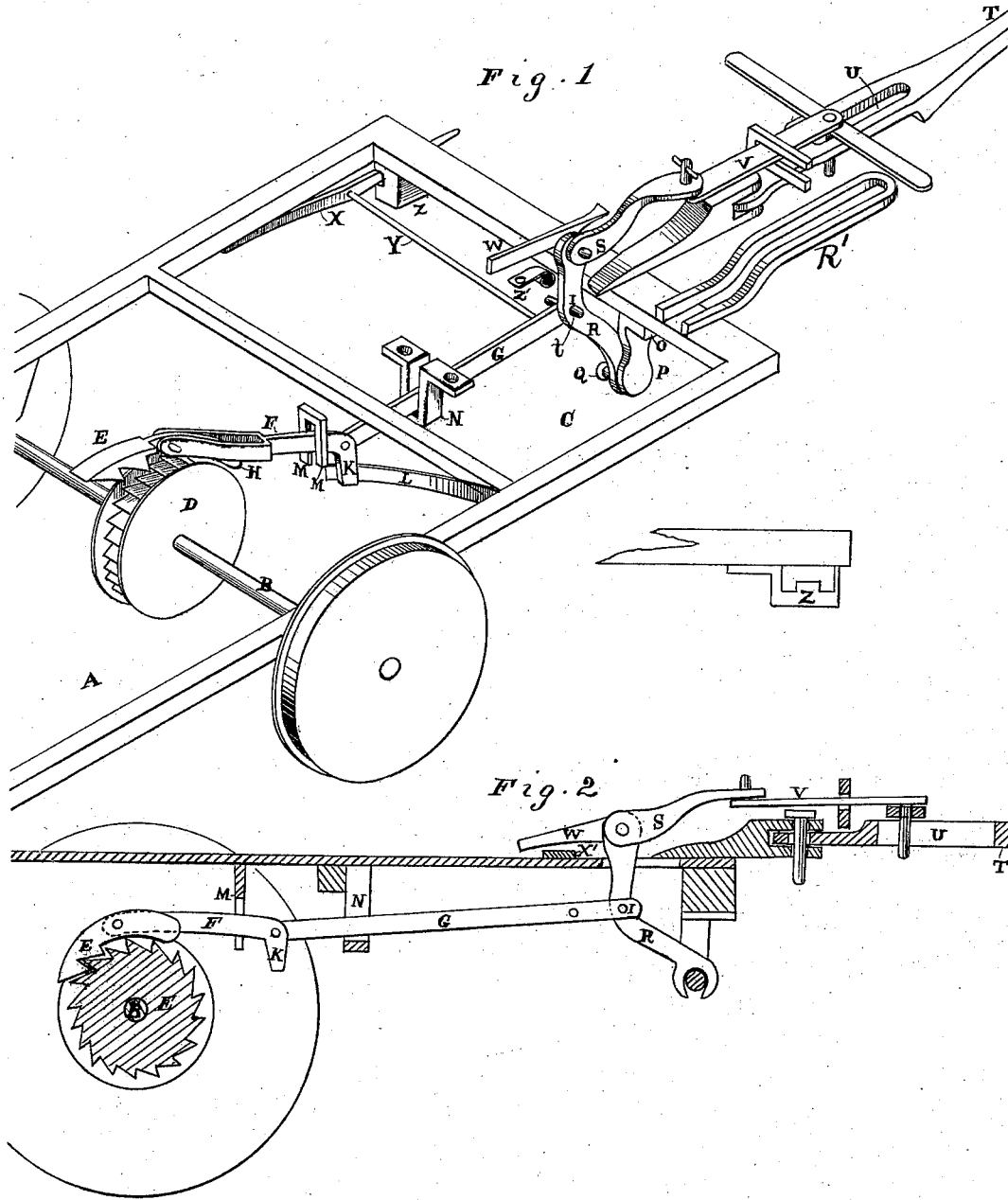


J. PRITCHARD.
Car Starter.

No. 201,700.

Patented March 26, 1878.



Witnesses:

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UNITED STATES PATENT OFFICE.

JAMES PRITCHARD, OF SAN FRANCISCO, CALIFORNIA.

IMPROVEMENT IN CAR-STARTERS.

Specification forming part of Letters Patent No. **201,700**, dated March 26, 1878; application filed September 27, 1877.

To all whom it may concern:

Be it known that I, JAMES PRITCHARD, of the city and county of San Francisco, and State of California, have invented an Improved Car-Starter; and I do hereby declare the following to be a full, clear, and exact description thereof, reference being had to the accompanying drawings.

My invention relates to an improved arrangement of that class of devices for starting horse-cars from a state of rest in which the initial pull of the horses is applied directly to a ratchet-wheel fixed on the axle of the car.

In most all of this class of devices the method heretofore employed was to connect the rear end of the pole with the pawl which engaged the ratchet on the axle, so that the pole had a longitudinal motion forward when the first pull came upon it. This motion of the pole is objectionable.

By my arrangement the pole is fixed to the end of the car in the ordinary manner, and the whiffletree is connected with the mechanism that engages with the ratchet on the axle. The whiffletree is arranged to move a short distance in and be guided by a slot in the rear end of the pole; or a slotted bar or link could be used, and the pole dispensed with. I also provide an arrangement of levers, which are detachable, so that they can be shifted with the pole to either end of the car, and which enable me to increase the power of the draft on the ratchet, all as hereinafter more fully described.

Referring to the accompanying drawings, Figure 1 is a perspective view, and Fig. 2 a sectional view.

Let A represent one end of a street-car, and B the axle which connects the wheels at that end. The portion C represents the platform at the end of the car. D is the ratchet-wheel, which I fix firmly to the middle of the axle B. This wheel I form with side flanges, which extend above the teeth—that is, I form the teeth only on a middle portion of the wheel, so as to leave a projecting rim all around on each side. The dog or pawl E is pivoted at its middle to the rear end of a lever, F, while the opposite end of the lever is pivoted to the end of a draw-bar, G, so that the pawl will be directly above the ratchet-wheel.

The pawl is made, as represented at Fig. 1, with teeth on its rear end, and an enlargement, H, on its forward end. This enlargement serves, by striking the teeth of the ratchet, to depress the opposite end of the pawl and force the teeth of the pawl into engagement with the ratchet when the strain upon the draw-bar is released. The forward end of the lever F passes between two guides, M M, and has a downward-projecting lug, K, at its extremity, against the front face of which the end of a flat spring, L, presses, so that when the draw-bar is drawn forward, the spring presses the rear end of the lever upward against the bottom of the car and out of engagement with the ratchet, in which position it remains as long as a forward draft is applied to the draw-bar.

The draw-bar G extends forward underneath the car-floor to a point under the platform near the end of the car, being supported and guided at suitable points by loops N. O is a casting, which is secured to the under side of the front beam of the platform, and which has a downward-projecting arm, P, on one side of which is a stud or pin, Q. R is a lever, which passes up through the slot in the floor of the platform, its lower end having a circular recess, which clasps the pin Q, while its upper end, above the platform, is attached to the rear end of a bar, S.

The forward end of the draw-bar G has a pin, t, on one side, which enters a hole, I, in the middle of the lever R, so that when the upper end of the lever is drawn forward the draw-bar is also drawn forward.

T is the pole of the car, which is attached to the end of the car in the ordinary manner. U is a slot in the rear end of the pole, over which the whiffletree moves, being attached to the pole by a pin which passes down through the slot U, so that the whiffletree can move the length of the slot. The forward end of a plate, V, is attached to the middle of the whiffletree, while its rear end is fastened by a pin or other coupling to the front end of the bar S, thus connecting the whiffletree with the draw-bar G by means of the plate V, bar S, and lever R.

Now, when the initial pull or draft comes upon the whiffletree, the upper end of the le-

ver R and the draw-bar are drawn forward until the pin of the whiffletree reaches the forward end of the slot U. As the dog or pawl E was in engagement with the ratchet when the draft commenced, this initial pull is directly exerted upon the ratchet, which, by reason of the leverage and direct application of the power, starts the car easily.

A pawl, W, is attached to the upper end of the lever R, which engages with a notch or projection, X', on the car-floor when the upper end of the lever has been fully drawn forward, and retains the entire arrangement in this position until it is released by the foot of the driver.

The enlargement H on the forward end of the dog acts like an escapement to trip the teeth of the pawl into engagement with the ratchet, and if, when the car is stopped on an incline or up-grade, the pawl W be released, the enlargement will cause the pawl to engage with the ratchet, and thus lock the axle, so as to prevent the car from moving backward.

When the pole is shifted from one end of the car to the other, I also remove the lever R, with its pawl W and bar S, so that the platform will be clear of obstructions. To enable this to be done quickly, I have connected the forward end of the draw-bar G with a slide-lever, X, at one side of the car in a spring-rod, Y. The forward end of the lever X moves in a block, Z, in which are two depressions, which are connected by a slot. By moving the lever so that it will rest in the inside notch, the draw-bar is forced toward the lever R, so as to carry the pin *t* into the hole in the lever, and complete the connection; but by moving the lever outward into the other notch, the pin is disengaged from the lever R and held by a block, Z. The lever R can then be raised through the slot in the floor of the platform. The spring L, by its pressure on the lug K of the lever F, keeps the pawl out of engagement with the ratchet, and holds it up against

the bottom of the car. The same arrangement can be used without a pole. In this case I employ a slotted rest bar or link, R', for the whiffletree to rest and move upon.

This entire arrangement is simple and free from the many objections heretofore urged against this class of car-starters.

Having thus described my invention, what I claim, and desire to secure by Letters Patent, is—

1. The axle B, with its ratchet-wheel D, in combination with the dog E, pivoted lever F, draw-bar G, draw-lever R, bar S, pawl W, and whiffletree.

2. The dog or pawl E, having the enlargement H on its rear end, and pivoted at its middle to the end of the lever F, said lever F having the arm or projection K, in combination with the spring L and draw-bar G, substantially as and for the purpose described.

3. The upright lever R arranged to pass through a slot in the platform, and having its lower end secured to a bearing, Q, below the platform, while its upper end is connected by a bar, S, with the whiffletree, in combination with the draw-bar G, pivoted lever F, and dog or pawl E, substantially as and for the purpose described.

4. The upright lever R, provided with a detachable connection at its lower end and hole I at or near its middle, in combination with the slide-lever X and a spring-rod, Y, substantially as and for the purpose described.

5. The pole T, provided with the slot U at its rear end, in combination with the whiffletree-plate V, bar S, lever R, draw-bar G, and pawl-and-ratchet mechanism, substantially as and for the purpose described.

In witness whereof I have hereunto set my hand and seal.

JAMES PRITCHARD. [L. s.]

Witnesses:

FRANK A. BROOKS,
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