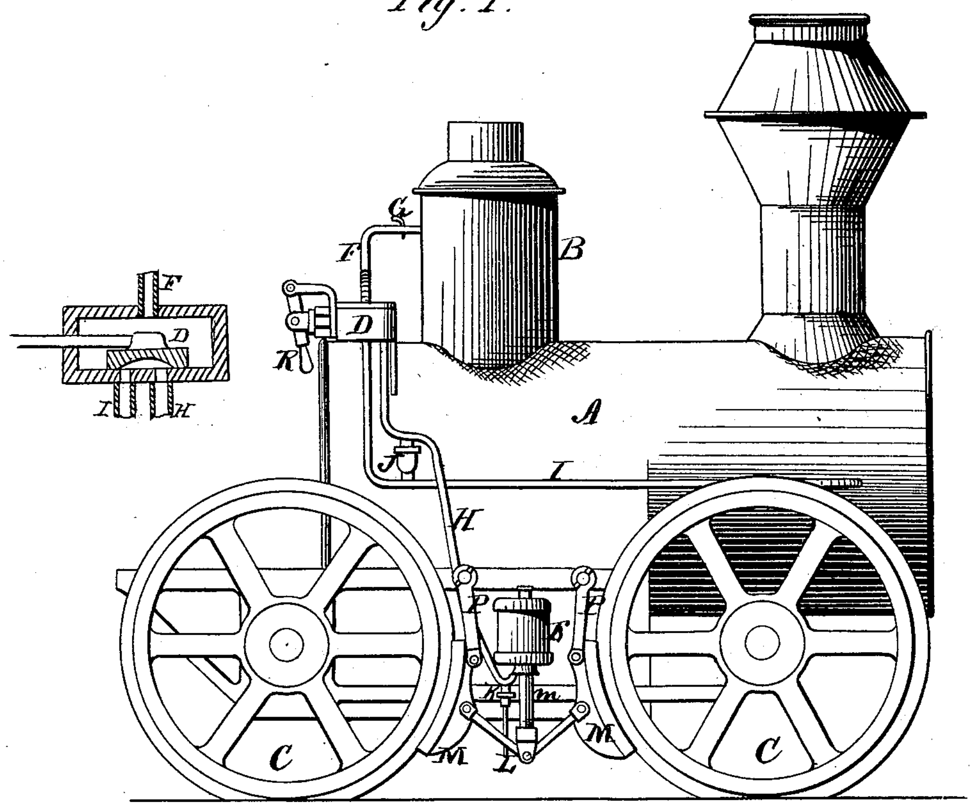
L. B. SALISBURY.

Steam-Brakes for Locomotives.

No. 166,895. Patented Aug. 17, 1875.

Fig. I.



WITNESSES
Robert M. Barr.
E. S. Nottingham

INVENTOR
Leonard B. Salisbury
By Leggett & Leggett Attorneys.

L. B. SALISBURY

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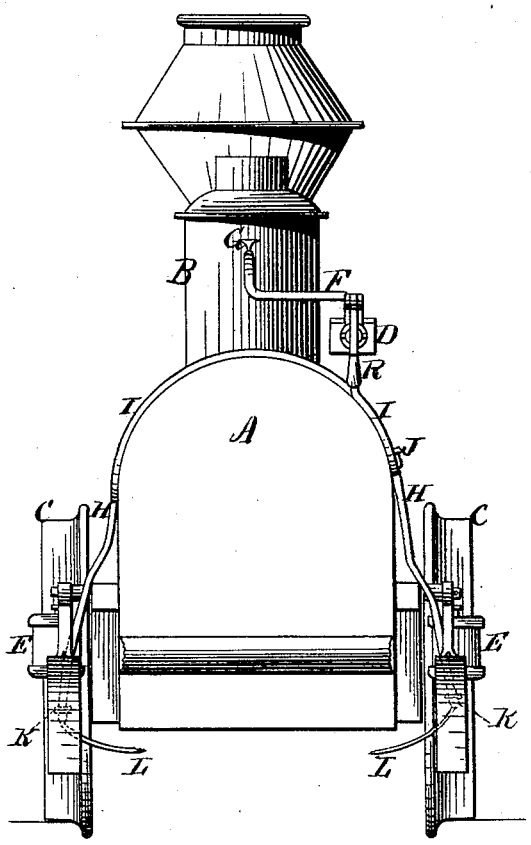
Fig. 2.



WITNESSES
Robert M. Pawl.
E. F. Nottingham

By

INVENTOR
Leonard B. Salisbury

Leggett & Leggett
Attorneys.

UNITED STATES PATENT OFFICE.

LEONARD B. SALISBURY, OF MOUNT VERNON, ILLINOIS, ASSIGNOR OF ONE-HALF HIS RIGHT TO EDWARD F. WINSLOW, OF ST. LOUIS, MISSOURI, AND GEORGE S. WINSLOW, OF MOUNT VERNON, ILLINOIS.

IMPROVEMENT IN STEAM-BRAKES FOR LOCOMOTIVES.

Specification forming part of Letters Patent No. **166,895**, dated August 17, 1875; application filed July 16, 1875.

To all whom it may concern:

Be it known that I, LEONARD B. SALISBURY, of Mount Vernon, in the county of Jefferson and State of Illinois, have invented certain new and useful Improvements in Railroad-Locomotive Steam-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 pertains to make and use it, reference being had to the accompanying drawings, which form part of this specification.

My invention relates to railroad-locomotive steam-brakes.

In the drawings, Figure 1 is a side elevation of a locomotive-engine provided with my invention. Fig. 2 is a rear view of same.

My invention consists in certain combinations and arrangements of devices and appliances, all constructed and adapted to operate substantially as and for the purposes hereinafter more fully set forth and claimed.

Referring to the drawings, A is the boiler of an ordinary locomotive-engine; B, the steam-dome, and C C the driving-wheels of same. D is a steam-chest, fitted with a slide-valve, with admission and exhaust ports and hand-lever for moving valve. E E are the cylinders operating the brakes, fitted with self-adjusting piston-packing, and placed in any convenient position between the drivers C C. F is a pipe for admission of steam from dome B to steam-chest D. G is a stop-cock placed in pipe F to shut off steam, when desired. H H are steam-pipes leading from steam-chest D to brake-cylinders E E. I is an exhaust-pipe from steam-chest D to smoke-box or ash pan, or elsewhere, as may be desired. J is a safety or over-pressure valve, adjusted to any desired pressure, and held closed by a spiral spring placed in pipe H, and connected to exhaust-pipe I. K K are drain-valves placed in the lowest parts of steam-pipes H H, and L L are waste-pipes attached to valves K K. M M are the brake-heads, connected to the piston-rod *m* of cylinders E E by suitable levers. P P are hangers or arms attached to frames of engines, to hold brakes M M in position. R is a hand-lever attached to slide-valve in steam-chest D.

The operation of the brake is follows:

Steam being raised in the engine, the cock G is opened, which admits steam from dome B to steam-chest D, and the brakes are then ready for use. On moving the lever R, which is attached to the slide-valve in the steam-chest D, a steam-port, to which is attached the steam-pipe H, is opened, and steam passes through pipes H H to the lower ends of cylinders E E. The pistons of the cylinders being fitted with self-adjusting packing, are forced upward by the pressure of steam on their lower sides, and the brakes being connected to the piston-rods by a suitable arrangement of levers, are, by the same movement, forced outward and against the faces of drivers C C, and remain in contact as long as the pressure is allowed to remain in the pipes and cylinders. To release the brakes the lever R of steam-chest D is moved to its original position, whereby an exhaust-port in the slide-valve is thrown over both the steam-pipe H and the exhaust-pipe I, and the steam in the cylinders is free to return through pipe H, and escape through exhaust-pipe I to smoke-box or elsewhere, as may be desired, and, on the pressure on the pistons being removed, the pistons, by their own weight, return to their original positions in the lower part of the cylinders, thereby releasing the brakes, as is apparent. To provide for the escape of the water from condensation the pipes H H are so arranged as to have a downward inclination from the steam-chest D to a point at or near the cylinders E E, and in this lowest point are placed the drain-valves K K. These valves are held open by spiral springs, and are so adjusted that, on steam being admitted to pipes H, the pressure will close the valves and prevent the escape of steam; but on steam being shut off, the springs will open the valves and allow any steam or water which may remain in the pipes or cylinders to escape through the valves and waste-pipes L L. To provide for a uniform pressure at all times in the cylinders, and enable the proper leverage to be calculated, a

safety or over-pressure valve, J, is placed in steam-pipe H, and so adjusted as to remain closed until the pressure in the boiler exceeds the pressure which is desired on the brakes; but as soon as the pressure in the boiler exceeds the pressure desired, the valve—which is held in position by a spiral spring, the same as the waste-valves—will open and allow the over-pressure to escape through the exhaust-pipe I.

The brake heads and shoes are made in any desired manner, and are attached to the frames of the engine in any convenient manner, varying according to the construction of the engine on which the brake is placed. The steam-chest D is placed in any convenient position to be within reach of the engineer, and the cylinders are attached either to the boiler or the frames of the engine, in any convenient place, over or between the drivers.

By this construction and arrangement a simple and effective means is secured for operating the brakes of locomotive-engines by steam taken direct from the boiler, and applied to the brakes without the intervention or use of pumps and reservoirs, as is the usual custom, and the brakes may be easily and quickly operated, and either gradually or directly applied.

By the employment or use of the safety or over-pressure and waste valves the parts are insured from bursting, and a uniform, smooth, and positive action is secured.

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

1. In a locomotive steam-brake, the over-pressure valve J, placed in inlet-pipe H, which communicates from steam-chest to brake-cylinder, connected to and communicating with exhaust-pipe I, as and for the purposes described.

2. The combination, with the supply and exhaust pipes H I, communicating through the over-pressure valve J, of the slide-valve D, steam-drum B, and brake-cylinders E, all arranged as described, substantially as and for the purposes set forth.

3. The combination and arrangement of the exhaust-pipe I, leading from the slide-valve to the smoke-box of the locomotive, with the over-pressure valve J and supply-pipe H, substantially as and for the purposes specified.

In testimony that I claim the foregoing I have hereunto set my hand this 12th day of July, 1875.

LEONARD B. SALISBURY.

Witnesses:

THOS. GOWENLOCK,

GEO. S. WINSLOW.