

May 11, 1937.

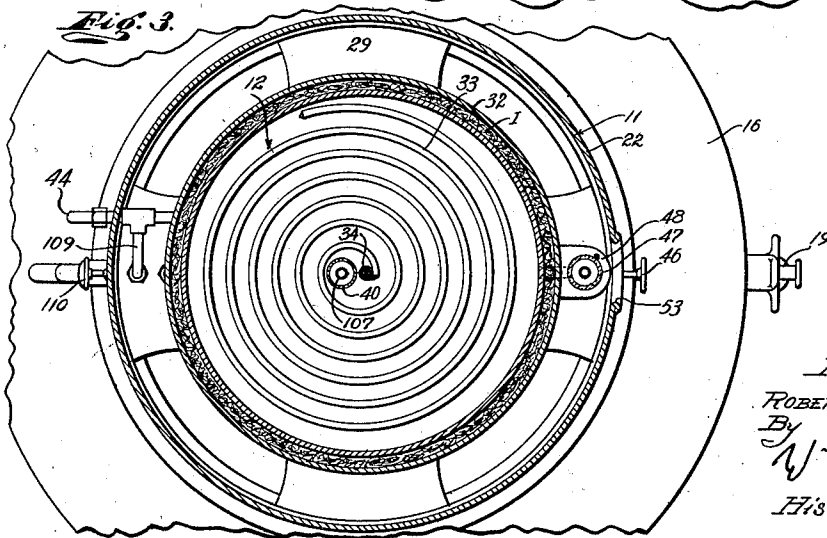
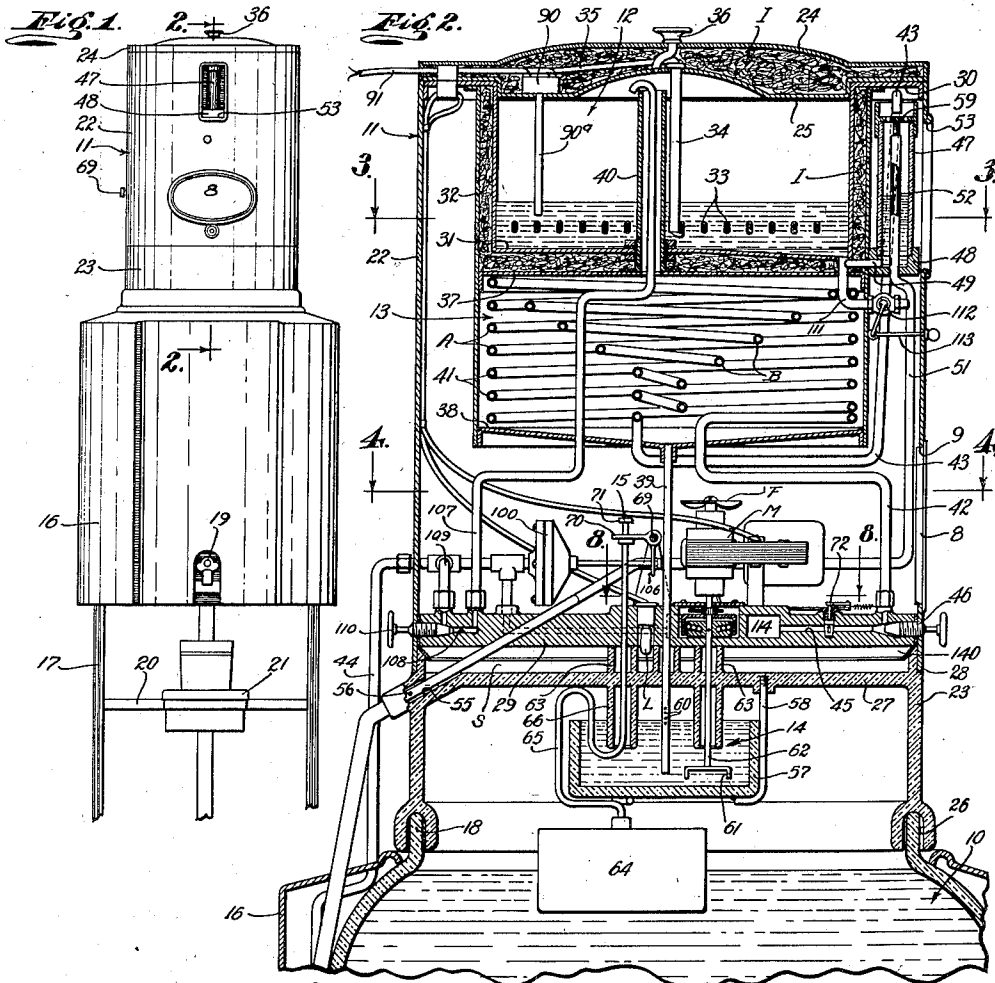
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2,079,897

APPARATUS FOR DISTILLING WATER

Filed Oct. 12, 1934

3 Sheets-Sheet 1



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APPARATUS FOR DISTILLING WATER

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3 Sheets-Sheet 2

Fig. 4.

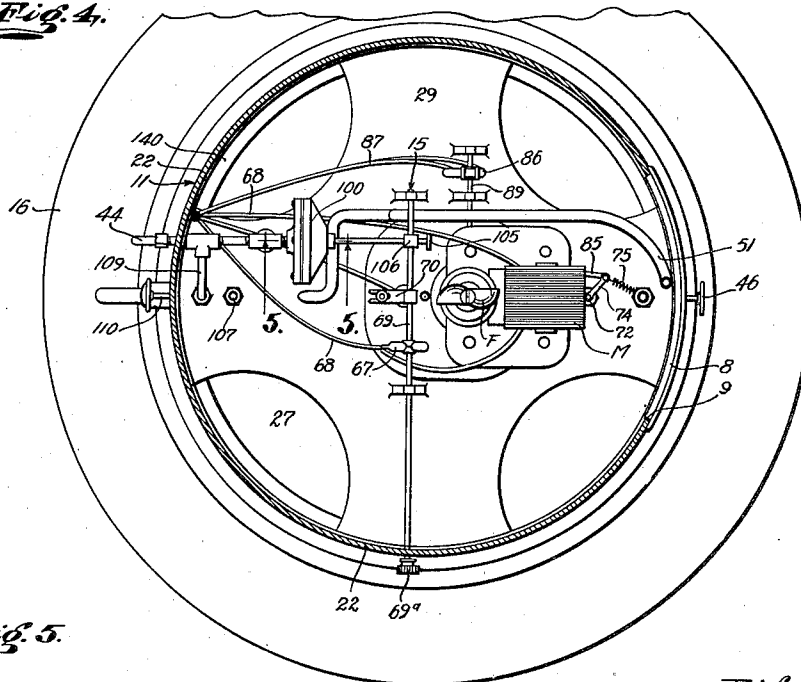


Fig. 5.

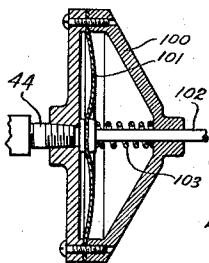


Fig. 6.

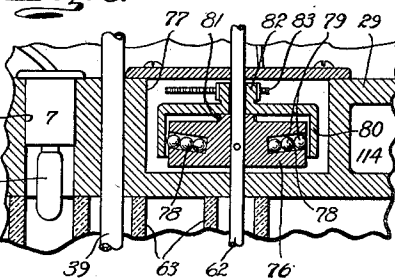


Fig. 7.

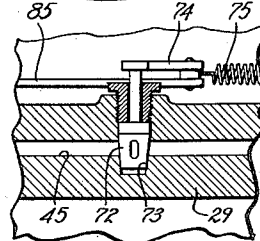
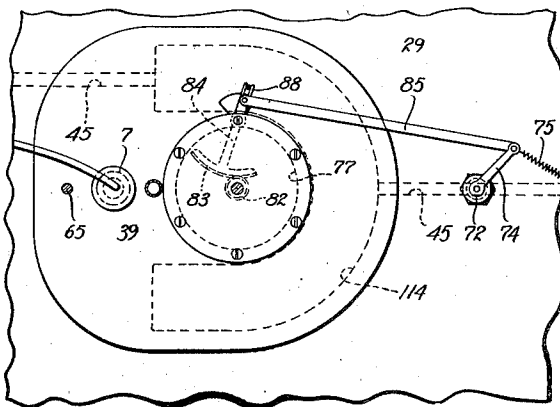


Fig. 8.



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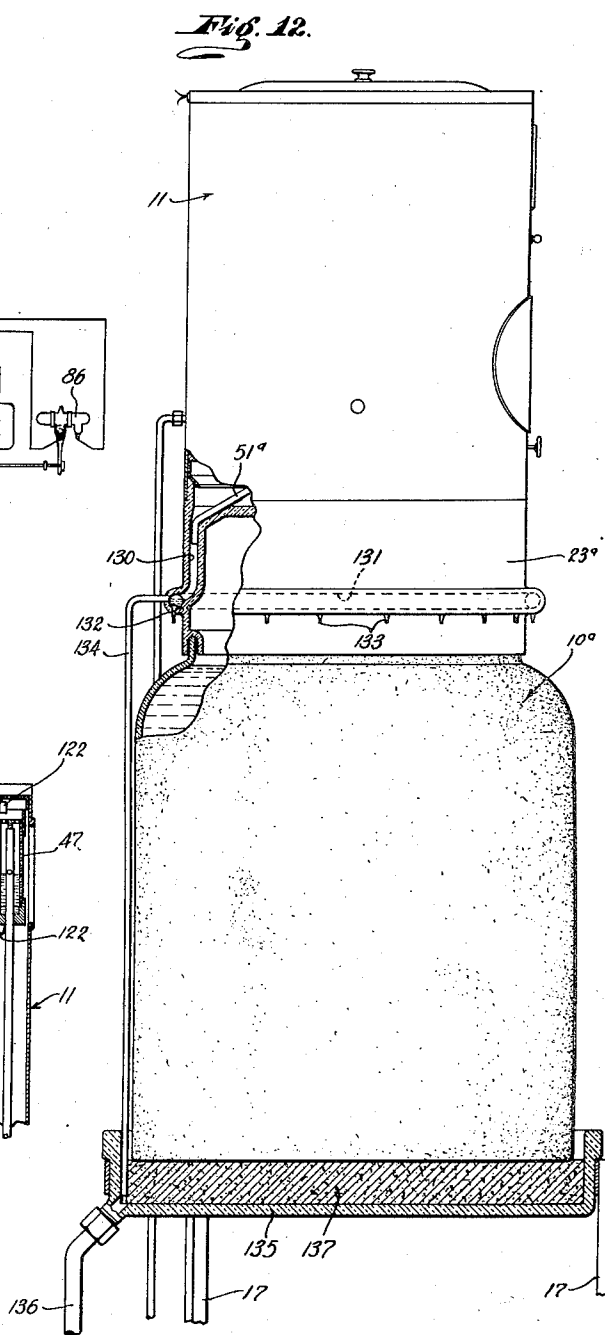
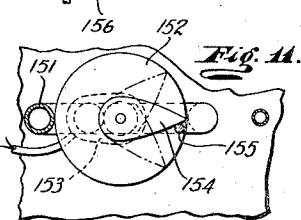
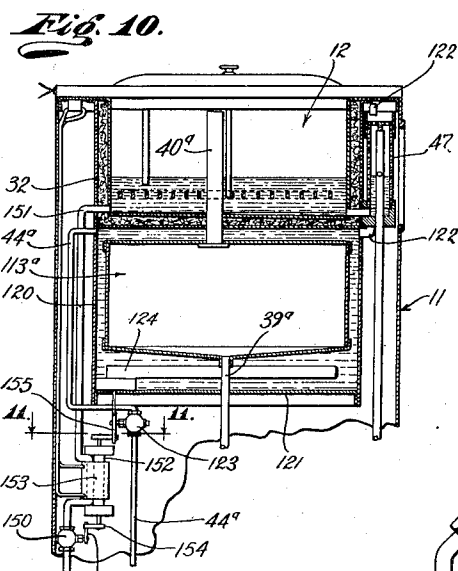
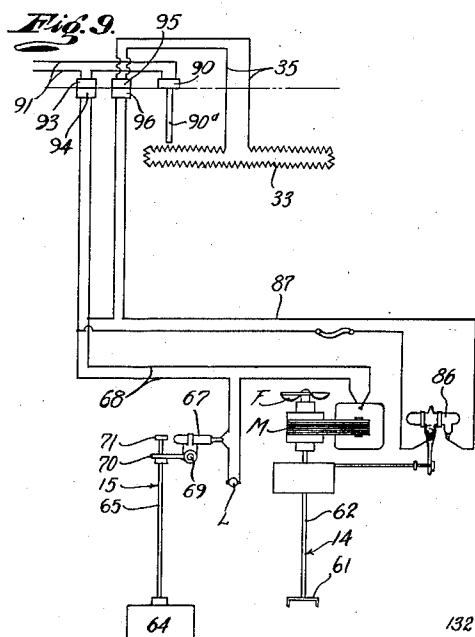
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APPARATUS FOR DISTILLING WATER

Filed Oct. 12, 1934

3 Sheets-Sheet 3



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UNITED STATES PATENT OFFICE

2,079,897

APPARATUS FOR DISTILLING WATER

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Application October 12, 1934, Serial No. 748,058

6 Claims. (Cl. 202—196)

This invention relates to a distilling apparatus and a general object of the invention is to provide a practical efficient automatic apparatus for purifying drinking water by distillation.

Another object of the invention is to provide a device or apparatus adapted to receive water from a city water line or other suitable source, automatically distill it and then aerate it to restore its oxygen content and life.

Another object of the invention is to provide an automatic apparatus for distilling water that is embodied in a relatively small, compact unit suitable for installation in a residence, office, store, etc.

Another object of the invention is to provide an apparatus for purifying water that may receive the water directly from the city water line or other suitable source, vaporize the water by heat, condense the water vapors, aerate the resultant distilled water by agitation and then deliver it to a cooling olla or other receptacle from which it may be withdrawn.

Another object of the invention is to provide an automatic apparatus for purifying drinking water by distillation that is capable of supplying aerated distilled water in substantially unlimited quantities as conditions may require.

Another object of the invention is to provide an apparatus of the character mentioned that is entirely automatic in its operation and requires but very little adjustment or attention.

Another object of the invention is to provide an apparatus of the character mentioned that includes a safety means for automatically rendering the heating element and the other parts inoperative when the water supply is interrupted or suspended.

Another object of the invention is to provide an apparatus of the character mentioned that includes a novel effective means for automatically aerating the distilled water by agitation before it is delivered to the olla or cooling receptacle.

Another object of the invention is to provide an apparatus of the character mentioned that has wall portions and internal parts of transparent material whereby the operation of the agitator or aerator may be observed.

A further object of the invention is to provide an apparatus of the character mentioned that is economical and efficient and only uses water and electrical energy when the water level in the olla or cooling receptacle is lowered.

The various objects and features of my invention will be fully understood from the following detailed description of typical forms and applica-

tions of the invention, throughout which description reference is made to the accompanying drawings, in which:

Fig. 1 is a front elevation of a typical embodiment of my invention. Fig. 2 is an enlarged, central, vertical, detailed sectional view of the principal parts of the apparatus, being a view taken as indicated by line 2—2 on Fig. 1. Fig. 3 is a transverse detailed sectional view taken as indicated by line 3—3 on Fig. 2. Fig. 4 is a transverse detailed sectional view taken as indicated by line 4—4 on Fig. 2. Fig. 5 is an enlarged longitudinal detailed sectional view of the safety diaphragm means. Fig. 6 is an enlarged vertical fragmentary sectional view illustrating the friction governor or drive of the control. Fig. 7 is an enlarged fragmentary vertical sectional view of the valve for controlling the incoming water. Fig. 8 is a fragmentary plan elevation of a portion of the control being a view taken substantially as indicated by line 8—8 on Fig. 2 showing certain parts in cross section. Fig. 9 is a schematic wiring diagram of the electrical circuits embodied in the apparatus. Fig. 10 is a vertical detailed sectional view of the upper portion of another embodiment of the invention. Fig. 11 is an enlarged fragmentary horizontal sectional view taken as indicated by line 11—11 on Fig. 10, and Fig. 12 is a side elevation of a form of the invention embodying novel means for cooling the olla, showing certain parts in cross section.

The form of the invention illustrated in Figs. 1 to 9, inclusive, of the drawings, includes, generally, a receptacle 10 for receiving and holding the distilled water, a body or case 11 supported on the receptacle 10, a boiler 12 in the case 11, a condenser 13 in the case 11 for receiving the water vapor from the boiler, means 14 for aerating the distilled water from the condenser 13, an automatic control 15 for the boiler 12, the condenser 13 and the aerating means 14, and various other mechanisms, the details and functions of which will be hereinafter set forth.

The receptacle 10 is provided to receive and hold the water distilled and aerated by the apparatus. In practice the receptacle 10 may be in the nature of an olla of suitable porous material so that the purified or distilled water is maintained at a relatively low temperature by the evaporation of water from its outer surfaces. In the drawings I have shown the receptacle 10 enclosed by a housing 16 supported by legs 17. The receptacle 10 has an upstanding neck 18 and a comparatively large open upper end. The neck 18 projects upwardly beyond the housing 16 to

carry the case 11. A valve or faucet 19 is provided for drawing or draining the water from the receptacle 10. A spreader 20 may extend between the spaced legs 17 to support a carrier 21 for holding a glass or other drinking vessel below the faucet 19.

The body or case 11 houses the boiler 12, the condenser 13, the aerating means 14 and the principal parts of the automatic control 15. The case 11 may be an upright, substantially cylindrical structure as illustrated throughout the drawings. The active or working parts of the apparatus may be embodied in a relatively small assembly so that the case 11 may be of less diameter than the receptacle 10 and its housing 16. The case 11 may include an upper section 22 of sheet metal or the like and a lower section 23 of glass or other transparent material. The upper case section 22 is tubular and its upper end is normally closed by a removable closure or cover 24. The cover 24 forms the top or upper wall of the boiler 12 and is suitably insulated. The insulating means for the cover 24 may include a lower wall 25 connected with the cover proper at its periphery and spaced below the cover to provide a space for carrying insulating material I. A service opening 9 may be provided in the front wall of the section 22 and may be normally closed by a removable door 8. The control 15 and various other parts are made accessible by removing the door 8.

The lower transparent section 23 of the case has an annular groove 26 in its lower edge or end receiving the neck 18 of the receptacle 10. The lower section 23 rests on the neck 18 and supports the upper section 22. A transverse partition 27 is provided across the upper portion of the section 23. The lower case section 23 with its partition 27 and other parts may be a single integral casting of glass being made of transparent material so that the aerating means 14 may be readily observed when the device is in operation. The lower portion of the upper case section 22 surrounds an upper edge portion of the section 23 and the section 22 is supported on a shoulder 28. A perforated plate or partition 29 of metal or the like is arranged in the lower portion of the section 22 and is spaced a short distance above the partition 27. The partition 29 is supported on the upper edge of the section 23 by a water shed having a downwardly and inwardly projecting flange 40. The openings or perforations in the partition provide for air circulation in the case.

The boiler 12 is arranged in the upper portion of the case 11 and is supplied with water from a suitable source under the control of the means 15. In the preferred construction the boiler 12 is substantially centrally disposed in the upper portion of the case section 22 and has an outwardly projecting annular flange 30 at its upper end which is suitably secured to the upper edge portion of the section 22. The particular boiler 12 illustrated in the drawings is a cylindrical container having a horizontal bottom 31. A shell 32 depends from the flange 30 and surrounds the boiler 12 in spaced relation thereto to provide a space for carrying heat insulating material I. The lower wall 25 of the cover 24 has a downwardly projecting central portion whose periphery fits within and seals with the upper portion of the boiler 12.

A heating means is provided in the boiler 12 to vaporize the water therein. The heating means may be in the nature of an electric heating element 33 arranged in the lower portion of

the boiler. The heating element 33 is a spiral or coil and is suitably insulated against contact by water. A tubular stem or pipe 34 projects downwardly from the center of the cover 24 to carry the heating element 33. The leads or conductors 35 of the heating element 33 extend through the cover 24 and the energization of the element is under the control of the control means 15 as will be hereinafter described. A safety pressure relief valve 36 may be provided in the cover 24 to relieve any appreciable pressure that may develop in the boiler 12. The boiler and condenser system is substantially open so that very little pressure develops in the boiler. The relief valve 36 may be provided with a whistle to give warning of the pressure in the boiler.

The condenser 13 is positioned in the case 11 below the boiler 12 and its outer wall may be formed by an extension of the shell 32. The top or upper wall 37 of the condenser 13 is spaced below the bottom 31 of the boiler to leave a space for holding insulation I. The bottom 38 of the condenser 13 is dished or inclined toward its center so that the condensed vapor or water may flow or run into a downwardly extending outlet pipe 39. A vapor pipe 40 of comparatively large diameter has communication with the upper end of the condenser 13 and extends upwardly through the bottom 31 of the boiler to project into the upper portion of the boiler. The pipe 40 conducts the vapor from the boiler downwardly into the condenser 13. A cooling coil 41 is provided in the condenser 13. The particular cooling coil illustrated in the drawings has an outer tubular coil portion A and an inner coil portion B which is of downwardly diminishing diameter, tapering downwardly toward the bottom 38 of the condenser. The pipe 42 for carrying the cooling medium or water to the coil 41 and the pipe 43 carrying the water from the coil 41 extend through openings in the bottom 38 of the condenser.

It is a feature of the invention that the water used as a cooling medium in the condenser coil 41 is fed to the boiler 12. The water for circulating through the condenser coil 41 and for delivery to the boiler 12 is brought into the case 11 from a suitable external source by a pipe 44. The pipe 44 has a main lead discharging into a lateral or horizontal port 45 in the partition 29. The intake pipe 42 of the condenser coil 41 receives the water from the port 45. A suitable cut-off and regulating valve 46 may be provided for controlling the flow from the port 45 to the pipe 42 and may have an operating handle projecting from the forward side of the case 11.

The pipe 43 carrying the water from the coil 41 extends upwardly into the forward upper portion of the case 11 where it discharges downwardly into a vertically disposed gauge glass 47. A block 48 supports the lower end of the gauge glass 47 and a pipe or conduit 49 extends from the lower end of the gauge glass to the lower portion of the boiler 12. A perforated baffle 50 may be provided on the upper end of the gauge glass 47 to break up the water discharging from the pipe 43. A drain pipe or overflow 51 extends upwardly into the gauge glass 47 and has perforations 52 at points between its ends for receiving the excess water supplied to the gauge glass. The water may normally be in excess of that required by the boiler 12 and the outlet 51 carries off the excess water. It will be apparent that the water

is warmed to some extent when it passes through the condenser coil 41 and it retains a certain amount of this heat when it is delivered to the boiler 12 from the gauge glass 47 and pipe 49. The perforations 52 are located and proportioned so that the required water level is maintained in the boiler.

An inspection or sight opening 53 is provided in the front of the case 11 whereby the gauge 47 is at all times visible. The sight opening 53 provides an outlet for vapor from the water discharged by the pipe 43 and an outlet for the gases that are driven from the water when it is heated in the coil 41. The drain pipe or overflow 51 extends downwardly through the case 11 and passes through inclined openings in the partition 29 and the lower section 23 and thence to the exterior of the case. The invention includes means for draining condensation and leakage from the space S between the partitions 27 and 29. An inclined recess 55 is provided in the partition 27 around the overflow 51. The recess 55 collects leakage and condensation from the space S which leakage or condensation water is free to pass out through an opening or openings 56 in the overflow 51.

The means 14 for aerating the distilled water from the condenser 13 re-charges the water with the air or oxygen that it loses in the distilling process. The means 14 includes an open topped container or cup 57 suspended below the partition 27 by hangers 58. The cup 57 is of glass or other transparent material and is centrally positioned within the case section 23. The pipe 39 projects from the bottom of the condenser 13 and extends through openings in the partitions 27 and 29 to project into the cup 57. The pipe 39 carries the condensed vapor or distilled water from the condenser to the cup 57. Perforations 60 may be provided in the pipe 39 adjacent the plane of the upper edge of the cup 57 to provide for a free discharge from the pipe and prevent a pressure from developing in the condenser and boiler system. A rotatable agitator 61 is provided in the cup 57 to agitate and aerate the water. The agitator 61 may be in the form of a horizontally disposed disc having downwardly turned blades at substantially diametrically opposite points on its periphery.

The agitator 61 is carried by a shaft 62 which extends upwardly through openings in the partitions 27 and 29. The shaft 62 is the driven shaft of a suitable electric motor M mounted on the partition 29. In accordance with the invention the axis of rotation of the agitator 61 is spaced equidistant from the center of the cup 57 and the peripheral wall of the cup so that the operation of the agitator does not cause the water to be thrown from the cup. The rotating agitator 61 aerates the water so that it is recharged with air before it reaches the receptacle 10. Tubular bosses 63 project upwardly from the partition 27 around the pipe 39 and the shaft 62, to prevent the leakage of condensation, etc. downwardly around the pipe and shaft. A fan F may be provided on the upper end of the motor and agitator shaft 62 to provide for a circulation of air in the case 11 and to cool the motor M. An electric light or lamp L may be provided to illuminate the aerating means 14. The socket 7 carrying the lamp L may be arranged in an opening 6 in the partition 29. The lamp L illuminates the interior of the transparent case section 23 and the transparent cup 57.

The control or control means 15 is an important

feature of the invention as it provides for the automatic operation of the apparatus. The control 15 automatically governs the operation of the agitator 61, the energization of the heating element 33 and the delivery of water to the condenser 13 and boiler 12. In accordance with the invention the control 15 is governed by or is responsive to the level of the water in the receptacle 10 to automatically actuate the distilling and aerating apparatus when the level of the water in the receptacle falls below a predetermined point. The control 15 includes a float 64 in the receptacle 10. A stem or rod 65 is connected to the float 64 and extends upwardly through openings in the partitions 27 and 29 to project into the case 11 above the partition 29. The rod 65 may be bent to extend around the bottom and peripheral wall of the cup 57, as illustrated in Fig. 2 of the drawings, to avoid the necessity of providing an opening in the cup. A tubular boss 63 projects upwardly from the partition 27 to the partition 29 to surround the rod 65 and prevent leakage thereabout. Downwardly projecting bosses 65 are provided on the partition 27 to surround the agitator shaft 62 and the float rod 65 and provide water seals about the shaft and rod which prevent air from passing downwardly from the interior of the section 22 into the section 23.

The float 64 governs a switch 67 in the motor circuit 68. The switch 67 is preferably a mercury switch and is operatively connected with a shaft 69. A yoke or finger 70 is provided on the shaft 69 and is alternately engageable by spaced stops or collars 71 on the float rod 65. When the level of the water in the receptacle 10 drops the float rod 65 moves downwardly so that the upper collar 71 engages the finger 70 to turn the switch shaft 69. This turning of the shaft 69 closes the switch and results in energization of the motor M and rotation of the agitator 61. When the level of the water in the receptacle 10 is again brought to the normal the lower collar 71 engages the finger 70 to turn the shaft 69 in a direction to open the switch 67 and de-energize the motor M.

The control 15 includes a valve 72 in the water supply system which is opened by operation of the motor M. In the preferred arrangement the valve 72 is in the form of a plug turnable in an opening 73 in the partition 29 to control the flow through the port 45. The stem of the valve 72 carries a lever 74. A spring 75 is connected with the valve lever 74 to normally urge the valve 72 to its closed position. The means for turning or operating the valve 72 includes a disc or fly-wheel 76 fixed on the agitator shaft 62. A socket 77 is provided in the partition 29 to receive or house the fly-wheel 76 and its associated parts. Circumferentially spaced outwardly and upwardly inclined openings 78 are provided in the periphery of the fly-wheel 76 to carry a plurality of centrifugally actuated balls 79. A drum 80 is freely rotatable on the agitator shaft 62 and its flange surrounds the fly-wheel 76 with clearance. A boss 81 on the fly-wheel 76 may normally support the drum 80. When the agitator shaft 62 is rotating the balls 79 are held outward by centrifugal force to have frictional cooperation with the drum 80 and thus urge the drum to turn with the shaft. The frictional cooperation of the balls 79 with the drum 80 forms a friction drive or yielding drive between the fly-wheel 76 and drum. A substantially horse-shoe shaped enlargement 114 is provided in the port 45 and partially surrounds the socket 77 to form a cooling chamber

2. The second section focuses on the role of communication in achieving organizational goals. It highlights the importance of clear and concise communication, both internally and externally. The text provides examples of effective communication strategies, such as regular team meetings, open-door policies, and the use of various communication channels like email, phone, and face-to-face interactions. It also discusses the importance of listening and understanding the needs and concerns of all stakeholders.

3. The third part of the document addresses the challenges of managing a large and diverse workforce. It discusses the importance of providing training and development opportunities to ensure that employees have the skills and knowledge needed to perform their jobs effectively. The text also mentions the need for a fair and equitable compensation system that motivates employees and attracts top talent. Additionally, it discusses the importance of creating a positive work environment that fosters collaboration and innovation.

4. The final section of the document discusses the importance of staying up-to-date with the latest trends and technologies in the industry. It emphasizes that continuous learning and innovation are essential for long-term success. The text provides examples of how organizations can stay ahead of the curve by investing in research and development, attending industry conferences, and collaborating with academic institutions. It also mentions the importance of having a flexible and adaptable organizational structure that can respond quickly to changes in the market.

ment 33 vaporizes the water in the boiler 12 and the vapors pass down through the pipe 40 into the condenser 13. The water continuously circulating through the coil 41 condenses the vapor to form water which freely drains out through the pipe 39 into the cup 57. The agitator 61 rotating in the cup 57 aerates the water in the cup before it overflows into the receptacle 10.

The apparatus operates as just described until the level in the receptacle 10 is raised until the lower collar 71 of the float actuated rod 65 engages the finger 70 and turns the shaft 69. This turning of the shaft 69 opens the switch 67 to de-energize the motor M. Upon de-energization of the motor M the spring 75 automatically closes the valve 72 and opens the switch 86 to cut off the flow of water through the system and de-energize the heating element 33. From the above it will be apparent how the control 15 provides for the automatic distillation of the water and aeration of the distilled water as required to maintain a predetermined level in the receptacle 10. The apparatus operates entirely without manual control or attention.

In the event that the water supply to the apparatus is interrupted the spring 103 acting on the diaphragm 101 moves the rod 102 to a position where it holds the switch 67 open so that the apparatus cannot operate in the event that the water level in the receptacle 10 is lowered when the supply of water is cut off. The valve 46 may be adjusted at will to provide for the desired rate of operation of the distilling apparatus. When it is desired to flush out the boiler 12 the cover 24 may be removed from the case 11. Removal of the cover 24 automatically opens the energizing circuits of the motor M and heating element 33 so that the distilling apparatus is rendered inoperative. The apparatus being inoperative the valve 72 is closed; however, if desired, the valve 46 may also be closed to positively prevent the flow through the pipe 42 and the condenser coil to the boiler. The valve 112 is then opened and the valve 110 opened to provide for the discharge of water into the boiler. If desired the water already in the boiler may be drained out through the by-pass 111 and the valve 112 before opening the valve 110. The water used to wash out the boiler 12 freely flows out through the by-pass 111 and the overflow pipe 51.

During the operation of the apparatus the aerating means 14 may be observed in operation through the transparent walls of the section 23. The means 14 re-charges the distilled water with oxygen bringing back its life and making it healthful and palatable. The apparatus is embodied in a small compact unit and is entirely automatic in operation.

Figs. 10 and 11 of the drawings illustrate an embodiment of the invention including a condenser 13^a enclosed in a water jacket or manifold 120. The manifold 120 may be in the nature of an extension of the shell 32 closed at its lower end by a bottom 121. A vapor pipe 40^a extends from the upper portion of the boiler 12 to the upper end of the condenser 13^a. An outlet pipe 39^a extends from the bottom of the condenser 13^a to the cup 57 (not shown) of the aerating means. The incoming water line 44^a discharges into the upper end portion of the manifold 120. An outlet pipe 122 communicates with the upper portion of the manifold 120 and discharges downwardly into the glass gauge 47. Water is adapted to freely circulate through the manifold 120 around the condenser 13^a to condense the vapors sup-

plied to the condenser from the boiler 12. A thermostatic control is provided for the water supply of the condenser and the boiler feed. A valve 123 is interposed in the pipe 44^a. A thermostatic element 124 extends into the lower portion of the cooling manifold 120 and has operative cooperation with the valve 123.

In the operation of the device illustrated in Figs. 10 and 11 of the drawings the control 15 may govern the supply of water to the pipe 44^a and controls the heating element of the boiler and the aerating means as in the previously described form of the invention. When the water in the cooling manifold 120 is relatively warm the valve 123 remains open to provide for the circulation of water through the manifold and to the gauge 47. When the temperature of the water in the manifold drops below a predetermined point the thermostatic element 124 closes the valve 123 to cut off the circulation of cooling water through the manifold. It will be obvious that the cooling water circulating through the manifold 120 condenses the vapor in the condenser 13^a so that the distilled water is delivered to the aerating means by the pipe 39^a.

Means is provided for automatically flushing out the boiler 12 before and after each distilling operation. A valve 150 is provided in a drain pipe 151 extending from the boiler 12. A thermostat 152 is provided adjacent the pipe 151 and is under the control of an electric heating element 153 which may surround the pipe 151. The element 153 is controlled by the control means 15 to be energized and de-energized simultaneously with the heating element 33 of the boiler. The thermostat 152 has turnable cams 154 on its opposite ends to operate the valves 123 and 150. When the element 153 is energized, together with the element 33, the upper cam 154 engages the operating stem or lever 155 of the valve 123 to open the valve so that a fresh supply of water is delivered to the boiler 12. The drain valve 150 is open at this time so that this water is freely circulated through the boiler to the drain pipe 151 to flush out the boiler. The lower cam 154 of the thermostat 152 then cooperates with the stem 156 of the valve 150 to close the valve 150 so that water is retained in the boiler to be vaporized. The upper cam 154 moves out of cooperation with the stem 155 so that the valve 123 is under the control of the thermostat 124 during the distilling operation as described in the preceding paragraph. When the heating element 33 and the heating element 153 are de-energized by the control 15 the lower cam 154 of the thermostat 152 cooperates with the valve stem 156 to open the drain valve 150 and allow for the discharge of the water remaining in the boiler 12. The upper cam 154 then cooperates with the valve stem 155 to open the valve 123 and thus supply flushing water to the boiler 12. This water freely circulates through the boiler 12 to flush it out after the distilling operation. From the above it will be seen that the form of the invention illustrated in Figs. 10 and 11 of the drawings embodies a boiler feed under the control of a thermostat in the water jacket of the condenser 13^a and includes means for automatically flushing out the boiler 12 prior to and following each distilling operation.

Fig. 12 of the drawings illustrates an improved means for cooling the olla or water containing receptacle 10^a. The cooling means illustrated in Fig. 12 may be embodied in the previously described forms of the invention. A port 130 extends downwardly through a wall of the lower

transparent section 23^a of the case. The drain or overflow pipe 51^a from the glass gauge 47 of the boiler feed discharges into the port 130. The port 130 communicates at its lower end with an annular passage 131 in the wall of the section 23^a. Downwardly directed perforations or jets 132 communicate with the passage 131 at circumferentially spaced points. Wicks 133 are arranged in the jets 132 so that the water circulating through the passage 131 may drip from the jets 132 onto the upper portion of the receptacle 10^a. The receptacle 10^a is preferably formed of a more or less porous material so that the water dripping from the jets 132 is partially absorbed and spreads over its surface to quickly evaporate and cool the water contained in the receptacle. The water from the pipe 51 is cooled as it flows through the passage 131. An outlet pipe 134 extends from the passage 131 to a supporting trough or pan 135 carrying the receptacle 10^a where it directly discharges into a drain pipe 136. The pan 135 carries an absorbent block or disc 137. The disc 137 may be formed of sandstone or the like and absorbs the water that flows down the sides of the receptacle 10^a and forms a cooling element at the bottom of the receptacle.

Having described only typical forms and applications of my invention, I do not wish to be limited or restricted to the specific forms and applications herein set forth, but wish to reserve to myself any modifications or variations that may appear to those skilled in the art or fall within the scope of the following claims.

Having described my invention, I claim:

1. Apparatus of the character described including a boiler, heating means in the boiler, a condenser for condensing the vapor from the boiler, means for aerating the distilled water from the condenser, a valve for governing the feed of water to the boiler, and a control including means for energizing the aerating means, and means actuated by the said aerating means for energizing the heating means and controlling the valve.
2. Apparatus of the character described including a boiler, heating means in the boiler, a condenser for condensing the vapor from the boiler, means for aerating the distilled water from the condenser, a valve for governing the feed of water to the boiler, a receptacle for re-

ceiving the distilled water from the aerating means, a float control for actuating the aerating means when the water in the receptacle falls below a given level, and means actuated by the aerating means for energizing the heating means and controlling the valve.

3. In apparatus of the character described, a case including a removable cover, a boiler in the case accessible upon removal of the cover, a heating element for the boiler, a condenser in association with the boiler, means for aerating the distilled water from the condenser, and means for rendering the heating element and the aerating means inoperative when the cover is removed.

4. Apparatus of the character described including a receptacle, a case supported on the receptacle, means in the case for distilling water, a partition across the interior of the case, an open cup below the partition, a pipe delivering the distilled water to the cup to overflow therefrom into the receptacle, a power means in the case above the partition, a shaft from the power means extending through an opening in the partition to project into the cup, an agitator on the shaft in the cup, and means providing a water seal around the shaft.

5. Apparatus of the character described including a receptacle, a case supported on the receptacle, a boiler in the case, a heating element for the boiler, a condenser in the case for receiving vapor from the boiler and including a water carrying cooling means adapted to feed the boiler, a container for receiving the distilled water from the condenser and discharging it into the receptacle, means for agitating the water in the container to aerate it, a valve controlling the supply of water to the cooling means, and means for automatically controlling the heating element, valve and means for agitating the water.

6. Apparatus of the character described including a boiler having a drain, a feed for the boiler, a heating element in the boiler, a control for the feed and heating element to provide for the automatic vaporization of water in the boiler, and means controlling the feed and drain to automatically flush out the boiler before and after each operation of the boiler.

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