(No Model.) 2 Sheets—Sheet 1.

I. P. CARNES.

STEAM CAR BRAKE.

No. 338,032. Patented Mar. 16, 1886.

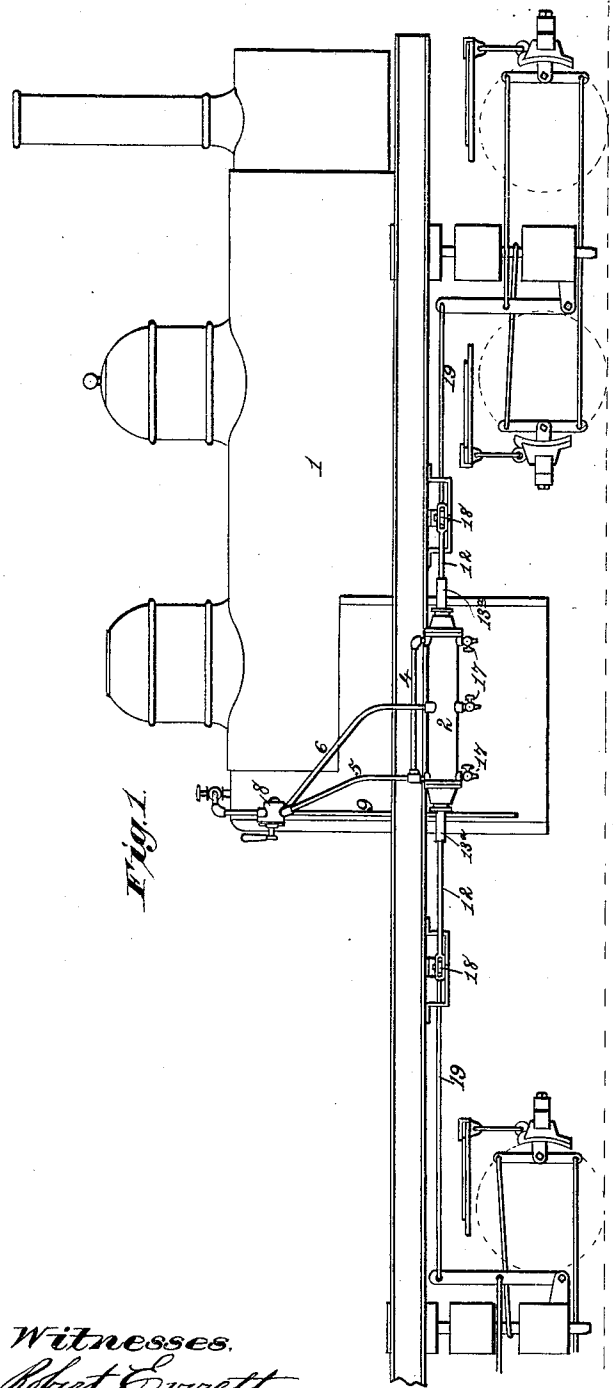

Fig. 1.

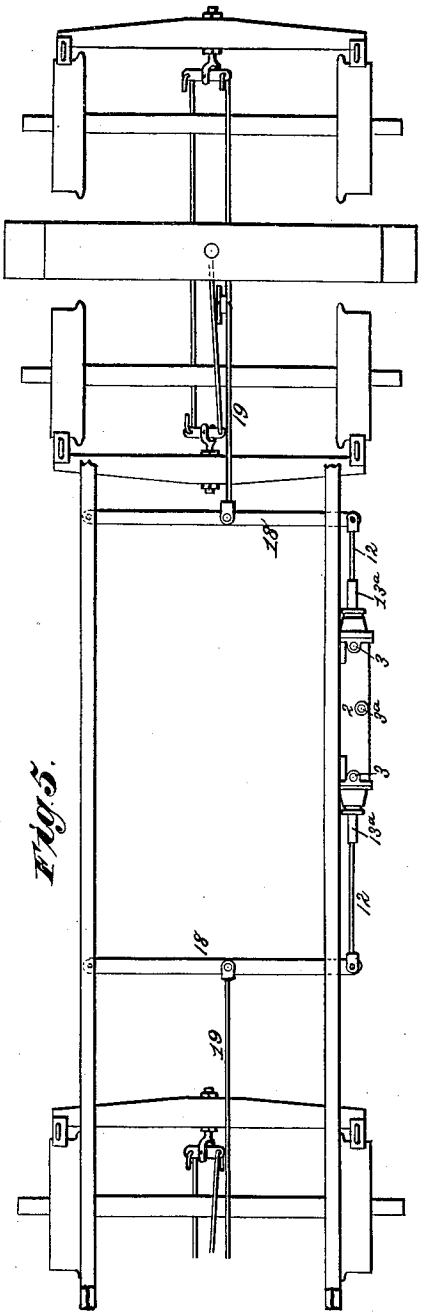

Fig. 5.

Witnesses.
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Jo. L. Coombs

Inventor:
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By James L. Norris.
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(No Model.) 2 Sheets—Sheet 2.

I. P. CARNES.

STEAM CAR BRAKE.

No. 338,032. Patented Mar. 16, 1886.

Fig. 4.

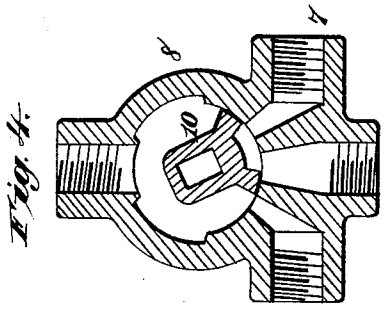


Fig. 3.

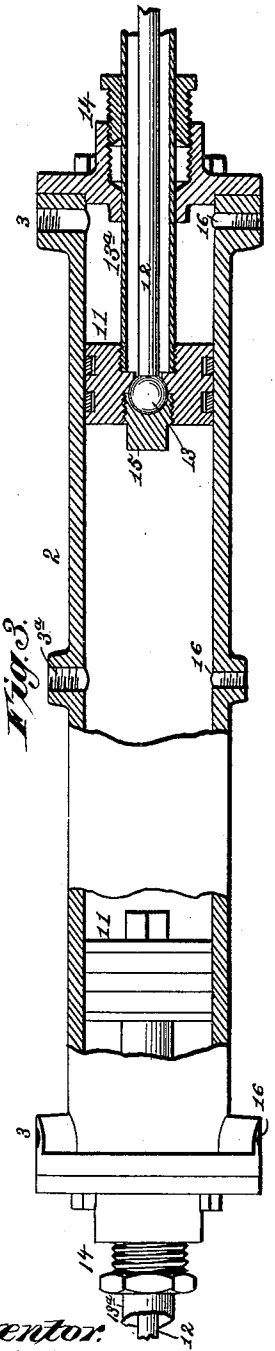
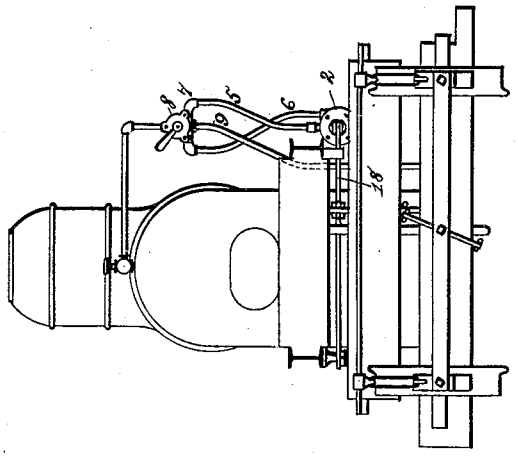


Fig. 2.



Witnesses.
Robt Ewett.
Jos. L. Coombs

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UNITED STATES PATENT OFFICE.

IRA P. CARNES, OF LIMA, OHIO, ASSIGNOR TO THE LIMA MACHINE WORKS, OF SAME PLACE.

STEAM CAR-BRAKE.

SPECIFICATION forming part of Letters Patent No. 338,032, dated March 16, 1886.

Application filed November 12, 1885. Serial No. 182,609. (No model.)

To all whom it may concern:

Be it known that I, IRA P. CARNES, a citizen of the United States, residing at Lima, in the county of Allen and State of Ohio, have invented new and useful Improvements in Steam Car-Brakes, of which the following is a specification.

My invention relates to steam-brakes for railway-cars, and the purpose thereof is to simplify and improve the construction of the same, where the operation of the brakes is rendered more perfect and is brought under more complete control.

The invention consists in the several novel features of construction and combinations of parts hereinafter fully set forth, and specifically pointed out in the claims annexed to this specification.

Referring to the accompanying drawings, Figure 1 is a side elevation illustrating the application of my brake mechanism. Fig. 2 is an end elevation of Fig. 1. Fig. 3 is an elevation, partly in longitudinal section, of the brake-cylinder enlarged. Fig. 4 is a detail view of the three-way valve by which the operation of the brake mechanism is controlled. Fig. 5 is a plan view of Fig. 1 with the boiler removed.

In the said drawings the reference-numeral 1 designates the locomotive-boiler and its immediate connections, which are of the usual construction.

Upon the frame of the engine is mounted, in any suitable manner, a cylinder, 2, having ports 3 at or near each end and a central port, 3^a. To the former is coupled a pipe, 4, supplying both ports and taking steam from the boiler through a pipe, 5. A separate pipe, 6, supplies steam to the port 3^a, and the latter pipe, as well as the pipe 5, is connected with a coupling, 7, communicating with a valve-chamber, 8, said coupling being formed with a central passage to receive an exhaust-pipe, 9.

Within the valve-chamber is placed a rotary valve, 10, whereby steam may be thrown into both ends of the cylinder 2 simultaneously or may be exhausted from the ends and thrown into the center.

Within the brake-cylinder are arranged two piston-heads, 11, each having a piston-rod, 12, which passes through the cylinder-head and is connected with the piston by a ball-and-socket joint, 13, whereby a vibratory movement is permitted the rod.

Surrounding the piston-rod 12 is a section of piping, 13^a, tapped into the piston-head and packed through a stuffing-box, 14. This pipe is concentric with the piston-rod, and of sufficient diameter to permit its vibratory movement, while its length is sufficient to permit a full stroke of each piston-head, whereby support and guidance are given to the latter, notwithstanding the lateral or vibratory movement or twisting of the rod.

The connection is made with the piston-head by means of a screw-plug, 15, inserted centrally in the front face, the socket being formed partly in the piston, whereby the parts may be readily and quickly united or removed.

Escape-openings 16 are formed at each end and in the center of the cylinder, and petcocks 17 are placed therein to allow the removal of moisture from condensation or other causes.

The piston-rods are connected to levers 18, and these in turn to brake-rods 19, connected to the brake-heads in the usual manner.

The brakes are set by throwing steam into the ends of the cylinder by means of the pipes 4 and 5, and they are released by exhausting through the pipes 5 and 9, and at the same time throwing steam into the cylinder through the pipe 6.

What I claim is—

1. The combination, with the brakes of a railway-car, of a steam-cylinder having ports at its ends and a port at its center, the tubular sections packed through the opposite ends of the cylinder and connected with pistons in the latter, the piston-rods connected with the brakes and extending through the tubular sections, and having ball-and-socket connections with the pistons to permit the rods to move laterally in all directions in the tubular sections, a steam-boiler, a three-way valve-casing connected with the boiler and having an exhaust-passage, 9, a pipe, 4, connecting the ends of the cylinder, a pipe, 5, connected with the aforesaid pipe and with the valve-casing, a pipe, 6, connecting the latter with the center port of the cylinder, and a rotary valve in

said casing to throw steam in at both ends of the cylinder, or in at the center to exhaust at both ends, substantially as described.

2. The combination, with a steam-cylinder having the piston-heads and the tubular sections packed through the heads of the cylinder, the ports at the end of the cylinder, and the ports at the center of the same, of a steam-boiler, a three-way valve-casing connected with said boiler and having an attached exhaust-pipe, 9, a pipe, 4, connecting the ends of the cylinder, a pipe, 5, connected with said pipe 4 and with the valve-casing, a pipe, 6, connected with the valve-casing and with the upper center port, and a rotary valve arranged in said casing to throw steam in at both ends of the cylinder, or in at the center to exhaust at both ends, substantially as described.

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

IRA P. CARNES.

Witnesses:
R. C. EASTMAN,
H. S. PROPHET.