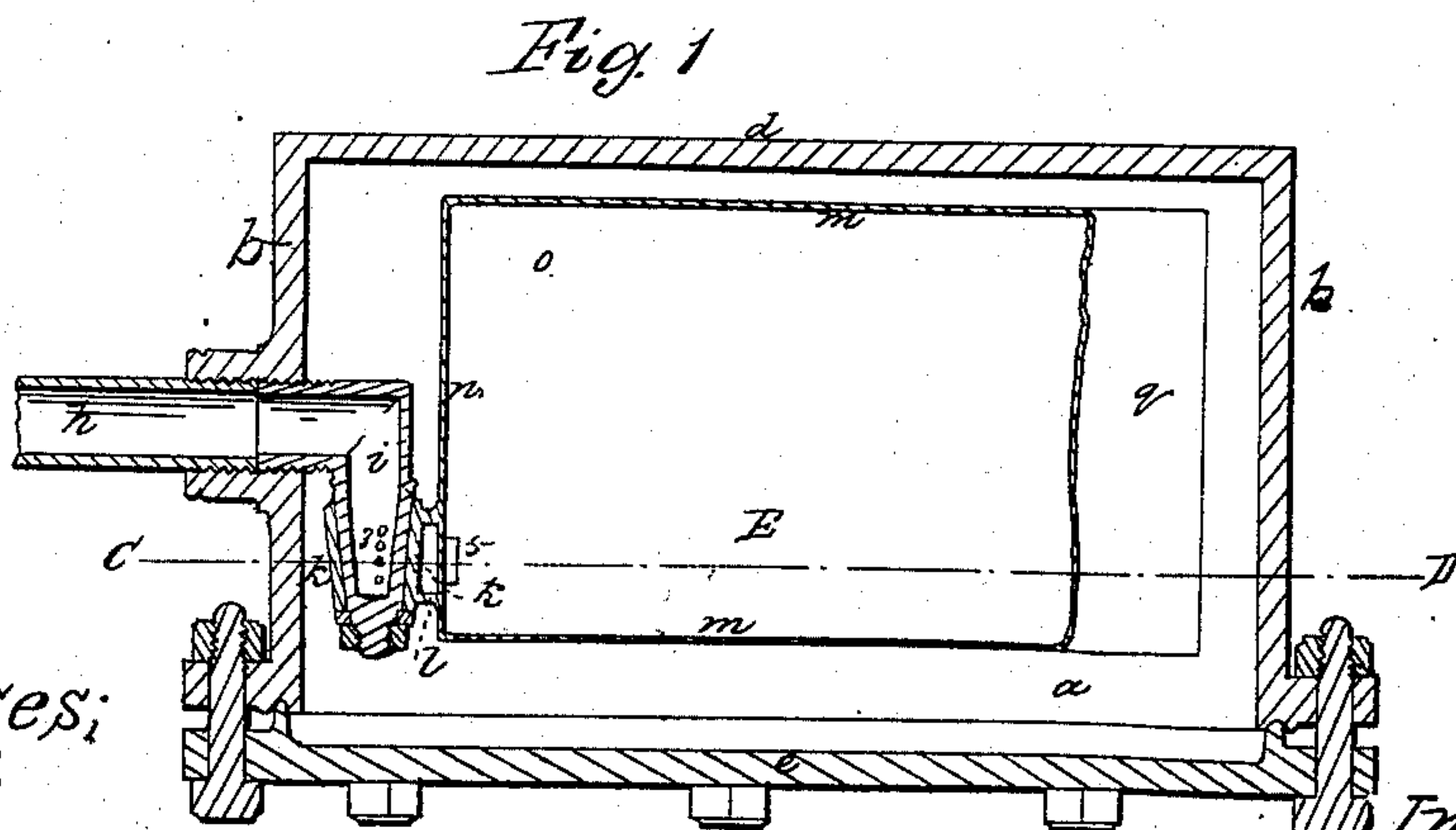
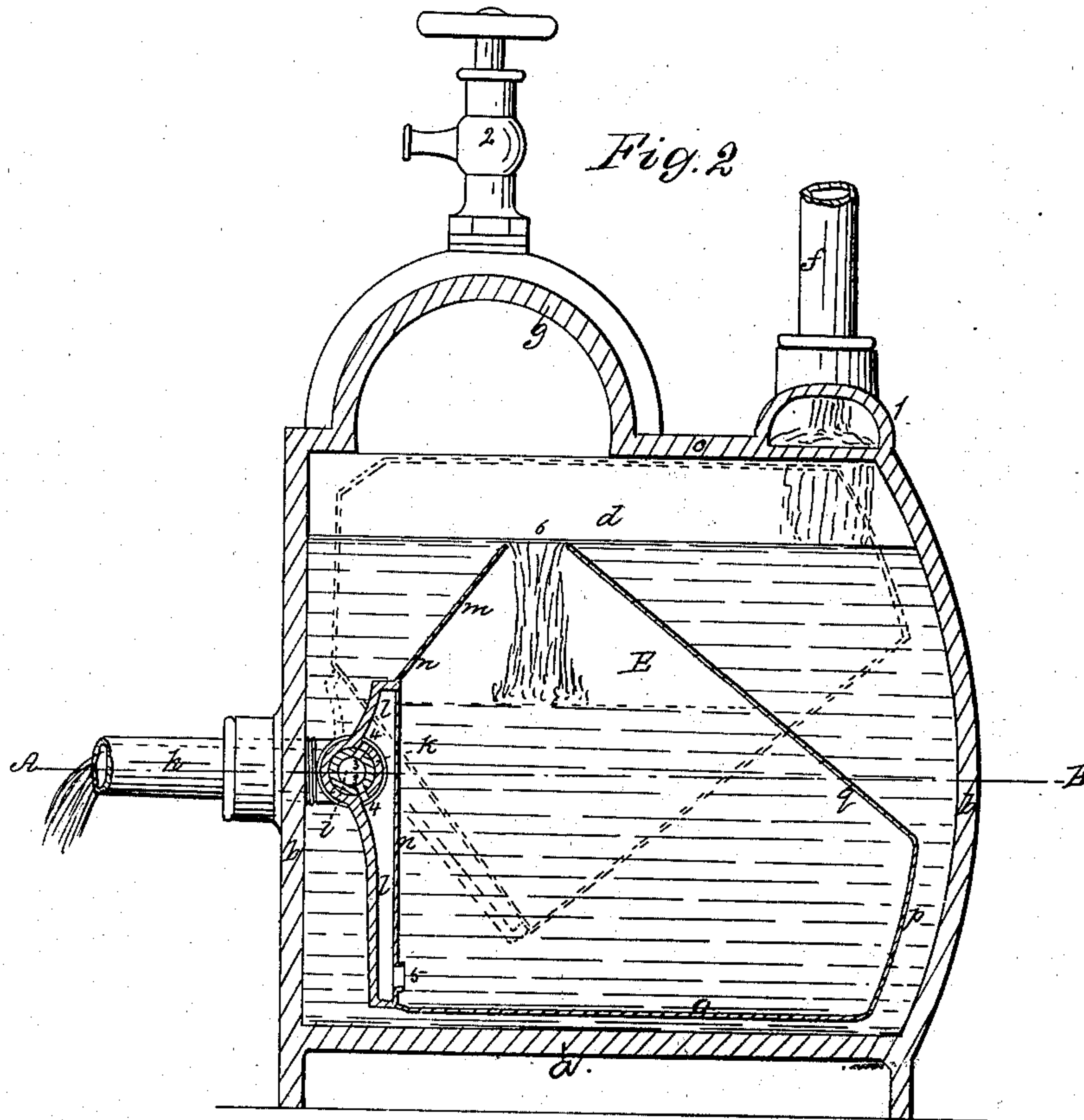


C. M. GUILD & J. BROWN.
STEAM TRAP.

No. 8,103.

Patented May 20, 1851.



Witnesses;
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UNITED STATES PATENT OFFICE.

C. M. GUILD AND JOHN BROWN, OF NEW YORK, N. Y.

STEAM-TRAP.

Specification of Letters Patent No. 8,103, dated May 20, 1851.

To all whom it may concern:

Be it known that we, CHARLES M. GUILD and JOHN BROWN, of the city, county, and State of New York, manufacturers of pipes, &c., have invented, made, and applied to use certain new and useful improvements in the means for allowing the escape of the water of condensation from the pipes in apparatus for warming by steam or in other steam-pipes, which we term collectively a "Steam-Trap," for which we seek Letters Patent of the United States, and that the construction, operation, and effects of these improvements are fully and substantially set forth and shown in the following description and in the drawing annexed to and making a part of this our specification, in which—

Figure 1, is a plan of the parts through the line A, B, of Fig. 2, which is a vertical sectional elevation through the line C, D, of Fig. 1, the like marks of reference applying to the same parts in each figure.

a, is the bottom, *b*, the sides, *c*, the top, and *d*, the back forming a box which is to be of cast iron, or other suitable material, and the front of the box is to be secured by a movable cover *e*, attached by flanges and screws to the other parts of the box.

In the top *c*, is a chamber 1, with openings near each end into the interior of the trap, and *f*, is a pipe connected to, or part of the heating pipes and conveys the water of condensation into the chamber 1.

g, is a dome or chamber with an air cock or valve 2, to allow of blowing through to free the pipes of air on commencing.

h, is a pipe in a coupling on one side *b*, to lead the condensed water to any convenient position.

i, is the hollow plug of a cock opening into the pipe *h*, and 3, 3, are small holes or openings into the interior of the plug *i*, and around this plug *i*, is the barrel *k*, with small holes or openings 4, 4, and formed with this barrel *k*, are half pipes *l*, setting against and soldered to the side *n*, of the float *E*, and this side *n*, has an inlet 5, to the bottom of the pipe *l*.

The float *E*, is made nearly in the form of a trapezium with two vertical sides, *m*, a vertical end, *n*, a bottom, *o*, a curved side, *p*, and a top, *q*, nearly reaching to the side, *n*; leaving an opening or mouth 6.

The operation is as follows: The water of condensation running into the chamber, 1, through the pipe, *f*, passes out at the ends,

without impinging on the top, *q*, of the float, *E*, and as the liquid rises around the float the float rises upon the plug, *i*, of the cock as a center, till it assumes the position shown by dotted lines in Fig. 2, with the top, *q*, against the underside of the top, *C*, of the box; in which situation the outlet by the pipe *h*, is shut off, and at all times the pressure operating on each side of the plug *i*, through the holes 4, 4, no extra friction is caused by any amount of pressure that may be in the trap. The water of condensation continuing to flow in rises until it runs in through the mouth, 6, into the inside of the float, *E*, and when the buoyancy caused by the surrounding water is overcome by the weight of the float and the water inside, the float immediately sinks, the mouth, 6, passing below the surface of the water in the trap, and the float coming into the position shown in Fig. 2, opens the passage through the holes 3 and 4, and plug, *i*, to the pipe, *h*, when the pressure of steam within the trap forces out a portion of the contents of the float and whatever water may be above the mouth, 6, through the hole, 5, and pipes, *l*, and *h*, until the buoyancy produced by partially emptying the float causes it to rise, again shutting off the outlet to the pipe, *h*, as before and the previous operations are now repeated, thus keeping the steam in heating apparatuses from blowing away to waste, and also keeping the pipes clear of the water of condensation, and these means are entirely self acting and are not likely to get out of repair, for if any pieces of red lead or other foreign substances enter the trap, with the condensation water, they remain in the bottom, beneath the float, and if any light substances which swim on the surface enter the float, they stay on the surface; for it will be seen that the water is taken from the surface into the float, and then the escape is taken from the bottom of the float, the float never entirely emptying. This also prevents the escape of steam at all times, and should steam ever escape from the pipe *h* it will immediately be known that the apparatus is out of repair. Many means have been arranged for this purpose but they are all more or less effected by the pressure of steam, requiring different proportions and arrangements for different pressures of steam, but our arrangement is wholly independent of the amount of pressure and works equally well under all pressures, as

long as there is as much pressure inside as the atmospheric pressure; and this arrangement is not liable to get choked by any foreign substances, like others where a valve sets on to a seat to close the outlet, in which any trifling sediment will prevent the valve shutting tight; but in ours even if any substance should float up over the mouth, and then down into the float, and rise up again into the pipe, *l*, and get stuck in the cock, the leverage of the float, turning the cylinder, *K*, on the plug, *i*, would cut off, and divide, any substance that could thus enter the pipe, *l*. And where a closed float is used the strength of the material has to be according to the pressure of the steam to prevent collapsing, but in ours the pressure is at all times the same, inside as outside, so a float of very thin metal can be used and is so much more effective, and as soon as the float commences to descend, the mouth sinks below the surface and the float fills up, causing it to sink with rapidity and by the construction, the mouth being at the highest point, no space remains full of air or steam to prevent the float sinking, and the float when discharging being entirely immersed, so soon as sufficient of the contents are forced out the surrounding water raises it with a quick motion and power that prevents any sticking or remaining half shut or half open.

It will be evident that the cock may be placed either higher up or lower down, and

the float be made of a different shape, without being any substantial variation from this invention, the main features being taking the water of condensation away through the float by the pipe, *l*, and cock *i*, although we believe the arrangements and proportions shown to be the best.

We do not claim to be the first to remove the water of condensation from steam warming or other apparatus by means of a float and valve or cock but we do not know of any means by which this water of condensation is taken off through the float by a cock. Therefore,

What we claim as new and of our invention and desire to secure by Letters Patent of the United States is,—

The construction and application of the float, *E*, with its mouth, *6*, opening *5*, pipe, *l*, and band *k*, on the plug, *i*, with the openings *3* and *4*, for the purpose of retaining the steam, in warming apparatuses, or in other steam pipes, and passing out the water of condensation through the float near the bottom substantially as described and shown.

In witness whereof we have hereunto set our signatures this eleventh day of December one thousand eight hundred and fifty.

CHAS. M. GUILD.
JOHN BROWN.

Witnesses:

N. BLISS,
LEMUEL W. TERRELL.