

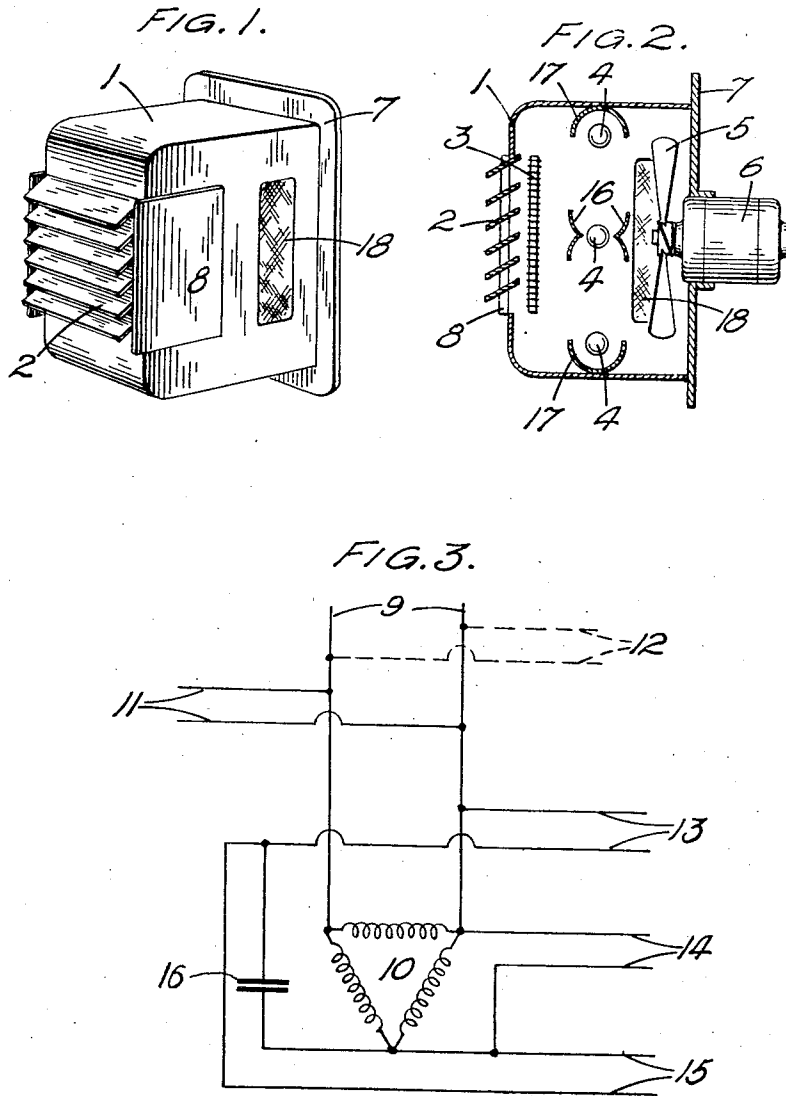
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HEATING AND VENTILATING SYSTEM

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HEATING AND VENTILATING SYSTEM

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4 Claims. (Cl. 250—43)

This invention relates to heating and ventilating systems and more particularly to heating and air conditioning units adapted to be mounted on the face of a wall or suspended from roof or ceiling members of a building.

Such units although they comprise heating elements, are usable in warm weather without the heating elements being in operation so as to provide a beneficial circulation of cooling air.

The primary object of the present invention is to provide a convenient unit of this general character which in addition to the normal function of merely circulating the air, heated or not, has incorporated in it means for sterilising the air so circulated from harmful bacteria.

According to the invention this sterilisation of the circulated air is effected by subjecting the air in its passage through the unit to the effects of ultra-violet radiation which can conveniently be effected by means of suitable electric discharge lamps.

The invention may therefore be said to consist in its broadest aspect of an air conditioning unit comprising a casing having inlet and outlet openings for permitting the passage of air through the casing, a fan for circulating the air through the casing, a heating element, and means for generating and radiating ultra-violet rays positioned so that the circulated air is subjected to the effect of the rays.

The invention further comprises the employment of electric discharge lamps as the means for generating the ultra-violet rays and the use of the windings of an electric motor used to drive the fan to control the electric discharge lamps whereby the use of the inductive chokes usually employed for this purpose is eliminated.

In the preferred practical application of the invention a three-phase fan motor is employed each of the three windings of which is used to control an electric discharge lamp. If desired an ozoniser of known construction and operation may be incorporated in the unit.

An embodiment of the invention is shown in the accompanying drawing, wherein

Figure 1 is a perspective outside elevation of the improved unit,

Figure 2 is a diagrammatic sectional view thereof, and

Figure 3 is a diagram of the electrical connections.

Referring to the drawing, the numeral 1 indicates a casing with a front louvred opening 2, behind which is an electric heater 3. Centrally across the interior of the casing are mounted

three electric discharge lamps 4 provided with suitable transparent envelopes capable of passing a wave length of 2537 Angstrom units radiation, and at the back of the casing is the circulating fan 5 driven by a three phase motor 6.

The casing 1 may be mounted on a wall by a surrounding flange 7 integral with the back wall of the casing, and as shown in Figure 1 screening or baffle plates 8 may be attached to the side walls of the casing 1 to assist in directing the flow of discharged air.

The electrical connections for the motor 6 and heating element 3 described above are illustrated by Figure 3 in which 9 indicates the supply mains connected to the three phase motor windings 10. This motor operates as a "pilot" motor off a single phase circuit. The heater is tapped off from the mains 9 at 11; likewise an ozoniser, if employed, is tapped off as indicated by the dotted lines at 12. The three lamps are connected to leads 13, 14 and 15 and a condenser 16 as shown. Where a three-phase supply is available a standard three phase motor can be used, in which case a lamp would be connected in each phase of the motor windings.

Although the heating element employed is indicated as an electrical heater it is to be understood that a heater of any form may be employed.

As is well known to those skilled in the art, the efficiency of the sterilizing action of such lamps on air-borne bacteria is highest when the lamps are maintained at about 75° F. It is therefore important, with the present apparatus, to locate the lamp in suitable positions in the heater casing where this temperature will be attained or most nearly approximated. In cases where the lamps are subject to the cooling effects of an air stream and the heating effects from a heating element, screening means will be required to ensure the maintenance of a satisfactory working temperature. For example in the arrangement shown in Figure 2 deflectors or screens are arranged to effect this screening of the upper and lower lamps while deflectors or screens 16 may be arranged on each side of the central lamp, the deflector on one side protecting the lamp from the effects of the air stream from the fan 5 and that on the other side protecting the lamp from the effects of the heater 3. The upper and lower of the lamps 4 may need to be shielded by screens such as 17.

It will be understood that the utilisation of the fan motor windings as ballasts for the control of the discharge lamps is not dependent upon

the use of a three-phase main supply, and is merely a question of selecting the type of electric motor to suit the mains supply and the number of discharge lamps needed in a unit.

If desired, an air filter indicated at 18 may be incorporated with the apparatus, consisting, for example, of fabric treated with an oily or adhesive medium arranged over the inlet openings to the casing 1, which will be capable of removing not only the larger particles of dirt in the circulated air, but also the larger sizes of airborne bacteria. The filtered air is then subjected to the ultra-violet radiation, which will be capable of destroying the smaller bacteria that it is not possible to trap by the filter.

It will be appreciated that, by suitable spacing of the combined heating, ventilating and sterilizing units, the whole of the floor area of a room or building may be effectively provided with a continuous supply of tempered and sterilized air which, whilst providing any desired degree of heating or cooling to suit the occupation of the people in the room or building, will also greatly minimise the risk of infection and pass-

ing on of such ailments as influenza, the common cold, measles and the like.

What I claim and desire to secure by Letters Patent is:

- 5 1. An air conditioning unit comprising a casing having air inlet openings and air outlet openings, a fan for circulating air through the casing, a plurality of germicidal lamps for generating germicidal ultra-violet rays to which the air
- 10 in the casing is subjected, and screening devices about the lamps to baffle the air and keep it quiet about the lamps and avoid chilling the lamps below their proper operating temperature.
2. An air conditioning unit according to claim 15 1, wherein the outlet opening from the unit is provided with louvers for directing the air on its discharge.
3. An air conditioning unit according to claim 1, having a filter in the inlet opening.
- 20 4. An air conditioning unit according to claim 1, having a heating element located within the casing adjacent the outlet opening.

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