

(No Model.)

B. HALE.

BALANCED SLIDE VALVE.

No. 347,793.

Patented Aug. 24, 1886.

FIG. 1.

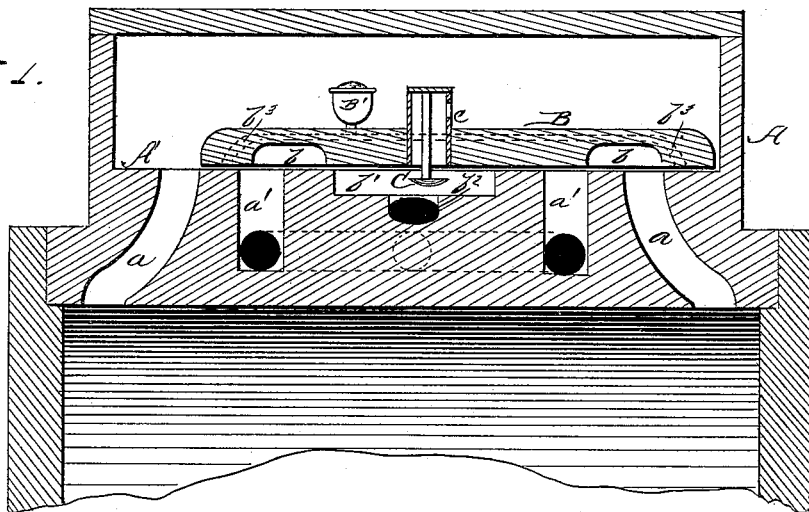
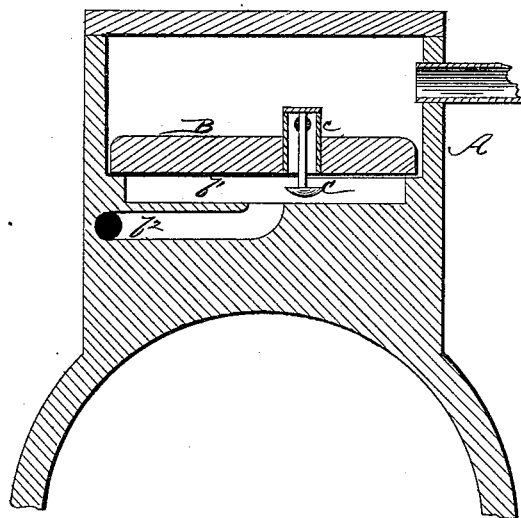


FIG. 2.



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Witnesses:

A. C. M. Arthur

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UNITED STATES PATENT OFFICE.

BEVERLY HALE, OF RUSHVILLE, ILLINOIS.

BALANCED SLIDE-VALVE.

SPECIFICATION forming part of Letters Patent No. 347,793, dated August 24, 1886.

Application filed October 15, 1885. Serial No. 180,010. (No model.)

To all whom it may concern:

Be it known that I, BEVERLY HALE, a citizen of the United States, residing at Rushville, in the county of Schuyler and State of Illinois, have invented certain new and useful Improvements in Balanced Slide-Valves, of which the following is a specification, to wit:

This invention relates to an improvement in balanced slide-valves; and it consists in certain peculiarities of the construction and arrangement of the same, substantially as will be hereinafter more fully set forth and claimed.

In order to enable others skilled in the art to which my invention appertains to make and use the same, I will now proceed to describe its construction and operation, referring to the accompanying drawings, in which—

Figure 1 is a longitudinal section of a steam-valve and its case, and Fig. 2 is a cross-section of the same.

A represents the valve-case, which is formed in the usual manner, with inlet-ports *a a*, and exhaust-ports *a' a'*, leading to and from the cylinder through the seat *A*.

The slide-valve B is of the usual and well-known form, having cored recesses *b b*, for connecting the exhaust-passages, and the seat is formed with a central depression or chamber, *b'*, connected to the steam-supply pipe *b²*, for obtaining sufficient steam below the valve to balance it.

In all valves of this kind difficulty is often experienced in the proper balancing of the valve by obtaining greater pressure beneath the valve than above it, because the steam from the boiler being admitted direct to the balancing-chamber, and confined there, the pressure is the same as in the boiler, while as the space in the steam-chest above the valve is in direct connection with the cylinder and the valve and piston both move with the steam, the effective pressure on the valve is reduced to the working-pressure on the piston, always less than that in the boiler. As an illustra-

tion: If the pressure in the boiler and balancing-chamber is assumed at ninety pounds, the motion of valve and piston will reduce this pressure to about seventy pounds, and the unequal pressure on the upper and under side of the valve lifts it from its seat. To avoid this, I provide the valve B with a puppet-valve, C, placed in a small passage, *c*, through the main valve, and arranged, as shown, to open upward. This allows the free escape of sufficient steam from one side of the slide-valve to the other to relieve the surplus pressure and retain the valve in its proper position, as will be at once understood.

I do not desire to confine myself to the especial form of relief-valve herein shown and described, but desire to use any form of valve that will accomplish the purpose in view. I thus obtain a more perfect working slide-valve, and relieve much of the strain upon the eccentrics and their rods.

Secured to the valve B is also a small oil-cup or receptacle, *B'*, from which a pipe or passage, *b³*, leads to either end of the valve, and enables me to effectually lubricate the bridges and valve-seat, as will be seen in the drawings.

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

The combination, with a steam-chest formed with a balancing-chamber connected with the boiler, and a slide-valve working in the chest, of an upwardly-opening puppet-valve placed in a passage connecting the balancing-chamber with the chest above the valve, substantially as and for the purpose set forth.

In testimony whereof I affix my signature in presence of two witnesses.

BEVERLY HALE.

Witnesses:

JOHN C. BAGBY,
AMOS H. TRAVIS.