The invention relates generally to connector structures and refers more particularly to improved connector structures including means to prevent the assembly of the connector units thereof in other than predetermined relative angular positions.

One of the purposes of the present invention is to provide connector structure including means to prevent assembly of the connector units thereof in other than a particular predetermined relative angular position.

Another object is to provide a connector structure including means for determining the relative angular relation of the connector units thereof in assembly.

Another object is to provide a connector structure including chevron type contact members whereby the relative angular position of the connector units of the structure in assembly may be predetermined.

More specifically it is an object to provide a bulb socket having chevron type contact members at one end thereof which bulb socket is adapted to receive an electrical bulb at the other end, and an electric connector including chevron type contact members adapted to interfit with the contact members of said bulb socket and to which electrical conductors are connected, which bulb socket and electric connector are adapted to be engaged in relative angular positions determined by the orientation of the chevron type contact members to connect the light bulb with the electrical conductors.

Another object is to provide connector structure as set forth above including a male chevron type contact member comprising an elongated member of conductive material including a V-shaped transverse cross-section at one end thereof and also including means adjacent the other end thereof for preventing withdrawal of the contact member from a member in which it is mounted.

Another object of the present invention is to provide a connector structure as set forth above including a female chevron type contact member comprising an elongated member of conductive material including at one end thereof a V-shaped cross-section having the outer ends of the V open returning to provide space for insertion of a male chevron type contact member and also including means at the other end thereof for preventing withdrawal of the contact member from a member in which it is mounted.

Another object of the present invention is to provide connector structure including means permitting assembly of the connector units only in predetermined relative angular positions, which connector structure is simple in construction, economical to produce and efficient in use.

Other objects, advantages and novel details of construction of this invention will be more apparent as this description proceeds, especially when considered in connection with the accompanying drawings, wherein:

FIGURE 1 is a partially broken away side view of a bulb socket connector unit including female chevron type contact members.

FIGURE 2 is a left end view of the bulb socket illustrated in FIGURE 1.

FIGURE 3 is a cross-section view of the bulb socket illustrated in FIGURE 1 taken on line 3-3 in FIGURE 1.

FIGURE 4 is a sectional view of an electric plug connector including male chevron type contact members.
tion 60 of the contact member 16 is adapted to fit within the recess 46 in the core 14 to present a substantially level surface for contacting the terminals of a light bulb inserted in the socket tube 24.

For the similar connector unit 18, as shown best in FIGURE 4, comprises an insulating body 62 having a recess 64 in end 66 thereof and passages 67 extending axially therethrough adapted to receive male chevron type contact members. The insulating body 62 is also provided with a bead 68 extending radially inwardly from the axially outer edge of the end 66 of the body 62 which is adapted to fit tightly around the socket tube 24 with the electric connector 18 and the bulb socket 12 in assembly, whereby recess 64 provides an insulating boot for the bulb socket 12 which is substantially sealed by the bead 68.

The male chevron type contact members 20 shown in FIGURE 4 are provided with transversely extending portions 71 and 72 at end 73 thereof adapted to connect electrical conductors 22 thereto.

The male chevron type contact member 20 shown in FIGURE 7, comprises an elongated strip of conductive material having a transverse V-shaped cross-section. The contact member 20 of FIGURE 7 includes an inclined recess extending from one end thereof adapted to fit within a recess such as 46 in core 14 to prevent withdrawal of the contact member from the core in one direction, while tabs 76 struck out from the contact member 20 prevent withdrawal of the contact member from the core in the other direction. The portions 60 and 75 of the male and female contact members 20 and 16 respectively, as shown in FIGURES 6 and 7, are particularly useful where the contact members 20 are to be engaged by the terminals of a light bulb. Ends 76 such as that of contact member 20 illustrated in FIGURE 4, are provided on the male and female contact members when these contact members are assembled in an electric connector as shown in FIGURE 4.

In use an electric bulb is inserted in bulb socket 12 with the terminals thereof in contact with the portions 60 of the female chevron type contact members 16. Electrical conductors 22 are connected to the male chevron type contacts 20 of the electric connector 18. The electric connector 18 is then inserted over the end 36 of the socket tube 24 and rotated relative thereto until the orientation of the chevron contact members is such that the male contact member may be inserted in the female contact member.

Thus an electrical connection may be completed between the electrical conductors 22 and the light bulb with the electric connector forming an insulating boot around the end 36 of the socket tube 24. Also, it will be noted that due to the chevron type contact members used in the connector structure illustrated that assembly of the bulb socket with the electric connector is possible only with the electric connector and bulb socket in a predetermined relative angular position. Proper polarity of electrical connections and angular orientation of members secured to the connector structure is thus accomplished without the use of additional structural members in a simple, efficient and economical manner.

As shown in FIGURES 8a, 8b and 8c the particular relative angular position of connector units of a connector structure in the above described assembly may be determined by the positioning of the chevron contact members. For example, with the four contact member structure illustrated in FIGURE 8a, it will be obvious that connection may be made between two connector units having such contact members with the connector units in relative angular positions spaced ninety degrees apart.

With chevron type contact members arranged in the manner shown in FIGURE 8b it will be obvious that a connector unit having two chevron type contact members positioned to be concave in the same direction as for example in FIGURE 5 may be assembled therewith only in either of two relative positions spaced ninety degrees apart.

Similarly, four chevron type contact members of a connector unit may be arranged to provide assembly with either one or two relative angular positions one hundred eighty degrees apart as indicated in FIGURE 8c.

Also, with chevron type contact members positioned as indicated in FIGURES 1–5, assembly of the line connectors may be accomplished with the connectors in only one relative angular position for use in a particular installation will readily suggest themselves as a result of the invention disclosed herein. It is the intention to include in the scope of the invention all such modifications.

What I claim as my invention is:

1. Electrical connector structure, comprising an electric bulb socket including a socket tube and an insulating core in one end of said socket tube, said bulb socket also including a contact member extending axially of said socket tube through said core and spring bias means acting between said core and socket tube to bias said contact member toward the other end of said socket tube, a separate electric connector also including a contact member secured therein, said contact members including chevron type interfitting portions operable to prevent engagement of said bulb socket and electric connector in other than predetermined relative angular positions.

2. Structure as claimed in claim 1 wherein said insulating core includes a transverse recess extending across the end thereof closest said other end of the socket tube and the contact member extending through said core includes a portion extending at right angles thereto operable to aid in securing the contact member to the core and located within the transverse recess whereby shearing of terminals from light bulbs secured in the bulb socket with a rotating movement is prevented.

3. Electrical connector structure, comprising an electric bulb socket including a socket tube and an insulating core in one end of said socket tube, spline means acting between said socket tube and said core for preventing relative rotation therebetween, said bulb socket also including a contact member extending axially of said socket tube through said core and contact member toward the other end of said socket tube, a separate electric connector also including a contact member secured therein, said contact members including chevron type interfitting portions operable to prevent engagement of said bulb socket and electric connector in other than predetermined relative angular positions.

4. Electrical connector structure, comprising an electric bulb socket including a socket tube and an insulating core in one end of said socket tube, said bulb socket also including a contact member extending axially of said socket tube through said core and spring bias means acting between said core and socket tube to bias said core and contact member toward the other end of said socket tube, a separate electric connector including a body of insulating material having an opening therethrough and a contact member secured within said opening, said contact members including interfitting portions having a V-shaped cross-section operable to prevent engagement of said bulb socket and electric connector with said bulb socket and electric connector in other than predetermined relative angular positions.
5. Electrical connector structure, comprising an electric bulb socket including a socket tube and an insulating core in one end of said socket tube, said bulb socket also including a contact member extending axially of said socket tube through said core and spring bias means acting between said core and socket tube to bias said core and contact member toward the other end of said socket tube, a separate electric connector including a body of insulating material having an opening therethrough and a contact member secured within said opening, said contact members including interfitting portions having a V-shaped cross-section operable to prevent engagement of said bulb socket and electric connector with said bulb socket and electric connector in other than predetermined relative angular positions, said body of said separate electric connector including a recess in one end thereof adapted to form an insulating boot around said one end of said socket tube with said bulb socket and electric connector in engagement.

6. Structure as set forth in claim 5 and further including a radially inwardly extending annular bead integral with the insulating boot at the axially outer extremity thereof operable to seal the connection between the bulb socket and electric connector in engagement.

7. An electric bulb socket comprising a cylindrical socket tube, a generally cylindrical core of insulating material in one end of said socket tube, means operably associated with said socket tube for limiting movement of the core toward the other end of said socket tube, resilient means acting between the socket tube and core for urging the core toward said other end of the socket tube, axially extending openings through said core, contact members mounted in said openings including chevron type end portions extending toward said one end of said socket tube and means for securing a light bulb in said other end of the socket tube in resilient engagement with the opposite end portions of said contact members.

8. Structure as claimed in claim 7 wherein said core includes a transverse recess extending across the end thereof closest said other end of the socket tube and said opposite end portions of said contact members include a portion extending at an angle thereto operable to aid in securing the contact members to the core and located within said recess whereby shearing of terminals from light bulbs secured in the bulb socket with a rotating movement is prevented.

9. Electrical connector structure, comprising an electric bulb socket including a socket tube and an insulating core in one end of said socket tube, said bulb socket also including a contact member extending axially of said socket tube through said core, a separate electric connector also including a contact member secured therein, said contact members including chevron type interfitting portions operable to prevent engagement of said bulb socket and electric connector with said bulb socket and electric connector in other than predetermined relative angular positions.

10. An electric bulb socket comprising a cylindrical socket tube, a generally cylindrical core of insulating material in one end of said socket tube, means operably associated with said socket tube for limiting movement of the core toward the other end of said socket tube, axially extending openings through said core, contact members mounted in said openings including chevron type end portions extending toward said one end of said socket tube and means for securing a light bulb in said other end of the socket tube in resilient engagement with the opposite end portions of said contact members.

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