J. J. VAN HORN.

CAR-STARTER.

No. 173,376. Patented Feb. 8, 1876.

Fig. I.

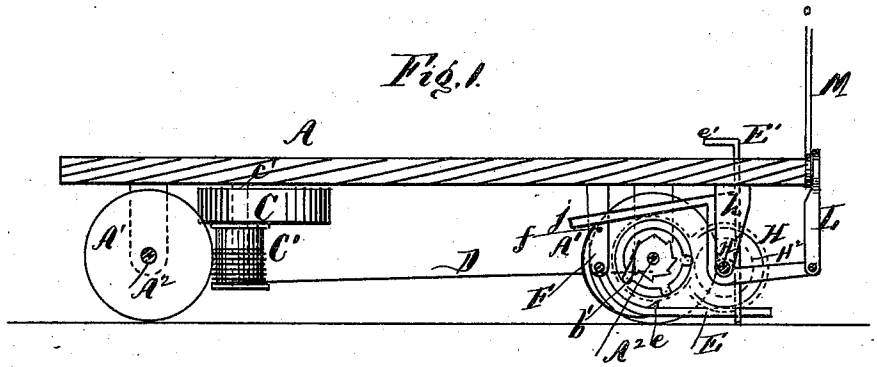


Fig. II.

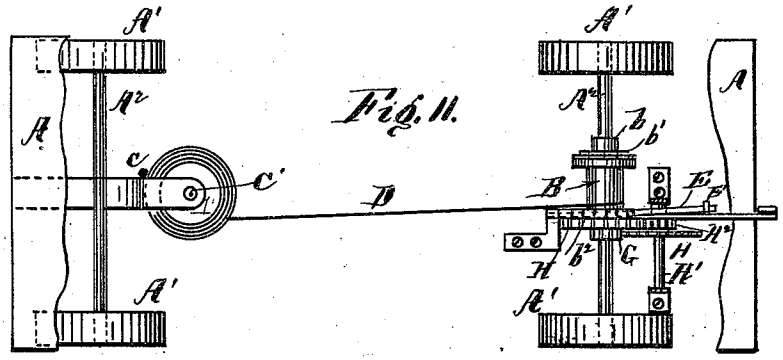


Fig. III.

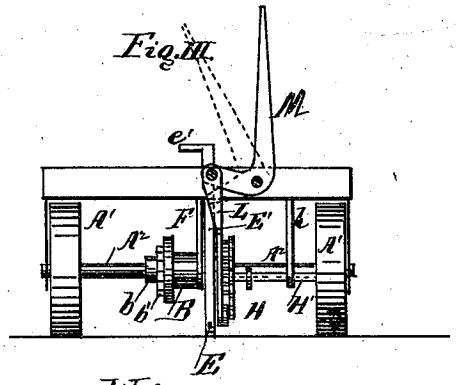
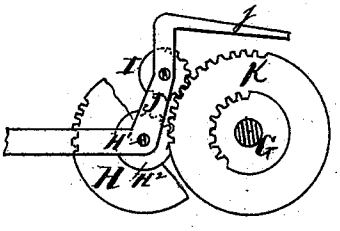


Fig. IV.



Witnesses:
Franklin Barrett.
Richard Gerner.

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John J. Van Horn.
Per.
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UNITED STATES PATENT OFFICE.

JOHN JAMES VAN HORN, OF ALLENDALE, NEW JERSEY, ASSIGNOR OF ONE-HALF HIS RIGHT TO JOHN BARTHOLF LYDECKER, OF SAME PLACE; AND SAID VAN HORN AND LYDECKER ASSIGNORS OF ONE-THIRD THEIR RIGHT TO WILLIAM E. RAMSEY, OF RAMSEY'S, NEW JERSEY.

IMPROVEMENT IN CAR-STARTERS.

Specification forming part of Letters Patent No. **173,376**, dated February 8, 1876; application filed October 26, 1875.

To all whom it may concern:

Be it known that I, JOHN J. VAN HORN, of Allendale, in the county of Bergen, State of New Jersey, have invented a new and useful Improvement in Power Accumulation for Assisting to Start Railroad-Cars, of which the following is the specification:

The invention has for its object the attachment to the axle of a railroad or street car of a device for storing of the power expended in the forward movement of the car, and using the accumulated power thus stored up to assist in starting the car.

The invention will be readily understood by reference to the accompanying drawing, of which—

Figure I is a sectional elevation of a flat car provided with the improved power accumulation. Fig. II is a plan of the same, portions of the floor of the car being broken out to disclose the operative parts of the attachment. Fig. III is a front elevation of the car and its attachments. Fig. IV is a detail sectional elevation of the mechanism for winding up the accumulating apparatus.

The car A is of any form now in use or adapted to operation on steam or street railroads, and is mounted on wheels A^1 and axles A^2, in the usual manner. On one of these axles is placed a revolving drum, B, which may allow the axle to revolve loosely within it, or which may be coupled to and revolve with the axle by means of the clutch-gearing below described. At the other end of the car, and below its floor, is placed a coiled spring, C, one end of which is fixed to the car by the stud *c*, and the other end of it is attached to a pin, *c'*, which carries a drum, C'. The drums B and C' are in line and are connected by the cord D, the opposite ends of which are attached to their respective drums. As the cord is wound up on the drum B it is unwound from the drum C', and this action causes the said drum C' to turn its pin *c'*, and with it to tighten up the coils of the spring C. The spring then acts through the cord D upon the axle A^2 to turn it forward, when the winding-up mechanism shall have been released, as will be presently explained. A collar, *b*, secured to the axle A^2, has a serrated periphery, which forms a ratchet that is engaged by the spring-pawl b^1, which is attached to one end of the drum B. As the cord D is wound up on the said drum B, this pawl and ratchet connection imparts the torsional strain thus acquired to the axle A^2. At the other end of the drum B is a ratchet, b^2, which is attached to or forms a part of that end of the drum. This ratchet is engaged by a dog, *e*, on the lever E, which holds the drum from unwinding the cord D until the moment arrives for its use. One end of the lever E is fulcrumed to the hanger F, and the other end of it is attached to a vertical rod, E', that rises through the car-floor, and terminates in a foot-piece, *e'*, in a convenient location for the brakeman or car-driver to put his foot upon and operate. A small cogged driving-wheel, G, fixed to the axle A^2, gears into and turns the large pinion H on the counter-shaft H^1, and this shaft carries on it also the small counter-pinion H^2, which, in turn, gears into an intermediate pinion, I, the journal of which is supported on the bent lever J. The pinion I gears into the wheel K on the end of the drum B, and by it the said drum is turned as required. The counter-shaft H^1 has its bearings in the hangers *h* attached to the car-bottom. The bent lever J is fulcrumed on the shaft H^1, and its rear arm *j* passes over the top of the drum B, and strikes a stop, *f*, on the hanger F that limits its motion. The forward end of the lever J extends nearly or quite to the front end of the platform A, and it is there connected by the rod L with another bent lever, M, which is fulcrumed to the car-platform, above which it extends, so as to be within convenient reach of the operator, who is expected to be either the brakeman or car-driver.

When the lever M is thrown into the position shown in full lines in Fig. III, the pinion I will be in gear with the wheel K, and the revolving axle A^2 will act through the medium of the wheels G H H^2 I K upon the drum B

to wind the cord D up thereon, and at the same time upon the spring C, to tighten up its coils upon the said cord D. This action will be to retard or "brake up" the forward motion of the car, just before it is desired to bring it to a stop, and the power so exerted will be stored up for future use in the spring C. When the lever is thrown into the position shown in dotted lines in Fig. III, the pinion I will be thrown out of gear with K, and the drum B will then be left free to unwind. The wheel I must be disconnected from K before it is desired to use the mechanism in starting the car.

Then, when the car is about to start, the operator will press with his foot on the piece e', and thereby disconnect the dog e from its ratchet, and thus allow the machine to act in starting the car, as has been described. The spring E^2 will hold the lever E, so that its dog e will be in contact with the ratchet b^2, except when pressed off therefrom by the action of the operator on the foot-piece e'.

Having described my invention, I desire to claim—

1. The axle A^2, drums B and C′, spring C, cord D, and pawl b^1, combined and arranged substantially as and for the purpose set forth.

2. The operating mechanism consisting of the wheels G H H^2 I K, ratchet b^2, and levers E, J, and M, arranged and operated as and for the purpose set forth.

This specification signed this 8th day of October, 1875.

JOHN JAMES VAN HORN.

Witnesses:

RICH. GERNER,

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