

Aug. 23, 1932.

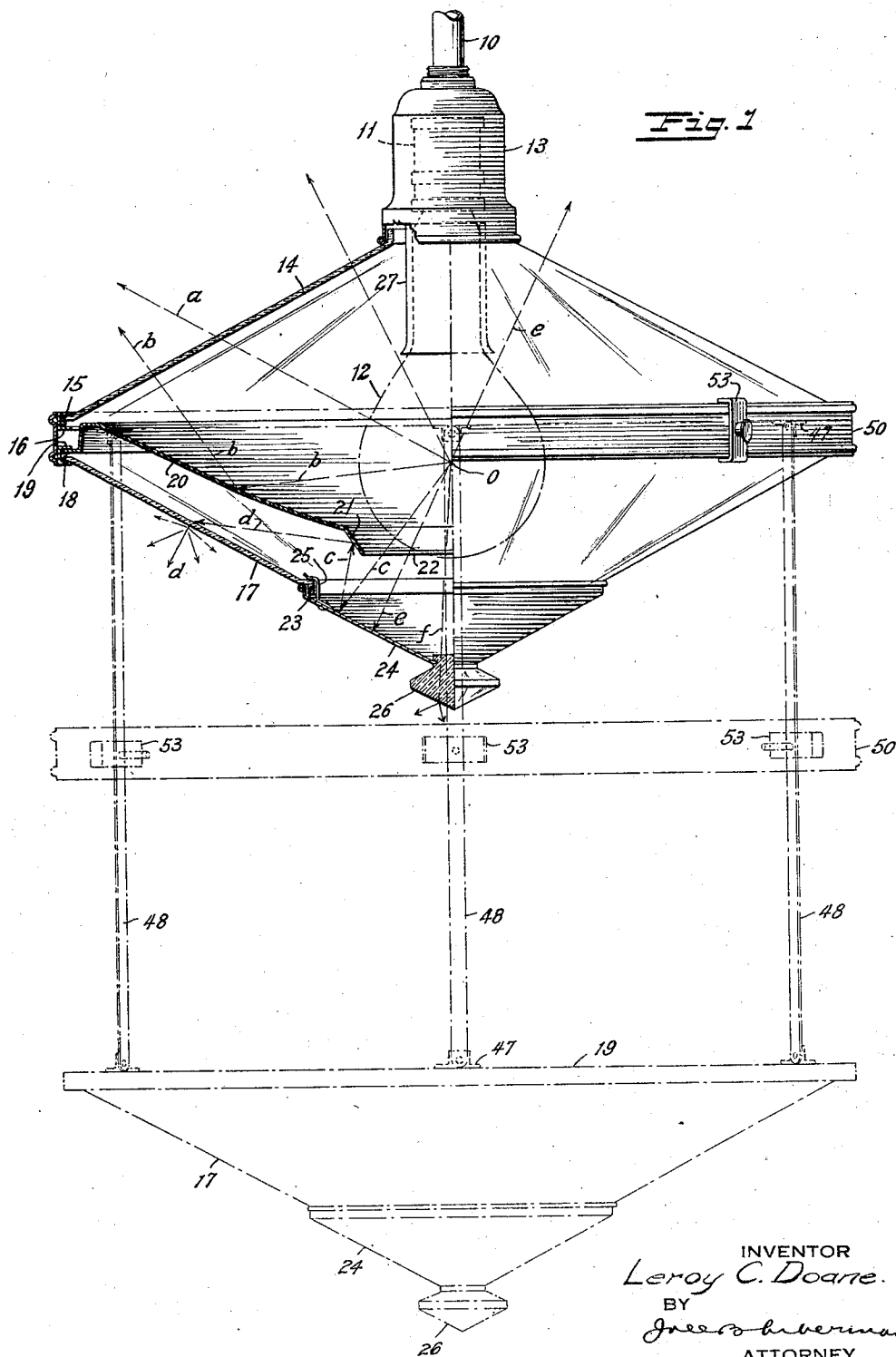
L. C. DOANE

1,873,308

INCLOSED LIGHTING UNIT

Filed Sept. 1, 1928

3 Sheets-Sheet 1



Aug. 23, 1932.

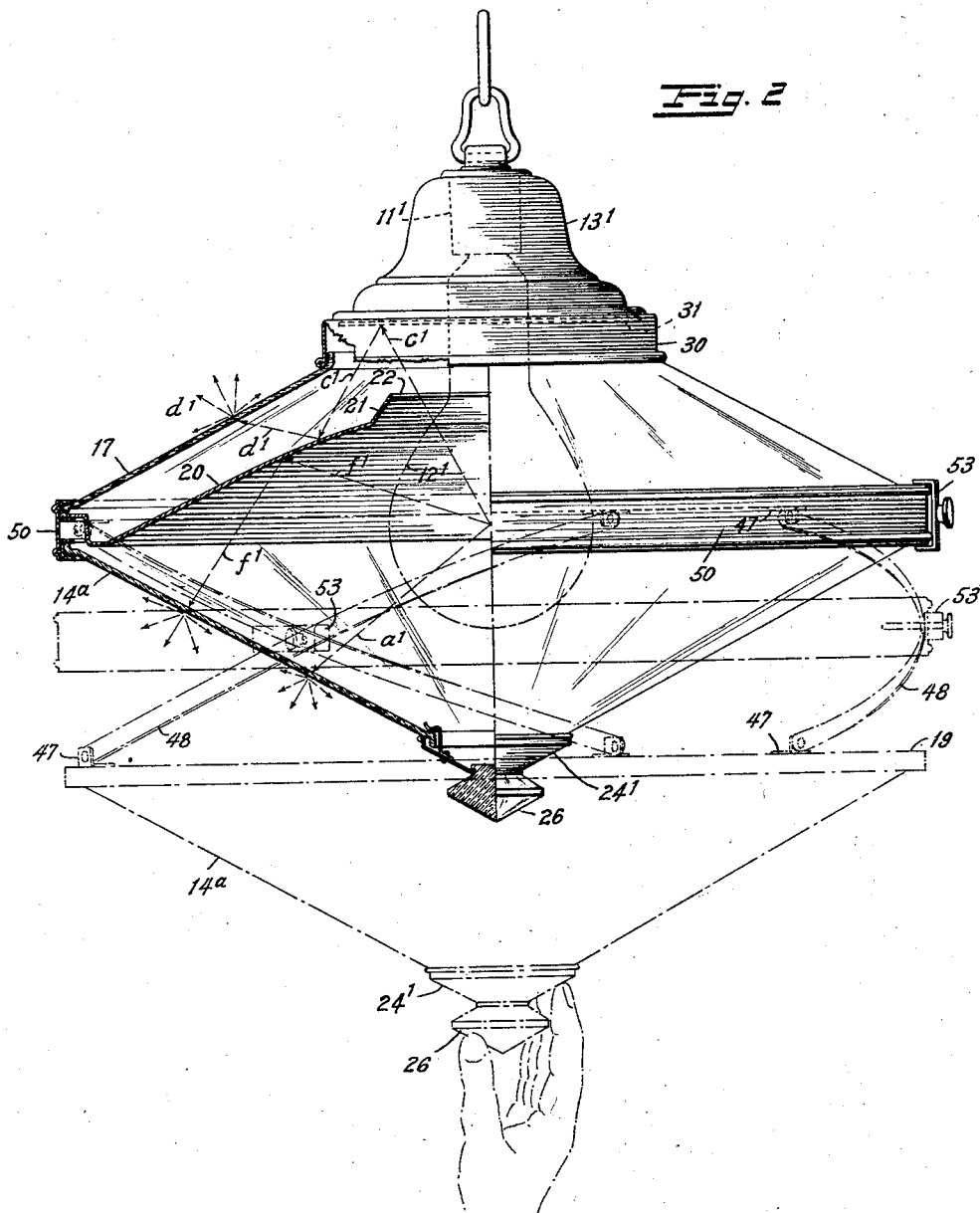
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3 Sheets-Sheet 2



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Fig. 3

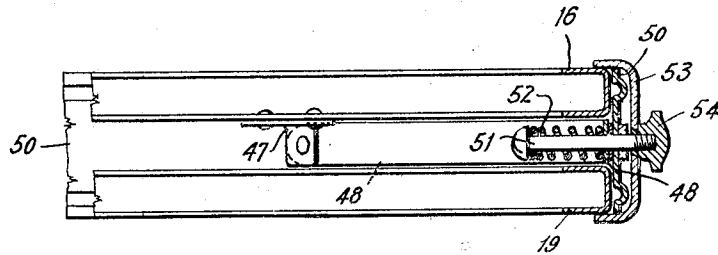


Fig. 4

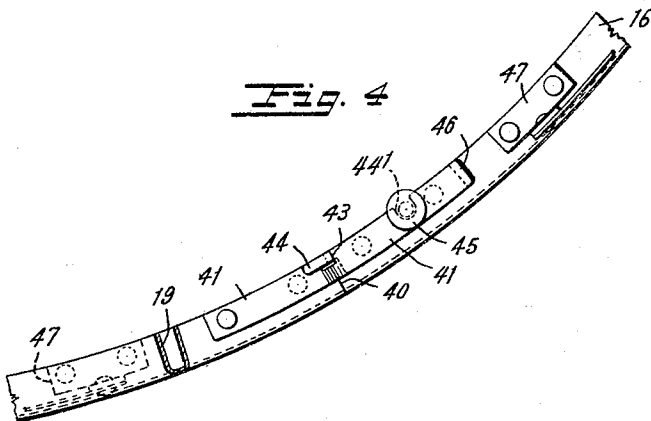
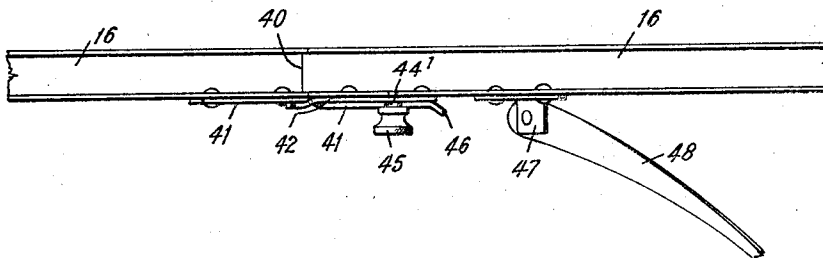


Fig. 5



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INCLOSED LIGHTING UNIT

Application filed September 1, 1928. Serial No. 303,429.

The present invention relates to inclosed lighting units and is more particularly directed toward inclosed lighting units having an upper glass cover and a lower glass bowl supported from the cover, together with devices for fastening the glass parts together and supporting the lower part in either of two selected positions.

The present invention contemplates an inclosed lighting unit in which the upper glass cover is secured to a shade or globe support carried at the lower end of a suspension element such as a chain or the like. The suspension element also supports a lamp socket and lamp bulb, in any suitable manner. The lower glass part or bowl preferably made of diffusing glass, is supported from the periphery of the glass cover plate so that the bowl may be held either up close to the cover plate so as to normally form an inclosed lighting unit or so that the bowl may be lowered sufficiently to separate it from the cover plate to permit access to the interior of the unit for relamping and cleaning.

The present invention also makes provision for employing inclosed reflecting members so arranged that substantially all of the light may be directed upwardly or downwardly according to the position in which the principal reflecting member is placed. Auxiliary reflectors are provided so as to redirect some of the light onto the outside of the main reflecting member for the purpose of rendering the shaded or screened glass part luminous.

A further object of the present invention is to provide a supporting device adapted to be secured to the peripheral edges of the two glass parts and to support these glass parts either close together or to suspend one of them a considerable distance below the upper part.

A further object of the invention is to provide such a supporting device wherein the elements which support the under glass part when lowered are capable of being collapsed and housed within the device which supports or fastens together the two glass parts.

A further object of the invention is to provide a line of inclosed lighting units which

may be assembled out of a comparatively small number of different parts so that one may have an indirect lighting luminous bowl, semi-indirect lighting units, diffused lighting units and direct lighting units.

Other and further objects of the invention will be apparent as the description proceeds.

The accompanying drawings show, for purposes of illustration, an indirect lighting luminous bowl and a direct lighting unit, together with a suitable supporting device for fastening together the two glass parts employed in the units. It will of course be understood that the drawings are illustrative of the invention and not limiting the same.

In these drawings:

Figure 1 is an elevational view with parts in section illustrating an indirect lighting luminous bowl, the parts being shown in full lines in the usual operating position and with parts shown in dotted lines in the position assumed when lowering the bowl to permit relamping and cleaning;

Figure 2 is a view similar to Figure 1 illustrating the parts assembled for a direct lighting unit;

Figure 3 is an enlarged sectional view of the supporting device intermediate the two glass parts; and

Figures 4 and 5 are fragmentary plan and elevational views of a split clamping ring adapted to be fastened to the glass parts.

In the form of construction shown in Figure 1, the indirect lighting luminous bowl A is supported from the pipe 10. This pipe also carries a lamp socket 11, bulb 12, and socket cover and shade support 13. This socket cover and shade support may be of any suitable construction, such for example, as that shown in my application Serial Number 74,309, filed Dec. 9, 1925. It is adapted to support a glass cover plate 14. In the ordinary use of the unit this glass cover plate is permanently carried by the combined shade holder and socket cover, although it may, if desired, be released upon proper manipulation of the shade support.

In the form indicated in the drawings, the glass cover plate 14 is shown as conical and has its lower outer peripheral edge 15 placed

slightly above the center O of the light source. This outer edge of the glass cover plate 14 is carried in a channel shaped split ring 16. The lighting unit is also provided with a lower glass bowl 17 whose outer edge 18 is mounted in a split ring 19 similar to the ring 16. These two rings 16 and 19 are fastened together by devices to be described.

As shown in Figure 1 the lower ring 19 also carries a metal reflector 20 preferably made of aluminum and of somewhat the configuration indicated. It is conical or dish shaped and as shown extends from near the outer edge of the upper plate 14 down adjacent the lower part of the lamp bulb. It is provided with a downwardly drawn portion 21 and a comparatively large central aperture 22. The lower glass bowl or plate 17 has a central aperture 23 here shown as somewhat larger than the aperture 22 in this reflector. A metal cap 24 having a reflecting inner surface is secured by means of clips indicated at 25 to the glass plate 17. The metal cap 24 also preferably carries an etched crystal glass knob 26. The unit may also be provided with a lamp shield 27 outside the neck of the lamp bulb.

When the unit is assembled as indicated in Figure 1 and the upper glass part is in the form of crystal glass etched inside and the lower glass part is opal glass, the unit will act as an indirect luminous bowl. Some of the light will pass directly through the glass cover plate as indicated by the ray *a*. Some of the light will be reflected by the upper surface of the reflector 20 and pass up through the glass cover plate as indicated by the ray *b*. A small amount of light will pass through the hole 22 in the reflector 20 and will be reflected back by the inner surface of the metal cap 24 to fall on the outside of the reflector 20 as indicated by the ray *c*. This reflected light will be scattered up underneath the reflector 20 and will pass out through the lower opal glass bowl or plate as indicated by the ray *d*. Other rays of light will be reflected back by the reflector or cap 20 and will pass up through the top of the unit, as indicated by the ray *e*. It will thus be seen that most of the light is sent upwardly and that only a small amount of light is permitted to reach the lower glass bowl. This will be sufficient, however, to render the lower bowl luminous. A small amount of light will also pass down through the glass knob as indicated by the ray *f*, and will be scattered as indicated.

When it is desired to employ the unit illustrated in Figure 1 as a semi-indirect unit, the aluminum reflector 20 may be omitted. Direct light will then fall on the lower glass plate or bowl 17 and be diffused.

When the unit is to be employed as a diffused lighting unit, the aluminum reflector

20 is omitted and the upper glass plate is preferably made of opal glass.

The direct lighting unit shown in Figure 2 employs many of the same parts shown in Figure 1 as being assembled for an indirect luminous bowl. The socket is indicated by 11', the lamp by 12' and the socket cover by 13'. This socket cover is preferably associated with a form of shade support, such as shown in my Patents 1,571,578 or 1,580,711, either of which employ a skirt portion 30 adapted to receive the lip of a large glass bowl. The skirt 30 of the canopy is preferably the same size as the metal part of the metal cap 24. This canopy is adapted to receive and support a glass cover plate 17*a*, which may be of the same shape, size and type of glass as the lower glass bowl 17 as shown in Figure 1. These two glass parts are preferably alike and interchangeable. The lower edge of this glass part, now a cover plate, instead of a lower bowl, is fastened in the channel shaped split ring 16, in a manner to be described. Preferably associated with this upper glass plate and upper split ring, is the aluminum reflector 20 which may be the same size and shape as the reflector 20 shown in Figure 1 except that now it is inverted and carried above the light source instead of below the light source. The lower glass bowl or plate 14*a* may be the same size and shape as the glass cover plate 14 used in the form of construction shown in Figure 1. Instead, however, of being made of crystal glass, it is preferably made of opal glass. This glass plate 14*a* has a small central opening which normally fits the small socket 13. This opening is now closed by a metal cap 24', which carries a glass knob 26 similar to the knob 26 shown in Figure 1.

The canopy 13' shown in Figure 2 also carries a metal reflector 31 in the form of a flat aluminum disk which surrounds the neck of the lamp.

When the parts are assembled as indicated in Figure 2 and the opal glass is used for the top and bottom, the unit acts as a direct lighting unit. Light passes downwardly through the lower glass part 14*a* and is diffused as indicated by the light ray *a'*. Other light rays are reflected by the lower surface of the reflector 20 and pass down through the glass bowl 14*a* as indicated by the rays *b'*. Other rays of light pass upwardly through the hole 22 in the reflector 20 and are reflected back by the reflecting ring 31 so as to fall on the outside of the reflector 20 as indicated by the rays *c'*. This light is scattered about above the reflector and passes out through the glass cover 17, thereby providing soft ceiling illumination, as indicated by the rays *d'*. The glass knob 26 is rendered luminous by light passing through it as before described.

When the unit indicated in Figure 2 is to

be employed as a diffused lighting unit, the aluminum reflector 20 may be omitted.

The rings 16 and 19 employed with the glass parts 14 and 17 may be identical. They are preferably in the form of channel shaped rings split at 40 as indicated in Figures 4 and 5.

The locking device provided for fastening the parts together may include straps 41 and 42 riveted to the channel-shaped split ring. The strap 41 is notched as indicated at 43 to receive the bent prong or tip 44 of the strap 42. The strap 41 is also notched at 44 to receive a clamping screw 45 threaded into the strap 42. The tip of the strap 41 is bent as indicated at 46 to facilitate manipulating the parts.

When the split ring is locked together as indicated in Figures 4 and 5 the glass part is securely held in place and surrounded by the metal ring.

Each of the rings 16 and 19 carry a number of lugs 47. The two rings are assembled so that the fastening devices 41-46 and the lugs 47 are facing one another. Flexible metal straps 48 are pivotally connected to the lugs 47 and extend from the lugs on one ring to the corresponding lugs on the other ring. The parts 47 and 48 may be fastened together by hollow rivets indicated at 49.

The rings 16 and 17 and straps 48 are adapted to be housed inside a circular band 50. This band is slightly larger in diameter than the rings and is connected with the straps 48 by pivot pins 51. Each of these pins may be in the form of a screw which passes through a helical spring 52, through a strap 48, the band 50, and through U-shaped clips or yokes 53 which are secured to knobs 54. These U-shaped members 52 act as clamping devices.

When the lighting units are in use the parts are in the position indicated in full lines in Figures 1, 2 and 3 and at this time the rings 16 and 19 are close together. They are held in this position by the U-shaped clips or clamping devices 58 as shown in full lines in Figure 3. When one desires to obtain access to the inside of the lighting unit, the lower part of the lighting unit is supported in one hand while pulling out on the clips 52 sufficiently to turn them part way around as indicated in dot and dash lines in the lower of Figures 1 and 2. The force holding the lower bowl up may then be removed to allow the bowl to lower, at which time the bowl turns partly on its axis as the straps 48 swing on the pivot ends 51. This allows the band 50 and lower glass plate to be brought some distance down below the upper or stationary parts of the unit. When the lower bowl is partly lowered, the parts are in the position indicated in dot and dash lines in Figure 2, and when they are completely lowered, the parts are in the dot and

dash line indicated in Figure 1. The straps 48 are flexible and fold or bend so as to lie inside the outer band 50. They are hidden when the unit is in the usual operating condition.

The device for attaching the two glass parts together may be entirely symmetrical so that the glass plates may be fastened to either ring. Either ring may carry a glass part and the metal reflector 20, or the metal reflector 20 may be omitted if desired.

Inasmuch as the glass parts, metal reflector and rings and band may be the same for various types of units and standard forms of shade support may be employed, it is obvious that a less number of parts must be carried in stock to provide various styles of enclosed lighting units, as various conditions arise. It is also possible to readily convert a unit from one style to the other.

It is obvious that the invention may be embodied in many forms and constructions within the scope of the claims, and I wish it to be understood that the particular form shown is but one of the many forms. Various modifications and changes being possible, I do not otherwise limit myself in any way with respect thereto.

What is claimed is:

1. An indirect lighting unit comprising an upper glass cover plate, a lower glass bowl of substantially the same outside diameter, separate and independent rings detachably secured to the peripheral edges of the upper cover plate and lower glass bowl respectively, flexible straps connected between the rings for suspending the lower ring and the bowl a substantial distance below the upper ring and cover to permit access to the interior of the lighting unit, the straps being straight when the bowl is lowered and bending when it is raised means for concealing the bent straps when the bowl is raised adjacent the cover, and means for holding the lower ring in the upper position.

2. In an enclosed lighting unit, the combination with a lamp socket, socket cover and lamp bulb assembled together and adapted to be suspended from above, of a two part glass enclosure for the bulb, the upper part being fixedly supported by the socket cover and carried above the lamp bulb, and means for supporting the lower part with its outer edge close to the outer edge of the upper part, or with the two glass parts widely separated to permit access to the interior, said means allowing the lower part to be moved axially downward and rotating it partially about the axis.

3. In an indirect lighting unit, in combination, an upper glass cover plate, a lower glass bowl, rings surrounding the peripheries of the plate and bowl, and means to support the rings close to one another or widely separated to permit access to the interior of the

lighting units, the means for holding the ring in the lower position including flexible straps extending from one ring to the other ring and having fixed pivotal connections at their ends with each of the rings.

4. An enclosed lighting unit having a lower dish-shaped light-diffusing glass part, an upper glass cover, an enclosed electric lamp, a reversible metal reflector, means to mount the reflector in fixed position relative to either glass part, the reflector screening the glass part with which it is mounted and reflecting light toward the other glass part, and means for normally supporting the glass parts close to one another, and for suspending the lower part and the reflector, when mounted with said lower part a substantial distance below the cover to permit access to the interior.

5. An enclosed lighting unit having a lower dish-shaped light-diffusing glass part, an upper glass cover, an enclosed electric lamp, a reversible metal reflector, means to mount the reflector in fixed position relative to either glass part, the reflector screening the glass part with which it is mounted and reflecting light toward the other glass part, and means for normally supporting the glass parts close to one another, and for suspending the lower part and the reflector, when mounted with the said lower part a substantial distance below the cover to permit access to the interior, said means including rings mounted about the peripheries of the glass part, a band adapted to receive the rings and flexible metal straps attached to the band and connected with the rings.

6. An enclosed lighting unit having a lower dish-shaped light-diffusing glass part, an upper glass cover, an enclosed electric lamp, a reversible metal reflector, means to mount the reflector in fixed position relative to either glass part, the reflector screening the glass part with which it is mounted and reflecting light toward the other glass part, and means for normally supporting the glass parts close to one another, and for suspending the lower part and the reflector, when mounted with the said lower part a substantial distance below the cover to permit access to the interior, said means including means which effects an axial movement of the lower glass part and causes a partial rotation thereof.

7. An enclosed lighting unit having a lower dish-shaped light-diffusing glass part, an upper glass cover, an enclosed electric lamp, a reversible metal reflector, means to mount the reflector in fixed position relative to either glass part, the reflector screening the glass part with which it is mounted and reflecting light toward the other glass part, and an auxiliary reflector independent of the first reflector and mounted adjacent the screened glass part for reflecting light on to the outside

of the first reflector for illuminating the screened glass part.

8. An enclosed lighting unit having a lower dish-shaped light-diffusing glass part, an upper glass cover, an enclosed electric lamp, a dish-shaped reversible metal reflector having a centrally disposed aperture and being carried between the glass parts, the reflector when mounted in one position screening the lower part from direct light and having the inner reflecting surface below the lamp, and when mounted in the other position screening the cover from direct light, and having its inner reflecting surface above the lamp, and an auxiliary reflector for reflecting light received through the aperture in the first reflector onto the outside of said reflector which redirects the light onto the screened glass part.

9. An enclosed lighting unit comprising two conically shaped glass parts of substantially the same outside diameter and having centrally disposed apertures of a different size, the parts being one above the other, and facing one another to enclose an electric lamp, a lamp socket, a socket cover and shade holder co-operative with the aperture in the upper glass part for supporting the same, a reversible metal reflector having an aperture intermediate in size between the size of the apertures in the glass parts, the reflector being carried between the glass parts and shaped to screen one glass part and reflect light toward the other part, coupling means between the two glass parts for supporting the lower part from the upper part, said means being capable of holding the parts close together to enclose the lamp or widely separated to permit access to the interior, and an auxiliary reflector adjacent the larger sized aperture in the glass part to reflect light onto the outside of the first reflector for illuminating the screened glass part.

10. An enclosed lighting unit comprising two conically shaped glass parts of substantially the same outside diameter and having centrally disposed apertures, the parts being one above the other, and facing one another to enclose an electric lamp, a lamp socket, a socket cover and shade holder co-operative with the aperture in the upper glass part for supporting the same, coupling means between the two glass parts for supporting the lower part from the upper part, said means being capable of holding the parts close together to enclose the lamp or widely separated to permit access to the interior, and a fitter carried by the lower glass part for closing the hole therein.

11. An enclosed lighting unit comprising a socket cover, a lamp socket, an electric lamp in the socket, two conically shaped glass parts of substantially the same outside diameter facing one another to provide space to enclose the electric lamp, means for support-

ing the upper glass part from the socket cover, means for supporting the lower glass part from the upper glass part, a centrally apertured reversible metal reflector carried between the two glass parts, means to mount the reflector in fixed position relative to either glass part, the reflector screening the glass part with which it is mounted and reflecting light toward the other glass part, and a centrally disposed auxiliary reflector adapted to receive light through the aperture and reflect it onto the outside of the first named reflector to illuminate the screened glass part.

12. In combination, two rings each adapted to embrace the periphery of a glass shade, a plurality of flexible straps pivotally connected at their ends to the rings and an outer band to which the straps are pivotally connected intermediate their ends, the straps and rings being collapsible to place them inside the band.

13. A bowl support for lighting units comprising two rings, one adapted to be attached to a support while the other is attached to a bowl to support the same, an outer band adapted to receive both rings, means to clamp both rings in place within the band, and members fastened to the band and both rings for supporting the band and lower ring spaced below the upper ring.

14. A bowl support for lighting units comprising two rings, one adapted to be attached to a support while the other is attached to a bowl to support the same, a narrow outer band adapted to receive both rings, clamping devices carried by the band and engageable with both rings to secure them within the band, and members fastened to the band and both rings for supporting the band and lower ring spaced below the upper ring when the clamping devices have been released.

15. A bowl support for enclosed lighting units comprising two rings, one adapted to be attached to a support while the other is attached to a bowl to support the same, a clamping means to fasten the two rings together adjacent one another, and links independent of the clamping means and connecting the rings together so that the lower ring may be support suspended a substantial distance below the upper ring.

16. A bowl support for enclosed lighting units comprising two rings, one adapted to be attached to a support while the other is attached to a bowl to support the same, clamping means to fasten the two rings together adjacent one another, and means to support the ring suspended a substantial distance below the upper ring, said means including horizontally pivoted flexible links which cause a partial rotation of the lower part relative to the upper part.

17. A locking device for a split ring adapted for attachment to the peripheries of

the shades and the like, said device comprising two straps each secured to an end of the ring and extending across the joint therein, one strap having two slots one of which receives an offset prong on the other strap, and a clamping screw carried by one end of the ring and entering into the other slot.

18. In an indirect lighting unit in combination, a glass cover plate and a glass bowl of the same outside diameter, rings about the edge of each glass part and secured thereto, and flexible metal straps having their ends pivotally connected to the two rings and adapted to act as tension members when suspending the lower ring below the upper ring or to flex so as to lie adjacent the rings when the rings are moved to be close together.

19. A globe holder for lighting units, comprising a substantially rigid upper supporting ring, a lower bowl-receiving ring of substantially the same diameter, and a plurality of wide, thin sheet metal strips flexible in one direction only and having their ends attached to the rings by pivotal mountings whose axes are radial of the rings, the strips having thin, flat faces toward the center and acting as tension members to suspend the lower ring from the upper ring and flexing to conform to the curvature of the rings when the lower ring is raised to be adjacent to the upper ring.

Signed at Meriden, in the county of New Haven and State of Connecticut, this 21st day of August, 1928.

LEROY C. DOANE.