

June 30, 1925.

1,543,760

A. J. FANDREY
AIR PURIFIER AND MOISTENER

Filed June 14, 1918

3 Sheets-Sheet 1

FIG. 1

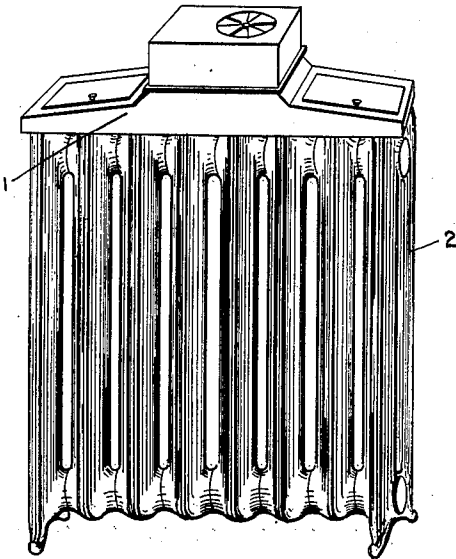


FIG. 3

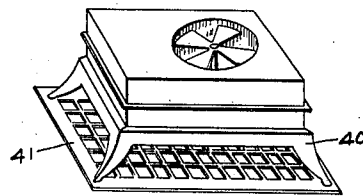


FIG. 2

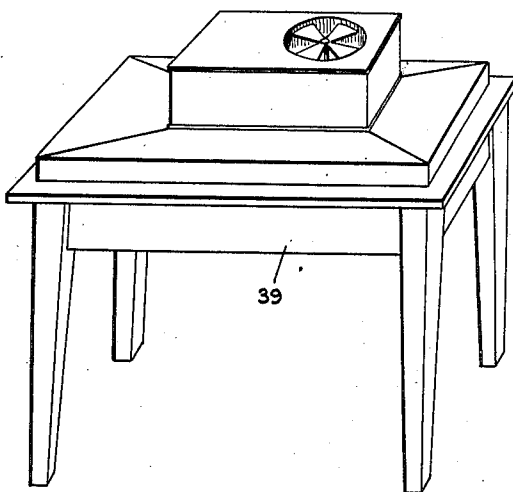
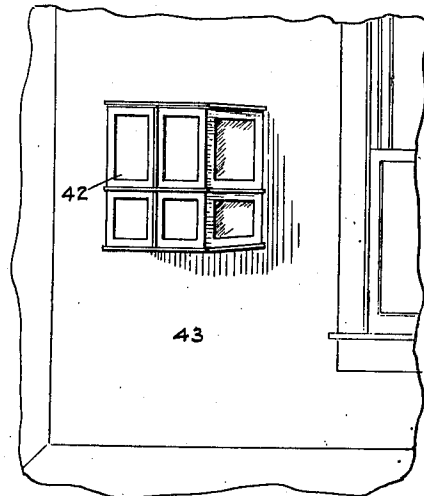


FIG. 4



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FIG. 5

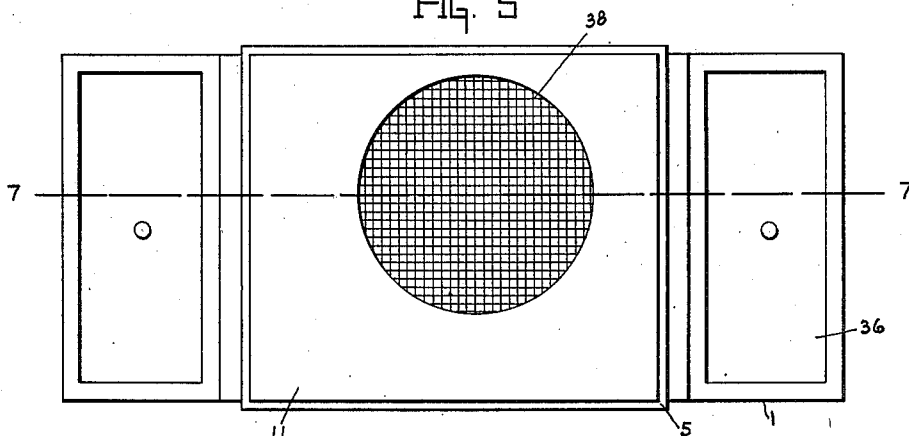


FIG. 6

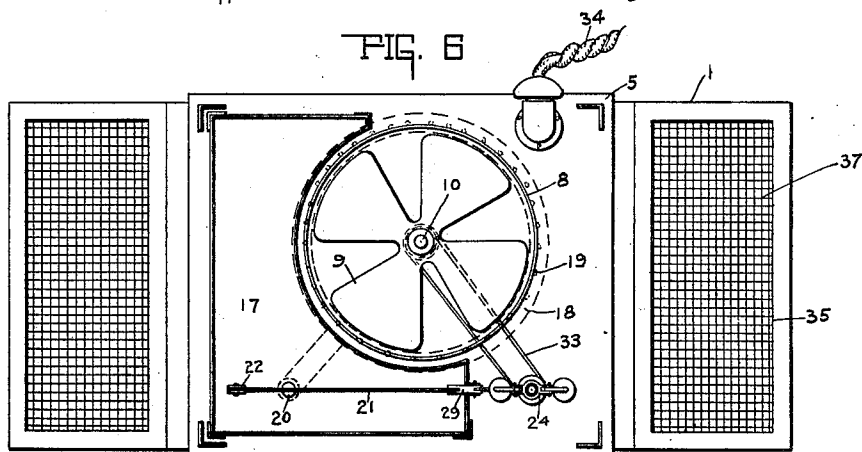
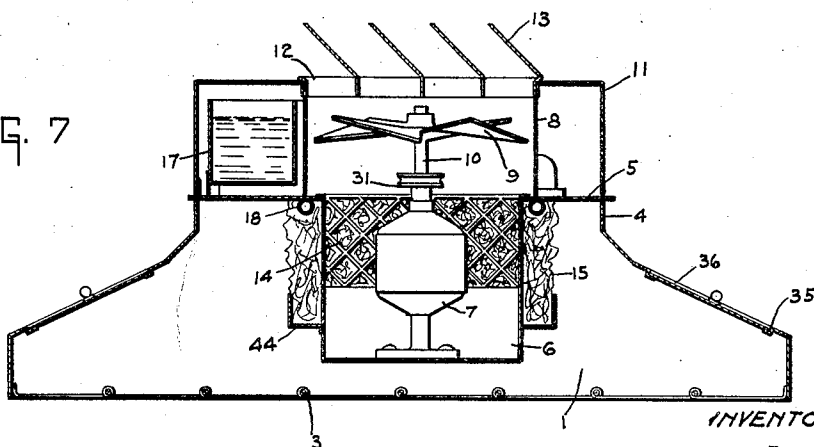


FIG. 7



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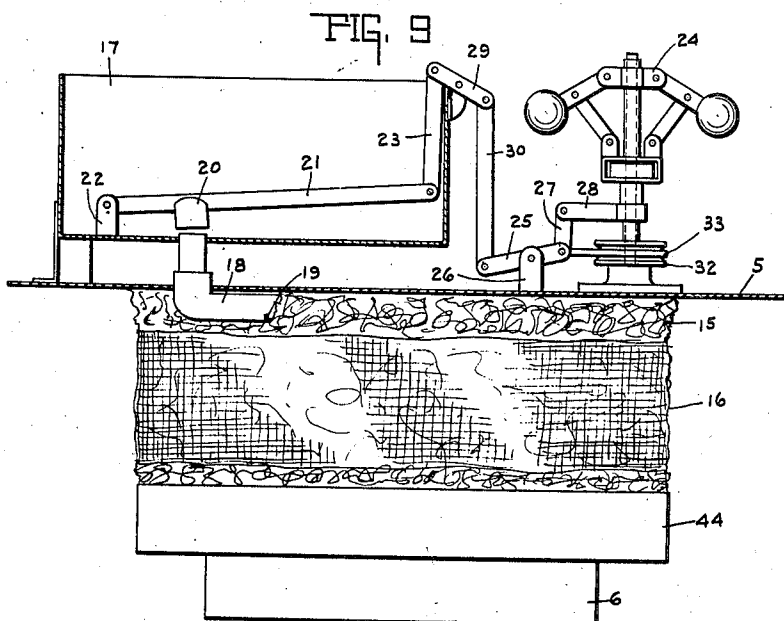
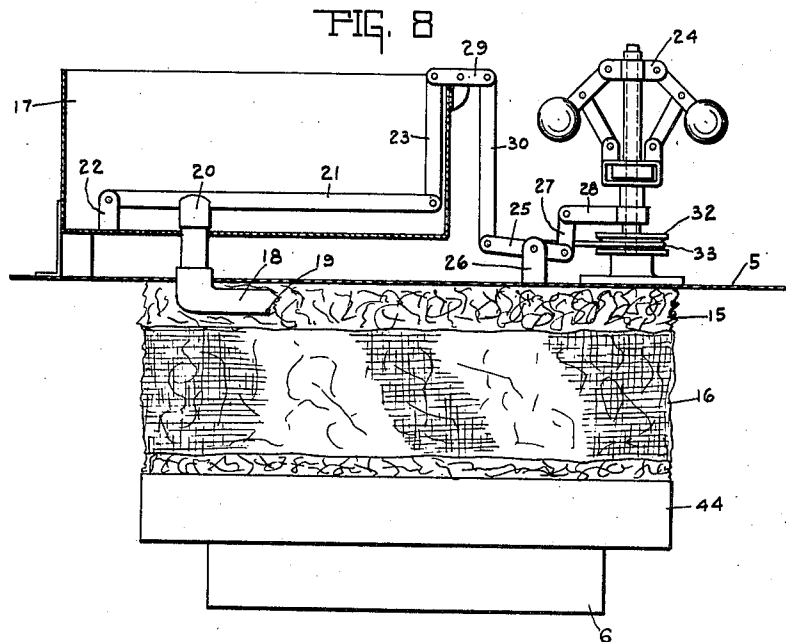
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3 Sheets-Sheet 3



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UNITED STATES PATENT OFFICE.

ALBERT J. FANDREY, OF INDIANAPOLIS, INDIANA.

AIR PURIFIER AND MOISTENER.

Application filed June 14, 1918. Serial No. 239,917.

To all whom it may concern:

Be it known that I, ALBERT J. FANDREY, a citizen of the United States, and a resident of Indianapolis, county of Marion, and State of Indiana, have invented a certain new and useful Air Purifier and Moistener; and I do hereby declare that the following is a full, clear, and exact description thereof, reference being had to the accompanying drawings, in which like numerals refer to like parts.

This invention relates to air purifiers and moisteners, and the prime feature of the invention is to provide a fan structure adapted to be placed at any convenient point for collecting and diffusing the air within a room or building.

A further feature of the invention is the provision of a housing for the fan structure, so constructed that it will cover a prescribed area, whereby the same may be placed over a radiator, hot air register or at other suitable points for treating and diffusing the heated air arising therefrom.

A further feature of the invention is the provision of closures for parts of the housing whereby when the fan is not in use, and the housing is positioned over a radiator or other heating element, the closures may be opened to permit the escape of the heated air arising therefrom.

Other objects and advantages will be hereinafter more fully set forth and claimed.

In the accompanying drawings, which are made a part of this application, Fig. 1 is a perspective view of the air purifier and moistener in co-operation with a radiator. Fig. 2 is a perspective view of the device shown resting upon a table. Fig. 3 is a perspective view showing the device positioned over a hot air register. Fig. 4 is a perspective view of the air purifier and moistener showing the same mounted upon a wall of a building. Fig. 5 is a top plan view of the air purifier and moistener. Fig. 6 is a similar view showing the top cover and closures removed from the housing. Fig. 7 is a longitudinal vertical sectional view, as seen on line 7-7 Fig. 5. Fig. 8 is an enlarged detailed sectional view showing the valve for controlling the flow of the liquid into the filtering medium and the mechanism for operating the same, the parts being in closed position. Fig. 9 is a similar view showing the valve and parts controlling the same in operative position.

Referring to the drawings in which similar reference numerals designate corresponding parts throughout the several views, 1 indicates the housing of the purifier and moistener, which may be formed in various sizes, shapes and outlines, and as shown in Figs. 1 and 5 to 7 inclusive, the housing is formed oblong and is designed to rest upon a radiator 2, the bottom of the housing 1 having a mesh base 3, which supports the housing upon the radiator and permits the heated air from the radiator to readily pass into the housing.

Approximately midway between the ends of the housing 1 is provided a dome 4, which dome is covered with a partition 5 having a central opening and extending downwardly through said partition opening is a casing 6 for the reception of a motor 7.

Extending upwardly from the partition 5, and concentrically arranged around the open end of the dome, is a shell 8, in which is mounted any suitable form of blast fan 9, said fan being in this instance attached to a spindle 10 of the motor 7, and by means of which the fan is driven.

Fitting around the upper end of the shell 8, and resting upon the partition 5, is a cover 11, which is removable so as to more readily gain access to the parts resting upon the partition, and in order to deflect the blast of air as it leaves the fan, any suitable form of deflector may be used, such as that shown in Fig. 7, which consists of a ring member 12, rotatively mounted in the upper end of the shell 8, to which are attached the plurality of deflector blades 13, and by rotating the ring member the blast of air may be directed to any part of a room or building.

In order to permit the air to pass from the housing 1, and into the shell 8, the circumferential wall of the casing 6 is provided with perforations 14, around which is disposed any suitable form of filtering construction, which, as shown in the drawings, comprises a porous sponge 15, although any other suitable material may be employed. The sponge is disposed over the perforations 14 so that the air in passing through the perforations will necessarily have to percolate through the pores of the filtering medium, and any dust or foreign particles of any nature will be removed from the air before it reaches the fan structure and will be retained within the filtering medium. To

more securely hold the filtering medium in position a strip of cheese cloth 16 is disposed around the filtering medium, which also aids in removing any foreign substances from the air.

In order to properly moisten the air as it passes through the filtering substance a tank 17 is mounted upon the partition 5 and is closed by the cover 11, and in said tank may be placed any suitable liquid such as water or the like. The liquid is conveyed through a pipe 18 and discharged on to the filtering medium or sponge 15 by providing the pipe with a plurality of perforations 19, the pipe 18 surrounding the casing 6 at a point immediately below the partition 5 and directly over the upper edge of the filtering medium 15 so that the liquid will percolate through the filtering medium and saturate all parts thereof. The flow of the liquid through the pipe 18 is controlled by means of a valve 20, carried by a bar 21, said bar being pivoted at one end to a standard 22, while the opposite end thereof is pivotally attached to a link 23, these parts all being positioned within the tank 17. In order to control the operation of the valve 20, to regulate the amount of liquid admitted into the pipe 18, or to prohibit access to the pipe when the fan is not in operation, a governor 24 is mounted upon the partition 5, said governor being operatively connected to a rocking arm 25, pivoted between its ends to a standard 26 on the partition 5, by means of a link 27, said link having its ends pivoted respectively to an extension 28 on the governor and to one end of the rocking arm 25. The opposite end of the rocking arm 25 is connected to a rocking arm 29, which is pivoted between its ends to the tank 17 at a point adjacent to the upper edge of the tank, through the medium of a link 30, the opposite end of the rocking arm 29 being attached to the link 23. The governor 24 is driven in unison with the fan 9 by placing a pulley 31 upon the spindle 10 and a similar pulley 32 upon the shaft of the governor 24, said pulleys being connected by a belt 33. By this construction it will be readily seen that as the fan starts to rotate, rotating motion will be imparted to the governor 24, and as the centrifugal force raises the governor balls, the extension 28 will be likewise raised, which, through the medium of the rocker arms and links, will lift the free end of the bar 21 and open the valve 20, thereby admitting liquid into the pipe 18, the degree of speed of the fan regulating the degree of elevation of the valve.

In the present instance an electric motor is shown for driving the fan 9, said motor receiving its current from the usual form of feed wires 34, although any other suitable means may be employed for operating the fan.

When the form of housing shown in Fig. 1 is being used in connection with a radiator, a considerable surface of the housing projects beyond each side of the dome portion of the housing, in order to cover the surface of the radiator or other object upon which the device is resting, and should it not be desired to use the fan, openings 35 are provided in the top walls of the extensions of the housing 1, which are normally closed by means of doors 36, which doors are to be open when the fan structure is not in use, to permit the heated air arising therefrom to escape from the housing. If preferred, a screen of mesh substance 37 may be disposed over the openings 35, which partially remove the foreign particles from the air as it passes through the openings, and a similar cover of screen substance 38 may be placed before the fan 9, as shown in Fig. 5 of the drawings.

In Fig. 2 of the drawings the device is shown as resting upon a table 39 having an opening through the top thereof (not shown), although any suitable support may be provided therefor, while in Fig. 3 the device is shown mounted upon a base 40, which supports the fan structure above a hot air register 41. In Fig. 4 of the drawings the device is constructed in the form of a cabinet 42, which is mounted upon the wall 43 of a building, and when so mounted is preferably fixed to the wall and is provided in the top and bottom walls with openings (not shown) for the passage of air therethrough. As shown particularly in Figs. 6 and 7 the device may be positioned upon the floor or a table, and in this event the openings 35 are utilized to supply air to the filter and blower construction within the device.

This device is designed to be used at any suitable point where a draft of air is desired, which may be either hot or cold, and is particularly useful in hospitals, sick rooms and like places where a current of pure air is desirable and without coming in direct contact with the patients that might be confined in the hospitals, and in addition to purifying the air by filtering the same, any suitable disinfectant or deodorizing substance may be placed in the liquid tank and the fumes thereof diffused through the room or rooms of the building.

In operating the device it is but necessary to electrically connect the feed wires 34 to the motor and, as soon as the motor begins to rotate, the governor will be operated to raise the valve 20 to admit liquid to descend on to the filtering medium so that the air, being drawn through the filtering medium, will be properly moistened, and as the speed of the motor increases, the valve 20 will be opened to a greater extent and likewise when the speed of the motor decreases the valve will be accordingly closed. Should an

oversupply of liquid be discharged into the filtering medium, a trough 44 is provided for the reception of the lower edge of the filtering medium, so that the excess liquid will be retained within the trough.

This device can be comparatively cheaply constructed and may be formed in any suitable design and used for any required purpose where a blast of air is essential, it being employed for diffusing heated air through the rooms in the winter weather as well as diffusing cool air through the rooms in the summer months.

The invention claimed is:—

1. An air purifier and moistening device comprising a housing, a horizontal partition for said housing and provided with an opening, an air conducting tubular casing positioned in said opening, the lower end of said tubular casing being closed and the upper portion of said casing being perforated for the passage of air therethrough, a tubular air conducting member extending upwardly from said partition and surrounding the upper end of the casing and said partition opening, a fan in said upwardly extending tubular member, a filtering medium sur-

rounding the tubular casing and covering the perforations through which the air must pass, and a tank on said partition for supplying liquid to the filtering medium.

2. An air purifier and moistening device comprising a housing having three openings therein, one of said openings being adapted to serve either as an intake or as a discharge at different times when suitably associated with the other openings, one of said other openings serving only as an intake and the other of said openings serving only as a discharge, a filtering construction within the housing and associated with said other discharge opening and adapted to be supplied with air from the combination intake and discharge opening or said other intake opening or by both the combination intake and discharge opening and said other intake opening, fan means associated with the filtering construction and said other discharge opening for securing the passage of the air therethrough, and means for supplying liquid to the filtering medium.

In witness whereof, I have hereunto affixed my signature.

ALBERT J. FANDREY.