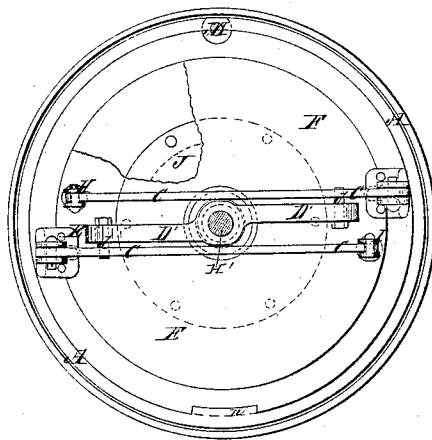


*Coppin & Clemens,  
Steam Safety Valve.*

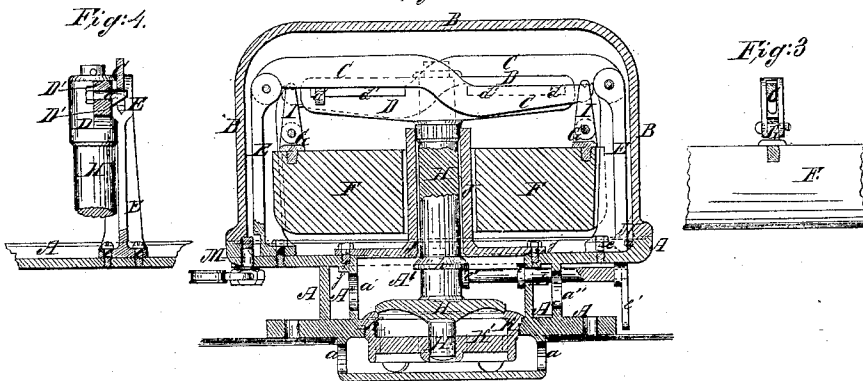
*N<sup>o</sup> 62,476.*

*Patented Feb. 26, 1867.*

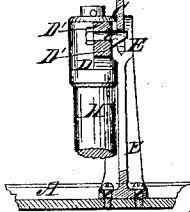
*Fig. 2*



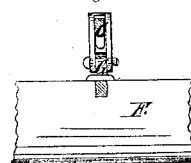
*Fig. 1*



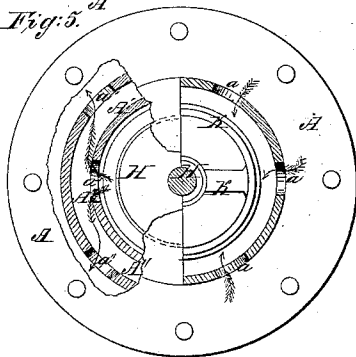
*Fig. 4*



*Fig. 3*



*Fig. 5*



*Witnesses:*

*W. S. Stone  
Geo. W. Burkhardt*

*Inventors:*

*Daniel P. Coppin  
Gilbert H. Clemens*

# United States Patent Office.

DANIEL G. COPPIN AND GILBERT H. CLEMENS, OF CINCINNATI, OHIO.

Letters Patent No. 62,476, dated February 26, 1867.

## IMPROVEMENT IN LOCK-UP SAFETY-VALVES.

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, DANIEL G. COPPIN and GILBERT H. CLEMENS, of Cincinnati, Hamilton county, State of Ohio, have invented certain new and useful improvements in Steam Safety-Valves; and we do hereby declare the following to be a full, clear, and exact description thereof, reference being had to the accompanying drawings, making part of this specification.

Figure 1 is a sectional view of our improved steam safety-valve, showing the working parts, which are unlike the valve accompanying this one as regards the enclosure of the valve-stem. The working parts are also entirely free from the exhaust steam, which is discharged directly from the valve through the openings in the body of case, and not through the enclosure of the working parts, as does the other valve.

Figure 2 is a plan of case with cap removed, showing the relative positions of the working parts above the weight, while a portion of the-weight is broken away, exposing a portion of the valve-stem guide flange, and how it is secured to the body of case by means of the set-screws, as shown.

Figure 3 is an end view of the lever, saddle, and attachment, and how secured to the weight, a portion of which is represented.

Figure 4 is an end view of the valve-stem in part, graduating arm, standards forming fulcra for levers, steel point, and portion of case.

Figure 5 is an inverted view of bottom of valve, showing the receiving and discharging openings, also valve, valve-stem, and guide for same.

A represents the body of case in form, as shown, provided at its periphery of top with a continuous raised lip to form base for the enclosing cap B. In the centre is a steam chamber, A', which is closed at the top by the valve-guide flange J after the valve-seat and valve have been placed in position. The steam chamber A' is encircled by another steam chamber, A'', which are connected by the openings a'. A circular enclosure projects downwards from the bottom of flange, which forms a guard for the valve-seat, and is provided with openings a to admit the steam to valve. The escape steam from the valve passes into chamber A', then to chamber A'', and out into the air, as the arrows indicate. A small spindle is provided, as shown, having upon one end an eccentric, l, and upon the other end an arm, l', for the purpose of raising the valve when desired. A lip, n, as shown, projects to receive the hook-lug N on cap. B represents the cap in form, as shown, provided at the bottom with a flange projecting outward, and formed to fit the body of case, while upon the inside a hook-lug occurs to receive the lip n, on body of case, opposite to which a lug is provided to receive the lock-bolt M, which secures the cap B to body A. C represents the parallel levers, hinged to the standards E, which are secured at their base by set-screws e to the top face of case A. D represents the graduating arms with a hub at centre, and fitted to the top of valve-stem H, and provided with elongated parallel slots d'' to allow the relative movement of the steel points d to any position desired to weigh all variable pressures of steam. E represent the standards forming fulcra for levers C. F represents the weight suspended from the levers C by the saddle I, pivoted to lug G, secured to the top of the weight, as shown. G represents the lugs with screw-pins attached, firmly secured to the top of weight at equal distances from centre, as shown. H represents the valve with stem above, to which are secured at the top the graduating arms D, while below is a stem to guide the valve to its seat. A collar, h, encircles the valve-stem, which is employed in connection with the eccentric-spindle L to assist in raising the valve, also to cut off any communication of the escape steam with the enclosing cap B by the inclines of top of collar and bottom of tube coming in contact with each other when the valve rises from its seat, thereby regulating the lift of valve. I represents a flange with tube on top, which forms a guide for top of valve-stem H, also to close the top of chamber A', secured to the case by set-screws j. J represents the valve-seat and stem-guide K' combined, secured to case, as shown. K represents a spindle, with an eccentric, l, on one end and arm l' on the other end, also a loose collar to secure the spindle in position. M represents the hook-lug on cap, and how attached to the lip on case.

### *Its Operation.*

The valve, being seated and at rest, the steam, as it rises, is admitted through the openings a under the valve. When the pressure of steam becomes equal to the resistance offered by the weight suspended from

the levers the valve will rise from its seat and relieve the boiler of any excess of steam over the maximum allowed. When the valve is raised from its seat the escape steam blows into the chamber A' through the openings a', into the chamber A'', and out through the openings a'' into the air, as indicated by the arrows represented in fig. 5, as shown.

We claim herein as new, and as our invention—

1. The body of case A and cap B to inclose the mechanism of the steam safety-valve, in combination with the steam chambers A' and A'' with openings a', bottom flange, and guard below, with openings a, in the manner and for the purposes set forth.
2. The arrangement of levers C, graduating arms D, steel points a, standards E, weight F, screw-lugs G, and saddles I, when constructed to operate with each other in the manner and for the purposes set forth.
3. The arrangement of the steam chambers A' and A'' and openings a' and a'', as shown, in the manner and for the purposes set forth.
4. The ring projecting from the bottom face of flange, provided with openings a, as shown in fig. 5, as set forth.
5. The arrangement of the horizontal eccentric spindle with reference to the fixed collar h on valve-stem, as set forth.

DANIEL G. COPPIN,  
GILBERT H. CLEMENS.

Witnesses: