June 19, 1962 P. B. SHARPE 3,039,678

FAN AND LAMP COMBINED

Filed Oct. 3, 1960

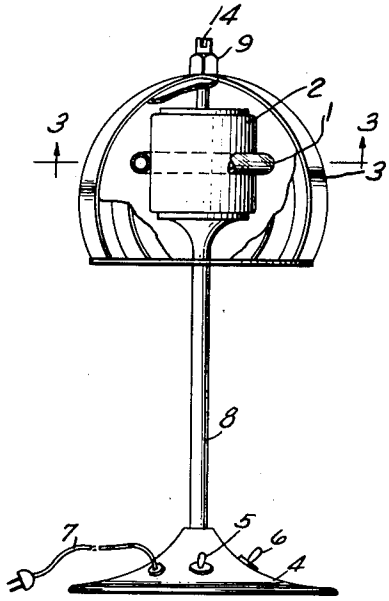


Fig. 1

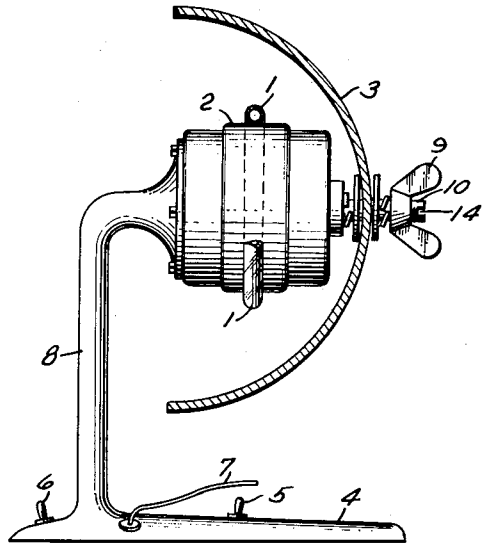


Fig. 2

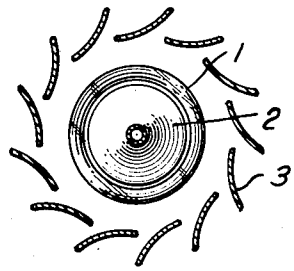


Fig. 3

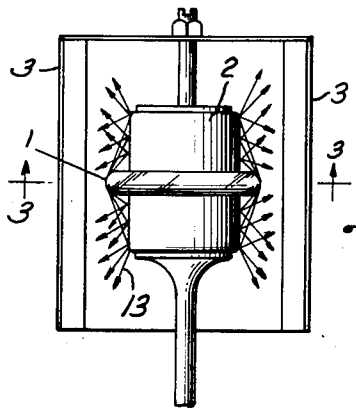


Fig. 5

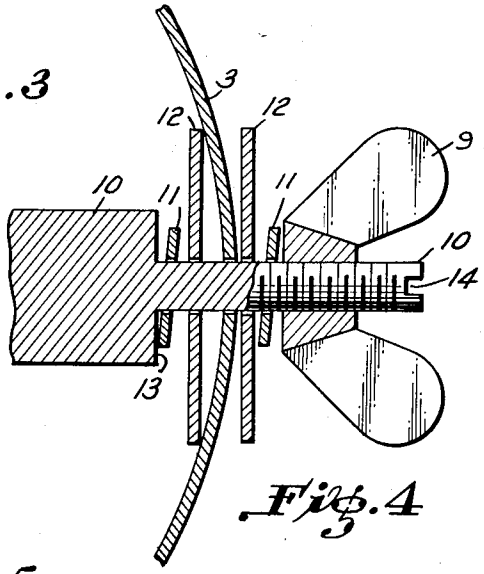


Fig. 4

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FAN AND LAMP COMBINED

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The instant invention relates to structurally novel mechanical means through the medium of which a user thereof may reliably combine into one office and household appliance both a cooling and an illuminating function and which means is characterized on the one hand by a novel power fan, on the other hand by a simple and practical illuminating device, and in addition by a combination of the fanning and illuminating devices.

Interpreted somewhat more specifically one device might be classified as the one which functions as a cooling means, namely for example a so-called electric fan. The other device might be classified more specifically as constituting the illuminating device and might namely for instance be a so-called electric lamp. It follows that the present concept speaking broadly relates to the improved cooling means and to the improved illuminating means whether constructed individually or singly and also in the combination sense wherein each means contributes its proportionate function to the conjoint construction.

With respect to the illuminating device, this pertains to a simple, practical and economical construction in its preferred embodiment wherein a circular or spiral fluorescent lighting tube such as is commonly used on kitchen ceilings is "wrapped around" or encircles a cylindrical reflecting and diffusing surface and in turn is surrounded at a little distance by a so-called lamp shade. The purpose is to provide illumination which will be more adequate, reinforced, diffuse, white, cool and economical. It may be stated here that the ordinary electric lamp bulb uses much more electricity per candlepower of light output, it does not give a truly white light, it runs hot enough to severely burn little fingers, although frosted it still glares, it is not reinforced and diffused by a reflector and it can be adequate only by the use of excess wattage. This invention looks forward to improving all the objections just mentioned in a very simple and indeed economical manner.

With respect to the cooling device, this pertains to a simple, practical and economical construction in the preferred embodiment of which the fan blades of an electric fan are bent back and partially enclose the electric motor in either a substantially spherical shape or in a substantially cylindrical shape. The purpose is to provide a fan shape which will in operation blow a gentle breeze over a wide cooling angle. It may be stated here that the ordinary electric fan commonly known and used today blows too strong a breeze causing "cricks in the neck" and flying desk paper. It also blows a very narrow beam of air turbulence which corresponds in shape rather closely to the beam of a searchlight. Of course an attempt has been made in the past to improve the effective width of the beam and lessen the "cricks in the neck" by adding an oscillating mechanism to the fan with the purpose of making it play back and forth like a searchlight searching. But this answer to the problem is unsatisfactory because it is noisy and only tends to spread the evil around in an intermittent sort of way with the result that you are at one moment getting too strong a breeze and at the next moment you are getting too little breeze or none at all. Furthermore, the oscillating mechanism necessitates the putting in of a great deal of additional cost by the manufacturer. This invention looks forward to improving all the objections just mentioned above and to doing so in part by the very simple and economical method of causing the reshaping of the fan in such a way

as to cause it to send out a constant gentle-because-wide beam of air turbulence that will more closely resemble the beam of a floodlight than that of a search light, thus eliminating the expensive and annoyingly unsatisfactory oscillating and oscillating mechanism.

With respect to the combination of the structurally novel mechanical construction of the fan with that of the structurally novel mechanical construction of the lamp, this pertains to a beautifully simplified, practical, and economical blending of the two constructions in a preferred embodiment wherein we have, first, at the center, the electric motor the outer surface of the housing of which is bright and constitutes the cylindrical reinforcing and diffusing reflecting surface for the illuminating feature also. That is, it serves a double function. Encircling this is the fluorescent illuminating tube which is the light source of the illuminating feature. Outside of this and spaced a little way from it is the fan blade construction which is roughly spherical or semi-spherical in shape, or cylindrical in shape. In the preferred embodiment, this loosely yet securely hangs upon the axle of the electric motor, revolves when it revolves, throws currents of turbulent air in a wide beam about it when the motor turns, and also comprises the lamp shade of the illuminating feature. Thus in the conjoint combination construction we have the conjoint function of having always available at the finger tips so to speak, and in a sightly and ubiquitous electrical household and office appliance either cool light or cool air or both together at the flip of a switch, and both diffuse, gentle, and easy on the eyes and neck respectively. Also eased is the expense, since the high wattage of the incandescent bulb type of light source and the annoying and expensive oscillating mechanism are no longer required or desired. Furthermore the double use of the mounting, stand, wiring, motor housing with a reflecting outer surface, fan blade support, fan blades in the shape of a lamp shade, etc. cuts down on both materials cost and manufacturers fabricating, assembly, and shipping costs.

This invention in its preferred embodiment features the diffuse, cool, economical, and reinforced light of the circular or spiral fluorescent lighting tube backed up by its large bright cylindrical reflector and diffusor surface, and surrounded by its semi-spherical or cylindrical translucent and diffusing shade, cooled or rather not over-heated by incandescent bulbs.

The invention in its preferred embodiment as also mentioned before features the gentle, diffuse, wide-beam, constant stream of turbulent air characteristic of the improved fan blade construction.

The invention in its preferred embodiment as also brought out above features the illuminating means and the cooling means cooperating in such a manner that the over-all construction offers the good looks and ubiquitousness of the lamp along with the more economical and satisfactory illuminating of this improved lamp with the healthier and quieter convenience of always having the improved fan available also with its gentle wide and constant breath of cooling air turbulence. And in addition, along with all the combined advantages of each and the gains of having both together, comes the economy of joint construction, and the double duty of most parts.

Other objects, features, and advantages will become more readily apparent from the following description and the accompanying drawings.

In the drawings wherein like numerals are employed to designate like parts throughout the same:

FIG. 1 is a vertical elevation view of a preferred embodiment of the instant inventive concept partly broken away in order to show both the cooling and illuminating devices cooperating conjointly.

FIG. 2 is a vertical elevation view of an adjustable modification of the combined device shown in FIG. 1.

FIG. 3 is a cross section taken substantially along the lines 3—3 of FIGURE 1.

FIG. 4 is a cross sectional detail view of the adjusting mechanism of FIGURE 2.

FIG. 5 is a vertical cross sectional view resembling the upper portion of FIG. 1 but with a cylindrical shade and with the reflecting and diffusing effect of the light colored outer surface of the motor housing indicated by arrows indicating rays of light.

Inasmuch as the improved illuminating device is of significance by itself and in combination with the cooling device it is believed that it is as good to begin with that for our detailed description as with anything else. Consequently reference may be had to FIGURES 1, 2, 4 and 5. In these figures the source of illumination is denoted as part **1**. A reflecting and diffusing surface is designated by part **2** and a lamp shade by the number **3**. The illuminating element **1** is in this case a circular fluorescent tube encircling the reflective and diffusive surface **2**. Light rays from the said illuminating element **1** radiate in all directions from the surface of the illuminating element **1** and is more diffuse and less glaring consequently than that from even a frosted incandescent bulb because it comes from a much larger surface. In addition, perhaps forty percent of the light rays radiating equally in almost all directions from the fluorescent lighting or illuminating tube **1** does not shine directly out but strikes the deflecting and diffusing surface **2** which is light colored for good reflecting qualities, but not shiny but is rather what might be called a "flat" color in order to diffuse the light most widely. The laws of reflection apply to it, of course, that light rays are reflected from its surface at the same angle to the perpendicular as they hit it. That law tends to make it diffuse, since the light rays hit it at different distances and therefore at different angles. But also, from a microscopic point of view, the surface of a "flat" color is very irregular on a small scale, and therefore the rays tend to obey the laws of reflection all right but in relation to a great variety of perpendiculars which makes it diffuse the light rays even more, making the light very diffuse indeed, since light will come to a certain point to be illuminated, from a large part of its surface. The lamp shade **3** is translucent like most lamp shades and so it also tends to make even more diffuse the light which goes through it as well as that which is reflected from its light colored but "flat" colored interior surface.

With respect now to the second aspect of the over-all combination, and as has been mentioned before, I have devised an arrangement which is characterized by bending the fan blades back and partially around the motor which drives them. This novel shape of the fan blades causes it to come about as a consequence, that when they are driven by the motor they send out a current of turbulent air in a very broad band cooling a very large area. It also distributes the driving force of the motor and fan over a large area making it gentle on a unit-area basis. Now, as will be explained presently in the description of the over-all combination some parts will serve a double purpose, functioning in one way as part of the illuminating device and in quite another way as part of the cooling device. This makes it possible to use the same illustrations and the same numbered parts thereof to illustrate the parts and functions of the cooling system just mentioned herein. Said duplications enable us to illustrate the above by FIGURES 1, 2, 4, and 5 again wherein part **1** still designates the fluorescent illuminating tube as before and can for the present purpose be ignored. But part **2** now designates the electric motor housing and thereby the presence of the electric motor itself, and part **3** now designates the bent back fan blades partially enclosing the motor. The widening of the band of cooling air turbulence obtained by this novel fan blade construction makes it unnecessary to oscillate the fan in order to cover a wide area. The width and consequently resulting gentleness of the band of turbulence makes it also unnecessary to oscillate the fan **3** in order to prevent the over-cooling of the skin of people in its path. Paper weights also become unnecessary. As a result, the noise and other annoyances of oscillation and the expensive oscillating mechanism can be totally eliminated.

The base **4** and the stem **8** support the mechanisms. The switches **5** and **6** turn on the lamp and the motor respectively. The wire **7** brings in the electric energy. The motor shaft **10** threads through the fan blade construction **3** and supports the fan blades shade **3**, the nut **9** secures it loosely yet securely in the preferred embodiment. In the adjustable modification FIG. 2, the wing nut by squeezing the fan blade construction **3** between the large washers **12** also tends to straighten out the curvature of the springy material of which it is made and thus adjust the breeze coming from it. The shoulder **13** of the motor shaft **10** gives something to squeeze against and the lock washers **11** keep it from loosening too much, the same serving in the preferred embodiment as an extremely simple and economical weight-friction, slip-clutch and in the other embodiment as an extremely simple and economical pressure-friction, slip-clutch. This slip-clutch reduces the power from the electric motor, and in conjunction with the wind resistance of the fan blades it also cuts the speed of the fan well below the speed of the electric motor. This gives a measure of comfort and safety and at the same time it eliminates the need for using such expensive items at low-speed motors and reduction gears. Shaft **10** of the electric motor is very carefully threaded with restraint and to a limited extent and with a pipe thread so that the nut cannot be turned on far enough to defeat our purpose of using the connection as a clutch as described above. In the embodiment portrayed in FIGS. 1, 3 and 5 the clutch action depends upon the weight, area and texture of bearing surface of shoulder **13**. In the embodiment portrayed in FIGS. 2 and 4, the clutch action depends upon a slight amount of pressure exerted by the nut **9** through curves and springiness of **11** and **3**. The springiness of **3** serving the additional function of changing the angle of the fan blades thereby making that feature adjustable.

As will now be anticipated and evident from the FIGURES 1, 2, 3, and 5 and the dual use of the designations **2** and **3** as parts thereof the combined electric lamp and electric fan cooperate in a practical and reliable manner in that the construction serves to illuminate the work and cool the worker doing both in a diffuse and gentle manner which is easy on both the eyes and the tendency to get a "crick in the neck" from over-cooling the skin with a present day unimproved electric fan. The electric lamp gives good looks and ubiquitousness to the electric fan. The electric fan gives the diffusing and reflecting surface of the outside of its motor housing **2** and the shade **3** to the lamp, said shade constituting the novel fan construction of the cooling feature. It also cools by the air currents generated. Great economy results from the fact that the one lead wire **7**, the one base **4**, the one stem **8** are used for both. Further economy results from the fact that the motor **2** housing serves more than one purpose in the combined over-all construction, as does also the bent back fan blades **3**. A yet further and very considerable saving economy results from the elimination of the oscillating mechanism and the need for it.

Therefore and in the over-all combination aspect of the concept a structural adaptation is had which is characterized not only by simplicity, beauty, economy, and ubiquitousness but a practical accomplishment in satisfactorily serving both illuminating and cooling needs with only one appliance for which the invention was devised. Compared with the desk cluttered with the usual one, two, or three burning and heat radiating and glaring incandescent bulbs which are equipped with shades to be sure but not with a

diffusing and reflecting surface behind them and also with an electric fan hurriedly dragged out of some closet and the dust blown off, noisily sending a too strong blast of air sweeping back and forth across the person and his papers from some temporary and precarious perch, this improved combination appliance is possessed of many advantages—as an improved lamp, as an improved fan, and as a combined lamp and fan.

FIGURES 2 and 4 illustrate a modification in which the angles of the fan blades 3 is adjustable by tightening the wing nut 9. There is a coin or screwdriver slot 14 in the end of the motor axle 10 to hold it steady when tightening the nut 9. In addition the wind resistance on very flexible blades tends to automatically reach a pitch wherewith the motor thrust and the wind resistance are in balance and that speed is then maintained. FIGS. 1 and 5 illustrate the vertical axis of rotation of the preferred embodiment which vertical axis of rotation has the useful result of automatically yielding 360 degrees of horizontal angle of air turbulence to which can be added as many degrees of vertical beam width as is usually desired by means of vertical curves in the fan blades as seen in FIG. 1. FIGURE 5 shows in addition with arrows how the motor housing reflector would reflect and diffuse light if shiny, on the left, and how it would do it on the right if painted with the special glass bead reflecting and diffusing paint often seen on auto registration plates and on roadside signs. It is, I believe, called "Scotchlite." FIG. 3 shows in addition a multitude of close-set, narrow, translucent fan blades with rounded leading edges and little pitch. This construction makes them safe for fingers since there is not room to get fingers between them, even little ones. It also has the advantage of giving a slow gentle breeze and doing so with a standard speed electric motor driving them, thus it secures the type of air turbulence we want and at the same time it avoids having to secure that result by means of the use of expensive slow speed special motors or of expensive adjustable speed motors or rheostats.

Reiterating now for the most part we can say that it will now be evident that novelty is predicated on the light source being a fluorescent tube, on the light source encircling a large cylindrical reflector, on said reflector being painted with special reflecting and diffusing glass bead paint as seen particularly well in FIGURE 5. Novelty is predicated also in the simple bent fan blade construction seen in FIGS. 1, 2, 3 and 5, in the multitude of close-set, narrow, translucent fan blades with rounded leading edges and little pitch as best seen in FIG. 3, in the vertical axis of rotation as seen in FIGURES 1 and 5. Novelty is predicated in addition in the combination of the two constructions just pointed out, with its double duty of most parts and with all the additional advantages of saving table and desk space, ubiquitousness, and the like as mentioned before besides the very decided economies thus made possible and the claim is being drafted accordingly.

The foregoing is to be considered as illustrative only, of the principles of the invention. Further, since numerous modifications and changes will readily occur to those skilled in the art, it is not desired to limit the invention to the exact construction and operation shown and described and accordingly all suitable modifications and equivalents may be resorted to falling within the scope of the invention as claimed.

What is claimed as new is as follows:

In a device of the described, comprising an electric motor including a housing and a rotatable driving shaft, a coating of light-reflecting material applied to the periphery of said housing, an annular lamp mounted about the middle of said motor housing whereby the motor housing serves as a reflector and a support for the annular lamp, and a rotatable fan assembly mounted on said driving shaft and having a translucent blade portion encircling said motor housing and lamp whereby said fan assembly serves as a lamp shade.

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