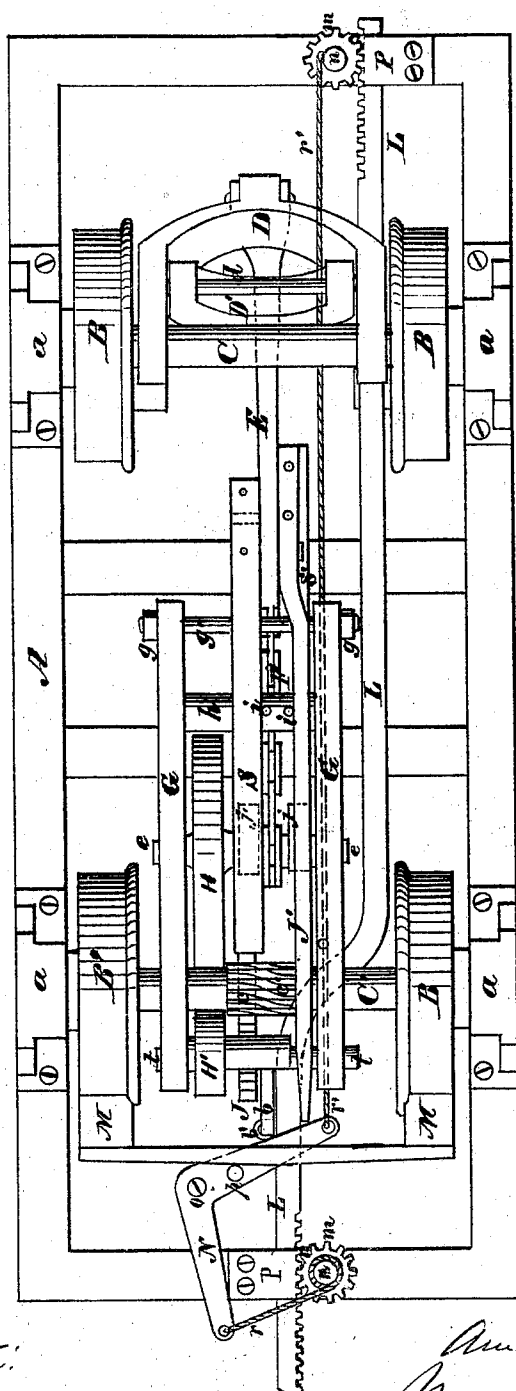


A. WHITTEMORE.
Car-Starters.

No. 143,948.

Patented Oct. 21, 1873.



Witnesses:
R. T. Campbell
J. M. Campbell.

Inventor
Amos Whittemore
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3 Sheets--Sheet 2.

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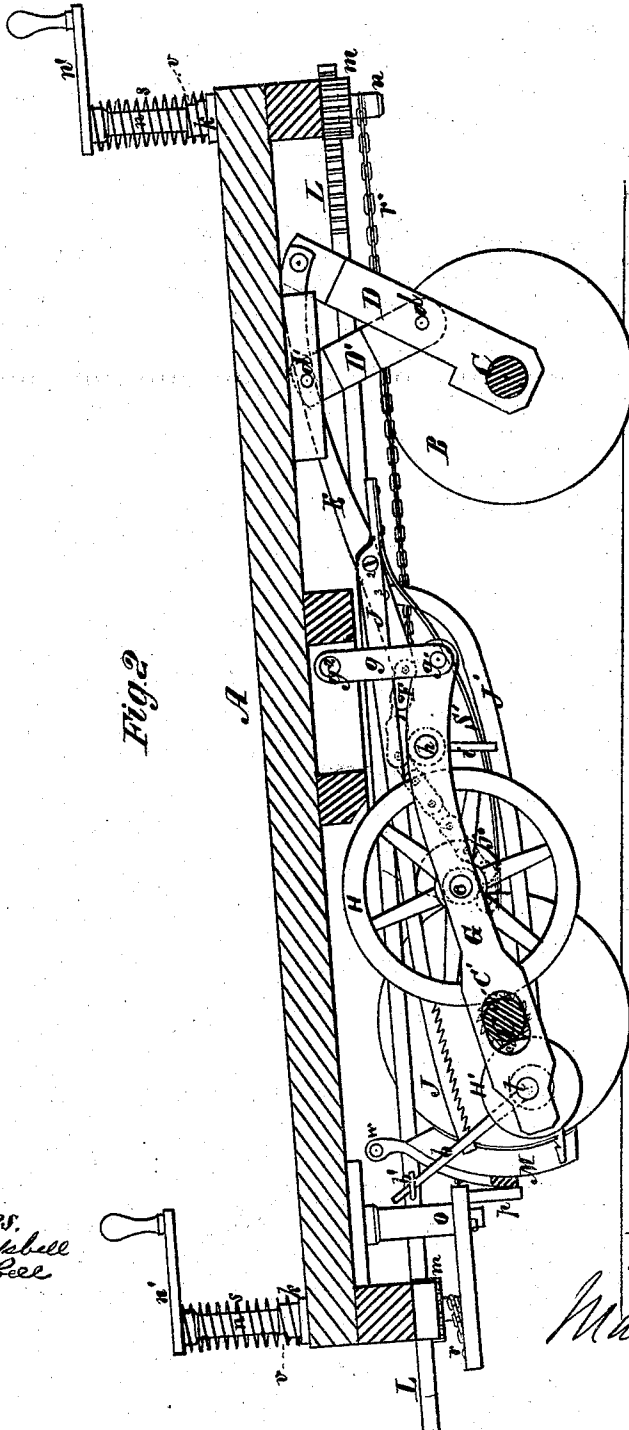


Fig. 2

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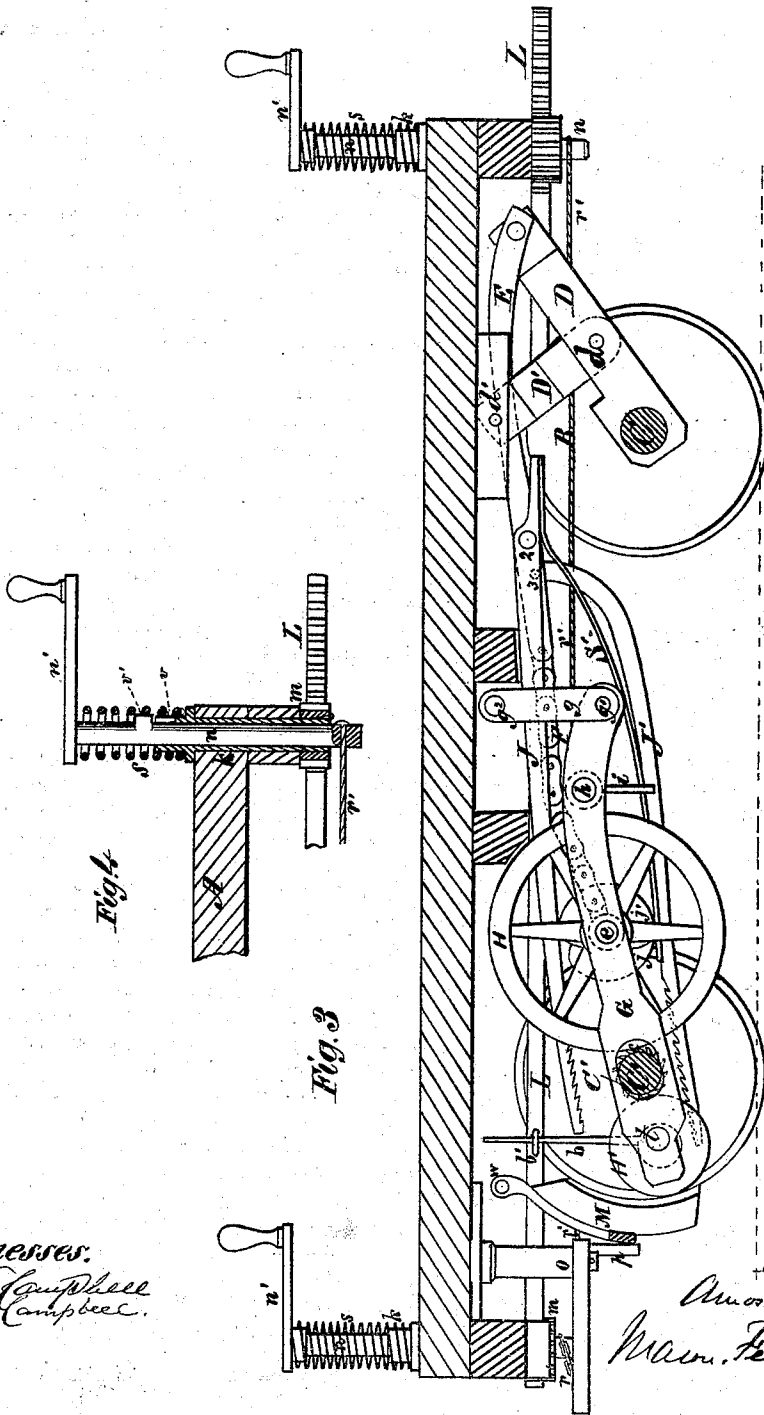
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UNITED STATES PATENT OFFICE.

AMOS WHITTEMORE, OF CAMBRIDGEPORT, MASSACHUSETTS.

IMPROVEMENT IN CAR-STARTERS.

Specification forming part of Letters Patent No. **143,948**, dated October 21, 1873; application filed June 3, 1873.

To all whom it may concern:

Be it known that I, AMOS WHITTEMORE, of Cambridgeport, in the county of Middlesex and State of Massachusetts, have invented certain new and Improved Mechanism for Starting Cars; and I do hereby declare that the following is a full, clear, and exact description thereof, reference being had to the accompanying drawings making part of this specification, in which—

Figure 1, Plate 1, is a bottom view of a railroad-car having my improved starting devices applied to it. Fig. 2, Plate 2, is a section taken longitudinally and vertically through the car in the plane indicated by dotted line *x x*, Fig. 1, showing one end of the car-body lifted. Fig. 3, Plate 3, is a similar view of the same parts represented by Fig. 2, showing the positions of the starting devices when the body of the car is in a horizontal position. Fig. 4, Plate 3, is a sectional view, showing one of the brake-rods and the devices for actuating a rack-bar for applying the starting mechanism.

Similar letters of reference indicate corresponding parts in the several figures.

The object of my invention is to take advantage of the momentum of a moving car in the act of stopping the car, for the purpose of raising one end of the same, so that when the brakes are released the weight of the raised end will operate to start the car forward.

In carrying out my present invention, I lift the same end of the car-body whichever way the car is moving, and employ a lifting-lever, a winding-up device, and a shifting rack-rod, which latter is operated by either brake-rod, and causes one or the other of two racks to engage with teeth on one of the axles, as will be hereinafter explained. I also connect the brake-rods to the shifting rack-rod in such manner that the driver can control the application of the brakes and also the starting mechanism by either one of said brake-rods, as will be hereinafter explained.

The following description of my invention will enable others skilled in the art to understand it.

In the accompanying drawings, A represents the bed or frame of a street-car, and B B are the wheels thereof, which are applied on

axles C C', that turn in spring-boxes in brackets *a*. The spring-boxes for the journals of the axles C' are applied in their brackets *a* in the usual well-known manner, but the spring-boxes for the journals of the axle C are applied in brackets having vertical slots of such length as will allow the body of the car at this end to be raised the desired height without lifting the wheels on axle C off the track, as indicated in Fig. 2. On the axle C a forked lever, D, is pivoted, so that its upper end will swing freely forward and backward, and to the free end of this lever a rod, E, is pivoted, which is connected by a chain, F, to the shaft *e*, of a winding-up wheel, H. The lever D is connected to the body of the car at *d'* by means of a link, D', which is pivoted to lever D at *d*. Thus it will be seen that when the chain F is wound upon the shaft *e* the lever D and links D' will lift that end of the car-body which is over axle C, the wheels B B being left on the track, as above stated. The shaft *e* has its bearings in a frame, G, which is pivoted at *g*¹ to suspension-rods *g*, which rods are pivoted at *g*² to the car-bed A. The opposite end of the frame G is slotted longitudinally, so that it may receive endwise play, and through the slots the axle C' passes, as shown in the drawings, Figs. 1, 2, and 3. On the shaft *e* is keyed a large winding-up wheel, H, and on a shaft, *t*, on the opposite side of the axle C' to wheel H, a wheel, H', is keyed, which wheel is eccentrically and loosely applied on its shaft *t*, so that when its periphery is caused to bear against one side of the axle C' it will forcibly draw the periphery of the wheel H against the opposite side of this axle, and if the car be in motion the wheel H will be rotated, and the chain F will be wound upon the shaft *e*. The shaft *t* has an arm, *b*, rigidly secured to it, which extends upward and passes loosely through the loop *b'* on one side of a rack-rod, L, which is supported and guided by boxes P P at both ends of the car-body. By moving the rack-rod L in the direction indicated by the arrow in Fig. 1, the arm *b* will force the eccentric H' against the axle C' and also draw the wheel H forcibly against this axle, thus winding chain F on axle *e* and lifting one end of the car by the action of lever D and link D'. The rack-bar L engages at each end with a pin-

ion, m , which is keyed on the lower end of a vertical tube, k , which tube extends up through the platform of the car-body, and has a notch, v , cut into its upper end. Through this tube k the brake-rod n passes freely, and has a crank-arm, n' , applied on it. Each brake-rod n is held up by means of a spring, s , in which position the tube k and its wheel m will not be turned when this rod is turned; but by pressing slightly on the rod n at the same time it is turned, a tooth, v' , on it will enter the notch v in tube k , and thus allow this tube to turn with the brake-rod. One of the brake-rods is attached to a right-angular lever, N , on a post, O , by means of a rope or chain, r , and the other brake-rod is attached to the same lever, N , by means of a rope or chain, r' . From the lever N depends a stud, p , which, by bearing against the cross-shaft of brakes M , will force these brakes against the wheels on the axle C' .

It will be seen that the brakes can be applied or released in the usual well-known manner without actuating the starting mechanism; also, that the starting mechanism can be actuated, by means of the brake-rod n at either end of the car, by simply depressing such brake-rod, and thereby engaging its tooth v' with the tube k , on which is a pinion, m , that engages with the rack-bar L .

I have shown that only one end of the car-body is lifted, whichever way the car is going. Now, for the purpose of giving the starting impulse to the car in the proper direction, I transmit the weight of the lifted end from the lever D , through the rod E , and one or the other of two rack-bars, J J' , to the axle C' . The rack-bar J is pivoted at 2 to the bar E , and extends over the toothed portion c on the axle C' , and the rack-bar J' is pivoted at 3 to said bar E , and extends beneath the toothed portion c' on the axle C' . These rack-bars move the car in opposite directions. The rack-bar J is acted on by a spring, which holds this bar down upon a lifting-cam, j' , on the shaft e , and also holds its teeth engaged with the teeth c on axle C , when the cam j' allows the bar J to engage with these teeth. The rack-bar J' is acted on by a spring, S' , which holds this bar up against a depressing cam, j , on shaft e , and also holds its teeth engaged with the teeth c' on axle C' , when the cam j allows the spring S' to effect such engagement. The cams j and j' are so adjusted on the shaft e of the winding-wheel H that, when the car is in motion, and the wheels H H'

are free from the axle C' , the two rack-bars J J' are free from their respective teeth on the axle C' .

It will be seen from the above description that in the act of stopping a car the driver turns his brake-rod in the usual manner for applying the brakes, and at a proper time depresses such rod so as to also move the rack-bar L in the direction indicated by the arrow in Fig. 1. This brings the wheels H H' into play on the axle C' , whichever way the car is moving, and allows either the rack-bar J or J' to engage with its teeth on axle C' , which winds the chain F on the shaft e , and thus lifts that end of the car-body which is over the axle C . When the brakes M and rack L are released the weight of that end of the car which was lifted will operate through the medium of the lever D , link D' , rod E , and the rack, which was brought into play on the axle C' to turn this axle and its wheels in the direction the car was going when it was stopped.

The brake-rods being applied to the tubes k , as described, allow the driver to check up his car at will without applying the starting mechanism.

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

1. The lifting-lever D , and its link D' , actuated by the axle C' through the medium of the rod E , chain F , wheels H H' , and rack-bars J J' , acting on teeth which are on the said axle C' , substantially as described.

2. The eccentric H' and its winding-up wheel H , acted upon by the axle C' , and an arm, b , and rack-bar L , for raising one end of the car-body, substantially as described.

3. The eccentric H' and its winding-up wheel H , applied to shafts which have their bearings in a longitudinally-movable frame, G , in combination with the lifting-lever D and link D' , and with the rack-rods J J' and teeth c c' on the axle C' , substantially as described.

4. The vertically and rotary movable brake-rods n and the tubes k with the teeth and notches v v' , combined with the rack-bar L , arm b , and the eccentric wheel H' for bringing the winding-up wheel H in contact with the axle C' , for the purpose described.

5. The rack-bars J J' , connected to the bar E and acting on the axle C , substantially as and for the purposes described.

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