April 28, 1942. A. J. D. OHM 2,281,378

ELECTRIC LIGHTING FIXTURE

Filed Feb. 21, 1941 2 Sheets-Sheet 1

Fig. 1.

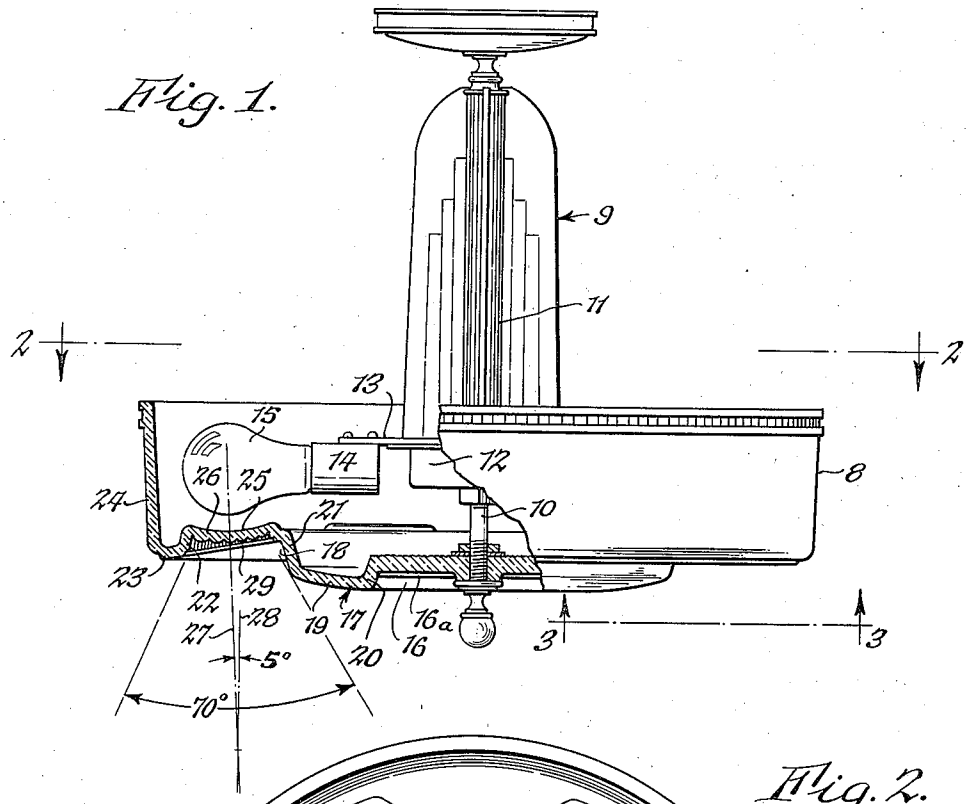
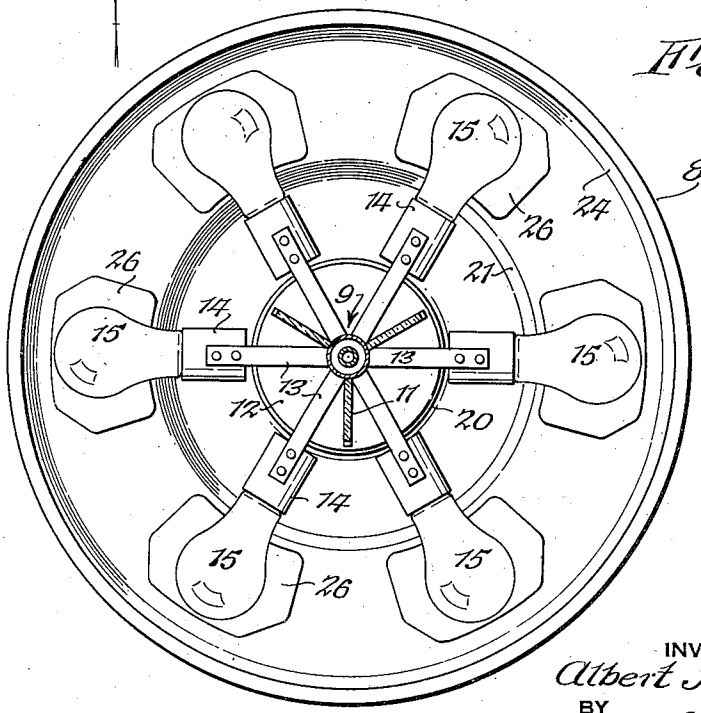


Fig. 2.



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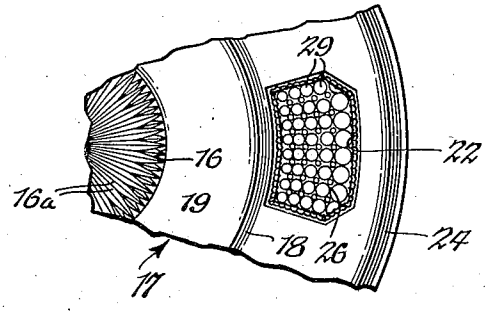


Fig. 3.

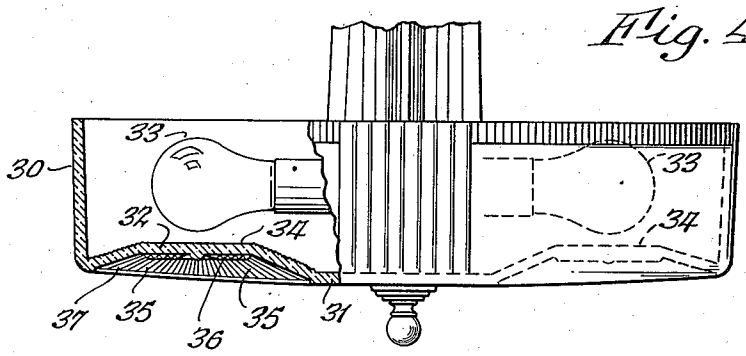


Fig. 4.

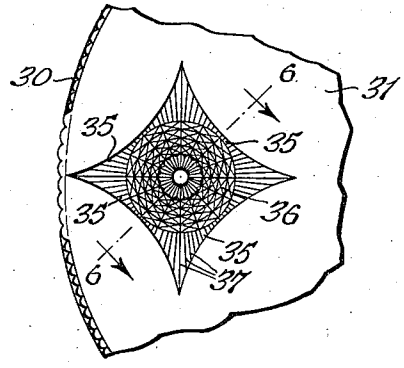
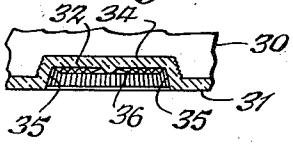


Fig. 5.

Fig. 6.



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ELECTRIC LIGHTING FIXTURE

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Application February 21, 1941, Serial No. 379,960

4 Claims. (Cl. 240—106)

This invention relates to improvements in electric lighting fixtures and more particularly a fixture of the kind wherein an inverted ornamental bowl is employed to modify the light emitted by the lamps of the light source and to conceal the lamps, their sockets, the wires leading to the sockets and certain of the associated parts of the assembly by which the fixture is mounted upon or suspended from the ceiling.

One object of the invention is to provide a fixture of the type generally described having a bowl which is so designed that a predetermined area below the fixture may be illuminated uniformly and to a substantially brighter degree than surrounding or adjacent areas without the passage into such areas of objectionable glaring rays.

A further object is to provide a fixture which is pleasing and attractive in appearance and simple and inexpensive in design.

The invention is illustrated in the accompanying drawings in which:

Figure 1 is a side view, partially in elevation and partially in section, of a fixture embodying the features of the invention.

Figure 2 is a horizontal section taken along line 2—2 of Figure 1.

Figure 3 is a fragmentary bottom view showing a lense portion of the bowl and is taken along line 3—3 of Figure 1.

Figure 4 is a view similar to Figure 1 showing a modified form of bowl.

Figure 5 is a fragmentary bottom view of the modified form of bowl.

Figure 6 is a fragmentary section taken along line 6—6 of Figure 5.

The fixture, as illustrated, is provided with an inverted bowl 8, of crystal glass or any other suitable material, which is adapted to be suspended from the ceiling by a hanger assembly 9, the bowl being suitably secured to the lower end of a rod 10 of the assembly which also includes an ornamental vaned housing 11 and a body 12. The latter is located within the bowl and carries radially extending arms 13 which in turn carry the sockets 14 for the lamps 15 of the fixture, the wires (not shown) which lead from the electrical outlet to the sockets passing through, and hence being concealed by, the housing 11.

In the embodiment of the invention illustrated in Figure 1 the bottom of the bowl 8 is formed with a central shallow depression 16 which may be roughened upon the inner face in conventional manner to promote light diffusion while the outer face may be cut to provide radial flutes 16a (Figure 3) which will have a prismatic action upon the light passing through them. An annular ring-like embossment 17 surrounds the depression 16 and in turn is surrounded by an annular concentric channel 18. The embossment and channel form a dome-like prominence upon the bottom of the bowl, the bottom wall 19 of the embossment curving downwardly and inwardly, the inner wall 20 forming the side wall of the depression 16 and the outer wall 21 providing the inner wall of the channel. The outer wall 22 of the channel is provided by the inner wall of a depending marginal rim 23, the outer wall of which is formed by, and is a continuation of, the side flange 24 of the bowl.

In accordance with the invention the bottom wall 25 of the channel 18 is deformed, preferably during the operation in which the bowl is molded into the desired shape, to provide a circular series of uniformly spaced concavo-convex lenses 26, the said lenses being formed integrally with and of the same material as the bowl and each of them utilizing one of the lamps 15 as a light source and producing a diverging beam. Those portions of the bottom wall of the channel 18 which provide the lenses 26 are transparent and hence permit free passage of light through them. The curvature of the lenses, however, is preferably predetermined so that the beams produced by them will meet, or intersect, one another at a point above the table or other surface to be illuminated, the said beams merging at the points of intersection to provide what is in effect a composite beam having a cross-sectional area great enough to illuminate the desired area uniformly throughout its entire extent. For most purposes, therefore, lenses having a curvature such that the light beams produced will have an angle of divergence of the order of 70° will be satisfactory, it being understood, of course, that the extent of the area which is to be illuminated in the manner described is dependent upon the distance of the bowl from such area and that this factor is to be taken into consideration.

Preferably the lenses 26 are formed so that the axes of the beams converge toward a point directly below the center of the bowl, the angle of each axis 27 (Figure 1) with respect to a line 28, which is parallel with the axis of the bowl, being substantially less than one-half the divergence angle of the beam, for example, of the order of 5°. As the axes of the beams converge a greater beam divergence may be em-

ployed while confining the light of the beams within the desired area. Full and uniform illumination of such area is thus insured. In order to permit a certain amount of diffusion of the light in the beams and at the same time enhance the appearance of the fixture the outer faces of the lenses may be beaded or otherwise roughened as indicated at 29.

Except for the lense portions of the bowl and the portion in which the depression 16 is formed, or other portions which may be specially treated or prepared for ornamental purposes, the exterior of the bowl is preferably sprayed, or otherwise coated, with a ceramic coloring material (the lense portions first being suitably masked) and then fired. The bowl may thereby be rendered translucent or opaque, preferably the former and will, therefore, have a low light transmission characteristic with respect to the lenses 26. If desired, a mottled effect may be imparted to the ceramic coating by acid etching the surfaces of the mold parts which shape those portions of the bowl which are to be subsequently coated in the manner described. In the use of the fixture a predetermined area below the bowl will be brightly and uniformly illuminated while adjacent or surrounding areas will be softly illuminated either by diffused light which is permited to pass through the translucent portions of the bowl, or if those portions of the bowl other than the lense or ornamental portions are opaque, by indirect light reflected from the ceiling. The lense portions being inset, it will be apparent that the side walls of the channel 18 tend to confine the light emitted by the lamps in the beams and serve to intercept and direct downwardly objectionable glaring rays which might otherwise be permitted to escape into the areas intended to be softly illuminated.

In Figures 4, 5 and 6 a modified form of bowl 30 is illustrated. In this embodiment the bottom wall 31 of the bowl is substantially flat. As in the embodiment first described, however, the bowl is clear, being of glass, a plastic or other synthetic material; and the bottom wall is formed to provide lenses 32 which are adapted to direct beams of light downwardly to brightly illuminate a predetermined area below the bowl, those portions of the bowl other than the lense portions, or portions bearing ornamental figures or designs, having a ceramic coating which renders them translucent or opaque. Each of the lenses has its own lamp 33, is preferably one of a circular series, is produced by forming a concavity in the bottom wall 31 and preferably includes a central substantially flat circular zone 34 and four side walls 35 which have a pitch which decreases from their centers in the direction of their ends. The central zone of each lens may, as illustrated, be cut to provide prism-like projections 36 while the side walls 35 may be fluted, as indicated at 37, the projections and flutes enhancing the appearance of the fixture without interfering to any substantial degree with the production of light beams in the manner and for the purpose described.

From the foregoing it will be apparent that the fixtures described have the advantage that they are available for illuminating different areas to different degrees of brightness in accordance with the requirements of such areas and without the passage of glaring rays into those areas which require soft illumination. A further advantage obtained is that the fixtures are pleasing and attractive in appearance, are inexpensive in design, lend themselves to conventional molding methods and do not require special accessories or assembling operations.

I claim as my invention:

1. An electric lighting fixture of the multi-lamp type including an inverted bowl which, throughout the greater part of its extent, has a low light transmission characteristic, integral portions of the bottom wall of said bowl having a high light transmission characteristic and being formed to provide lenses, one for each lamp, to direct diverging beams of light downwardly, said lenses being so arranged that the beams thus produced merge at a point below the fixture to illuminate a predetermined area brightly and uniformly.

2. An electric lighting fixture of the multi-lamp type including an inverted bowl which, throughout the greater part of its extent, has a low light transmission characteristic, integral portions of the bottom wall of said bowl having a high light transmission characteristic and being formed to provide lenses, one for each lamp, to direct diverging beams of light downwardly and which are so arranged that the beams thus produced illuminate brightly and uniformly a predetermined area under the fixture, said lense portions being inset with respect to adjacent portions of the bottom of the bowl to provide walls which intercept and direct downwardly glaring light rays from said lenses which might otherwise pass outside said area, said side walls being included in those portions of said bowl having a low light transmission characteristic.

3. An electric lighting fixture of the multi-lamp type including an inverted bowl which, throughout the greater part of its extent, has a low light transmission characteristic, an annular channel formed in the bottom wall of said bowl, integral portions of the bottom wall of said channel having a high light transmission characteristic and being formed to provide lenses, one for each lamp, to direct diverging beams of light downwardly and which are so arranged that the beams thus produced illuminate brightly and uniformly a predetermined area under the fixture, the side walls of said channel being included in those portions of said bowl having a low light transmission characteristic and intercepting and directing downwardly objectionable glaring rays from said lenses which might otherwise pass outside said area.

4. An electric lighting fixture including a bowl which, throughout the greater part of its extent, has a low light transmission characteristic, an annular embossment and a concentric annular channel formed in the bottom wall of said bowl, the outer wall of said embossment providing the inner wall of said channel and the channel and embossment providing a dome-like prominence upon the bottom of the bowl, portions of the bottom wall of said channel having a high light transmission characteristic and being formed to provide lenses, each of which is adapted to direct a beam of light downwardly and which are so arranged that the beams thus produced illuminate brightly and uniformly a predetermined area under the fixture, the side walls of said channel intercepting and directing downwardly glaring rays which might otherwise pass outside said area.

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