T. M. BRINTNALL.

CAR-STARTER.

No. 184,059. Patented Nov. 7, 1876.

Fig. 1.

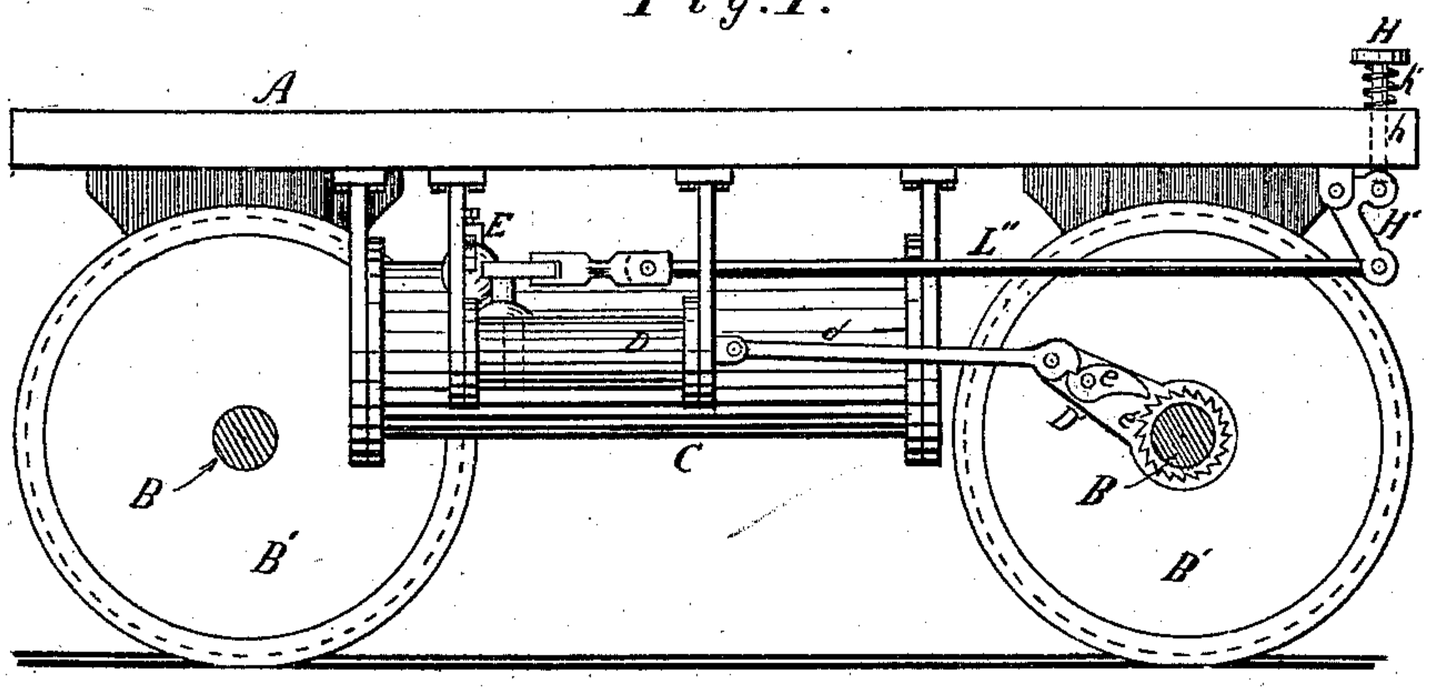


Fig. 2.

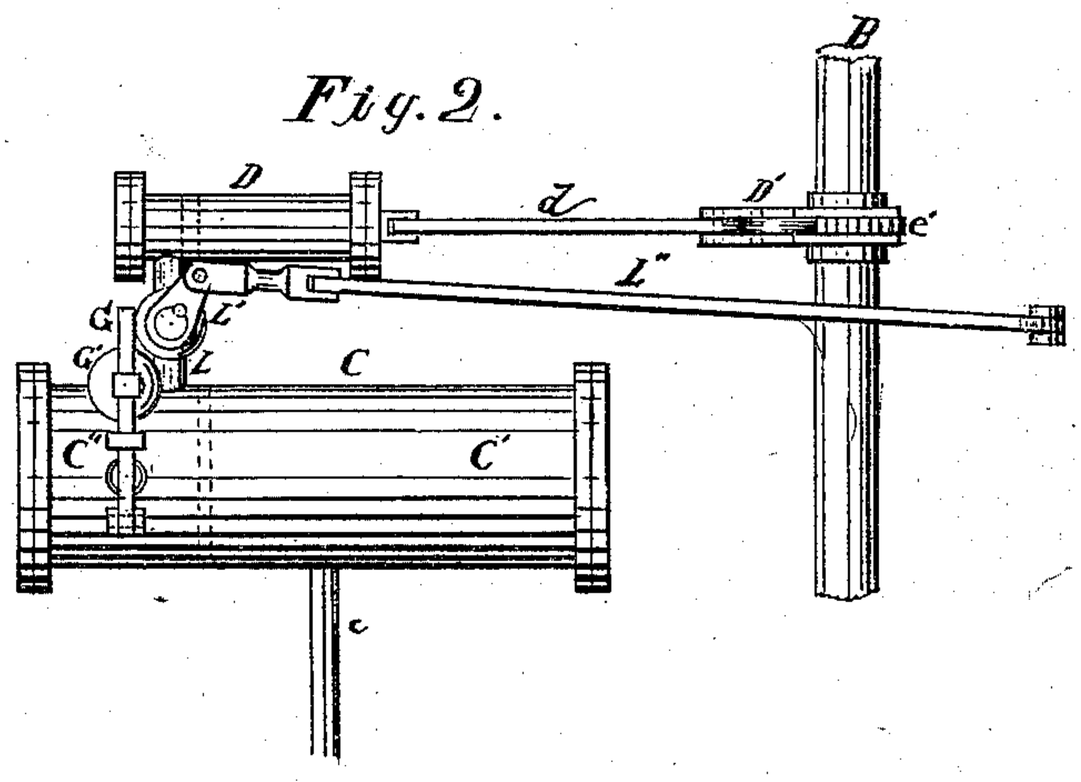


Fig 4

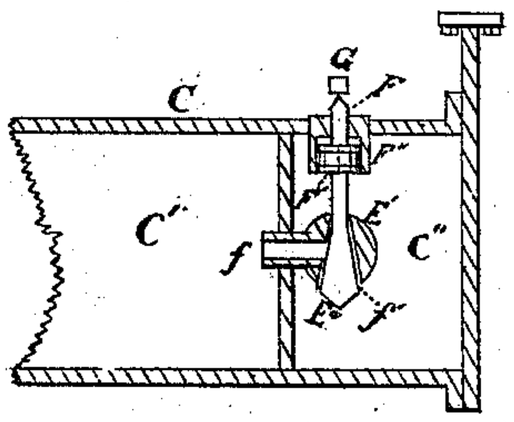
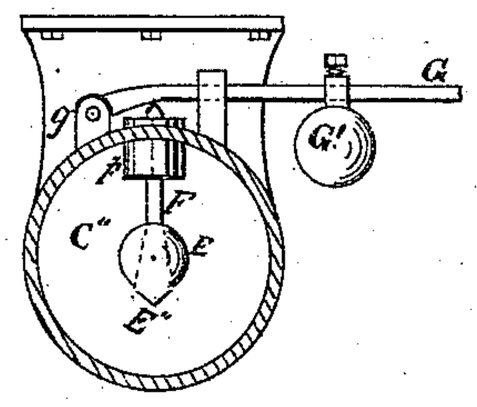


Fig. 3.



Witneses:
C. E. Morrell
F. H. Abbot

Inventor:
Thomas M. Brintnall.

UNITED STATES PATENT OFFICE.

THOMAS M. BRINTNALL, OF NEW YORK, N. Y., ASSIGNOR OF ONE-HALF HIS RIGHT TO JOHN GOODCHILD, OF SAME PLACE.

IMPROVEMENT IN CAR-STARTERS.

Specification forming part of Letters Patent No. **184,059**, dated November 7, 1876; application filed October 3, 1876.

To all whom it may concern:

Be it known that I, THOMAS M. BRINTNALL, of the city and State of New York, have invented an Improved Car-Starter, of which the following is a full, clear, and exact description, reference being had to the accompanying drawing and the letters of reference marked thereon, making part of this specification, in which—

Figure 1 is a longitudinal sectional view. Fig. 2 is a top plan view of the working mechanism. Figs. 3 and 4 are sectional views of the cylinder.

The object of my invention is to provide a practical device by which compressed air can be economically employed as a power in starting street-cars, by the introduction of an automatic valve to govern the supply of air from a main reservoir to a second reservoir, from whence it is taken to operate the starting mechanism at any given pressure requisite to start the car. Also in so constructing the mechanism that the driver may control the same with his foot, while his hands are occupied with the reins and brake.

My invention consists in a reservoir having two compartments or chambers, in the smaller of which is an automatic valve communicating with the main reservoir, which being supplied with highly-compressed air will greatly prolong the cylinder supply at a given pressure through the agency of the self-operating valve. The reservoir and cylinder, being secured to the under surface of the car, are joined by a pipe having a throttle-valve, communicating with the smaller reservoir. A foot spring-piece passes through the platform, and is pivoted to a bell-crank lever, working the throttle-valve by means of a swivel connecting-rod. The cylinder-piston connects with an axle-lever, having a loose pawl working in a circular ratchet secured to the axle.

The construction and operation of my invention are as follows: A is the platform of a street-car. B are the axles, and B′ the wheels, all constructed in the usual manner. C is the reservoir for containing compressed air, and is secured by suitable brackets to the under surface of the car. This reservoir has two compartments, C′ C″. The chamber C′ is charged with compressed air through the conducting-pipe *c*. D is the cylinder, having an ordinary piston-head and piston, and to the latter is pivoted the connecting-rod *d*, pivoted to the axle-lever D′ with pawl *e*, which works in the axle-ratchet *e′* when in operation. E is the automatic device connecting the chambers C′ C″. E′ is the valve-seat in which works the cone-shaped valve E″; but of course this valve may be constructed in various ways to close and open the port *f*. *f′* is the orifice of valve E″. F is the valve-stem, having a suitable expansive head, F′, working in a tube, F″, secured to the upper section of the auxiliary reservoir C″. G is a lever pivoted at *g*, and operating on the valve-rod F. It is provided with a movable weight, G′, to graduate the air-pressure; but of course a spring would accomplish a like result. H is the foot-piece, supported by a spring, *h′*, and secured to a rod, *h*, which passes through the platform A, and connects with a bell-crank lever, H′. L is a tube connecting the chamber C″ with the cylinder D. This tube contains the throttle-valve L′, by means of which the air is allowed to pass into the cylinder D, as required. This throttle-valve L′ is operated by means of the swivel connecting-rod L″, attached to the bell-crank lever H′.

The operation is as follows: Compressed air is passed into the chamber C′ through the tube *c*, the weight G′ being first set to resist any given pressure. When it is desired to relieve the horses of the heavy strain in starting a car, the driver presses his foot on the foot-piece H, opening the throttle-valve L′ by the movement given to the bell-crank lever H′ and the swivel connecting-rod L″. The air will then rush from the auxiliary reservoir C″ into the cylinder D, and start the car, by means of the piston-rod forcing the pawl to engage with the ratchet-rack, and thus turning the axle. As soon as this portion of compressed air is drawn from the auxiliary reservoir C″, the diminution is instantaneously supplied from the chamber C″ through the port *f* until said chamber is full, when the air will strike the expansive head F′ and close the valve, the object being always to keep the auxiliary reservoir C″ full.

What I claim as new, and desire to secure by Letters Patent of the United States, is—

1. In a car-starter, the combination of the reservoir C′ C″, the conical valve E″, the cylinder and piston F′ F″, located inside the reservoir C″, the rod F, and weighted lever G, substantially as and for the purpose described.

2. In a car-starter, the combination of the auxiliary reservoir, the automatic regulator, constructed as described, the starting-engine, the throttle-valve operated by the rod L″, bell-crank lever H′, and the foot-piece H, substantially as and for the purpose set forth.

In testimony whereof I have signed my name to this specification in the presence of two subscribing witnesses.

THOMAS M. BRINTNALL.

Witnesses:

EDWIN JAMES,

J. W. HAMILTON JOHNSON.