

(No Model.)

3 Sheets—Sheet 3.

H. E. HUNT.
CAR CONTROLLING SYSTEM.

No. 555,376.

Patented Feb. 25, 1896.

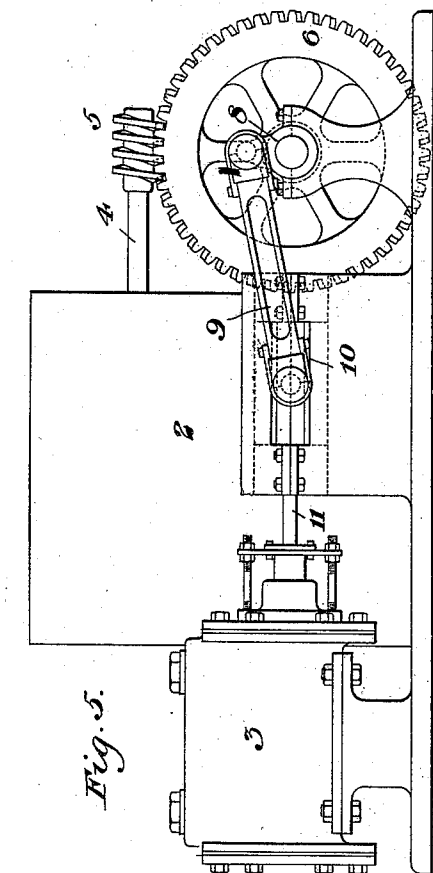


Fig. 5.

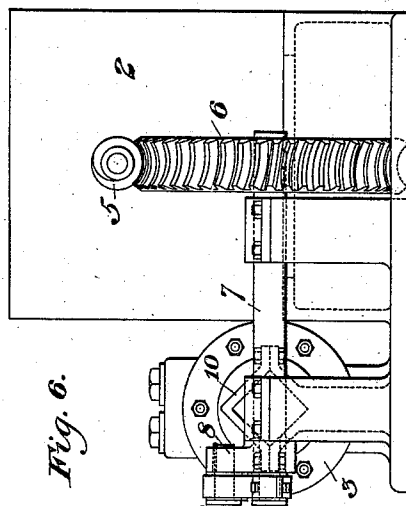


Fig. 6.

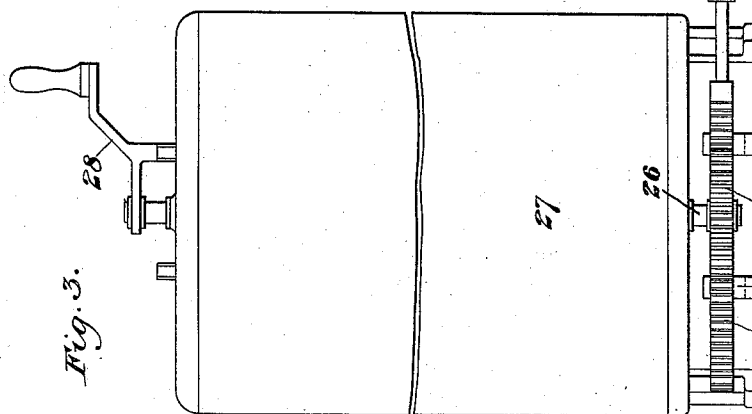


Fig. 3.

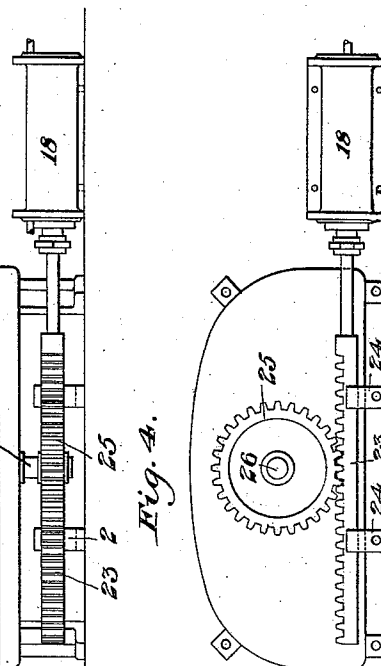


Fig. 4.

WITNESSES

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UNITED STATES PATENT OFFICE.

HERBERT E. HUNT, OF PITTSBURG, PENNSYLVANIA.

CAR-CONTROLLING SYSTEM.

SPECIFICATION forming part of Letters Patent No. 555,376, dated February 25, 1896.

Application filed October 28, 1895. Serial No. 567,080. (No model.)

To all whom it may concern:

Be it known that I, HERBERT E. HUNT, of Pittsburg, in the county of Allegheny and State of Pennsylvania, have invented a new and useful Improvement in Car-Controlling Systems, of which the following is a full, clear, and exact description, reference being had to the accompanying drawings, forming part of this specification, in which—

Figure 1 is a general perspective view of a cab supplied with my improved regulating system. Fig. 2 is a general plan view of the brakes and their connections. Fig. 3 is a side elevation, and Fig. 4 a bottom plan view, of the rheostat and its operating-cylinder. Fig. 5 is a side elevation, and Fig. 6 an end view, of the pump-operating motor and its connections; and Figs. 7 and 8 are cross-sectional views of the five-way controlling-valve in different positions.

Like symbols of reference indicate like parts in each figure.

My invention relates to the air-brake systems employed upon cars, and more especially those used upon street-railways, and is designed to afford an improved system for controlling the air-brakes and the car-motors employed therein.

In the drawings, 2 indicates an electric motor, which is shown as placed in the cab, though it may be placed beneath the car, together with the air-pump 3, which it drives. The shaft 4 of the motor is provided with a worm 5, intermeshing with a worm-wheel 6 upon a shaft 7, which shaft is provided with a crank 8 and connecting-rod 9, actuating a cross-head 10, carried at the end of the piston-rod 11 of the air-pump 3.

The connections I show between the motor and the pump are especially advantageous, as they permit the use of an electric motor running at a high speed, and which for that reason could not be employed with the usual connections.

From the pump the pipe 12 leads to the air-reservoir 13, an automatic pressure-regulator 14 being placed in the pipe, so that when the pressure in the reservoir rises above a certain determined limit the air passes into the open air and back-pressure is removed from the pump. From the air-reservoir the sup-

ply-pipe 15 leads to the five-way valve 16, which controls the air passing to and actuating the piston of the brake-cylinder 17, and also the piston of the controller-operating cylinder 18. A pipe 19 leads from the valve 16 to the brake-cylinder, and from this valve lead the pipes 20 and 21 to opposite ends of the cylinder 18, and also pipes 22 and 32 to the open air. The piston of the cylinder 18, as shown in Figs. 3 and 4, is provided with a rack 23 moving in suitable guides 24 and intermeshing with a toothed wheel 25 mounted upon the controller-shaft 26. The rheostat or controller 27 may be of any desired form or construction, and its shaft is provided with the usual hand-lever 28, by which the controller may be independently operated.

The piston of the brake-cylinder is connected to the system of brake-levers, as shown in Fig. 2, to which system the hand-wheel 29 is also connected by a chain 30 and rod 31.

The operating-valve is so arranged that movement in one direction admits air to the cylinder 18, and this actuating the controller turns on the current which drives the car. Movement of the valve in the opposite direction first admits air to the opposite end of the cylinder 18, thus throwing off the current, and then admits air to the brake-cylinder, setting the brakes and stopping the car. It is thus impossible for the operator to set the air-brakes before cutting off the current, this being one of the advantages of using a single valve to control the brake-cylinder and also the controller-operating cylinder, which combination I consider myself the first to devise, and therefore wish to cover, broadly, no matter what the character of the controller.

The position of the valve when in complete release is shown in Fig. 7, the air from the pipe 19 passing to the outlet-pipe 22, and the air from the pipes 20 and 21 being released into the pipe 32.

Fig. 8 shows the position for starting and moving the car, the air passing from the pipe 15 through the valve to the pipe 20 and to the controller-actuating cylinder, the brake still being on partial release.

The advantages of my invention, in addition to those above pointed out, reside in the fact that in crowded districts, where stops are

frequent and a pump actuated from the axle might not be operated sufficiently to keep up the necessary pressure, the pump-motor may be operated at will, independently of the movement of the car, thus keeping the pressure in the reservoir always at the desired point. The controlling-handle for the pump-motor is placed within easy reach of the motorman, and the whole system is simple and compact.

I claim as my invention—

1. The combination with a car having a brake-actuating cylinder, of a cylinder arranged to actuate the power-controller, and
15 a valve arranged to control the air passing to

each of said cylinders; substantially as described.

2. The combination with a car having an air-reservoir, a brake-cylinder, and a controller-operating cylinder, of a single five-way valve to which the reservoir and cylinders are connected, said valve having suitable release-ports for the cylinders; substantially as described.

In testimony whereof I have hereunto set
my hand.

HERBERT E. HUNT.

Witnesses:

C. BYRNES,
G. I. HOLDSHIP.