J. C. Bromley,

Rotary Valve.

No. 111,513. Patented Feb. 7. 1871.

Fig. 1.

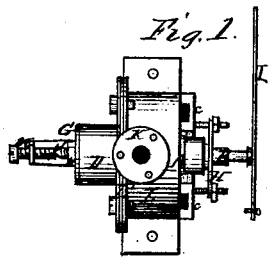


Fig. 2

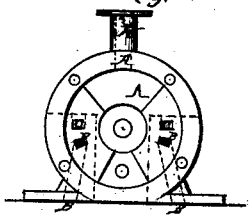


Fig. 3

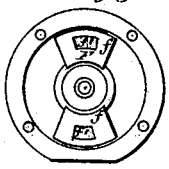
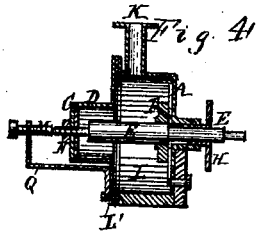


Fig. 4



Witnesses
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Atty.

United States Patent Office.

JOHN C. BROMLEY, OF ROCK ISLAND, ILLINOIS.

Letters Patent No. 111,513, dated February 7, 1871.

IMPROVEMENT IN OSCILLATING BALANCE STEAM-VALVES.

The Schedule referred to in these Letters Patent and making part of the same.

To all whom it may concern:

Be it known that I, JOHN C. BROMLEY, of Rock Island, in the county of Rock Island and State of Illinois, have invented certain new and useful Improvements in the steam-valve known as the "Oscillating Balance Steam-Valve;" and I do hereby declare that the following is a full, clear, and exact description thereof, reference being had to the accompanying drawings making part of this specification, and to the letters of reference marked thereon, like letters indicating like parts wherever they occur.

To enable others skilled in the art to construct and use my invention, I will proceed to describe it.

In the drawings—

Figure 1 is a top view.

Figure 2 is a vertical section looking toward the interior of face plate A.

Figure 3 is a vertical section taken between face plate A and segmental valve F.

Figure 4 is a vertical longitudinal section.

L represents the valve-case, consisting of a short cylinder.

A is the "face plate," provided with the steam and exhaust passages, ports B and C, respectively, laid off in the segment of a circle.

The cylinder L is closed at the end opposite the face plate by a cap or head, L', to which is attached the small cylinder D.

Through the center of the latter passes the sliding shaft E, supporting the segmental valve F, which is designed to work over the ports B and C.

On the opposite end of the shaft E is a balance plate, G, which also serves as a cap, for the purpose of closing the steam-chamber entirely, receiving the pressure of steam, and closing the valve-chamber at the same time.

In the front of the face plate A is a stuffing-box, H.

Upon the end of the shaft E is an arm, I, provided with a wrist, to which can be attached the eccentric or cam-rod of an ordinary engine.

The end of the shaft E which reaches beyond the cylinder D, is turned to a conical point, which oscillates in a corresponding socket, formed in the end of a set-screw M, which is supported by a bracket, Q, secured rigidly to the cap L'.

F represents the segmental balance valve, formed of the segmental wings *f*, in each of which is formed a recess, *f'*, as shown in fig. 3, which, during the oscillation of the valve passes alternately over the steam and exhaust-ports B and C.

The steam is supplied through a pipe, K, and at each oscillation is admitted to the ports B alternately leading to the engine cylinder, and, returning in like manner through the ports B, escapes by means of the communication effected by the recesses *f'*, passes off through the exhaust-ports C.

The adjustable nut N is designed to secure the balance plate G to the shaft E, and to regulate the distance between that plate and the valve. A piston may be used instead of the balance plate G.

When steam is admitted through K it fills the steam-chamber, and presses upon the valve F with such force as to cause considerable friction, but the pressure against the plate G, which is securely attached to the shaft E of the valve F, counterbalances the pressure upon valve F and relieves it of the friction. At the same time the position of plate G is so adjusted, by means of the set-screw M and nut N, that there is no escape of steam around the cap plate G.

Having fully described my invention,

I claim—

The arrangement and application of the bracket Q, set-screw M, stuffing-box H, and adjustable nut N, attached to the balance plate G, as and for the purpose set forth.

JOHN C. BROMLEY.

Witnesses:

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