Oct. 2, 1956 L. P. ZELENKA 2,764,789

VAPOR-RELEASING FAN-DRIVEN DEODORIZER

Filed July 3, 1953

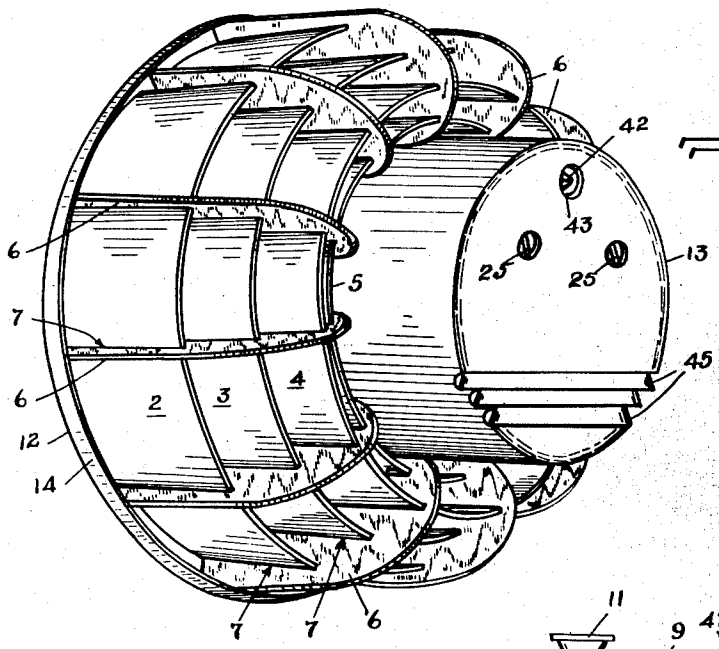

FIG. 1.

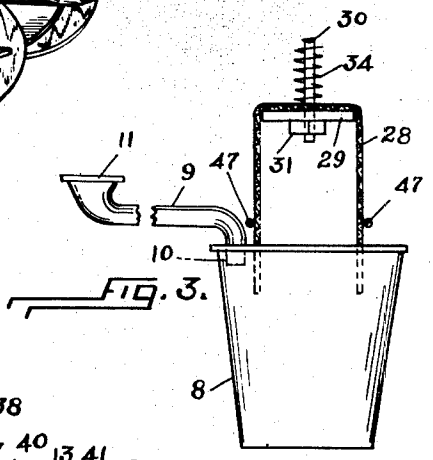

FIG. 3.

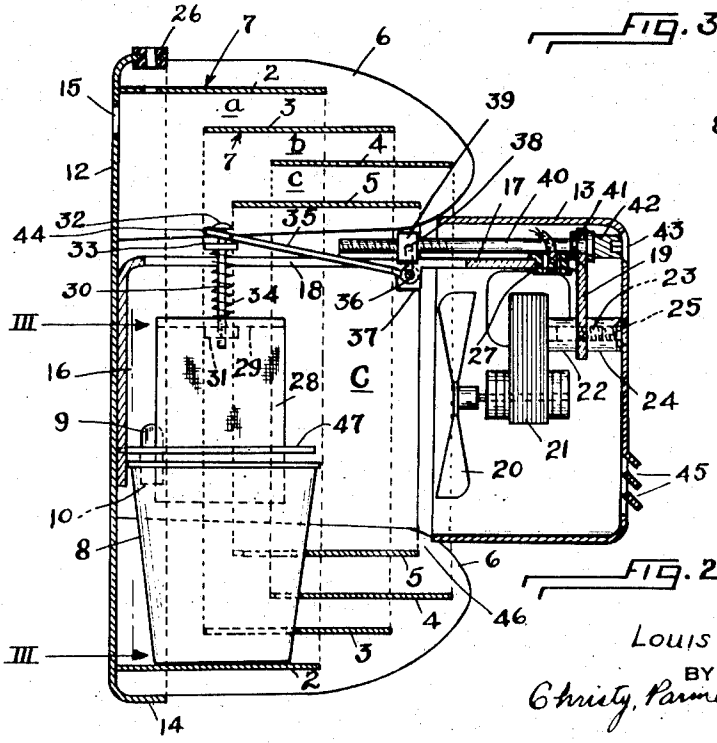

FIG. 2.

INVENTOR
Louis P Zelenka
BY
Christy, Parmele & Strickland
ATTORNEYS

United States Patent Office 2,764,789 Patented Oct. 2, 1956

2,764,789

VAPOR-RELEASING FAN-DRIVEN DEODORIZER

Louis P. Zelenka, Mount Lebanon, Pa., assignor to Commonwealth Sanitation Company, Pittsburgh, Pa., a corporation of Pennsylvania

Application July 3, 1953, Serial No. 365,945

4 Claims. (Cl. 21—74)

My invention relates to devices for deodorizing and disinfecting the atmosphere in rooms and spaces occupied by people, and the invention consists in certain new and useful improvements in such devices, to the end that deodorants and disinfectants may be more effectively released and distributed than hitherto.

The principal object of my invention is to provide a device which is highly efficient for the purposes expressed, a device which is, furthermore, inexpensive to manufacture, easily serviced, and which combines utility with attractiveness in appearance. Other objects of the invention will appear in the following specification.

In the accompanying drawing:

Fig. 1 is a view in perspective of a device embodying the invention in exemplary way;

Fig. 2 is a view in medial, vertical section of the device shown in Fig. 1; and

Fig. 3 is a fragmentary view, taken on the plane III—III of Fig. 2, and showing in elevation a container for disinfectant or deodorant which is incorporated in the device.

Referring to the drawings the device of the invention comprises a plurality of thin-walled tubular elements, which in this case take the form of four cylindrical baffles **2**, **3**, **4** and **5** nested one within another, on common axis, and laterally spaced from one another, as shown in Fig. 2. Radial vanes **6**, extending longitudinally of and parallel to the axis of said nest of baffles, are spaced apart around the periphery or circumference of the baffle nest. The baffles **2–5** may be formed of strips of sheet metal, say sheet aluminum, and the vanes **6** may be formed of the same material. The vanes are slotted, as at **7**, and the strips that form the baffles are threaded through the slots, with the otherwise free ends of the strips united in any suitable way, to complete the cylinders that severally form the baffles.

The inner cylindrical baffle or tubular element **5** forms a chamber C, in which means are provided for releasing vapors of a selected deodorant or disinfectant. The chamber C, formed within the compass of the baffle **5**, is closed at its opposite ends. At the left-hand or proximate end (Fig. 2) the chamber is closed by a plaque-like member **12**, and at opposite or distal end by a monitor or cap member **13**. Indeed, the chamber C may be properly defined as the space within the assembled tubular element **5**, the member **12** and the cap member **13**, as will be seen in Fig. 2. The member **12** is provided with a peripheral flange **14**, and the vanes **6** are secured to the member **12**, by tack-welding, or by means of rivets, or other suitable fasteners, and thus the plaque-like member or supporting plate reinforces and integrates the baffle and vane assembly. The said member **12** includes an orifice **15**, whereby the assembled unit may be supported, say as a picture is supported, upon the wall of a room, whose atmosphere is to be served by the device.

Within the chamber C a bracket is provided, such bracket comprising a vertical leg **16** secured, as by rivets or welding, to the plaque-like member **12**. From leg **16** a horizontal arm **17** extends and this arm includes an elongate slot **18**; and from the distal end of this slotted arm a leg **19** extends downwardly. A motor-driven fan **20** is mounted on the leg **19**, the stator **21** of the motor having a pair of rigid studs **22** (the two studs lie one behind the other in the line of sight in Fig. 2) that abut upon the left face of the leg **19**. Each stud is provided with a threaded stem **23** that is projected through an orifice provided therefor in the body of the leg, and on the projecting ends of each of the two studs a nut **24** is tightened, thereby providing a rigid mounting for the motor-fan unit **20**, **21**.

The threaded stems **23** extend only part way through the threaded bores of the nuts **24**, leaving threaded sockets for the reception of screws **25** (Figs. 1 and 2) that secure the cap **13** in the assembly described. It may be noted that the cap, by virtue of its cup-shaped form, not only provides a closure for the right-hand end of the chamber C, but also provides a part of, or a longitudinal extension of the chamber.

The circuit wires for the electric motor (**21**) may be led through an insulator bushing **26**, and passed through and between the baffles and vanes, and through an insulator bushing **27** on the bracket arm **17** to the motor.

The means for releasing vapors in the chamber C may comprise a container **8** for a pool of liquid deodorant or disinfectant, and if desired an electrical resistance heater may be combined with the container to accelerate the release of vapors from the contained pool. Such use of a heater is a well-known expedient in the art, and it is needless to illustrate the same in the accompanying drawing. The baffles **3**, **4** and **5** are recessed at the bottom of the assembly, to provide lateral security for the container seated upon the baffle **2**. Conveniently, a pipe **9** for filling the container extends from a filling funnel **11** (Fig. 3), which funnel will be understood to be accessible externally of the assembled device, to a delivery end **10** opening into the container.

A wick formed of a web of absorbent fabric **28** is supported upon a metal disk **29**, and draped therefrom in the form of an inverted U, as appears in Fig. 3. A vertical supporting stem **30**, carrying a nut **31** on its lower end, extends upwardly through disk **29** and the supported fabric, and terminates in a head **32** at its upper end. The stem is provided with a washer **33**, between which washer and the top of the fabric a helical compression spring **34** is arranged, to secure the fabric upon the said disk. The two legs of the inverted U-shaped body of the wick depend into the pool of liquid in the container, and thus the entire wick body becomes saturated with the liquid and promotes the release of the liquid in the form of vapor in the chamber C, whence the motor-driven fan **20** propels it into the room or atmosphere to be treated, as will presently appear in greater detail.

In order to regulate the rate of evaporation of the liquid under the effect of the fan, the wick is vertically adjustable in its extent above the container **8**. Means to this end comprise a bell-crank lever **35** that is pivotally mounted, at **36**, in a bracket **37** on the supporting arm **17**. The upwardly extending shorter arm of the bell-crank lever is pivotally secured, as at **38**, to a nut **39** which is in threaded engagement with a shaft **40** fixed for rotation to a lug **41** integral with supporting arm **17**, and the right-hand end (Fig. 2) of this shaft is equipped with a socket stud **42** accessible through an orifice **43** in the cap **13**. A suitable socket wrench or key may be inserted in the stud **42** and the shaft **40** rotated, to cause the nut to travel along the shaft in either direction desired. The distal end of the laterally extending longer arm of the bell-crank is articulated to the wick-supporting stem **30**; such end of the arm being formed with an eye **44** located between the head **32** and washer **33** on the said stem. Thus, as the nut is caused to travel one way or the other along the shaft **4**, the bell-crank lever is selectively rotated clockwise or

counterclockwise on its pivot **36**, with the effect that the wick is raised or lowered, as desired. Lateral pins **47** extend from the bracket portion or leg **16** along the outer sides of the wick (Fig. 3) and serve to guide the wick during its adjustment.

Under the effect of the fan **20** in operation air is drawn into the chamber C, the air inlets advantageously comprising louvres **45**, and an opening in the side wall of chamber C in the form of a circumferential opening **46** between the inner edge of the cap member **13** and the outer edge of baffle **5**. The air thus drawn into the chamber **5** is propelled over the surface of the wick and entrains the vapors yielded thereby, whence the vapor-laden air is projected through a multiplicity of outlet passages into the channels formed by and between the baffles and vanes, whereby a distributed and substantially draftless delivery of the vapor-laden air is made into the outer atmosphere served.

Such outlet passages referred to are provided by spacing the inner edges or proximate ends of the inner and intermediate baffles **3**, **4** and **5** from the plaque-like member **12**, with the corresponding edge of the outermost baffle **2** positioned in abutment upon the member **12**, or substantially so. Thus, each of the annular spaces *a*, *b* and *c* between the four nested baffles **2–5** are in open communication with the chamber C around its entire periphery, wherefore the propelled vapor-laden air flows in streams that are distributed, with the manifest aid of the radial vanes, around the periphery of the assembly of baffles and vanes.

The particular composition of the liquid deodorant or disinfectant that is used in the device is not a matter of importance so far as my present invention is concerned. Many suitable liquids for the purpose are known to the art. In modification the vapor-yielding means may be provided in solid form, a solid that sublimates under the effect of the driven air and releases the essential vapors thereto. Deodorant and disinfectant substances in solid or block form are also known to the art, and it is needless to involve this specification with a consideration of them, other than to note that a block of the selected substance may be suspended from the end of the vertically adjustable stem **30**.

Other modifications and variations will occur to those skilled in the art, without departing from the spirit of the invention defined in the appended claims.

I claim:

1. In a device of the class described having a basal member adapted to be supported upon the vertical wall of a room, inner, outer and intermediate thin-walled tubular elements that are nested on a common axis normal to said basal member, that are laterally spaced from one another, and that are mounted on said basal member, a plurality of vanes extending radially of and between the nest of elements at spaced apart points peripherally of the nest and forming outlet passages in the spaces between said tubular elements and said vanes, the proximate ends of the inner and intermediate tubular elements of the nest being spaced from said basal member to provide communication between said outlet passages and the space within the inner tubular element, a cap member secured in position over the distal end of said inner tubular element, said inner tubular element and cap member forming a chamber having walls that include an inlet for the admission of air from the outer atmosphere, a motor-driven fan mounted in said chamber for drawing air through said inlet and delivering the air into said outlet passages, and vapor-releasing means mounted in said chamber in the line of air flow between said inlet and outlet passages.

2. The structure of claim 1, in which said inlet for air comprises an annular space between the distal end of said inner tubular element and said cap member.

3. In a device of the class described having a plaque-like basal member, inner, outer and intermediate thin-walled tubular elements that are nested on a common axis normal to said basal member, that are laterally spaced from one another, and that are mounted on said basal member, a plurality of vanes extending radially of and between the nest of elements at spaced apart points peripherally of the nest and forming outlet passages in the spaces between said tubular elements and said vanes, the proximate ends of the inner and intermediate tubular elements of the nest being spaced from said basal member to provide communication between said outlet passages and the space within the inner tubular element, a cap member secured in position over the distal end of said inner tubular element, said inner tubular element and cap member forming a chamber having walls that include an inlet for the admission of air from the outer atmosphere, a motor-driven fan mounted in said cap member for propelling air from said inlet to said outlet passages, and vapor-releasing means mounted in said chamber between said fan and said outlet passages.

4. The structure of claim 3, in which the vapor-releasing means in said chamber comprise a container for liquid, a wick extending upward from such liquid, adjustable means supporting said wick, and means accessible externally of said cap member for actuating said adjustable wick-supporting means for varying the extent of the wick above said liquid.

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