May 29, 1951 H. A. SNIDER 2,554,647

PLASTIC LAMP SHADE WITH CIRCULATING AIR PASSAGE

Filed June 8, 1948

FIG. 1

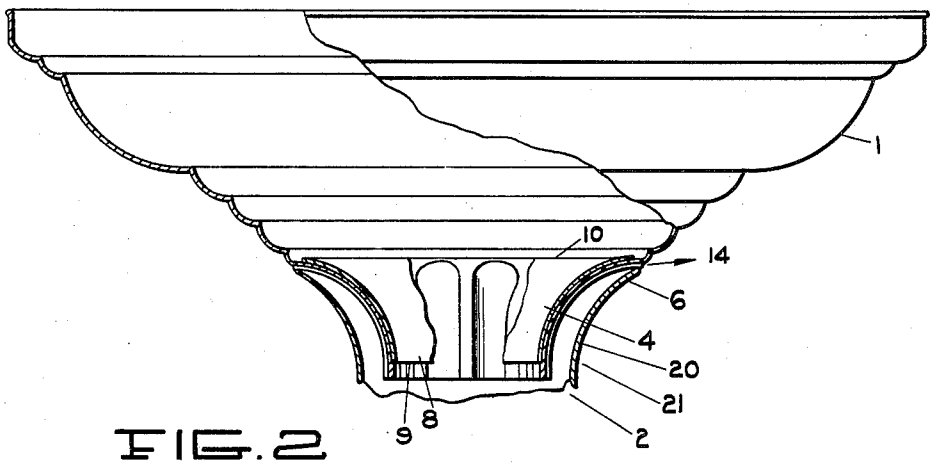


FIG. 2

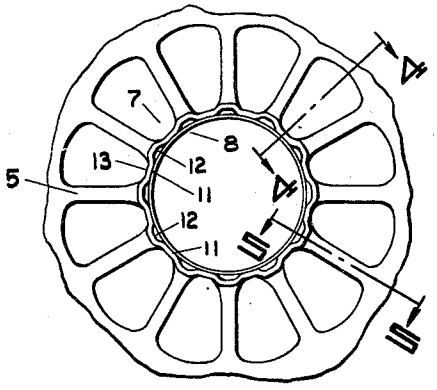


FIG. 3

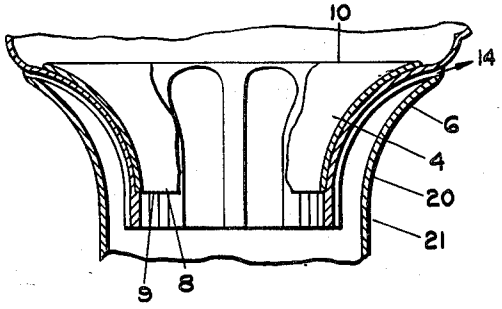


FIG. 4

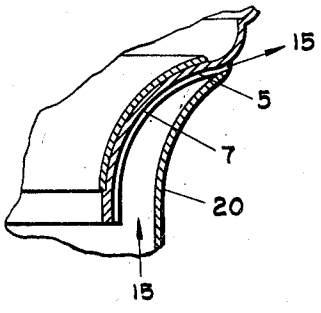
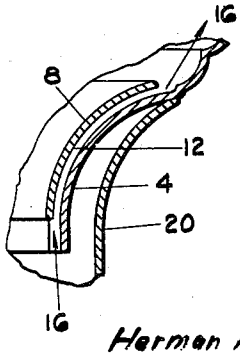


FIG. 5



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PLASTIC LAMP SHADE WITH CIRCULATING AIR PASSAGE

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7 Claims. (Cl. 240—47)

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The present invention relates to a translucent lamp shade which, in the present invention, is constructed of thermo-plastic material, preferably polyamids such as synthetic linear condensation products of diamines and dicarboxylic acids with or without coloring agents, dyes and stabilizers such as "nylon," which may be molded and which will withstand fairly high temperatures without change of its character such as discoloration, warping and loss of light transmission efficiency.

In the lamp shade of the type of the present invention which applies specifically to indirect lighting fixtures as floor lamps, desk lamps or the like, glass shades have been commonly used. These shades become quite hot in the vicinity of the lamps themselves so that the shades must be made of material adapted to withstand high heat. In lamps of this type where indirect lighting is used it is also common to use 300 watt lamps developing bulb temperatures of 385° F. to make up for the light loss which is incurred by reflections from wall surfaces which are for the most part inefficient light reflecting surfaces. Since in lamps of this type the shades are open at the top and the bottom rests on and is enclosed in part by a metallic base, there is little provision for conducting the heat away from the interior of the bowl or shade and this too adds to the increase of the temperature of the shade in the vicinity of the lamps themselves.

Thermo-plastic materials, particularly the non-setting thermo-plastics will either melt, warp, become cloudy, char or change their characteristics if too high a temperature is applied for any length of time to them. Some thermo-plastics break down at comparatively low temperatures, 150 to 250° F., as, for instance, cellulose acetate. Others will withstand higher temperatures in the neighborhood of 200 to 300° F. without being materially affected by the heat, but in most cases continuous application of the higher temperatures will affect the thermo-plastics in such a way that they will finally become useless as materials for lamp shades of the present type used in this construction.

In the present invention this difficulty has been over-come by the construction of a lamp shade of thermo-plastic materials in which the heat is effectively kept away from the thermo-plastic material such that the temperature of the material does not rise above its safe normal value which it can continually withstand for any number of hours. Not only is the direct heat kept away from the thermo-plastic material of the

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shade to a great degree but also a continuous circulation of air is established uniformly over the region of highest temperature so that the shade is kept at a safe operating value.

This is accomplished in the present invention not only without in any way interfering with efficient transmission of light, but in fact, by use of means which provide a greater efficiency than would otherwise normally be obtained in other systems.

The shade in the present invention is a single unit and is put on the lamp or removed as a single unit since the air circulation and the other properties are all provided as inherent elements of the unit itself. The shade of the present invention as used for indirect lighting may be applied to an enclosed base or to an open base with the same effect. The only requisite is that the lamp base to which the shade is to be applied has a rim of proper size opening and depth to accommodate the shade.

The present invention will be described in the specification set forth below with reference to an embodiment as illustrated by the drawings in which

Figure 1 shows an elevation of a shade and stand constructed according to the present invention with parts shown in fragmentary section.

Figure 2 shows a fragmentary plan view of the shade looking upwards at the throat end of the shade in the position shown in Figure 1.

Figure 3 shows a vertical section through the lower portion of the shade and stand.

Figure 4 shows an enlarged detail section taken on the line 4—4 of Figure 2 but including also a section through the stand.

Figure 5 shows an enlarged detail section taken on a line 5—5 of Figure 2 but including also a section through the stand.

In the arrangement indicated in the drawings the lamp shade 1 is preferably of the bowl type with a flared out horn or frustum of a cone with a throat aperture in the region of which it rests upon a suitable stand 2, which holds the electrical lamp for furnishing the light. The stand 2 is provided at its end with a flared out section 21 to receive the base 4 of the shade, the wall of the section being spaced apart from the wall of the shade. This base 4 is provided with fluting 5 which extends upwards beyond the line where the rim 6 of the flared out section 21 of the base rests so as to provide spaces between the wall of the shade and the wall 20 of the flared out section 21 except where the convex projec-

tion of the fluting of the shade rests on the flared rim of the section 21.

The shade itself is molded by injection or compression molding of a thermo-plastic or thermo-setting material which is translucent to a desired degree sufficient to give a general diffusion of light through the shade of a substantially lower intensity than that obtained through the indirect lighting. Such polyamides as "nylon" or other thermo-plastic resin which will withstand fairly high temperatures of the vicinity of 200° F. without material deterioration or changes are suitable for this purpose. The shade itself may be of the shape as shown in Figure 1 with successive scallop section parallel to the wide edge down as far as the throat portion of the shade. In this section, from the open throat end to the bowl section of the shade, the shade should have fluting in the direction of its axis in its wall. These flutings such as shown at 5, Figure 2, alternate with projecting and recessed sections such as shown at 7, and provide thereby a uniformly waving contour about the base of the shade. The inside of the shade in the throat section is lined with a metallic foil 8, of a smooth unwaved contour, fitting into the flared out throat from the edge 9 in the vicinity of the throat opening to the edge 10 substantially at the end of the fluted section of the shade. The foil 8 touches the shade in the region of its inwardly projected fluted surfaces such as 11, and forms an air space for an upward air draft between the foil and the material of the shade at the outwardly projecting wall sections as indicated at 12. The foil 8 may be provided with a bright reflecting surface on both of its faces for the better radiation of the heat. Air circulation is also obtained on the outer side of the shade base over the sections 7 where the shade on the inside is in contact with the foil 8. On the outside a space is provided between the wall 20 and the concave or inwardly projecting region 13 of the fluting through which upward circulation is established between the shade and the metallic wall of the stand, the hot air flowing out through the top rim, as indicated by the arrow 14. In the arrangement, therefore, shown in the application, a complete air circulation is maintained in close proximity to both the inner and outer face of the shade at its base where the temperature is the hottest. This is indicated more clearly in Figures 4 and 5. In Figure 4, the arrows 15—15 show the travel of air on the inside of the wall 20 and the outside of the concave fluting at 7. The contact formed by the fluted ridges 5 with the inside of the stand wall 20 provides on both sides of the ridges a thin passage for air bordered by the outside wall of the shade.

In Figure 5 the path of circulation is shown on the inside of the shade between the foil 8 and the wall 4 of the shade. These elements border the space 12 through which air circulates as indicated by the arrows 16. This circulation is on the inside of the shade and the use of the close spacing of the foil provides a means for confining the circulatory air close to the surface of the shade itself. This is also true of the circulation to the outside wall of the shade.

It will be noted from Figure 2 that the successive convolutions close to one another provide air cooling over a large shade surface quite uniformly on both faces so that an efficient cooling of the shade is effectively accomplished. An additional feature obtained in the arrangement described is that the foil surface has an efficient reflector for the light which would otherwise be lost in the metal stand itself. This light would simply go to heat up the metal stand at the top whereas in the present arrangement a percentage of this light is reflected outward for its proper use. The reflecting surface is also such as to prevent radiation to the base of the shade from the light source and yet it is effectively concealed so as not to interfere with the general glow through the shade itself.

It will be noted that the foil is recessed slightly in the wall of the shade so that its surface is continuous with the inner surface of the shade. Various types of foil may be used for the purpose, such as aluminum, or some alloy metal which will retain a fairly bright inner surface for efficient reflecting purposes.

It will further be noted that when the lamp shade is made of a thermo-plastic material as set forth above, the particularly soft and pleasant light effect is obtained through the material of the shade. This is due to the action of the plastic material in particular to the large molecular structure which causes a uniform dispersion of light with high surface reflective properties and low absorption. In addition, the plastic material of the type used for the present invention is not readily fractured and will not shatter, break, or crack if dropped, thereby greatly increasing its utility and light.

Having now described my invention, I claim:

1. In combination with an indirect lighting electric lamp fixture having an open ended housing for the reception of a lamp shade surrounding the lamps, a lamp shade of a molded thermoplastic material having a partially translucent wall with a large top opening to permit indirect lighting and a bottom throat portion having a comparatively smaller section adapted to fit into the open ended housing, the contour of said throat portion being shaped with respect to the open ended housing and spaced from the housing to provide air passages between the housing and the throat portion spaced around the outer surface of the throat portion where the shade is supported in said housing and a reflecting metallic foil attached to the inner side of the throat section of said shade spaced away from the surface of the shade in regions, to provide air passages between the foil and the shade.

2. In a combination of the type described, a lamp shade of thermo-plastic material having a large open bowl end at the top and a small symmetrically positioned throat section at the bottom, said throat section having its walls fluted in a top and bottom direction and a light reflecting metallic foil on the inside of the throat section of the wall touching the wall in the inwardly projecting fluted regions and coextensive therewith forming air passages in an up and down direction adjacent the inner surface of the throat section of the lamp shade.

3. In a combination of the type described, a lamp shade of thermo-plastic material having a large open bowl end at the top and a small symmetrically positioned throat section at the bottom, said throat section having its walls fluted in the axial directions of the shade and a light reflecting metallic foil extending around the inner surface of the throat section spaced from the outwardly projecting fluted regions forming air passages axially of the throat along the inner surfaces thereof.

4. In a combination of the type described, a lamp shade of thermoplastic material having a

partially translucent wall with an open bowl type section and a throat portion axially symmetrical with the bowl and having a tapering fluted wall decreasing from the bowl end to the throat opening, a light reflecting metallic foil lining the inside of said throat but spaced away from the wall in the region of the flutings forming a series of air passages between the foil and the wall extending generally in said axial direction.

5. In a combination of the type described, a lamp shade of thermoplastic material having a partially translucent wall with an open bowl type section and a throat portion axially symmetrical with the bowl and having a tapering fluted wall decreasing from the bowl end to the throat opening, a light reflecting metallic foil lining the inside of said throat but spaced away from the wall in the region of the flutings forming a series of air passages between the foil and the wall, said foil being set within the wall to form a continuous surface therewith extending generally in said axial direction.

6. In combination with an indirect lighting electric lamp fixture having an open ended housing for the reception of a lamp shade surrounding the lamps, a lamp shade of a molded thermoplastic material having a partially translucent wall with a large bowl-like top opening to permit indirect lighting and a bottom throat portion having a comparatively smaller section at its junction at the bottom of the bowl and tapering to a smaller end opening said throat portion adapted to fit into the open ended housing, the contour of said throat portion being shaped with respect to the open ended housing and spaced therefrom to provide air passages between the housing and the throat portion spaced around the outer surface of the throat portion where the shade is supported in said housing and a reflecting metallic foil attached to the inner side of the throat section of said shade spaced away

from the inner surface of said throat section, to provide air passages between the foil and the throat section of the shade, said metallic foil extending upwards not substantially further than the periphery of the housing wall.

7. In combination with an indirect lighting electric lamp fixture having an open ended housing for the reception of a lamp shade of a moulded thermoplastic material having a partially translucent wall with a large bowl-like top opening to permit indirect lighting and a bottom throat portion having a comparatively smaller section adapted to fit into the open ended housing, the throat portion being fluted in a top and bottom direction and providing up and down air passages between the housing wall and the throat portion of the shade at intervals about the entire throat portion of the shade, and a reflecting metallic foil lining the inside of the throat portion of the shade touching the wall in the region of the inwardly projecting flutings but otherwise spaced away from said wall thereby forming air passages at the walls in the outer projecting fluted regions of the throat of the shade.

HERMAN A. SNIDER.

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