

E. AMES.
Car-Starters.

No. 147,088.

Patented Feb. 3, 1874.

Fig. 1.

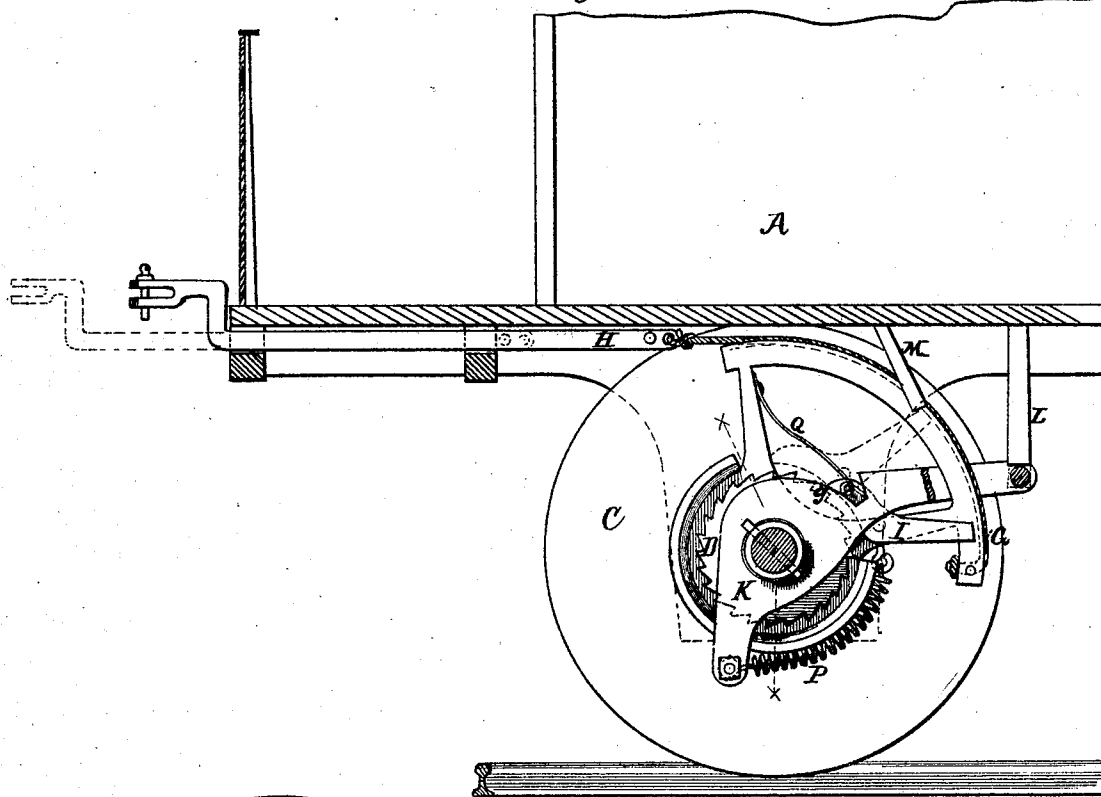
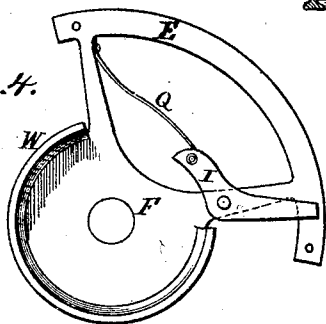


Fig. 4.



Witnesses:

H. R. Bunn
Wm. J. Deaton

Fig. 3.

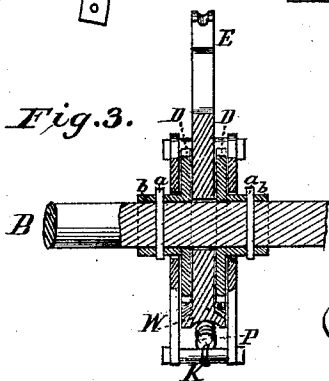
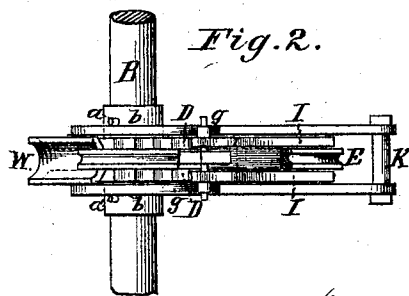


Fig. 2.



Inventor.

Emerson Ames

Per.

James L. North
Atty.

UNITED STATES PATENT OFFICE.

EMERSON AMES, OF BALTIMORE, MARYLAND, ASSIGNOR OF ONE-HALF HIS
RIGHT TO JOSEPH C. TIFFANY, OF PORTSMOUTH, NEW-HAMPSHIRE.

IMPROVEMENT IN CAR-STARTERS.

Specification forming part of Letters Patent No. **147,088**, dated February 3, 1874; application filed
December 8, 1873.

To all whom it may concern:

Be it known that I, EMERSON AMES, of Baltimore, in the county of Baltimore and State of Maryland, have invented certain new and useful Improvements in Car-Starters, of which the following is a specification:

This invention has for its object to furnish simple and effective mechanism for starting street-railway cars, through the agency of which the draft-animals are materially assisted and relieved from the difficult and necessarily oft-repeated task of starting the car, as the initial force is applied directly to the axles of the wheels for imparting a sufficient momentum to the car to enable the draft-animals to proceed with their burden with the greatest ease and facility. The invention consists in locating upon the axles of the wheels an oscillating quadrant or curved arm, which is connected with the draft-tongue or clevis, and carries a double pawl, operating, in connection with a double ratchet keyed onto or made stationary on the axle, in such a manner that, when the force of the draft-animals is applied to the draft-tongue, the quadrant will receive a vibrating movement to cause the pawl carried by the same to engage with the ratchet on the axle, which will effect a quarter or nearly half a revolution of the same for overcoming the inertia of the car, and as soon as the pawl has reached its highest point in respect to the axle it will be disengaged from the ratchet. The invention also consists in combining, with the quadrant or curved arm, a segmental head or pulley, which is grooved on its periphery, and is designed to receive a spiral spring, which is attached at one end to a fixed support or hanger mounted on the axle, and at its opposite end secured to the segmental head, the object of said head and spring being to retract the quadrant when the car has stopped, so as to throw the operative devices in gear. The invention further consists in extending the spring-pawl in rear of its pivot-point, and in providing the same with a stud or pin, which moves in a slot formed in the rear end of the quadrant, so that when the latter has been turned to a sufficient extent for starting the car, the pawl will come in contact with a suitable stop applied to the car-body,

so as to disengage the pawl from the ratchet for preventing rattle and wear.

In the accompanying drawings, Figure 1 is a longitudinal section of a car having my starting mechanism applied thereto. Fig. 2 is a detached plan view of the ratchet-and-pawl mechanism. Fig. 3 is a sectional detail view, showing the method of applying the ratchets and pawl-carrying quadrant to the axle. Fig. 4 is a detached side view of the quadrant, pawl, and segmental pulley or head.

The car-body A, axle B, and wheels C are of the usual construction, and need no special description. On the central portion of the axle I locate two ratchet-disks, D D, which are keyed to the same by means of pins *a a* passing through collars *b b* on the ratchets. Other suitable means may, however, be resorted to for firmly securing the ratchets to the axle. E designates a quadrant or curved arm, which is formed with a hub portion, F, encircling the axle and loosely mounted upon the same, so as to enable it to receive a vibrating movement, for the object hereinafter specified. The hub F is of such a form as to form a segmental pulley, the lateral faces of which are recessed or provided with an edge rim, W, so as to inclose the ratchet-disks, as shown in Fig. 1. The periphery of the quadrant E is grooved, and to its rear lower extremity there is attached a cord or chain, G, which fits in the groove in the quadrant, and is attached at its forward end to the rear end of the longitudinally-sliding draft bar or pole H. To the quadrant, at its junction with the segmental pulley, there is pivoted a double pawl, I, which is extended in a rearward direction from its pivot-point, as shown. When the draft is applied to the car, and the same is moving forward, the pawl is in the position illustrated by the dotted lines in Fig. 1—that is, it is disengaged from the ratchets by causing its front end to assume an elevated position by the means hereinafter described. When the motion of the car is checked, the mechanism is in the position shown in Fig. 1, the pawl being, however, not in contact with the ratchets, as provision must be made for moving the car in a retrograde direction without rattling. The pawl is held at a suitable distance from the

ratchet-teeth by causing lateral studs, at the forward end of the pawl, to rest upon inclined surfaces *g*, formed on the lateral arms of a hanger or yoke, K, mounted on the axle, and extending on opposite sides of the quadrant. The rear horizontal portion of said hanger bears or rests against a suitable stop-bar, L, applied to the car-body, as shown. In starting the car, the draft-pole is drawn forward, thus imparting a vibrating movement to the quadrant, and causing the pawl to engage with the ratchets, which will effect a partial revolution of the car-axle. After the car is thus started, the draft will be comparatively light and easy, commensurate with the power of the team. As soon as the quadrant has been moved to a sufficient extent for starting the cars, the pawl carried by the same is disengaged from the ratchets by means of a stop, M, on the car-body, as the pawl will, when the quadrant is turned forward, come in contact with said stop, which will cause its rear end to be depressed and its front end to be elevated, thus disengaging the pawl for preventing rattling and wear. Whenever the team or car is checked, the quadrant will be brought to its original position through the medium of a spiral spring, P, which is attached at one end to the hanger K, and at its opposite end to the segmental pulley or hub. The periphery of said pulley being grooved, the spring is retained in proper relation to the same, and will thus not be liable to slip off. The pawl is maintained in contact with the ratchet, when in action, by means of a spring, Q, which bears upon the forward end of the pawl.

The starting device may be arranged at both ends of the car, so as to enable the same to be

started from either end; but when a turn-table is provided at the end of the route for changing the position of the car, this duplication is not necessary.

My invention is also applicable to steam-railway cars or other analogous carriages, and will be found most useful in making up trains in depots, sidings, &c., as will be obvious.

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

1. The oscillating quadrant E, formed with the recessed and grooved segmental hub F, for the reception of the ratchet-wheels D, and carrying the pivoted pawls I, in combination with the hanger K, cord or chain G, draft-pole H, and pin M, for disengaging the pawls from the ratchets, substantially as described.

2. The hanger K, mounted on the axle, and having one end of the spring P attached thereto, and the opposite end attached to the grooved segmental hub F of the quadrant E, all constructed and combined to operate substantially as described.

3. The hanger K, mounted on the axle B, and having the inclined surfaces *g g*, for retaining the pawls I from contact with the ratchets D, in combination with the quadrant E, having grooved periphery, and grooved segmental hub F, all constructed to operate substantially as described.

In testimony that I claim the foregoing, I have hereunto set my hand this 14th day of November, 1873.

EMERSON AMES.

Witnesses:

THOS. T. KEMPE,
JNO. R. TODD.