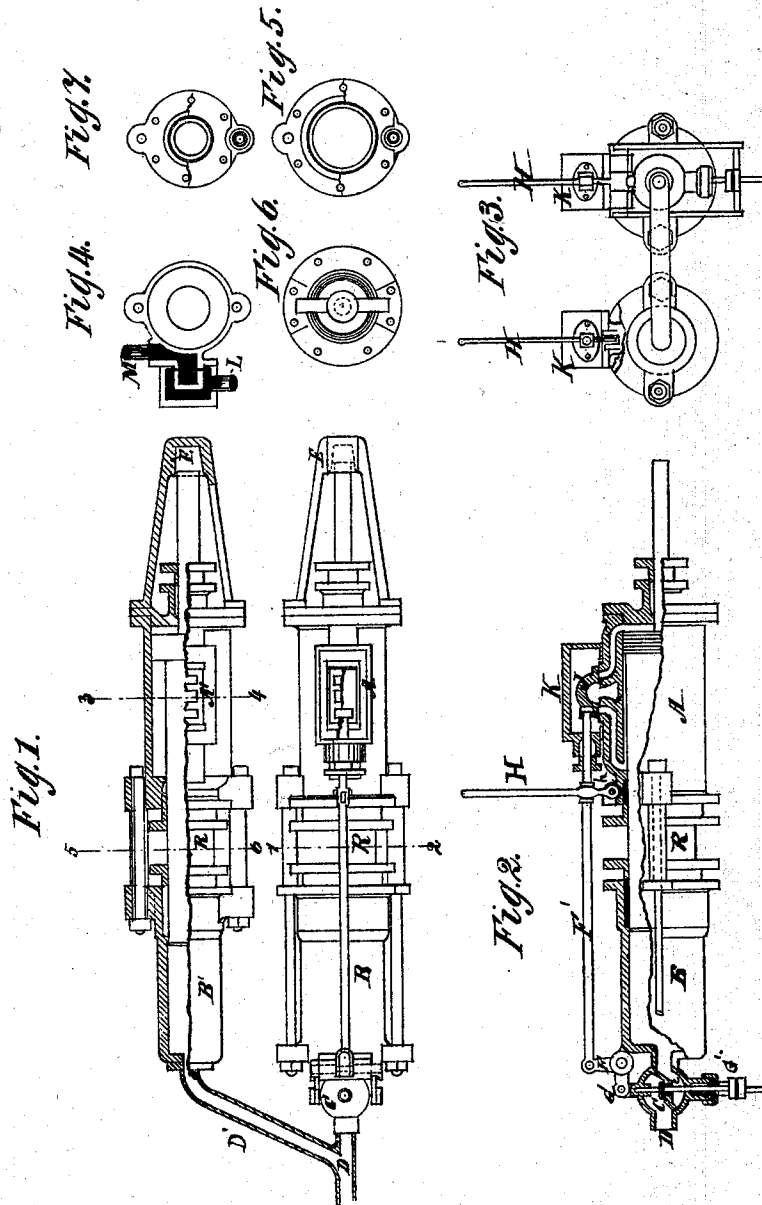


J. F. TAYLOR.
Hydraulic Car-Brakes.

No. 144,578.

Patented Nov. 11, 1873.



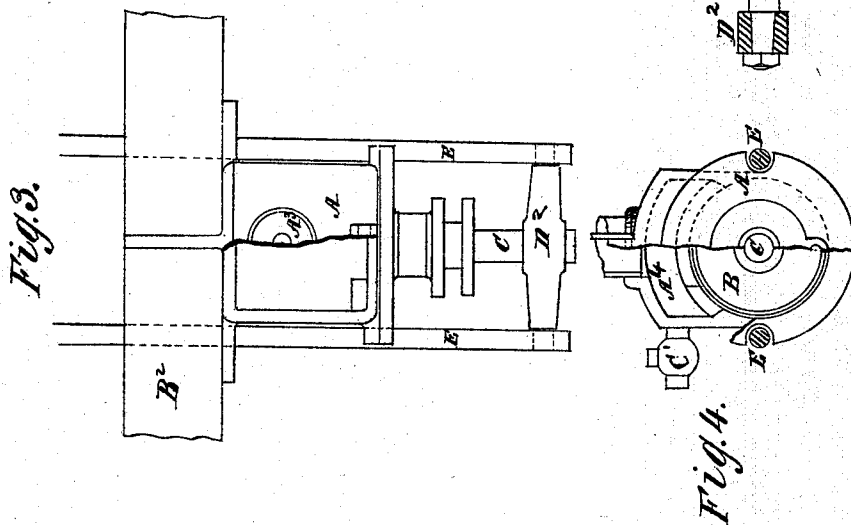
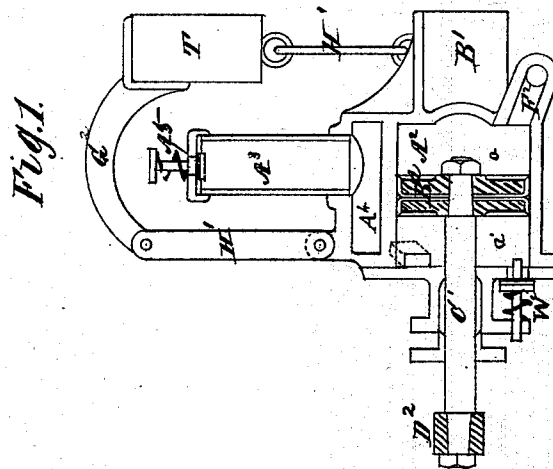
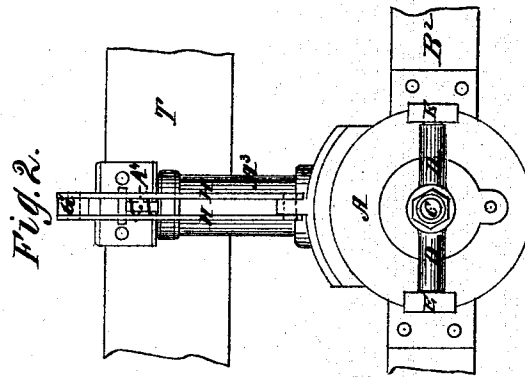
Witnesses:
G. Martiny.
Salon C. Hemon

Inventor:
John F. Taylor
Per *Wm V B*
Attorneys.

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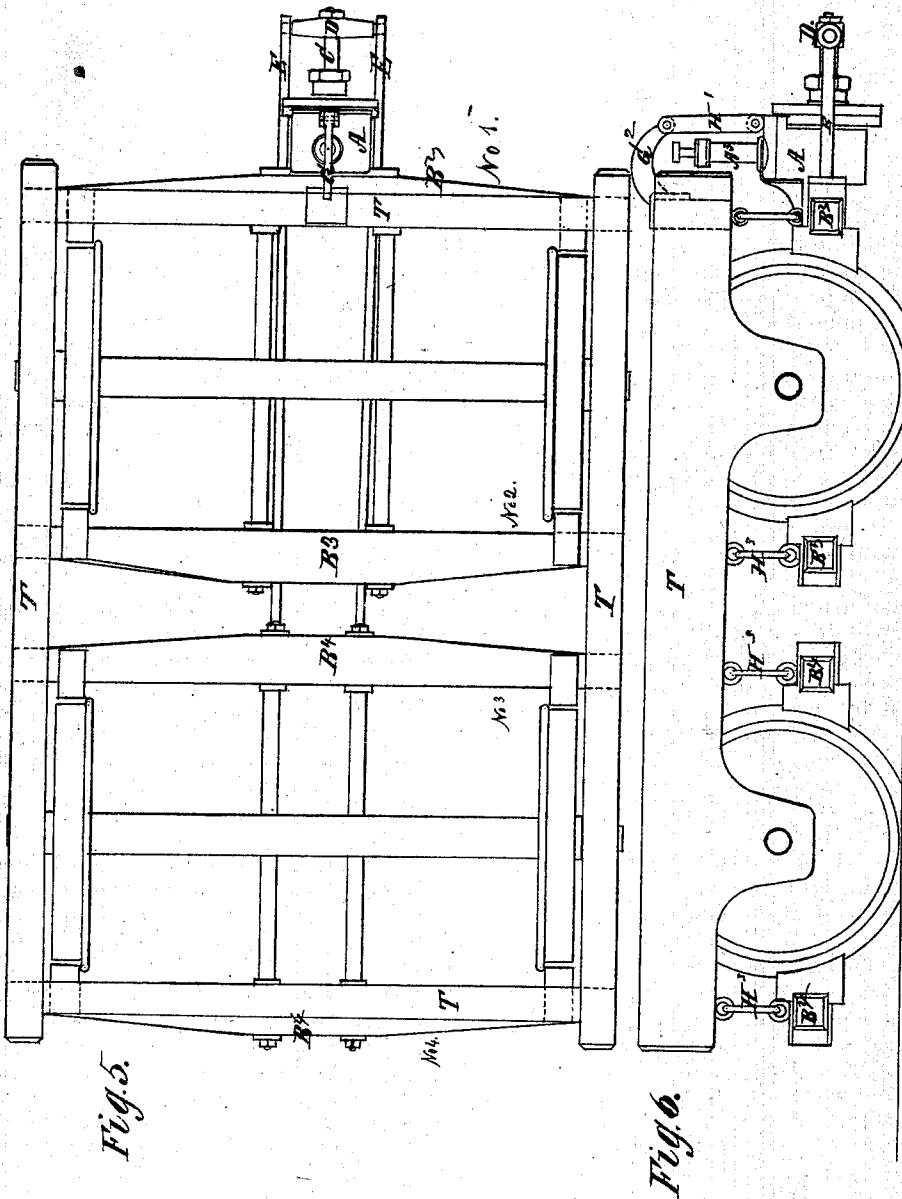
Witnesses:
G. Mathys.
Salon Chemon

Inventor:
John F. Taylor
Per *Wm. B.*
Attorneys.

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Witnesses:
G. Matting.
Salon C. Kemm

Inventor:
John F. Taylor
Per *Wm. C.*

Attorneys.

UNITED STATES PATENT OFFICE

JOHN F. TAYLOR, OF CHARLESTON, SOUTH CAROLINA.

IMPROVEMENT IN HYDRAULIC CAR-BRAKES.

Specification forming part of Letters Patent No. **144,578**, dated November 11, 1873; application filed June 17, 1873.

To all whom it may concern:

Be it known that I, JOHN F. TAYLOR, of Charleston, Charleston county, in the State of South Carolina, have invented a new and Improved Hydraulic Brake; and I do hereby declare that the following is a full, clear, and exact description of the same, reference being had to the accompanying drawing forming a part of this specification.

The invention will first be fully described, and then pointed out in the claims.

In Sheet 1, Figure 1 is a plan; Fig. 2, a side elevation, partly in section; Fig. 3, a front elevation. Figs. 4, 5, and 7 are sections, and Fig. 6 a rear elevation, of the various parts connected with my invention.

In Sheets 2 and 3, Fig. 1 is a sectional; Figs. 2 and 4, front elevations, and Fig. 3 a plan view.

In Sheet 1 of drawing, A A¹ are steam, and B B¹ water, cylinders, through each pair A B and A¹ B¹ of which reciprocates a long piston or ram, R, while the ends of cylinders B B¹ are connected by two conjoined tubes, D D'. C is a check-valve in tube D, provided with a rod, c, that is moved from below by the cross-bar G¹, arms G, and lever F. In the steam-chest K is a slide-valve, J, which is connected with the lever F by a rod, F¹, through which passes a lever, H, pivoted at h. By moving this lever to the right, both steam and water or steam and check valves are simultaneously opened.

In Fig. 4, L may represent a suitable steam-inlet, and M an exhaust-pipe. The tube D is connected by hose with pipe F² of cylinder A², (shown in Sheets 2 and 3 of drawing,) whereinto and in space a, on one side of piston B², the water is forced, while in the space a', on the opposite side, is air. G² is a bracket, from which the cylinder A² is suspended by links H' H'. C' is a rod, that connects piston B², through cross-head D and rods E E, with the brake-shoe frame B⁴ B⁴, while the cylinder A³ is itself rigidly attached to the brake-shoe frame B³ B³, these frames being suspended from the truck-frame T in the usual manner.

The operation is as follows: The lever H being moved to the right and the valve C J opened, the water in chamber B is forced

through the pipe D, the intermediate hose, and pipe F², so as to fill the side a of cylinder A², and then the steam is admitted to cylinder A¹. This forces water through pipe D', and exerts the desired hydraulic pressure to cause the brake-bars to bring their shoes against the wheels. The reversal of lever H relieves the brakes.

As, however, there may be occasions when the pipe or connecting-hose may be broken or disconnected, I provide for this contingency as follows: On the side a' of piston air is forced, by a suitable apparatus, through a valve, A⁵, and chambers A³ A⁴, while a surplusage thereof may find its exit through an opening covered by spring-valve W.

Having thus described my invention, what I claim as new, and desire to secure by Letters Patent, is—

1. The combination of the steam-cylinder A, having the usual steam-chest, piston, and parts, and the water-cylinder B, having the outlet-tube, with the same ram R, so that the introduction of steam in one cylinder results in the expulsion of water from the other.

2. The combination of the cylinder A B and A¹ B¹, provided with rams R R, and connected by tubes D D', as and for the purpose set forth.

3. The combination of the valve C of water-outlet tube D and the steam slide-valve J of chest K, connected by intermediate mechanism, and operated by the same lever H, for the purpose specified.

4. The combination of the cylinders A A¹, rams R R, and cylinders B B¹, connected by tubes D D', with the hydraulic engine A² B², to operate the brake mechanism of a car or train of cars, arranged as shown, and for the purpose described.

5. The combination, with cylinders A A¹, of engine A² B² and the air-chambers A³ A⁴, having valve A⁵, to enable an air-forcing apparatus to operate the brake at the times and in the manner described.

JOHN F. TAYLOR.

Witnesses:

SOLON C. KEMON,
T. D. DURBIN OURAND.