

[54] **VAPORIZER HAVING A FILL HOLE**

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[51] Int. Cl.**B01f 3/04, B01f 7/16**

[58] Field of Search ...**219/271, 275; 261/91, 72, 119, 261/142, DIG. 34, DIG. 4**

[56] **References Cited**

UNITED STATES PATENTS

3,420,509 1/1969 Katzman et al.**261/142**

3,130,245 4/1964 Banks**261/91**
1,830,182 11/1931 Anderson**261/DIG. 34**

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[57] **ABSTRACT**

A humidifier comprising a container having a bowl-shaped lower portion. Integral with the lower portion is an upper wall which slants upwardly and inwardly and terminates in a top having a main opening for receiving a vapor-producing head. A Baffle is integral with the upper wall and is spaced between an outlet opening and the main opening. A fill opening having a conical downwardly and inwardly tapering wall extending below the outlet opening is provided at a location diametrically opposite the outlet opening.

3 Claims, 4 Drawing Figures

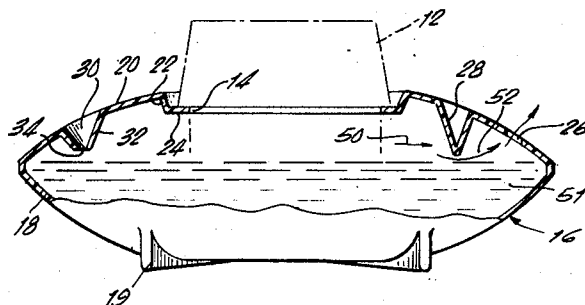


FIG. 1

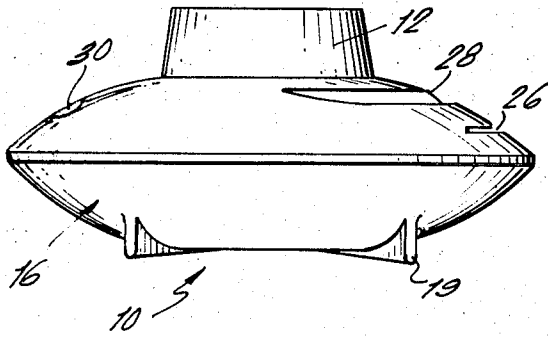
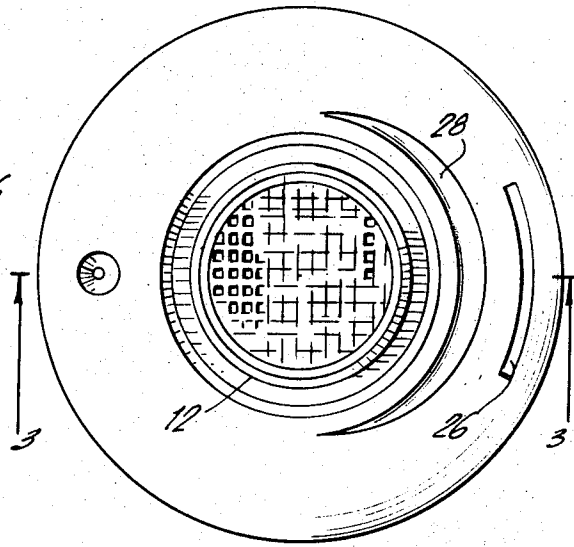


FIG. 3

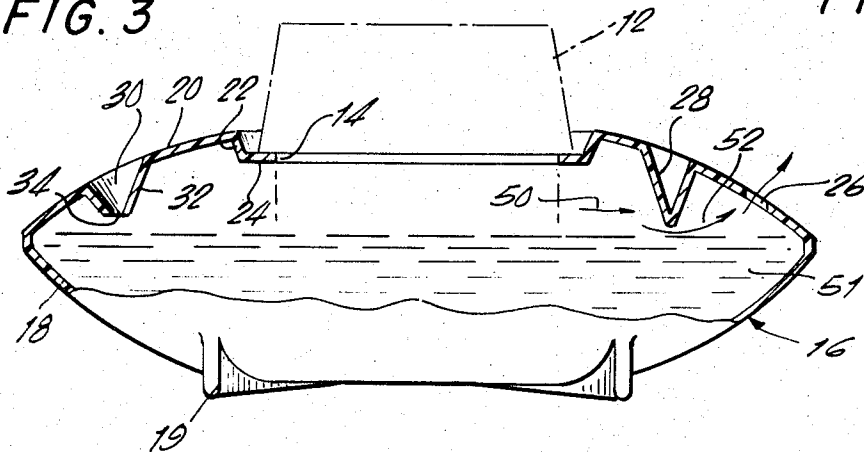
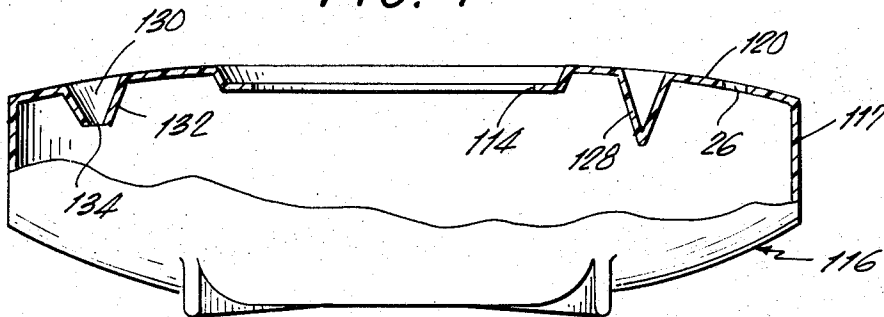


FIG. 2

FIG. 4



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VAPORIZER HAVING A FILL HOLE

This invention relates to improvements in a vaporizer or humidifier of the type for spraying vapor for treatment of various medical disorders, as well as beneficially increasing the humidity of a room or other enclosure.

In the past various types of vaporizers and humidifiers have been produced for delivering vapor to the atmosphere. A humidifier of this type is disclosed in U.S. Pat. No. 3,420,509, issued Jan. 7, 1969, to Lawrence Katzman and Edward Briggan. This type of vaporizer employed a vapor-producing head which is removably inserted on a flange surrounding a central opening in the container. The container is filled by removal of the head, and this may lead to dripping of water from the vapor-producing head when removed from the container. Further, manipulation of the vapor-producing head relative to the bowl is also entailed.

The present invention provides for a convenient fill hole having an integrally molded funnel for enabling the filling of the humidifier under a conventional bathroom water tap or through use of a pitcher or tumbler directly at the bedside where the humidifier is operation, thus eliminating the necessity of moving the humidifier or for removal of the vapor-producing head.

The construction of this invention gives rise to an unusual and unexpected result inasmuch as the surface tension across the inlet of the fill opening is such that when the humidifier is in operation, a liquid barrier will be provided which will prevent any vapor from passing out of the fill opening.

Still further objects and features of this invention reside in the provision of a humidifier that may include a blow-molded container having all of the parts integrally formed, which is attractive in appearance, and so constructed that the sloping upper portion thereof facilitates the pouring of water into the container.

These, together with the various ancillary objects and features of the present invention, which will become apparent as the following description proceeds are attained by this vaporizer having a fill hole, preferred embodiments of which are illustrated in the accompanying drawing, by way of example only, wherein:

FIG. 1 is a side elevational view of a humidifier constructed in accordance with the concepts of the present invention;

FIG. 2 is a top plan view of the humidifier;

FIG. 3 is an enlarged vertical sectional view of the humidifier, taken along the plane of line 3—3 in FIG. 2, with the vapor-producing head being shown in phantom lines; and,

FIG. 4 is a view similar to FIG. 3 of another form of the invention.

With continuing reference to the accompanying drawing, wherein like reference numerals designate similar parts throughout the various views, reference numeral 10 generally designates a humidifier constructed in accordance with the concepts of the present invention. This humidifier includes a vapor-producing head 12 of the type disclosed in U.S. Pat. No. 3,283,478, for "Humidifier," in the names of Lawrence Katzman, Edward Briggan, Edward Stolarz, and Anthony N. D'Elia, and is of the cold vapor type. The head is positioned within a central opening 14 formed

in the humidifier container 16 having a generally bowl-shaped lower portion provided with suitable feet 19 for securely supporting the humidifier 10. Integral with the lower portion 18 is an upper wall 20 which slopes upwardly and inwardly and integral with the lower wall is a top 22 having a horizontal peripheral flange 24 which surrounds the opening 14 and on which the vapor-producing head 12 seats.

An outlet opening 26, which is arcuate in shape, is formed in the upper wall 20. Integrally formed in the upper wall 20 is a V-shaped depression forming a baffle 28, which extends in a semi-circular manner half way about the opening 14 and which is disposed between the outlet 26 and the central opening 14.

Diametrically opposite the outlet 26 is a fill opening 30, a funnel having a tapered downwardly and inwardly converging conical wall 32 terminating in an inlet 34 is integral with the upper wall 20. The inlet 34 is below the outlet 26 and the baffle 28 extends below the outlet 26.

The entire bowl 16 is blow molded out of any suitable plastic material and the inlet 34 is drilled after the entire bowl is otherwise formed.

In use, the vapor-producing head 12 will drive vapor in all directions, including the direction of arrow 50. The baffle 28 will stop all but the most finely divided particles of vapor and the droplets will drop back into the water 51 in the container 16. The finest droplets of water will pass in the direction of arrow 52 through the opening 26 and into the atmosphere and in a direction toward a patient being treated. Initially, and for the first few seconds of operation, some negligible amount of vapor will pass up through the fill opening 30. However, since some water has passed into the fill opening 30, surface tension will cause a film to extend across the inlet 34 and provide a liquid barrier against any further outlet of vapor through the fill opening 30. Of course while the film caused by surface tension will be sufficient to bar the outlet of vapor, a head of water above the film will break the film and allow the container 16 to be filled.

In use, when the level of the water 51 in the container 16 is so low as to need replenishing, the humidifier need not be necessarily moved, but by using a tumbler, pitcher, bathroom tap, or the like, may be conveniently filled through the inlet opening 30 and funnel 32. The sloping upper wall 20 facilitates access to the fill opening 30.

Referring to FIG. 4, herein there is shown a modified form of the invention wherein the container 116 is provided with vertical side walls 117 as well as an upwardly and inwardly sloping upper wall 120. Herein the baffle 128 is disposed between the inlet opening 126 and the central opening 114. A tapered fill opening 130 is provided having conical walls 132 terminating in an inlet 134. It is noted that the diameter of the inlets 34 and 134 is less than one-third that of the fill openings 30 and 130 respectively.

A latitude of modification, substitution and change is intended in the foregoing disclosure, and in some instances some features of the invention may be employed without a corresponding use of other features.

We claim:

1. A humidifier comprising a container having a bowl-shaped lower portion, an upper wall integral with

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said lower portion, a top integral with said upper wall, said top having a main opening therethrough and an inwardly extending peripheral flange surrounding said top, a vapor-producing head seated on said flange, said upper wall having an outlet opening therein below said main opening, a downwardly extending baffle integral with said upper wall and extending only substantially half way about said main opening, said baffle being disposed between said outlet opening and said main opening, and a tapered fill opening in said upper wall located on the side of said baffle opposite said outlet opening said fill opening being provided with a downwardly and inwardly extending integral conical

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wall extending below said upper wall and terminating in an inlet below said outlet opening of a size to be closed by a liquid film during operation of said humidifier.

5 2. A humidifier according to claim 1, wherein said inlet is of a diameter less than one-third the diameter of said fill opening.

3. A humidifier according to claim 2, wherein said upper wall extends sloping upwardly and inwardly, said baffle being V-shaped in cross section and extending below said outlet opening, said fill opening being diametrically opposed to said outlet opening.

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