May 21, 1963 S. SCHAEFER 3,090,589

PIVOTAL SUPPORT MEANS FOR PENDANT LIGHTING FIXTURES INCLUDING GLOBE ATTACHING MEANS

Filed May 5, 1960

3 Sheets-Sheet 1

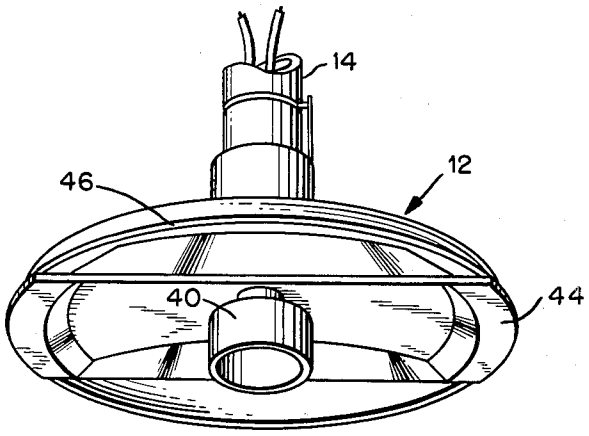


FIG. 1

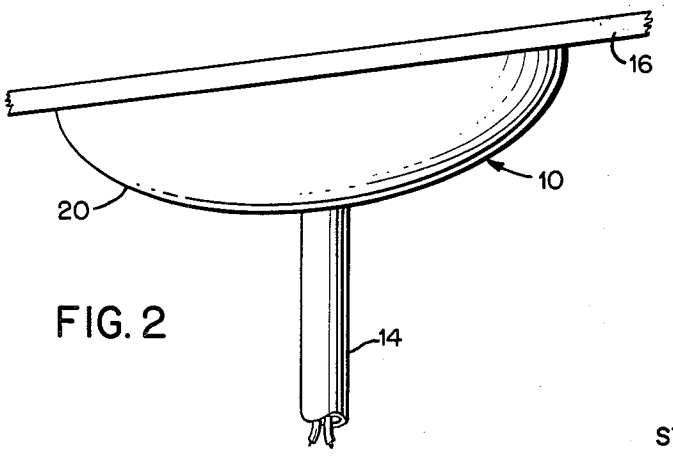


FIG. 2

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FIG. 9

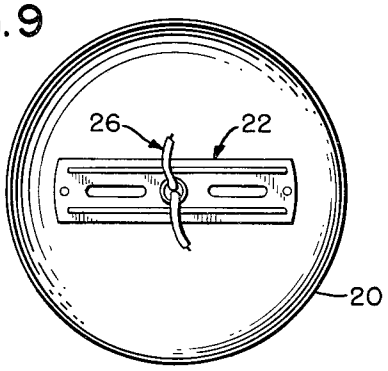


FIG. 8

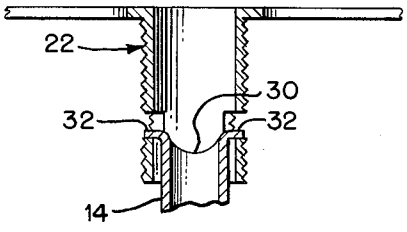
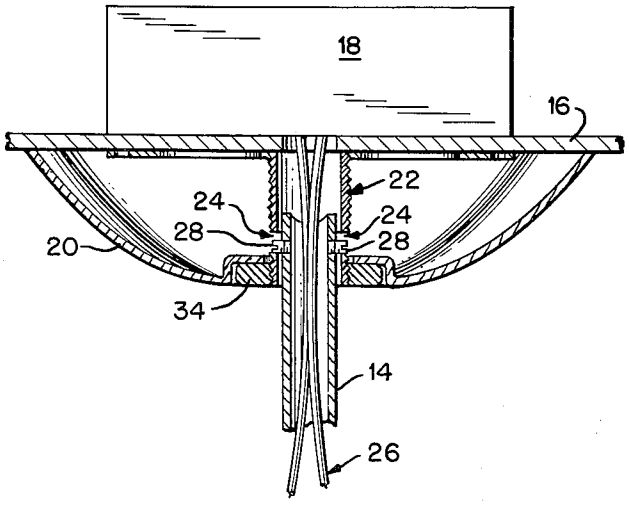


FIG. 3



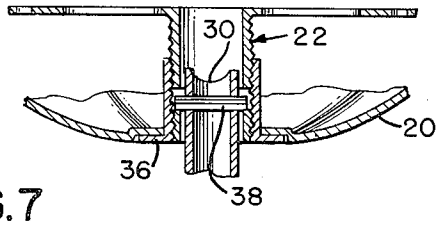
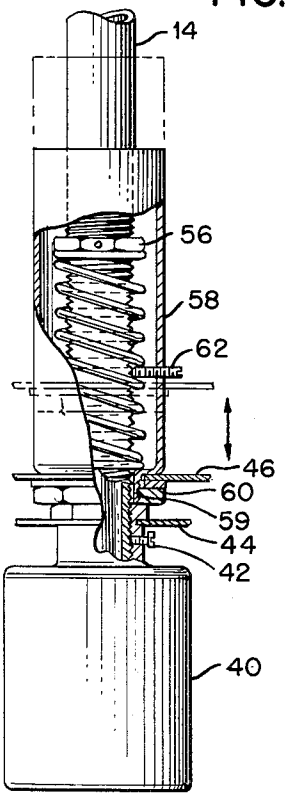


FIG. 7

FIG. 4



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FIG. 6

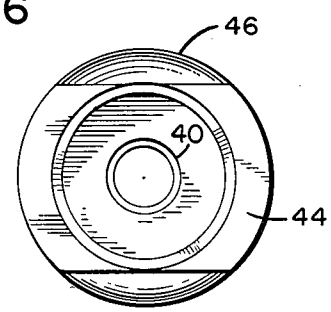
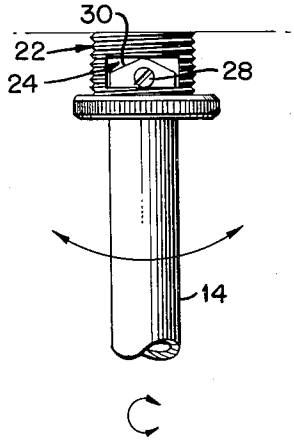


FIG. 3a



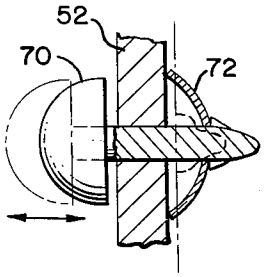


FIG. 5

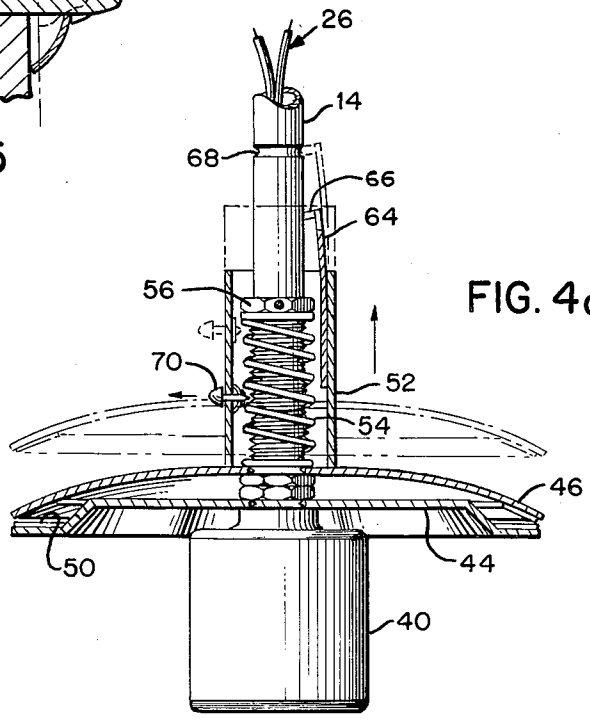
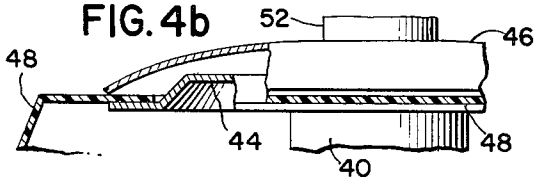


FIG. 4a

FIG. 4b



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3,090,589

PIVOTAL SUPPORT MEANS FOR PENDANT LIGHTING FIXTURES INCLUDING GLOBE ATTACHING MEANS

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7 Claims. (Cl. 248—318)

This invention relates to pendant lighting fixtures and more particularly to improvements in pivotal support means therefor and in lamp globe attachment means.

The present invention is particularly concerned with improvements in swivel supports for ceiling supported lighting fixtures. The swivel is constructed to be readily concealable within a smooth ceiling support cover structure. It employs a transversely extending pivotal support located in the pendant lamp holding shaft which is engaged with a pair of elongated opposed rectangular apertures in a ceiling support bracket. This structure permits the pendant support shaft to hang plumb in substantially all orientations of the support bracket upon a sloping ceiling. Prior art devices for accomplishing this same pivotal freedom in a pendant fixture have used ball-and-socket arrangements or analogous pivots having two planes of freedom similar to a universal joint. Both of these prior art devices are more costly in manufacture and do not lend themselves as readily to applicant's concealed pivot and cover construction.

Another aspect of applicant's invention is in the fixture globe or reflector holding mechanism which blends with the contour of the globe or reflector. The lower portion of the fixture incorporates a pair of horizontally disposed plates, the lowermost of which is suitably shaped so that it may be inserted into a conforming lamp globe aperture, whereupon the globe is rotated a quarter turn to positively engage it with the support plate. The upper horizontal plate is spring biased in a downward direction against the globe and lower plate, and acts to form a smooth, blending upper contour with a conventional globe assembly. The upper spring biased plate may be raised against the downward spring force to an upper position and locked therein to allow easy removal, cleaning or replacement of the globe.

It is therefore an object of the invention to provide a pendant lamp fixture which employs a simplified upper swivel support adaptable to flush design and to provide a lower globe holding mechanism which permits easy globe attachment and positive securing thereof.

Another object of the invention is to provide a pendant lamp swivel support which allows swinging freedom in one plane while not restraining rotational freedom of the pendant fixture support shaft.

A still further object of the invention is to provide a lamp globe holding arrangement wherein the globe is secured to the fixture by a quarter turn thereof and held in said position by a spring loaded pressure plate.

A further object of the invention is to provide a pendant lamp fixture which is simple in design, neat in appearance, durable in construction and economical to manufacture.

Other objects and advantages of the invention will become apparent and the invention will be understood from the following description and drawings in which:

FIG. 1 is a perspective view of the lower portion of the invention showing the globe holding mechanism;

FIG. 2 is a partial elevation view of the invention showing the upper ceiling swivel support housing;

FIG. 3 is a view similar to FIG. 2 showing the parts in cross section;

FIG. 3*a* is an enlarged side elevational view of a portion of the pivotal support employed in FIG. 3;

FIG. 4 is a broken sectional view of the lamp socket portion of the fixture showing the cover plate set screw locking means;

FIG. 4*a* is a cross sectional view similar to FIG. 4 showing various techniques for fastening the globe cover plate in a raised position;

FIG. 4*b* is a sectional view of part of a reflector in the holder shown in FIG. 4;

FIG. 5 is an enlarged sectional view of the spring biased plunger lock employed in FIG. 4*a*;

FIG. 6 is a reduced bottom plan view of FIG. 4*a*;

FIG. 7 is a cross sectional view of another embodiment of pivotal support means;

FIG. 8 is a cross sectional view of another embodiment of the invention; and

FIG. 9 is a top plan view of the fixture support bracket and swivel cover.

Referring to the drawings, an upper support section 10 is shown attached to an inclined mounting wall 16 having a pivot support cover 20 and a vertically depending lamp supporting shaft 14. The upper section 10 is designed, in a manner to be described hereafter, to permit mounting on sloped ceiling structures such as that shown at 16 and allows the support shaft 14 to hang in a vertical direction regardless of the ceiling inclination. Connected to the lower portion of the column 14 is a lamp attachment section shown generally at 12. This attachment section carries two substantially horizontal disc members 44 and 46 which are adapted to engage a contoured aperture in a conventional globe or reflector 48 (FIG. 4*b*). The globe cover plate or skirt 46 is free to slide vertically on the support shaft 14 to allow the insertion of the globe support plate 44 into a typical similarly shaped aperture in a globe (not shown). Positive locking between the plate 44 and globe is accomplished by a quarter turn of the globe in a position well known to those skilled in the art.

The globe securing mechanism is further shown in FIGS. 4 and 4*a* which illustrate various embodiments of the invention. The attachment section is shown having a lamp receiving socket 40 connected by threaded engagement to the lower end of the support shaft 14 and rotationally fixed thereto by a set screw 42. A globe support plate 44 is locked to the upper portion of the lamp socket 40 by a suitable lock nut. The support plate 44 is provided with a stepped peripheral portion which may be shaped in such a manner that upon engagement with a lamp globe flush smooth alignment will be obtained between the globe surfaces and the upper curvature of the skirt 46. A pair of cushioning gaskets 50 are suitably secured to the peripheral portions of the horizontal plates 44, 46 to prevent damage to the globe. Cover plate 46 has a central aperture which is sufficiently large to permit sliding passage over the lower threaded portion of the support shaft 14 (FIG. 4*a*). Secured about this central aperture is a tubular collar 52 which encloses and conceals a coil spring 54. The spring 54 abuts against a stop nut 56 threaded upon the support shaft at its upper end and against the upper surface of the cover plate 46 to normally hold the latter in a downward position against the outer surface of the globe. Temporary upward movement of the collar and cover plate assembly to the dotted position is easily accomplished by raising the assembly against the pressure of spring 54 (FIG. 4*a*). In this position a spring clip 64, affixed to collar 52, having a pin portion 66, will engage an annular groove 68 in the support shaft 14 to hold the cover in the raised position, thereby allowing removal of the globe. An alternate securing means is shown on the opposite side of the tubular barrel 52 in the form of

a plunger lock arrangement which employs a biasing spring 72 which urges the pointed portion of the plunger 70 toward the support shaft thereby engaging the shaft threads and coil spring turns to hold the collar and cover assembly in an upward position (FIG. 5).

In the embodiment shown in FIG. 4, a tubular collar 58 is shown having a smaller diameter lower threaded neck portion engaging a retaining nut 60 to secure the cover plate 46 to the tubular collar 58. A threaded set screw 62 is suitably placed through a threaded aperture in the collar 58 and may be inwardly adjusted to lock the collar and globe cover assembly in the upper dotted position during relamping in similar fashion as in FIG. 4*a*.

Referring to FIGS. 3, 3*a*, 7 and 8, a T-shaped support bracket 22 carries a depending threaded tubular portion containing a pair of opposed elongated rectangular apertures 24. These apertures provide the support points for a pair of opposed set screws 28 which are threaded into the upper end of the tubular support shaft 14. The upper end of the shaft 14 is beveled at 30 to allow pivotal clearance of the shaft within the inside diameter of the tubular support bracket 22 when the support shaft axis is angularly displaced relative to the support bracket axis. The inside diameter of the threaded portion of the support bracket 22 is made sufficiently large, in relation to the outside diameter of the support shaft 14, to allow considerable angular freedom therebetween. A nut 34 on the lower end of the threaded portion 22 holds the cover 20 against the ceiling surface 16. The securing nut 34 is recessed into the cover 20 to provide a flush, neat appearance (FIG. 3).

The embodiment of FIG. 7 employs a transverse dowel pin support 38 which is axially retained by an elongated skirt portion of a threaded securing nut 36.

FIG. 8 shows another embodiment of the novel pendant support portion of the invention employing bent pivotal support tab portion 32 which is integrally formed from the upper wall portion of the support shaft 14. This construction is well adapted for in situ assembly in that the tab portion 32 of the shaft need not be bent outwardly until the upper end of the shaft 14 is disposed within the lower end of the support 22. The bending of the tab 32 may be readily accomplished by means of a screw driver inserted through the rectangular opening on either side of the depending tubular portion 22. Alternately, the tab 32 may be bent outwardly before insertion and by lifting the shaft 14 into the tubular portion 22 in a tilted posiiton with respect thereto until one of the tabs 32 gains entry into one of the rectangular openings on one side. Then the shaft may be swung over and forced upwardly adjacent the other tab until it drops into the rectangular opening on the other side of the depending portion 22.

In each of the pivotal support embodiments, it should be noted that hanging freedom is maintained in a single plane about a transverse axial support member. But in addition, because the rectangular apertures 24 in the depending bracket 22 are horizontally elongated, the support shaft 14 may be angularly rotated about a vertical axis to allow the selection of the pivotal support freedom in any desired vertical plane. In this manner the invention approximates that degree of hanging freedom that could be obtained in a universal ball-and-socket arrangement without the complexity of this prior art technique. Applicant's improved pivotal support embodies a simple single axis opposed trunnion support which may use either an opposed set screw, a through dowel pin, a cotter pin, or outwardly projecting ear portions to obtain multi-plane pendant freedom without recourse to a complex universal joint structure. Applicant's device, in effect, synthesizes substantially all the advantages of the ball-and-socket universality without its associated costs.

It should be noted that no critical alignment of the support bracket 22 need be maintained when securing the bracket to the inclined ceiling surface. If any misalignment does occur, it may readily be compensated for by a slight angular rotation of the support shaft 14 about its vertical axis which will readjust the plane of pendulous hanging of the pivotal support to complement the plane of the ceiling's inclination.

While specific embodiments of the invention have been shown and described in detail to illustrate the application of the invention principles, it will be understood that the invention may be embodied otherwise without departing from such principles.

What I claim is:

1. A flexible support for suspending a pendant lighting fixture from a ceiling, or the like, comprising a support bracket for mounting adjacent the ceiling and having a depending tubular portion, the inner surface of which is cylindrical, said tubular portion having a pair of diametrically opposed horizontally elongated substantially rectangular apertures in the wall adjacent the lower end thereof, a tubular fixture support shaft having a cylindrical outer surface and an outside diameter smaller than the inside diameter of said support bracket tubular portion, the upper end of said tubular fixture support shaft being disposed within the lower end of said depending tubular portion and in sufficient radial spaced relation so that angular movement therebetween is permitted, and pivotal support means extending in diametrically opposite directions and located in the upper end of the support shaft, said support means extending into and engaging said elongated rectangular apertures.

2. A flexible support for suspending a pendant lighting fixture from a ceiling, or the like, comprising a support bracket for mounting adjacent the ceiling and having a depending threaded tubular portion, the inner surface of which is cylindrical, said tubular portion having a pair of diametrically opposed circumferentially elongated substantially rectangular apertures in the wall adjacent the lower end thereof, a tubular fixture support shaft having a cylindrical outer surface and an outside diameter smaller than the inside diameter of said support bracket threaded tubular portion, the upper end of said tubular fixture support shaft being disposed within the lower end of said depending tubular portion and in sufficient radial spaced relation therewith so that angular movement therebetween is permitted, pivotal support means extending in diametrically opposite directions and located in the upper end of said support shaft, said pivotal support means extending into and engaging said opposed rectangular apertures, a cover for enclosing said support bracket having a central aperture and a recessed portion about said aperture, said aperture being of greater dimension than said bracket tubular portion outside diameter, and threaded securing means within said recessed portion of said cover and engaging said support bracket threaded tubular portion.

3. Apparatus according to claim 2, wherein said pivotal support means comprises a pair of oppositely extending trunnion portions of lesser diameter than the minor dimension of said elongated rectangular apertures.

4. Apparatus according to claim 2, wherein the end of the fixture support shaft carrying the pivotal support means is beveled in a pointed manner and in planes parallel with the axis of said support means to allow additional pivotal freedom of said support shaft.

5. A pendant lighting fixture having an upper pivotal support section for mounting adjacent a ceiling, or the like, and a lower lamp holding section separated from said support section by a thin rigid length of tubular support shaft, said fixture comprising a support bracket for connection to the ceiling and having a depending tubular portion, the inner surface of which is cylindrical, said tubular portion having a pair of diametrically opposed circumferentially elongated substantially rectangular apertures in the walls adjacent the lower end thereof, a tubular fixture support shaft having a cylindrical

outer surface and an outside diameter smaller than the inside diameter of said support bracket tubular portion, the upper end of said tubular fixture support shaft being disposed within the lower end of said depending tubular portion and in sufficient radial spaced relation so that angular movement therebetween is permitted, pivotal support means extending in diametrically opposite directions and located in the upper end of the support shaft, said support means extending into and engaging said rectangular apertures, first and second horizontally disposed globe holding plates at the lower end of said support shaft, said first plate being fixedly secured to said support shaft, said second plate being movable axially along said support shaft above said first plate, means biasing said second plate toward said first plate, said plates being complementarily formed at their opposing surfaces for holding therebetween a lighting fixture covering globe, said first plate being formed for insertion thereof into a globe to be held, and holding means to maintain said plates in separated relation to facilitate lamp section maintenance.

6. A lamp fixture having attachment means for securing a fixture covering globe, said fixture comprising a fixture shaft, first and second spaced substantially parallel plate portions having central apertures therein, said first plate portion fixedly connected to an end of the fixture shaft at its central aperture and having a size and shape for permitting entry thereof into a fixture covering globe, said second plate portion being movable axially along the length of said fixture shaft above said first

plate, said plates being complementarily formed at their opposing surfaces for holding a lighting fixture covering globe therebetween, a compression spring means to normally urge said second plate in substantial contact with said fixed first plate, and holding means releasably connecting said second plate portion and said shaft to maintain said plates in separated relation to facilitate lamp fixture maintenance.

7. A lamp fixture having attachment means according to claim 6 wherein said holding means includes a cylindrical tubular collar secured at one end to said second plate and enclosing said compression spring means, said tubular collar including an adjustable pin portion adapted to be engageable with said fixture shaft to hold said collar and said second plate in a raised relation with respect to said first plate during lamp fixture maintenance.

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