

(No Model.)

G. S. LEE.
AIR BRAKE.

No. 557,514.

Patented Mar. 31, 1896.

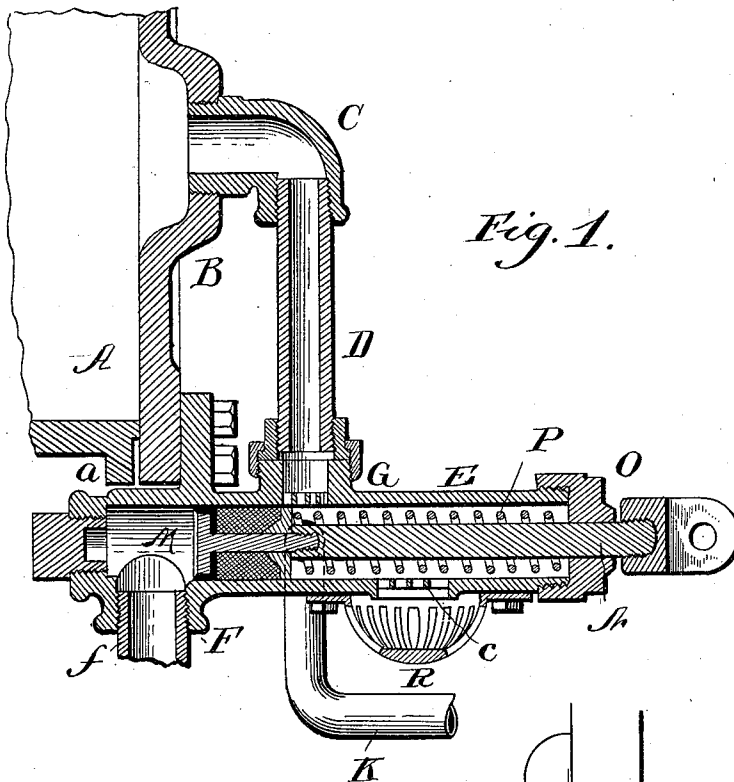


Fig. 1.

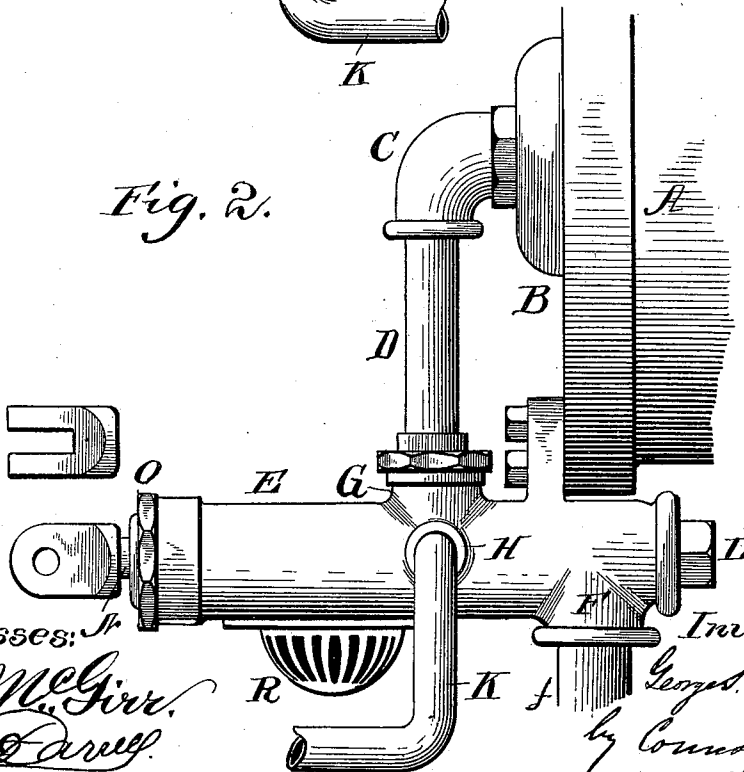


Fig. 2.

Witnesses:

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AIR-BRAKE.

SPECIFICATION forming part of Letters Patent No. 557,514, dated March 31, 1896.

Application filed February 19, 1896. Serial No. 579,873. (No model.)

To all whom it may concern:

Be it known that I, GEORGE S. LEE, a citizen of the United States, residing at Hawthorne, in the county of Passaic and State of New Jersey, have invented certain new and useful Improvements in Air-Brakes; and I do hereby 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 appertains to make and use the same.

My invention has relation to air-brakes for railway-cars, and particularly for the cars of cable or electric railways, and has for its object the provision of novel means for controlling the supply of air to or from the brake or jam cylinder and rendering the supply and exhaust valve or valves operable from the platform of the car.

My invention has for its further object the provision of means for controlling the operation, simultaneously or practically so, of the piston of a main brake-cylinder on a motor-car and of supplementary brake-cylinders on one or more trailer-cars.

In the accompanying drawings, Figure 1 is a central longitudinal sectional view of part of a brake-cylinder embodying my invention. Fig. 2 is a plan view.

In the embodiment of my improvement in brake-cylinders, illustrated in the drawings, A designates one of the cylinder-heads, having a centrally-bored and screw-threaded boss B, in which is fitted an elbow-pipe connection C.

D is a pipe leading from said elbow to a cylindrical valve-chamber E, which is bolted on or otherwise secured to the cylinder-head A or flange *a*. The chamber E is formed with the lateral ports F G H, having screw-threaded bosses, and with a number of lateral air-escape openings *c* in its wall. To the port F is connected a pipe *f* leading from the air-reservoir containing compressed air. To the port G is connected the pipe D, while to the port H is connected a branch K leading to the train-pipe. A threaded plug L is inserted in the open correspondingly-threaded rear end of the chamber E, and this may, when desired, be removed and the air-inlet pipe *f*

connected, the port F being then closed by the plug.

Within the chamber E is fitted a suitably-packed air-tight piston-valve M, the rod or stem N of which passes through the cap O, closing the forward end of the chamber, and is connected to a rod or chain leading to the platform of the car on which is mounted the valve-operating lever. A strong spiral spring P encircles the piston-valve stem and tends to force the valve toward the rear end of the chamber, its normal position being at a point between the inlet-port F and the port G leading to the brake-cylinder. When the valve is in this position the brake-cylinder is exhausting, the air then escaping in front of the valve and issuing through the opening *c*. The openings *c* are covered by a cup-shaped muffler R formed with numerous apertures S, through which the escaping distributed air issues without hissing or other disagreeable noise.

When it is desired to admit air to the brake-cylinder to propel the piston and operate the brakes, the valve is pulled forward through the medium of the chain and platform-lever until it passes the port G, whereupon the air under pressure passes from the inlet-pipe *f*, by way of the valve-chamber, into and through the pipe D.

The port G is formed of a series of small openings and the distance which the valve is moved regulates and controls the amount of air admitted to the brake-cylinder. The ports being under the control of the motorman or driver the operation of the brakes may be gradual and under a limited acting force or may be sudden and under full force as in emergency-stops.

Having described my invention, I claim and desire to secure by Letters Patent—

1. In air-brakes, the combination with a brake-cylinder and an air-reservoir, of a chamber E, a reciprocating valve M, arranged and operating therein, a valve-stem N, to which said valve is attached, and a spring pressing against said valve, an inlet F, from the air-reservoir, leading into said chamber back of said valve, an outlet-pipe D, leading

from said chamber in front of the valve into the brake-cylinder, a pipe K leading from the said chamber to a separate brake-cylinder and an escape-opening in front of said valve
5 and of both the pipes D and K, substantially as described.

2. A valve for air-brakes, consisting of a chamber, a piston arranged in said chamber and having an air-tight packing surrounding
10 the piston-head and filling the bore of the chamber diametrically, an inlet-port at a point beyond the limit of movement of said piston, an outlet-port leading from the side of the chamber and opening in the path of
15 the piston-head, an exhaust-opening, and a

spring normally holding said piston between the inlet and outlet ports, the latter having a stem projecting through the end of the chamber and adapted for connection to an operating-lever, the piston being so constructed and
20 arranged as to permit of a graduated opening of said outlet-port without opening communication with the exhaust-port, substantially as described.

In testimony whereof I affix my signature 25
in presence of two witnesses.

GEORGE S. LEE.

Witnesses:

THOS. A. CONNOLLY,
ANTHONY A. CONNOLLY.