

W. M. HENDERSON.
Hydraulic or Air Car-Brakes.

No. 143,980.

Patented Oct. 28, 1873.

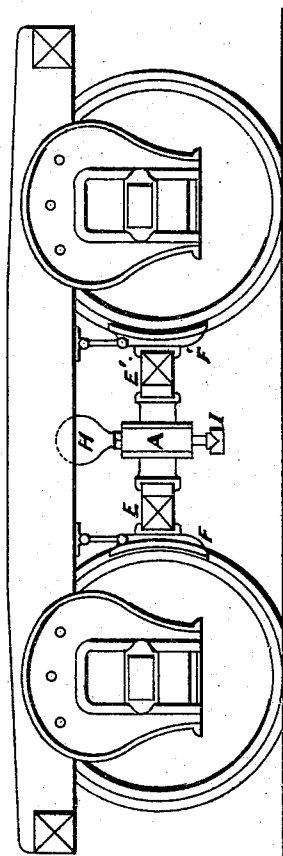
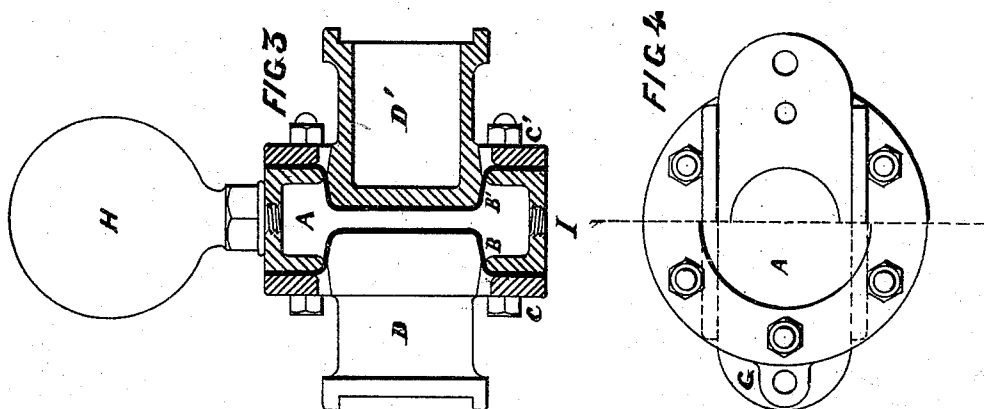


FIG 1

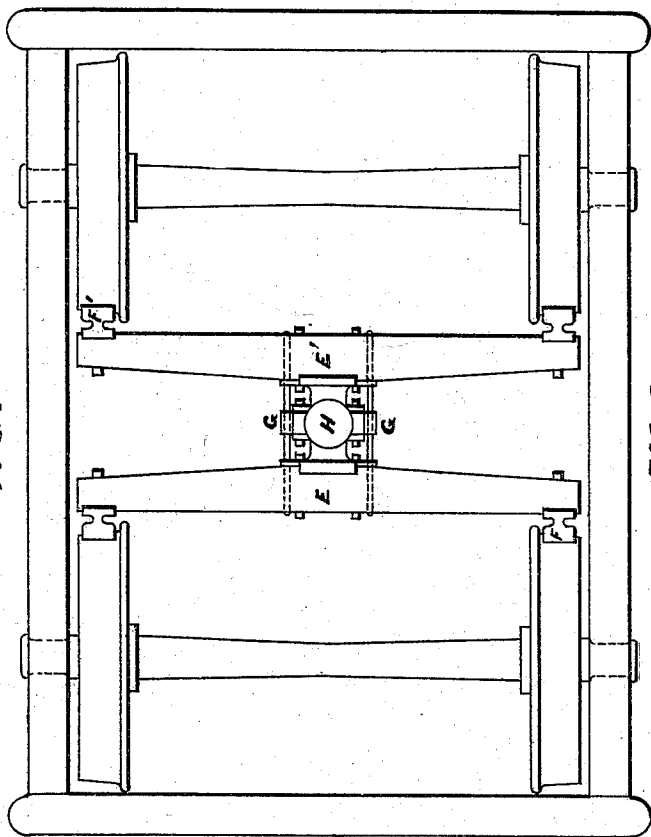


FIG 2

WITNESSES.

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WILLIAM M. HENDERSON, OF PHILADELPHIA, PENNSYLVANIA.

IMPROVEMENT IN HYDRAULIC OR AIR CAR-BRAKES.

Specification forming part of Letters Patent No. **143,980**, dated October 28, 1873; application filed September 22, 1873.

CASE B.

To all whom it may concern:

Be it known that I, WILLIAM M. HENDERSON, of Philadelphia, Pennsylvania, have invented certain Improvements in Hydraulic or Air Car-Brakes, of which the following is a specification:

My invention relates to that class of railroad-car brakes operated by fluid pressure and controlled by the engineer from the locomotive; and consists in the application of flexible diaphragms to fluid-containing vessels, with suitable plungers or rams directly connected to the brake-beams.

The invention reduces the number of parts and effects a saving in first cost, and of trouble and expense in subsequent maintenance. The diaphragms are specially advantageous, as compared with pistons and cylinders, in excluding dust, avoiding leakage, and dispensing with all packing.

I will now proceed to describe particularly and exactly the manner in which my said invention is to be made and operated, referring, in so doing, to the drawing annexed and the letters of reference marked thereon.

Figure 1 is a side elevation of a four-wheeled truck with this invention applied, and Fig. 2 is a plan of the same. Figs. 3 and 4 show an enlarged drawing of the brake-operating device, the former being a side section, and the latter an end view with one-half of the ram removed, showing the center chamber or drum.

The same letters of reference apply to the same parts in the several figures.

A represents a chamber, whose ends are formed of flexible diaphragms B and B', secured by flanges C and C' bolted securely to the chamber A, making air-tight joints. The edges of the openings in the chamber A and flanges C C' should be carefully rounded, so as not to chafe or break the diaphragms. Against each of the diaphragms B and B' are placed plungers or rams D D', whose outer ends are attached to the brake-beams E and E', bearing the brake-shoes F F'. G G are guides passing through suitable lugs on the vessel A and outer ends of the rams D D', into the brake-beams E E', supporting the vessel A

and rams D D' in proper position. Fluid pressure is admitted or relieved through a tube connected at the bottom I of the vessel A.

When pressure is applied the diaphragms B B' become inflated, and press the rams D D' outward, and, by means of the brake-beams E E' and shoes F F', the brakes are applied. When the fluid pressure is relieved the diaphragms collapse, and the brake-shoes F F' no longer being pressed to the wheels, they are free to rotate.

When an inelastic fluid is employed to operate the brakes, I add an air-chamber, H, to the top of the vessel A, the function of which is to moderate the action of the brake-shoes F F' against the wheels to accommodate any imperfections in circular form consequent either on defective construction or unequal wear. When an elastic fluid is employed, then the air-chamber is unnecessary.

The vessel A may be used with a single diaphragm and ram, in which case the vessel A must be connected with a pipe at I, of sufficient elasticity or flexibility to permit of motion in the vessel A in a direction opposite to the motion of its ram.

When the brakes are applied to the outer sides of the wheels, instead of the inner sides, as shown in the drawing, motion may be transmitted by rods reaching from the ram-heads to the brake-beams, without the intervention of levers.

Having thus described my said invention, what I claim as new and useful therein is—

1. The combination of dish-shaped diaphragms, with rams or plungers directly connected with the brake-beams and brake-shoes, substantially as and for the purpose described.

2. The combination of the air-chamber H with the vessel A, dish-shaped diaphragms B, and rams D, having brake-beams E directly connected therewith, substantially as and for the purpose set forth.

WILLIAM M. HENDERSON.

Witnesses:

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JOHN B. DEVINE.