Coppin & Clemens,

Steam Safety Valve.

No. 62,477. Patented Feb. 26, 1867.

Fig: 1

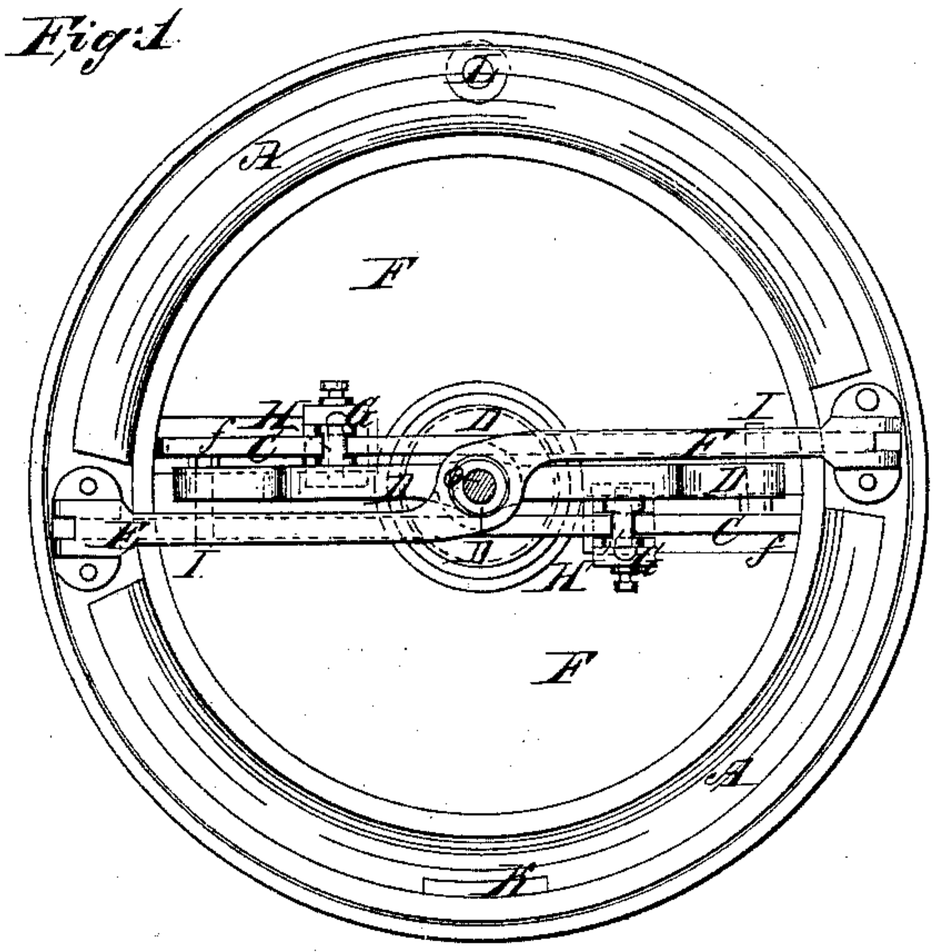


Fig: 2.

Fig: 4.

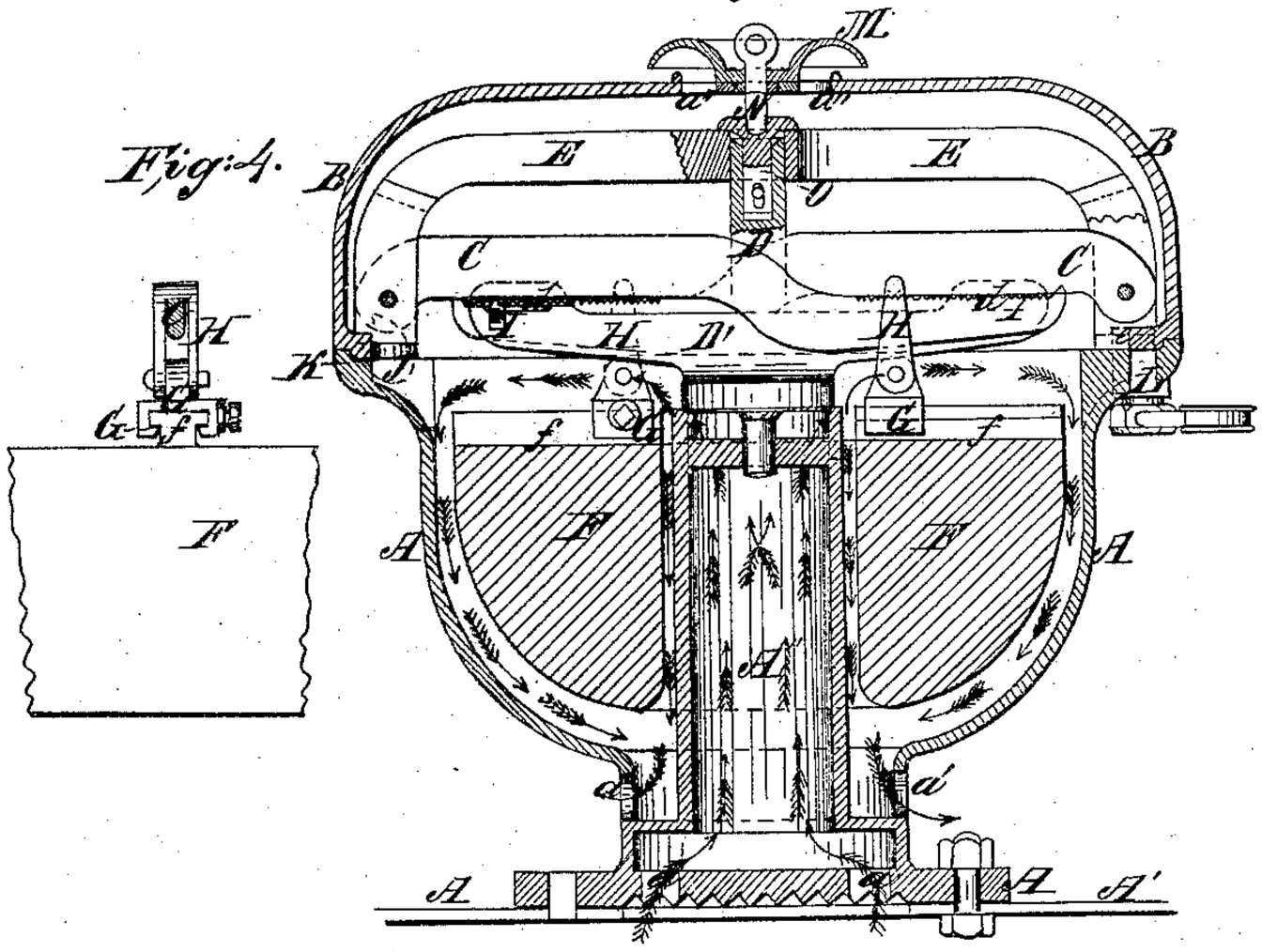


Fig: 3

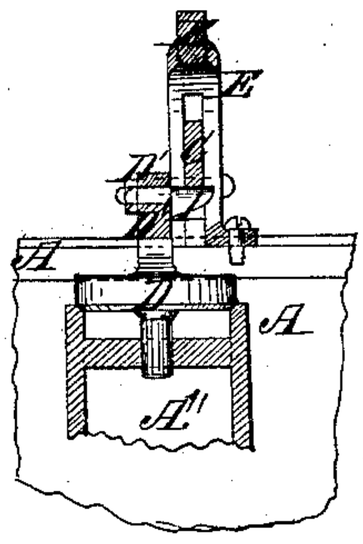
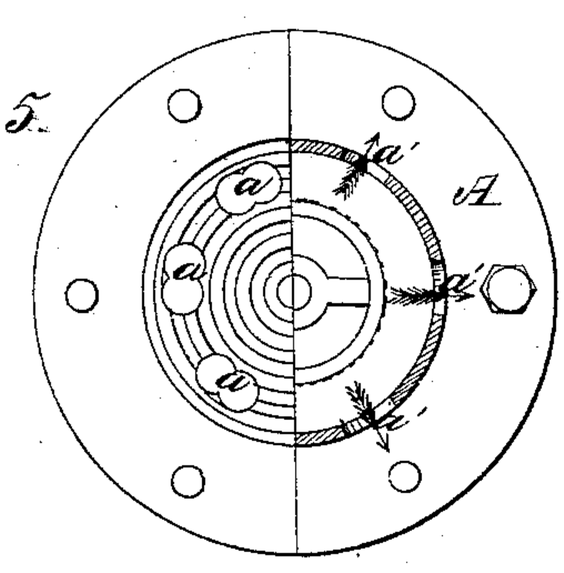


Fig: 5.



Witnesses:

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Letters Patent No. 62,477, *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 and their attachments in position, when at rest, and the course of the steam as received and discharged through the case; also the mode of securing the cap to body.

Figure 2 is a plan of case with cap removed, showing the relative positions of the working parts, as before mentioned.

Figure 3 is an end sectional view of the mechanism in part, showing valve tube, valve, graduating arms, lever, etc.

Figure 4 is an end view of lever, adjustable clamp, and saddle, for the suspending of the weight.

Figure 5 is an inverted view of bottom of valve, showing the position and form of the receiving and discharging ports of the steam.

A represents the body of case, provided at the periphery of top with a continuous raised lip or top projection to form seat for cap B, also base for arch guide E, while in the centre a tube is erected, through which the steam is directed to the valve seated upon the top. The tube is connected at its lower extremity with a chamber, into which the steam is admitted through the peculiar-shaped openings *a*, which is more fully explained in fig. 5. Immediately above the chamber and around the tube is a similar chamber, provided with openings *a'* through which is conducted the escape steam when blowing off. The body of case is provided at the bottom with a flange of suitable dimensions for the securing of the valve firmly to the boiler A', the bottom of said flange being provided with a series of V-shaped rings, the object of which is to prevent the total exclusion of steam from the valve by evil-designed persons so disposed. B represents the cap, provided at the bottom with a continuous flange projecting inwards, and formed to fit inside the lip, as shown on the body of case. Upon the inside, and projecting from the flange, a hook lug is formed, in dotted lines and marked J, to fit under the lip K on body of case, and marked as shown. Opposite to the lip is formed a lug, at *l*, into which the lock-bolt is secured against the removal of the cap, unless the lock is taken from the bolt. C represents the levers, which are hinged to the arch guide E secured to body of case, and are supported by the steel points I secured to the graduating arms projecting from the valve stem D. A series of notches are provided at the ends of the levers to indicate the pounds pressure required, which is regulated by the moving of the saddles to the desired point. D represents the valve, valve stem, and graduating arms combined, which are provided near each end with a slotted opening, into which the steel points I are fitted so they can be shifted when required to produce a greater or less proportion of leverage. The top part of valve stem is in form a tube, through the sides of which a pin is inserted to guide the slot in the headed bolt O, fitted into the stem loosely, so that it may be raised or lowered at pleasure. E represents the arch guide, which is firmly secured to the body of case, and forms the fulcra for levers, as also the top guide for valve stem. F represents the weight, in form as shown, provided on the top, in proper positions, with T-lugs extending from the outer periphery of the weight towards its centre, a corresponding distance with the space of notches on face of levers. G represents the clamps, fitted to the T-lugs on weight, to admit of their being moved to any desired position on same, and there secured by the set-screws, as shown. H represents the saddles hinged to the lugs on clamps G, and formed V-shaped, near the top, upon inside, to fit the notches on top of levers. I represents the steel points, in form as shown, and are fitted to the slots in graduating arms D, and secured in position by a nut upon the opposite side of same. J represents the hook lug on cap, to secure it to the body of case. K represents the lip on body, to receive the hook lug on cap. L represents the lock-bolt, to secure the cap to body of case by its being passed up through the body and screwed into a lug on cap for the purpose. M represents the guard, to prevent the tampering with the valve from the top by its complete enclosure of the escape-steam openings. N represents the eye-bolt passed through the guard and screwed into the top of bolt O to raise the valve when required. O represents a pin with head large enough to prevent its dropping down on the top of valve stem, and near the lower end a slot for pin to

pass through both it and the valve stem, which will admit the raising of the valve at pleasure, but will not allow its being loaded or tampered with.

Its Operation.

The valve, as represented, is at rest, and is supposed to be set to any given pressure of steam desired. The steam as it rises will pass through the openings, *a*, in bottom of case, into the tubular chamber A″ and under the valve D. When the pressure of steam under the valve becomes equal to the amount of resistance offered by the weight suspended from the levers C, the valve will raise from its seat and relieve the boiler of any excess of pressure over the maximum allowed. The escape steam blowing into the case, and coming in contact with the top of the weight, will assist in reseating the valve by the steam exhausting downwards through the openings A′ near bottom of case, as is indicated by the arrows shown on the drawing. The case has relief by the escape steam passing through the openings A″, in top of cap, and out under the guard M, as shown.

We claim herein as new, and as our invention—

1. The arrangement of the body A and cap B of the enclosing case, for the mechanism of the safety-valve, with the tube A″, valve D, ports A′ A′, series of V-rings, hook lug J, lug *l*, guard M, and escape ports A″ A″, in the manner and for the purposes set forth.

2. The arrangement of the notched levers C C, valve and stem D D, graduating arms D′ D′, with slots *d d*, steel points I I, guide E, weight F, with T-lugs *f f*, saddles H H, clamps G G, slotted pin, and eye-bolt N, in the manner and for the purposes set forth.

3. The arrangement of the V-shaped rings, with reference to openings A and chamber A″.

4. The arrangement of the weight F, with reference to the vertical tubular chamber A″ and levers C, as herein set forth.

5. The construction of the arch guide E whereby to guide the valve stem, in the manner and for the purposes set forth.

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Witnesses:
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