July 22, 1958 R. R. FISHER 2,843,891

STEAM VAPORIZER

Filed Aug. 8, 1955

FIG. 1

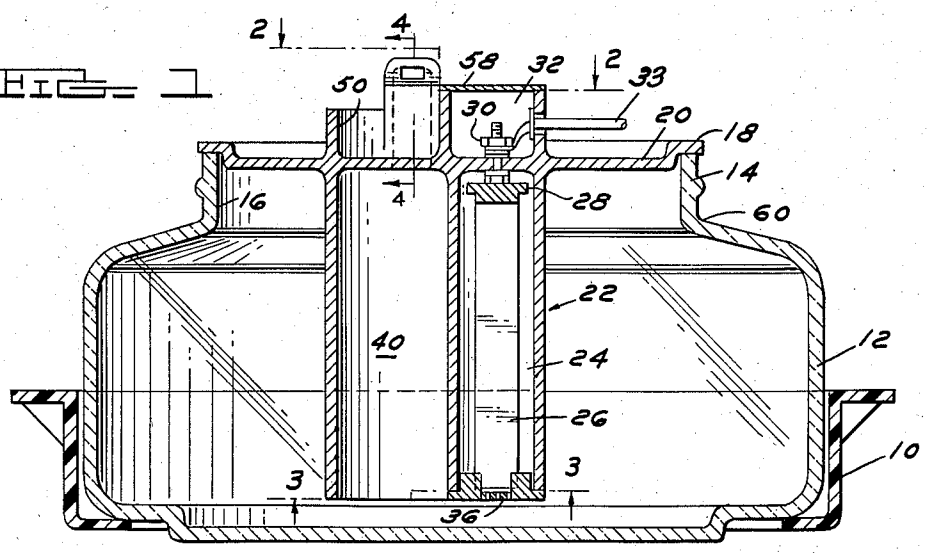


FIG. 2

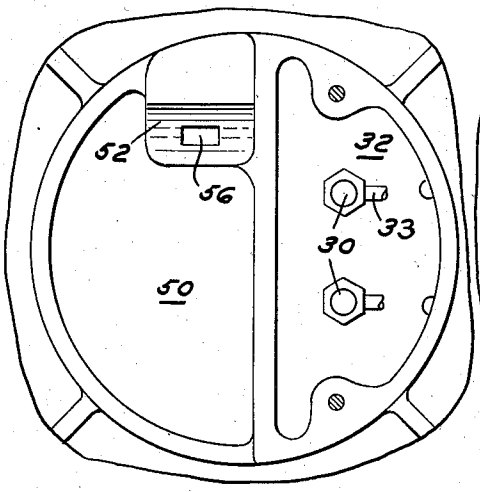


FIG. 3

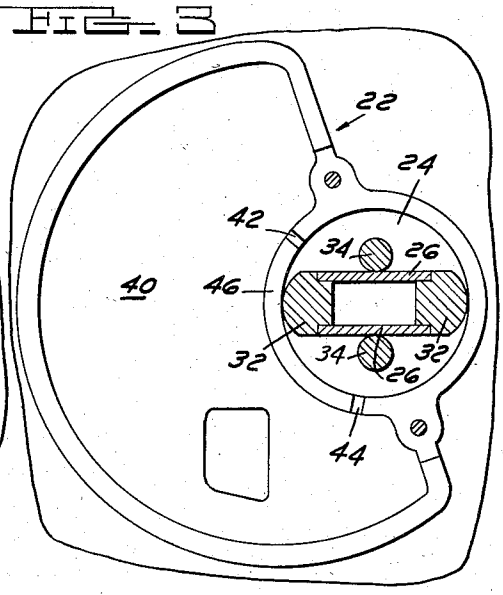
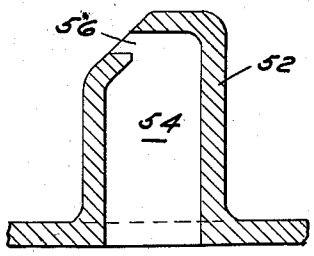


FIG. 4



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STEAM VAPORIZER

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5 Claims. (Cl. 21—119)

This invention relates to a steam vaporizer and particularly to that type of vaporizer that is used in an individual sick room or hospital room for the purpose of increasing the moisture in the air to relieve respiratory congestion.

The type of device under consideration may be referred to generally as the top-suspension type wherein an electrical unit is suspended from the rim of an opening of a vessel for containing water to be changed to steam. In the past, one type of device has discharged steam directly from the generating chamber to the atmosphere. An improved device has discharged steam to the top of the liquid in the containing vessel prior to the time that it discharged into the atmosphere.

The present improvement relates to a top-suspension unit which has formed therein a steam generating chamber which contains the electrical units and a steam expansion chamber connected to an upper outlet.

It is an object of the invention to avoid the necessity of sealing the top unit to the vessel and yet also to eliminate the disadvantage of direct transfer of steam from the generating chamber, where it sometimes causes what is called "spitting" of water into the room.

Other objects and features of the invention will be apparent in the following description and claims.

Drawings accompany the disclosure, and the various views thereof may be briefly described as:

Figure 1, a sectional view illustrating various parts of the assembly.

Figure 2, a top plan view of the main heating unit on line 2—2 of Figure 1.

Figure 3, a bottom view of the same unit on line 3—3 of Figure 1.

Figure 4, a detailed section on line 4—4 of Figure 1 showing the discharge spout.

Referring to the drawings, a bottom tray unit which may be formed of molded plastic is shown at 10 supporting a liquid vessel 12 which is preferably formed of glass. The vessel has a short neck 14 surrounding an opening 16, and the top of the neck 14 supports the edges 18 of an outwardly extending flange 20, which in turn supports a steam-generating assembly 22. This assembly consists of a steam-generating chamber 24 which is circular in cross section and which extends substantially the height of the vessel 12. This chamber contains two vertically disposed, spaced electrodes 26. Suspended at the top of the chamber 24 on an insulation plate 28 and connected to suitable binding posts 30 in a small recess 32 at the top of the assembly, leads 33 extend to a plug-in cord. Details of this assembly are shown in a co-pending application Serial No. 463,852, filed October 22, 1954.

At the bottom of the chamber 24, the electrodes 26 are separated by posts 32 and 34 molded into a bottom plate 36, which is apertured to permit water from vessel 12 to enter the chamber 24. Thus, when a potential is applied to binding posts 30 and transmitted to the electrodes 26, the water in chamber 24 acts as an electrolyte to cause development of heat and the transfer of water to steam. Also formed in the assembly is a relatively large semicircular steam expansion chamber 40, which extends around the chamber 24 and is connected thereto by steam vent slots 42 and 44 in the wall 46 between chamber 24 and chamber 40.

Above chamber 40 is a semi-circular chamber 50, at one corner of which is a small pilot housing 52 which forms a chamber 54 connected directly to chamber 40. The housing 52 has a horizontal port 56 which projects toward the chamber 50 and out of which steam may pass from chamber 40. Chamber 50 can be used for containing a medicament if desired. Chamber 32, over the binding posts 30, can be closed by a semi-circular, preferably non-conductive plate 58.

Chamber 40, being open at the bottom and being also open to chamber 24 through the slots 42 and 44, will contain water at the same level as the vessel 12. However, assuming that the starting water level of the vessel 12 is approximately at the bend 60 of the vessel walls, there will be a space above the liquid which is connected to chamber 24 through the slots 42 and 44. Thus, steam being created between the electrodes 26 will pass through these slots into the chamber 40. Any undue pressure that might develop in the chamber 40 will merely depress the liquid level in that chamber, and steam will pass gently from the port 56 of the pilot housing 52.

Since there is no chance for any condensate to collect in the pilot housing 52, there will be no opportunity for steam to force water from the port 56. In addition, since steam is not reaching the surface of the water of the vessel 12, it is unnecessary to seal the flange 18 to the neck of the vessel 12. The electrode unit may be suspended in the vessel without additional means or it may be clamped onto the neck of the vessel by a screw top ring.

I claim:

1. An electric steam unit of the type including a vessel having an open top and an electric steam-creating means supported from said top in the vessel, in which the steam-creating unit comprises a vertical chamber in said vessel extending through a top opening in the vessel to a point substantially near the bottom having suitable spaced electrodes therein for creating a potential differential adapted to be connected by liquid in the vessel, a secondary chamber axially co-extensive with said heating chamber and similarly supported, and connected with said heating chamber throughout its length, said heating chamber being closed at the top and said second chamber being open at the bottom to the interior of the vessel and having a steam escape opening at the top thereof.

2. An electric steam unit of the electrode immersion type which comprises an electrode chamber containing spaced electrodes to be immersed in a body of liquid in a closed container and a steam expansion chamber connected with said first chamber open adjacent its lower end to liquid in a vessel and open adjacent its upper end above the normal liquid level in said vessel to atmosphere.

3. An electric steam unit for discharging steam into the atmosphere of a room, which comprises a vessel for containing liquid and a steam-creating means in said liquid comprising a first chamber, means in said chamber actuated by electric power to create steam in said first chamber, a second chamber connected to said first chamber above the water level of said vessel, said second chamber being open to the liquid at one portion thereof adjacent the lower end below the normal liquid level of the vessel, said second chamber being open at another portion thereof above the liquid level of the vessel to the atmosphere of the room.

4. An electric steam unit of the type including an open-topped vessel for containing liquid and a steam-creating means supported on said vessel having a portion extending above the top of said vessel and a portion extending into the vessel below the normal liquid level thereof and adjacent to the bottom of the vessel, a first chamber in said means extending independently into said vessel, and means in said first chamber for electrically changing the liquid in said vessel to steam, a second chamber in said means also extending deeply into said vessel connected through a passage to said first chamber and connected through a bottom opening to the liquid in said vessel, said second chamber opening above said vessel to the atmosphere.

5. A device as defined in claim 4 in which said chambers extend longitudinally downward into said vessel on each side of a common wall, said wall being slotted vertically to connect said chambers within the vessel and each of said chambers being open at the bottom to admit liquid from said vessel.

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