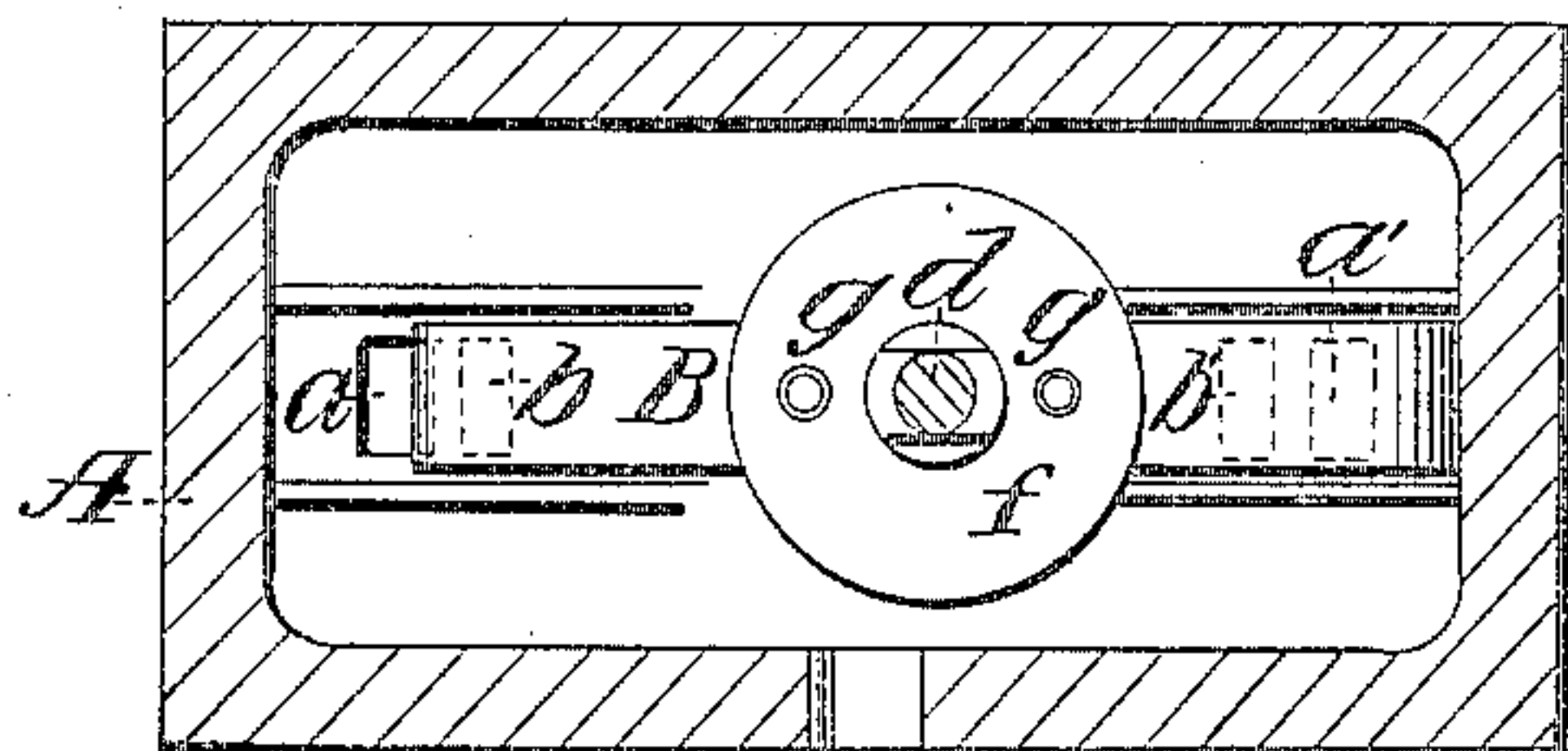
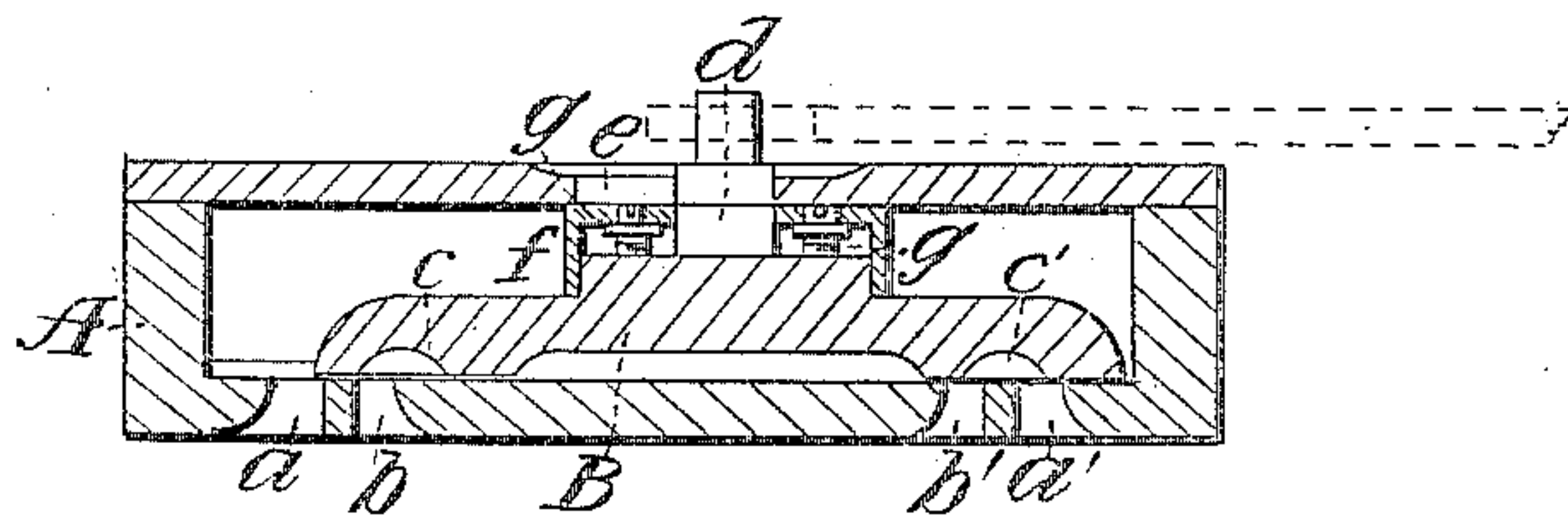


*D. F. Walker,*  
*Steam Balanced Valve.*  
*N<sup>o</sup> 44,830. Patented Oct. 25, 1864.*

*Fig. 1*



*Fig. 2*



*Witnesses:*

*Wm. J. M<sup>r</sup> Kamara*  
*J. O. Hall,*

*Inventor:*

*D. F. Walker*  
*per Munn & Co*  
*attorneys*

# UNITED STATES PATENT OFFICE.

D. F. WALKER, OF POTOSI, MISSOURI.

## IMPROVEMENT IN SLIDE-VALVES FOR STEAM-ENGINES.

Specification forming part of Letters Patent No. 44,830, dated October 25, 1864.

*To all whom it may concern:*

Be it known that I, D. F. WALKER, of Potosi, in the county of Washington and State of Missouri, have invented a new and Improved Balance Slide-Valve; and I do hereby declare that the following is a full, clear, and exact description thereof, which will enable those skilled in the art to make and use the same, reference being had to the accompanying drawings, forming a part of this specification, in which—

Figure 1 represents a horizontal section of my invention. Fig. 2 is a longitudinal vertical section of the same.

Similar letters of reference indicate corresponding parts.

This invention consists in connecting the eccentric rod to a stud rising from the back of the valve through a slot in the valve-chest cover and applied in combination with an adjustable cap in such a manner that by raising the cap close to the inner side of the valve-chest cover the escape of steam through the slot in said cover is prevented, and at the same time the pressure of the steam on the valve is balanced, causing the same to work with perfect ease, and without the use of a stuffing-box.

A represents the steam chest, which is constructed in the ordinary manner, and attached to the top or side of the cylinder, as may be desirable. The bottom of this steam-chest forms the valve-seat, and it is perforated with four openings, *a a' b b'*, the openings *a a'* to form the steam and the openings *b b'* to form the exhaust ports; or, if desired, the bottom of the steam-chest may be made with three openings only, one to form the exhaust and two to form the steam ports.

B is the valve, which is ground down to work steam-tight on the valve-seat in the steam-chest. The ends of this valve work over the ports *a b a' b'*, in the manner as clearly shown in Fig. 2 of the drawings, where the port *a* is open ready to take steam, the port *b* is closed, and the port *b'* communicates through the cavity *c'* in the under surface of the valve and

through the port *a'* with the interior of the cylinder, and consequently is open to exhaust.

The middle portion of the valve is hollowed out to allow the steam to pass clear through between its two ends, in order to reduce the pressure with which the valve is held down upon its seat by the action of the steam on its back.

From the back of the valve rises the stud *d*, and this stud extends through a slot, *e*, in the cover of the valve-chest. In order to prevent the escape of steam through this slot, a cap, *f*, is fitted over the stud and over the central part of the valve. The outer surface of this cap is intended to fit steam-tight against the inner surface of the steam-chest cover, and it can be adjusted by set-screws *g*, provided with shoulders which bear against the inner surface of the cap.

The superficial area of the cap *f* is equal to the area of that part of the valve which is exposed to the pressure of the steam, so that the pressure of the steam acting on the valve is perfectly balanced from both sides, and the valve works equally easy under a head of a hundred pounds of steam as it does in the open atmosphere.

The stud *d* extends far enough beyond the outer surface of the steam-chest cover to receive the eccentric rod, and the use of a stuffing-box is thus entirely avoided.

By the combined arrangement of the cap *f* and stud extending through a slot in the valve-chest or its cover, I am enabled to operate my valve with less power than any other valve heretofore constructed.

I claim as new and desire to secure by Letters Patent—

A valve, B, provided with a stud, *d*, and cap *f*, and operating in combination with the steam-chest A, in the manner and for the purpose substantially as herein shown and described.

D. F. WALKER.

Witnesses:

P. C. WINNE,  
ALLAN H. NEWLIN.