Nov. 18, 1941. P. LARSEN 2,262,772

VAPORIZING DEVICE

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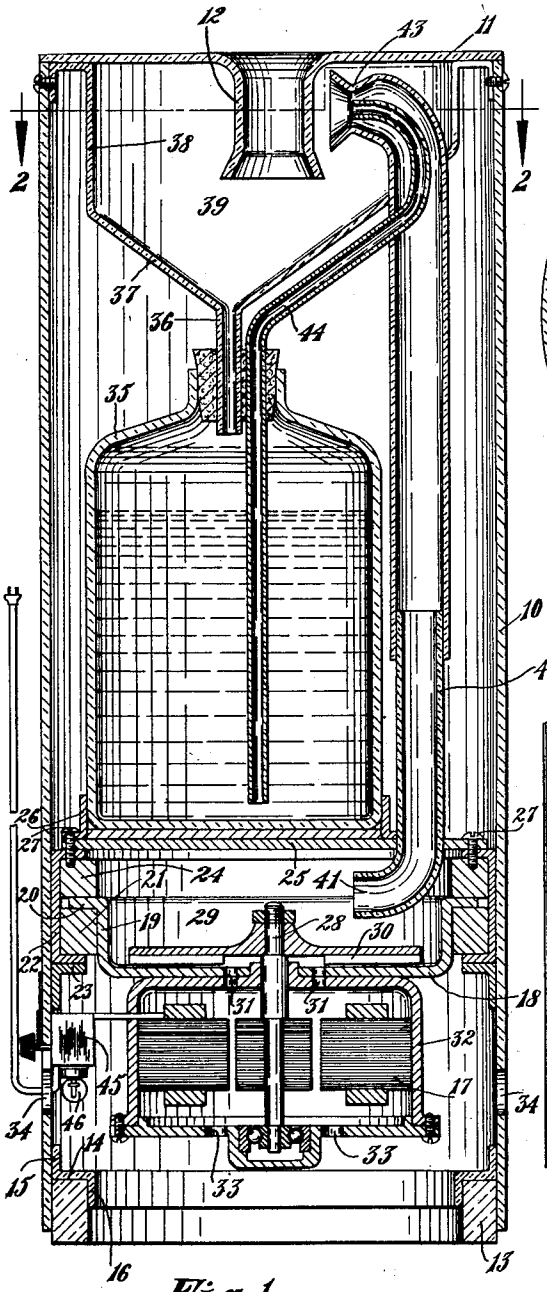



Fig. 1

Fig. 2

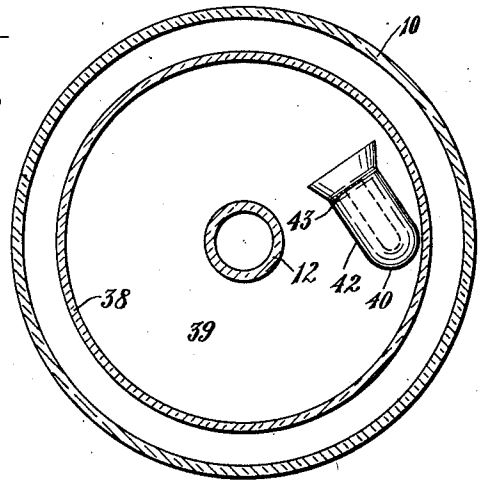
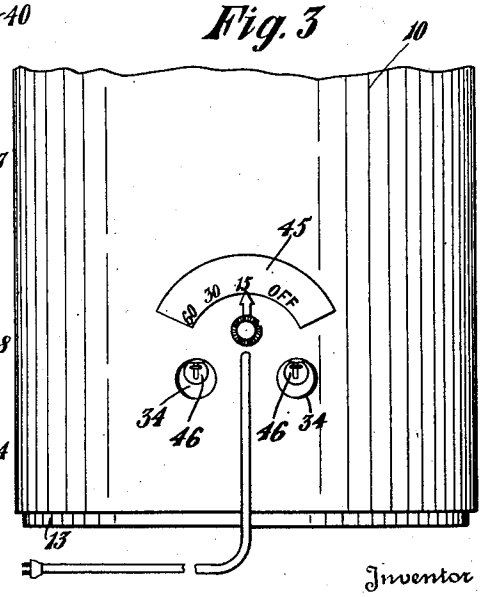



Fig. 3




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## VAPORIZING DEVICE

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Application January 23, 1939, Serial No. 252,505

3 Claims. (Cl. 183—26)

The invention relates to vaporizing devices for vaporizing chemical solutions in order to sterilize the air in a room or other place in which the device is located.

An object of the improvement is to provide an electric motor operated means for vaporizing the chemical solution.

A further object is to provide a device of this kind including a motor driven fan for forcing air through a Venturi tube which draws the chemical solution through a suction tube for vaporizing the same and discharging it into a separating chamber from which the vaporized chemical issues into the room; any liquid which has not been vaporized draining back into the liquid container.

Another object of the improvement is to provide a clock switch or timer for controlling the operation of the motor so that it will intermittently operate for predetermined periods of time.

The above objects together with others which will be apparent from the drawing and following description or which may be later referred to may be attained by constructing the improved vaporizing device in the manner illustrated in the accompanying drawing in which

Figure 1 is a longitudinal sectional view through a vaporizing device embodying the invention;

Fig. 2, a transverse sectional view taken on the line 2—2, Figure 1;

Fig. 3, an elevation of the lower portion of the vaporizing device shown in Figure 1.

Similar numerals refer to similar parts throughout the drawing.

The improved vaporizing device is adapted for sterilizing the air by the atomization of chemical solutions such as sodium hypo-chlorite solution (NaClO), and for this reason the various parts of the device, especially those parts which come in contact with the chemical are formed of glass, earthenware, vitrous enamel or certain plastics which the chemical will not attact.

Referring first to the construction illustrated in Figs. 1 to 3, inclusive, which is a preferred embodiment of the invention, the device is mounted within a housing 10 which may be of cylindrical form as shown, and provided with a top wall 11 having the central exhaust tube 12 depending therefrom.

A reinforcing base ring 13 may be mounted within the lower end of the cylindric housing 10 and connected thereto as by the ring 14 having the annular attaching flanges 15 and 16 around its outer and inner perimeters, respectively.

An electric motor indicated generally at 17 is mounted within the lower end of the housing preferably being supported from the lower wall 18 of a fan housing, which is provided with the upstanding peripheral wall 19 having an outturned flange 20 supported upon a ring 21 which is mounted within the channel ring 22 mounted within the cylindric housing 10 and supported upon the angular ring 23 which is attached to the inner wall of the housing 10.

A ring 24 may be located between the peripheral flange 20 of the fan casing and the upper flange of the channel ring 22. Mounted upon said upper flange of the channel ring is the top wall 25 of the fan casing which together with the angular ring 26 may be attached to said upper flange as by screws 27.

The motor shaft 28 extends vertically upward into the fan chamber 29 thus formed, and has a rotary fan 30 fixed thereon. Air inlet openings 31 are formed in the top wall of the motor housing 32 and the bottom wall 18 of the fan casing and openings 33 are formed in the bottom wall of the motor housing so that air drawn in through the openings 34 in the lower portion of the housing 10 will be drawn upward through the motor to the fan chamber thus tending to keep the motor cool while operating.

A container 35 for the sodium hypo-chlorite solution or other chemical solution to be dispensed, is mounted upon the top wall 25 of the fan casing, the lower end of the container being positioned within the angular ring 26, and the upper end of the container communicates with the drain tube 36 at the lower end of the conical bottom wall 37 of the separating chamber casing 38, which together with the top wall 11 forms a separating chamber 39.

A tube 40 has its lower end extended tangentially into the fan chamber as indicated at 41 and its upper end extended tangentially into the separator chamber as indicated at 42 and formed into a Venturi tube as at 43, and a suction tube 44 extends from a point near the bottom of the container 35 into said Venturi tube.

The motor 17 is preferably controlled by means of a clock switch or timer 45, and signal lights 46 may be associated therewith to indicate when the motor is operating.

In the operation of the device above described, air is drawn from the outside into the lower portion of the housing 10 through the apertures 34 and then through the apertures 33 and 31 to the fan chamber.

Pressure is built up in the fan chamber and the air is forced up through the tube 40 passing

through the Venturi tube **43** which creates suction in the tube **44** drawing the liquid chemical solution from the container **35**.

The air and liquid are forced in vaporized condition into the separating chamber **39** and the vaporized chemical is forced out through the tube **12** to sterilize the air within the room in which the device is located while any portions of the liquid which have not been vaporized will be collected and drained back upon the inclined bottom wall **37** and through the tube **36** to the container.

I claim:

1. A vaporizing device including a cabinet, having an air inlet opening in its lower portion, an electric motor in the lower portion of the cabinet, a fan casing above the motor, there being an air inlet opening in the bottom of the fan casing, a blower fan in the fan casing operatively connected to the motor, a liquid container above the fan casing, a liquid separator above the liquid container, the bottom of the liquid separator communicating with the top of the liquid container, a pipe leading from the discharge side of the fan casing to the top of the liquid separator, a tube leading from the bottom of the liquid container to said pipe, and an exhaust tube located through the top of the cabinet and depending into said liquid separator.

2. A vaporizing device including a cabinet, having an air inlet opening in its lower portion, an electric motor in the lower portion of the cabinet, means for time controlling the electric motor, a fan casing above the motor, there being an air inlet opening in the bottom of the fan casing, a blower fan in the fan casing operatively connected to the motor, a liquid container above the fan casing, a liquid separator above the liquid container, the bottom of the liquid separator communicating with the top of the liquid container, a pipe leading from the discharge side of the fan casing to the top of the liquid separator, a tube leading from the bottom of the liquid container to said pipe, and an exhaust tube located through the top of the cabinet and depending into said liquid separator.

3. A vaporizing device including a cabinet, having an air inlet opening in its lower portion, an electric motor in the lower portion of the cabinet, a fan casing above the motor, there being an air inlet opening in the bottom of the fan casing, a blower fan in the fan casing operatively connected to the motor, a removable liquid container above the fan casing, a liquid separator above the liquid container, the bottom of the liquid separator communicating with the top of the liquid container, a pipe leading from the discharge side of the fan casing to the top of the liquid separator, a tube leading from the bottom of the liquid container to said pipe, and an exhaust tube located through the top of the cabinet and depending into said liquid separator.

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