

Jan. 17, 1967

L. A. GILBERTSON

3,298,674

AIR TREATING APPARATUS

Filed May 10, 1965

2 Sheets-Sheet 1

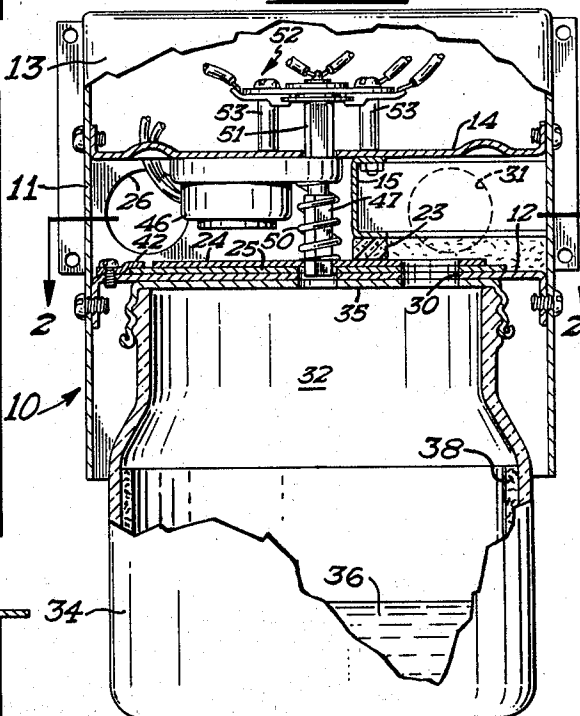
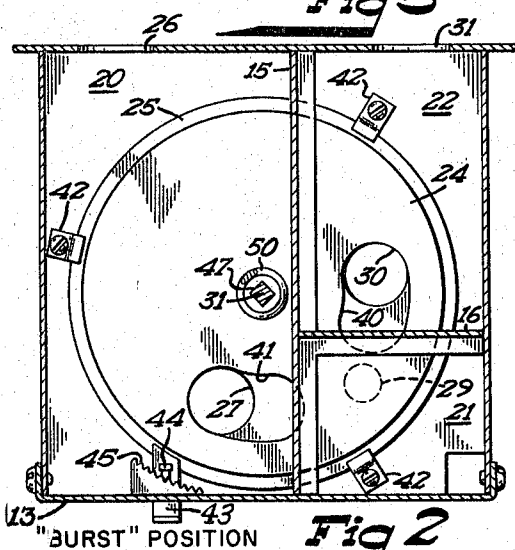
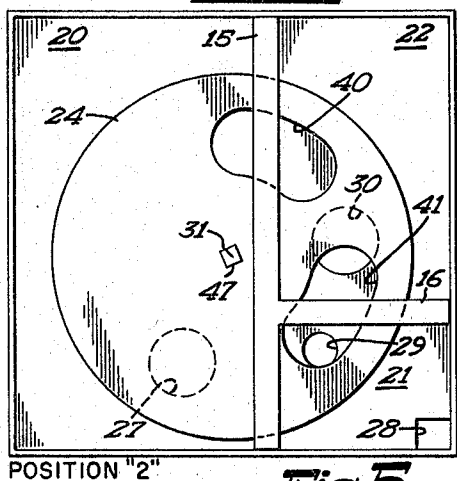
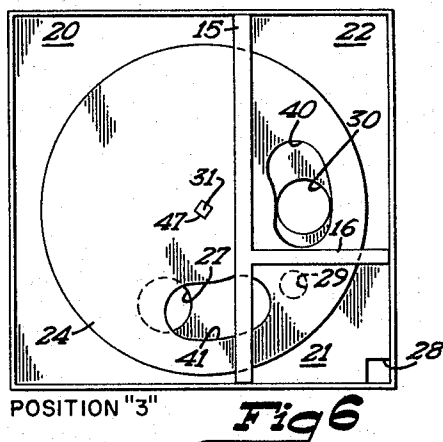
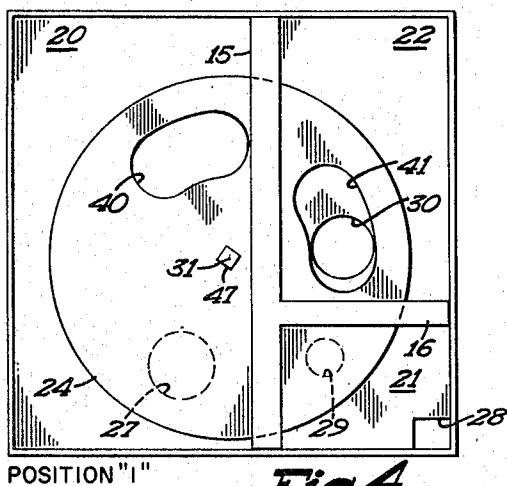


Fig 1

INVENTOR.
LYNN A. GILBERTSON

BY *Francis A. Sin*
ATTORNEY

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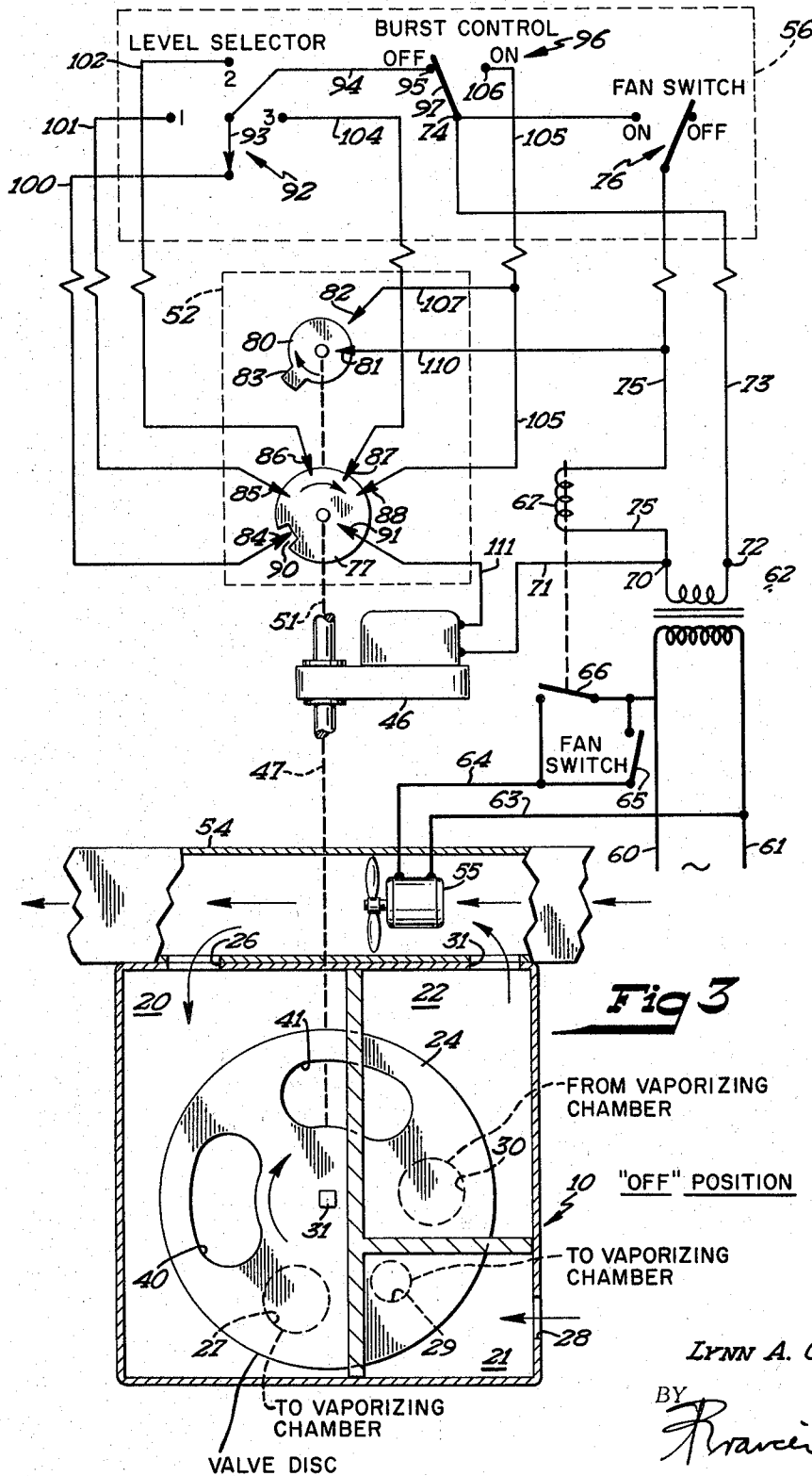
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2 Sheets-Sheet 2



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AIR TREATING APPARATUS

Lynn A. Gilbertson, Minneapolis, Minn., assignor to Honeywell Inc., Minneapolis, Minn., a corporation of Delaware

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8 Claims. (Cl. 261—30)

This invention relates to control apparatus and more specifically to an improved air treating apparatus and control system therefor. In particular, the invention relates to dispensing apparatus for adding a vaporizable air treating material to air, means for varying the rate of evaporation of the material by varying the amount of air coming into contact with the material, and a control system for selectively controlling the rate of evaporation of the air treating material and thereby the effectiveness of the dispensing apparatus. The invention is applicable to any type of air treating material but finds special application in the counteracting of undesirable odors.

Various methods in counteracting undesirable odors in residences, commercial buildings, and the like have been proposed in the past and several are used widely today. These include various deodorants marketed in aerosol cans and also deodorants dispensed by means of a wick which is exposed to the air and which conveys the deodorant material from the container to the air. Also, some types of deodorants or odor counteractants are dispensed by bringing a stream of air into contact with them so as to evaporate a portion of the counteractant into the air which is then mixed with the air in the enclosure or room where the air is to be treated. This type of counteractant may take the form of either a liquid, a solid, or a gel. Various attempts to control the effectiveness of dispensers for this type of counteractant material have been proposed, but these systems have generally not been satisfactory since they did not provide an adequate range of control nor one which could be easily operated from a control panel at a remote point.

My invention provides a dispensing or treating apparatus and a control system therefor which permits selective operation of the apparatus at levels of vaporization which vary over a wide range, preferably from an "off" position where the counteractant system is rendered completely inoperative, over a range of intermediate positions, to a maximum or "burst" position which provides a very high level of vaporization of the counteractant material and hence a high degree of effectiveness of the air treating apparatus. Also, my invention is particularly useful where it is desired that the control panel be located remote from the dispensing apparatus. Thus, the invention is particularly useful where the dispensing apparatus is to be used in connection with the air treating system in a building with the controls located in a position remote from the dispensing apparatus and other treating apparatus so that the controls will be more convenient to the occupants of the building.

The apparatus of my invention may be described broadly as an apparatus including a housing which has an air inlet, air outlet, and a vaporizing area which is adapted to contain vaporizable air treating material which is evaporated into a stream of air which is passed through the area. Preferably the vaporizing area is a separable chamber connected to the housing by a single coupling. A first opening through the coupling connects the inlet to the vaporizing area and a second opening through the coupling connects the vaporizing area to the outlet. This apparatus is intended for use with an air moving device such as a fan and connected so that the fan is operable to create a pressure differential such that the pressure at the inlet of the apparatus exceeds the pressure at the outlet. In order to control the rate of evaporation of the

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air treating material located in the vaporizing area, there is provided valve means associated with the coupling and cooperable with both the first and second openings to vary the effective areas of these openings and thus to control the amount of air passed through the vaporizing area.

My invention further contemplates the use of a motor which is operably connected to the valve means and is operable to drive it through a plurality of positions to vary the effective area of the aforesaid openings. In addition, the invention contemplates the use of a control system which is particularly applicable to installations where the control panel for the apparatus is remote from the dispensing apparatus. Further, the control system preferably includes means for selectively energizing the motor means to drive the valve means to the desired position and means for providing a "burst" operation of the dispensing apparatus wherein the valve means is moved to the maximum air flow position and a system fan is turned on so that a maximum effectiveness of the air treating apparatus is obtained.

My invention will become apparent upon reading the following detailed description of a preferred embodiment thereof with reference to the drawing wherein:

FIGURE 1 discloses in vertical section taken substantially through the center of the device, a liquid odor counteractant dispenser constructed according to my invention.

FIGURE 2 is a horizontal cross-sectional view of the dispenser taken generally along line 2—2 of FIGURE 1, disclosing the dispenser in its "burst" position.

FIGURE 3 discloses schematically the dispensing apparatus of FIGURES 1 and 2 with the dispenser utilized in connection with an air flow system, such as a central forced air heating or cooling system, and also discloses schematically an electrical control system, including a remote control panel, for the dispenser apparatus. This figure discloses the dispenser apparatus and the control system in an "off" position.

FIGURES 4—6 are generally similar to FIGURE 2 but on a reduced scale and show schematically the dispenser in its "intermediate" positions referred to as positions "1," "2," and "3," in FIGURES 4, 5 and 6 respectively.

Referring to FIGURE 1, reference numeral 10 generally designates a dispenser having a cabinet 11 which takes the form of an enclosed box-like structure having a plate 12 forming bottom wall and a removable front cover 13 (see FIGURE 2). This box is divided into an upper and lower area by a horizontal dividing plate 14. The area between the bottom plate 12 and dividing plate 14 is substantially air tight. This area is divided by appropriate means, such as partition walls 15 and 16, into three separate areas defining a first inlet chamber 20, a second inlet chamber 21 and an outlet chamber 22. The partitions or walls 15 and 16 may take the form of sheetmetal members suspended from dividing plate 14 but, at the bottom, are provided with a resilient sealing material 23 which may be, for example, of a non-air permeable foam type of material which is secured to a horizontal flange on the bottom of each partition. This sealing material engages the upper surface of a valve disk 24 which lies parallel to bottom plate 12. Intermediate valve disk 24 and bottom plate 12 is a second valve disk 25.

Inlet chamber 20 is provided with an inlet opening 26 through the back wall of the box and with a valve port 27 which extends through bottom plate 12. Inlet chamber 21 is provided with a small inlet opening 28, which, as will be seen hereinafter, is adapted to open to atmosphere. Chamber 21 has a valve port 29 extending through bottom plate 12. Outlet chamber 22 is provided with a valve port 30 which extends through bottom plate 12 and with an outlet opening 31 which extends through the back wall of the box. The sealing material 23 on the bottom of the partitions 15 and 16 resiliently engages the

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upper surface of valve disk 24 and allows it to rotate with respect to the partitions while still retaining a substantial air-tight wall between the three chambers 20, 21 and 22. Valve ports 27, 29, and 30 are formed equidistant from a central vertical axis 31.

Beneath bottom plate 12 of box 11, the dispenser has a vaporizing chamber 32 which may take the form of another air-tight box. However, in the preferred embodiment I provide a glass or plastic jar 34 which may be attached to the underside of bottom plate 12 by appropriate coupling means such as a jar cover 35 which is spot welded to plate 12. Cover 35 is provided with openings corresponding to and aligned with valve ports 27, 29 and 30 in plate 12. As noted, the interior of jar 34 provides the vaporizing chamber 32. It is adapted to contain a quantity of a vaporizable air treating material which may be liquid, solid, or gel. In the illustrated embodiment I use a quantity of an odor counteractant liquid 36 which is vaporized in a stream of air passing through vaporizing chamber 32. A cylindrical wick 38 may be used inside the vaporizing chamber to increase the surface area of the counteractant.

Valve disks 24 and 25 are substantially identical. Each is a relatively thin, flat disk having two elongated arcuate openings 40 and 41 formed therethrough. These openings are at the same radius as the ports 27, 29 and 30 from axis 31 and each of the valve disks is rotatable about this axis. The openings 40 and 41 are so disposed in the valve disks that in one angular position of disk 24 (FIGURE 2) the valve ports 27 and 30 are both completely opened or, in other words, are aligned with the openings 40 and 41. In another position (FIGURE 3) all three of the valve ports 27, 29 and 30 are completely covered by the disk 24. In other positions, for example as shown in FIGURES 4-6, portions of the valve ports are aligned with the openings 40 and 41 and other portions are closed by the valve disk 24.

Valve disk 25 serves as a calibration disk which is manually rotatable about axis 31. It may be mounted in any desired manner, for example, as shown in FIGURE 2, disk 25 may be slightly larger in diameter than disk 24 and held in place by a plurality of clips 42. Disk 25 is provided with an operating handle 43 which extends through the front cover 13 of the box so that the disk may be manually rotated to a desired position with respect to the valve ports to thus permit calibration of the device. The disk is releasably held in this selected calibrated position by an appropriate means such as a spring latch 44 coacting with a notched arcuate surface 45. In FIGURE 2 disk 25 is shown positioned so that openings 40 and 41 therein are aligned with openings 40 and 41 in disk 24. In the schematic showings of FIGURES 3-6 disk 25 has been omitted for the sake of clarity.

Valve disk 24 lies immediately above calibration disk 25 and is operably connected to an electric driving motor 46 by a shaft 47. This shaft may be connected to the valve disk in any desired manner, for example by providing a square opening through the center of the disk which accepts the square end of the shaft. A spring 50 encircles shaft 47 and has one end abutting motor 46 and the other end bearing on the upper surface of valve disk 24. This urges disk 24, as well as calibration disk 25, toward bottom plate 12 and hence aids in providing a substantially air-tight structure. As seen in FIGURE 1, motor 46 may be mounted on dividing plate 14 between plates 14 and 12. In addition to shaft 41, the motor also has a shaft 51 extending upward therefrom through an aperture in dividing plate 14. Shaft 51 drives a rotary switch 52 which will be described in connection with the description of FIGURE 3 where it is shown schematically. Suffice it to say that switch 52 has a fixed portion which is mounted on plate 14 by appropriate means such as pillars 53 and a movable portion which is driven by shaft 51.

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In the above described preferred embodiment a single coupling or connection is provided between the vaporizing chamber 32 and the rest of the system by the jar cover 35 and plate 12 and the aligned ports therethrough.

Valve disks 24 and 25 are associated directly with this coupling. This arrangement provides advantages which other constructions would not provide. The container 34 is readily removable to facilitate rapid and easy replenishment of the treating material and cleaning of the apparatus. The structure requires no complex seals to keep the system tight. The use of substantially identical valve disks 24 and 25 provides a simple and inexpensive means for obtaining manual calibration of the device and automatic control thereof over a wide range by rotation of the disks to vary the effective size of the valve ports.

Ports 27, 29, and 30 are arranged so that air enters and leaves the vaporizing chamber in a direction generally tangential to the surface of the treating liquid 36. This results in a stirring action at the surface of the liquid which stimulates evaporation thereof. The valving action provided controls flow through both the inlet and outlet ports so that maximum control is obtained.

The dispensing apparatus is intended for use in connection with an air moving apparatus such as a fan which is operable to create a pressure differential so that the pressure in inlet chamber 20 is greater than the pressure in outlet chamber 22. Also, the pressure in outlet chamber 22 must be less than the pressure in ambient inlet chamber 21. This may be accomplished in any appropriate way and the dispenser may be used as a free standing unit with a fan of its own, or it may be connected into a central forced air system as shown in FIGURE 3. There the dispenser is shown connected to a duct 54 which forms a part of a forced air system. Mounted within the duct is an electrically energizable fan 55 for moving air through the system. The dispenser outlet 31 is connected on the upstream or suction side of the fan and inlet 26 is connected on the downstream or exhaust side of the fan. Thus, when the fan is operated, a pressure differential exists between the inlet and outlet chamber such that the pressure at the inlet chamber is greater. Also, if the ambient inlet chamber 21 is exposed to ambient air in the area which is being supplied with air by duct 54, the pressure there is greater than on the suction side of the fan. It should be pointed out, that ambient inlet 30 and the chamber supplied thereby is not necessary in order to practice my invention. I have found that in some instances it is desirable and in others it may simply be eliminated. Nevertheless, I have chosen to include it in my preferred embodiment.

FIGURE 3 also discloses the control system for the dispenser. As was noted previously, a dispenser constructed according to my invention is particularly useful where it is desired that a remote control panel be provided. FIGURE 3 illustrates a remote control or selector panel 56 which may be located some distance away from the dispenser itself. For example, the dispenser may be located in the basement of a home while the panel 56 is located upstairs in a living area.

Power is supplied to the control system by a pair of power line conductors 60 and 61, connected across the primary winding of a step-down transformer 62. The motor for fan 55 is connected across conductors 61 and 62 by appropriate conductors 63 and 64 through the parallel combination of a fan switch 65, which may be a manual switch located at or adjacent the dispensing apparatus or may be a thermostatic or other condition controlled switch, and a switch 66 which is part of a control relay having an electrically energizable coil 67. The secondary winding of transformer 62 has a terminal 70 which is connected to one terminal of motor 46 by a conductor 71 and another terminal 72 which is connected by a conductor 73 to a common terminal 74 in remote control panel 56. A conductor 75 is also connected to terminal 70 of transformer 62 and connects relay coil 67, through

a fan switch 76 located in remote panel 56, to the common terminal 74 in the remote panel.

As seen in FIGURE 3, rotary switch 52 includes two movable conductive disks 77 and 80 which are operably connected to shaft 51 so as to be driven by the motor 46 when it is energized. Disk 80 is continuously engaged by a fixed contact 81 and engages a second fixed contact 82 only when the disk is in the particular angular position wherein a radially extending portion 83 thereof engages contact 82. Disk 77 has disposed around it a plurality of angularly displaced contacts 84, 85, 86, 87 and 88. These contacts are disposed at a radial distance so that they normally engage conductive disk 77 but so that when a notch 90 in the disk is rotated adjacent any one of these contacts it no longer engages the disk. Another contact 91 is continuously in engagement with the conductive disk 77. It should be noted that notch 90 in disk 77 and extending portion 83 of disk 80 are disposed so that contact 82 engages extending portion 83 of disk 80 only when disk 77 is rotated to a position so that notch 90 is adjacent contact 88.

Control panel 56 includes, in addition to fan switch 76, a level selector switch 92 which has four fixed contacts corresponding to "off," "1," "2" and "3" positions. This selector switch has a movable contact 93 about which the fixed contacts are symmetrically disposed. Movable contact 93 is connected by a conductor 94 to an "off" contact 95 of a "burst" control switch 96 which is also located at remote panel 56. Contact 95 is connected by a switch blade 97 to the common terminal 74 when the "burst" switch is in its "off" position. The "off" contact of the level selector switch is connected by a conductor 100 to contact 84 of the rotary switch 52. Contact "1" of the level selector switch is connected by conductor 101 to fixed contact 85 of the rotary switch and contact "2" is connected by conductor 102 to fixed contact 86 of the rotary switch. In like manner, contact "3" is connected by a conductor 104 to fixed contact 87 of the rotary switch. Contact 88 of the rotary switch is connected by a conductor 105 to an "on" contact 106 of the "burst" control switch. Contact 82 is connected to conductor 105 by a further conductor 107. Contact 81 of the rotary switch is connected by a conductor 110 to conductor 75 intermediate relay coil 67 and fan switch 76. Contact 91 of the rotary switch is connected by a conductor 111 to one of the terminals on motor 46.

The operation of the air treating apparatus and control system will now be described. FIGURE 3 discloses the system in its "off" position. Fan 55 is de-energized and valve disk 24 is disposed in a position so that valve ports 27, 29 and 30 in plate 12 are all covered. In this condition, level selector switch 92 is in a position so that movable contact 93 engages the "off" contact. The "burst" control switch is in a position wherein blade 97 engages "off" contact 95 and fan switch 76 is in its "off" position. Motor 46 has rotated the rotary switch to a position wherein notch 90 is adjacent contact 84 and extending portion 83 of disk 80 is disposed so that it is not in contact with fixed contact 82. Thus, it will be seen that no circuit is completed to motor 46. However, a circuit can be traced from contact 72 of the transformer, through conductor 73 and "burst" control switch 96, conductor 94, level selector switch 93 and its "off" contact and conductor 100 to contact 84 of the rotary switch. Since notch 90 is adjacent contact 84 the circuit is not completed through disk 77.

The operation of fan switch 76 will be apparent. Closure of the switch simply completes a circuit from terminal 72 of the transformer, through conductor 73 to the common terminal 74 at panel 56 which is connected to the "on" terminal of the fan switch. Thus a circuit is completed through conductor 75 and the relay to terminal 72 of the transformer, and relay coil 67 is energized closing switch 66 to energize the motor for fan 55. This has no effect upon the motor 46 or disk valve 24 operated

thereby. As noted before, the fan may be operated independently of fan switch 76 by switch 65. For the purposes of this description, it will be assumed that fan switch 76 is left in the "off" position.

If the level selector switch is operated so that movable contact 93 engages fixed contact "1," the circuit to fixed contact 84 of rotary switch 52 is broken but a circuit is completed through conductor 101 to fixed contact 85 and then through disk 77, contact 91 and conductor 111 to motor 46, the other terminal of which is connected by conductor 71 to terminal 70 of the transformer. This energizes motor 46 which then rotates in a clockwise direction to a position where notch 90 is adjacent contact 85 and hence opens the circuit. This rotation moves valve disk 24 to the position shown in FIGURE 4. Here outlet valve port 30 is opened but inlet ports 27 and 29 are still closed. This will provide a low level of air treating since, while no air is actually drawn through the vaporizing chamber, the vapor pressure of the liquid counteractant will cause some vapor to be drawn into the duct by fan 55 when it is energized. At this point extending portion 83 of disk 80 is still not in contact with fixed contact 82.

If the level selector switch is moved to a position where movable contact 93 engages the number "2" contact the circuit through conductor 101 is broken but a circuit is completed through conductors 102 to fixed contact 86 and disk valve 24 and the rotary switch will again be rotated in a clockwise direction to a position where notch 90 is adjacent contact 86. In this position, valve disk 24 will be disposed in an angular position similar to that shown in FIGURE 5. In this condition ambient inlet port 29 is opened and outlet port 30 is partially open. Thus, when fan 55 is operated, a small quantity of air will be drawn through the vaporizing chamber due to the pressure differential between outlet chamber 22 and inlet chamber 21. In this position disk 80 still does not contact fixed contact 82 of the rotary switch.

Similarly, if movable contact 83 of the level selector switch is moved into engagement with the number "3" contact, the circuit will be completed through conductor 104 to fixed contact 87 of the rotary switch and the motor will again be energized so as to drive the rotary switch and the disk valve in a clockwise direction to a position wherein notch 90 is adjacent fixed contact 87. In this position disk valve 24 will occupy the position shown in FIGURE 6. Here outlet valve port 30 is completely open and the inlet valve port 27 is partially opened. Thus air will be supplied to the vaporizing chamber from the outlet side of the fan, pass through the chamber and pick up the vaporizing material and be drawn back into the duct through outlet chamber 22. It can be seen that the rate of evaporation of the counteractant material, and thus the effectiveness of the air treating apparatus will be progressively increased as the selector switch is moved from the "off" position through positions "1," "2" and "3".

As noted, movement of the level selector switch has no effect upon the system fan which must be energized either by operation of fan switch 65 or remote fan switch 76. Should a particularly undesirable odor condition arise, it may be desirable to operate the dispensing apparatus at a maximum effectiveness. When such condition occurs the "burst" control switch is moved from the "off" to the "on" position. This completes a circuit from terminal 72 of the transformer, through conductor 73, "burst" control switch 96 and conductor 105 to fixed contact 88 of the rotary switch. Thus motor 46 is energized and rotates in a clockwise direction until notch 90 is moved adjacent fixed contact 88. This rotation also moves radially extending portion 83 of conductive disk 80 into engagement with fixed contact 82. Thus a circuit is completed from conductor 105, through conductive disk 80 and conductor 110, to conductor 75 so that relay coil 65 is energized and closes fan switch 66. Thus, whenever the "burst" control is moved to an "on" position, not only

is motor 46 energized to rotate valve disk 24, but also the fan is turned on. Movement of motor 46 to this position results in valve disk 24 being disposed in the position disclosed in FIGURE 2 so that both inlet valve port 27 and outlet valve port 30 are completely opened. Air passes from the outlet side of the fan, through open valve port 27, through vaporizing chamber 32 and out valve port 30 to the outlet chamber. It can be seen that a maximum air flow will thus be obtained through the vaporizing chamber and consequently the system will be operating at its maximum effectiveness. If desired, a timer may be incorporated into "burst control" switch 96 so that the system will return to normal operation at a pre-selected time after initiation of a "burst."

From the foregoing, it can be seen that a dispenser apparatus constructed according to my invention, utilizing the rotary valve construction, in combination with the single coupling between the vaporizing chamber and the rest of the apparatus, and control system therefor, provides a system which is selectively adjustable over a wide range of effectiveness so that the system can be shut off completely, can be operated at various intermediate levels, or can be operated at a maximum effectiveness or "burst" level. The system is particularly useful where remote control is desired but can also be used in a free standing unit where the air treating apparatus is used alone with its own blower or in connection with another device such as a portable air cleaner, humidifier or the like.

I have shown a preferred embodiment of my invention for illustrative purposes but various modifications can be made thereto without departing from the spirit of my invention. As noted previously, the ambient inlet opening and chamber may be eliminated and the device utilized with a single inlet chamber coming from the outlet side of the fan. Also, the system may be modified so that an ambient inlet only is used with the outlet connected to the suction side of the fan and the only source of inlet air being from the ambient air surrounding the dispenser. While I have chosen to disclose an "off" position, three intermediate positions, and a "burst" position for the valve disk, this is by way of illustration only and any desired number of positions may be provided. The use of a separable container to provide a vaporizing chamber is desirable for the reasons enumerated previously herein. However, the device may be made with the box 11 extending down so as to provide a vaporizing chamber. Further, as noted previously, the invention is not limited to use with a liquid air treating material but may be used with various other types such as gels or solids. Since these and other modifications to my invention will be apparent to those skilled in the art in view of my disclosure, it is intended that my invention be limited solely by the scope of the appended claims.

I claim:

1. Air treating apparatus for use with a system including an air moving fan, the apparatus comprising: a housing having therein a first air inlet opening adapted for connection to the outlet side of the fan, a second air inlet opening adapted to supply ambient air to the apparatus, an air outlet opening adapted for connection to the inlet side of the fan, and a vaporizing chamber adapted to contain a quantity of vaporizable air treating material to be evaporated into a stream of air passed through the chamber; a first opening connecting said first inlet to said vaporizing chamber, a second opening connecting said second inlet to said vaporizing chamber, and a third opening connecting said vaporizing chamber to said outlet; valve means cooperable with said first, second, and third openings and movable through a plurality of positions with respect thereto to vary the effective areas of said first, second and third openings to select the amount of air passed through said vaporizing chamber; and valve operating means connected in controlling relationship with said valve means and selectively operable to position said valve means to thereby determine the effectiveness of the

treating apparatus, said valve means and said valve operating means being characterized in that they are operable to open said first opening only when said second opening is closed and are operable to open said second opening only when said first opening is closed.

2. Apparatus for dispensing a vaporizable liquid air treating material into air, comprising: a housing having an air inlet and an air outlet, the apparatus being adapted for use with an air moving fan operable to establish a pressure differential so that the air pressure at the inlet exceeds that at the outlet; enclosure means associated with said housing and defining a vaporizing chamber adapted to contain a quantity of air treating liquid to be evaporated into a stream of air passed through the chamber and carried away thereby; a single coupling means removably connecting said enclosure means to said housing; inlet valve port means in said coupling means connecting said vaporizing chamber to said inlet; outlet valve port means in said coupling means connecting said vaporizing chamber to said outlet; rotary valve closure means associated with said coupling means, cooperable with said port means, and rotatable through a plurality of positions with respect thereto to vary the effective opening through said port means to control the amount of air passed through said chamber by the fan from a minimum air flow to a maximum air flow; valve operating means including motor means operably connected to said rotary valve closure means and selectively operable to rotate said closure means through said plurality of positions to thereby select the effectiveness of the dispensing apparatus; and control apparatus operably associated with said dispensing apparatus and including means for selectively operating said motor means to cause it to drive said valve closure means to a desired one of said plurality of positions.

3. Apparatus for dispensing a vaporizable liquid air treating material into air, comprising: a housing having an air inlet and an air outlet, the apparatus being adapted for use with an air moving fan operable to establish a pressure differential so that the air pressure at the inlet exceeds that at the outlet; means associated with said housing and defining a vaporizing chamber adapted to contain a quantity of air treating liquid to be evaporated into a stream of air passed through the chamber and said chamber being constructed so that a relatively large surface area of the liquid is exposed to air in the chamber; inlet valve port means connecting said vaporizing chamber to said inlet; outlet valve port means connecting said vaporizing chamber to said outlet; valve means including a disk-type closure member overlying said inlet port means and said outlet port means and having a plurality of openings therethrough which are aligned with said port means in one angular position of said closure member to define a "burst" position, said closure member being rotatable through a plurality of angular positions to vary the effective opening of said ports between an "off" position wherein said ports are closed, at least one intermediate position wherein said ports are partially open and said "burst" position wherein said ports have a maximum effective opening; motor means operably connected to said closure member and operable to drive said closure member through said plurality of positions; and control apparatus operably associated with said dispensing apparatus and including remote selector means for selectively operating said motor means to a desired one of said plurality of positions and for initiating operation of the fan.

4. The apparatus of claim 3 wherein: the means defining a vaporizing chamber is a separate enclosure and wherein there is provided a unitary coupling means removably connecting said enclosure to said housing, said valve port means extending through said coupling means, and said disk-type closure member being in cooperating relationship with said coupling means to control air flow through said valve port means.

5. Apparatus for dispensing a vaporizable air treating material into air, comprising: a housing having an air

inlet and an air outlet, the apparatus being adapted for use with a system having an electrically energizable air moving fan operable to establish a pressure differential so that the air pressure at the inlet exceeds that at the outlet; means associated with said housing and defining a vaporizing chamber adapted to contain a quantity of air treating material to be evaporated into a stream of air passed through the chamber and said chamber being constructed so that a relatively large surface area of the treating material is exposed to air in the chamber; inlet valve port means connecting said vaporizing chamber to said inlet; outlet valve port means connecting said vaporizing chamber to said outlet; rotary valve means associated with said inlet port means and said outlet port means and having a plurality of openings therein which are aligned with said port means in one angular position of said closure member to define a "burst" position, said closure member being rotatable through a plurality of angular positions to vary the effective openings of said ports between an "off" position wherein said ports are closed, at least one intermediate position wherein said ports are partially open, and said "burst" position wherein said ports have a maximum effective opening; electrically energizable rotary motor means operably connected to said closure member and operable to drive said closure member through said plurality of positions; remote, manually operable selector switch means having a plurality of operative positions including positions corresponding to said "off" and said "intermediate" positions; rotary switch means operably connected to said motor means and operable thereby through a plurality of positions corresponding to the said positions of said closure member; circuit means, including said selector switch means and said rotary switch means, adapted to connect said motor means to a source of electrical power and constructed and arranged so that movement of said selector switch means to one of its said operative positions completes a circuit to said motor means through said rotary switch means and so that when said closure means is rotated to a position corresponding to the position of said selector switch means, said rotary switch means opens said circuit to de-energize said motor means; remote "burst" switch means; further circuit means including said "burst" switch means connected in controlling relation with said motor means through said rotary switch means so that upon closing of said "burst" switch means said motor means is energized and drives said closure means to its "burst" position, said rotary switch means simultaneously being driven to a position where it opens the circuit to said motor means; electrically operable control relay means adapted to be connected in controlling relation with the fan; and additional circuit means connecting said "burst" switch means in controlling relation with said relay means so that upon closing of said "burst" switch means said relay means is operated to initiate operation of the fan.

6. Apparatus for dispensing a vaporizable air treating material into air, comprising: a housing having an air inlet and an air outlet, the apparatus being adapted for use with a system having an air moving fan operable to establish a pressure differential so that the air pressure at the inlet exceeds that at the outlet; means associated with said housing and defining a vaporizing chamber adapted to contain a quantity of air treating material to be evaporated into a stream of air passed through the chamber and said chamber being constructed so that a relatively large surface area of the treating material is exposed to air in the chamber; inlet valve port means connecting said vaporizing chamber to said inlet; outlet valve port means connecting said vaporizing chamber to said outlet, said inlet and outlet valve ports being disposed about a common axis; first valve means including a first disk-type closure member overlying both said inlet port means and said outlet port means and having a plurality of openings therethrough which are aligned with said port means in one angular position of said closure

member to define a "burst" position, said closure member being rotatable, about said common axis, through a plurality of angular positions to vary the effective openings of said ports between an "off" position wherein said ports are closed, at least one "intermediate" position wherein said ports are partially open, and said "burst" position wherein said ports have a maximum effective opening; motor means operably connected to said closure member and operable to drive said closure member through said plurality of positions; second valve means including a second disk-type closure member generally similar to said first closure member, overlying said inlet and outlet valve port means and rotatable with respect to said port means and said first closure member; first control means including manually operable means operably connected to said second closure member and operable to rotate said second closure member with respect to said valve port means to effect a calibration of the apparatus; means releasably holding said second closure member in the calibrated position; and further control means operably associated with said motor means and including selector means for selectively operating said motor means to drive said first closure member to a desired one of said plurality of positions.

7. Apparatus for dispensing a vaporizable air treating material into air, comprising: a housing having an air inlet and an air outlet, the apparatus being adapted for use with a system having an air moving fan operable to establish a pressure differential so that the air pressure at the inlet exceeds that at the outlet; enclosure means defining a vaporizing chamber adapted to contain a quantity of air treating material to be evaporated into a stream of air passed through the chamber, said enclosure being constructed so that a relatively large surface area of the treating material is exposed to air in the chamber; unitary coupling means removably connecting said enclosure means to said housing; inlet valve port means in said coupling means connecting said vaporizing chamber to said inlet; outlet valve port means in said coupling means connecting said vaporizing chamber to said outlet, said inlet and outlet valve port means being disposed about a common axis; first valve means including a first disk-type closure member overlying both said inlet port means and said outlet port means and having a plurality of openings therethrough which are aligned with the port means in said coupling means in one angular position of said closure member to define a "burst" position, said closure member being rotatable, about said common axis, through a plurality of angular positions to vary the effective openings of said ports between an "off" position wherein said ports are closed, at least one intermediate position wherein said ports are partially open, and said "burst" position wherein said ports have a maximum effective opening; motor means operably connected to said closure member and operable to drive said closure member through said plurality of positions; second valve means including a second disk-type closure member generally similar to said first closure member, overlying said inlet and outlet valve port means and rotatable with respect to the port means in said coupling means and with respect to said first closure member; first control means including manually operable means operably connected to said second closure member and operable to rotate said second closure member with respect to said valve port means to effect a calibration of the apparatus; means releasably holding said second closure member in the calibrated position; and further control means operably associated with said motor means and including selector means for selectively operating said motor means to drive said first closure member to a desired one of said plurality of positions.

8. Apparatus for dispensing a vaporizable air treating material into air, comprising: a housing having an air inlet and an air outlet, the apparatus being adapted for use with a system having an air moving fan operable to establish a pressure differential so that the air pressure at the inlet exceeds that at the outlet; means associated with

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said housing and defining a vaporizing chamber adapted to contain a quantity of air treating material to be evaporated into a stream of air passed through the chamber; inlet valve port means connecting said vaporizing chamber to said inlet; outlet valve port means connecting said vaporizing chamber to said outlet, said inlet and outlet valve ports being disposed about a common axis; first valve means including a first disk-type closure member overlying both said inlet port means and said outlet port means and having a plurality of openings therethrough which are aligned with said port means in one angular position of said closure member to define a "burst" position, said closure member being rotatable, about said common axis, through a plurality of angular positions to vary the effective openings of said ports between an "off" position wherein said ports are closed, at least one "intermediate" position wherein said ports are partially open, and said "burst" position wherein said ports have a maximum effective opening; second valve means including a second disk-type closure member generally similar to said first closure member, overlying said inlet and outlet valve port means and rotatable with respect to said port means and said first closure member, first control means including manually operable means operably connected to said

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second closure member and operable to rotate said second closure member with respect to said valve port means to effect a calibration of the apparatus; means releasably holding said second closure member in the calibrated position; and further control means operably associated with said first closure member and including means for selectively moving said first closure member to the desired one of said plurality of positions.

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HARRY B. THORNTON, *Primary Examiner.*

T. R. MILES, *Assistant Examiner.*