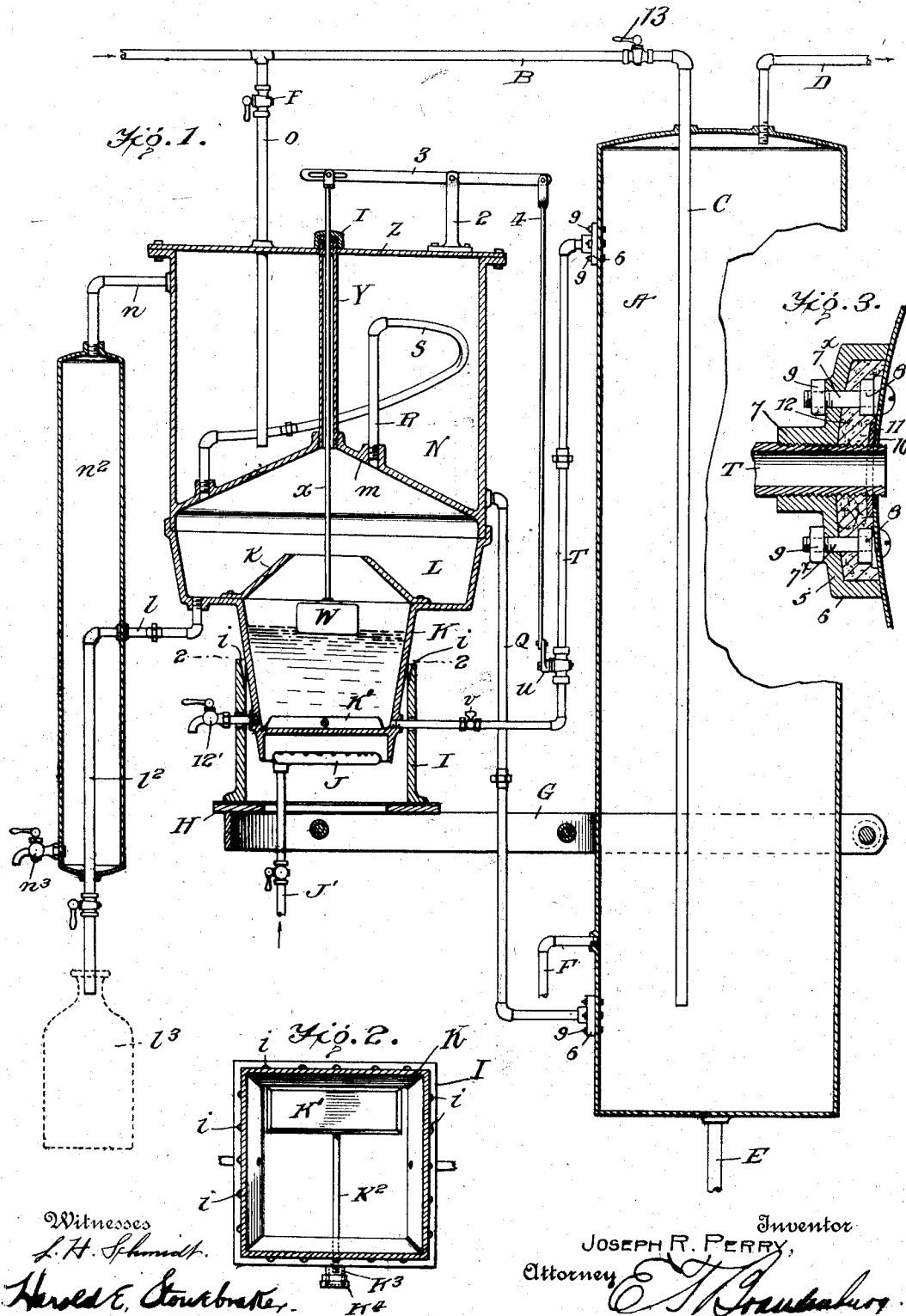


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 DEVICE FOR DISTILLING WATER.
 APPLICATION FILED NOV. 26, 1907.

901,645.

Patented Oct. 20, 1908.



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DEVICE FOR DISTILLING WATER.

No. 901,645.

Specification of Letters Patent.

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To all whom it may concern:

Be it known that I, JOSEPH R. PERRY, a citizen of the United States, residing at Wilkes-Barre, in the county of Luzerne and State of Pennsylvania, have invented certain new and useful Improvements in Devices for Distilling Water; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same.

The object of my invention is to distil water by converting it into steam of a very low temperature, and I aim to provide a mechanism which may conveniently be attached to any boiler containing hot and cold water, which mechanism is combined with vaporizing means.

Another object is to supply cold water to the condensing-chamber and thence to the boiler.

With these objects in view, and others appearing as the specification proceeds, my invention resides in the novel construction, combination, and arrangement of parts, as hereinafter fully described in the specification, summed up in the claims, and illustrated in the drawings, in which:

Figure 1 is a sectional elevation of the invention and of its connections with a hot and cold water boiler; Fig. 2 is a top plan view of the retort and the heating-chamber; Fig. 3 is an enlarged detail view of the means of attachment with the boiler of the hot-water pipe supplying the retort.

Referring in detail to the drawing, A designates a boiler of ordinary construction, and B the cold water pipe and its connections with the boiler, having a pipe C conveying cold water nearly to the bottom of the boiler.

From the top of the boiler extends the usual hot-water pipe D, which conveys hot water to all parts of a building.

On the bottom of boiler A is the cold-water pipe E running to the water-back of the ordinary range, also the returning hot-water pipe F and its connections coming from the range to the boiler.

For sustaining the weight of the distilling-device, a strap of flat iron G is passed around the boiler in two half sections and bolted and drawn together. It has extensions running out from the boiler to form a base or support for the still. Upon this extension is placed a suitable plate or bottom

H, secured to the extension. Upon the bottom or plate H is secured a heat-chamber I, in which is placed a gas-fixture J, or the like, at the bottom of which is the usual Bunsen gas-burner, having a pipe J' attached to the gas-pipe of the house. This chamber I is without air-openings near the flame, but has them near its base, by which means the heat is more confined in acting against the bottom of a water-chamber K, the sides of which converge downward and extend into the heat-chamber I. The heat-chamber I is desirably formed interiorly with top grooves (Figs. 1 and 2) for outlet of heat. It will thus be seen that the products of combustion, before escaping, have to travel upward around the sides of retort K, thus more quickly vaporizing the water therein, and effecting a conservation of heat. If no chamber I were provided, the heat would waste by spreading out horizontally.

Upon the retort K is a steam-chamber L. This chamber is formed by means of an arched condensing-surface *m* and a flaring, open-ended hood *k* removably secured to the top of chamber K. Thus steam escapes through the open end of hood *k* and strikes the hipped surface *m* of the chamber L.

Above the steam-chamber L is a cold-water vessel N, which acts as a condenser upon the steam striking the under surface of the arched plate *m*.

The cold water to supply the chamber N is taken from the water-pipe B leading to the boiler by means of a pipe O, having a valve P. This cold-water pipe discharges close upon the conical portion of the steam-chamber L.

From the cold-water chamber N and on the opposite side from the pipe O is another pipe Q leading the water from or through chamber N and discharging it into the boiler A at the same distance from its bottom as the ordinary cold-water pipe B.

Within the cold-water chamber N and from the conical portion of the steam-chamber, extends into the cold water a steam-pipe R, to which is attached a coil of lead or other pipe S, which leads back to the steam-chamber L. This pipe and coil or coils are placed within the cold-water chamber N to insure rapid condensation of steam.

In practice, it is found that the water, as it condenses and issues from chamber L through a pipe *l*, is quite hot; hence it is desirable to provide means for cooling the

same. I preferably provide a pipe n , which may be disposed near the top of vessel N, and which has its outlet-end in line with a vertically-disposed cold-water pipe n^2 provided at its end with an outlet-spigot n^3 . Communicating with pipe l is a pipe l^2 disposed within the cold-water pipe n^2 and leading to a catch-receptacle, such as a can l^3 . When the machine is in use, there will be a constant flow of cold water through the vessel N by means of the supply-pipe O, spigot n , pipe n^2 , and pipe n^3 , and the hot water of condensation, as it passes through the pipe l^2 , will be very appreciably cooled.

The chamber K is supplied with water from the boiler A near its top by means of a stop-valve u and pipe T, and also by means of a valve v attached to that part of pipe T which enters the hot-water chamber.

The regulation of the required amount of water from boiler A through pipe T and valve u is effected by an automatic device acting within water-chamber K, as follows: Within chamber K is a hollow float W, to the upper end of which is secured a hollow brass pipe x passing through a brass pipe Y, which is threaded into the upper central portion of the surface m and is also secured to the cover Z, or top of the cold-water chamber N. In order to be secured against leakage on account of the cold-water pressure, this rod Y has a stuffing-box I surrounding the said pipe Y and by suitable packing may be made water tight.

Upon cover Z is securely bolted the stud 2; attached thereto is a lever 3, slotted at the end to allow rod x to slide and maintain its position without friction in acting upon lever 3.

Attached to lever 3 at the other end is a rod 4, which, in turn, is secured to the lever of the stop valve u .

As a convenient means of attaching the pipe T to the boiler, I have devised the following construction: 5 is a casting formed with a rim, 6, and an internally-threaded extension or boss 7, through which the pipe T passes, as shown. Bolts 7* extend from the interior of the boiler through the same and through the casting 5. Nuts 8, 8 are secured on the bolts to draw the heads of the bolts tightly against the boiler; and, on the ends of the bolts are secured additional nuts 9, 9, to maintain the casting firmly against the boiler, as shown. Admission to the boiler to place the bolts in position is afforded by means of the opening 10 through the boiler-shell. This opening may be closed by a cap 11, or any other desirable means. Hydraulic cement, or the like, 12, is finally disposed in the space between the interior of the boiler and the casting 5, which cement sets to form a water-tight joint at this place.

The operation of the automatic device is as follows: When the heat and steam or flow

of hot water from boiler A rises above the proper level, the water will act upon the hollow float W and raise it upward, which causes the lever 3 to move up at the slotted end and press the rod 4 downward, acting thereby to close stop valve- u and check the flow of water from boiler A, and, as soon as the water has been vaporized and condensed, the float W will immediately descend and reopen the stop valve u to allow the inflow of water and produce an equilibrium of pressure. The small valve v may be used to regulate the exact amount of water required to maintain a regular, steady and uniform operation of the device, or may be changed arbitrarily at will to increase or diminish the amount of water in chamber K.

It will be observed that great economy of the heat required to vaporize the water is accomplished by taking the hot water directly from the top of boiler A, as it is always in a state approaching 212° F. and often contains a large proportion of actual steam ready to be condensed into pure water. It will be seen, also, that when the flow of cold water is required to fill the chamber N and to operate this machine for the purposes named, there will be no necessity to allow the water from pipe B to flow into boiler A. I therefore close the stop valve 13 on pipe B and open the stop-valve P, and thereby it will be seen that the same flow of cold water through chamber N by means of pipes O and Q on the outside of the boiler will act in the same manner as when the cold water is put into the boiler by means of the inside pipe C. The only difference will be slight change in the temperature of the water, which has become slightly warmer, so that not a particle of heat has been lost.

As all the dirt, filth, germs, and other chemical impurities will be precipitated to the bottom of chamber K, it will be necessary to clean it out occasionally and for this purpose the mud-spigot 12 is connected near the bottom, and by opening it the force of water issuing from pipe T may be used to run clean water, when favorable, and clean it out. Readily to dislodge sediment collecting upon the bottom of chamber K, I have provided a scraper K' disposed in chamber K, the handle l^2 of which extends through the walls of chambers K and I and through an exteriorly threaded boss or lug K³ on the outside of chamber I. Screwed on the lug is a cap l^4 , thus making a water-tight connection at this point.

Without limiting myself to details of construction, what I claim as new and desire to secure by Letters-Patent is:

The combination with the usual hot-water boiler connected to the water-back of a stove, or the like, of a retort communicating directly with the boiler, whereby hot water is supplied direct to said retort, a condensing-

chamber disposed above and communicating with said retort, and provided, intermediate its depth and spanning its width, with an arched condensing surface, whereby said chamber is divided into an upper and a lower compartment; a steam-condensing coil in the upper compartment and provided with an inlet-end communicating with the lower compartment and with an outlet-end

also communicating with said lower compartment.

In testimony whereof, I have hereunto signed my name in the presence of two subscribing witnesses.

JOSEPH R. PERRY.

Witnesses:

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E. T. BRANDENBURG.