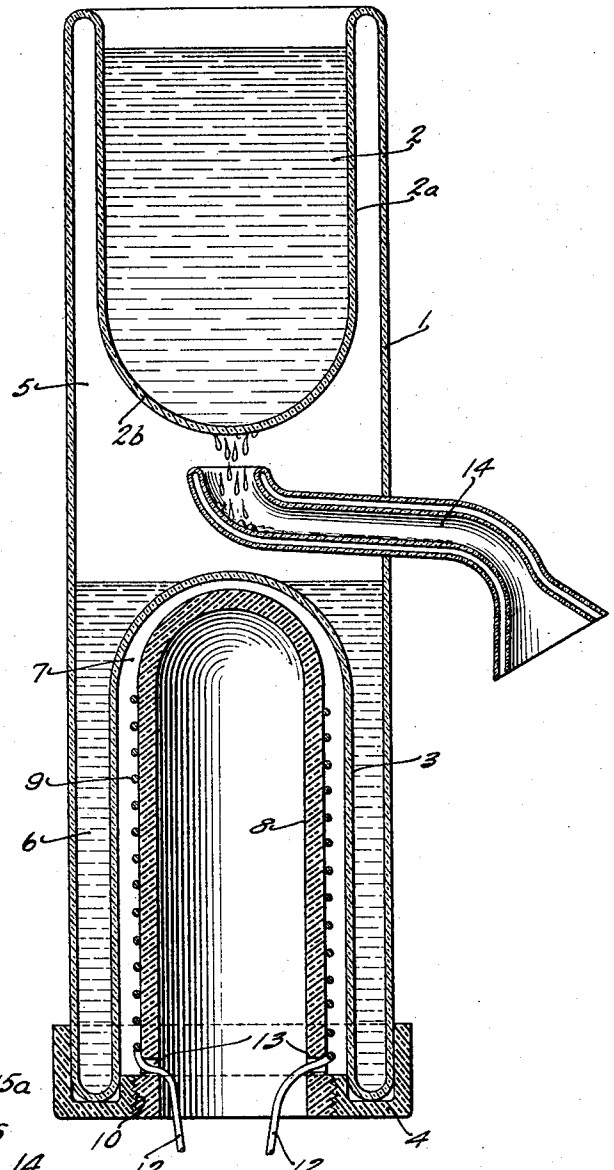
Jan. 3, 1933. P. SCHLUMBOHM 1,893,340

DISTILLING APPARATUS

Filed June 12, 1931

FIG. 1.



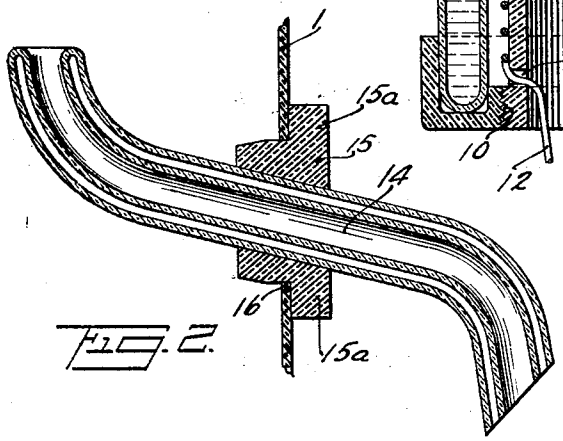


FIG. 2.

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UNITED STATES PATENT OFFICE

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DISTILLING APPARATUS

Application filed June 12, 1931. Serial No. 543,899.

The subject matter of this invention is a simple compact apparatus for quickly distilling small quantities of water or other suitable liquids. For this purpose I provide a device in which the boiler and condenser form a unitary structure providing a single chamber in which the water is boiled and condensed. Heat is applied to the water in the lower part of the chamber with practically no loss, and the water vapor is condensed in the upper part of the chamber on a depending wall from which it drips into a collecting tube. The condenser wall forms a cup which is filled with cold water or other cooling agent, so that no running water for the condenser is necessary. This apparatus is so simple that the boiler and condenser can be made in one piece, preferably of glass.

A simple embodiment of my invention is shown in the accompanying drawing, in which—

Fig. 1 illustrates diagrammatically a vertical cross-section of my device, and

Fig. 2 shows a convenient way of removably attaching the collecting tube to the main part of the apparatus.

An outer tube or cylinder 1 is provided with two cups 2 and 3 arranged in inverse relation, these cups being spaced from the outer tube. In practice it is convenient to form the parts 1, 2 and 3 of glass in one piece, which is firmly supported on a suitable base 4. When I say that the outer glass casing 1—2—3 is in one piece, I do not mean that it must be blown or shaped complete from a single gather of glass, but I mean that the parts 1, 2 and 3 are fused together to form in effect an integral member. The inside of casing 1—2—3 constitutes a closed chamber 5 in which the water is boiled and condensed. The annular space 6 around the lower inverted cup 3 is filled with water or other liquid to be distilled, and the upper cup 2 is filled with cold water to keep the inner condensing surface 2*a* cooled.

The inverted cup 3 forms an outer recess 7 for receiving an electric heating unit which in this instance comprises an insulating core 8 carrying a heating wire 9. The core 8, which may be solid or a cylindrical shell of porcelain, lava and the like, has a screw-threaded flange 10 adapted to be screwed into base 4 for easy insertion and removal. The circuit wires 12 for the heating coil 9 may pass through holes 13 in core 8. It should be noted that the cylindrical coil 9 is very close to the outer wall of cylindrical cup 3, whereby the heat produced in the closed recess 7 is transferred to the wall of the cup with maximum efficiency. Furthermore, the water in annular space 6 being in contact with a large heating surface (the cylindrical wall of cup 3) boils very quickly and with little expenditure of heat.

The water vapor condenses on the cool surface 2*a* of cup 2 and runs to the center of the rounded bottom 2*b* of the cup, where it forms drops of distilled liquid that falls into a suitable collecting pipe 14. This pipe is attached to wall 1 of the device in any practical way, and is preferably double-walled or otherwise heat-insulated to avoid reheating of the condensate. If the pipe 14 is of glass, it may be permanently fused to the glass wall 1, as shown in Fig. 1. If the pipe is to be detachable, I may use a rubber plug 15 (see Fig. 2) in which the pipe is mounted and which passes through an opening 16 in cylinder 1 in a tight fit. A flange 15*a* on plug 15 assists in holding it in place. Any other suitable means may be employed to secure the collecting pipe 14 in operative position, and the particular form or structure of the pipe may be varied in different designs of apparatus. Also, any other practical form of heating unit may be used, such as a gas burner, but personally I prefer an electric heater as the most suitable, especially since it can be entirely housed in recess 7 where it is out of the way and can not burn any one. A suitable thermostat switch may be mounted in the hollow core 8 or in chamber 5 to turn off the current when the water in space 6 is evaporated and the temperature rises above 100° C. The cylinder 1 may be a double-walled vacuum tube to heat-insulate the chamber 5 completely from the outside.

Although I have explained my invention by describing a specific structure, I have done so merely by way of example and without

restricting myself to the details set forth. Changes and modifications may be made within the scope of the appended claims.

I claim as my invention:

1. A device for quickly distilling small quantities of liquid comprising a glass cylinder having the upper and lower end portions thereof turned inwardly upon themselves in the form of outwardly opening cups closed at their inner ends and extending into the ends of the cylinders in spaced relation to the sides thereof, the bottom cup being adapted to receive an electric heating element and the top cup being adapted to receive a cooling medium, the annular space between the bottom cup and the cylinder being adapted to receive the liquid to be distilled, and a pipe for directing the distilled liquid from the device, said pipe extending through the side of the cylinder and having within the cylinder an upwardly opening end underlying the inner end of the top cup to receive the distilled liquid dropping from the inner end of the top cup.

2. A distilling device for quickly distilling small quantities of liquid comprising a glass cylinder having the lower end portion thereof turned inwardly upon itself and directed upwardly into the cylinder in the form of an inverted cup of less diameter than the cylinder to provide an annular space around the cup within the cylinder for the reception of liquid to be distilled, said cup being open at its bottom for the reception of an electric heating element, said cylinder having the upper end portion thereof turned inwardly upon itself and directed downwardly into the cylinder in the form of a cup to receive a cooling medium, said last mentioned cup also being of less diameter than the cylinder to provide an annular condensation space around the same within the cylinder, said cylinder having a pipe extending through the side thereof and said pipe within the cylinder having an upwardly opening end underlying the inner end of the top cup to receive condensed liquid dropping from said cup, a supporting base for holding the device in an upright position, said base having a threaded opening alined with the lower cup, and a heating element insertable into the lower cup through said opening and provided with threads for engagement with the threads of the base whereby the heating element is adapted to be detachably supported in operative position within the lower cup.

PETER SCHLUMBOHM.