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SCENT SPRAY FOR AIR CONDITIONERS

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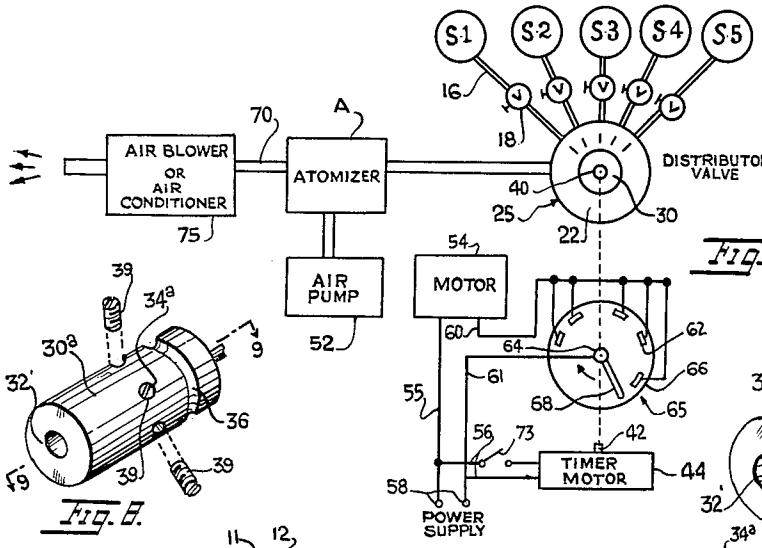


Fig. 1.

Fig. 8.

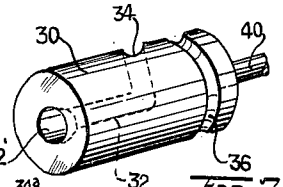


Fig. 7.

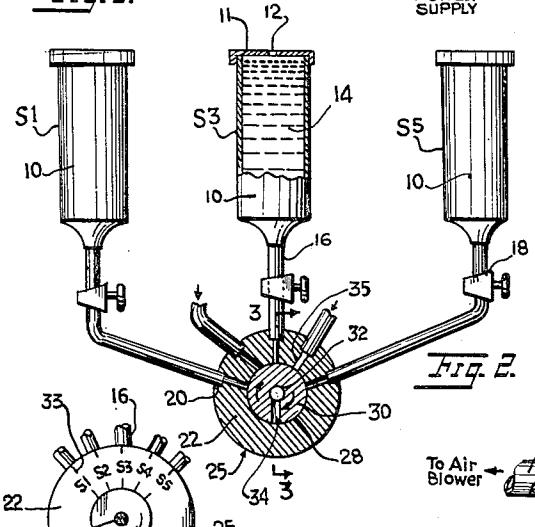


Fig. 2.

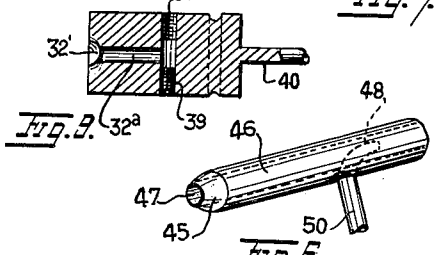


Fig. 9.

Fig. 6.

Fig. 5.

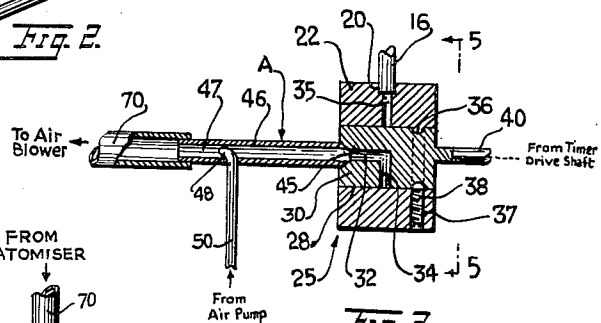


Fig. 3.

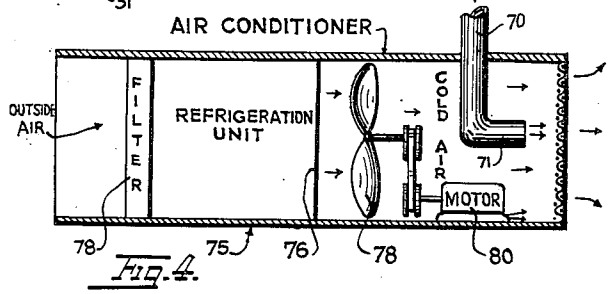


Fig. 4.

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SCENT SPRAY FOR AIR CONDITIONERS

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This invention concerns an air treatment apparatus.

According to the invention there is provided an atomizer connected to an air pump and a distributor valve. To the valve are connected a plurality of tanks or containers of different fluids for air treatment. Such fluids may be odorants, insecticides, moisturizers, bacteriocides, and the like. Each container is provided with an individual valve to control the rate of flow of fluid therefrom. The distributor valve is motor driven and under control of a timer. The valve may be arranged to select one or more containers for passing fluid therefrom to the atomizer. The atomizer is connected to an air blower, or preferably the fan of a room air conditioner, so that the fluid in atomized form is distributed in the room.

It is therefore a principal object of the invention to provide an apparatus for treatment of air in a room by distribution therein of atomized liquid.

A further object is to provide an apparatus of the character described provided with timing means for distributing the fluid automatically at predetermined timed intervals.

Still another object is to provide an apparatus as described having a distributor valve, air pump and atomizer controlled by a timer for distributing air treatment liquid in association with an air conditioner unit.

For further comprehension of the invention, and of the objects and advantages thereof, reference will be had to the following description and accompanying drawings, and to the appended claims in which the various novel features of the invention are more particularly set forth.

In the accompanying drawings forming a material part of this disclosure:

FIG. 1 is a schematic diagram of apparatus embodying the invention.

FIG. 2 is an elevational view with parts shown in section of portions of the apparatus.

FIG. 3 is a sectional view taken on line 3—3 of FIG. 2.

FIG. 4 is a sectional view through an air conditioner unit showing parts of the apparatus associated therewith according to the invention.

FIG. 5 is a side elevational view of a distributor valve taken on line 5—5 of FIG. 3.

FIG. 6 is a perspective view on an enlarged scale of a coupling member employed in the apparatus.

FIG. 7 and FIG. 8 are perspective views of two rotors for distributor valves.

FIG. 9 is a sectional view taken on line 9—9 of FIG. 8.

Referring to FIGS. 1–3, there is shown a plurality of containers designated S1–S5. Each container has an axially vertical cylindrical body 10 and a removable cover 11 having a vent opening 12. In each container is a quantity of liquid 14 such as an odorant, insecticide, bacteriocide or other liquid adapted for treatment of air in a room. Connected to the bottom of each container is a conduit 16. A manually operable valve 18 is fitted on each conduit 16 to adjust the rate of fluid flow from the container. Each conduit 16 terminates in a different opening or bore 20 of a casing 22 of a distributor valve 25. The valve casing is a cylindrical member with an axial bore 28 in which is rotatably disposed a cylindrical rotor 30. The rotor has an axial bore 32 connecting with a radial bore 34 disposed to align with bores 35 in the casing, so that each conduit 16 communicates with bore 32 through bores 34 and 35 when the rotor is properly positioned in the casing.

The rotor 30 is provided with a circumferential groove 36, see FIGS. 3 and 7. In this groove rides a setscrew or pin 38 seated in a hole 37 in the casing to hold the rotor rotatably in the casing. The rotor has an axial shaft 40 which is connected to and driven by a shaft 42 of timer motor 44.

Bore 32 has an enlarged concave end 32' in which is fitted the rounded end 45 of a stationary conduit 46; see FIGS. 3 and 6. The bore 32 communicates with passage 47 in the conduit 46. Extending radially into the passage 47 is a narrow nozzle end 48 of a pipe 50 which conveys air under pressure from an air pump 52. The conduit 46 and nozzle 48 together constitute an atomizer A for fluid entering the conduit. The air pump is driven by a motor 54.

The timer motor 44 is driven continuously and is energized by wires 56 connected to power supply terminals 58. Motor 54 has one wire 55 connected to one power supply terminal. The other wire 60 is connected to each of contacts 62 in a timer 65. The timer includes a circular insulated disk 66 on which contacts 62 are circumferentially spaced. The contacts may have the same or different lengths. The timer has an electrically conductive rotor 64 connected to drive shaft 42 of the motor 44. The rotor 64 carries a radial contact arm 68 which traverses the contacts 62 in turn as the rotor 64 turns. Wire 61 is connected to rotor 64. The power supply circuit of motor 54 is completed through wire 60, contacts 62, contact arm 68 and wire 61 connected to the power supply.

A conduit 70 is connected from atomizer conduit 48 to the casing 72 of an air conditioner unit 75. This unit includes a refrigeration unit 76 and air filter 78, through which air is drawn for cooling by the unit 76. A fan 78 driven by a motor 80 causes outside air to blow over or through the refrigeration unit for cooling. The conduit 70 has an elbow nozzle 71 disposed in the path of the chilled air so that atomized liquid leaving the nozzle 71 mixes with the chilled air and is distributed in the room where the air conditioner unit is installed. A screen 77 may be placed at the outlet of the air conditioner unit casing 72.

A switch 73 is provided in the timer motor circuit for stopping this motor. The rotor 30 has on its end an index mark 31 which can be aligned with any of index marks 33 on the casing; see FIG. 5. This arrangement enables the system to discharge fluid from the selected container continuously.

In FIGS. 8 and 9 is shown another rotor 30^a which permits two or more containers to discharge liquid simultaneously into the atomizer. This rotor has a plurality of threaded radial bores 34^a all communicating with axial bore 32^a. The bores 34^a are threaded and may receive selectively screw plugs 39 so that one or more bores 34^a may be blocked off. There will, of course, be at least one bore 34^a which is not blocked off for selecting any one of conduits 16. If two or more bores 34^a are unplugged, then two or more conduits 16 will discharge liquid to the atomizer simultaneously.

The invention makes it possible to discharge atomized liquids of different types or of the same type. For example, all of the containers may contain different scented odorants. The invention makes it possible to discharge a single odorant or to discharge a mixture of odorants. The invention will operate automatically when once set to discharge atomized liquids each time the contacts 62 are traversed by the rotor contact arm 68. At these times the motor 54 will be turned on and the air pump will be operated, to drive atomized liquid through the atomizer to the conduit 70 and the air blower or fan of air conditioner unit 75.

While I have illustrated and described the preferred

embodiments of my invention, it is to be understood that I do not limit myself to the precise constructions herein disclosed and that various changes and modifications may be made within the scope of the invention as defined in the appended claims.

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

1. In an air treatment system, a distribution apparatus for atomized liquids, comprising a plurality of containers of said liquids, a distribution valve having a stationary casing, a rotatable rotor in the casing, conduits connecting said containers to bores in the casing, said rotor having a bore intermittently communicating with the bores in the casing as the rotor is rotated, a source of compressed air, an atomizer connected to the bore in the rotor, another conduit connecting said source to said atomizer to discharge compressed air therein for atomizing liquid discharged into the atomizer from the rotor, an air conditioner unit including a refrigeration unit and a fan adjacent thereto for drawing cooled air past the refrigeration unit, and a further conduit connected from said atomizer to said air conditioner unit and terminating adjacent said fan, so that atomized liquid discharged by said further conduit is distributed by said fan with the cooled air.

2. In an air treatment system, a distribution apparatus for atomized liquids, comprising a plurality of containers of said liquids, a distribution valve having a stationary casing, a rotatable rotor in the casing, conduits connecting said containers to bores in the casing, said rotor having a bore intermittently communicating with the bores in the casing as the rotor is rotated, a source of compressed air, an atomizer connected to the bore in the rotor, another conduit connecting said source to said atomizer to discharge compressed air therein for atomizing liquid discharged into the atomizer from the rotor, an air conditioner unit including a refrigeration unit and a fan adjacent thereto for drawing cooled air past the refrigeration unit, and a further conduit connected from said atomizer to said air conditioner unit and terminating adjacent said fan, so that atomized liquid discharged by said further conduit is distributed by said fan with the cooled air, a timer motor operatively connected to drive the rotor continuously, a timing device driven by said timer motor, said source including an air pump driven by another motor, and electric circuit means including said timing device and said other motor for delivering compressed air to the atomizer at predetermined times when the bore in the rotor is aligned with bores in the casing.

3. In an air treatment system, a distribution apparatus for atomized liquids, comprising a plurality of containers of said liquids, a distribution valve having a stationary casing, a rotatable rotor in the casing, conduits connecting said containers to bores in the casing, said rotor having a bore intermittently communicating with the bores in the casing as the rotor is rotated, a source of compressed air, an atomizer connected to the bore in the rotor, another conduit connecting said source to said atomizer to discharge compressed air therein for atomizing liquid discharged into the atomizer from the rotor, an air conditioner unit including a refrigeration unit and a fan adjacent thereto for drawing cooled air past the refrigeration unit, and a further conduit connected from said atomizer to said air conditioner unit and terminating adjacent said fan, so that atomized liquid discharged by said further conduit is distributed by said fan with the cooled air, a timer motor operatively connected to drive the rotor continuously, a timing device driven by said timer motor, said source including an air pump driven by another motor, and electric circuit means including said timing device and said other motor for delivering compressed air to the atomizer at predetermined times when the bore in the rotor is aligned with bores in the casing, and manually operable valves in the respective first-named conduits for adjusting the rate of flow of liquid out of the containers.

4. In an air treatment system, a distribution apparatus for atomized liquids, comprising a plurality of containers of said liquids, a distribution valve having a stationary casing, a rotatable rotor in the casing, said casing having a plurality of circumferentially spaced radial bores, conduits connecting the containers to the bores respectively, said rotor having another plurality of radial bores and an axial bore communicating with each of said other radial bores, plugs selectively and removably disposed in certain of said other radial bores so that at least one of said other radial bores communicates with said axial bore, said other radial bores being disposed to communicate intermittently with the bores in the casing as the rotor is rotated, a source of compressed air, an atomizer including a stationary pipe fitting having one end disposed in said axial bore, a compressed air discharging nozzle extending radially into said pipe for atomizing liquid entering the pipe, an air blower, and another conduit connecting said atomizer and air blower for distributing atomized liquid in an air stream maintained by said air blower.

5. In an air treatment system, a distribution apparatus for atomized liquids, comprising a plurality of containers of said liquids, a distribution valve having a stationary casing, a rotatable rotor in the casing, said casing having a plurality of circumferentially spaced radial bores, conduits connecting the containers to the bores respectively, said rotor having another plurality of radial bores and an axial bore communicating with each of said other radial bores, plugs selectively and removably disposed in certain of said other radial bores so that at least one of said other radial bores communicates with said axial bore, said other radial bores being disposed to communicate intermittently with the bores in the casing as the rotor is rotated, a source of compressed air, an atomizer including a stationary pipe fitting having one end disposed in said axial bore, a compressed air discharging nozzle extending radially into said pipe, an air blower, another conduit connecting said atomizer to a point near said air blower for distributing atomized liquid in an air stream maintained by said air blower, a timer motor operatively connected to drive the rotor continuously, a timing device driven by said timer motor, said source including an air pump driven by another motor, and electric circuit means including said timing device and said other motor for delivering compressed air to the atomizer at predetermined times when certain bores in the rotor are aligned with certain bores in the casing.

6. In an air treatment system, a distribution apparatus for atomized liquids, comprising a plurality of containers of said liquids, a distribution valve having a stationary casing, a rotatable rotor in the casing, said casing having a plurality of circumferentially spaced radial bores, conduits connecting the containers to the bores respectively, said rotor having another plurality of radial bores and an axial bore communicating with each of said other radial bores, plugs selectively and removably disposed in certain of said other radial bores so that at least one of said other radial bores communicates with said axial bore, said other radial bores being disposed to communicate intermittently with the bores in the casing as the rotor is rotated, a source of compressed air, an atomizer including a stationary pipe fitting having one end disposed in said axial bore, a compressed air discharging nozzle extending radially into said pipe, an air blower, another conduit connecting said atomizer to a point near said air blower for distributing atomized liquid in an air stream maintained by said air blower, a timer motor operatively connected to drive the rotor continuously, a timing device driven by said timer motor, said source including an air pump driven by another motor, and electric circuit means including said timing device and said other motor for delivering compressed air to the atomizer at predeter-

mined times when certain bores in the rotor are aligned with certain bores in the casing, and an air conditioner unit including a refrigeration unit, said air blower being disposed adjacent to said refrigeration unit for drawing cooled air therefrom, whereby the atomized liquid is distributed in a stream of said cooled air.

7. In an air treatment system, a distribution apparatus for atomized liquids, comprising a plurality of containers of said liquids, a distribution valve having a stationary casing, a rotatable rotor in the casing, said casing having a plurality of circumferentially spaced radial bores, conduits connecting the containers to the bores respectively, said rotor having another plurality of radial bores and an axial bore communicating with each of said other radial bores, plugs selectively and removably disposed in certain of said other radial bores so that at least one of said other radial bores communicates with said axial bore, said other radial bores being disposed to communicate intermittently with the bores in the casing as the rotor is rotated, a source of compressed air, an atomizer including a stationary pipe fitting having one end disposed in said axial bore, a compressed air discharging nozzle extending radially into said pipe, an air blower, another conduit connecting said atomizer to a point near said

air blower for distributing atomized liquid in an air stream maintained by said air blower, a timer motor operatively connected to drive the rotor continuously, a timing device driven by said timer motor, said source including an air pump driven by another motor, and electric circuit means including said timing device and said other motor for delivering compressed air to the atomizer at predetermined times when certain bores in the rotor are aligned with certain bores in the casing, and an air conditioner unit including a refrigeration unit, said air blower being disposed adjacent to said refrigeration unit for drawing cooled air therefrom, whereby the atomized liquid is distributed in a stream of said cooled air, and manually operable valves in the respective first-named conduits for adjusting the rate of flow of liquid out of the containers to the distributor valve.

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