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AIR FILTER FOR LAMPS

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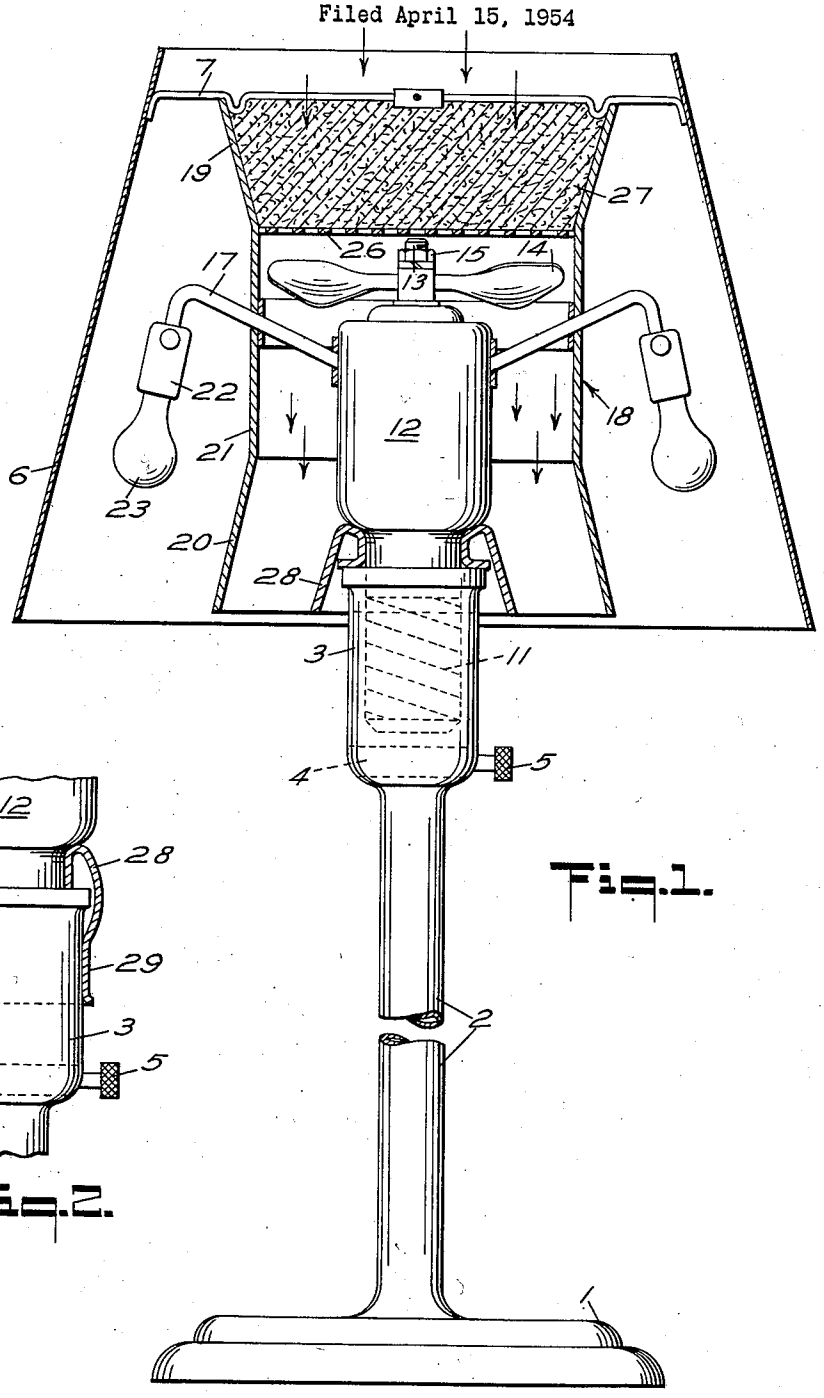


Fig. 1.

Fig. 2.

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AIR FILTER FOR LAMPS

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3 Claims. (Cl. 183—37)

The present invention relates to a combined lamp and filter, and in more particular to a powered filter unit that may be supported on the upper end of an ordinary floor lamp standard to take the place of its light and light bowl but which may retain the original shade.

There is a need in many places for an air filter that is compact, light in weight, easily installed, and inexpensive. The prior art devices have required that if the filter be easily portable and installed, it must be constructed as a separate piece of furniture if placed in a room. A further requirement has been the need for a separate power cord to connect the filter fan to a source of power. Other defects of the prior art have been the complexities of construction of such prior devices.

Having in mind these and other defects of the prior art devices, it is an object of the present invention to construct an air filter that may be screwed into an ordinary lamp socket for support of the filter unit and for obtaining power for its operation.

Another object of the present invention is the construction of an air filter that may be installed by substituting it on a floor lamp for the light and bowl of such floor lamp.

A further object of the present invention is the forming of an air filter, light, and lamp stand as a single unit.

A still further object of the present invention is the construction of an air filter so that it is small, compact, light in weight, and has but few parts.

Yet another object of the invention is the combining of an electric motor and a plug electrical connector so that they are a single rigid integral unit that may be supported by the plug when the plug is placed in a mating socket.

The invention possesses other objects and features of advantage, some of which, with the foregoing, will be set forth in the following description of the preferred form of the invention which is illustrated in the drawing accompanying and forming part of the specification. It is to be understood, however, that variations in the showing made by the said drawing and description may be adopted within the scope of the invention as set forth in the claims.

The above mentioned objects are achieved and the defects of the prior art remedied by securing integral with an electric motor for the transmission thereto of power, a plug electrical connector, and of placing said plug axially of the motor and its shaft, and at one end of the motor, whereby the motor may be supported in an electrical socket by such plug and power thereby delivered to the motor for its operation. Further, if the axis of the motor is vertical and supported at its lower end, a fan is secured to the motor shaft at the upper end of the shaft and motor, a tubular housing is placed around the motor and supported thereon, and a foraminous plate is placed above and adjacent the fan but spaced from the upper end of the housing to form with the housing a filter chamber that is filled with a

porous filter material. Finally, light sockets may be secured at spaced points around the housing and a shade placed outside of the whole assembly.

Such an assembly when screwed into the socket of a floor lamp in place of the usual light and bowl, the shade may be the same one originally used with the floor lamp, does not change the appearance of the floor lamp or its usefulness as a source of light. However, the function of an air filter has been added, and by adding to the porous filter material certain substances, odorizing of the air may, also, be achieved.

An illustrative embodiment of the invention as above outlined, is hereinafter described in detail and illustrated in the accompanying drawings, in which:

Figure 1 is an elevational view, partly in section and certain conventional details omitted, of a floor lamp and filter embodying the present invention.

Figure 2 is a fragmentary elevational view partly in section showing slightly modified form of the invention.

In the figure, there are shown as conventional parts of a floor lamp, its base **1**, standard **2**, light socket **3**, switch **4**, switch key **5**, and shade **6** with its supporting spider **7**.

The filter unit is secured to the stand and supported by a screw plug **11** having the standard form of threads or other securing means formed in electrical connectors but preferably either the medium or mogul screw form. This screw plug **11** is, of course, also constructed in other details than the form of the thread in the manner of such electrical connectors. The plug is located axially and at the lower end of an electric motor **12**. The plug is rigid with the motor and by its electrical construction and the construction of the motor, electric power may be transmitted from the plug to the motor for its operation. Also, arranged axially of the plug and the motor, and extending outwardly from the upper end of the motor is a drive shaft **13** of the motor to which shaft is secured a screw type fan **14**, or propeller, by means of a nut **15** or other securing device.

The rotational direction of the motor and the construction of the propeller may be such that they will drive the air either upward or downward, but it has been found that the motor will remain cleaner if the air is forced downward as indicated by the directional arrows.

Surrounding, spaced from, and supported on the motor **12** by means of a plurality of radially extending brackets **17** is an open ended tubular housing **18** that has flared upper **19** and lower **20** end portions, and a cylindrical middle portion **21**. Brackets **17** are secured to the motor and the housing, and are each hollow to provide a conduit for electric wires connected in the motor circuit and to a light socket **22** secured at the outer end of the bracket which extends slightly beyond the outside of the housing. A light **23** is secured in each of these sockets **22**, and each socket may be provided with a suitable switch.

Above and adjacent the fan **14**, and extending across and secured to the housing is a foraminous plate **26**. This plate is spaced from the upper end of the housing and is about at the juncture of the upper flare **19** and the middle portion **21**. This foraminous plate and the upper flare portion of the housing form a receptacle for the retention of a porous filter material **27**. This material may be glass wool or other conventional air filter medium. Further, this filter medium may be impregnated with an oil so as to increase the dust retention power of the filter, and impregnated with an odorizing or deodorizing substance which will, also, treat the air passing through the filter.

The shade **6** is supported on the upper end of the

housing 18 by its spider 7, and is of a size that will surround the filter housing and the lights 23, and be outwardly spaced therefrom. At the lower end of the housing, the motor may have secured to it a fairing ring 28 which will shield the plug 11 and the socket 3, and will reduce air turbulence at this part of the housing.

Also, this fairing ring, as shown in the modification of Figure 2, may be extended to have a bottom, or skirt, part 29 which snugly fits around the socket or standard of the lamp so that all of the bending loads which may be applied to the filter when it is being handled will not come on the electrical connectors but will pass from the motor housing to the fairing ring and, thence, directly to the lamp standard.

From the above description when taken in connection with the drawing, it will be readily understood that the filter unit may be easily installed on a conventional floor lamp or table lamp having an upwardly opening socket. The filter unit will take the place of the lamp and bowl usually found on such lamps. In most instances the shade found on the lamp may be used with the filter. The lights secured to the filter housing will function in much the same manner as the one replaced by the filter. If the lights are provided with separate switches, they may or may not be operated with the filter. Of course, the motor may be provided with a separate switch so that the lights may be operated while the motor is not operating. While in the drawings the air has been indicated as flowing downward through the housing, this direction may be reversed by a change in the fan design or in the motor direction of rotation. While other types of fans could be incorporated in the present invention, the one shown lends itself well to this particular form of construction. With this embodiment of the invention large quantities of air may be rapidly cleaned and odorized. The construction is compact, simple, and inexpensive to produce. The filter material is easily replaced.

Having thus described the construction and operation of a particular form of my invention, I claim:

1. An air filter comprising: a vertically disposed tubular housing having open upper and lower ends, a standard having a base and an upper end secured to said housing and having a socket thereon, a perforate member extending across said housing near its upper end, an electric motor having a drive shaft positioned coaxial of said housing and below said member, a screw propeller below said member and secured to the upper end of said shaft, and a screw plug electrical connection for operation

of said motor secured to the under side of said motor and coaxial of said shaft and housing and threadedly engageable with said socket.

2. An air filter comprising: a tubular housing having open upper and lower ends, horizontal means extending across said housing near its upper end to form with the portions of the housing above said means a receptacle to hold a porous filter material, an electric motor having an upper end adjacent said means, a lower end adjacent the open lower end of said housing and a drive shaft coaxial of said motor and said housing, a screw propeller between said means and said motor and secured to said shaft for operation thereby, and a screw plug electrical connection secured to the lower end of said motor, coaxial of said motor and housing, and electrically connected to said motor for delivery of electrical power thereto, whereby operation of said motor and fan will move air through said porous material, said housing, and axially thereof, a standard having a lamp socket thereon threadedly receiving said screw plug connection.

3. In combination with a vertical standard having a threaded lamp socket at the upper end thereof, a tubular housing having open upper and lower ends and axially aligned with said standard, a foraminous plate extending across said housing near its upper end to form with the portions of the housing above said plate a receptacle to hold a porous filter material, below said plate an electric motor having an upper end adjacent said plate, a lower end adjacent the open lower end of said housing and a drive shaft coaxial of said motor and said housing, a screw propeller between said plate and said motor and secured to said shaft for operation thereby, and a screw plug electrical connection secured to the lower end of said motor, coaxial of said motor and housing, and electrically connected to said motor for delivery of electrical power thereto, whereby operation of said motor and fan will move air through said porous material, said housing, and axially thereof, said screw plug connection being threadedly engageable in said lamp socket.

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