A. BERNEY.

SAFETY-VALVE ATTACHMENT TO PREVENT NOISE AND UTILIZE THE ESCAPE STEAM.

No. 181,624. Patented Aug. 29, 1876.

Fig. 3.

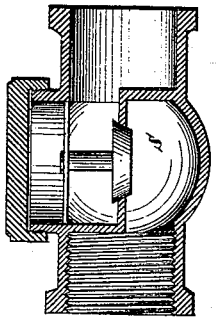


Fig. 1.

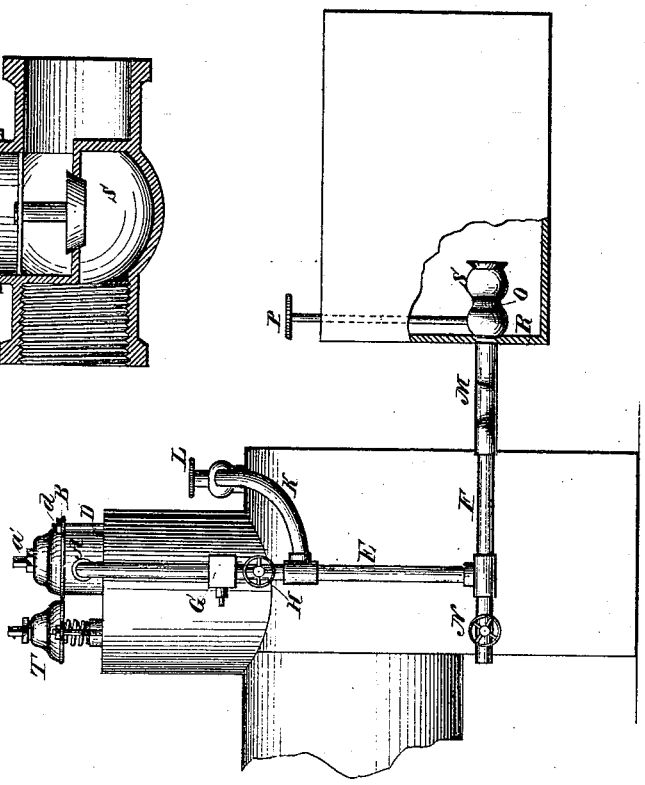
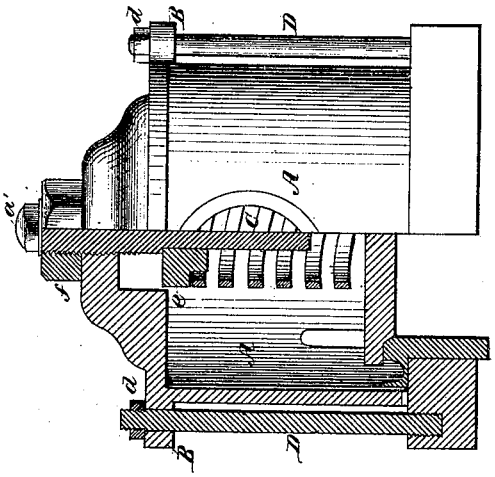


Fig. 2.



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UNITED STATES PATENT OFFICE.

ALFRED BERNEY, OF SOMERVILLE CITY, MASSACHUSETTS, ASSIGNOR TO MARY E. BERNEY, OF SAME PLACE.

IMPROVEMENT IN SAFETY-VALVE ATTACHMENTS TO PREVENT NOISE AND UTILIZE THE ESCAPE-STEAM.

Specification forming part of Letters Patent No. **181,624**, dated August 29, 1876; application filed August 22, 1876.

To all whom it may concern:

Be it known that I, ALFRED BERNEY, of Somerville city, in the county of Middlesex and State of Massachusetts, have invented a new and useful Improvement in Blow-Backs for Saving Waste-Steam, which improvement is fully set forth in the following specification, reference being had to the accompanying drawings.

The object of my invention is to produce a perfect, economical, and noiseless means for conveying the steam from the safety-valve of locomotives to the feed-water tanks, as will be hereinafter described.

The nature of my invention consists in a hood or cover for open safety-valves, also pipes, hose, cocks, and noiseless valve leading from said hood or cover to the tender.

Figure 1 is a side elevation. Fig. 2 is an elevation, one-half in section; and Fig. 3 is a vertical section of the noiseless valve.

A represents the hood or cover resting upon the boiler or disk around the valve-seat, cast from any suitable metal usually employed in manufacturing safety-valves, and is provided with lugs or projections B at or near the upper extremity of said hood, which takes the place of the usual cross-head, as shown in the Richardson and other valves. Said hood is also provided with an opening, C, at one side, to engage with the pipe leading to the tender, for the purpose of carrying off the steam to said tender for heating the water contained therein. The hood may be provided with two or more lugs, B, and the bottom of said hood or cover may be fitted with a ground joint or groove for packing; or the hood may be provided with lugs at the bottom and bolted on the boiler.

It will be observed that my hood or cover is not limited to any peculiar construction of valve, but is intended to cover all open safety-valves, the area of the hood being of such dimensions as to permit the steam which is blown from the valve free recourse therefrom by the outlet-pipe E to the tender.

I do not wish to confine myself to the exact shape of hood shown, as the same may be varied and not depart from the spirit of my invention; but I find the one shown to be the most suitable form.

a' represents a screw for regulating the tension of the spring used on the valve. A recessed cap is placed over the spring, upon which the regulating-screw presses. When the requisite tension of the spring is obtained the screw *a'* is secured by a lock-nut, *f*. D represents the ordinary standards used with almost every locomotive-valve, and to them is attached the hood or cover A by means of lugs or projections B and nuts *d*. E represents a pipe leading from the cover A to the feed-water pipe F, and is provided with a vacuum-valve, G, to prevent a vacuum in the pipes, hose, and cover when the steam condenses. When the steam escapes it closes the valve G, and when the steam is condensed and ceases to escape from the valve, the atmospheric pressure presses the valve in and fills the pipes, &c., with air, thus preventing a vacuum. The pipe E is also provided with a stop-cock, H, to prevent too much steam from escaping into the tender and heating the water too hot. Should the water in the tender become too hot, the valve H is closed and the steam allowed to escape into the air by means of the open safety-valve T.

K represents a heater-pipe, to prevent the water in the pipes and hose from freezing in cold weather, and communicates from the steam-space of the boiler to the pipe E, the amount of steam being regulated by a valve, L. F is the ordinary feed-water pipe used to convey the water from the feed-water tank to the pump, and is connected to a pipe in the tender by means of a rubber hose, M, and provided with a cock, N, to prevent the water from the tender being pumped into the boiler when not required. O represents a pipe or attachment from the hose M, provided with a valve, S. R represents a cock to be used to allow the water, by means of rod P, to flow into the hose M and feed-water pipe F, as used on all tenders. S represents a noiseless valve, to be attached to the pipe O in the tender, to allow the steam escaping through

the safety-valve to flow into the tender without any noise, and prevent the pipes O and F and hose M from being filled with water.

The operation of my invention is as follows: After applying the hood or cover over the open safety-valve, and attaching thereto the pipes, &c., as hereinbefore described, and there being two valves on all locomotives, one remaining open and the other covered by the hood, the covered valve is adjusted to blow off at three to five pounds less pressure than the open valve, when the overpressure of steam generated in the boiler raises the valve from off its seat in the covered valve A, and passes down pipe E through the pipe F, hose M, pipe O, and noiseless valve S, escaping and heating the water in the tender. In case the water in the tender should become too hot, close the valve H, and allow the steam to pass out the open valve T into the air. When desired to turn on the feed-water, open cocks R and N.

If desirable to heat the water at any time without blowing off, or to prevent the water in the pipes and hose from freezing, open cock L and admit live steam.

A perforated pipe may be used in the tender, if desired, to subdue the noise of escaping steam.

If desired to connect the tender with the cover or hood, an independent pipe and hose may be used, extending from said hood or cover to the tender, and connected to the pipe O, or its equivalent, with the valve S, thereby dispensing with the combinations shown and described.

My device should be applied to the left side of the locomotive and tender.

The stop-cock or valve N may be left open, and can be closed when necessary.

The vacuum-valve C can be placed in the detachable cover, or any of the pipes or hose, so that the vacuum can be prevented.

I do not claim the combination of a closed valve-pipe and hose leading to the tender, as described in my application filed December 20, 1875, and amended August 22, 1876.

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

1. In combination with a safety-valve, a hood or cover resting upon the boiler or disk surrounding the valve-seat, and provided with lugs for securing it thereto, an opening for the escape-steam, and a screw for regulating the tension of the valve-spring, substantially as set forth.

2. In combination with the detachable hood or cover A, the pipe E, provided with the valves G and H, substantially as described, and for the purpose set forth.

3. In combination with the hood or cover A, the pipe E, provided with the vacuum-valve G, substantially as described.

4. The combination of the pipe E and heater-pipe K, provided with the valve L, substantially as described, and for the purpose specified.

5. The combination of the hood or cover A, and pipe leading to the tender and connected thereto, with a suitable coupling and pipe, provided with a noiseless valve, S, substantially as described, for the purpose specified.

6. The combination of the hood or cover A, as described, with the pipes E, F, and K, hose M, pipe O, valve R, and noiseless valve S, substantially as described, and for the purpose specified.

7. The combination of the pipe F, provided with the stop-cock N, hose M, pipe O, valve R, and noiseless valve S, as described, and for the purpose specified.

8. The combination of the hood or cover A and pipe leading to the tender, said pipe provided with a vacuum-valve, hose, and pipe, provided with a valve, S, substantially as described, and for the purpose specified.

9. The combination of an open safety-valve, connected with the steam-space of a boiler, a detachable hood or cover for inclosing the same, connected with the pipes E and F, hose M, and valve R, connecting with the water-space of the tender, substantially as described, and for the purpose specified.

ALFRED BERNEY.

Witnesses:
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