

J. M. HARSH.
 WATER DISTILLING APPARATUS.
 APPLICATION FILED MAY 1, 1911.

1,013,936.

Patented Jan. 9, 1912.

Fig. 1

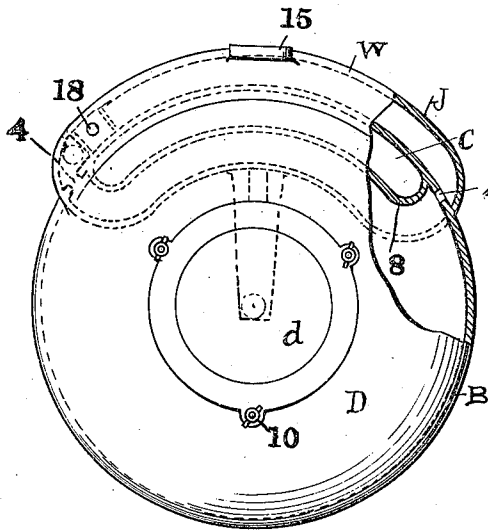


Fig. 2

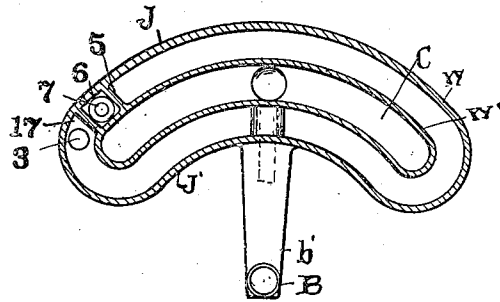
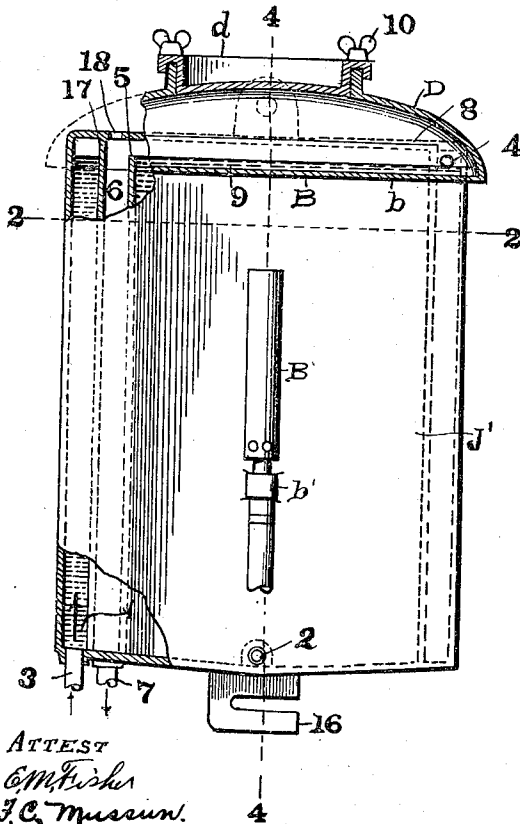
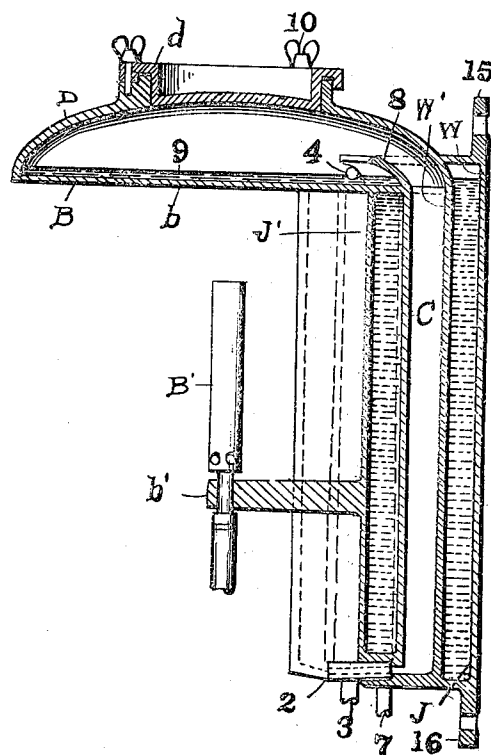


Fig. 3



ATTEST
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Fig. 4



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UNITED STATES PATENT OFFICE.

JOHN MARION HARSH, OF CLEVELAND, OHIO.

WATER-DISTILLING APPARATUS.

1,013,936.

Specification of Letters Patent.

Patented Jan. 9, 1912.

Application filed May 1, 1911. Serial No. 624,374.

To all whom it may concern:

Be it known that I, JOHN MARION HARSH, a citizen of the United States, residing at Cleveland, in the county of Cuyahoga and State of Ohio, have invented certain new and useful Improvements in Water-Distilling Apparatus, of which the following is a specification.

My invention relates to water distilling apparatus, and the invention consists in an apparatus or still constructed and adapted to operate substantially as shown and described and particularly pointed out in the claims.

In the accompanying drawings, Figure 1 is a plan view of the apparatus partially broken away at the top, and Fig. 2 is a cross section thereof on line 2—2, Fig. 3. Fig. 3 is a front elevation partially broken away top and bottom, and Fig. 4 is a vertical sectional elevation on a line corresponding to 4—4, Fig. 3.

The apparatus as thus shown is designed to be connected with a water service pipe to maintain the water supply and has two overflows or outlets, one for the cooling water in the respective jackets and another for the condensed water.

Structurally the invention comprises a water distilling boiler B, two cooling jackets J and J' and a steam condensing chamber C between the same having an outlet 2 at its bottom for the distilled water. Entrance of the water to the apparatus is by inflow or supply pipe 3 to the said jackets which, while being distinguished herein by different reference characters for convenience of description, in fact are one continuous jacket as seen in Fig. 2. The said condensing space lies within and is surrounded by this jacket and opens into the upper portion of the boiler over an inwardly curved wall 8 at the front and top of said space and apart from the dome D of the boiler. This wall also serves to confine the water in the boiler at its rear. As the steam is evolved from the shallow layer 9 of water on the bottom b of the boiler it naturally rises above and rolls outward over the said wall 8 and as it comes into the presence of the cool surfaces or walls of the space C naturally condenses and runs down and out at spout or pipe 2. The supply of water to the boiler is from the top of the outer jacket J through orifices or openings 4 in the wall of dome D, and the level of the water in the jackets and boiler

is fixed at one side of the rear cooling jacket J by overflow wall 5, where the water drops into the vertical and separately walled passage 6 and passes down to outlet pipe 7 at its bottom. This maintained level precludes possible flooding of the boiler with water beyond the comparatively shallow depth shown and quickly responds to the heat from burner B'. The bottom of the boiler is flat and level and the burner B' is supported on a bracket b' centrally beneath said bottom and carried by the front wall of the water jacket. The burner may be of any preferred form or construction.

The dome D of the burner is provided with a central flanged opening in its top which is closed by a steam tight cap d seated upon and within said flange and concave on its inner surface to conform exactly to the curvature or contour of the inner surface of the dome and to be flush therewith all around, screws 10 serving to lock said cap in place. Cap d is removable to permit cleansing of the interior of the boiler.

Now, the semi-elliptical shape or outline of the boiler and part-circular form of the cooling jackets and condensing chamber is deemed to be material to the invention for several reasons. In the first place, it works economy in generating the steam by reason of its semi-elliptical and circular shape with the burner at the middle, and it especially promotes rapid condensation by reason of the free access of the condenser space to the interior of the boiler and the large condensing area, and for the further reason that the semi-elliptical dome eliminates all dead ends and pockets. Furthermore, the vapor pressure in the boiler is maintained below normal by reason of the rapid condensation due to the construction described. A maximum of efficiency in condensation is the result. Then again by having the entire depending portion of the apparatus curved to a segment with the back to the rear or wall the heat is not only confined thereby about the rear but an outward deflecting surface is provided for the heat and such flame as there may be away from the wall. It is to be observed that this apparatus is comparatively small and is designed to be hung upon a wall or partition or the like, and hence it is material to so construct the device as to absolutely prevent catching fire therefrom. Further detailed reference discloses that the inner jacket J' stops beneath the bottom

of the boiler while the outer jacket extends above said bottom somewhat and has its high water mark level with the top of the water in the boiler but with its outer wall
 5 W extending above the lower portion of the dome. In a sense there are four walls and in another sense there are but two. Thus, the outer wall may be defined as that wall which extends around the entire water jacket
 10 while the inner wall W' extends around the condensing space and also constitutes the inner wall of the jacket or jackets. In cross section these walls also are four in number when the spaces bounded by them are considered. It will be seen that this portion of
 15 the apparatus is vertical while the boiler projects forward from the top thereof after the manner of a canopy in point of appearance, but of evident utility in fact. Ears or
 20 extensions 15 and 16 top and bottom respectively serve to support the apparatus on the wall, and the bottom ear is slotted to permit fastening of the apparatus in true vertical alinement, using a screw or other
 25 fastening device.

In my invention I have accomplished the maintenance of a constant water level in the boiler by an overflow within the cooling jacket J and small feed openings direct from
 30 the cooling jacket J' to the boiler B, thereby eliminating any and all exterior tubing connections or cups employed in other known devices to accomplish the same result.

The bottom of condensing chamber C is
 35 inclined downwardly from each side to the center and also forward to promote self-drainage, and a vertical division wall 17 within jacket J the full depth thereof separates the intake side at intake 3 from outlet
 40 passage 6, thereby causing a circuitous flow of the water around the front and back of chamber C from the bottom to the top. A small vent opening 18 is also provided in the top of jacket J above passage 6. Obviously,
 45 valved pipes or faucets may be used in lieu of the plain intake and discharge pipes shown and described.

What I claim is:

1. A water distributing apparatus having
 50 a boiler with a flat bottom and a dome-shaped top closing down about the said bottom, a condensing space segmental in cross section inclosed about its top by said dome and a water jacket segmentally shaped to

conform to said condensing space and having a discharge opening in its outer portion into said boiler next beneath the dome therein.

2. A distilling apparatus consisting of a boiler having a flat bottom and a dome-
 60 shaped top of greater area at its bottom portion than said bottom, a condensing space segmental in cross section depending from and carried by said top and having a flange at its inner edge over which the steam is
 65 adapted to pass into said space, and a water jacket about said space the full depth thereof and provided with an outlet at its top and outer portion through the wall of said dome on a level above the boiler bottom. 70

3. In a water distilling apparatus, a circular boiler of semi-elliptical cross section and a steam condensing chamber depending from one side thereof and a water-cooling
 75 jacket about the same forming a side portion of the boiler, said jacket and said condensing chamber being segmental in cross section and of uniform depth transversely, whereby a large condensing area is provided.
 80

4. In a water distilling apparatus, a boiler and a segmentally shaped steam condensing chamber vertically at the rear thereof and open thereto at its top, and water-cooling
 85 jackets front and rear of said chamber segmental shape in cross section and having water communicating openings with the boiler above the bottom thereof and an overflow outlet from said boiler to maintain a shallow depth of water therein.
 90

5. In a water distilling apparatus, a boiler having a steam condensing chamber open thereto at its rear and a water jacket encircling said chamber having an inlet and
 95 an outlet at its bottom and provided with a division wall between said inlet and outlet and also an overflow wall parallel with said division wall to maintain a fixed level of water in the boiler and jacket and promote a circuitous flow of water around the front
 100 and back of said chamber from bottom to top thereof.

In testimony whereof I affix my signature in presence of two witnesses.

JOHN MARION HARSH.

Witnesses:

R. B. MOSER,

E. M. FISHER.

It is hereby certified that in Letters Patent No. 1,013,936, granted January 9, 1912, upon the application of John Marion Harsh, of Cleveland, Ohio, for an improvement in "Water-Distilling Apparatus," errors appear in the printed specification requiring correction as follows: Page 1, line 71, for the word "burner" read *boiler*; page 2, line 49, for the word "distributing" read *distilling*; and that the said Letters Patent should be read with these corrections therein that the same may conform to the record of the case in the Patent Office.

Signed and sealed this 27th day of February, A. D., 1912.

[SEAL.]

C. C. BILLINGS,
Acting Commissioner of Patents.