July 4, 1939. L. B. MEYERSON 2,164,881

VAPORIZER

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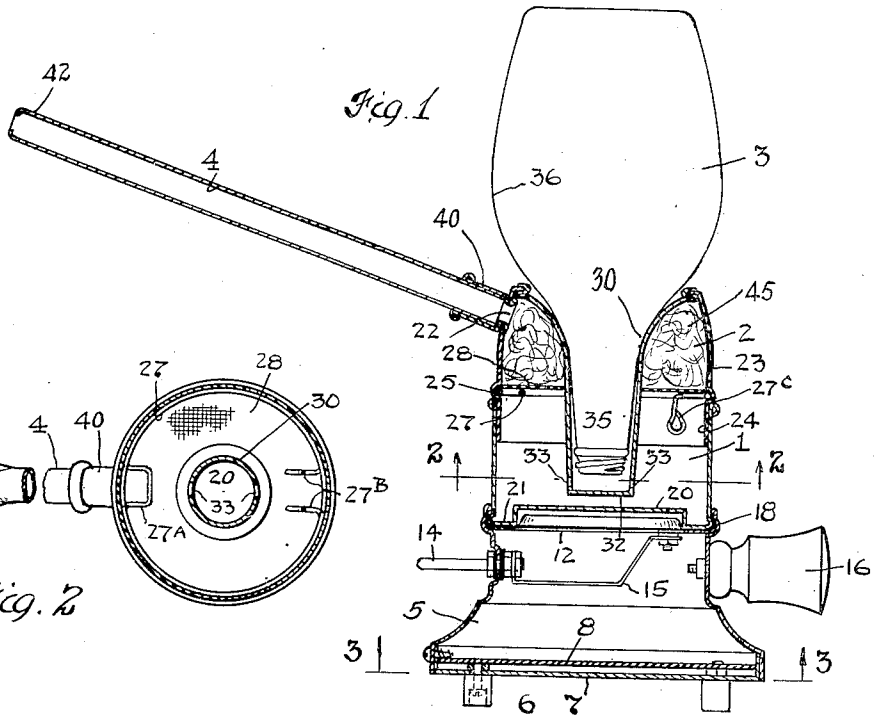


Fig. 1

Fig. 2

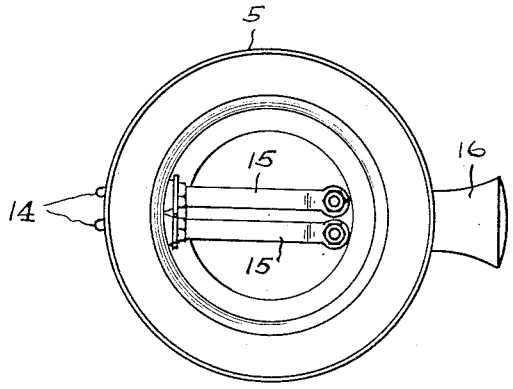


Fig. 3

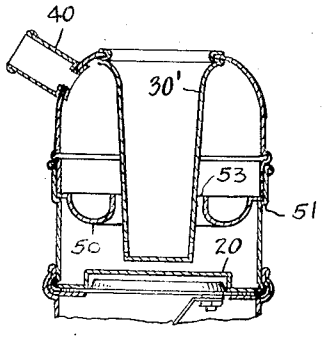


Fig. 4

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VAPORIZER

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2 Claims. (Cl. 128—192)

This invention relates to a vaporizer particularly adapted for bedside, household or nursery use, and characterized by simplicity and strength of construction, speed and economy of coming into action, ease of setting up and of operating, facility of cleaning, safety, and other advantages that will be apparent as the description proceeds.

Further objects and purposes of the invention are a compact arrangement combining a relatively large liquid reservoir with a relatively small base area, and necessitating the boiling of only a very shallow depth of liquid, also whereby the vaporizer can operate continuously during short periods when the reservoir is removed for refilling; provision of means whereby the vapor can be delivered at some distance from the main body of the vaporizer, thus enhancing the usefulness of the invention as a bedside appliance; optional arrangements for segregating medicament from liquid; arrangements preventing hot liquid from spurting out; means for minimizing the danger of spilling hot liquid if the vaporizer should accidentally be overturned; and the general convenience, adaptability, strength and simplicity of the apparatus.

The apparatus is capable of use either as a vaporizer for dispensing medicinal, deodorant, disinfectant, or other vapors into the atmosphere of a room; or can be used as a simple humidifier.

To the accomplishment of the foregoing and related ends, said invention, then, consists of the means hereinafter fully described and particularly pointed out in the claims.

The annexed drawing and the following description set forth in detail certain mechanism embodying the invention, such disclosed means constituting, however, but one of various mechanical forms in which the principle of the invention may be used.

In the accompanying drawing:

Fig. 1 is a vertical central section through my vaporizer set up for use;

Fig. 2 is a horizontal section on the plane 2—2 Fig. 1, looking upward;

Fig. 3 is a view on the plane 3—3 looking for-

Fig. 3 is a view on the plane 3—3 looking upward, with the bottom plate removed; and

Fig. 4 is a partial vertical central section, illustrating a modification.

In its preferred embodiment the invention is illustrated with an electric heating element, as being the most convenient means of heating, and almost universally available, although it will be understood that the invention is not limited to any specific heating means.

The principal elements of my improved vaporizer comprise the vaporizing boiler 1, medicament chamber 2, liquid supply reservoir 3 and a spout such as 4. These are all supported by a base 5 having feet 6 of thermally non-conducting material, the base being preferably outwardly and downwardly flared and including a bottom protective cover 7 and an inner pad 8 of asbestos or the like. The only element supported above the base which extends beyond the area of the base is the spout 4. Thus the vaporizer as a whole is economical of table space and also not readily overturned. A heating element 12 is suitably enclosed in the upper part of the base, and connected by leads 15 to external electrical contacts 14 of conventional type for connection with a standard household appliance cord. A handle 16 is conveniently attached to the base on the side opposite the contacts 14.

The vaporizing boiler 1 is preferably permanently attached to the top of the base, as by beading at 18. The bottom of the boiler 1 preferably includes a raised central portion 20 of less than full bottom diameter, in which the heating element 12 is placed. A depressed annular channel 21 in the bottom of the boiler 1 and surrounding the portion 20 holds a reserve of liquid when the supply 3 is being changed.

The upper part of the vaporizer consists of a double walled element 23, closed at the top except for an outlet 22, and deeply skirted as at 24 to fit into the upper portion of the boiler 1. A bead 25 serves the double purpose of seating the element 23 upon the top of the wall of 1, and of receiving a retaining ring 27 which in turn holds a grill 28 when the element 23 is to be used as a medicament chamber. A convenient form of the ring 27 is shown in Fig. 2 and includes inwardly directed elements 27A and 27B on which the bottom plate 28 rests, and finger grips 27C depending from the elements 27B, whereby the ring 27 can be squeezed together and removed from the groove 25.

The outer wall of 23 is shaped slightly inwardly upward at the top, and there joined to a funnel-shaped inner wall or sleeve 30 which projects downward to below the level of the skirt 24 and almost to the raised bottom plate 20. The bottom of this funnel 30 is closed as at 32, but side perforations 33 near the bottom cause the liquid level in the boiler 1 to be automatically maintained at the top of the perforations.

The liquid container 3 is preferably a bottle with a neck 35 and a substantial middle bulge as at 36. The bottle is held more securely

against tilting in the vaporizer if the neck 35 approximately fits the funnel 30 and extends well down therein, as shown.

The spout 4 fits by friction into an external nipple 40 extending from the aperture 22 near the top of the wall 23, thus spouts of various lengths and shapes can be substituted. The preferred form as shown in Fig. 1 is about twice as long as the diameter of the vaporizer and with an inwardly beaded discharge nozzle 42 to prevent condensate from dripping off. Another shape of nozzle is that shown at 43 in Fig. 2, flattened.

The vaporizer may be used in various ways; the most usual method will be by applying the medicament to absorbent cotton or like material as indicated at 45 and holding this cotton in place on the grill 28, all as shown in Fig. 1. Thus the steam rising from liquid in the boiler 1 will pass through the cotton and the medicament will be entrained with the vapor which is discharged at the nozzle 42. In this case plain water would be used in the bottle 3.

An example of another arrangement for holding medicament is shown in Fig. 4, and comprises a ring-shaped trough 50 suitably secured, as upon a shelf 51 in the wall 52, and spaced, as at 53, from the sleeve 30 or otherwise arranged to permit passage of steam. Material to be vaporized is held in the trough 50.

Alternatively the liquid to be vaporized could be employed in the bottle 3, in which case such arrangements as 28 or 50 would be unnecessary and the grill 28 could be removed if desired. Obviously the water level will be maintained substantially constant by small replenishments as evaporation exposes the tops of the perforations 33. The spout, as has been indicated, can be changed if desired to deliver the charged vapor where it is wanted.

When the liquid in the bottle 3 is used up, the bottle can be removed, refilled and replaced without stopping the apparatus, inasmuch as the change can be made before the residual liquid in the bottom of the boiler 1 is entirely evaporated. Among other purposes, the reduced size of the perforations 33 prevents substantial escape of steam at these points while the bottle 3 is out, even though the liquid evaporates somewhat below the level of the perforations during the interval.

Safety against hot liquid spilling or spurting out is accomplished by placing the small opening 22 near the top of the medicament chamber 2, and by the upward direction of the nipple 40 and spout 4, and also by the arrangement for maintaining only a shallow small quantity of water in the boiler 1. Thus even if the grill 28 is not in the vaporizer, there is no danger of any hot liquid being thrown out. In ordinary conditions of use the grill 28 and material thereon further inhibit the throwing out of any unvaporized liquid.

Accidental overturning of the vaporizer while in use is unlikely on account of the broad base, but should it occur very little liquid will be spilled from the boiler because the deep skirt 24 makes a close fit, which, even if not perfectly water-tight, will reduce escape to a slow trickle.

The enlarged base and the reduced top of wall 23 will cause the vaporizer to take an inverted slant if it falls over, and thus the small amount of liquid in the boiler will run into the medicament chamber, which, on account of the depth of skirt 24, is large enough to contain most of such water in what will then be the lower portion. The nozzle 4 will prevent the vaporizer from rolling into a position where the opening 22 would be on the bottom. The perforations 33 in the funnel will of course now be well above the water, so that none can run out there except the small amount that was initially in the funnel bottom.

Furthermore, no great amount of water will escape from the bottle because of the equatorial bulge at 36 which will make the neck tilt up when the bottle is on its side. Thus, due to the combination of various features of construction, knocking the vaporizer over cannot do much damage.

From the foregoing it will be seen that I have invented a vaporizer which is characterized by compactness and simplicity of construction, speed of coming into action, which is readily taken apart for cleaning and easily assembled for use, which is safeguarded both against hot liquid spurting out and against spilling if upset, which can be placed at a sufficient distance from a patient in bed to be out of the way and safe and at the same time deliver vapor near the patient, and which may be used for the application of vapor charged in various manners, or even for simple humidification of the air of a room.

Other modes of applying the principle of my invention may be employed instead of the one explained, change being made as regards the mechanism herein disclosed, provided the means stated by any of the following claims or the equivalent of such stated means be employed.

I therefore particularly point out and distinctly claim as my invention:

1. A vaporizer comprising, in combination, a base, a boiler thereabove, an inner wall defining a funnel-like receptacle extending to near the bottom of the boiler and having a restricted orifice into said boiler, said orifice serving to establish a constant water level in said boiler, a medicament holder within said boiler above said water level and contained entirely within said boiler, a discharge opening near the top of said boiler, and a bottle adapted to be received inverted in said funnel-like receptacle, all of said elements being substantially within the horizontal area defined by said base.

2. A vaporizer comprising in combination a boiler of substantially annular horizontal cross section above its normal water line, having outer and inner walls of said boiler relatively converging and joined at the top, a baffle between said water line and said top, and a discharge opening from the converged portion of said boiler, a liquid reservoir adapted to be received inverted within the inner wall of said boiler, and restricted liquid discharge and air inlet means for said reservoir adjacent the bottom of said inner wall, said openings constituting sole egress and ingress means to said liquid container when said liquid container is in place.

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