

H. Taylor & J.M. Coale.
Safety-Valve.

N^o 90999.

Patented Nov. 16. 1869.

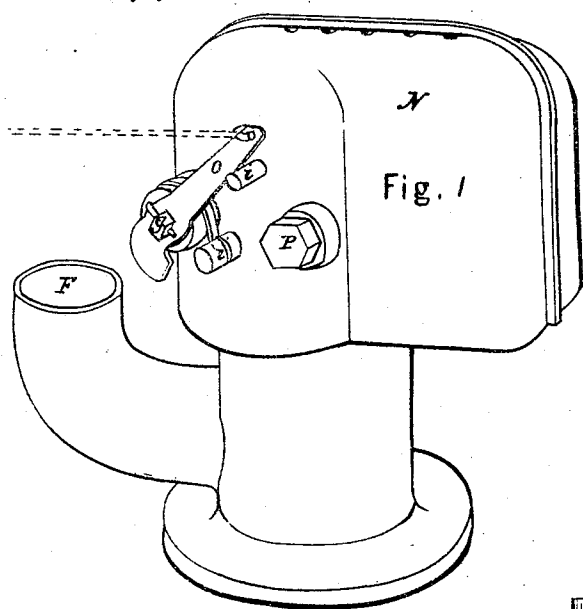


Fig. 2.

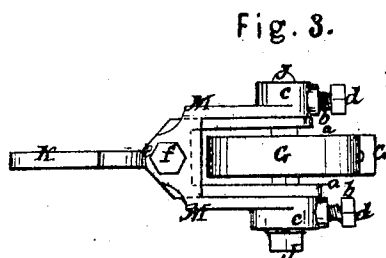
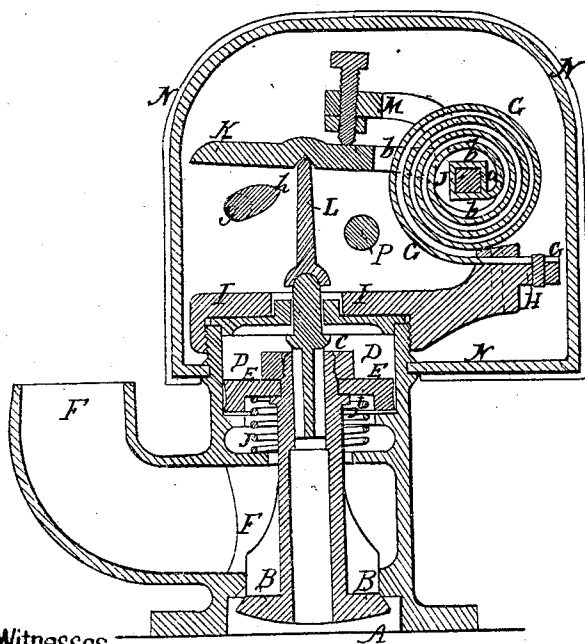


Fig. 3.

Witnesses
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United States Patent Office.

HENRY TAYLOR AND JOSEPH M. COALE, OF BALTIMORE, MARYLAND.

Letters Patent No. 96,999, dated November 16, 1869.

SAFETY-VALVE.

The Schedule referred to in these Letters Patent and making part of the same.

To all whom it may concern:

Be it known that we, HENRY TAYLOR and JOSEPH M. COALE, of the city of Baltimore, in the State of Maryland, have invented certain new and useful Improvements in Steam-Generator Safety-Valves; and we do hereby declare the following to be a full, clear, and exact description of the same, reference being had to the accompanying drawings, making a part of this specification, in which—

Figure 1 represents, in perspective, an exterior view of the case or cover, within which the regulating-mechanism is arranged, so as not to be tampered with, and showing such of the parts as protrude through the case, or are operated from its exterior.

Figure 2 represents a vertical section through the case, the operating-mechanism, and the valves and steam-ways.

Figure 3 represents a top plan of the spring, lever, and setting or regulating-mechanism.

Similar letters of reference, where they occur in the several separate figures, denote like parts of the safety-valve and its connections, in all of the drawings.

The safety-valve herein shown is more especially arranged for locomotive-engines, where a weight is not so steady under the motion or jars of locomotion as a spring is; and

Our invention consists in combining two valves, of unequal areas, with a lever, spring, and regulating-mechanism, so that, whilst the engineer may blow off the steam from the boiler at pleasure, he cannot prevent it from blowing off whenever it rises above the pressure for which the valve has been set.

To enable others skilled in the art to make and use our invention, we will proceed to describe the same with reference to the drawings.

The valve being attached to the boiler, and the passage A being in communication with the steam therein, the pressure of the steam, at its regulated point, forces the valve B to its seat, and prevents any steam from escaping; but whenever the pressure rises above that which it is designed to carry in the boiler, it raises the small valve C, and admits the steam into the chamber D and upon the upper head E, of the valve B, which is of greater area than the valve, and forces down said valve B, and allows the steam to escape through F.

When the pressure in the boiler is reduced to that which has been designated by the tension of the spring, or for which it may be set, then the valve C is closed, by the action of the spring, cutting off the steam from the chamber D.

This done, the steam in the boiler shuts the valve B, and there is no more escape, until the pressure again becomes greater than the regulated quantity.

The spring, and its appliances, by which the exact pressure or height of steam to be carried is regulated, are arranged and operate as follows:

One end of the coiled spring G is fastened to a projection, H, on the top plate I. The inner coil of the spring terminates in a square opening, through which the square part *a* of the bolt J passes, and so that said spring may be further coiled or strained by said bolt.

On the square portion of the bolt J, the arms or lugs *b b*, of the lever K, are also placed, so that the pressure or force of said spring shall be exerted through said lever K, and through the stem or post L, to the holding down and closing the small valve C.

Upon the round portions of the bolt J, and outside of the lugs *b*, the hubs *c*, of a forked lever, M, are placed, said lever, except in the length of its pressing-arm, being substantially similar to that one, K.

Through the hubs *c*, of the lever M, are set-screws, *d d*, by which said hubs and the lever may be fastened to the bolt J.

Through the point *e*, of the lever M, a set-screw, *f*, passes, the point of which latter bears upon the stem or arm of the lever K.

By this arrangement of levers and springs, an approximation to the amount of steam or pressure that the boiler is to carry, is made through the spring and lever K, and the exact pressure by the thumb-nut or screw *f*, so that the utmost accuracy is attained in fixing the amount of pressure, whilst any excess over that amount escapes of itself, and the engineer cannot stop or prevent such escape.

The valve, spring, and levers are arranged under a case, or cover N, inaccessible to the engineer, except by force. But by means of a shaft, *g*, passing through the case, and a cam-arm, *h*, upon it, inside of the case, and a crank, O, on the outside thereof, the engineer can raise the lever K, and allow the steam to blow off; the whole of it, if so desired, but he cannot carry a pound, or fraction of a pound, over and above what the boiler and valve are set to carry.

Two guide or gauge-pins, *i i*, are arranged to catch the crank-arm O, at the proper position to hold it there, and a through-bolt, P, holds the case N tightly together, it being cast in halves or sections.

The spring *j j* is for holding the valve B on its seat, or shut, before or whilst steam is making, which, when made, then does that work.

We have described the devices exactly as we find them to act well, and be inexpensive in construction and fitting.

The devices may be changed or refined without varying the result or mode of operation.

Having thus fully described our invention,

What we claim therein as new, and desire to secure by Letters Patent, is—

The combination of the two valves, one large and the other small, with the coiled spring, and the bearing-levers and steam-ways, so that the valve shall be held shut when the steam is below the regulated pressure, and opened by the steam when it rises

above the designated pressure, substantially as and for the purpose described and represented.

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Witnesses:

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