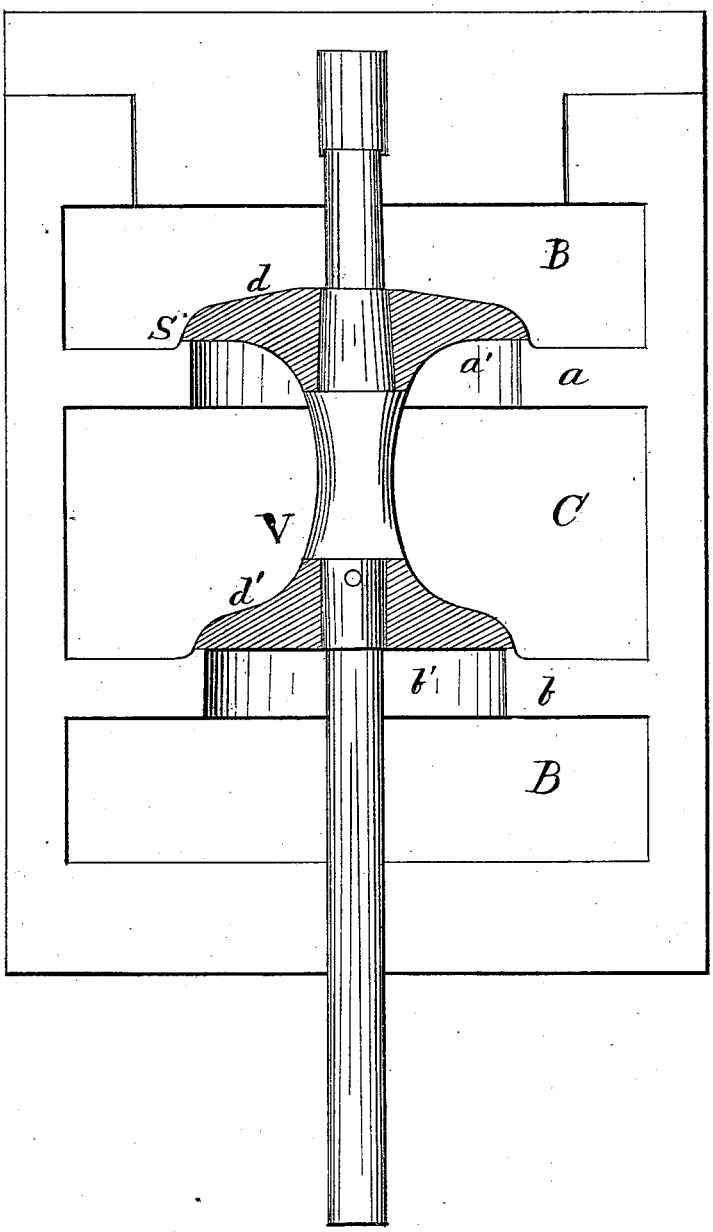
2 Sheets—Sheet 1.

# L. D. BARTLETT.

## Balance Puppet-Valve.

No. 213,030. Patented Mar. 11, 1879.

Fig 1.

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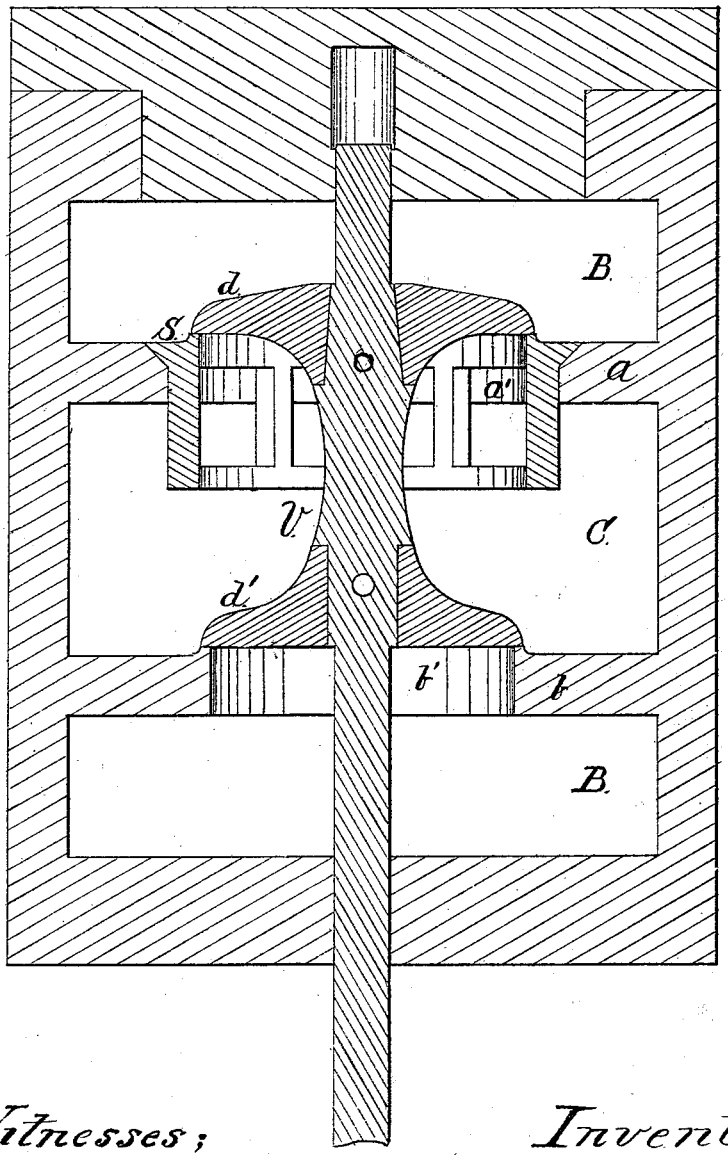
2 Sheets—Sheet 2

# L. D. BARTLETT.

## Balance Puppet-Valve.

No. 213,030. Patented Mar. 11, 1879.

Fig 2.

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# UNITED STATES PATENT OFFICE.

LOUIS D. BARTLETT, OF FITCHBURG, MASSACHUSETTS.

## IMPROVEMENT IN BALANCE PUPPET-VALVES.

Specification forming part of Letters Patent No. **213,030**, dated March 11, 1879; application filed August 19, 1878.

*To all whom it may concern:*

Be it known that I, LOUIS D. BARTLETT, of Fitchburg, in the county of Worcester and State of Massachusetts, have invented certain Improvements in Balance Puppet-Valves for Steam-Engines, of which the following is a full, clear, and exact description, reference being had to the accompanying drawings, which make part of this specification, and are sectional views of a valve-chest and valve.

The object of my invention is to construct the valves so that they shall act as relief-valves for the escape of water that may be pent up in the cylinder, or for any excessive pressure that may result from compression, &c.

In the drawings, Figure 1 is a vertical section of a steam-chest and valve constructed according to my invention; and Fig. 2 is a vertical section of the same, showing a modification of the valve.

I will now proceed to describe the construction of the valves, referring to the drawings, in which the valve shown is the induction-valve for the admission of steam into the cylinder, and is marked V. Those parts of the chest which connect with the boiler and cylinder are marked, respectively, B and C, and are separated by the walls or partitions *a* and *b*, in which are the valve openings or apertures *a' b'*.

I construct the device by placing the disks or valves *d d'*, which cover the apertures *a' b'* in the chest, over each end of a valve-stem, and bringing them up against shoulders formed by the enlargement of the stem.

It will be noticed that the pressure from the boiler tends to force the disks toward each other and against the shoulders of the stem; but should the pressure in the cylinder exceed that in the boiler, the tendency would be to force them apart and away from the shoulders of the stem, so that if the upper disk were not fastened to the stem the disk would be lifted up from its seat and permit the pressure in the cylinder to equalize itself with that in the boiler. Therefore I do not fasten the upper disk upon the stem, but make a tapering fit for it, upon which it is steam-tight when in place, yet free to be lifted up by the pressure in the cylinder when it exceeds that in the boiler, and thus to act as a relief-valve for the cylinder, to prevent damage from water or excessive pressure that may accumulate therein.

In Fig. 2 is shown a modification of my device, which consists in making the valve-seat S in a separate piece, and placing the same loosely in the aperture in the chest, as shown.

When the valve is very small, with disk so light that its weight is not sufficient to return it home to the shoulder, or from any cause there is objection to having it loose upon the stem, I fasten the disk in its place and make a seat for it, loose within and resting upon the margin of the aperture in the chest, by which the area presented to the action of the pressure within the cylinder tending to raise the valve is increased without affecting its equilibrium in relation to the pressure from the boiler. When made in this manner the entire valve, with the loose seat S, will be raised by any excessive pressure in the cylinder and permit the equalization of pressures, as before described.

I claim—

1. A steam-chest constructed with passage-ways leading to the boiler and cylinder, and having communicating valve throats or openings, and provided with puppet-valves placed therein, and constructed and arranged so as to automatically equalize the pressure of steam between the cylinder and boiler, substantially as set forth.

2. The balance puppet-valve herein described, constructed with a loose disk, arranged to operate substantially as and for the purposes specified.

LOUIS D. BARTLETT.

Witnesses:
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