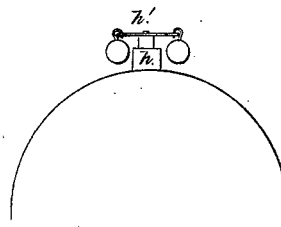
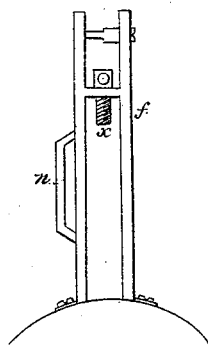
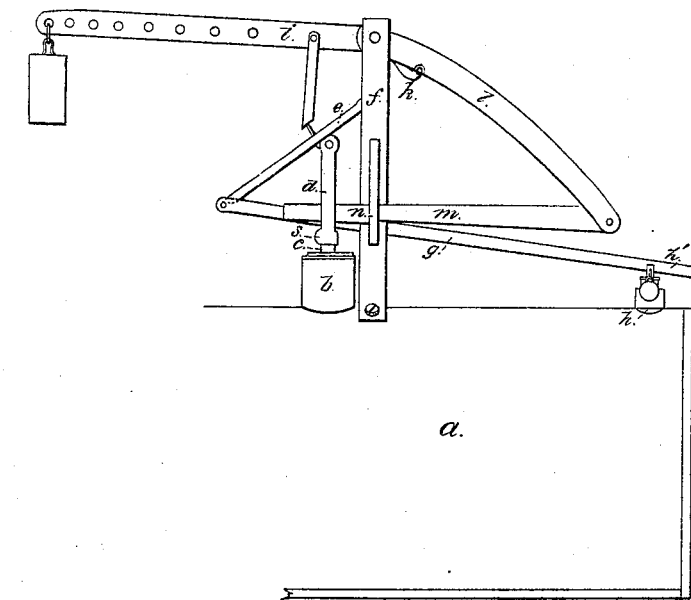


J. Shorb,
Steam Safety Valve.
N^o 4,388. Patented Feb. 20, 1846.

Fig. 1.



UNITED STATES PATENT OFFICE.

JOHN SHORB, OF CANTON, OHIO.

MODE OF OPERATING SAFETY-VALVES.

Specification of Letters Patent No. 4,388, dated February 20, 1846.

To all whom it may concern:

Be it known that I, JOHN SHORB, of Canton, in the county of Stark and State of Ohio, have invented a new and Improved Safety-Valve, and that the following is a full, clear, and exact description of the principle or character thereof, which distinguishes it from all other things before known, and of the manner of making, constructing, and using the same, reference being had to the accompanying drawings, making part of this specification.

In all the different modifications of steam safety valves, there has been a difficulty in preventing them from adhering to the seat, or causing them to act with certainty at all times, which imperfections I in part remedy in the following manner: I attach to any boiler a safety valve either of common construction, or a piston moving in a cylinder. To the stem of this valve I attach a combination of levers which are made to hold down said valve by a catch or notch in one of said levers which is set off and relieves the safety valve by the rising of a stem attached to a smaller valve under said lever, by raising it as the pressure is carried above the desired point, after which a weight is brought into action upon the valve to regulate the pressure.

In the accompanying drawings, Figure 1 is a side elevation of a boiler with the apparatus attached, (*a*) is the boiler of ordinary construction, (*b*) is a safety valve, the stem (*c*) of which has a double shackle (*d*) that connects it with a short lever (*e*) of the second order above it. One end of this lever is jointed to a frame (*f*) composed of two standards as shown in Fig. 3 affixed to the boiler on one side of the valve seat, and rising perpendicularly above the top of the valve stem to a sufficient height for the purpose intended; the point of connection of lever (*e*) with the frame is high enough to allow said lever, when the valve is down, to assume an angle of about 45°, as represented in the drawings and its height may be regulated by screw X. A long bar (*g*) is jointed to the lower end of lever (*e*), and extends horizontally through between the side pieces of the shackle that connects lever (*e*) with the valve stem; this bar (*g*) has a notch on the under side that catches on the end of the said stem on the lower connection of the shackle which holds it in the position shown in the Fig. 1, and

the valve is thus prevented from rising; near the end of this bar which is free there is a small valve (*h*) situated directly under it, the stem of which has a cross head (*h'*) on it, as represented more clearly in Fig. 2, and to this, weights may be attached to hold the valve down under proper pressures, but when this is exceeded, the valve rises and lifts the bar (*g*) sufficiently to detach it from the shackle, which allows the lever (*e*) and valve (*b*) to rise unobstructed by anything but its own weight. Over the lever (*e*) is another longer lever (*i*) that is also jointed to the frame (*f*); on this lever a weight is suspended and from a point nearly above the valve stem an arm projects down to lever (*e*) into a slot in which its lower end passes; there is a shoulder above at some distance so as to allow lever (*e*) to rise somewhat before it strikes it, for a purpose hereinafter mentioned; the lever (*i*) and its weight are held in their position by the following arrangement: The lever projects beyond its fulcrum on the other side at (*l*) and has a pin standing out from its side, a bent lever (*l*) which has the same fulcrum extends out over this pin and downward toward the boiler, nearly to a level with the bar (*g*), which end is provided with a horizontal bar (*m*), (similar to the arrangement of (*e*) and (*g*) above named) that extends back through a mortise (*n*), in the frame (*f*), (which mortise is shown in the detached view of the frame in Fig. 3,) and extends out beside the shackle (*d*); by means of a notch in said bar (*m*) that catches on the lower side of the mortise in which it works, the lever (*i*) and its weight are held up.

The operation of this apparatus is as follows: As the pressure of steam improperly increases, the valve (*h*) rises and relieves bar (*g*) which frees valve (*b*) and allows steam to escape; but on rising, a pin (*s*) standing out from the side of the shackle (*d*) strikes bar (*m*) and relieves it so as to allow the weighted lever (*i*) to descend and bear on the valve (*b*) by means of its connection therewith as herein before described. This weight is graduated for the proper pressure on the boiler, and when sufficient steam is discharged to bring the pressure to that point, the valve is made to descend and the bar (*g*) catches and holds it after which the weight can be again raised by drawing back the bar (*m*) until it catches

in the mortise as above named. By this arrangement the surplus steam can be always worked off and the boiler prevented from bursting by bringing the whole force
5 of the steam to act on the unweighted valve.

Having thus fully described my improved valve and its mode of operation, what I claim as my invention and desire to secure by Letters Patent is—

10 The method of freeing the valve (*b*) by

means of the bar (*g*) and valve (*h*), substantially as herein described, in combination with the weighted lever (*i*) and the apparatus for bringing the same into action, constructed and operating in the manner
15 set forth.

JOHN SHORB.

Witnesses:

ADAM THIMNELL,
ELI SOWERS.