(No Model.)

W. E. ADAMS.

CAR STARTER.

No. 302,224. Patented July 22, 1884.

Fig. 1.

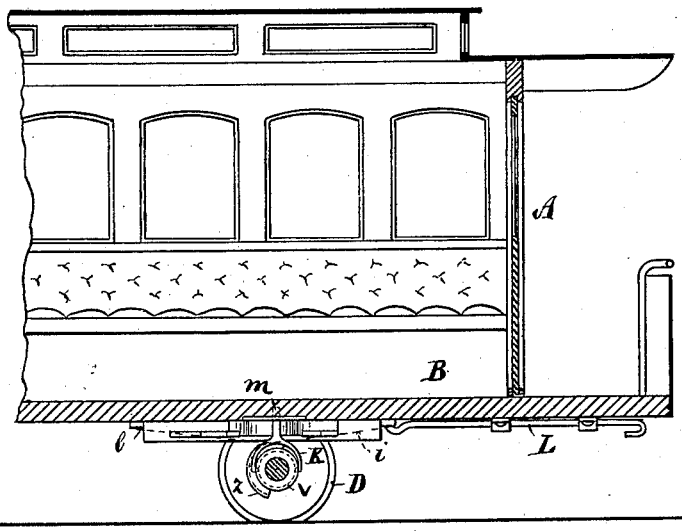


Fig. 2.

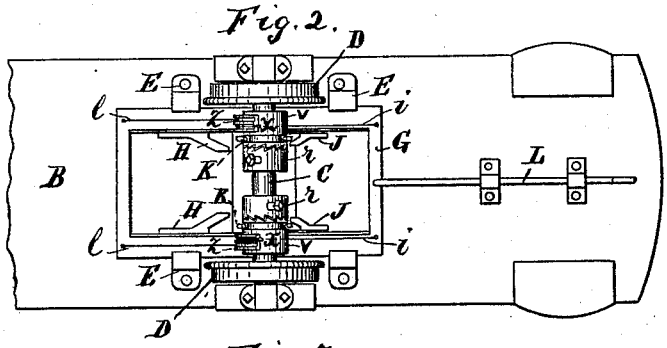
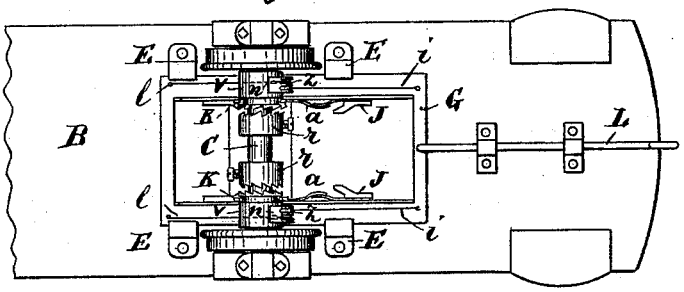


Fig. 3.



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CAR-STARTER.

SPECIFICATION forming part of Letters Patent No. 302,224, dated July 22, 1884.

Application filed May 12, 1884. (No model.)

To all whom it may concern:

Be it known that I, WILLIAM E. ADAMS, of Lynn, in the county of Essex, State of Massachusetts, have invented a certain new and useful Improvement in Car-Starters, of which the following is a description sufficiently full, clear, and exact to enable any person skilled in the art or science to which said invention appertains to make and use the same, reference being had to the accompanying drawings, forming a part of this specification, in which—

Figure 1 is a vertical longitudinal section of one end of a car provided with my improvement; Fig. 2, a bottom plan view showing the starter in the position it assumes when the car is at rest, and Fig. 3 a like view showing the starter in the position it assumes when the car is in motion.

Like letters of reference indicate corresponding parts in the different figures of the drawings.

My invention relates to that class of car-starters which are designed for use in connection with horse-cars and operated by the draft-horses; and it consists in a novel construction and arrangement of the parts, as hereinafter more fully set forth and claimed, by which a more desirable and effective article of this character is produced than is now in ordinary use.

The nature and operation of the improvement will be readily understood by all conversant with such matters from the following explanation:

In the drawings, A represents the body of the car; B, the floor or bottom of the same; C, the axle, and D the trucks or wheels, all of which are of the ordinary construction, and require no special description.

Disposed beneath the bottom B, and fitted to slide longitudinally thereon in the ways E, is a rectangular frame, G.

Projecting inwardly and forward from each of the side rails of the frame there are two inclined arms, H, disposed near its rear or inner end. A corresponding pair of arms, J, also project inwardly but rearward from said rails, the latter arms being disposed near the forward end of said frame.

Attached to the inner face of each of the side rails of the frame, near the arms J, and between said arms and the arms H, there is a leaf-spring, *a*.

Disposed on the axle C there are two fixed ratchet-collets, *r*, the teeth of which incline toward the rear of the frame G. A corresponding pair of loose collets, *v*, are also disposed on the axle—one at either end—the teeth of the loose collets being adapted to engage those on the fixed collets, and thereby form positive clutches. A semicircular grooved boss or segment, *z*, projects from the face of either of the loose collets *v;* and attached to the forward end of the frame G, at either side thereof, is a wire or cord, *i*, these wires passing back over the collets *v*, and being secured at *x* to the ends of the bosses *z*, as shown in Fig. 2. A corresponding pair of cords or wires, *l*, are secured to the rear end of the frame G, the latter wires passing forward over the loose collets *v*, and being attached at *n* to the bosses *z*, as seen in Fig. 3, the wires *i l* being respectively attached to the opposite ends of the bosses.

Projecting downwardly from the bottom B of the car, and pivoted at their upper ends, *m*, therein, are two bifurcated levers or forks, K, which respectively pass astride and fit into annular grooves (not shown) in the loose collets *v*, near their inner ends, these levers when swung inwardly being adapted to slide the loose collets *v* on the axle C and cause them to engage the fixed collets *r*.

A draw-bar, L, is secured to the forward end of the frame G, to which the horses are attached and by which the car is drawn.

In the use of my improvement, the bar L being retracted, the frame G pushed inwardly to its farthest extent and the collets engaged, as shown, in Fig. 2, if, now, the horses are started up or power is applied to the draw-bar, the frame G will be drawn forward, causing the cords or wires *i* to act upon the bosses *z* to turn the collets *v*, and through them the engaged collets *r*, axle C, and wheels D. When the frame has advanced sufficiently to bring the inclined arms H into contact with the forked levers K, said levers will slide down the inner face of the arms and be pushed or swung outwardly, thereby causing the collets *v* to be gradually disengaged from the collets *r*, after which, as the frame continues to ad-

vance, the arms H being unable to pass the levers K, the advance of the frame G will be stopped. In stopping the car the horses are backed, pushing the frame G toward the rear, and bringing the curved springs *a* into contact with the levers K, causing said levers to swing inwardly, and the collets *v* to again engage the collets *r* preparatory to repeating the operation of starting the car by pulling on the draw-bar L.

In case it is desired to back the car itself for any purpose by means of the horses, the frame G is pushed to the rear sufficiently to cause the springs *a* to pass by the levers K and bring the inclined arms J into contact with said levers, thereby disengaging the collets and permitting the axle to turn freely, the arms J stopping the rearward movement of the frame at the proper time.

It will be obvious that when the car is stopped, and the wheels D, axle C, and collets *r* are stationary, if the frame G is pushed to the rear, the wires or cords *l*, acting on the bosses *z* and collets *v*, will partially revolve said collets, and thereby wrap the wires *i* around the same preparatory to starting up the car, and vice versa.

It will also be obvious that in starting up the car the draft will be exerted on the wires *i*, and these, being secured to the ends of the bosses *z* at *x*, will enable the car to be started with much greater ease or less strain on the horses than is possible when the line of draft is in a direct line with the center of the axle, the leverage or advantage of a direct draft being in proportion to the diameter of the collets *v*, including their bosses.

The bosses *z* may be omitted, if desired, and the wires attached directly to the collets.

The springs *a* are each composed of two leaves, but may be made in one piece, if preferred. They should, however, be sufficiently rigid to move the levers K properly, and sufficiently elastic to prevent the frame from binding as the springs pass said levers.

Instead of two fixed and two movable collets, one of each may be used, if desired; and instead of the frame G, a bar or slide may be employed carrying but two wires, the other necessary and obvious changes being made, although I deem four collets and four wires preferable to two of each, and the frame preferable to a single bar or slide.

Friction-clutches may also be used instead of positive clutches, if desired.

Having thus explained my invention, what I claim is—

1. In a car-starter, the combination of the following instrumentalities, to wit: an axle carrying a pair of wheels, a fixed collet, and a loose collet, a slide or frame provided with a draw-bar and two wires or cords, and a movable or swinging lever adapted to engage the loose collet, said wires having their inner or adjacent ends wrapped in opposite directions around or partially around the loose collet, said loose collet being adapted to slide on the axle and engage the fixed collet, and said frame or slide provided with means for causing the collets to be engaged and disengaged, substantially as set forth.

2. In a car-starter, the frame G, provided with the spring *a*, in combination with the axle C, levers K, collet *v*, and means for causing said collet to engage the axle, substantially as specified.

3. In a car-starter, the frame G, provided with the spring *a*, arms H J, and wires *i l*, in combination with the collet *v*, and means for causing said collet to engage the axle, substantially as set forth.

4. In a car-starter, the pendulous levers K, in combination with the collets *v*, frame G, and means for actuating said levers, substantially as specified.

5. The improved car-starter herein described, the same consisting of the frame G, provided with the draw-bar L, wires or cords *i l*, arms H J, and springs *a*, the pendulous levers K, and the axle C, carrying the wheels D, and collets *r v*, all constructed and arranged to operate in combination with the car A, substantially as described.

6. In a car-starter, the collets *v*, provided with the grooved bosses *z*, substantially as set forth.

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