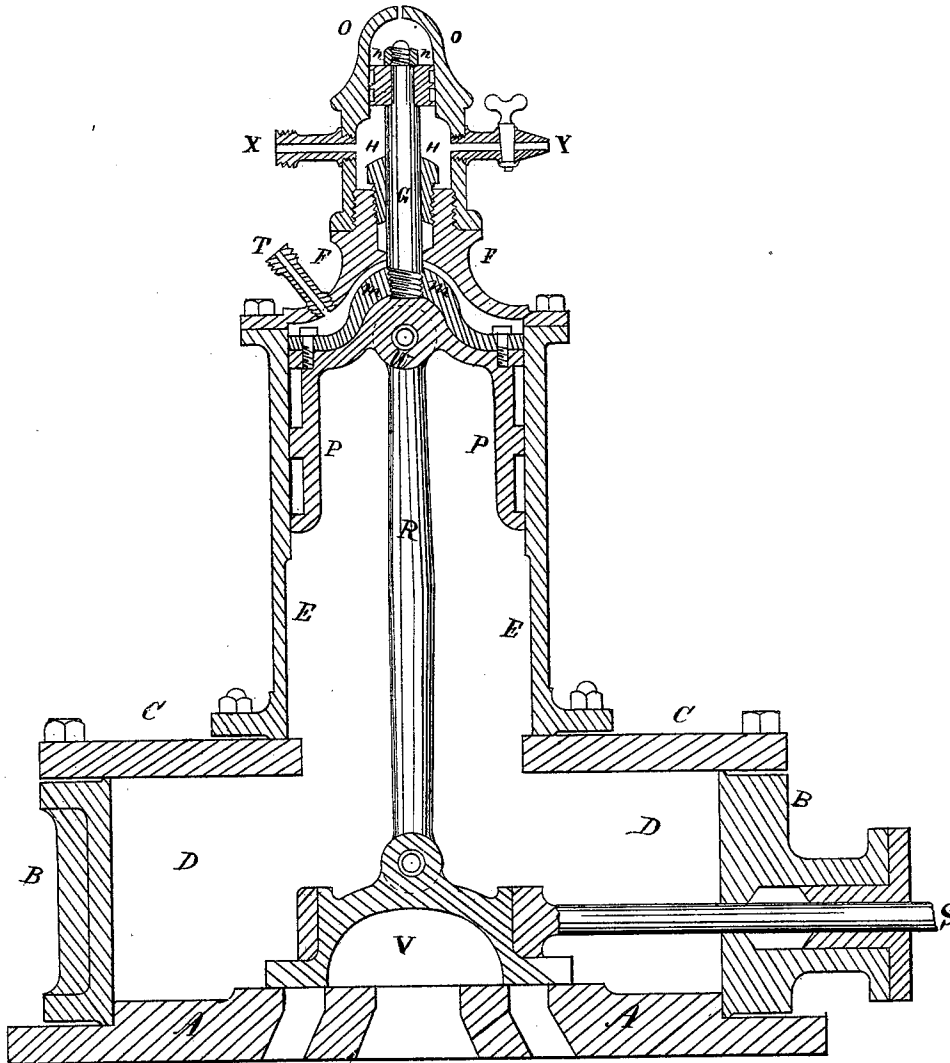


R. TREMAIN.

Improvement in Balanced Slide-Valves.

No. 126,427.

Patented May 7, 1872.



Witnesses:

N. P. Smith
C. W. Smith

Inventor:

Richard Tremain

UNITED STATES PATENT OFFICE.

RICHARD TREMAIN, OF SYRACUSE, NEW YORK.

IMPROVEMENT IN BALANCED SLIDE-VALVES.

Specification forming part of Letters Patent No. 126,427, dated May 7, 1872.

To all to whom these presents shall come:

Be it known that I, RICHARD TREMAIN, of the city of Syracuse, in the county of Onondaga and State of New York, have invented a new and Improved Balance Slide-Valve; and I do hereby declare that the following is a full, clear, and exact description of the same, reference being had to the annexed drawing, which represents a perpendicular sectional view of the parts and forms a part of this specification.

A represents a part of the cylinder constituting the valve-seat. B B show the ends of an ordinary steam-chest, D; C C, the cover; V, an ordinary slide-valve; S, the valve-stem. The steam may be fed at any convenient point into the steam-chest D. Upon the top of the steam-chest I place a cylinder, E, into which is fitted the piston P, having a connecting-rod, R, with one end attached to the top of the valve V in any ordinary manner, and the other end to the under side of the piston P by a knuckle-joint, W, substantially as shown in the drawing. The piston P is fitted and packed in any ordinary way; but it is better to be in bell form, substantially as shown in the drawing. The object of the cylinder E and piston P is to create an upward pressure of steam upon the piston P nearly equal to the downward pressure upon the valve V, and thereby reduce the friction of the valve. The piston P has a cap, M, fitted on the top of the piston, and properly fastened thereto, into which cap another connecting-rod, G, is firmly inserted and passes through the stuffing-box H, which is inserted into the cover F of the cylinder E, substantially as shown in the drawing, and connects with the small piston N,

which works in the small cylinder O, which rests upon and is fastened to the cover F of the large cylinder E. The object of the small cylinder O and piston N is to lift the valve V from the valve-seat A, when the engine is running, without using steam in the working-cylinder of the engine; and this is effected by connecting in any convenient manner by a pipe, X, with the boiler the steam-chamber of the small cylinder O. T is a pipe in the cover of the cylinder E, to prevent a vacuum above the piston P and let off any steam that may accumulate there by leakage. Y is a cock to let off the condensed steam or water from the small cylinder O.

By making the piston P in bell-shaped form I gain the following advantages: First, I get a longer bearing on the sides to prevent rocking; second, it affords a longer connecting-rod, causing the piston to work more vertically and with less travel; it obviates the difficulty and friction of drawing at a sharp angle, thereby cutting the cylinder.

What I claim as my invention, and desire to secure by Letters Patent, is—

1. The small cylinder O and piston N, when connected by the rod G with the piston P, for the purpose of lifting the valve V, substantially in the manner described.

2. The combination of the small cylinder O and piston N with the cylinder E provided with bell-mouthed piston P, rod R, and attached to valve V, substantially as and for the purpose set forth.

RICHARD TREMAIN.

Witnesses:

N. B. SMITH,
C. W. SMITH.