(No Model.)

# W. S. DWINEL.

## CAR STARTER.

No. 261,209. Patented July 18, 1882.

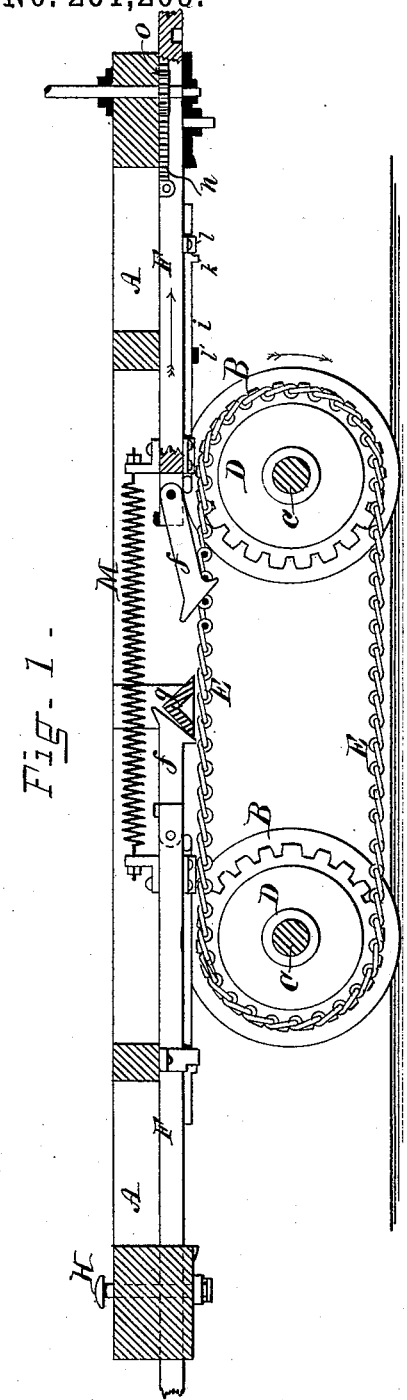

Fig. 1.

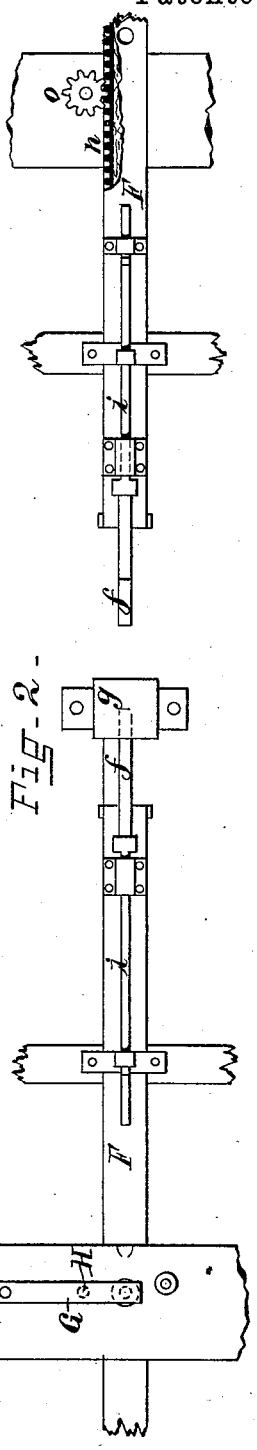

Fig. 2.

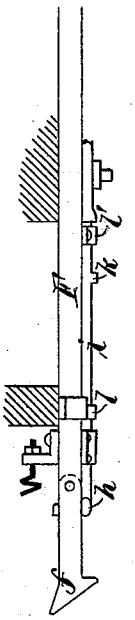

Fig. 3.

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# UNITED STATES PATENT OFFICE.

WARREN S. DWINEL, OF PROVIDENCE, RHODE ISLAND.

## CAR-STARTER.

SPECIFICATION forming part of Letters Patent No. 261,209, dated July 18, 1882.

Application filed May 22, 1882. (No model.)

*To all whom it may concern:*

Be it known that I, WARREN S. DWINEL, of the city and county of Providence, and State of Rhode Island, have invented a new and useful Improvement in Car-Starters; and I hereby declare that the following is a full, clear, and exact description of the same, reference being had to the accompanying drawings, forming part of this specification.

This invention has reference to an improvement in horse-cars; and it consists in the new and peculiar construction of a draw-bar in connection with an endless chain, as will be more fully set forth hereinafter.

The object of this invention is to facilitate the starting of a horse-car when the same has been at rest; and to accomplish this object the draw-bar on each end of the car to which the draft-animals are hitched is made to engage with an endless chain placed over two chain-wheels secured to the axles of the running-gear, and thus a greater leverage is secured to turn the wheels and start the car.

Figure 1 is a longitudinal sectional view of the platform and running-gear of a car, showing the application of my improved car-starter. Fig. 2 is a top view of the two draw-bars, partly in section, to show the rack and pinion for operating the draw-bars. Fig. 3 is a view of one of the draw-bars, showing the pawl raised.

In the drawings, A is the frame of the car. B B are the car-wheels; C C, the axles; and E, an endless chain placed on the gear-wheels D D, and connecting the two axles, the gear-wheels, and the car-wheels.

F F are two draw-bars, placed under the platform, and provided at their inner ends with the hinged pawls *f*. These pawls have an inclined riding end, so as to slide over the chain in one direction, and a hook which engages with the chain when the pawl is drawn in the opposite direction.

At or near the center of the car is the double inclined stop *g*, on which the pawls *f f* rest and are kept from contact with the chain E when out of use. When the power is applied to the draw-bars (either of them) the pawl *f* engages with the chain E, and the whole power is applied to turn the wheels near the periphery of the wheels instead of the axles, and therefore the power is applied much more effectually. When the draw-bar is nearly drawn out the pawl *f* is drawn over the bolster *h* and is raised off from the chain, as is more clearly shown in Fig. 3. This bolster *h* forms the end of the sliding rod *i*, which is provided with the stop *k*. The sliding rod *i* is supported in the stirrups *l* and *l'*, and moves with the draw-bar F until the stop *k* encounters the stirrup *l'*, when the sliding rod *i* is arrested, the bolster *h* is held, and the pawl *f* is drawn over the bolster and raised from the chain. When, now, the draw-bar F is returned to its original position the bolster *h* and rod *i* move inward with the draw-bar F until the stop *k* reaches the stirrup *l*, when the bolster is again held and the pawl allowed to descend and engage with the chain E; but at this point the beveled end of the pawl *f* has reached the double inclined stop *g*, and the inward motion of the draw-bar raises the pawl up the incline of the stop *g* and free from the chain. The draw-bars are held in the fixed position by a draft-pin, which enters the same through suitable strong guides. This draft-pin is secured to the spring G, which holds it in the draw-bar until, by the pressure of the foot on the pin H extending above the platform of the car, the driver releases the draw-bar, and as the horses are secured so as to exert the pulling force always on the end of the draw-bars, the power is at once transferred to the pawl *f* and the chain E, and thus to the wheels, when the draw-bar is released; and thus the car can be readily started, as the power is exerted near the periphery of the wheels.

To facilitate the drawing in of the draw-bars F the two draw-bars are connected with the spiral spring M, and as one of the draw-bars is always in place the whole strength of the spring is exerted to draw in the other draw-bar. The draw-bars F F may also be provided with the rack *n* near their forward end, and the pinion *o* may be arranged so as to be operated by a hand-wheel so as to return the draw-bars to their proper place. This rack-and-pinion arrangement can be used independently of or with the spring M, both together, or either.

With my improved car-starter the great strain on the horses in first starting a loaded car can be avoided. The injury caused to the

horses by each false start, the delay caused by inducing them to start a full car, usually beyond their strength, and the cruel exhibitions so frequently seen to compel the poor animals to do more than is in their power are all avoided by the simple pressure of the driver's foot on the pin H, the release of the draw-bars, and their engagement with the chains E.

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

1. The combination, with the platform and running-gear of a car, of the gear-wheels D D, secured to the car-axles, the endless chain E, and the draw-bars F F, provided with the hinged pawls *f f*, constructed to apply the traction force to the chain and wheels, as and for the purpose described.

2. The combination, with the running-gear of a car, of the chain E, the draw-bars F F, provided with the hinged pawls *f f*, and the spring M, constructed to draw the draw-bars inward when released, as described.

3. The combination, with the draw-bars F F and the pawls *f f*, of the rods *i i*, provided with the bolster *h* and stop *k*, constructed to raise and retain the pawl, as described.

4. The combination, with the platform and running-gear of a car, of the gear-wheels D D, the endless chain E, the draw-bars F F, provided with the hinged pawls *f f*, and a rack and pinion constructed to operate the draw-bar, as described.

5. The combination, with a car and its running-gear, of the chain E, the draw-bars F F, provided with the pawls *f f*, and the spring G, having a bolt constructed to enter the draw-bar, and the bolt H, extending above the platform, constructed to release the draw-bars and apply the tractive force, as and for the purpose set forth.

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