

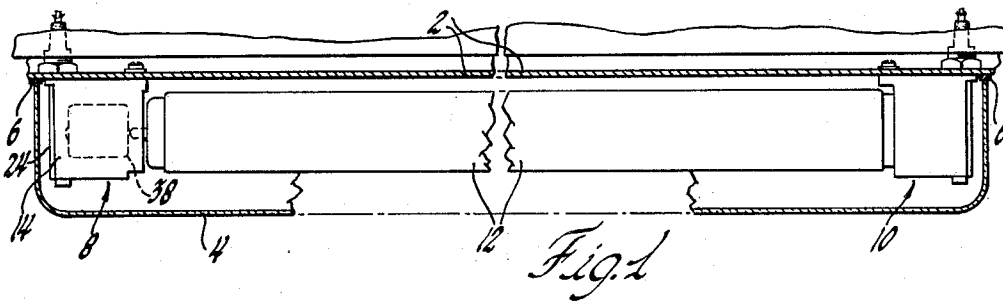
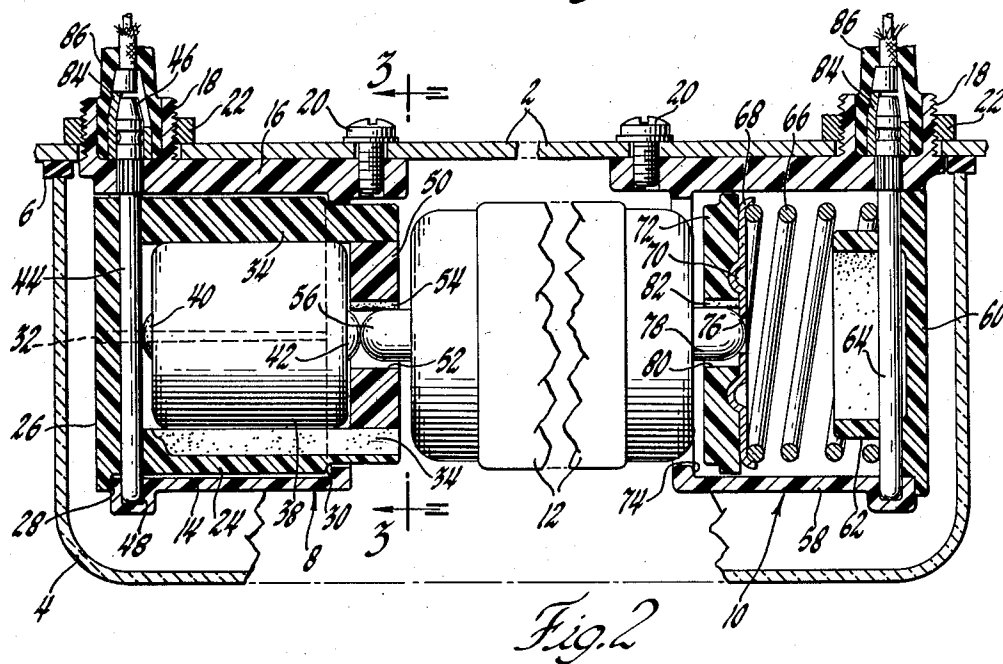
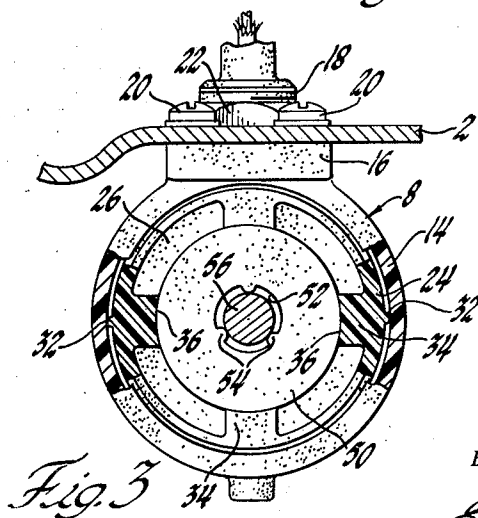
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TUBULAR LAMP FIXTURE

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3,060,310

TUBULAR LAMP FIXTURE

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7 Claims. (Cl. 240—51.11)

The present invention relates to a lighting fixture including a tubular-type lamp or light source such as a fluorescent tube and, in particular, to such a fixture including an improved socket construction.

Conventional commercial tubular lamp fixtures of the fluorescent tube type normally comprise a fixture frame containing one or more fluorescent tubes mounted in associated socket structures at each end thereof. The "ballast" or electrical power package is usually mounted in a box on the fixture frame, and includes such electrical components as a transformer and a suitable number of condensers and reactors for firing and operating the fluorescent tubes. Moreover, such conventional lighting fixtures have been rather elaborate in construction generally with respect to the socket structures and particularly with respect to electrical terminal construction which makes it difficult to readily connect and disconnect the electrical power source to the fixture. These and other factors render such conventional structures relatively expensive and impractical for use in commercial vehicles such as passenger coaches.

In view of the above considerations, it is a principal object and feature of this invention to provide an improved lighting fixture of the tubular lamp type which is relatively compact and simple in construction and may be readily assembled and mounted in place.

It is yet another object of this invention to provide a fixture of this type with an improved socket construction which may be readily manufactured and assembled, and which is adapted to firmly mount the contact pins of the tubular bulb and prevent rattling thereof.

It is yet another object of this invention to provide a fixture of this type, and particularly the socket constructions thereof, with a moisture-proof, quick-disconnect type electrical terminal construction which allows the fixture to be quickly installed on or removed from its support.

It is yet another object and feature of this invention to provide an improved socket assembly for a lighting fixture of the type aforementioned which is relatively compact in comprising its own ballasting condenser electrically connected between the power source and the contact pins of the tubular bulb with a minimum of electrical connections.

The nature of the invention and the manner in which the foregoing objects are attained will become more apparent hereinafter as the description of the invention proceeds, and in which reference is made to the following drawings in which:

FIGURE 1 is a longitudinal view of the fixture of this invention;

FIGURE 2 is an enlarged view corresponding generally to FIGURE 1, but in section and showing certain details of the invention; and

FIGURE 3 is a view, partly in section and partly broken away, taken on line 3—3 of FIGURE 2.

Referring now to the drawings, there is shown a lighting fixture comprising the elongated base or body member 2 to which the lens 4 is adapted to be suitably secured in sealing engagement by means of the sealing gasket 6 to form an enclosed sealed envelope for the spaced socket assemblies 8 and 10 between which a conventional tubular bulb 12, such as a fluorescent tube, is adapted to be mounted.

The socket assembly 8 comprises an axially extending hollow cylindrical body or housing 14 open at both of its

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ends, and including an axially extending planar mounting rib 16 on the exterior surface thereof from which there projects a threaded boss 18 extending through a suitable aperture in the fixture body 2. Suitable fastener means as indicated at 20 are adapted to secure the mounting rib of the housing flush with the fixture body 2 while nut 22 receives boss 18 to aid in supporting the body or housing.

A cylindrical adapter or condenser mount 24 includes a transverse wall 26 at one end thereof adapted to form a base for the socket assembly, and the adapter is axially insertable through the outer or base end of the housing to the extent permitted by cooperating stop shoulders on the adapter and socket body as indicated at 28 and 30. The outside diameter of the adapter is generally slightly less than the inside diameter of the body 14 to permit ready installation within the latter, but the adapter includes diametrically opposite axially extending ribs 32 which frictionally engage the inner surface of the socket body 14 to maintain the adapter in a desired position relative thereto. A plurality of equally circumferentially spaced radially inwardly directed support arms 34 are formed on the interior surface of the adapter 24, and each includes an inner terminal end 36 of arcuate or concave curvature. A ballasting condenser 38 for initially firing the tubular lamp is of cylindrical configuration, and is supported on the arms 34. Moreover, the condenser is provided with axially aligned contact buttons 40 and 42 on opposed faces thereof.

A rod-like terminal pin 44 has a male connector end 46 extending through a wall of the socket body 14 into the boss 18, while the pin extends transversely through the wall of housing 14 and the base of the adapter 24 to be seated in a depression 48 in the opposite end of the socket body, and is so arranged as to abut the condenser contact 40. The circular end plug 50 is received with an interference fit within the inner end of the adapter 24 and includes an aperture 52 axially aligned with the condenser contact button 42. A plurality of equidistantly spaced radially inwardly directed axially extending ribs 54 surround the aperture 52 and are adapted to snugly receive and support a protruding tubular lamp contact pin 56 for engagement with the associated contact button 42 on the condenser.

The other socket assembly 10 includes a cylindrical body or housing 58 substantially identical to the body 14 and adapted to be mounted to the fixture body 2 in an equally similar manner. The outer or base end of the socket body 58 is adapted to be closed by a circular end cap 60 adapted to be suitably secured therein as by an interference fit. The end cap 60 includes an axially projecting annular skirt 62 through which a terminal or contact pin 64 extends. The contact pin 64 is identical to the pin 44 previously described and is seated within a depression in the base of the socket body 58 and protrudes from the socket housing in a manner identical to that previously described. An axially coiled contact spring 66 surrounds the skirt 62 and abuts the contact pin 64, while the other end abuts an annular contact plate 68 having an annular rib 70 seated within a similar depression in the axially reciprocable annular slide 72. Movement of the slide axially outwardly of the socket body 58 is limited by abutment with the annular stop shoulder 74. The contact plate 68 is provided with a small aperture 76 adapted to be engaged by the other contact pin 78 of the tubular lamp 12, while the aligned aperture 80 in the slide 72 is provided with spaced ribs 82 for snugly receiving the tubular lamp contact pin 78 in a manner similar to the ribs 54 of the socket assembly 8.

In installing the fixture, the respective sockets 8 and 10 are mounted on the fixture body 2 with the respective bosses 18 projecting through the former. A cooperating quick-disconnect type female contact member 84 includ-

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ing a surrounding sealing boot 86 is then mounted in engagement with each of the terminal pin contact ends 46 with the boot mounted within the bosses 18 to form a sealed construction. The tubular lamp contact terminal 78 is then mounted within the aperture in the slide plate 72 which is pressed rearwardly to permit entry of the other tube contact 56 in the socket 8. The translucent lens 4 is then mounted in sealing engagement with the fixture body 2. When the tubular bulb is installed and energized, a circuit is established from terminal pin 44 through condenser 38, bulb 12, contact plate 68 and spring 66 to terminal pin 64.

It will thus be seen that the lighting fixture of this invention includes a particular socket construction permitting the power supply to be located remote from the lamp fixture with the ballasting condenser mounted in the lamp fixture and, more particularly, in the socket 8. Moreover, each socket assembly includes a moisture-proof, quick-disconnect type electrical termination which allows the fixture to be quickly installed on or removed from the support to which it is attached. Since these electrical terminations at the heads of the respective contact pins 44 and 64 are located exteriorly of the lamp envelope, the fixture may be sealed at the sockets against both dust and moisture prior to installation of the fixture on the vehicle. The particular design of the socket assembly 8 eliminates wiring between the condenser, the terminal pin 44 and the fluorescent lamp 12. It will also be noted that the support arms 34 of socket assembly 8 provide air passages around the condenser to aid cooling of the condenser. Removal and replacement of the condenser 38 may be accomplished without the use of any special tools such as the usual soldering iron, hook, clamp, etc. To remove the condenser, a screw driver may be inserted through an air passage for easily removing the end plug 50 thereby permitting ready access to the condenser for removal by hand. Finally, the aperture in each socket assembly through which the contact pin on the fluorescent tube passes is provided with the aforescribed rib structures 54 and 82 which provide rigid, rattle-proof support for the fluorescent lamp while allowing the contact pins easy passage through the respective apertures to make electrical contact.

While but one form of the invention has been illustrated, other forms will now be apparent to those skilled in the art. Therefore, the embodiment shown in the drawing is merely for illustrative purposes, and is not intended to limit the scope of the invention which is defined by the claims which follow.

We claim:

1. A socket assembly for a light source having an electrical contact fixed thereto, said assembly comprising a housing, a plug closing an end of said housing and including an aperture for receipt of said contact, electrical contact means within said housing aligned with said aperture for engagement with said contact upon insertion of the latter, and a plurality of spaced radially inwardly directed ribs on said plug member about said aperture to snugly receive and support said light source contact.

2. A socket assembly for a tubular light source of the type including axially aligned electrical contact pins fixed at the opposite ends thereof, said assembly comprising a housing having a base end and an end opposite thereto, a wall member closing the base end of said housing, an end plug removably insertable into the other end of said housing and including an aperture for receipt of a light source contact pin, electrical contact means within said housing axially aligned with said aperture for engagement with said contact pin upon insertion of the latter, and a plurality of spaced radially inwardly directed axially extending ribs on said plug about said aperture to snugly receive and support said light source contact pin.

3. A socket assembly comprising a hollow housing having a base end and an end opposite thereto, spaced support arms radially inwardly directed within said housing, electrical terminal means in the base end of said housing, a ballasting condenser supported on said arms and

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having axially aligned contacts on each end thereof, one of said condenser contacts being in engagement with said terminal means, and an end plug removably insertable into the said of said housing opposite the base end thereof and including a contact-receiving aperture aligned with the other contact of said condenser.

4. A socket assembly for a light source having an electrical contact protruding therefrom, said assembly comprising a hollow housing having an open base end, an adapter member having a base end closed by a wall and being open at the opposite end thereof, said adapter being insertable axially through the base end of said housing, spaced support arms radially inwardly directed within said adapter and having concavely curved inner ends, terminal means in the base of said socket assembly, a cylindrical ballasting condenser supported on said arms and having axially aligned contact buttons on each end thereof, one contact button being in engagement with said terminal means, and an end plug removably insertable into the end of said adapter opposite the base end thereof and including an aperture aligned with the other contact button of said condenser for receipt of said light source contact to engage the latter with said other contact button.

5. A socket assembly for a tubular light source of the type having axially aligned contact pins at the opposite ends thereof, said assembly comprising a hollow housing open at both ends, an adapter member having a base end closed by a wall and being open at the opposite end thereof, said adapter being insertable axially through one end of said housing, spaced support arms radially inwardly directed within said adapter and having concavely curved inner ends, a terminal pin extending transversely through said housing and adapter in the base of said socket assembly, a cylindrical ballasting condenser supported on said arms and having axially aligned contact buttons on each end thereof, one contact button being in engagement with said terminal pin, and an end plug removably insertable into the end of said adapter opposite the base end thereof and including an aperture aligned with the other contact button of said condenser for receipt of a light source contact pin to engage the latter with said other contact button.

6. A socket assembly for a tubular light source of the type having axially aligned contact pins at the opposite ends thereof, said assembly comprising a hollow housing open at both ends, an adapter member having a base end closed by a wall and being open at the opposite end thereof, said adapter being insertable axially through one end of said housing, spaced support arms radially inwardly directed within said adapter and having concavely curved inner ends, a terminal pin extending transversely through said housing and adapter in the base of said socket assembly, a cylindrical ballasting condenser supported on said arms and having axially aligned contact buttons on each end thereof, one contact button being in engagement with said terminal pin, an end plug removably insertable into the end of said adapter opposite the base end thereof and including an aperture aligned with the other contact button of said condenser for receipt of a light source contact pin to engage the latter with said other contact button, and a plurality of spaced radially inwardly directed ribs on said end plug about said aperture to snugly receive and support said light source contact pin.

7. A lighting fixture for a tubular light bulb having axially aligned contact pins at the opposite ends thereof and comprising a fixture body, a translucent lens sealingly engaging said body to form a sealed envelope, a pair of spaced socket assemblies mounted on said body within said envelope to support the tubular lamp therebetween, one of said assemblies comprising a cylindrical housing open at both ends and including a boss projecting through an opening in said body, an annular stop shoulder at the inner end of said housing, a cylindrical adapter insertable axially through the outer end of said housing for abutment with said stop shoulder and including a base wall

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at the outer end thereof closing one end of said socket and an open inner end extending axially inwardly of said stop shoulder, said adapter including opposed axially extending ribs frictionally engaging said housing, a plurality of circumferentially spaced radially inwardly directed support arms on said adapter each of which is concavely curved at its inner end, a cylindrical ballasting condenser supported on the ends of said arms and having axially aligned contact buttons on each end thereof, a terminal pin extending transversely along the base wall of said adapter and including a contact end located within said boss exteriorly of said body, said terminal pin being in engagement with one of said condenser contact buttons, an end plug removably insertable into the inner end of

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said adapter and including an aperture aligned with the other condenser contact button for receipt of a bulb contact pin to engage the latter with said other contact button, and a plurality of spaced radially inwardly directed axially extending ribs on said end plug about said opening to snugly receive and support said bulb contact pin.

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UNITED STATES PATENT OFFICE
CERTIFICATE OF CORRECTION

Patent No. 3,060,310

October 23, 1962

Ralph H. Bertsche, Jr., et al.

It is hereby certified that error appears in the above numbered patent requiring correction and that the said Letters Patent should read as corrected below.

Column 1, line 37, for "readilly" read -- readily --;
line 59, for "insection" read -- in section --; column 4,
line 4, for "said", first occurrence, read -- end --;
column 6, line 4, for "pluraliy" read -- plurality --.

Signed and sealed this 2nd day of April 1963.

SEAL)
ttest:

STON G. JOHNSON

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DAVID L. LADD
Commissioner of Patents

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