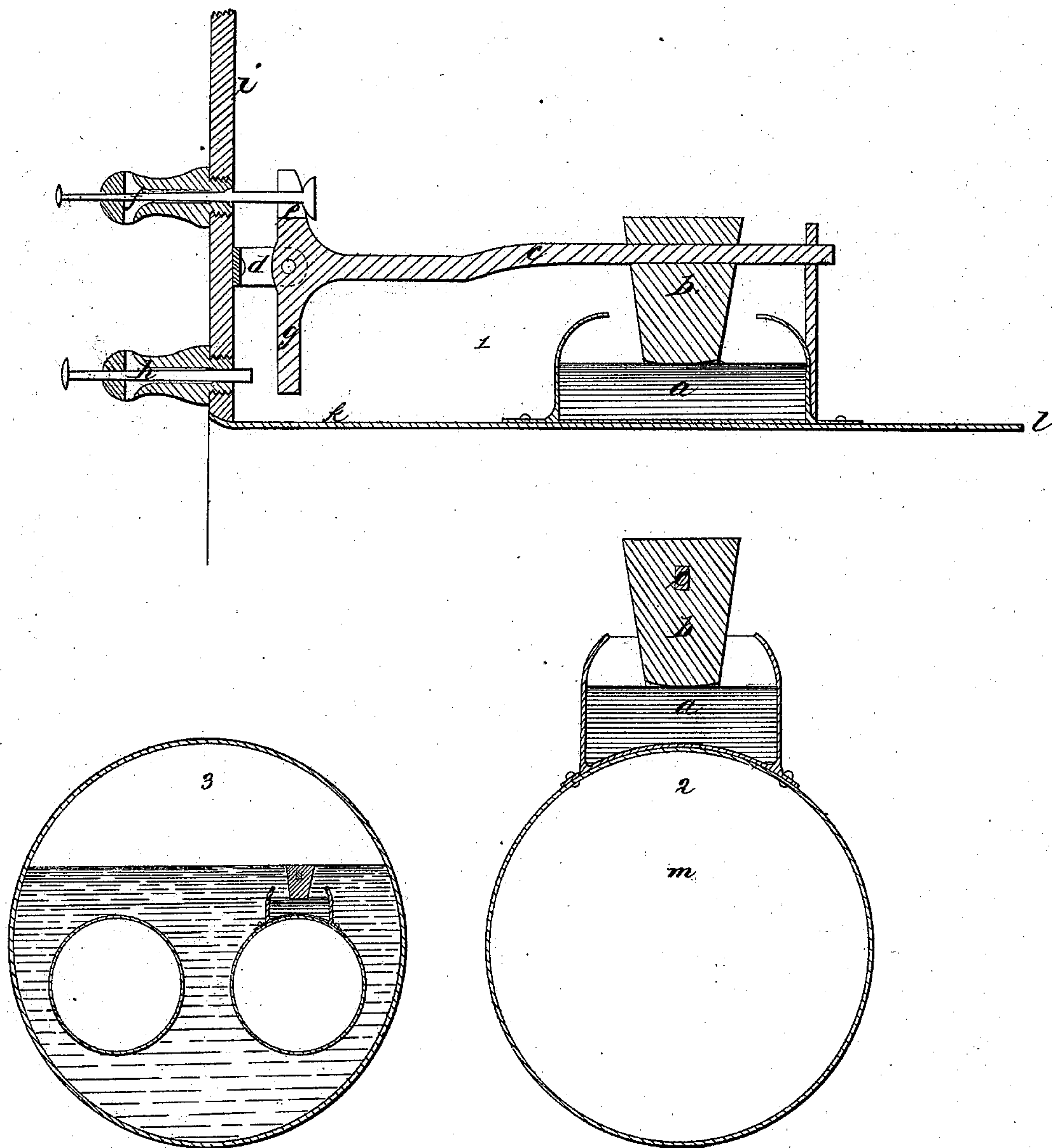


J. A. Roebling,
Steam-Boiler Indicator.
No 2,728. *Patented July 16, 1842.*



UNITED STATES PATENT OFFICE.

JOHN A. ROEBLING, OF SAXONBURG, PENNSYLVANIA.

SAFETY STEAM-GAGE FOR STEAM-BOILERS.

Specification of Letters Patent No. 2,728, dated July 16, 1842.

To all whom it may concern:

Be it known that I, JOHN AUGUSTUS ROEBLING, of Saxonburg, in the county of Butler, State of Pennsylvania, have invented a new and Improved Self-Acting Safety-Gage for Steam-Boilers; and I do hereby declare that the following is a full and exact description.

The principle of my invention consists in the application of a common conical steam gage such as is generally used on the high pressure boilers of the West, in one of the boiler heads; the stem of the valve being extended inside of the boiler several inches, and furnished with a head, against which the vertical and short arm of a lever will act, whose other and longer arm is supplied with a weight which may be of the shape of a hammer, this weight being supported upon the surface of fusible metal, which is inclosed in a box, which is placed upon the top of one of the flues, so that when the level of the water sinks below the fusible metal the rapid absorption of heat from the flue will speedily melt the alloy, which then no longer affords a support to the hammer. The pressure of the short lever against the valve stem which results from the weight attached to the long lever, will now readily open the gage and allow steam to escape, which by its hissing noise will warn the engineer of the approaching danger.

The hammer or weight should be raised again to its former position by closing the valve, before the deficiency of water is supplied, so that the surface of the alloy may resume its former level, while in a state of fusion. But in order to assist the rise of the hammer, another gage is arranged below the first, the stem of which, when pressed, will act upon the lower arm of the lever, and must be kept in that position, until the boiler is supplied and the alloy cooled. Where there is no room for the lower gage, it may be placed sideways, and the lower lever arm be bent to suit its position.

To prevent the settling of dirt and sediment from the boiler water upon the surface of the alloy, the box, containing it, may be covered, but so as to leave the hammer and lever at liberty to rise and fall and allow the water inside to communicate with that outside.

The accompanying drawing will explain the construction of the apparatus.

Figure 1 shows the longitudinal section, and Fig. 2 the cross section taken through the alloy box, hammer and flue.

a represents the alloy, *b* the hammer, *c* the lever to which the hammer is attached.

d is the fulcrum fastened to the boiler head; *e*, the short lever acting upon the valve stem *f*.

g is the lower lever arm, which when pressed by the stem *h* of the lower gage, will raise the hammer.

k l shows the top of the flue.

In the second diagram *m* represents a cross section of the flue, to which the apparatus is attached.

Diagram 3 shows a cross section on a smaller scale of a boiler with two flues and an alloy box attached to one of them.

I propose that the gage cocks with which the apparatus is connected, should be used as common gages for the purpose of ascertaining the stage of the water at all times. Being thus constantly used, they can never become fixed in their seats and will always be in a condition to be acted on by the lever.

Whenever the boiler is cleaned, the little sediment which may have collected on the surface of the alloy should be removed.

What I claim as my original invention and desire to secure by Letters Patent is:

1. The application of a lever which may be in the shape of a hammer, the head of which rests on the surface of fusible metal, which is contained in a box and secured upon the top of a flue, so that when the water in the boiler sinks too low and exposes the alloy, this will readily melt from the heat of the flue and allow the hammer to sink, which then by its leverage will open a gage and give alarm by the escape of steam. I do not claim the principle of applying fusible alloy, but only the application of a lever in shape of a hammer or any other convenient shape in connection with a gage or gages to be acted upon by the melting of an alloy, the apparatus being arranged and operating substantially in the manner fully explained and described above.

JOHN A. ROEBLING.

Witnesses:

AARON B. DAVIS,
JOHN DAVIS.