

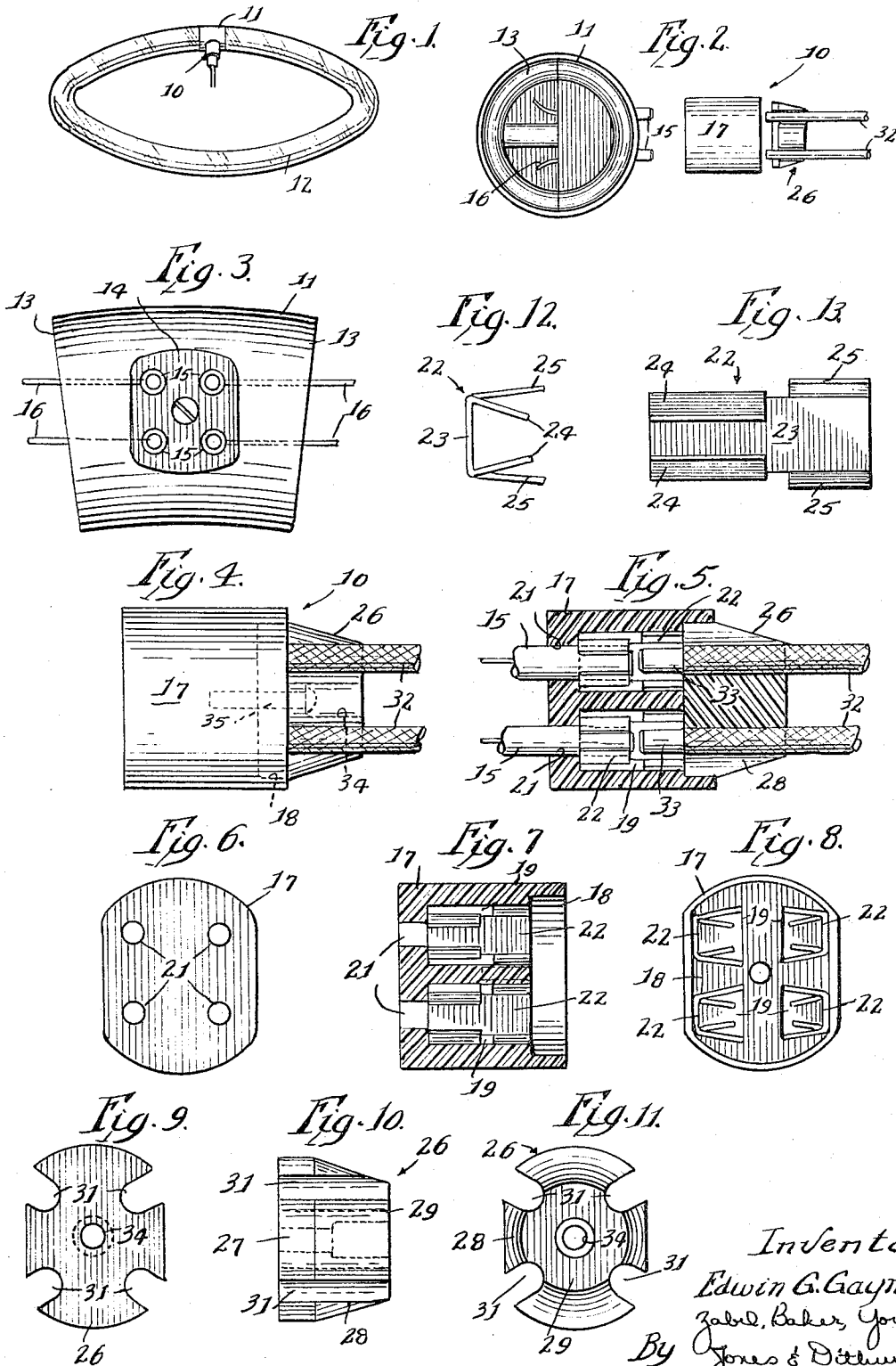
Dec. 13, 1966

E. G. GAYNOR

3,292,097

CIRCULAR FLUORESCENT LAMP CONNECTOR

Filed Dec. 16, 1963



Inventor:
Edwin G. Gaynor
Zabell, Baker, York,
Jones & Dittmer
Attorneys

1

2

3,292,097

CIRCULAR FLUORESCENT LAMP CONNECTOR
Edwin G. Gaynor, Bridgeport, Conn., assignor to
Edwin S. Gaynor, Southport, Conn.
Filed Dec. 16, 1963, Ser. No. 330,748
3 Claims. (Cl. 339-50)

The present invention relates to a fluorescent lamp connector and more particularly to a circuit connector for a fluorescent tube which is formed in a circle with a socket joining the ends of the tube and providing a recess to receive the connector, of the general type shown by Nicolario, Patent No. 2,802,191 dated August 6, 1957.

In the fluorescent lamp industry, fluorescent tubes are generally utilized in a straight longitudinal design for lamps and for ceiling fixtures in offices, etc. However, for special applications or esthetic reasons, these tubes have been formed in a circle with the free ends joined by a socket having a recess with four prongs into which a connector or plug is inserted. A pair of prongs are required for the filament of the heater starting circuit at each end of the fluorescent tube with two of the four prongs providing voltage across the filaments at the ends of the tube once the fluorescent tube has been started to provide current flow through the tube. The present invention deals with the connector or plug from the fluorescent lamp circuit to the socket.

An important object of the present invention is the provision of a novel connector to be utilized with a circular fluorescent lamp which is more compact than prior known connectors thus reducing the cost and area required for the fixture assembly for the fluorescent tube.

Another important object of the present invention is the provision of a novel connector having a one-piece body and a cap fitting into a recess in the body and holding the terminals for the connecting circuit leads or wires in place. The sides of the terminals are outwardly flared to take up any stress placed on the terminals. There may be stress in using the connector and a stress in removing the connector as removal is apt to be accomplished by yanking or pulling on the leads emerging from the connector.

A further important object of the present invention is the provision of a simplified connector structure which may be easily and quickly assembled with a minimum of parts. The connector includes a casing open at one end to receive a cap, and having four spaced longitudinally extending passages opening at the opposite end of the body to receive the prongs of the socket. The terminals are inserted into the passages in the casing, and the cap, having channels to receive the wires secured to the terminals, holds the terminals in position in the body. There are no additional insulating or separating members as required by prior known connectors. Furthermore, a single centrally disposed fastener holds the assembled connector together.

Further objects are to provide a construction of maximum simplicity, efficiency, economy and ease of assembly and installation, and such further objects, advantages and capabilities as will later more fully appear and are inherently possessed thereby.

In the drawing:

FIG. 1 is a perspective view of a circular fluorescent tube and socket with the connector of the present invention received in the socket.

FIG. 2 is an exploded or disassembled side elevational view of the connector and socket.

FIG. 3 is a front elevational view of the socket utilized to connect the ends of the fluorescent tube and supply the filaments thereof thereto.

FIG. 4 is a side elevational view of the connector assembly.

FIG. 5 is a cross sectional view through the connector and showing the relationship of the connector terminals, leads and prongs of the fluorescent tube socket.

FIG. 6 is a rear elevational view of the connector body or casing.

FIG. 7 is a cross sectional view of the connector body or casing with the cap removed and showing the location of the terminals.

FIG. 8 is a front elevational view of the casing with the cap removed.

FIG. 9 is a rear elevational view of the connector cap.

FIG. 10 is a side elevational view of the cap.

FIG. 11 is a front elevational view of the cap.

FIG. 12 is an end elevational view of a terminal taken from the left-hand end of FIG. 13.

FIG. 13 is a side elevational view of a terminal.

Referring more particularly to the drawing in which is shown an illustrative embodiment of the present invention, FIG. 1 discloses a connector 10 located in a socket 11 for a circular fluorescent lamp 12. The socket 11 has opposed open ends 13 receiving the ends of the fluorescent tube and an inwardly opening recess 14 with four spaced prongs 15 extending therefrom. Each pair of prongs is connected to the cathode or filament 16 at one end of the tube to provide the current flow to heat the cathodes during starting to initiate ionization of the gas in the tube and also provide the voltage potential between the cathodes once the lamp has been started.

The connector 10 includes a generally rounded or cylindrical body member 17 having a shallow recess 18 (FIGS. 7 and 8) at one end with four spaced longitudinally extending and generally parallel passages 19 extending from the recess 18 to a terminus spaced inwardly a suitable distance from the opposite or inner end of the member 17. Each passage 19 is generally trapezoidal in cross section and is connected at its terminus with a reduced generally cylindrical opening 21 in the inner end wall of the member, which opening is adapted and conformed to receive a prong 15 of the socket.

Positioned in each passage 19 is a terminal 22 formed of an electrically conductive material such as copper. Each such terminal (FIGS. 12 and 13) is divided into two approximately equal portions including a base portion 23 extending the length of the terminal. A pair of converging clamping arms 24 extend from the base 23 and are positioned at the end of the terminal adjacent an opening 21 (FIGS. 5 and 7) to aid in receiving and frictionally holding and contacting the prongs 15 of the socket. These prongs and openings are so spaced apart that the connector will only be received in the socket in one of two positions 180° apart so that the circuit leads are always properly connected to the fluorescent tube filaments. Spaced outwardly from the clamping arms 24 are a pair of outwardly flared or diverging arms 25 extending from the base and along the non-parallel sides of the trapezoidal cross section of the passage 19. Each terminal ends or terminates substantially flush with the bottom of the recess 18.

A cap 26 (FIGS. 5, 9, 10 and 11) has an inner end portion 27 which conformably fits within the recess 18 of the body member 17 and an outwardly tapered external end portion 28 which terminates in a reduced generally flat surface 29. Four longitudinally extending rounded indentations or channels 31 are formed in the sides of the cap to receive the leads 32 from the circuit for the lamp. The insulation is stripped from the ends of the leads and each of the bare wires 33 is suitably secured, as by soldering, to the base 23 of its terminal 22 between the arms 25. The arms 25 diverge outwardly so that their outer

3

end edges contact and engage the inner end of the cap 26 and thus prevent axial movement of the terminals 22 within the body member 17.

The cap 26 includes a counterbored axially extending opening 34 (FIGS. 4 and 11) therethrough which is aligned with an axial opening in the body member 17 to receive a suitable screw or other securing means 35 secured anchoring the cap in the body member. The cap positively retains the terminals 22 in place in the passages 19 and, due to the outward flare of the arms or sides 25 of the terminals, takes up any stress put on the terminals. As the inner end portion 27 of the cap 26 is secured within the recess 18 in the body member 17 by the securing means 35, the inner face or base of this end portion 27 is positioned in contact with or closely adjacent to the ends of the terminals 22 so that upon any longitudinal movement of a terminal the arms 25 contact the cap 26 and the cap takes up any stress placed upon the terminal.

It follows that when the connector 10 is inserted in the recess 14 and the prongs 15 enter the openings 21 and between the converging arms 24, any friction between the prongs and the terminals 22 will cause the arms 25 of the terminals to move into abutting relation with the cap. Additionally, if the leads 32 are grasped and yanked to remove the connector, again the arms 25 of the terminals about the anchored cap and the cap takes up any stress placed on the terminals.

From the above description it is thought that the construction and advantages of this invention will be readily apparent to those skilled in the art. Various changes in detail may be made without departing from the spirit or losing the advantages of the invention.

Having disclosed the invention, I claim:

1. A circuit connector for a circular fluorescent lamp including a socket joining the ends of a fluorescent tube, said socket having pairs of projecting prongs with each pair connected to the ends of a filament in the tube, comprising:

- (a) a body member having a recess at one end thereof and a plurality of openings in the opposite end adapted to receive the prongs of the socket,
- (b) a cap conformably received in said recess in the body member and secured thereto and having two

4

pairs of longitudinally extending generally radially outwardly opening channels adapted to receive circuit leads for the fluorescent tube,

- (c) said body member having longitudinally extending enlarged passages therein between said recess and terminating at the openings in the opposite end of the body member,
- (d) and a conductive terminal positioned in each of said passages with each terminal including
- (e) an elongated longitudinally extending flat base having parallel longitudinal edges,
- (f) a pair of converging arms integral with and extending upward from the opposite longitudinal edges of the base adjacent one of the openings in the body member and adapted to receive and frictionally engage the end of a prong projecting from the socket and entering said one opening, and
- (g) a pair of diverging arms extending upward and outward from the longitudinal edges of the base at the opposite end thereof adjacent said recess,
- (h) each circuit lead being secured to the base of a terminal between the diverging arms.

2. A connector as set forth in claim 1, in which the distance between the outer ends of the diverging arms is greater than the cross section of a channel in the cap so that the cap in the recess abuts and restrains longitudinal movement of the terminal in the body member.

3. A connector as set forth in claim 1, in which the openings in the body member are smaller in cross section than the passages in the body member, and the width of the terminal.

References Cited by the Examiner

UNITED STATES PATENTS

2,534,956	12/1950	Pistey et al.	339—50 X
2,700,752	1/1955	Cataldo	339—20 X
2,709,792	5/1955	Peters	339—191 X
3,118,716	1/1964	Brellier	339—217 X
3,212,047	10/1965	McDonough	339—217 X

EDWARD C. ALLEN, *Primary Examiner.*

ALFRED S. TRASK, *Examiner.*