June 19, 1951 L. T. MERRICK 2,557,451

METHOD AND APPARATUS FOR DEODORIZING A SPACE

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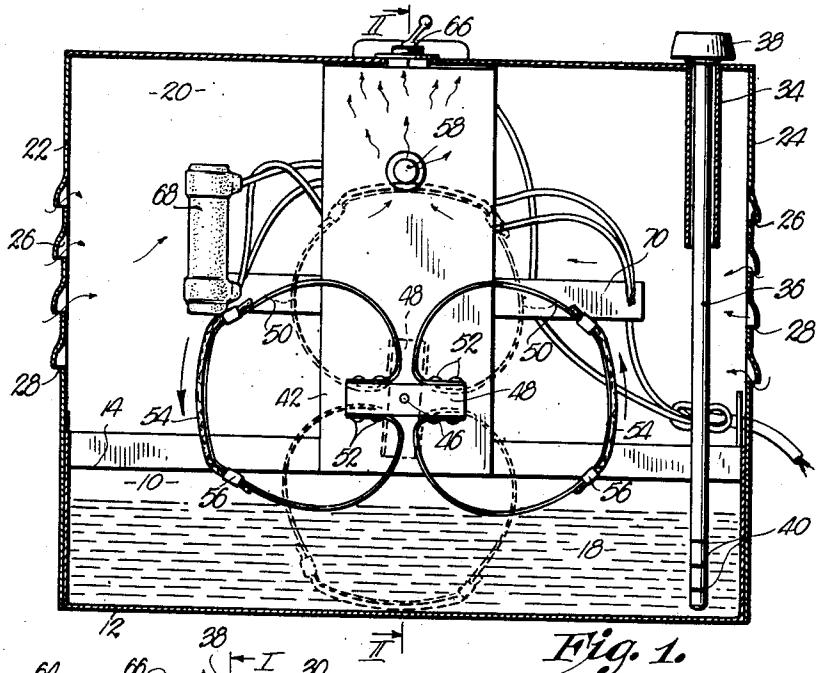


Fig. 1.

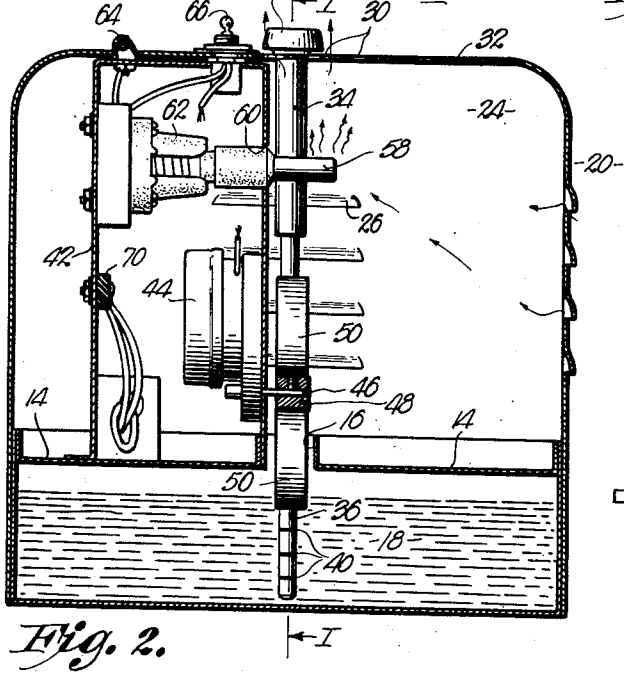


Fig. 2.

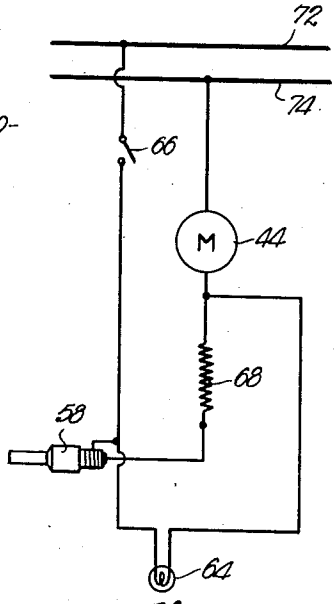


Fig. 4.

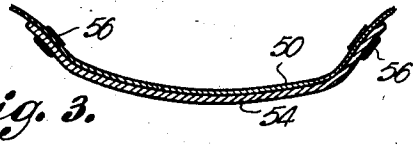


Fig. 3.

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METHOD AND APPARATUS FOR DEODORIZING A SPACE

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5 Claims. (Cl. 21—53)

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This invention relates to air conditioning apparatus and more particularly to structure for directing a gaseous mixture into the air automatically and continuously for deodorizing, sterilizing, fumigating or like purposes.

It is the primary object of the present invention to provide apparatus in the nature of a dispenser for chemical solutions or other liquids capable of converting the liquid into a vaporous or gaseous form, whereby the same is free to rise within the atmosphere in predetermined quantities to suit the desire of the user and in accordance with the amount of air to be so treated.

The most important object of the present invention is to provide a dispenser for directing liquid in relatively small quantities automatically and continuously through the medium of structure capable of moving the liquid from a container therefor against a heated element, whereby, through heating of the small quantities of liquid, gasification takes place and the resultant form of the liquid is free to rise in fumes within the atmosphere.

Another important object of the present invention is to provide a dispenser of the above-mentioned character having a resiliently-mounted saturable element rotatable alternately through a body of liquid and in wiping engagement with a heated element, whereby small quantities of the liquid are continuously deposited upon the heated element for vaporization or gasification thereby.

Other more minor objects will be made clear or become apparent as the following specification progresses, reference being had to the accompanying drawing, wherein:

Fig. 1 is a substantially central, vertical, cross sectional view through apparatus for dispensing a liquid made in accordance with my present invention, taken on line I—I of Fig. 2.

Fig. 2 is a vertical, cross sectional view taken on line II—II of Fig. 1.

Fig. 3 is a fragmentary, detailed, substantially central, longitudinal, cross sectional view taken through one of the saturable elements, per se; and,

Fig. 4 is a schematic wiring diagram, showing the electrical circuit forming a part of the dispenser.

The present invention has been designed particularly for use in sterilizing air within a room or the like by directing chemical solutions into the air in the form of fumes, whereby to combat disease through use of germ-killing chemical liquids. It will be understood, however, and become apparent that the apparatus might well be used wherever it is desired to convert a liquid into the vaporous or gasified form and dispensing the same into the atmosphere.

In Figs. 1 and 2, there is shown a pan-like receptacle 10 having a bottom 12 and a recessed top

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wall 14 that, in turn, is provided with a centrally-disposed, elongated slot 16. Slot 16, as shown in Fig. 2 particularly, is formed by upturned, substantially parallel, opposed flanges on the wall 14 of receptacle 10.

Receptacle 10 is designed to receive a filling of liquid 18 constituting any desired chemical solution and is mounted within a hollow case broadly designated by the numeral 20. Receptacle 10 is disposed at the open bottom of the case 20 and combines therewith in forming an entirely closed case 10, bottom 12 of receptacle 10 constituting, also, the bottom of the over-all case 20.

Opposed side walls 22 and 24 are each provided with a plurality of relatively superimposed louvers 26 stamped therein to present air inlet openings 28. A plurality of outlet openings 30 for the case 20 are provided in the top wall 32 of the case 20. A tube 34 depends from the innermost face of wall 32 for receiving an elongated rod 36 that extends into the receptacle 10 through slot 16 and into the liquid 18.

Rod 36 is provided with a head 38 at the uppermost end thereof and markings 40 on the innermost end thereof, all to the end that the level of liquid 18 within receptacle 10 can easily be determined through removal of the rod 36.

A U-shaped bracket 42 is disposed within the case 20 and mounted in an upright condition upon the wall 14 of receptacle 10 on one side of the elongated slot 16. The uppermost or bight end of bracket 42 terminates adjacent the innermost face of the top wall 30 of case 20.

An electric motor 44 provided with suitable reduction gearing and terminating in a rotatable shaft 46 is mounted upon the innermost face of one leg of the bracket 42, said shaft 46 passing outwardly through an opening in said leg of bracket 42 immediately above the wall 14. An elongated, solid block 48 is secured directly to that end of the shaft 46 extending outwardly from bracket 42 for rotation therewith.

Block 48 carries a pair of loops 50 of identical character, said loops 50 each being formed from any suitable resilient, metallic material and having their ends secured directly to the block 48 through the medium of rivets, screws or the like 52. Each loop 52 carried at the bight thereof and upon its outermost face a strip 54 of saturable material having properties rendering the same not readily inflammable. It is contemplated that the two elements 54 be formed from strips of asbestos, and the same are mounted directly upon the respective loops 50 through the medium of circumscribing clips 56.

A heating element 58 passes through an opening 60 in the same leg of bracket 42 having motor 44 mounted therein and disposed directly above motor 44. Heating element 58 is threaded with an electric socket 62 that is, in turn, secured

directly to the innermost face of the other leg of bracket 42. An electric lamp 64 is suitably socketed and mounted upon the uppermost face of the bight of bracket 42, as is a conventional toggle switch 66.

A resistor 68 is mounted within the case 20 and supported by the electrical wiring shown in Figs. 1 and 2 having connection with the electrical components of the device, certain of said wirings having connection with a terminal bar 70 mounted upon the innermost face of that leg of bracket 42 having socket 62 thereon.

As shown in Fig. 2 of the drawing, the top wall 32 of the case 20 is provided with suitable openings for clearing the lamp 64 and its case, as well as the switch 66, both lamp 64 and switch 66 being disposed on the uppermost face of the wall 32 when all of the parts of the device are in the assembled condition.

The wiring diagram of Fig. 4 illustrates a pair of lead lines 72 and 74 with switch 66, motor 44, resistance 68, lamp 64 and heating element 58 in series therewith. Additional explanation of Fig. 4 seems unnecessary, since it is apparent that the closing of switch 66 will energize motor 44 to cause rotation of shaft 46 and loops 50 carried thereby. It is, also, clear by Fig. 4 that lamp 64 will be energized by closing of the switch 66 to indicate to the user when the device is in operation.

Finally, element 58 will be maintained in a heated condition whenever switch 66 is closed, the temperature thereof being determined by the choice of resistor 68.

It is noted in Fig. 2 of the drawing that the loops 50 are mounted upon the block 48 in direct alignment with the slot 16 and spaced between the upturned flanges of wall 14 defining slot 16.

When motor 44 is placed in operation, loops 50 will rotate, and the elements 54 thereof will be alternately passed through the liquid 18 and thence upwardly against the heating element 58 in the direction indicated by the arrow in Fig. 1. The loops 50 are so disposed as to bring the elements 54 into wiping engagement with the heating element 58, as shown by the dotted lines in Fig. 1; and, as the elements 54 so wipe against the heating element 58, the inherent resiliency of loops 50 will permit flexing thereof intermediate their ends and, also, maintain the outermost face of the elements 54 biased against the heating element 58 in wiping engagement therewith.

As the saturable elements 54 pick up a small quantity of the liquid 18 when passing therethrough and move against heating element 58, a small amount of the liquid will be deposited upon the heating element 58, and vaporization or gasification will take place because of the heating of such deposited liquid by elements 58.

As soon as such gasification takes place, fumes will rise from elements 58 and pass upwardly through openings 30 of wall 32 to be dispensed within the atmosphere. A complete cycle of circulation takes place within the case 20 because of the openings 28 permitting air to enter the case 20 and rise through opening 30 carrying therewith the fumes emanating from element 58.

It is apparent from the foregoing that an inexpensive means has been provided for continuously deodorizing, sterilizing or otherwise treating the atmosphere with various types of liquid chemicals. The apparatus is simple in operation, inexpensive and capable of dispensing liquid over a long period of time in the manner aforesaid without likelihood of mechanical or electrical defects.

A minimum number of parts likely to wear and become defective is provided. It is apparent that many changes and modifications may be made, particularly with respect to the way in which the elements 54 are moved alternately through the liquid 18 and against the heating element 58 for wiping, biased engagement therewith, all without departing from the spirit of this invention as defined by the scope of the appended claims.

Having thus described my invention, what I claim as new and desire to secure by Letters Patent is:

1. A dispenser of the kind described comprising a liquid receptacle; a heated member spaced from said liquid; and at least one element of saturable material mounted for movement alternately through the liquid and against the member for conveying the liquid to the member for heating and conversion of the liquid into fumes.

2. A dispenser of the kind described comprising a liquid receptacle; a heated member spaced from said liquid; and at least one element formed from absorptive material mounted for swinging movement through the liquid and into wiping engagement with the member, whereby the liquid deposited on the member by said element is heated by the member and converted into fumes.

3. A dispenser of the kind described comprising a liquid receptacle; a heated member spaced from said liquid; at least one element formed from absorptive material mounted for swinging movement through the liquid and into wiping engagement with the member, whereby the liquid deposited on the member by said element is heated by the member and converted into fumes; and means for holding said element biased against the member as the element wipes thereacross.

4. A dispenser of the kind described comprising a liquid receptacle; a heated member spaced from said liquid; at least one element formed from absorptive material mounted for rotative movement through the liquid and into wiping engagement with the member, whereby the liquid deposited on the member by said element is heated by the member and converted into fumes; and a resilient support for said element disposed to hold the element biased against the member as it wipes thereacross.

5. The method of dispensing liquid into a space in a gaseous form which comprises the steps of first saturating an absorptive element with the liquid to be dispensed; and then wiping the saturated element across a heated member to deposit a quantity of the liquid thereon for heating and gasification of the liquid by the member.

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