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Roth

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[54] **LAMP MOUNTING FOR HIGH INTENSITY LIGHT FIXTURE**

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[52] **U.S. Cl.**..... **240/51.11 R,** 240/11.4 R, 240/47, 339/56

[51] **Int. Cl.** **H05b 33/02**

[58] **Field of Search**. 240/51.11 R, 51.11 A, 11.4 R, 240/47; 339/53–56, 119 L, 112 R, 52 R, 52 S

[56] **References Cited**

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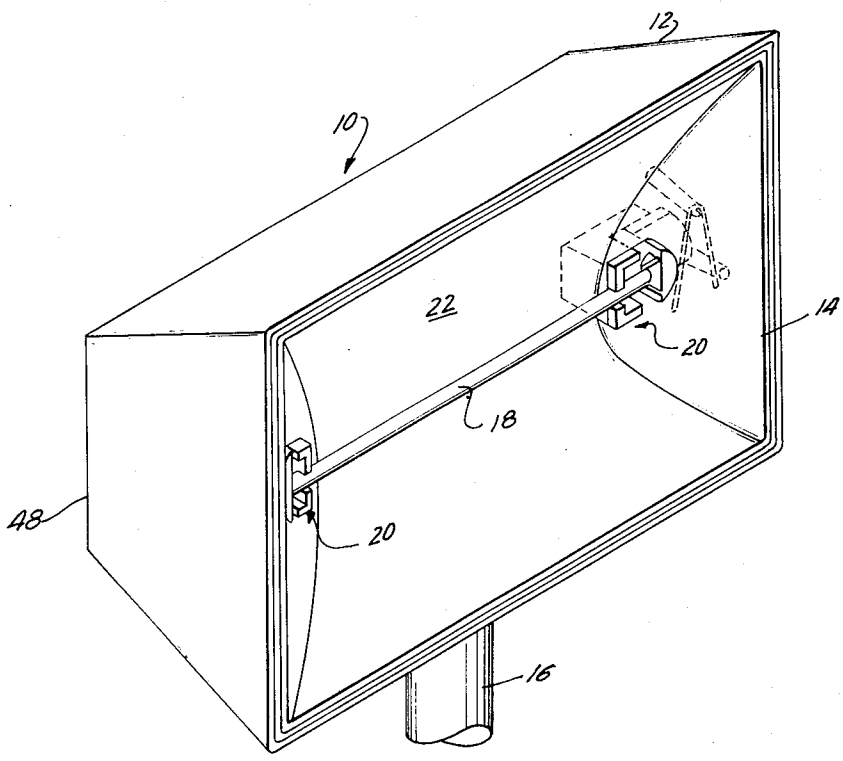
[57] **ABSTRACT**

A lighting fixture adapted to receive an elongated high intensity lamp is provided. The fixture includes a pair of socket assemblies spaced apart from each other within the fixture housing with each assembly including a ceramic socket housing adapted to nest in a base of material of high thermal conductivity. The ceramic housing is maintained in position by a spring which also urges the housing toward the other socket assembly to provide the necessary secure electrical connections between the sockets and the ends of the lamp which comprise the lamp terminals.

4 Claims, 2 Drawing Figures



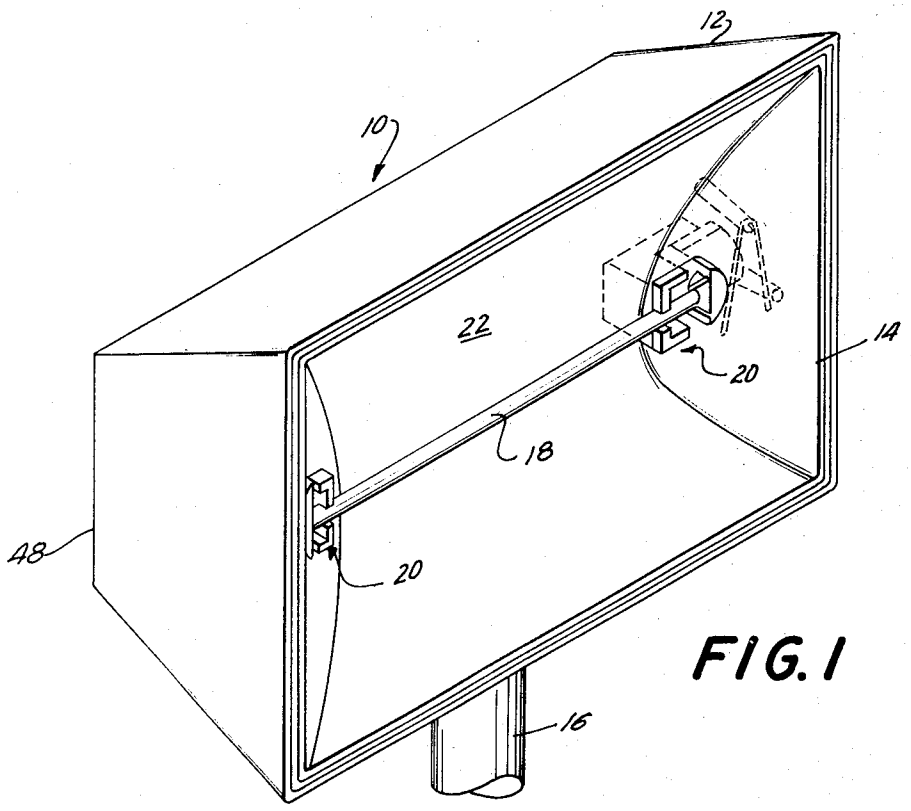

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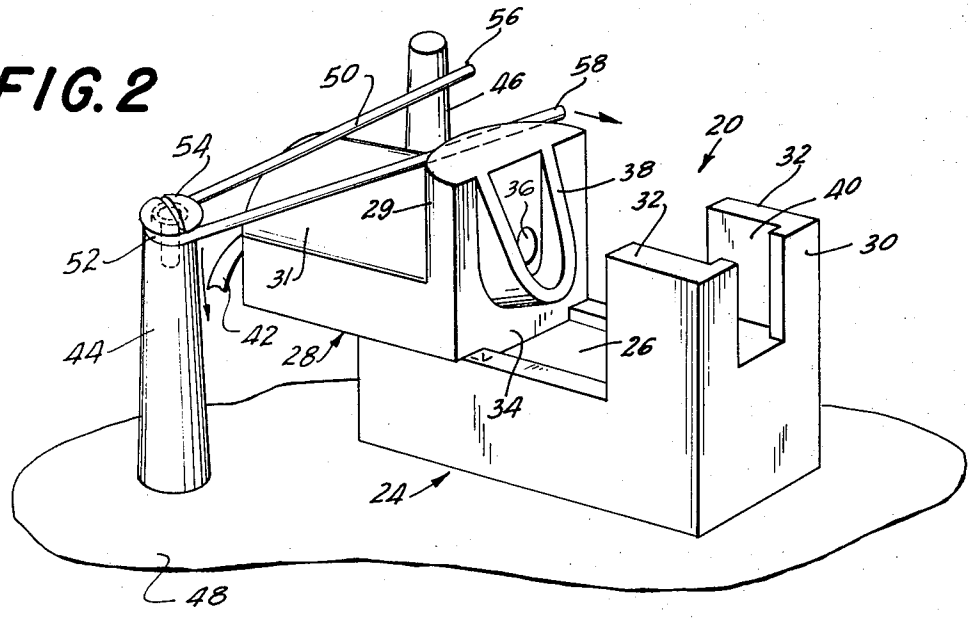
FIG. 1

FIG. 2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LAMP MOUNTING FOR HIGH INTENSITY LIGHT FIXTURE

BACKGROUND OF THE INVENTION

The present invention relates to lighting fixtures and in particular to high intensity lighting fixtures of the type adapted to receive an elongated high intensity lamp such as the quartz iodine lamps produced by various manufacturers and available commercially. Such lamps, in addition to providing a brilliant white light, also generate large quantities of heat during operation. It is essential to proper operation of the lamps and to their prolonged life that the lamps be used in fixtures designed to draw sufficient heat from the lamp to keep its operating temperature within prescribed limits. The heat generated by the lamps poses a particular problem at the lamp ends where the filament passes through the sealed ends of the lamp tube to a terminal adapted to mate with an appropriate socket within the lamp fixture. Unless provision is made to properly dissipate heat from the terminals, which is on the order of several hundred degrees Fahrenheit, the insulation on the wires feeding the sockets may burn which could eventually lead to the entire fixture shorting out. Also, unless the heat generated by the glowing filament is dissipated, the bond between the filament and terminal of the lamp may be destroyed, thus ending the useful life of the lamp.

Most of the heat generated in fixtures of the type described is dissipated by conduction throughout the fixture housing which is cooled by exposure to ambient air. This process is aided by forming the fixture housing of a material of high conductivity such as aluminum. The terminals of the lamp, however, must be properly electrically insulated from the housing and thus the socket housings which receive the terminals are conventionally formed of a ceramic material such as porcelain which has excellent electrical insulation properties and is able to withstand the high temperatures generated. The problem then arises as to how to dissipate heat from the ceramic socket housings and, at the same time, insure proper electrical connections between the sockets and the ends of the lamp to be received therein. Heretofore, the problem was solved by utilizing relatively complex, multispring arrangements to maintain the ceramic housings in position.

In view of the above, it is the principal object of the present invention to provide a high intensity lighting fixture having an improved socket assembly incorporating simplified means to insure the proper dissipation of heat generated at the terminals of the lamp received therein while at the same time providing a secure and positive electrical connection with the lamp.

A further object is to provide such an assembly which is relatively inexpensive and simple to manufacture and assemble and can be used with pre-existing fixture designs with little or no modification of the basic fixture design.

SUMMARY OF THE INVENTION

The above and other beneficial objects and advantages are attained in accordance with the present invention by providing a lighting fixture of the type adapted to receive an elongated lamp and including a fixture housing formed of a material having a high thermal conductivity. The fixture housing includes a pair of

socket assemblies spaced apart from each other a distance sufficient to engage terminals mounted at the ends of the lamp. At least one of the socket assemblies comprises a socket base formed of a material of high thermal conductivity affixed to the housing. The socket base includes surfaces thereon defining a nest adapted to receive a lamp socket housing formed of a ceramic or other electrically insulating material seated within the nest and containing the lamp socket. Spring means are provided within the fixture adapted to simultaneously retain the socket housing in the nest and bias the socket housing longitudinally toward the other socket assembly.

BRIEF DESCRIPTION OF THE DRAWINGS

In the accompanying drawings:

FIG. **1** is a perspective view of a high intensity lighting fixture in accordance with the present invention; and,

FIG. **2** is an enlarged perspective view of the socket assembly of the present lighting fixture.

DETAILED DESCRIPTION OF THE PREFERRED EMBODIMENT

Reference is now made to the drawings wherein similar components bear the same reference numeral in both views. Reference is first made to FIG. **1** wherein an improved lighting fixture **10,** in accordance with the present invention, is shown comprising a fixture housing **12** having continuous top, bottom, rear and side walls defining an enclosure having an open front side **14.** The fixture housing is formed of a suitable material of high heat conductivity such as cast or a heavy gauge aluminum. If desired, a decorative veneer may be applied to the exterior surfaces of the fixture. A heat treated lens supported within a suitable temperature and weather resistant gasket removably seals the front surface of the fixture. Fixture **10** may be supported on a mast **16** through which the appropriate electrical connections enter. If desired, a universal mounting (not shown) may be interposed between the fixture and mast to facilitate adjustment of the fixture in use.

As shown, the fixture is designed to contain an elongated high intensity lamp **18.** To this end, a pair of socket assemblies **20** are provided within the fixture spaced apart to receive and secure the terminals at the ends of lamp **18.** To increase the efficiency of the fixture, a reflector **22** is provided extending from top to bottom along the interior rear and side walls of the housing with portions of the socket assemblies **20** penetrating through openings in the side wall reflectors as shown.

The details of the lamp socket assemblies **20** are shown in FIG. **2.** Accordingly, each assembly includes a socket base **24** formed of a material of high thermal conductivity. In this regard, the base **24** may conveniently be cast in a single unit with the fixture housing and, more specifically, the rear wall of the housing. The socket base **24** generally comprises a rectangular member, the top surface of which includes a recess **26** defining a nest for a socket housing generally designated by the number **28.** The socket base **24** further includes an integral wall **30** extending upwardly from the front end of the rectangular member and having wing portions **32** which wrap partially about the sides of the rectangular member.

The socket assembly **20** further includes a socket housing **28** formed of an electrically insulating material, as for example porcelain or other ceramic. The socket housing **28** comprises an elongated generally rectangular member having a lower depending portion **34** contoured to nest within recess **26** of base **24.** The forward end **29** of housing **28** is raised and includes an opening providing access to a socket **36** mounted in the forward end and designed to receive and make electrical connection with a terminal at the end of lamp **18.** To this end, the exact configuration of the socket is determined by the shape of the terminal of the lamp to be used in the fixture. The surfaces **38** of the raised portion **29** of housing **28** surrounding socket **36** are contoured to define a ledge adapted to receive and support the end of lamp **18.** A cutout **40** is provided in the front wall **30** of base **24** aligned with socket **36** thereby providing access for the terminal end of lamp **18** to socket **36.** The socket housing further includes an elongated section **31** extending rearwardly from the raised forward end **29** and having a cavity therethrough which terminates at one end in socket **36.** The electrical leads **42** for the socket extend through the cavity.

A pair of posts **44** and **46** extend upwardly from the rear wall **48** of the fixture housing **12** on opposite sides and spaced rearwardly of socket base **24.** The posts may conveniently be cast integrally with the fixture housing rear wall and the socket base. As shown, the posts extend above the top of socket housing **28.** A U-shaped spring **50** having a base portion **52** secured to post **44** by screw **54** and a pair of legs **56** and **58** is also provided. Leg **56** of the spring abuts post **46** while leg **58** abuts the rear of the raised front portion **29** of socket housing **28** thereby serving to urge the socket housing in the direction of the arrow of FIG. **2** until the socket housing raised portion **29** abuts the rear of the wing portions **32** of wall **30** of housing base **24** (as shown in phantom in FIG. **1**). Screw **54** serves to secure spring **50** in position. In this connection, the height of post **44** is such that legs **56** and **58** of the spring rest on the top surface of the socket housing and thus serve to urge the socket housing downwardly so that the depending portion **34** of the socket housing nests in recess **26** of the socket base. This establishes a firm heat conduction path from the socket housing to the socket base **24.** The socket base, in turn, serves to conduct heat to the fixture base **48** from which the heat is dissipated to the atmosphere, thus enabling the fixture to operate within its designed temperature range.

In use, lamp **18** is inserted in the fixture by pushing one of the socket housings rearwardly (to the position shown in FIG. **2**) and inserting the lamp through opening **40** in the housing wall **30** so that the lamp terminal can engage socket **36.** The socket housing is then released enabling the legs **56** and **58** of spring **50** to separate thereby urging socket housing **28** forwardly to the position illustrated in FIG. **1** whereby a firm electrical contact is established between the lamp terminals and sockets **36.** While in this position, spring **50** serves the double purpose of maintaining a constant longitudinal force urging the sockets **36** of assemblies **20** toward one another thereby insuring electrical contact with lamp **18** while at the same time each spring urges its associated socket downwardly insuring a good thermal contact with its associated housing base **24.** This arrangement is both simple and effective in meeting the aforementioned objectives.

Having thus described the invention, what is claimed is:

1. A lighting fixture of the type adapted to receive an elongated lamp having terminals at the ends thereof, said fixture including: a fixture housing including a rear wall formed of a material having a high thermal conductivity and a pair of socket assemblies in said housing spaced apart from each other a distance substantially equal to the length of said lamp and adapted to secure said lamp in said position and provide electrical connections for said lamp through said terminals wherein at least one of said socket assemblies comprises: a socket base formed of a material of high thermal conductivity affixed to said housing in thermal conductive relationship, said socket base comprising a generally rectangular member formed integral with said rear wall and including surfaces thereon defining a nest having a raised forward end directed toward the other socket assembly and a top surface spaced above said fixture housing rear wall; a lamp socket housing formed of an electrically insulating material seated within said nest and containing a socket therein adapted to receive one end of said lamp; and spring means affixed to said fixture housing adapted to simultaneously urge said socket housing into said nest and bias said socket housing longitudinally toward the other socket assembly.

2. The invention in accordance with claim **1** wherein said raised forward portion comprises wall means extending upwardly from the forward end of said member, said nest includes a recess extending downwardly from said top surface, said socket housing includes a depending bottom portion contoured to fit within said recess and a front portion contoured to abut against the socket base raised forward end, and said spring means simultaneously urges said socket housing depending portion into said recess and front portion against said socket base forward end.

3. The invention in accordance with claim **1** wherein said socket extends from the front portion of said housing and further comprising a cutout in said socket base forward end aligned with said socket and providing access to said socket.

4. The invention is accordance with claim **3** further comprising a pair of spring retaining posts secured to and extending upwardly from said fixture housing rear wall spaced rearwardly of said socket base forward end and positioned on opposite sides of said socket base and said spring means comprises a U-shaped spring having a base portion secured to one of said posts, a first leg abutting the other of said posts, a second leg abutting the socket housing front portion and biased to urge said front portion longitudinally toward said socket base forward end, both said legs rest on the top surface of said socket housing and said spring is further biased to urge said socket housing into said socket base nest.

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