2 Sheets—Sheet 1.

J. A. AYRES.

Street-Car.

No. 214,347. Patented April 15, 1879.

Fig. 1.

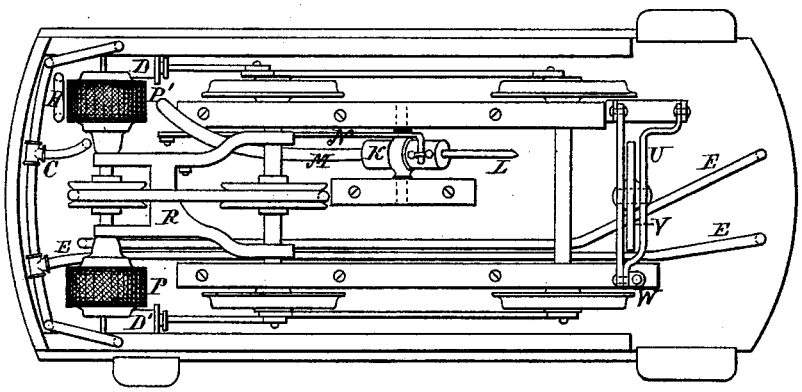
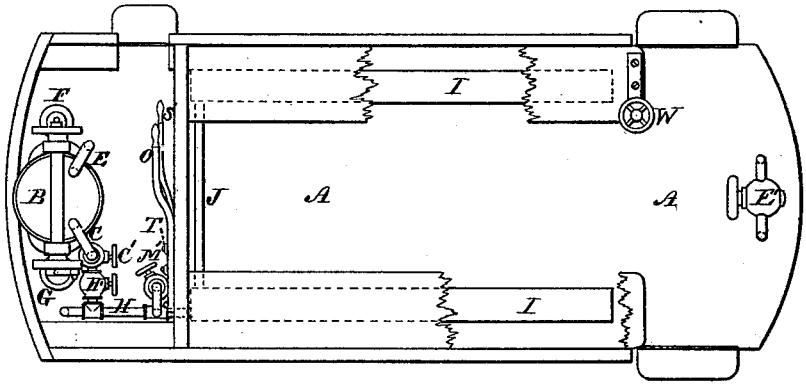


Fig. 2.



Witnesses.

Geo. A. Knapp

Fred S. Brown

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James A. Ayres

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2 Sheets—Sheet 2.

J. A. AYRES.
Street-Car.

No. 214,347. Patented April 15, 1879.

Fig. 3.

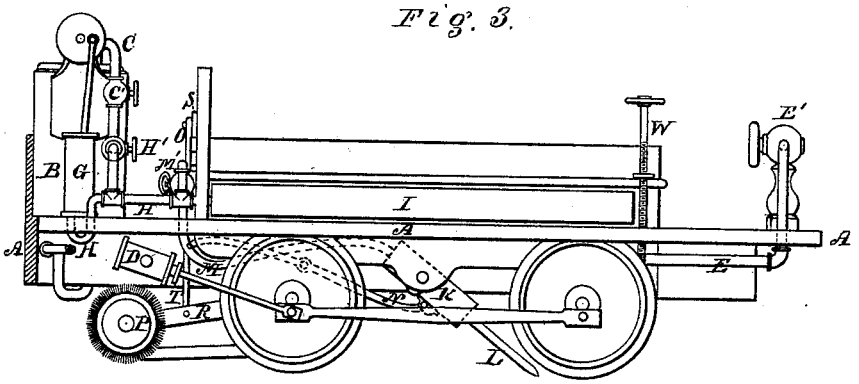


Fig. 4.

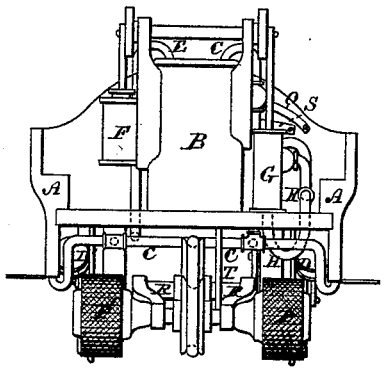
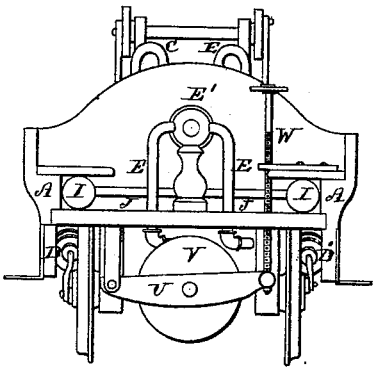


Fig. 5.



Witnesses.

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UNITED STATES PATENT OFFICE.

JARED A. AYRES, OF MYSTIC RIVER, CONNECTICUT.

IMPROVEMENT IN STREET-CARS.

Specification forming part of Letters Patent No. **214,347**, dated April 15, 1879; application filed October 22, 1877.

To all whom it may concern:

Be it known that I, JARED A. AYRES, of Mystic River, in the county of New London and State of Connecticut, have invented certain new and useful Improvements in Street-Cars; and I do hereby declare that the following is a full, clear, and exact description thereof, whereby a person skilled in the art can make and use the same, reference being had to the accompanying drawings, and to the letters of reference marked thereon.

Like letters in the figures indicate the same parts.

My improvements relate to such cars or carriages as are intended to be used upon street tramways or railways, and especially those that employ steam as the motive power.

My invention has for its object the more convenient and economical propulsion and management of such cars, and the avoidance of the use of animal-power in operating them.

My invention consists in the construction and arrangement of the several parts, as will be hereinafter described.

In the accompanying drawings, Figure 1 is a bottom view of a street-car embodying my improvements. Fig. 2 is a top view of the same, having a portion of the seats removed in order to show the condensed-air cylinders beneath them. Fig. 3 is a side view with the outside shell of the car removed, so as to show the interior parts. Fig. 4 is a front view with the shield of the platform removed, so as to show the working parts of the machinery. Fig. 5 is a rear view of the car.

A is the body of the car. B is a boiler, of any ordinary construction, to furnish steam for operating the mechanism. It furnishes steam directly through the pipe C to the two cylinders D and D′, which drive the wheels of the car in the manner usual in locomotive-engines. This pipe is furnished with the cock C′ near the boiler, to regulate the supply of steam.

E is a subsidiary pipe, leading from the boiler through the cock E′ at the other end of the car. It enters the pipe C below the platform, and likewise conveys steam to the cylinders D and D′. This is for the purpose of operating the steam from the rear end of the car by means of the cock E′, when desired.

The boiler B also furnishes steam to a small cylinder, F, which operates an air-pump, G, by means of a revolving shaft, as shown in the drawings, or otherwise in any convenient manner. This air-pump forces air through the pipe H into the reservoirs I I, which are connected by the pipe J, so as to form one chamber.

The proportions of the steam-cylinder F and the air-pump G are intended to be such that the pressure of the compressed air will be much greater than that of the steam in the boiler. About four times as great will be found a convenient proportion, although the exact amount is not essential to my invention.

H′ is a cock in a short connection between the pipes H and C, below the cock C′. This forms a communication to admit the compressed air to the propelling-cylinders D and D′ when desired.

When the cock C′ is open and H′ closed, these cylinders are operated wholly by steam from the boiler, and when the cock H′ is open and C′ closed these cylinders are operated wholly by the compressed air in the reservoir I I.

It is intended that the steam shall be ordinarily sufficient to run the car, and that the compressed air shall furnish a greater power, to use occasionally when needed—as in starting, ascending steep grades, &c.

The compressed-air reservoir is kept full at the desired pressure by using the steam for pumping air whenever the car is stopped or the full power of the boiler is not employed in propelling the car. In this manner steam is utilized that would otherwise be blown off and the power wasted.

In order to apply the power of the driving-cylinders D D′ effectively when the ordinary wheels of the car slip on account of ice or snow, or for any other reason, I provide the friction-wheels P P′, connected by an axle and suspended at the forward end of the frame R, the rear end of which is pivoted upon the axle of the forward driving-wheels, upon which it swings, so that the forward end can be elevated or depressed, as desired. The axles of the wheels P P′ and the ordinary driving-wheels of the car are connected by a friction-band, as shown in the drawings, so that they shall turn in the same direction as the driving-

wheels. The circumference of the wheels P P′ is made of stout wire brush, to give the required friction and traction upon the rail.

The wheels P P′ are raised and lowered, and pressed down upon the ground or track, by means of the lever-handle S, which is operated from the platform of the car. This lever S is connected with the swinging frame R by means of the rod T. Any other common device—such as a screw—can be used to give a greater pressure upon the traction-wheels P P′, if desired.

What I claim as my invention is—

1. The combination, for a street-car motor, of a steam-engine, an air-pump, and a reservoir for compressed air, constructed and arranged so that the reservoir shall carry compressed air at a much greater pressure than that of the steam in the boiler, as a reserve to use when greater power is required than can be furnished by the steam, the compressed air and the steam being used alternately in the same driving-cylinders, substantially as herein described.

2. The wire brush traction-wheels P P′, acting upon the rails, and connected with the axle of the driving-wheels by means of the frame R and a suitable friction-band, in combination with a mechanism for raising and pressing them down upon the rails, substantially as herein described.

J. A. AYRES.

Witnesses:
THEO. G. ELLIS,
GEORGE F. STONE.