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LIGHTING FIXTURE FOR SLOPING CEILINGS

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FIG. 1.

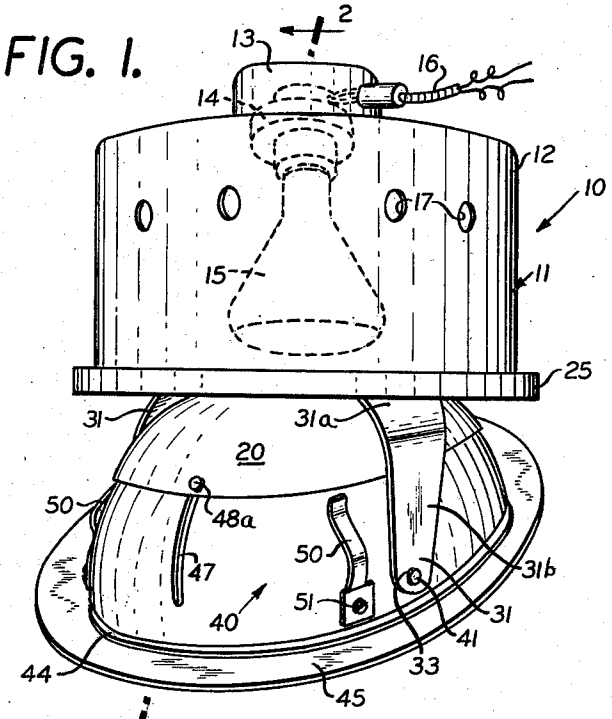
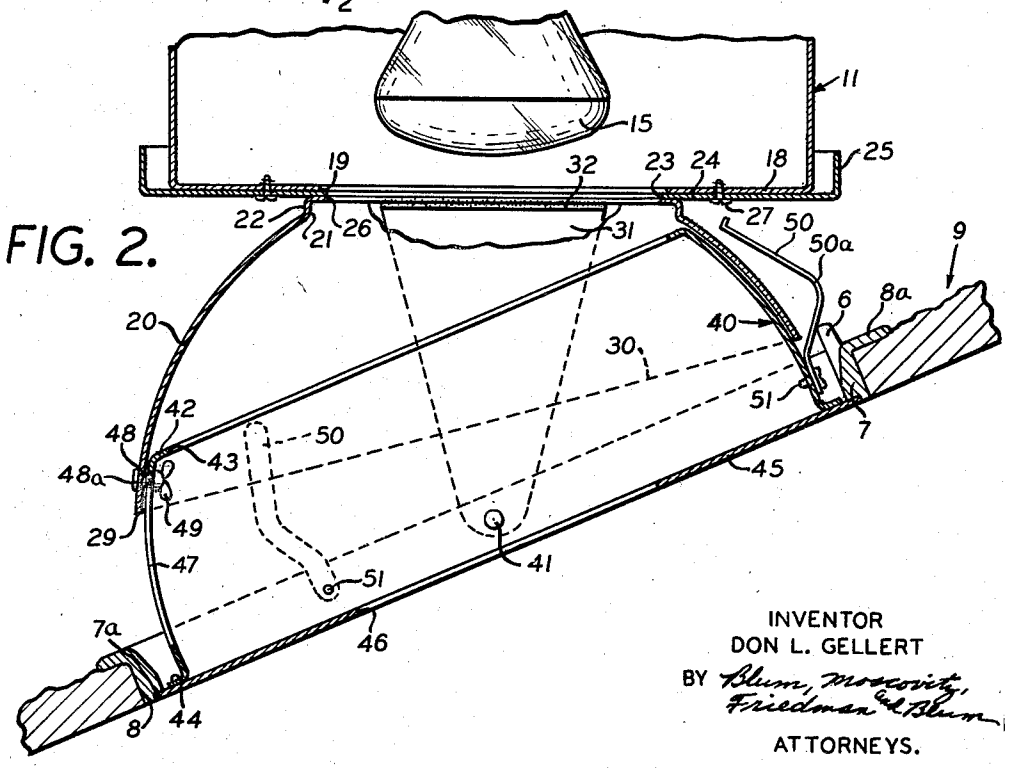


FIG. 2.



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LIGHTING FIXTURE FOR SLOPING CEILINGS

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This invention relates to an improved recessed lighting fixture for a sloped ceiling.

The usual recessed ceiling lighting fixture is arranged with its axis extending vertically, for mounting upon a horizontal ceiling. When the ceiling is sloped, the fixture must be modified for mounting purposes, if the fixture is to be arranged with its axis extending vertically. In the past, constructions had to be improvised in order to adapt recessed fixtures to sloped ceilings, resulting in excessive cost of the fixtures and often resulting in bad lighting design.

An important object of the invention is to provide a recessed fixture of simple design, which can be readily mounted in ceilings of various slopes and which will insure proper light transmission through the ceiling opening.

Another object of the invention is to provide a recessed ceiling fixture for sloped ceilings, which can be readily adjusted so as to comply with the slope of a particular ceiling.

In accordance with the preferred embodiment of the invention, the fixture includes a housing having an upstanding axis and peripheral wall and a bottom opening and receiving a lamp. A part-spherical, downwardly-opening socket is fixed to the housing below and covering the bottom opening. The socket has a top opening registering with the housing bottom opening. Opposing ears are fixed to the housing and depend therefrom outside and below the socket. A bearing having open ends and a part-spherical peripheral wall is pivotally mounted between the ears below the socket and extends frictionally turnably into the socket.

The bearing has means, which may include a face ring, for mounting it in adjusted turned position in the opening of the sloped ceiling with the housing located above the ceiling. The ears are then turnable about their pivots to locate the axis of the housing in vertical position. The housing, socket and bearing together define a peripherally closed passage for transmission of light from the lamp to below the ceiling.

Other objects and advantages of the invention will become apparent from the following description, in conjunction with the annexed drawing, in which a preferred embodiment of the invention is disclosed.

In the drawing,

FIG. 1 is a perspective view of the fixture in accordance with this invention.

FIG. 2 is a section on line 2—2 of FIG. 1, showing the fixture mounted in a ceiling.

The drawings are substantially to scale of a working model of the invention, and reference is made to the drawing to complete this disclosure.

Upon reference to the drawing in detail, it will be noted that it shows a lighting fixture 10 for a sloped ceiling 9. Said sloped ceiling 9 has an opening 8 which is optionally circular and a mounting ring 7 received within said opening 8. Said ring 7 is conventional, and as illustrated is cylindrical with an upstanding top flange 8*a* which overlies the top of the ceiling 9. Said ring 7 has upstanding retaining pins 6.

The fixture 10 comprises a housing 11 which is to be mounted so that its axis is upstanding and a peripheral wall 12 which is optionally cylindrical. Wall 12 may have ventilating holes 17. Junction box 13 is mounted on the top of the housing 11 and supports a socket 14

which extends downwardly through the top wall of the housing into the interior thereof to receive a lamp 15. Any suitable cable 16 may be led into the junction box 13. These various fixture parts are conventional and are not described in detail.

Housing 11 has a bottom wall 18 in the form of an in-turned annular bottom flange, having a central opening 19 serving as the bottom opening of the fixture. Lamp 15 is centered on opening 19 so that the light from lamp 15 can be transmitted downwardly through opening 19.

A part-spherical, but less than hemi-spherical, downwardly-opening socket 20 is fixed to housing 11 below and covering bottom wall 18. Specifically, the socket 20 has a top opening 21, around which is an upstanding short cylindrical flange 22. Said flange 22 connects with a further top, inwardly turned, annular flange 23. This flange 23 is fixed by welding or other suiable means to an overlying annular plate 24. This plate 24 optionally extends outwardly of housing 11 and has an outer peripheral cylindrical, upstanding flange 25. The plate 24 is fixed by metal screws 27 to housing bottom wall 18. The flange 23 and plate 24 have co-extensive openings which together serve as the top opening 26 of socket 20, which is in registration with housing bottom opening 19. The bottom edge 29 of socket 20 is preferably oriented at an angle other than 90 degrees to the vertical, or in other words the plane of bottom edge 29 is inclined, as indicated by the broken line 30.

Opposing ears 31 are fixed to housing 11 and depend therefrom outside and below socket 20. Specifically, each said ear 31 has a top horizontal flange 32 fixed to the bottom of plate 24 outwardly of its central opening. The ear 31 is curved outwardly downwardly at 31*a* to conform to the curvature of socket 20 and then depends generally vertically at 31*b* below the lower edge 29 of socket 20. The two ear portions 31*b* are diametrically opposed and have bottom opposed bearing openings 33.

Bearing 40 has a part-spherical, truncated peripheral wall conforming in curvature and diameter to socket 20. Bearing 40 extends between ear portions 31*b*. Lateral pivots 41 extend turnably through openings 33 and are fixed to the opposite sides of bearing 40, so that bearing 40 is pivotable upon the common pivot axis of said pivot pins 41. Said bearing 40 extends frictionally turnably into socket 20.

The upper end of bearing 40 has an inturned, planar, annular flange 42 which defines a top opening 43 of bearing 40. The bottom end of bearing 40 has an out-turned peripheral flange 44. This is fixed, by welding or the like, to the top face of an annular plate 45 whose central opening 46 serves as the bottom opening of bearing 40. This opening 46 is preferably of diameter somewhat comparable to that of opening 26. Plate 45 and flange 42 are preferably parallel to each other.

Any suitable means may be provided for releasably locking bearing 40 in selected position relative to socket 20. In the embodiment shown, bearing 40 is provided with a vertically extending slot 47, extending almost the full height of bearing 40. Slot 47 is centered between bearing openings 33. Screw 48 extends through an opening of socket 20, adjacent socket lower edge 29, and extends slidably through slot 47. Screw 48 has a head 48*a* against the outside of socket 20. A wing nut 49 is threaded onto screw 48 on the inside of and against housing 40. Accordingly, nut 49 is accessible through the ceiling opening. By loosening nut 49, bearing 40 may be turned on its pivot pins 41 to adjusted position, and screw 49 may then be tightened. Any other suitable tensioning means may be utilized in place of nut 49.

Any suitable means may be provided for mounting the bearing 40 within the ceiling opening. In the embodiment

shown, the plate 45 is received within groove 7*a* in the bottom of ring 7. Spring clips 50 are secured at their bottom by screws 51 to the peripheral wall of bearing 40. These springs 50 are outwardly bowed, at 50*a*, intermediate their ends. As a result, when the bearing is pushed upwardly through the ceiling opening, the respective clip portions 50*a* engage over the tops of the respective elements 6, so as to retain the fixture in place. It will be apparent that any other suitable mounting means may be provided.

Ordinarily, the ceiling 9 will be sloped in only one direction, as shown in the drawing. The ring 7 and clips 50 are located in selected turned position such that the plane transverse to the pivot pins 41 is vertical. Also, the plane of socket edge 29 is oriented in generally the same sense as the slope of ceiling 9. Slot 47 is located so that it is in the plane transverse to the pivot pins 41. It is then a simple matter to turn the socket until the axis of the housing extends truly vertically, and then to tighten the nut 49 to hold the parts in proper position.

The drawing shows screw 48 at the upper end of slot 47, with bearing 40 thereby tilted so that at its upper end its peripheral wall is close to flange 23. In the other extreme position of screw 48 in slot 47, flange 44 is approximately horizontal but with bearing 40 remaining retained within socket 20.

As clearly shown in the drawing, the socket and bearing together define a peripherally closed passage for transmission of light from 15 through the ceiling opening to below the ceiling.

While a preferred embodiment of the invention has been disclosed, and various possible changes, omissions and additions have been indicated therein, it will be apparent that various other changes, omissions and additions may be made in the invention without departing from the scope and spirit thereof.

What is claimed is:

1. Lighting fixture for a sloped ceiling comprising a housing having an upstanding axis and peripheral wall and a bottom opening and adapted to receive a lamp, a part-spherical, downwardly-opening socket fixed to said housing below and covering said bottom opening and having a top opening registering with said housing bottom opening, opposing ears fixed to said housing and depending therefrom outside and below said socket, a bearing having open ends and a part-spherical peripheral wall, pivot means pivotally mounting said bearing between said ears below said socket with said bearing extending frictionally turnably into said socket, said pivot means having an axis which is transverse to said housing axis, and means on said bearing for mounting it in adjusted turned position in the opening of a sloped ceiling with said housing above said ceiling, said ears being turnable about their pivots to locate the axis of said housing in vertical position, said housing, socket and bearing together defining a peripherally closed passage for transmission of light from said lamp to below said ceiling.

2. Lighting fixture in accordance with claim 1, said fixture also comprising means for releasably locking said bearing and said socket with said housing axis extending vertically, said locking means comprising a stud on said socket, said bearing having a vertical slot, said stud extending slidably through said slot and into the interior space of said bearing, and means on said stud within said bearing for clamping said socket and said bearing together.

3. Lighting fixture for a sloped ceiling comprising a generally cylindrical housing having an upstanding axis and peripheral wall and a bottom wall having a bottom opening of reduced diameter and adapted to receive a lamp, a part-spherical, but less than hemi-spherical, downwardly opening socket below said housing, said socket having a top opening of approximately the same diameter as said housing bottom opening, means fixing the top of said socket to said housing bottom wall with said openings registering, the bottom edge of said socket being inclined when the axis of said housing is vertical, opposing ears on opposite sides of said socket, said ears having top extensions fixed to said housing bottom wall, said ears having portions extending below said socket and diametrically opposed and parallel to each other, a bearing in the form of a truncated part sphere of the same diameter and curvature as said socket extending frictionally turnably into said socket and extending below said socket, opposed means pivotally connecting said bearing to said ear portions, said bearing having a vertical slot centered relative to the pivots, a stud on said socket at its lowest point and extending slidably through said slot and into the interior of said bearing, means on said bearing below said socket for mounting said bearing in adjusted turned position in the opening of a sloped ceiling with said housing above said ceiling, said ears being turnable about their pivot means to locate the axis of said housing in vertical position, and means within said bearing and cooperating with said stud for releasably clamping said bearing to said socket in the adjusted position of said fixture, said housing, socket and bearing together defining a peripherally closed passage for transmission of light from said lamp to below said ceiling.

4. Lighting fixture for a sloped ceiling comprising a housing having an upstanding axis and a peripheral wall and a bottom opening and adapted to receive a lamp, the bottom portion of said housing being shaped to form a downwardly opening socket, opposing ears fixed to said housing and depending therefrom outside and below said socket, an open-ended bearing, pivot means mounting said bearing between said ears below said socket and extending frictionally turnably into said socket, said pivot means having an axis which is transverse to said housing axis, means on said bearing for mounting it in adjusted turned position in the opening of a sloped ceiling with said housing above said ceiling, said ears being turnable relative to said bearing to locate the axis of said housing in vertical position, said housing, socket and bearing together defining a peripherally closed passage for transmission of light from said lamp to below said ceiling.

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