

J. A. DAVIS.  
Car-Starters.

No. 153,054.

Patented July 14, 1874.

Fig. 1.

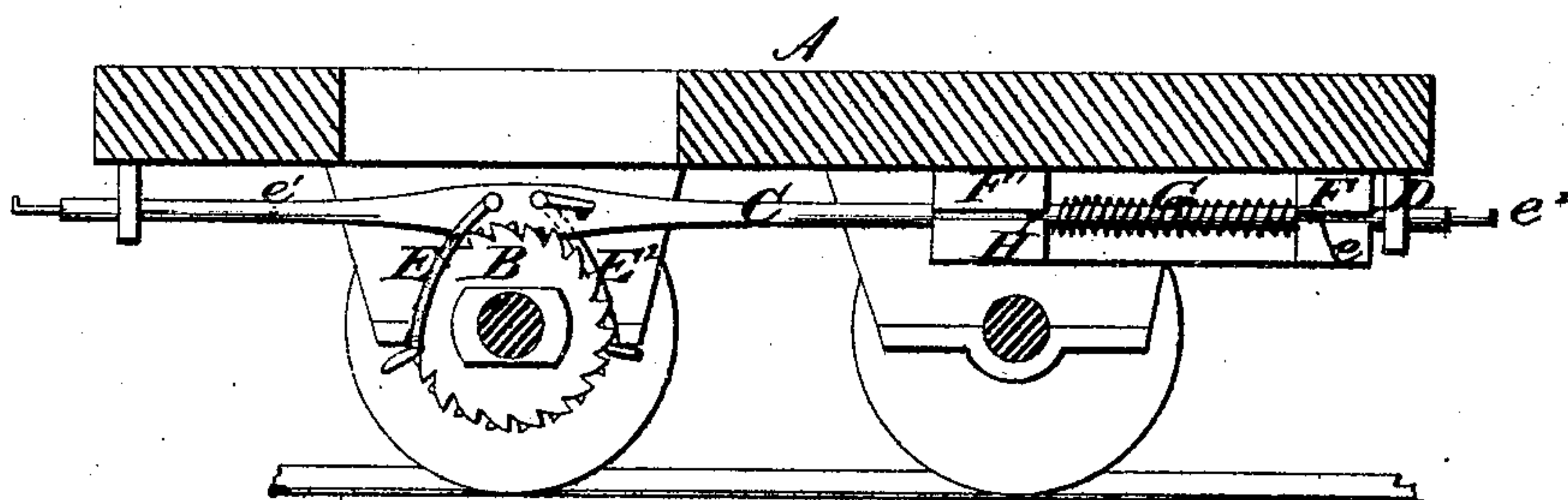
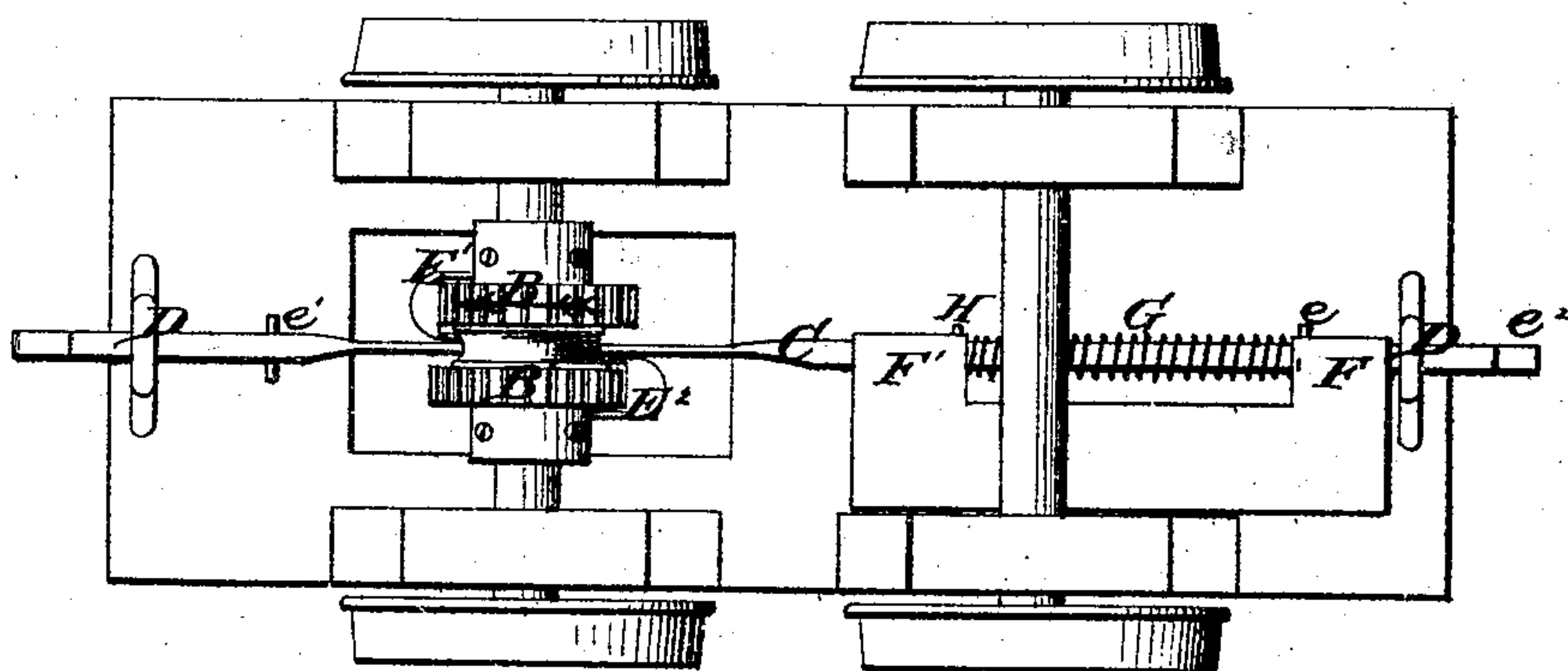


Fig. 2.



Witnesses

C. F. Brown  
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# UNITED STATES PATENT OFFICE.

JOB A. DAVIS, OF BINGHAMTON, NEW YORK.

## IMPROVEMENT IN CAR-STARTERS.

Specification forming part of Letters Patent No. 153,054, dated July 14, 1874; application filed April 11, 1874.

*To all whom it may concern:*

Be it known that I, JOB A. DAVIS, of Binghamton, in the county of Broome and State of New York, have invented a new and Improved Car-Starter; and I do hereby declare the following to be a full and exact description thereof, reference being had to the accompanying drawings forming part of this specification, in which—

Figure 1 is a sectional elevation, showing my invention applied to a street-car; and Fig. 2, a bottom-plan view.

Similar letters of reference in the accompanying drawings denote the same parts.

My invention has for its object to provide for public use a cheap, simple, and efficient device for starting street-cars and other vehicles, which shall be adapted to operate from either end. To this end the invention consists of a longitudinal sliding rod or chain, extending under the car, and provided with two weighted pawls, engaging with opposite sides of two ratchets on the axle or axles, said ratchets having their teeth cut in opposite directions. The longitudinal rod is provided at its ends with suitable means for the attachment of the draft, and has a spring adapted to retract it in either direction when the car or other vehicle is stopped, so that, in starting, the draft is first applied to the rod, the latter, through one of its pawls, giving a rotary movement to one of the axles, thereby starting the car, the same effect being produced whether the draft is from one end or the other, all of which I will now proceed to describe.

In the drawings, A represents a street-car having on one of its axles two ratchets, B B', the teeth of which are cut in opposite directions. C is a longitudinal sliding rod, extending under the car, over and between the ratchets B B', and having its supports in suitable bearing-blocks D D at the end of the car. E<sup>1</sup> E<sup>2</sup> are weighted pawls, pivoted to the rod C, and so located as to engage with the ratchets B B' on opposite sides, as shown, the pawl E<sup>1</sup> being adapted to rotate the ratchet B in the direction indicated by the arrow in Fig. 2, while the pawl E<sup>2</sup> rotates the ratchet B' in the opposite direction.

The rod C slides in its bearings in both di-

rections, its motion being restricted by stops e e', which abut against the inner sides of the bearing-blocks D.

F F' are slotted projections on the bottom of the car, through which projections the rod C passes, its stop e sliding in the slot of the projection F. G is a spiral spring, which surrounds the rod C between the projections F F', the latter serving as abutments for the spring. H is a stop, located on the rod C between the stop e and the center of the rod, the distance between stops e H being equal to that between the projections F F'. The spring G bears alike on the stops e H and projections F F' when the rod is at rest, holding the latter in the position shown.

The ends of the rod being provided with suitable means for the draft attachment, and the draft being applied to the end e<sup>2</sup>, the rod is moved longitudinally, the stop e sliding through the slotted projection or abutment F, and the spring G being compressed between said abutment and the stop H. The pawl E<sup>1</sup> is thus caused to impart a partial rotation to the ratchet B and its axles before the motion of the rod C is arrested by its stop e striking one of the blocks D, the motion given the axle and wheels being sufficient to start the car, the draft being entirely on the rod, and the spring G remaining in a state of compression as long as the draft continues. When the car stops and the draft slackens, the spring retracts the rod C, and throws the pawl E<sup>1</sup> back to its former position, ready for the next operation.

When the draft is applied to the opposite end of the rod C the spring is compressed between the stop e and abutment F', and the pawl E<sup>2</sup> is brought to bear on its ratchet. When the draft ceases, the rod is retracted as before, the stop H sliding in the slot of the abutment F'.

It will be seen from the foregoing that the spring G retracts the rod C from each end, and brings it to rest at a point where each of its pawls is adapted to operate on the corresponding ratchet, so that the same effect is always produced, whether the draft is applied to one end or the other. The result is thus sure, and the parts are simple and not liable to get out of order.



The pawls are of such construction as to engage with their ratchets at a point sufficiently low to insure a sufficient rotation at each stroke, and may be slotted or otherwise constructed.

A chain may be substituted for the rod C, if desired, it being only necessary to provide means of draft extending from one end of the car to the other. The ratchets B B' may be both located on one axle, or one on each axle, as preferred.

Having thus described my invention, what I claim as new is—

1. In a car-starter, a longitudinal draft rod or

chain, provided with a spring adapted to retract it from either end of the car, and with two weighted pawls, adapted to engage in opposite directions with corresponding ratchets upon one of the axles, all combined substantially as described, for the purpose specified.

2. The rod C, having the stops *e e'* H and spring G, in combination with the slotted abutments F F' and blocks D, substantially as and for the purposes set forth.

JOB A. DAVIS.

Witnesses:

MELVILLE CHURCH,  
WM. READ.