3,270,248
ELECTRICAL JACK PLUGS

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1 Claim. (Cl. 317—99)

The invention relates to electrical jack plugs of the kind having at least two metallic portions arranged co-axially and forming contacts which are insulated from one another.

The invention provides a plug of the above kind in which the two contacts are separated by an electrical component such as a diode, resistor, or condenser having a casing (e.g. of glass) which serves as at least part of the insulation between the contacts and to which the contacts are secured, the component being electrically connected in series relation to the contacts.

The contacts may be directly attached to the casing or there may be an insulating sleeve or stem between one, or each, contact and the casing.

The contacts or the stem, when provided, may be secured to the casing by adhesive. Preferably the component lies within the compass of at least one of the contacts, as viewed in the axial direction.

It is also preferred that at least one of the contacts is tubular and an electric lead wire from the component is threaded through the contact and secured (e.g. by soldering) to the end of the contact remote from the component.

The plug forming the subject of the invention may be used in the socket contacts assembly forming the subject of Patent No. 2,922,135. That is one of the plug contacts may engage in a socket contact of one set and the other plug contact may engage in a socket contact of the other set whereby the component is connected between the two socket contacts and in any external circuit to which they may be connected.

A specific example of a plug according to the invention in position in a modified arrangement of the socket assembly according to said Patent No. 2,922,135 and an alternative form of plug will now be described with reference to the accompanying drawings in which:

FIGURE 1 is a section showing the plug and socket assembly, and

FIGURE 2 is a section of the alternative form of plug.

Referring first to FIGURE 1, the plug, which is of circular section throughout, comprises a tubular metal contact 10 at one end and a second tubular contact 11 at the other end. Between the two contacts there are an insulating tube or sleeve 12 and an electrical diode component (e.g. a diode rectifier, a resistor, a switch, a condenser or a lamp) 13. This component, indicated at 14, which has its own casing, e.g. of glass, is secured by adhesive to the contact 10 and the sleeve 12. Any adhesive which will secure glass to metal and the material of the sleeve 12 may be used. A suitable adhesive is the epoxy resin composition known as "Araldite." The diode has electrical lead wires 15, 16 which are threaded through the contacts and sleeve and soldered, at 17, 18, to the free ends of the contacts.

The socket assembly comprises two sets of rows of socket contacts 20, 21 mounted back-to-back on support plates 30, 31, respectively, as shown in my Patent No. 3,027,534, the rows of the two sets crossing at right angles. The plug contact 10 engages in one of the sockets 20 and the contact 11 engages in one of the sockets 21 whereby the diode is electrically connected between these two sockets. The diode is received in the space between the arms of the socket contact 20 and the insulating sleeve 12 ensures that there is no undesired electrical connection between the lead 16 to contact 11 and the base of the socket 20.

Various modifications may be made in the construction described above. For instance the hole in the base of the socket contact 20 may be lined with an insulating bush, in which case the insulating sleeve 12 may be omitted and replaced by an elongation of contact 11. A triode may be used in place of the diode described, a third lead wire being led out through the base of contact 10 and suitably insulated.

FIGURE 2 shows an alternative form of plug which may also be used in the socket assembly described above. In this plug the contact 11a is extended to engage the glass bulb or casing 13a and has a countersunk mouth 22 in which the rounded end of the casing is secured by adhesive. The insulating sleeve 12 is omitted and in its place the portion 23 of the contact 11a is slightly reduced in diameter and coated with a vitreous insulating enamel 24 which is also coated over the outside of the mouth portion.

As an alternative to a vitreous enamel, a heat-cured plastic enamel coating (e.g. polyurethane "Araldite") may be used, especially when the material of the contact will not stand the high temperature required for a vitreous coating.

I claim:

An electrical jack plug comprising two tubular metallic contacts arranged co-axially and, between the contacts, a sealed glass bulb, an insulating sleeve aligned with the contacts, the glass bulb being secured, at one end thereof, by adhesive to one contact and, at the other end thereof, to one end of the sleeve and the other end of the sleeve being secured to and supporting the other contact and, within the glass bulb, an electrical component having two lead wires which pass out through opposed walls of the bulb, the wires passing through the contacts and secured to the ends of the contacts remote from the glass bulb.

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