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H. P. CASE & R. P. BAILLIE.

Improvement in Safety Valves.

No. 122,704.

Patented Jan. 16, 1872.

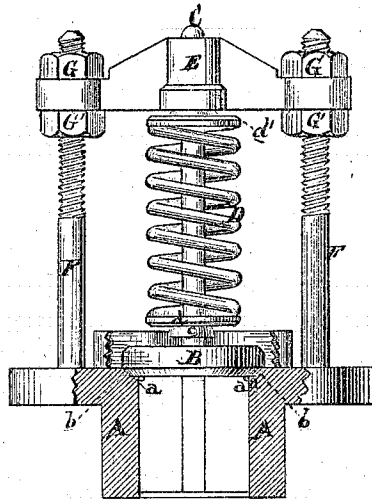


Fig. 1.

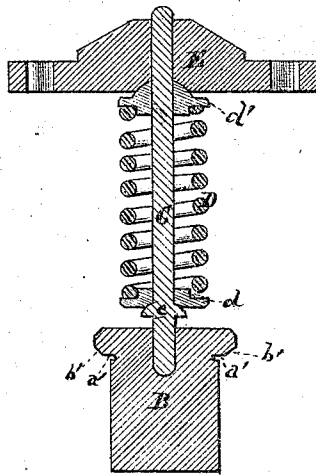


Fig. 2.

ATTEST

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HIRAM P. CASE AND ROBERT P. BAILLIE, OF DETROIT, MICHIGAN.

IMPROVEMENT IN SAFETY-VALVES.

Specification forming part of Letters Patent No. 122,704, dated January 16, 1872.

To whom it may concern:

Be it known that we, HIRAM P. CASE and ROBERT P. BAILLIE, of Detroit, in the county of Wayne and State of Michigan, have invented a new and useful Improvement in Safety-Valves; and we do declare that the following is a true and accurate description thereof, reference being had to the accompanying drawing and to the letters of reference marked thereon and being a part of this specification, in which—

Figure 1 is an elevation of our device partially in section; and Fig. 2 is a vertical section through the center of the valve, spring, and yoke.

Like letters indicate like parts in each figure.

The nature of our invention relates to an improved construction of safety-valves, and consists in the means employed to hold the spring in a vertical position under all conditions, as is more fully hereinafter described.

In the drawing, A represents the dome-cap of a steam-boiler, having formed in its mouth a horizontal seat, *a*, while *b* is a chamfered or flaring seat, of the usual form, extending to the top of the cap, forming a double or angular seat. It is not necessary that the seat *a* should be horizontal, only so that it will be inclined from the other. B is the valve, having the faces *a'* and *b'* inclined to each other and accurately fitted to the seats *a* *b*. C is a spindle, the lower convex end of which is seated in a concave step formed in the bottom of a recess in the center of the upper side of the valve. *c* is a hemispherical collar about the lower part of the spindle. On this collar is seated a disk, *d*, having a corresponding depression on its under side to receive the cone of the collar. The disk has resting on it the lower convolution of a spiral spring, D, which

is surmounted by another disk, *d'*, which has a central hemispherical projection on its upper side. The spindle passes up through the coil and disks and through a yoke, E, which has a seat for the rounded valve-like projection of the upper disk. F are stud-bolts, rising from the dome-cap through the ends of the yoke, and are provided with nuts G G'. By screwing down the former the desired pressure may be exerted, through the spring, upon the valve. A spiral spring, as usually constructed and applied between two disks or bearing-plates, exerts a greater pressure or affords a greater resistance at one side of the end convolutions, so that, if applied to holding down a valve, the latter is apt to be tilted or cocked to one side and thus create leakage, which increases in volume by abrading the surfaces where it occurs. The above-described arrangement of the spindle and disks effectually obviates this objection, as the pressure is transmitted directly from the center of the yoke to the center of the valve, no matter what the inequalities of the ends of the spring may be, by reason of the play of the ball-and-socket joints afforded in a lateral direction to the spring, as the spindle is kept in line with the center of the valve by having its upper end pass through the yoke.

What we claim as our invention, and desire to secure by Letters Patent, is—

The combination of a spindle, C, provided with a hemispherical collar, *c*, the disks *d* and *d'*, the yoke E, and the spring D, all constructed and arranged substantially as described and shown.

HIRAM P. CASE.

ROBERT P. BAILLIE.

Witnesses:

SAM. J. SPRAY,
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