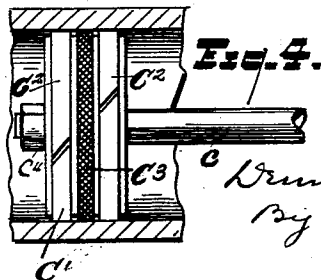
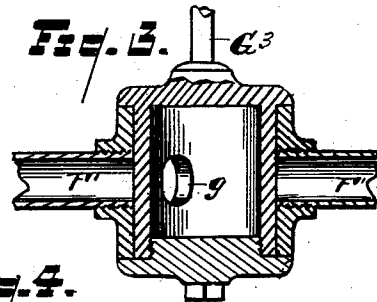
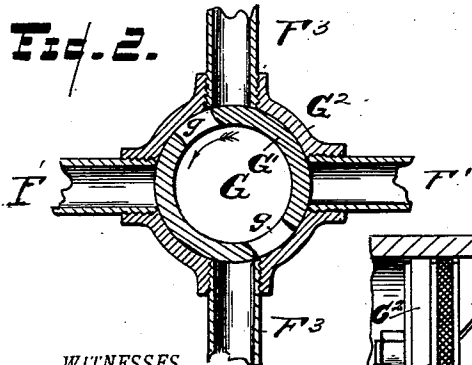
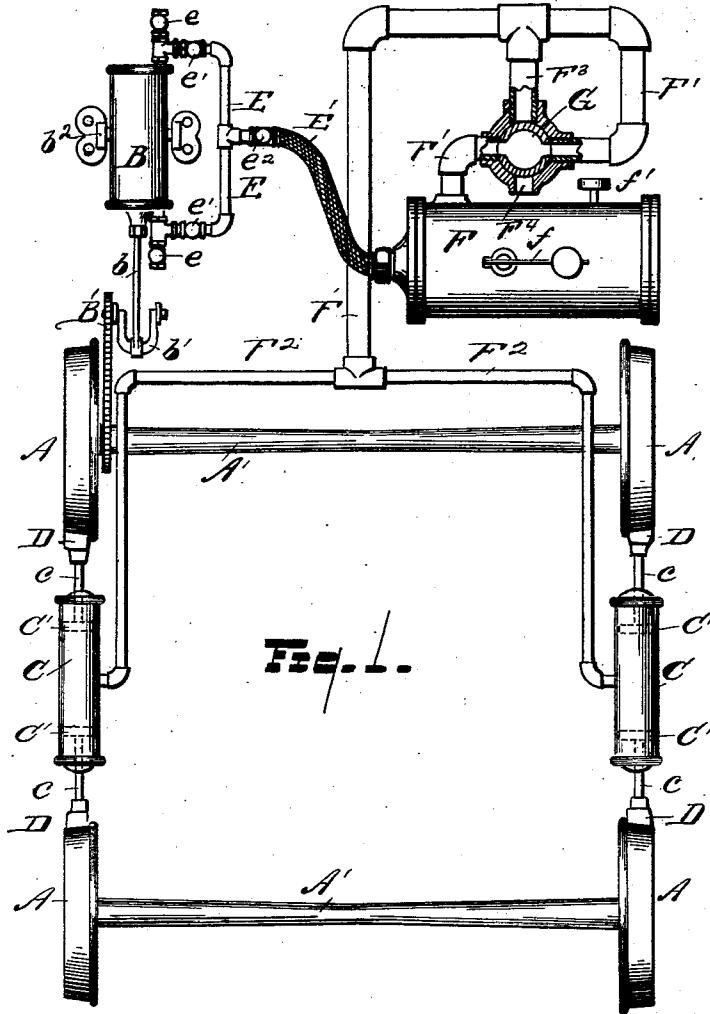


(No Model.)

D. BEEMER.
AIR BRAKE FOR STREET CARS.

No. 564,863.

Patented July 28, 1896.



WITNESSES
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AIR-BRAKE FOR STREET-CARS.

SPECIFICATION forming part of Letters Patent No. 564,863, dated July 28, 1896.

Application filed March 16, 1896. Serial No. 583,364. (No model.)

To all whom it may concern:

Be it known that I, DENNIS BEEMER, a citizen of the United States, residing at Detroit, county of Wayne, State of Michigan, have invented a certain new and useful Improvement in Air-Brakes for Street-Cars; and I declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it pertains to make and use the same, reference being had to the accompanying drawings, which form a part of this specification.

My invention relates to air-brakes for street-railway or other cars, the object of which is to automatically charge a storage-cylinder with air under compression and provide means whereby the air from said storage-cylinder may be caused to enter a cylinder adapted to set the brakes when so desired.

Figure 1 is a plan view showing the arrangement of my improved means for braking cars. Fig. 2 is a horizontal sectional view through the valve, by which communication is afforded between the compression-cylinder and the brake-cylinders and by which the air is allowed to exhaust from the latter. Fig. 3 is a vertical section through the same. Fig. 4 is a sectional view showing a piston employed in the pump and brake cylinders and the manner of packing the same.

In the drawings, A are the car-wheels, and A' their axles. B is a pump hung on trunnions b^2 . The pump piston-rod b is connected with the crank-shaft b' , on which is mounted the sprocket-wheel, over which the sprocket-chain B' runs, establishing connection with the sprocket-wheel mounted on the axle A'.

C C are the brake-cylinders, preferably mounted between the wheels, as shown, and C' are the pistons traveling in said cylinders and provided with piston-rods c , connected with the brake-shoes D.

F is the air-compression cylinder, and E and E' are the pipes through which the air is forced into the compression-cylinder F by means of the pump B. Power being applied to the pump by means of the sprocket-chain connection with the sprocket-wheel on the car-axle, air is drawn in one end of the cylinder until the extreme limit of the stroke

given to the piston is reached. Then, as the piston returns, the check-valve e automatically closes and the check-valves e'' and e^2 open and air is forced into the compression-cylinder F, air being at the same time drawn into the other end of the cylinder B through the check-valve e . As the piston returns, the check-valve e'' closes and the valves e' and e^2 open, permitting the air to be forced into the compression-cylinder F on the return stroke.

F' is a pipe communicating through the valve G with the pipes F², which in turn lead to the brake-cylinders C.

f is a safety-valve mounted on the compression-cylinder F, which may be set to blow off at any desired pressure.

f' is a pressure-gage so located as to be in range of the vision of the motorman.

F³ is an exhaust-pipe connecting the pipe F' with the valve G and adapted to communicate with the exhaust-port F⁴ when the valve G is turned. The valve G is constructed with an outer shell G² and an inner shell G', having ports g , said inner shell being adapted to rotate by means of the valve-stem G³, operated by a lever under control of the motorman.

The piston C' is provided with expansion-rings C², and between these rings is a disk of rubber or other suitable packing C³ to afford suction. By turning the nut C⁴, the rings C² are brought together, compressing the rubber packing C³ and giving it greater or less suction. As the air enters the brake-cylinder C between the pistons C', forcing them in opposite directions, there is no necessity for stuffing-boxes where the piston-rods pass out through the ends of the cylinder.

The operation of my device is as follows: When it is desired to set the brakes, the valve G is turned so as to afford communication between the compression-cylinder F and the brake-cylinders C C for the passage of the air. The air being under compression forces the pistons C' C' in opposite directions, causing the brake-shoes D to come into frictional contact with the wheels A. The brakes may be applied as suddenly or as slowly as desired. If it is necessary to make a sudden stop, the operator turns the valve G so as to make a

free passage between the compression-cylinders and the brake-cylinders. He can check the speed of the car gradually by slowly turning the valve G and allow only a small outlet for the air under compression. When it is desired to release the brakes, the valve G is turned so that the ports *g* connect the pipe F³ with the exhaust-port F⁴.

Having thus described my invention, what I claim is—

1. In an air-brake system for street or other cars, a pump, inlet-ports in the ends of said pump provided with check-valves, a compression-cylinder, means for conducting the air from said pump to the compression-cylinder, check-valves to hold the air under compression, brake-cylinders having pistons traveling in opposite directions and connected directly with the brake-shoes, a four-way valve, two ports of said valve being arranged diametrically opposite so that a direct passage may be established between the compression-cylinder and a pipe leading to the brake-cylinders; the exhaust-ports being ar-

ranged at right angles to said ports, whereby the passage of air may be established between the compression-cylinder and the brake-cylinders, and the air exhausted from the latter without reversing the valve, substantially as described.

2. In an air-brake system for street or other cars, a four-way valve, two ports of said valve being arranged diametrically opposite so that a direct passage may be established between the compression-cylinder and a pipe leading to the brake-cylinders, the exhaust-ports being arranged at right angles to said ports, whereby communication may be afforded between the compression-cylinder and the air-brake cylinder, and the air exhausted from the latter without reversing the valve, substantially as described.

In testimony whereof I sign this specification in the presence of two witnesses.

DENNIS BEEMER.

Witnesses:

SAMUEL E. THOMAS,
G. M. DAVIS.