United States Patent

[11] **3,601,600**

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[45] Patented **Aug. 24, 1971**
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[54] **LIGHTING UNIT**
13 Claims, 7 Drawing Figs.

[52] **U.S. Cl.** ..... **240/81 R,** 240/108
[51] **Int. Cl.** **B44d 3/64**
[50] **Field of Search** ..... 240/41.6, 61, 81 A, 81 P, 81 BC, 81 BA, 84, 103, 105, 104, 108, 109, 110, 128, 144; 16/136, 191

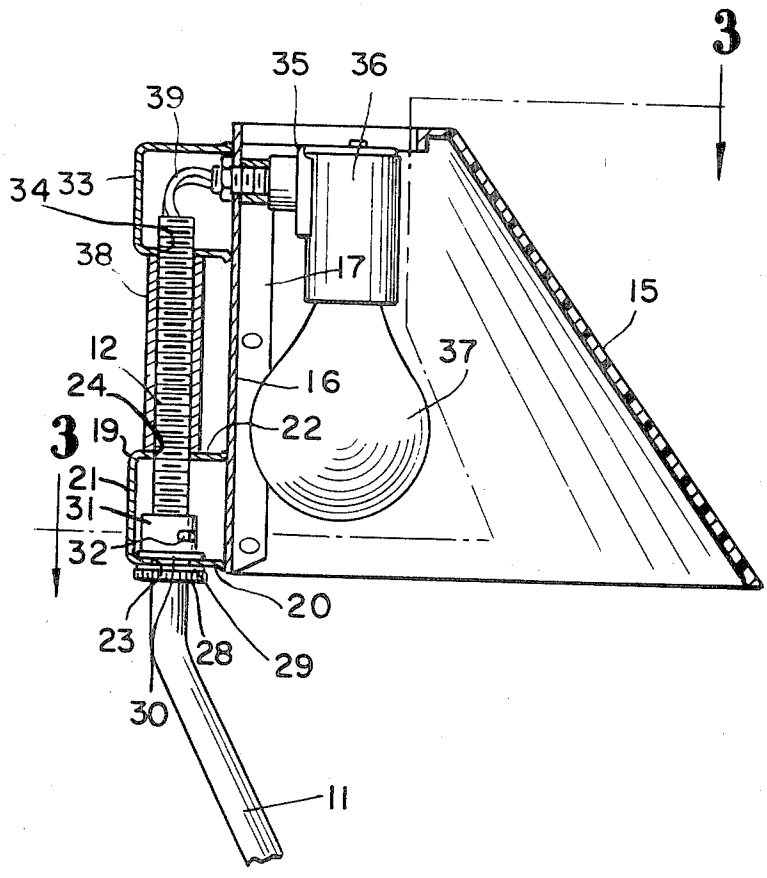
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Primary Examiner—Charles A. Ruehl
Assistant Examiner—C. E. Snee, III
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ABSTRACT: A lighting unit including a "half shade" assembly mounted for oscillation about an axis at or near the center of curvature of the shade and in which a receptacle for an electrically energized lamp is carried within the shade assembly for movement therewith. A feature of the disclosure is stop means for limiting the oscillatory movement of the shade assembly to just under 360°, the stop means comprising an element fixed with respect to the axis of oscillation of the shade assembly and having a protuberance, and an element moving with said shade assembly and having a peripherally-narrow region of its radially-inner surface disposed to interfere with the protuberance at points separated from each other by approximately 350° of shade assembly oscillation.



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SHEET 1 OF 2

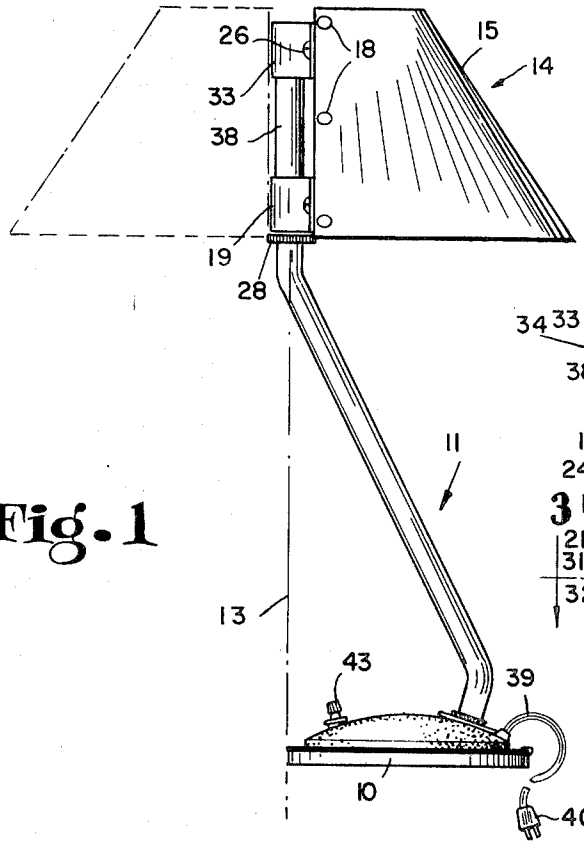


Fig. 1

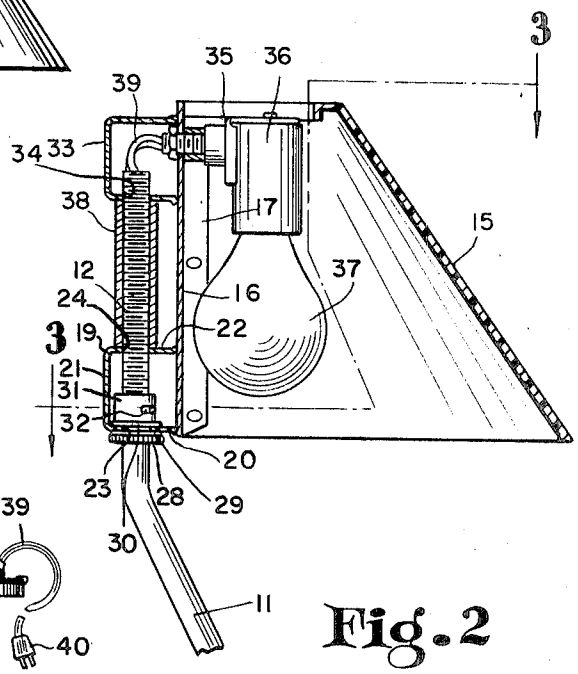


Fig. 2

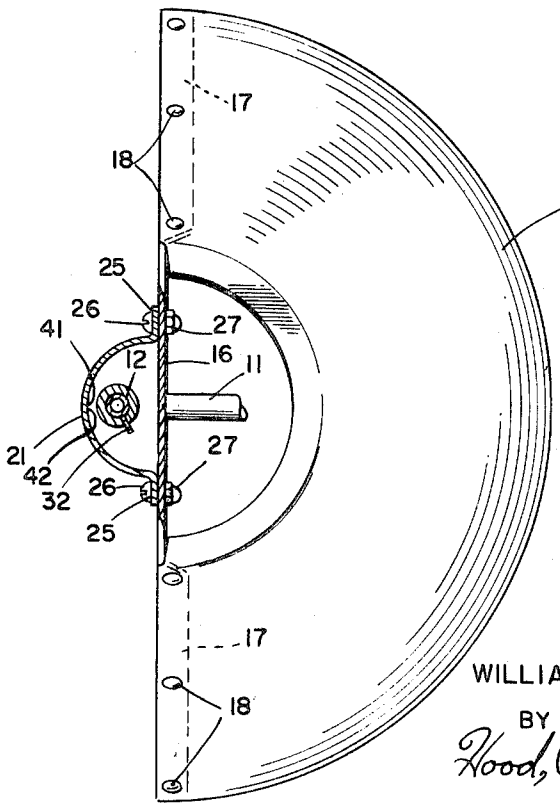


Fig. 3

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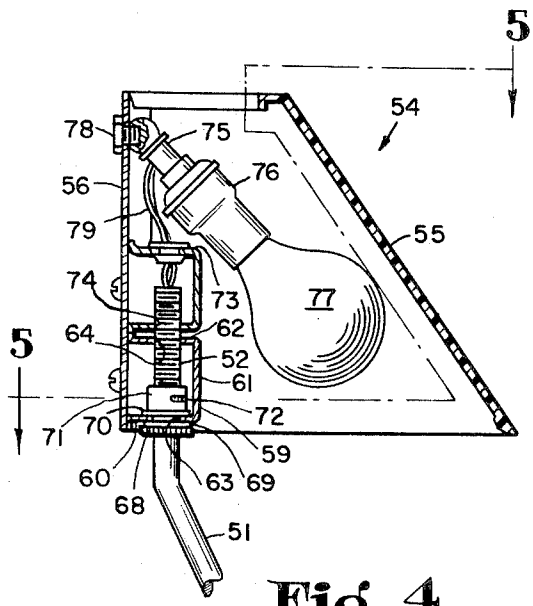


Fig. 4

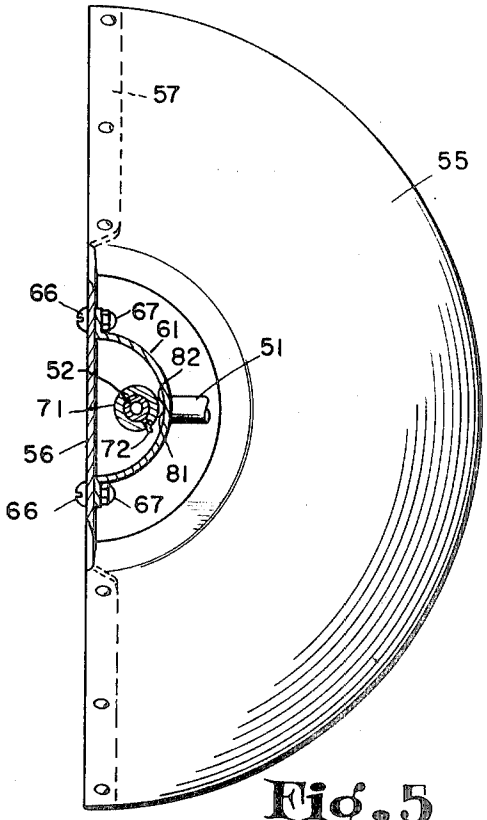


Fig. 5

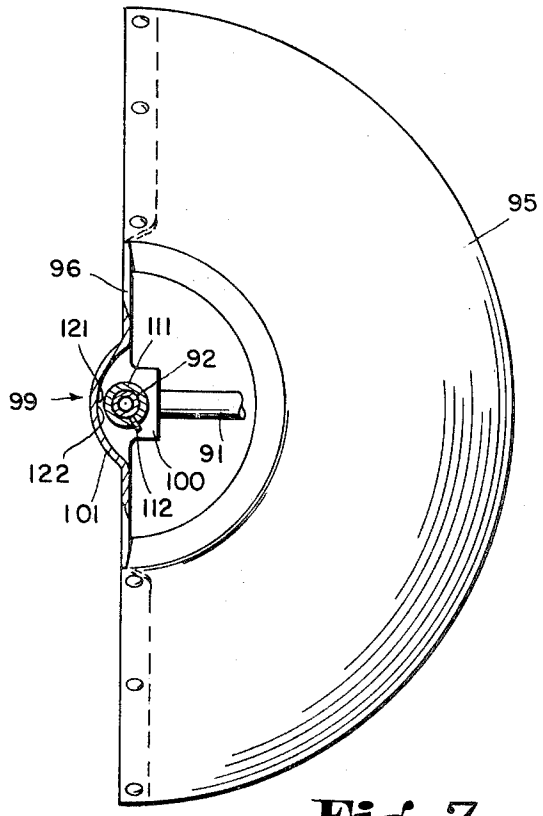


Fig. 7

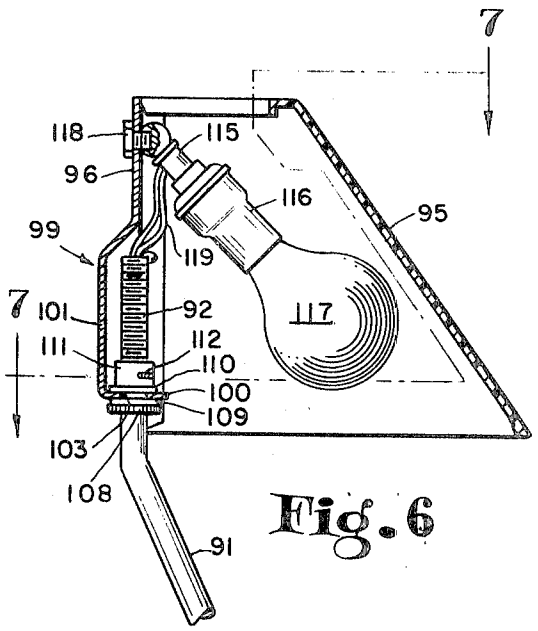


Fig. 6

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LIGHTING UNIT

The present invention relates to a lighting unit and more particularly to an adjustable shade assembly which consists of a particular (preferably semicircular) shade mounted for oscillation, through an arc of slightly less than 360°, about an axis close to its center of curvature, the receptacle for an electrically energized lamp being carried by, and moving with, the shade assembly. While I have illustrated and shall describe herein my invention embodied in a lighting unit of the character usually referred to as a table lamp or student lamp, it will be apparent that the invention is equally applicable to other types of portable lighting units such as those usually referred to as floor lamps, bridge lamps and the like, and to ceiling- or wall-mounted lighting units such as are usually referred to as lighting fixtures. It will also be apparent that, although I have illustrated an incandescent bulb and a suitable receptacle therefor, the invention is indifferent to the character of the lamp and is equally applicable to lighting units embodying fluorescent tubes or other known types of electrically energized lamps, with suitable receptacles therefor mounted within the shade assembly for movement therewith.

The primary object of the invention, then, is to provide a lighting unit which is so constructed and arranged that it will occupy a minimum of table, floor or wall space but will provide for wide adjustment of a shaded lamp to direct light to a desired area, while guarding against damage to the necessary electrical conductors. A further object of the invention is to provide, in such an assembly, and at minimum cost, suitable means for limiting the oscillation of the assembly about its axis of adjustment to an extremely long arc approximating, but not exceeding, 360°.

Still further objects of the invention will appear as the description proceeds.

To the accomplishment of the above and related objects, my invention may be embodied in the forms illustrated in the accompanying drawings, attention being called to the fact, however, that the drawings are illustrative only, and that change may be made in the specific constructions illustrated and described, so long as the scope of the appended claims is not violated.

In the drawings:

FIG. 1 is a side elevation of a lighting unit of the character usually referred to as a "student lamp" and embodying the present invention;

FIG. 2 is an enlarged, diametrical section through the shade assembly and its mounting, including a fragment of the standard;

FIG. 3 is a further enlarged view, partially in section, taken substantially on the line 3—3 of FIG. 2;

FIG. 4 is a section similar to FIG. 2 but showing a modified form of mounting;

FIG. 5 is an enlarged section taken substantially on the line 5—5 of FIG. 4;

FIG. 6 is a view similar to FIG. 2 but showing still another form of mounting; and

FIG. 7 is an enlarged section taken substantially on the line 7—7 of of FIG. 6.

Referring more particularly to FIGS. 1–3 of the drawings, it will be seen that I have illustrated a base 10 upon which is suitably mounted a standard 11 having a distal region 12 which is circular in cross section and which, throughout a portion of its length, is threaded as shown. In the particular embodiment of the invention illustrated, the standard 11 is provided with reverse bends and is so supported upon the base 10 that the axis of its distal region 12 lies substantially in the vertical plane 13 which includes an edge of said base 10.

A shade assembly embodying the present invention is illustrated generally by the reference numeral 14 and includes a shade proper 15 whose cross-sectional shape is an arc of a circle—preferably, a semicircle. In the illustrated embodiment, a plate member 16 joins the opposite ends of the arc defined by the shade 15 and is disposed in the diametrical plane of said

shade 15. The shade 15 may be formed of any desired material, but is preferably molded from translucent plastic and, while the member 16 may be formed of the same material, I prefer to use sheet metal for that purpose, said member being provided with terminal ears 17 which are received within the terminal regions of the shade 15 and there secured in place by means of rivets 18 or other suitable fastening means.

A lower bracket or swivel housing 19 comprises a floor 20, an upstanding, perimetral wall 21 and a ceiling 22, the floor and ceiling being formed with aligned openings 23 and 24, respectively. In the illustrated embodiment of the invention, the upstanding wall 21 is semicircular and terminates laterally in oppositely extending ears 25, 25 disposed in a common plane and secured to the outer surface of the member 16 by a suitable fastening means such as machine screws 26 penetrating perforations in said ears and in said member 16 and receiving cap nuts 27 on their inner ends.

A support member 28 is fixedly mounted upon the standard 11 and may preferably constitute a knurled nut threaded onto the region 12 of the standard. A washer 29 is loosely sleeved onto the standard to rest upon the member 28 and is preferably formed of self-lubricating plastic such as, for instance, nylon, "Teflon" or the like. The region 12 of the standard penetrates the openings 23 and 24 of the bracket 19 so that the floor 20 thereof rests upon the washer 29. A second washer 30 is preferably sleeved on the standard region 21 to rest upon the upper or inner surface of the bracket floor 20 and a collar 31 is received on the standard region 12 within the bracket or cover 19 to bear upon the washer 30 to restrain the bracket 19 against upward movement relative to the standard. The collar 31 may preferably be internally threaded so that it may be threadedly mounted on the standard region 12; but whether or not said collar is threaded, a setscrew 32 substantially radially penetrates said collar to engage the standard region 12 whereby said collar is restrained against movement relative to the standard region 12. As is most clearly to be seen in FIG. 3, the length of the set screw 32 is such that, after it has been set, its outer end will protrude beyond the peripheral surface of said collar.

An upper bracket or swivel cover 33, generally similar to the bracket 19 but devoid of any opening through its ceiling, is secured to the outer surface of the member 16, the floor of the bracket 33 being formed with an opening 34 aligned with the openings 23 and 24 and penetrated by the standard region 12 to assist in the journal mounting of the shade assembly. A carrier bracket 35 penetrates the member 16 and is secured thereto within the shade assembly to support a receptacle 36 for a lamp 37. As has been stated, while a conventional incandescent bulb 37 and a conventional receptacle 36 therefor have been illustrated, it will be apparent that any kind of lamp may be used with a receptacle designed for cooperation with the selected type of lamp.

Preferably, a sleeve 38 is loosely received on that portion of the standard region 12 which extends between the brackets 19 and 33. In the illustrated embodiment of the invention, the ceiling of the bracket 19 and the floor of the bracket 33 are slightly annularly dished around the openings 24 and 34 whereby the opposite ends of the sleeve 38, being received in those dished regions, are somewhat restrained against wobbling.

In the illustrated embodiments of the invention, the base 10 and the standard 11 are hollow to accommodate conventional wiring 39, including a male plug 40 and a switch 43, the wiring being led through the fitting 35 to the conventional terminals of the receptacle 36 for energizing the lamp 37.

Referring more particularly to FIG. 3, it will be seen that the axis of oscillation of the shade assembly 14 is the axis of the standard region 12 and that that axis is close to, but slightly offset rearwardly or outwardly from the center of curvature of the shade 15. It will also be perceived that the wall 21 is a circular arc whose center of curvature coincides with the center of curvature of the shade 15. Otherwise stated, the axis of oscillation of the shade assembly is parallel with, but offset

from, the center of curvature of the wall **21**. As a consequence, the mid point of the wall **21** is closer to the periphery of the collar **31**, in any position of adjustment of the shade assembly, than is any other point of the wall, and the wall **21** retreats from the periphery of the collar **31** in both directions from that mid point.

As has been stated, the length of the set screw **32** is so selected that, when said screw is solidly seated against the standard region **12**, the outer end of the screw will protrude beyond the periphery of the collar **31**. If the degree of that protrusion is very slightly greater than the distance between the collar periphery and the mid point of the wall **21**, it will be seen that, as the shade assembly is turned in a clockwise direction from its solid line position in FIG. **3**, the point **41** will interfere with the screw **32** to limit such clockwise turning movement; and as the shade assembly is turned in a counterclockwise direction from said solid line position, the point **42** will interfere with the protruding screw to limit turning movement in that direction. It will also be apparent that, if the screw length is properly selected, so that the points **41** and **42** are respectively offset equally and very slightly from the mid point of the wall **21**, the shade assembly **14** will be oscillable through a path of approximately 350° but will be affirmatively prevented from turning movement in excess of 360° which might result in twisting of the cord **39** and consequent damage thereto.

Thus, it will be apparent that the shade assembly and mounting of the present invention produces an extremely versatile lighting unit which will conserve space on, for instance, a desk top, while permitting light to be thrown to any one of a large plurality of positions relative to the base. For instance, the edge of the base **10** which lies in the plane **13** may be set very closely adjacent a wall against which the supporting desk is located, with the shade assembly in the full line position of FIG. **1**. Alternatively, the diametrically opposite edge of the base may be placed against the wall, with the shade arranged in the dotted line position of FIG. **1** to throw light upon an area of the desk top significantly removed from the wall. As a still further possibility, any portion of the perimetral edge of the base **10** may be set into a corner between adjacent walls, and the shade assembly can be turned to extend outwardly away from the wall corner on a line bisecting the corner angle, or may be turned into close adjacency to either wall.

The form of the invention illustrated in FIGS. **4** and **5** is an even greater conservator of space, in that the swivel housings are disposed inside the shade instead of outside as shown in FIGS. **1–3**. In FIGS. **4** and **5**, I have shown a standard **51** having a threaded cylindrical region **52** supporting a shade assembly indicated generally by the reference numeral **54** and comprising a shade proper **55** and a plate member **56** having tongues **57** secured to opposite ends of the shade **55**.

A lower bracket or swivel cover **59** is formed to provide a floor **60**, an upstanding wall **61** and a ceiling **62**, the floor and ceiling being formed, respectively, with aligned openings **63** and **64** penetrated by the standard region **52**. Screws **66** and cap nuts **67** secure the bracket **59** to the inner surface of the member **56**. A support member **68** is suitably mounted on the standard **51** and an antifriction washer **69** is interposed between the support member **68** and the floor **60** of the bracket **59**. A similar washer **70** bears upon the upper surface of the bracket floor **60** and is held in place by a collar **71** provided with a set screw **72**.

An upper bracket or swivel cover **73** is formed in its floor with an opening **74** penetrated by the standard region **52**, said bracket being similarly secured to the inner surface of the plate **56**. A carrier bracket **75**, supporting a receptacle **76** for an electrically energized lamp **77**, is secured in place within the shade by a screw **78** which penetrates the plate **56** and is threadedly received in said bracket.

It will be perceived that the structure just described is closely similar to the structure illustrated in FIGS. **1–3**, except for the fact that the brackets **59** and **73** are disposed within the shade assembly **54** rather than externally thereof. Suitable wiring for the receptacle **76** is suggested at **79**.

As in the previously described embodiment of the invention, the upstanding wall **61** of the bracket **59** is arcuate and preferably semicylindrical, the center of curvature of said wall being parallel with the axis of the standard region **52**, but offset to the left therefrom as viewed in FIG. **5** so that, in any position of adjustment of the shade assembly about the axis of the standard region **62**, a point mid way between the ends of the arcuate wall will be closer to the axis of oscillation of the shade than is any other point on said wall. Thus, as the shade assembly is turned in a clockwise direction from the position of FIG. **5**, the point **81** on the inner surface of said wall **61** will interfere with the protruding end of the set screw **72** to limit such turning movement; and as the shade assembly is turned in a counterclockwise direction from the position of FIG. **5**, the point **82** will interfere with the protruding end of the set screw **72** to limit such turning movement in the latter direction. As explained above in connection with FIGS. **1–3**, the relationship between the axis of curvature of the wall **61**, the axis of oscillation of the shade assembly **54** and the degree of protuberance of the set screw **72** will determine the magnitude of the oscillatory adjustability of the shade assembly **54**.

A still further form of the invention is illustrated in FIGS. **6** and **7** in which the standard **91** is provided with a cylindrical, threaded region **92** upon which is mounted for oscillation a shade assembly comprising a shade proper **95** and a plate member **96**. In this form of the invention, a bracket, indicated generally by the reference numeral **99**, is bent outwardly from the general plane of the member **96** to define an arcuate, upstanding wall **101**, with a portion slashed from its lower edge and bent inwardly to define a bracket floor **100** provided with an opening **103** there through. It will be apparent that, alternatively, the bracket **99** could be bent inwardly with its slashed lower edge bent outwardly to define an equivalent floor.

The standard region **92** penetrates the opening **103** whereby the bracket floor **100** is supported from a support member **108** similar to the member **68**, with an antifriction washer **109** interposed between said member **108** and said floor **100**. A second antifriction washer **110** rests upon the upper surface of the floor **100** and is held in place by a collar **111** fixed to the standard region **92** by means of a set screw **112**.

A carrier bracket **115** supporting a receptacle **116** for a lamp **117** is mounted within the shade assembly by means of a headed screw **118** penetrating the member **96** and threadedly received within the bracket **115**, energizing wiring for the receptacle **116** being suggested at **119**.

If desired, suitable means (not shown) moving with the plate member **96** may be provided to engage the upper portion of the standard region **92** to improve the journal mounting of the shade assembly on the standard.

As will be obvious from inspection of FIG. **7**, the axis of oscillation of the shade assembly in this form of the invention coincides with the center of curvature of the shade proper **95**, while the center of curvature of the upstanding wall **101** is parallel to, but significantly offset from, said axis of oscillation, whereby, as the assembly is turned in a clockwise direction about the axis of the standard region **92**, the point **121** will interfere with the screw **112** to limit such movement; and as the shade assembly is moved in a counterclockwise direction about said axis, the point **122** on the inner surface of the wall **101** will interfere with the set screw **112** to limit such movement in that direction.

Thus, all illustrated embodiments of the invention possess in common the advantages of simplicity, inexpensiveness, versatility, space conservation and the provision of novel stop means for limiting oscillation of the shade assembly about the standard axis to a value close to, but slightly less than 360°the lamp receptacle in all forms being mounted for movement with the shade and the axis of oscillation of the shade assembly being, in all forms, either coincident with, or close to, the center of curvature of the shade proper.

While I have shown shades whose horizontal sections are circular arcs, and have referred to them as "part-circular," "semicircular," or "arcuate," it will be apparent that, just as an arc is recognized generally as a multiplicity of infinitely short,

angularly related straight lines, so a shade having a polygonal horizontal section of 180° perimetral extent with a subtending flat side is, in the environment of the present invention, the full equivalent of the shades illustrated herein; and the terms "arc," "arcuate," "part-circular," and the like, as used herein, are to be interpreted to include such polygonal shapes.

It will be apparent, of course, that, if desired, various accessories such as diffusers, filters, polarizers, diminishers, intensifiers, magnifiers, reducers or blockers could be associated with the assembly disclosed herein without affecting the advantages achieved by the above described structure.

What I claim is:

1. A lighting unit including a standard having a region of circular cross section, a shade formed to provide a generally arcuate portion and a subtending portion, means fixed relative to said subtending portion and engaging said standard region, at a point close to the center of curvature of said arcuate portion, to support said shade from said standard for oscillation about the axis of said standard portion, and a lamp receptacle supported within said shade for movement therewith about said axis.

2. The lighting unit of claim 1 in which said point substantially coincides with said center of curvature.

3. The lighting unit of claim 1 in which said point is slightly offset outwardly from said center of curvature.

4. The lighting unit of claim 1 in which said point is slightly offset inwardly from said center of curvature.

5. The lighting unit of claim 1 including means on said standard region and cooperative with said means which is fixed relative to said subtending portion to limit oscillation of said shade to less than 360°.

6. The lighting unit of claim 1 in which said means includes a wall portion which is eccentric relative to said axis, said standard being provided with a means for interfering with said wall portion to limit oscillatory movement of said shade.

7. The lighting unit of claim 1, including a radially outward protuberance on said standard, said means including a wall which is eccentric relative to said axis, said wall including a portion disposed to interfere with said protuberance to limit movement of said shade.

8. The lighting unit of claim 5 in which said cooperative means permits substantially 350° of oscillatory movement of said shade.

9. The lighting unit of claim 7 in which said wall is part-cylindrical upon an axis parallel with, but offset relative to, the axis of said standard-region, the magnitude of such offset being such as to produce such interference.

10. The lighting unit of claim 1 in which said means is a bracket formed to provide a floor and an arcuate wall upstanding from said floor, said floor being formed with an opening penetrated by said circular region of said standard, means on said standard engaging said bracket floor to support said bracket, a collar on said standard above said floor to restrain said bracket against movement away from said support means, said collar having a generally radially outward protuberance, and the center of curvature of said bracket wall being offset relative to the axis of said circular standard region whereby said protuberance will interfere with said wall to limit oscillatory movement of said shade about said axis.

11. The lighting unit of claim 10 in which said circular region of said standard is threaded, said bracket supporting means is a nut threadedly mounted on said region, an antifriction washer supported on said nut and engaged by the outer surface of said floor, a second antifriction washer supported on the inner surface of said floor, said collar being a nut threaded on said region above said floor and bearing on said second washer, and said protuberance being defined by a set-screw transaxially penetrating said last-named nut to engage said standard and protruding outwardly from said nut.

12. The lighting of claim 1 including a base, said standard being supported from said base with the axis of said circular region of said standard disposed substantially in the vertical plane which includes an edge of said base.

13. The lighting unit of claim 1 including a base, said standard being supported from said base with the axis of said circular region of said standard disposed substantially in the vertical plane which includes an edge of said base.

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UNITED STATES PATENT OFFICE
CERTIFICATE OF CORRECTION

Patent No. 3,601,600 Dated August 24, 1971

Inventor(s) William P. Cannon

It is certified that error appears in the above-identified patent and that said Letters Patent are hereby corrected as shown below:

Column 1, line 3 after the title, "particular" should be -- part-circular --.
Column 4, line 66, insert a comma after "360°".
Column 6, line 1, (Claim 7, line 5) before "movement" insert -- oscillatory -- ; same column, line 31, (Claim 12, line 1) after "lighting" insert -- unit --.

Signed and sealed this 7th day of March 1972.

(SEAL)
Attest:

EDWARD M.FLETCHER,JR.
Attesting Officer

ROBERT GOTTSCHALK
Commissioner of Patents