Dec. 15 1925. 1,565,408

W. T. BLACKWELL

LIGHTING FIXTURE

Filed Dec. 16, 1921

FIG. 1.

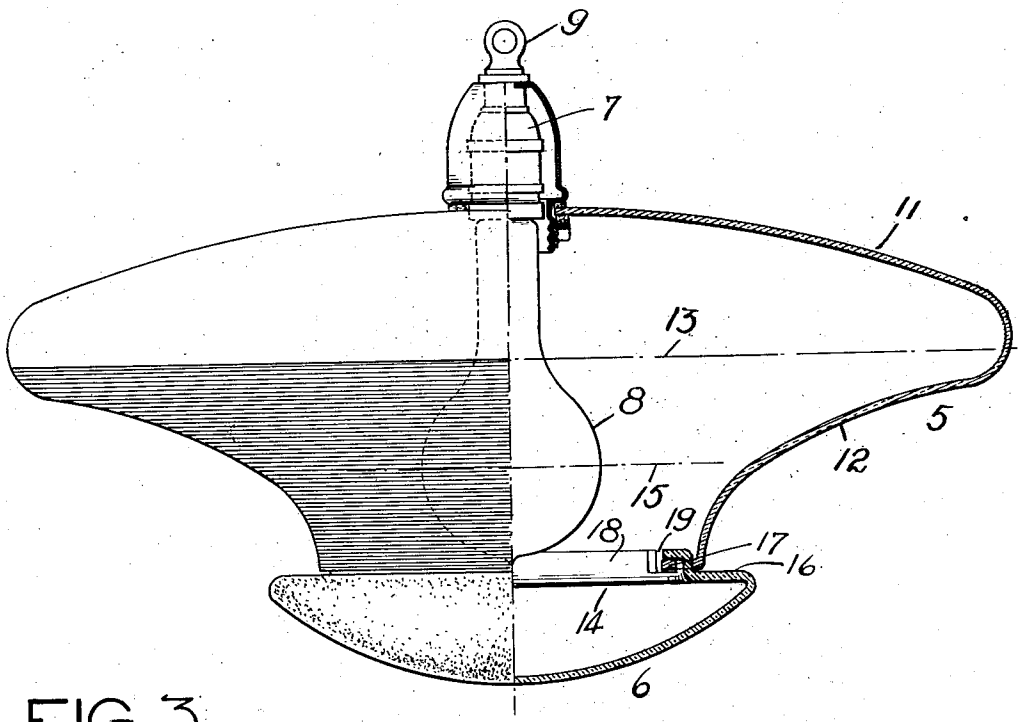


FIG. 3

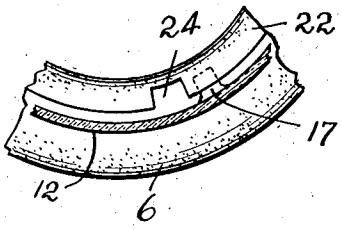


FIG. 2

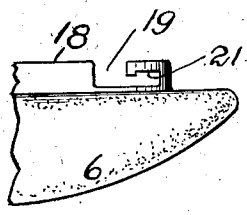
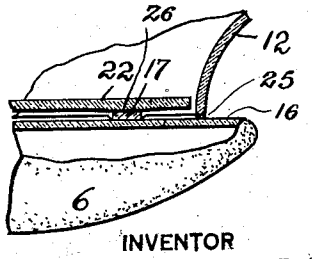


FIG. 5.



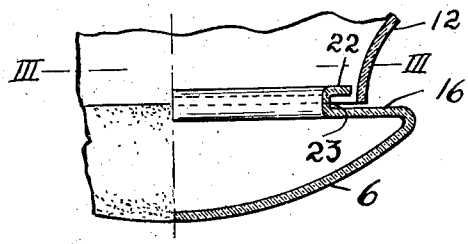


FIG. 4.

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UNITED STATES PATENT OFFICE.

WILLIAM T. BLACKWELL, OF WESTFIELD, NEW JERSEY, ASSIGNOR TO WESTINGHOUSE LAMP COMPANY, A CORPORATION OF PENNSYLVANIA.

LIGHTING FIXTURE.

Application filed December 16, 1921. Serial No. 522,748.

To all whom it may concern:

Be it known that I, WILLIAM T. BLACKWELL, a citizen of the United States, and a resident of Westfield, in the county of Union and State of New Jersey, have invented a new and useful Improvement in Lighting Fixtures, of which the following is a specification.

This invention relates to lighting fixtures and more particularly to fixtures of the type employed for indoor lighting.

An object of the invention is to provide a lighting unit which is substantially dust-proof and in which the light from a given source may be reflected and transmitted with a minimum amount of loss.

Another object is to provide a dust-proof unit having a globe in which a certain percentage of the light rays will pass from beneath the globe and illuminate at least a portion of the outer surface thereof.

A further object is to provide a lighting unit having a globe in which a portion of the light will be transmitted through the upper portion of the globe and another portion of the light will be reflected from the lower portion of the unit and transmitted through the upper portion of the globe.

A still further object is to provide a translucent globe of such contour that it may, during the process of manufacture, be readily finished to serve as a direct or as a semi-indirect lighting unit as desired.

The character of lighting units or fixtures commonly employed for indoor use demand an efficient light-distributing element and one which must incorporate a design which is pleasing to the eye and which will be harmonious to indoor environments. The goal sought in the production of such lighting fixtures is, however, to provide a globe of a contour which will not only give the desired agreeable effect by its grace of lines, but which will lend itself to efficient and expeditious production.

The above requirements are met in the present invention inasmuch as the simplicity of the construction embodying the invention provides a desirable article from a manufacturing standpoint while the configuration of the globe in such embodiment permits a wide distribution of light with an extremely low surface brilliancy.

Furthermore, the light source may be readily obscured from sight, which is an advantage when the unit is employed for either direct or semi-indirect lighting. The manufacturing advantages of this unit are evident from the fact that a variation in the style of unit produced is attained by a variation of the coating applied to the globe. This coating may be translucent by the application of a sprayed superficial layer or it may be opaque depending upon the type of unit required. Where a highly interior surface is desirable on the lower portion of the globe, it may be silvered in any well known manner. The outer side, if desired, may be provided with a layer of enamel. When a mirror reflector is provided, the lower portion of the globe may be corrugated or ribbed for the purpose of breaking up specular reflection which wold have a tendency to project the image of the light source onto the walls or ceiling.

In addition to the above mentioned features, which are prerequisites of the latest development in illumination engineering, the present invention provides a substantially dust-proof fixture, in which the bulb is conveniently accessible for replacement through an aperture in the lower end of the globe. The upper portion of the globe may be provided with an aperture adapted to be closed by a fitter or husk in which is carried any desirable lighting element, preferably an electric incandescent bulb of the type known in the trade as the mazda C.

Lamps of the aforementioned character are substantially pear-shaped and employ what is termed a concentrated filament which gives a high intensity of light. This filament or light source is of comparatively small area and is thus readily adapted for disposition in a given relation to the globe. The present invention takes advantage of this feature by so positioning the light source as to obtain the most effective and efficient use thereof by disposing it in a given relation to the peculiar configuration of the globe employed.

The invention will be more fully understood by reference to the accompanying drawings which show one embodiment thereof, in which

Fig. 1 is an elevational view of the improved lighting fixture or unit partly in section;

Fig. 2 is a fragmentary elevational view of the lower cover;

Fig. 3 is a fragmentary plan view showing a modification of the means for attaching the cover to the globe;

Fig. 4 is a fragmentary view, partly in vertical section, of the modification shown in Fig. 3; and

Fig. 5 is a fragmentary view showing a section through a portion of the flange on the lower cover and illustrating the engagement between a cam surface on this flange and a lug on the lower portion of the globe.

The globe employed in this invention is provided with apertures at the lower and upper ends thereof, the former aperture being utilized for removing or replacing lamps. The lower aperture is, however, adapted to be closed by a cap which may be of bowl-shape and preferably provided with an interiorly projecting flange, which encircles the lower end of the globe when the cap is in place. This cap may be of metal but is preferably composed of an opalescent glass or of a clear glass provided with a superficial coating. When the cap is in position, it constitutes a closure for the aperture in the lower portion of the globe and at the same time permits the transmission of a certain percentage of light rays to pass through the flange and thus illuminate the outer surface of the lower portion of the globe thereby enhancing its appearance. The upper aperture is closed by a fitter or husk in which may be carried any desirable lighting element. These elements when assembled comprise the lighting fixture or unit.

A fixture embodying the advantages above outlined may consist substantially of the three parts mentioned above; namely, a husk or fitter 4, a globe 5 and a cap or cover 6. The husk may be of any well-known standard construction but as illustrated herein it is similar to that described and claimed in my copending application Serial No. 510,840 filed Oct. 27, 1921, universal lighting fixture, assigned to the Westinghouse Lamp Company. This husk is adapted to carry a socket 7 capable of receiving a standard incandescent electric lamp 8. The husk is also provided with an eyelet 9 in which a chain may be secured for the purpose of suspending the fixture.

In order to obtain the advantages of efficient illumination, as above set forth, the globe 5 is preferably constructed with an upper convex portion or wall 11. This wall or upper portion is preferably composed of transparent glass through which the light rays may be directly transmitted. The lower portion 12, disposed below a transverse plane which is indicated by the dotted line 13, converges toward the vertical axis of the lamp for a given portion of its length then curves downwardly, and terminates at a given distance from the vertical axial line of the lamp thereby providing a lower aperture 14 through which a bulb may be inserted or removed from the socket 7.

Although the upper portion of the globe is preferably made of clear glass, it is obvious that if desirable it may be made of a light diffusing material, or else it may be etched or even given a superficial coating. The lower portion 12 may be treated in a variety of ways to provide varying degrees of reflection or it may be treated to produce different degrees of diffusion.

Exceptionally good results have been obtained by providing the lower portion 12 with an interior mirrored surface whereby a preponderance of useful rays are transmitted through the upper portion of the globe, the lower portion of which is especially shaped to efficiently direct reflected light. The peculiar configuration of this globe will be appreciated by an inspection of Fig. 1 which shows a section thereof taken substantially on a vertical plane, and it will be noted that the light center which is on the dotted line 15 lies approximately in a plane intermediate the upper and lower ends of the lower portion 12 of the globe.

After a lamp has been suitably positioned in the globe 5, the cap or cover 6 is placed over the aperture 14 and the globe is thus completely closed preventing the entrance of dust or other foreign matter.

For the purpose of permitting light to be transmitted to the outer surface of the globe, the perimeter of the cap 6 is sufficiently greater than the perimeter of the lower end of the globe to provide an annular space therearound. The cap, however, is provided with a flange 16 which, when the cap is in position, occupies the space above mentioned.

For the purpose of quickly and conveniently attaching and removing the cap the lower portion of the globe is provided with a plurality of lugs 17 and the cap is provided with a collar 18 in which are disposed a plurality of notches 19 of right angular form. The cap is attached to the globe by positioning it with the lugs in line with the notches and then moving the cap toward the globe until the lugs pass to the end of the vertical portion of the notches after which the cap is slightly rotated to bring the horizontal portion of a notch about each lug and the cap is then permitted to seat thereon. A depression 21 is provided in the horizontal portion of the notch to prevent the accidental displacement of the cover.

The lugs are illustrated as being integral with the globe and of the same material but it is obvious that they may be made of a different material, as for instance a metal, and may be secured to the globe in the proper positions. One way of securing such lugs

to a globe may consist in the provision of an annulus having lugs attached thereto; this annulus may be so constructed as to be capable of being spun about the lower edge of the globe. The collar 18 could also be made of metal and secured to the cap in any suitable manner.

In many instances it is preferable to provide an all-glass fixture and a modification of the attaching means for an all-glass cap is shown in Figs. 3, 4 and 5, wherein the cap 6 is provided with a double flange consisting of the flange 16 and a reverse flange 22 thereby providing an annular recess 23. The flange 22 is provided with a plurality of notches 24 to permit the passage of the lugs 17 when the cap is juxtaposed for attachment to the globe. When the lugs have passed through the notches 24 the cap is rotated slightly to bring the lugs beneath the flange 22 and the cap is thus supported by the engagement of the flange 22 with the lugs 17.

It will be readily understood that although this cover may quickly be secured or be removed from the globe its connection thereto is practically dust-proof. If desirable a resilient packing 25, consisting of a ring of any suitable material, may be disposed between the lower edge of the globe and the flange 16. For the purpose of more firmly seating the globe upon the flange 16 a cam surface 26 (Fig. 5) may be provided on the flange 22 so that when the cap 6 is rotated the flange 22 will cause the cam to engage with the lug 17 and lift the cap 6 thereby bringing it firmly against the packing 25. This elastic packing also serves to permit a slight variation in the relative positions of the globe occasioned by expansion and contraction of these parts during the heating and cooling of the unit.

It has been found that by disposing the light source 15 midway between the upper and lower ends of the lower portion of the globe a portion of the light rays will be reflected and caused to pass directly through the upper portion 11 of the globe and thus illuminate the wall and ceiling. A greater percentage of the rays, however, will be transmitted directly through the upper portion of the globe onto the walls and ceiling. The cover 6 may have a reflecting surface of the same value as the lower portion of the globe and will serve to reflect rays directly upwardly through the wall 11. Part of the light rays reflected from the inner surface of the cover 6 will be transmitted through the flange 16 when the cover is made of a translucent material as, for instance, an opalescent glass. This transmission of the light rays through the flange provides an illumination of the outer surface of the globe. When desirable the bowl portion of the cover may be opaque and the flange 16 may be either clear glass or translucent and illumination of the outer portion of the globe may be made more or less intense by a variation in the opacity of the flange 16. Where an indirect lighting fixture is required the flange 16 may be made opaque by a coating or the cap may be made entirely of an opaque material in which case a metal cap may be employed.

It will be appreciated that this invention provides a unit which is substantially dust-proof and at the same time furnishes a construction by means of which the outer surface of the bowl thereof may be illuminated to a greater or lesser degree.

When assembled for use, the fixture provides a compact, dust-proof lighting unit in which the bulb is readily accessible for replacement by merely removing the cover 6. The cover may be conveniently detached without the annoyance of having to manipulate screws or other mechanical elements or the inconvenience of manually supporting heavy lamp parts. The cover is of comparatively light weight and when associated with the globe, is adapted to provide a dust-proof connection. It will be readily seen that the unit possesses features essential to meet the demands of efficient lighting and commercial requirements.

It is obvious that many modifications and structural variations may be resorted to in practicing this invention and it is understood that the invention embraces all such modifications as come within the scope of the appended claims.

What is claimed is:

1. A lighting unit comprising a globe, said globe being of a transparent material having its lower portion coated to provide an interior reflecting surface whereby light rays are directed through the upper portion of said globe, an aperture in the said lower portion for the replacement of bulbs, a cover for said aperture having a flange of light-transmitting material, projections of light transmitting material for attaching said cover over the aperture of said globe with the said flange disposed therearound, said flange being of sufficiently greater diameter than said aperture to provide an appreciable light-transmitting medium to permit the emission of light rays to the exterior of the lower portion of said globe.

2. A lighting unit comprising a globe having a holder, said globe being of a transparent material having its lower portion silvered on the exterior side thereof and adapted to provide an interior light reflecting surface for the reflection of light rays through said upper portion, an aperture in said lower portion for the replacement of lamps, a bowl shaped cap having an interiorly projecting flange of light-transmitting material, the interior diameter of said

flange being slightly less than the diameter of said aperture, lugs integral with said globe for securing said cap over said aperture whereby a closure for said aperture is provided and light may be reflected from the inner surface of said cap and transmitted through said flange.

3. A lighting unit comprising a globe having an aperture therein, a cap for said aperture having an interiorly extending flange, lugs integral with said globe and disposed about the perimeter of said aperture for engagement with said flange to secure said cap over the aperture, said cap being of a sufficiently greater diameter than the aperture to provide a flange thereabout, said flange being of a light transmitting material.

4. A lighting unit comprising a globe having an aperture therein, a cap for said aperture, said cap having an interiorly extending flange provided with a collar adapted to enter said aperture, lugs integral with said globe for engagement with said collar to secure said cap over said aperture, said cap being of a light transmitting material and of a diameter sufficiently greater than said aperture to provide a flange therearound.

5. A lighting unit comprising a globe having an aperture therein, a plurality of projections integral with the globe and disposed about said aperture, a bowl-shaped cover for said aperture having an interiorly projecting flange provided with a collar adapted to enter the aperture, a plurality of slots in said collar to receive said projections, said cover being of a light transmitting material and of sufficiently greater diameter than said aperture to provide a flange thereabout.

6. A lighting unit comprising a globe having an aperture therein, lugs integral with said globe and disposed radially about the perimeter of said aperture, a concave cover of a light transmitting material having an interiorly projecting flange, a collar integral with and disposed about the inner perimeter of said flange and slots in said collar to receive lugs for securing the cover over said aperture, said cover being of sufficiently greater diameter than said aperture to provide a collar therearound for the transmission of light reflected from the inner surface of said cover.

7. A lighting unit comprising a globe having a light transmitting upper portion and a light reflecting lower portion, an aperture in said lower portion, a cover for said aperture, said cover being of a greater diameter than said aperture and having an interiorly projecting flange, a collar integral with said flange and adapted to enter the aperture of said globe, light-transmitting means for securing said collar to the globe with said flange disposed about the perimeter of said aperture to provide for the transmission of light through the flange to the outer surface of said globe.

8. A lighting unit comprising a globe having an aperture in the upper portion thereof, a globe supporting member for closing said aperture, an aperture in the lower portion of said globe for the replacement of lamps and a bowl-shaped cover for said lower aperture, an interiorly extending flange integral with said cover, a collar integral with and disposed about the inner perimeter of said flange and adapted to enter the aperture of said globe, light transmitting means for securing said collar to said globe so as to dispose said flange about said aperture to permit the transmission of light rays through the outer surface of said globe.

9. A lighting unit comprising a globe having a light transmitting upper portion and a light reflecting lower portion, an aperture in said upper portion, a globe supporting member for closing said aperture, an aperture in said lower portion for the replacement of lamps and a cover for said lower aperture, said cover having an interiorly extending flange provided with a collar adapted to enter the aperture of said lower portion of the globe, whereby said flange may be disposed about the perimeter of said aperture to permit the transmission of light rays to the outer surface of the lower portion of said globe and light transmitting means for securing said collar to said globe, the diameter of said cover being sufficiently greater than said lower aperture for the purpose of providing a flange therearound.

10. A lighting unit comprising a globe having upper and lower portions of different coefficients of light absorption, an aperture in said upper portion, a globe supporting member for closing said aperture, an aperture in said lower portion for the replacement of lamps and a cover for said lower aperture having a diameter sufficiently greater than said aperture to provide a flange around the end of the said lower portion of the globe, means for attaching said cover to said globe, said means and said flange being of a light transmitting material for the purpose of permitting light rays to pass therethrough and illuminate the outer lower surface of said globe.

11. A lighting unit comprising a globe having an aperture in the upper end thereof, a husk for supporting said globe and adapted to close said upper aperture, an aperture in the lower end of said globe, a plurality of lugs upon the inner side of the lower end of said globe and a cover of appreciably greater diameter than said lower aperture, an interiorly extending flange upon said cover provided with notches for the passage of said lugs when said cover is

juxtaposed with relation to said globe, whereby said cover may be slightly moved about its vertical axis and supported on said lugs and positioned to provide a flange about the lower aperture and means for preventing accidental removal of said cover.

12. A lighting unit comprising a globe having an aperture in the upper end thereof and a husk adapted to close said aperture, an aperture in the lower end of said globe, a plurality of lugs upon the inner side of the lower end of said globe, a cover having an interiorly extending flange provided with notches for the passage of said lugs when said cover is juxtaposed with relation to said globe, whereby said cover may be slightly moved about its vertical axis and supported on said lugs, means for preventing accidental removal of said cover and means for maintaining said cover in resilient engagement with said globe.

In testimony whereof I have hereunto subscribed my name this 15th day of Dec., 1921.

WILLIAM T. BLACKWELL.