(No Model.)

E. DEDERICK.

CAR STARTER.

No. 345,281. Patented July 13, 1886.

Fig. 1

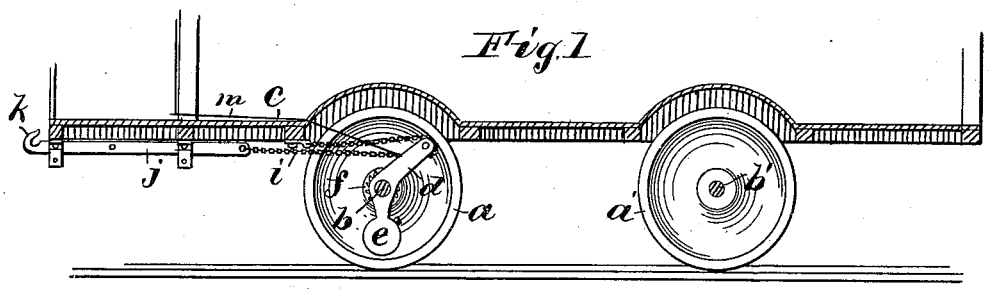


Fig. 2

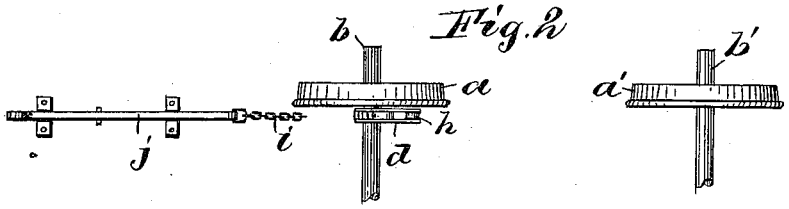


Fig. 3.

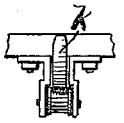


Fig. 4

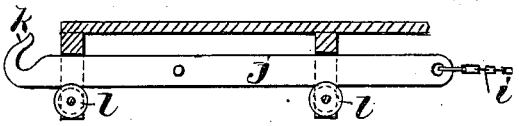


Fig. 5

Fig. 6

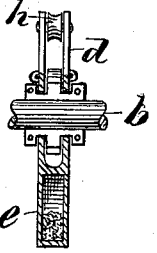
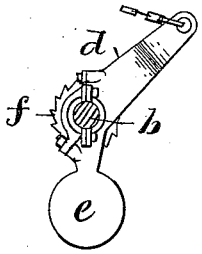


Fig. 7.



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UNITED STATES PATENT OFFICE.

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CAR-STARTER.

SPECIFICATION forming part of Letters Patent No. 345,281, dated July 13, 1886.

Application filed October 30, 1885. Serial No. 181,358. (No model.)

To all whom it may concern:

Be it known that I, EZRA DEDERICK, of Milwaukee, in the county of Milwaukee and State of Wisconsin, have invented new and useful Improvements in Car-Starters; and I do hereby declare the following to be a full, clear, and exact description of said invention, reference being had to the accompanying drawings, and to the letters or figures of reference marked thereon, which form a part of this specification.

My invention, to be hereinafter distinctly claimed, relates to that class of car-starters in which force is applied temporarily by means of a lever directly to the wheels at the moment of starting, to cause them to rotate.

The objects of the invention and the mechanism by which those objects are accomplished will be understood by the following description and claims, aided by a reference to the accompanying drawings, in which—

Figure 1 is a vertical section of the sill or lower part of the frame of a street-car with the wheels and axles and my device attached thereto. Fig. 2 is a top view of the wheels and axles and a part of my starting device. Fig. 3 is a front view of the parts shown in Fig. 4. Fig. 4 is a section of the car-frame with a part of the mechanism of my device. Fig. 5 is a vertical section of that part of my device which is attached directly to the axle. Fig. 6 is a central vertical cross-section of the parts shown in Fig. 5. Fig. 7 is a modified form of the lever shown in Fig. 5.

The same letters refer to like parts in all the views.

The device herein described is intended to be used, preferably, in duplicate, one on each side of the car, attached to the axle just inside of the front wheels of the car; but I have shown the device on one side of the car only, as that will fully explain the mechanism and its use.

The device is shown and will be described as attached to a street-railway horse-car; but the device may be applied to other cars or vehicles with equal facility and success, such changes in the manner of attachment, if any are required, being made as may be necessary and as could be made by any skilled mechanic.

The wheels *a a'* are rigid on the axles *b b'*, which axles rotate in journal-boxes affixed to the under side of the frame *c* in the usual manner. The lever *d* has two arms, rigid together at an obtuse angle, and is pierced in the angle at the junction of the two arms by the axle *b*, on which the lever is supported and oscillates freely toward the front and rear. The shorter arm of the lever is weighted by the ball *e*, whereby by gravity the longer arm of the lever is caused to project upwardly in the position shown in Figs. 1, 5, and 7. The weight *e* may be made adjustable either by being constructed hollow, and made the receptacle for sand or lead, or by other equivalent means, whereby the proper position of the lever can be certainly secured as against varying friction or weight of opposing mechanism. The circular ratchet *f* is centrally rigid on the axle *b*, and the pawl *g* is attached to the lever *d*, its free end being adapted to engage the ratchet *f* when the free end of the lever *d* is moved forward toward the front, (the axle being at rest,) but which permits the axle to rotate freely when the car is running ahead. For convenience, the lever *d* is preferably made bifurcate, as shown in Fig. 6, and the ratchet *f* and pawl *g* are inserted within the bifurcate arms of the lever *d*. In the free outer end of the lever *d* there is a loose pulley, *h*, and over this pulley a chain, *i*, runs, which is attached at one end in front of the lever *d* to the car-frame *c*, and at its other end is attached to the sliding rod or bar *j*, extending to the front end of the car. This rod *j* rides in the frame of the car, preferably on the anti-friction rollers *l l*. The power to move the lever *d* is attached to the front end, *k*, of the rod *j*. In street-railway horse-cars the rod at its front end is attached to the single-tree or at the outer end of the evener, so that when the horses start ahead the requisite forward motion will be given to the rod *j* to swing the lever *d* over to the front and start the car; for it will be seen that, the lever *d* being in the position shown in Fig. 1, and the axle at rest, when the lever *d* is forced over toward the front, the pawl *g* will engage with the ratchet *f*, and will cause the axle *b* and wheel *a* to commence their forward revolutions. The same result may be attained by attaching the power by chain, rod, or otherwise directly to the free end of the lever *d*, as shown in Fig. 7; but I preferably use the pulley *h* and doubled chain shown in Fig. 1, to increase the power applied to the lever.

It will be observed that by constructing lever *d* in the form shown and loading its shorter arm, as described, and attaching the draft-chain to the free end of the upwardly-projecting longer arm in the manner shown and described, the forward drawing force applied to the draft-chain will be exerted on the arm of lever *d* to throw it forward directly in the line of motion of the draft-chain, whereby any loss of power by changing the line of motion by means of a pulley, bell-crank, or otherwise is obviated.

As it may be desirable to attach my device to cars already built, and as it would involve considerable labor to remove a wheel from the axle to put my device on, the ratchet *f* may be constructed in halves and bolted together, as shown in Fig. 5, and the lever *d* may be provided with a removable section opposite the aperture for the axle, which section is bolted to the main part of the lever, as shown in Fig. 7, whereby both the ratchet *f* and lever *d* may be applied to a completed car without removing a wheel from its axle; and as it may sometimes be necessary to back a car on the track, I provide a cord or chain, *m*, attached at one end to the pawl *g*, and preferably carried over a small pulley, *n*, in lever *d*, and run to the front of the car or other convenient locality, whereby by pulling on the cord *m* the pawl *g* will be raised so as not to engage the ratchet *f*, and the car can then be moved backward freely.

What I claim as new, and desire to secure by Letters Patent, is—

1. The combination of lever *d*, constructed with two arms set at an angle to each other, one arm being weighted, and the other arm, to which the draft-chain is attached, being held upwardly by the gravity of the weighted arm, with axle *b*, ratchet *f*, and pawl *g*, substantially as described.

2. The combination of the bent weighted lever *d*, axle *b*, ratchet *f*, and pawl *g* with pulley *h* and chain *i*, one end of the chain being attached to the body of a car, substantially as described.

3. The combination of lever *d*, having a weighted arm and an upwardly-extending draft-arm, axle *b*, ratchet *f*, and pawl *g*, attached to the upwardly-projecting arm of the lever, substantially as described.

In testimony whereof I affix my signature in presence of two witnesses.

EZRA DEDERICK.

Witnesses:
C. T. BENEDICT,
JAS. B. ERWIN.