Oct. 14, 1958 J. STEIN 2,855,641

ELECTRIC AIR PURIFIER

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FIG. 1

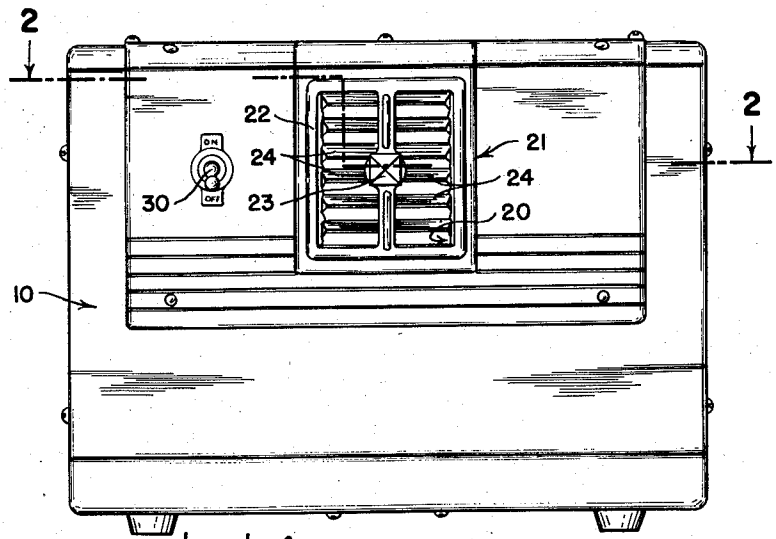
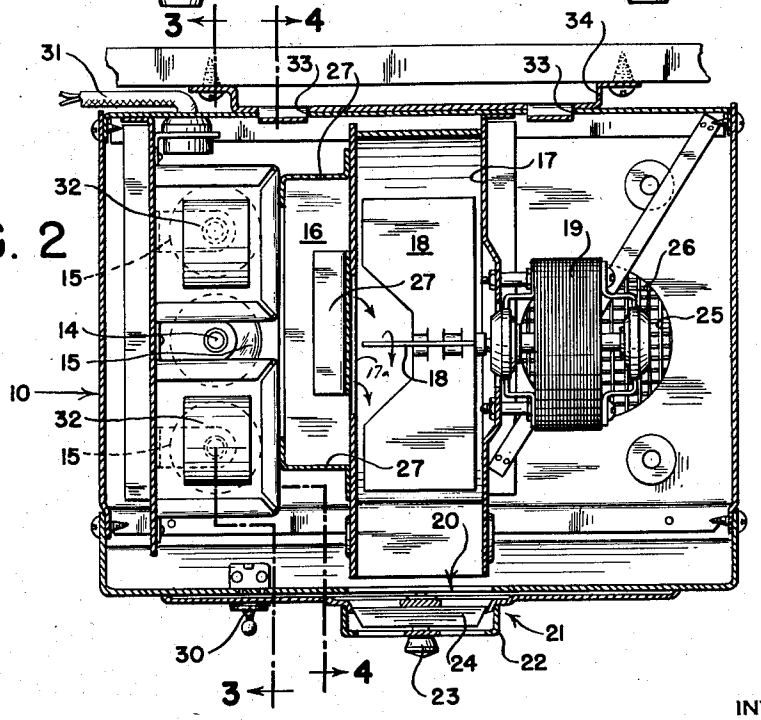


FIG. 2



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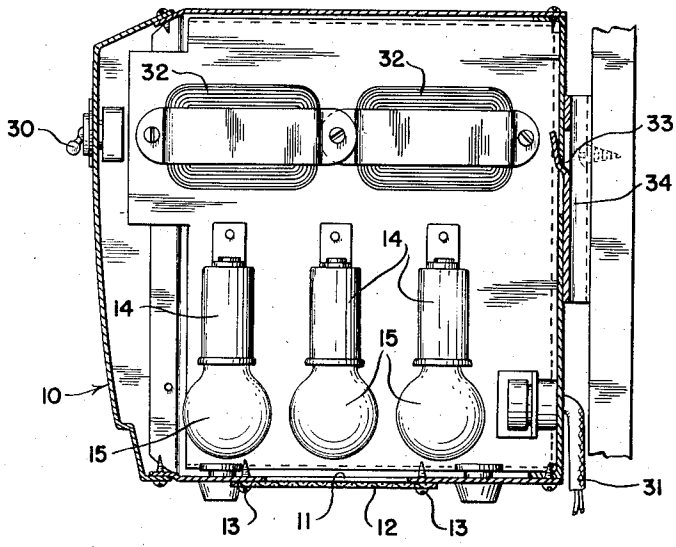
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FIG. 3



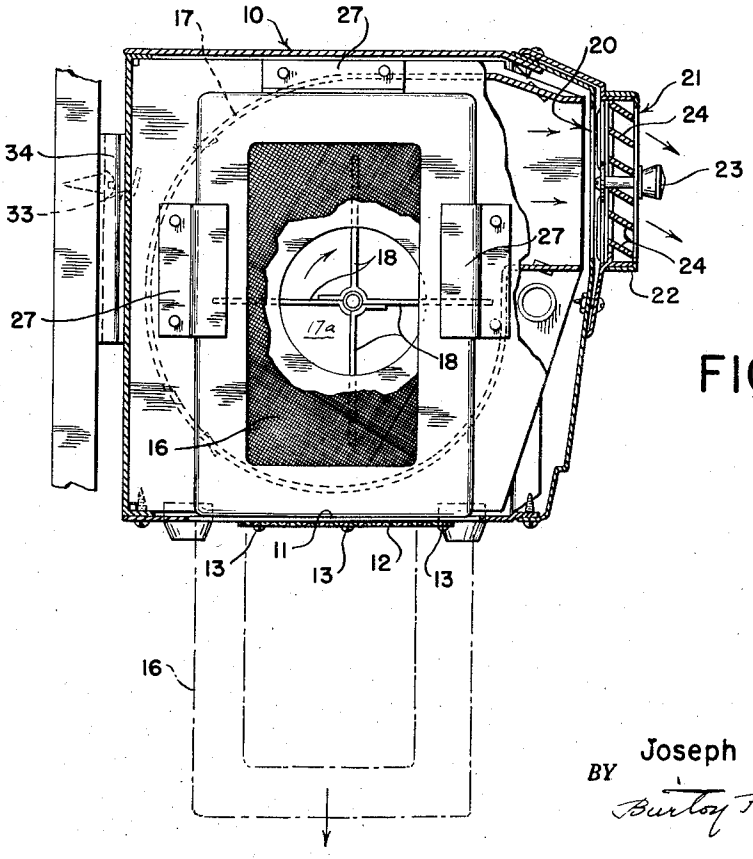


FIG. 4

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FIG. 5

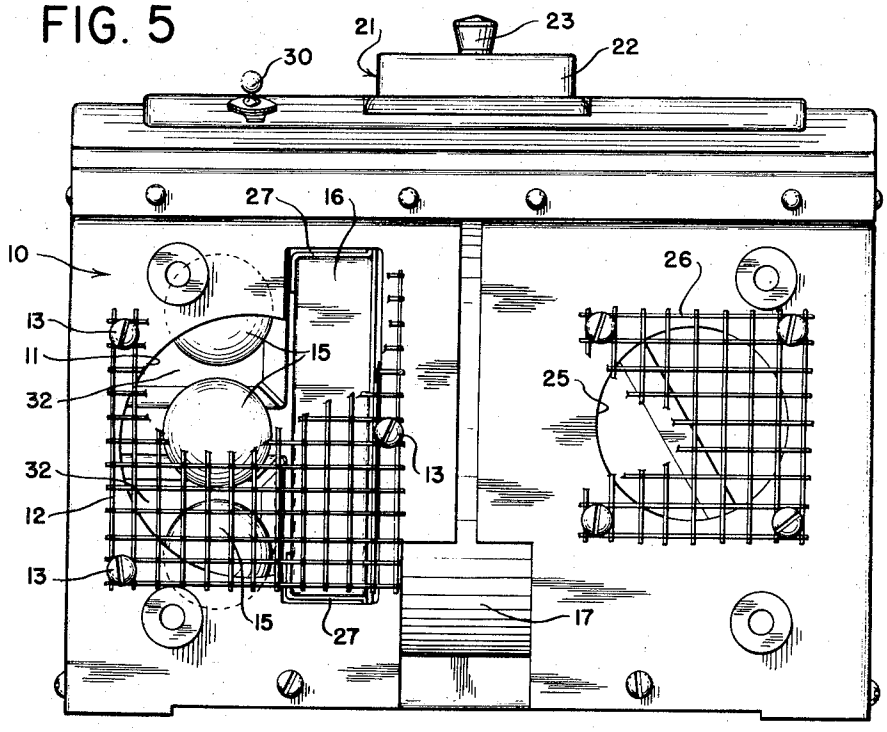


FIG. 6

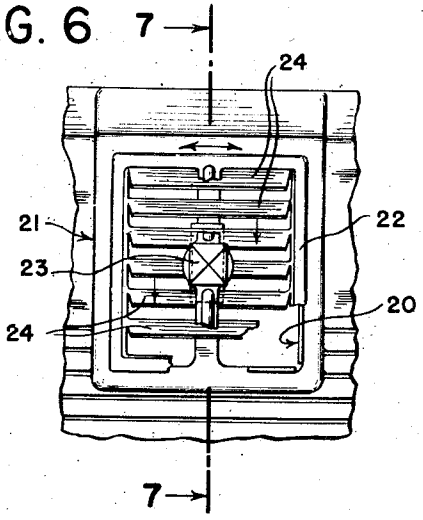
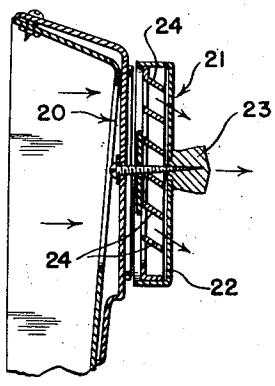


FIG. 7



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ELECTRIC AIR PURIFIER

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Application September 12, 1955, Serial No. 533,847

4 Claims. (Cl. 21—74)

This invention relates to air purifiers and more particularly to such a purifier which is electrically powered and motor driven.

The enclosure of space for dwelling purposes, as well as for business, has always presented a problem in terms of maintaining the well being of those who are confronted with the necessity of living and working in such enclosure. The problem, of course, lies in maintaining the air within the enclosure in a pleasant and breathable condition. Some times ordinary ventilation will suffice to meet the problem. But where there are concentrations of unpleasant or disagreeable odors as perhaps in the kitchen or in an office in which an accumulation of tobacco smoke may arise, this is not the case. Nor is the problem confined solely to the necessity for elimination of unpleasant and disagreeable odors. In the sick room at home or in the hospital or in a physician's or dentist's office the atmosphere may become unhealthfully germ laden. In such case simple ventilation could certainly not suffice to restore the atmosphere to a healthful condition. Sometimes attempts are made to deal with the problem by installlation of a system of forced ventilation. This may do the job in relatively small areas and will indeed often cause the rapid dispersion of unpleasant concentrations of odors. But in the main this is not a satisfactory solution, particularly where the problem of unpleasant odor is complicated by the presence of dangerous organisms in the air.

In the prior art there are known a number of methods and devices which attempt to confront the problem whose existence is pointed out up above. These may take the form of a chemical which, upon exposure to the air, serves to dissipate disagreeable and unpleasant odors. But too often such expedients simply replace the original strong and unpleasant odors with another odor which, while it may not be as unpleasant, at the same is noticeable. Such expedients are certainly lacking in effectiveness by contrast to a means which, in treating the atmosphere, does not imprint its own distinctive mark thereupon. Moreover, such devices, of course, cannot perform a filtering function, a filter providing a positive means for the removal of germs and other intolerable organisms from the air.

Accordingly it is the primary object of this invention to provide an air purifier which has the ability of eliminating from the atmosphere unpleasant and disagreeable odors and, in addition, has the constructive function of refining the air to remove therefrom unhealthy organisms. The way in which this objective is to be implemented is not simply to leave to chance the exposure of contaminated air to a static medium, but to forceably cause the air to pass through a purifying stage whose activating power derives from ozone producing lamps, and then through a filter means which has the ability of removing from the air undesirable matter unaffected by ozone. The air following such treatment is forceably expelled from the device in such a manner that it will replace untreated air,

and in short, will cause a circulation of the air within a general area.

Another object is to provide ozone sources and filter means within the housing of the air purifier unit, to be so disposed as to most effectively treat air circulated through the unit.

A further object herein is to provide means for the directional control of the purified air emerging therefrom.

Still another object herein is to make the air purifier unit completely portable and extremely compact so that it may be moved from place to place within the home or in an office, as necessity may dictate.

Another object is so to create an air purifier unit in which the active components may easily be replaced as their service life expires.

The final object is to achieve all of the foregoing by a unit which is durable and yet not intolerably expensive either in terms of necessary components or of fabricating procedures.

How these and many other objects are to be implemented will become clear through a consideration of the accompanying drawings wherein:

Fig. 1 is a front view of the enclosed unit;

Fig. 2 is a section taken at **2—2** of Fig. 1;

Fig. 3 is a section taken at **3—3** of Fig. 2;

Fig. 4 is a section taken at **4—4** of Fig. 2;

Fig. 5 is a bottom view of the enclosed unit;

Fig. 6 is an enlarged view of the louvre region of the housing, and

Fig. 7 is a section taken at **7—7** of Fig. 6.

All of the components of the air purifier unit are enclosed within a housing **10**. Air is drawn into the unit through the bottom thereof through a hole **11** which is covered by a screen **12**, the screen **12** being secured releasably to the housing by screws **13**. Sockets **14**, for ozone lamps **15** are mounted upon a side wall in such position that the ozone lamps are disposed so that air coming in through hole **11** immediately comes into contact with the lamps **15**. The lamps, it will be understood, are conventional sources of ozone. After passing the lamps the air next passes through filter **16** and thence into the fan shroud **17** through air intake port **17*a*** in the fan shroud **17**. Fan blades **18** rotate within the fan shroud, the fan blades being driven by the motor **19**. Indeed, it is the action of the fan blades which draws air into the unit. Under the driving force of the fan blades, purified air is driven out of the housing through the front opening **20**, passing thereafter through louvre unit **21**.

Louvre unit **21** is composed of a frame **22**, a knob **23**, and has louvre strips **24**. Thus by grasping knob **23** and turning it, the louvre unit may be rotated so that the inclined louvre strips **24** may deflect emerging air in any direction which may be desired.

There is a second opening **25** in the bottom of the housing of the unit, this opening being protected by a screen **26**. The function of this second opening is to permit the admission and circulation of air whereby the motor **19** may be cooled.

It will be observed that all operative components of the air purifier unit are situated within the housing in such a manner as to make for the most compact arrangement thereof. Moreover, it will be seen that the components are so disposed as to permit easy replacement of the ozone lamps and of the filter as such replacement becomes required. Thus, by simply removing screen **12** by loosening screws **13** it is apparent that the ozone lamps may thereafter be screwed out and new ozone lamps substituted therefor. In addition, to replace the filter all that is necessary is to remove the same screen **12** which provides a positive effective force for holding

the filter within the unit. The filter may thereafter be easily pulled downwardly out of its holding brackets **27**, replaced by inserting a new filter upwardly into the holding brackets and the same secured in position by replacing the screen **12** at the bottom of the housing.

Electrically activated components of the air purifier unit, the ozone lamps and the motor are both controlled by a single switch **30**. Power is supplied to the unit through plug-in **31**. The numeral **32** designates ballast members for the ozone lamps. Holes **33** are provided in the back of housing **10** for easy support of the whole unit upon a wall bracket **34**.

While I have described a specific embodiment of my invention, it is apparent that changes and modifications may be made therein without departing from the spirit of my invention.

I claim:

1. An electric air purifier comprising a housing having an air ingress opening communicating directly with said housing, a fan shroud within said housing leading into an air egress opening in said housing, said fan shroud having an axial air intake port in one side thereof, the interior width of said fan shroud being substantially as great as that of said air egress opening and extending rearwardly within said housing from said air egress opening, fan blades mounted for rotation within said fan shroud about an axis parallel to the front of said housing, each of said blades having a portion substantially as wide as the interior width of said fan shroud, the width of each said portion being only sufficiently less than the interior width of said fan shroud to permit clearance of the sides of said fan shroud thereby, a motor within said housing for driving said fan blades, a filter covering said air intake port, and a source of ozone at said air ingress opening disposed between said air ingress opening and said filter, said air intake port in said shroud being smaller in size than said air ingress opening, whereby air drawn into the portion of said housing in which said source is located by action of said fan blades passes about said source of ozone at its slowest rate of movement and before passing through said filter and before being expelled from said housing to assure optimal treatment by said source, said motor being situated on one side of said fan shroud, and said ozone lamps, said filter and said ingress opening being situated on the other side thereof whereby contamination of air purified by said lamps and filter through operation of said motor is avoided.

2. An electric air purifier as claimed in claim 1 wherein said source of ozone comprises a cluster of ozone lamps mounted within said housing at said ingress opening, disposed between said air ingress opening and said filter, said cluster of ozone lamps being greater in extent than said air ingress opening.

3. An electric air purifier as claimed in claim 1 wherein said filter is vertically disposed relative to the bottom of said housing, and is removable from said housing.

4. An electric air purifier as claimed in claim 1 wherein said air ingress opening is situated in the bottom of said housing and is covered by a removable screen, and wherein said filter is vertically disposed relative to the bottom of said housing and is disposed to be removable through said air ingress opening, said screen furnishing a support for said filter.

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