

N. H. BUNDY.
Balanced Valves.

No. 137,654.

Patented April 8, 1873.

Fig: 1

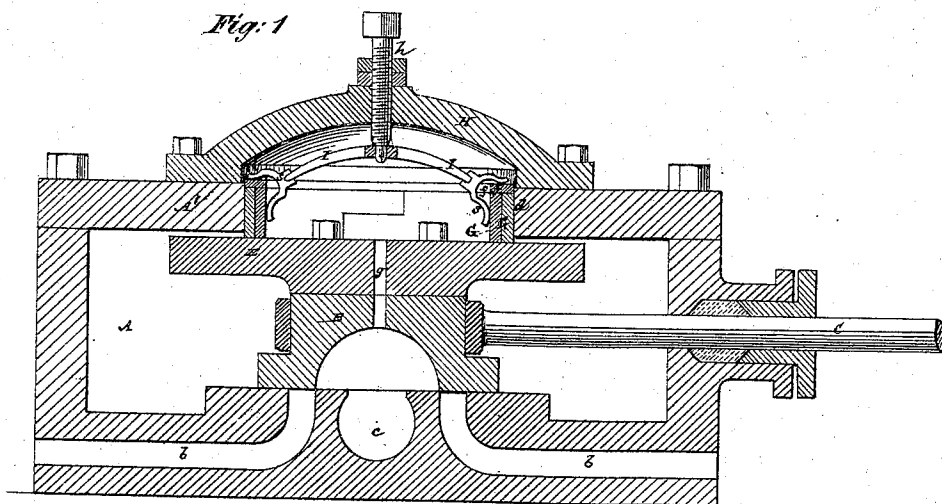
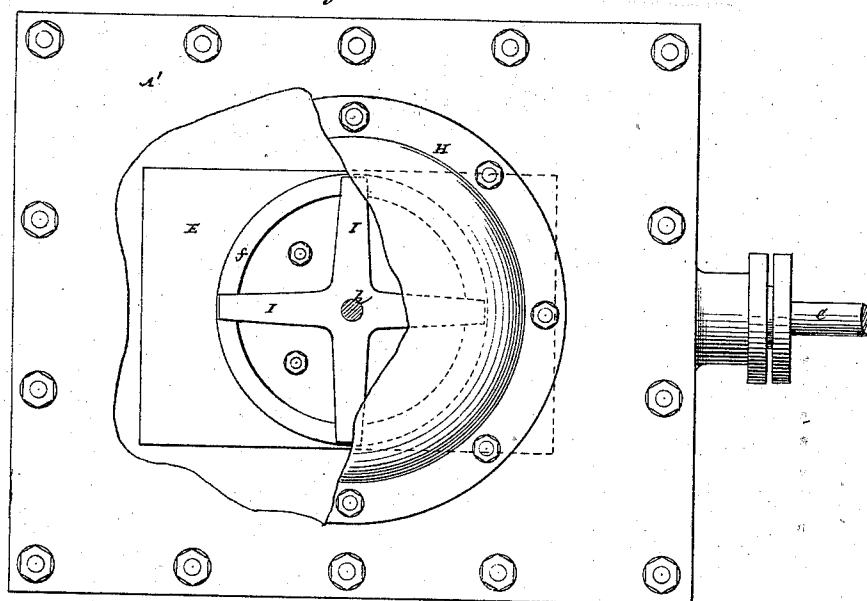


Fig: 2



Witnesses:
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and
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UNITED STATES PATENT OFFICE.

NELSON H. BUNDY, OF NEW YORK, ASSIGNOR TO HIMSELF AND ALEXANDER F. WEAVER, OF BROOKLYN, NEW YORK.

IMPROVEMENT IN BALANCED VALVES.

Specification forming part of Letters Patent No. 137,654, dated April 8, 1873; application filed October 16, 1872.

To all whom it may concern:

Be it known that I, NELSON H. BUNDY, of the city, county, and State of New York, have invented an Improvement in Balance Slide-Valves, of which the following is a specification:

This invention relates to a slide-valve, provided with a back plate, arranged to work in contact with the one side or face of a packing-ring held to its place against or on the plate by spring pressure, whereby the valve is relieved in a simple, durable, and practicable manner, from pressure on its seat by the steam, gas, or fluid which it serves to control. The invention consists in a novel construction of the spring which holds the packing-ring in contact with the valve, whereby, in addition to such action on the ring, said spring also operates to expand the ring peripherically for the purpose of keeping it in close contact with the chamber or recess in which it fits, thereby preventing leakage past the ring.

In the accompanying drawing, Figure 1 represents a longitudinal sectional elevation of a valve and valve-chest constructed in accordance with my improvement, and Fig. 2 a partly sectional plan of the same.

Similar letters of reference indicate corresponding parts.

A represents the valve-chest of a steam-engine, having in its base, which forms the valve-seat, ways *b b* leading to opposite ends of the engine-cylinder and an intermediate exhaust-passage, *c*, said ways or passages being controlled by a slide-valve, B, in the ordinary or any suitable manner. Steam may be admitted to the valve-chest through its top, sides, or ends. C is the rod by which the valve B is worked. This valve is constructed or provided at its back with a plate, E, arranged to work in proximity to the cap-plate or cover A' of the chest, and serving, in conjunction with a packing ring or rings, G, to seal the valve at its back against steam within the valve-chest, and thereby to balance the valve or relieve it of steam-pressure on its seat, the packing-ring, which rests with its one side or face upon the back-plate E of the valve, being

of a suitable diameter for such purpose. This ring is represented as composed of two independent rings—one arranged within the other, and being split or divided to break joint. Said ring is placed within a circular opening, *d*, in the cap-plate A' of the chest, and is covered by a bonnet, H, bolted onto the valve-chest cover, and having arranged within it a spring or springs, I, which bear upon a follower, *f*, that rests upon the packing-ring G, whereby said ring is held with a spring-pressure against the sealing or back plate E of the valve, thus preventing passage of steam to the back of the valve. In case, however, of any live steam leaking from the valve-chest past or through the packing-ring to the interior of the bonnet H, the same is passed to the atmosphere or to a condenser, as the case may be, by an aperture, *g*, arranged to establish communication between the interior of the bonnet and the exhaust-passage of the valve. The spring I is of a divided construction to form bowed arms or leaves, which press at different or opposite points on the follower *f*, at the back of the packing-ring G, and, by a forked construction of its ends *s s*, against the interior of said ring, so that, on applying pressure to the spring, the latter not only bears the packing-ring against the sealing-plate E, but also has an expanding action upon the ring to keep it in close contact with the walls of the recess *d*. The tension of the spring may be adjusted, as required, to press with more or less force upon the packing-ring by a screw, *h*, which, although here shown as accessible from the exterior, may be wholly under cover to guard against tampering.

If preferred, the sealing-plate E may be arranged within the bonnet on the valve-box cover by making such bonnet of suitable size for such purpose, and said plate be connected with the body of the valve by a shank-like connection arranged to pass through a slot or opening in the cover, and through the packing-ring G, which then will be arranged to act upon the reverse side of the plate E to that shown in the drawing, and be borne against the plate by a spring or

springs within the recess *d* in the valve-box cover, but the principle of action remains the same.

What is here claimed and desired to be secured by Letters Patent, is—

The combination of the slide-valve B, the sealing-plate E, the packing-ring G, and the spring I having forked ends, and being ar-

ranged in relation with said ring G, and a follower, *f*, substantially as and for the purposes herein set forth.

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Witnesses:

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