S. L. WALKINSHAW.

VALVES FOR STEAM CYLINDERS.

No. 194,941. Patented Sept. 4, 1877.

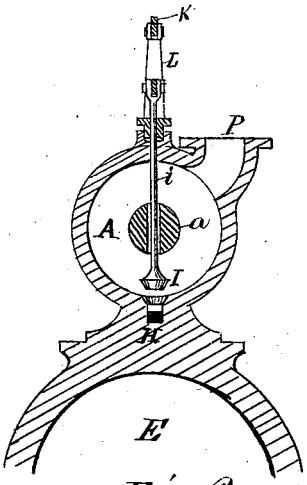

Fig. 2.

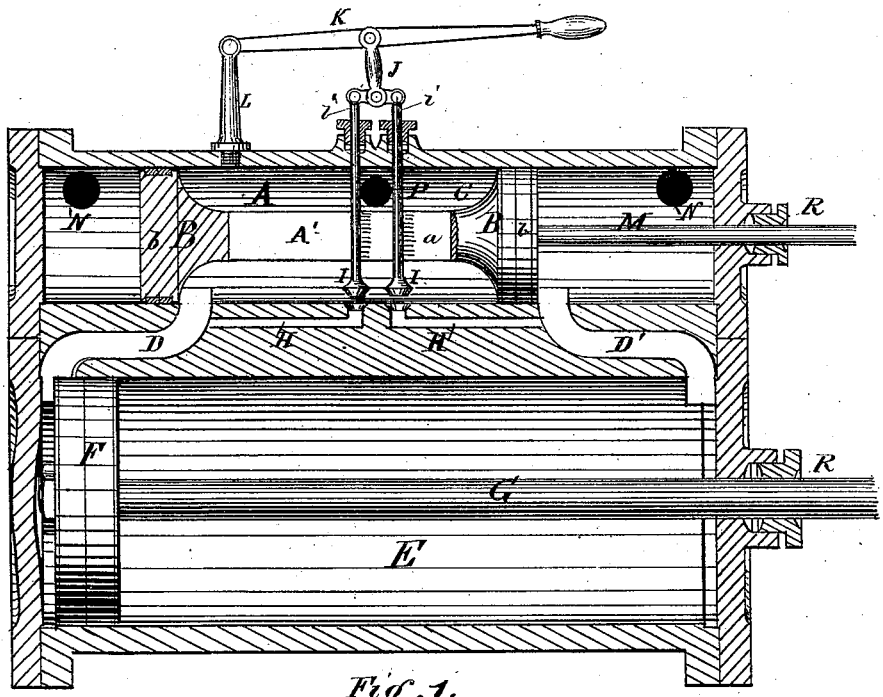

Fig. 1.

Witnesses

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UNITED STATES PATENT OFFICE.

SAMUEL L. WALKINSHAW, OF ALLEGHENY, PENNSYLVANIA, ASSIGNOR OF ONE-HALF HIS RIGHT TO JAMES H. LINDSEY, OF SAME PLACE.

IMPROVEMENT IN VALVES FOR STEAM-CYLINDERS.

Specification forming part of Letters Patent No. **194,941**, dated September 4, 1877; application filed December 4, 1876.

To all whom it may concern:

Be it known that I, SAMUEL L. WALKINSHAW, of the city of Allegheny, in the county of Allegheny and State of Pennsylvania, have invented a new and useful Improvement in Slide-Valves of Steam-Engines, and "bleeders" for engines of that class, which improvement is fully set forth in the following specification, reference being had to the accompanying drawing.

The object of my invention is to provide a slide-valve engine with a device by which the steam can be allowed to blow through the engine when it is standing still, so as to keep it warm, relieve the boiler, and keep the feed-water hot, technically termed, on poppet-valve engines, a "bleeder."

This I accomplish in a slide-valve engine by the combination of a cylindrical steam-chest, A, a peculiar shaped valve, A′, having two heads, B and B′, steam-inlet port P, and two outlet-ports, N N′, steam-passage ways or cylinder-ports D and D′, bleeder-valves I I, having the rods *i i* J, and hand-lever K, or their mechanical equivalents, and the steamways H H′, as is shown in detail in the longitudinal vertical section, Figure 1, and the transverse section, Fig. 2, of the drawing, of which the following is a more particular description.

The steam-chest A is cylindrical in shape, having a suitable flange for connection with the cylinder. At each extreme end on one side are the outlet or exhaust ports N N′, and on one side in the center is the inlet or receiving port P. The steam-passage ways or cylinder-ports D D′, which connect the chest A with the cylinder E, are located toward the center of the chest from the ports N N the distance of about the thickness of a valve-head.

The valve A is constructed similar in shape to that of an ordinary "thread-spool," and consists of a shaft, *a*, with a head on each end B and B′. These heads are turned up true, and of a relative diameter to the bore of the chest A, and are packed with ordinary spring-packing *b b*. The shaft portion of the valve *a* has a longitudinal vertical slot through it from one head to the other, and the length of the valve is made to correspond to the cylinder-ports D and D′.

At each side of the longitudinal center of the chest, and in a line with steamways D D′, as is shown in Fig. 1, H H′ are small steam-passage ways, which connect with cylinder-ports D D′. They are closed by the valves I I. These valves are attached to valve-rods *i i*, which pass up through the slot in shaft *a*, and out of the top of chest A, where they connect with each other and the rod J, which, in turn, is connected to the hand-lever K, having its fulcrum in the standard L. These valves I I, in connection with the rods, lever, and steamways H H′, constitute what is termed a "bleeder."

The cylinder E, piston F, and piston-rod G are all constructed the same as is usual in slide-valve engines. R R R are stuffing-boxes. S is the usual stem to the slide-valve A′.

Operation: When the steam is admitted to the chest A it enters through the port P in the center, and exerts its pressure equally on all sides of the valve-shaft *a* and the internal portions of the valve-heads B B′, which confine it. The valve being, as shown in Fig. 1, at the left end of the chest A, the steam will pass into the cylinder through D′, and force the piston F to the opposite end of the cylinder, when, the valve A′ being reversed, (by the usual cam motion,) D′ is closed from the steam by the valve-head B′ passing to the inner side of it, thereby opening it to the exhaust-port N′, and also admitting the steam to the cylinder through the passage-way D.

When from any cause the engine is standing still, the hand-lever K is raised, drawing the valves I I from their seats, and thereby opening the passage-ways H H′; the steam is then admitted to the chest A, and so circulates or blows through the ways H H, into the cylinder, and out of one of the exhaust-ports.

Having thus described my invention and its operation, what I claim, and desire Letters Patent for, is—

1. The combination of the balanced valve having a vertical slot, and the valve-rods *i i*, substantially as and for the purpose set forth.

2. The valves I I, rods *i i* J, lever K, fulcrum L, and the steam-passage ways H H′, all combined and operating as described, for the object specified.

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