(No Model.)

J. W. STOKES.

BALANCED SLIDE VALVE.

No. 342,763. Patented May 25, 1886.

Fig. 1.

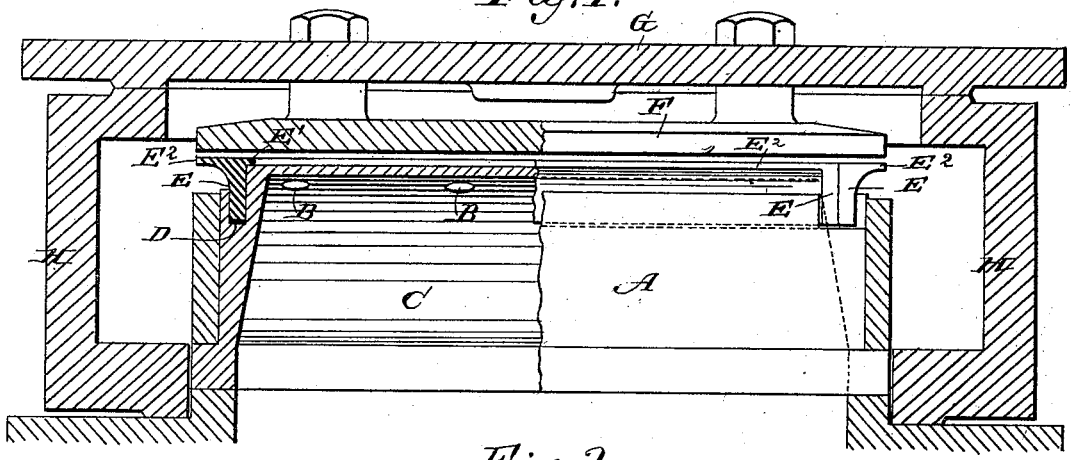


Fig. 2.

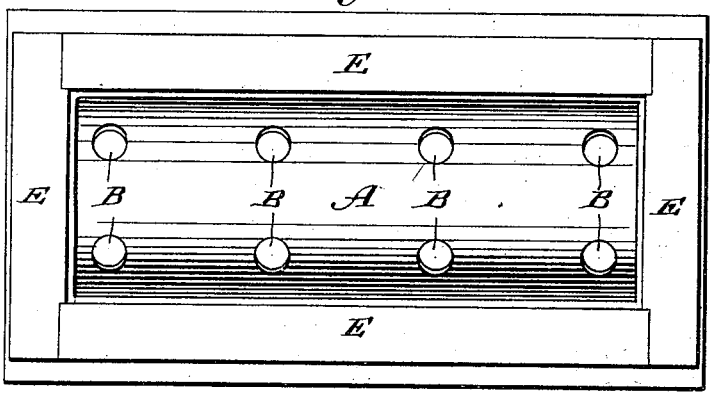
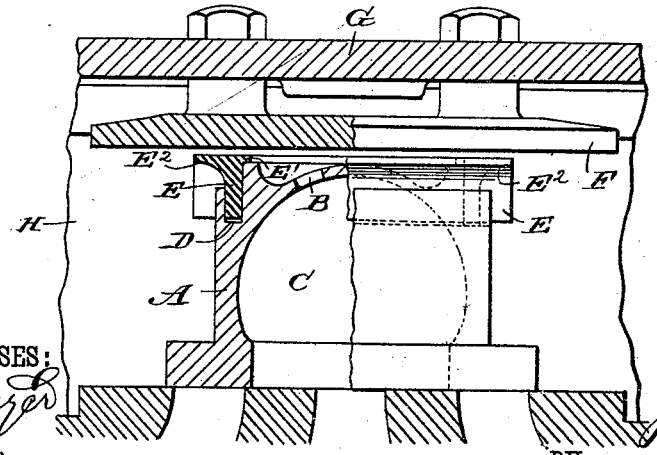


Fig. 3.



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JOHN W. STOKES, OF PANA, ILLINOIS.

BALANCED SLIDE-VALVE.

SPECIFICATION forming part of Letters Patent No. 342,763, dated May 25, 1886.

Application filed February 6, 1886. Serial No. 191,095. (No model.)

To all whom it may concern:

Be it known that I, JOHN W. STOKES, of Pana, county of Christian, and State of Illinois, have invented a new and Improved Balanced Slide-Valve, of which the following is a full, clear, and exact description.

The object of my invention is to provide a new and improved slide-valve, which is perfectly balanced by being held in contact with the balancing-plate on the steam-chest lid without the aid of springs when steam-pressure is applied.

The invention consists of a slide-valve provided with vertically-sliding bars, forming a frame fitted in grooves on top of the slide-valve, which frame is moved to and held in contact with the under side of the balancing-plate on the steam-chest cover or lid by the pressure of the live steam.

The invention also consists of various parts and details and combinations of the same, as will be fully described hereinafter.

Reference is to be had to the accompanying drawings, forming a part of this specification, in which similar letters of reference indicate corresponding parts in all the figures.

Figure 1 is a cross-sectional view of the steam-chest provided with my improved balancing slide-valve, which is shown partly in section. Fig. 2 is a plan view of the slide-valve. Fig. 3 is a sectional elevation of the steam-chest provided with my improved valve, which is shown partly in section.

Heretofore the balancing of slide-valves has been accomplished by circular disks held in contact with the steam-chest cover, or by straight strips with springs, held similarly by means of the springs; but the circular disks soon wear out of true, so as to allow the live steam to leak into the exhaust, and the straight strips supported by the springs lose their respective positions in relation to the valve, and are continually in contact with the cover of the steam-chest, thereby creating unnecessary friction and wear, and are liable, when the steam is shut off, to draw cinders into the cylinders and steam-chest, thereby making a supplementary air-valve necessary.

My improved balanced slide-valve will wear evenly, thereby giving long service, and will close automatically when steam-pressure is applied. When the steam-pressure is withdrawn, the balancing-frame of the slide-valve is out of contact with the balancing-plate attached to the steam-chest cover.

The slide-valve A is provided on top with apertures B, which lead into the exhaust-cavity C of the slide-valve. The top of the slide-valve A is provided near its outer edges with grooves D, which extend around the said edges of the valve. In these grooves D are placed the sliding bars E, provided on their inner edges with flanges E′, and on their outer edges with curved projections E^2. The sliding bars E, of which there are four—one on each side—form a complete frame of rectangular or other form, and which is placed a little below the under side of a balancing-plate, F, attached to the lid G of the steam-chest H. The inner flanges, E′, of the sliding bars E rest usually on the top of the slide-valve A. When the full pressure of steam is applied to the steam-chest H, the current of steam seeks to rush into the space formed between the balancing-plate F and the sliding bars E, and into the cavity C by means of the holes B, thereby forcing the sliding bars E upward by pressing against the curved flanges E^2 until the sliding bars rest against the under surface of the balancing-plate F, so that the steam is prevented from entering the exhaust-cavity C through the apertures B. As soon as the steam-pressure is withdrawn, the sliding bars E slide downward to their normal positions by their own weight, so that the sliding valve A is not in contact with the balancing-plate F when no pressure is applied, but is only in contact when under pressure.

The balancing-plate F may be entirely dispensed with, the cover G being used instead, by being placed a short distance above the top edge of the sliding bars E.

It will be seen that there is free communication between the interior of the steam-chest H and the exhaust-cavity C as long as no pressure is applied by means of the apertures B in the top of the slide-valve A, and the space between the balance-plate and the frame, thereby avoiding the necessity of a supplementary relief air-valve, to prevent cinders from being drawn into the cylinders and steam-chest.

It will be understood that the outer projecting flanges, E^2, on the sliding bars E permit

the steam to lift the sliding bars E into contact with the balancing-plate F.

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

1. A sliding valve, A, provided with apertures B, leading into the exhaust-cavity C, and having the grooves D, in combination with the sliding bars E, sliding in the grooves D, and provided with the inner flanges or stops, E′, and the outer curved projections, E^2, substantially as herein shown and described.

2. The slide-valve A, having the apertures B, leading into the exhaust-cavity C, and the sliding bars E, forming a frame, and provided with the inner flanges, E′, and the outer curved projections, E^2, in combination with the balancing-plate F, attached to the cover or lid G of the steam-chest H, substantially as herein shown and described.

JOHN W. STOKES.

Witnesses:
A. S. PHILLIPS,
J. O. YOUNG.