April 15, 1969 W. C. SWARTOUT 3,439,308

MALE/FEMALE ELECTRICAL ADAPTOR

Filed Dec. 12, 1966

Fig. 2.

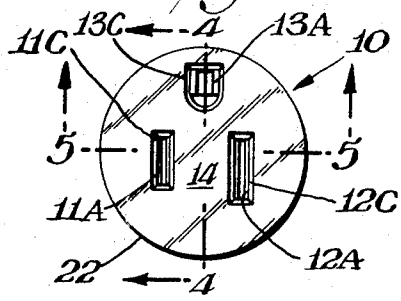


Fig. 1.

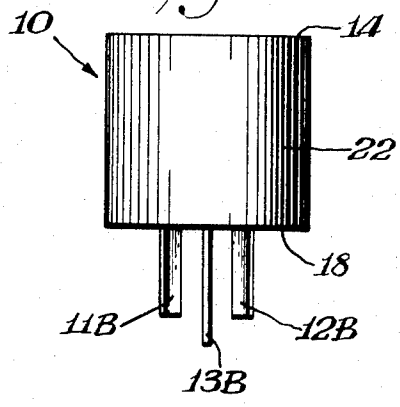


Fig. 3.

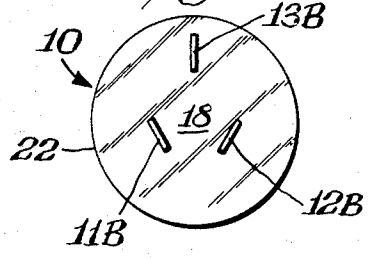
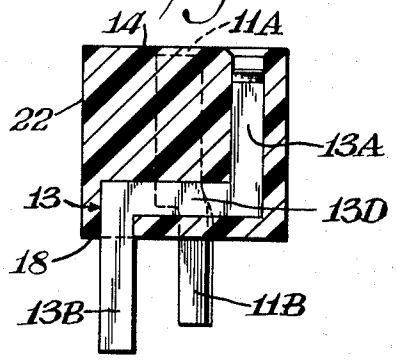
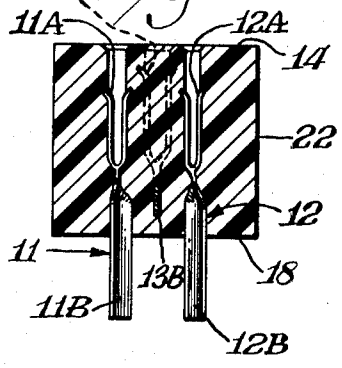


Fig. 4.



13A Fig. 5



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MALE/FEMALE ELECTRICAL ADAPTOR

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ABSTRACT OF THE DISCLOSURE

Electrical adaptor for converting between male/female connections.

BACKGROUND OF THE INVENTION

Field of the invention

This invention relates to an electrical adaptor for converting between male/female electrical connections in a connecting adaptor of the L1, L2, ground type and it more particularly relates to such a plug type adaptor. For safety purposes the lines connected to each end of the connector should be consistent to insure that the current is carried through connected machinery and appliances on the protected circuit. Such adaptors sometimes therefore have the L1 and L2 connectors on each end, electrically cross-polarized with respect to each other.

Description of the prior art

Heretofore the L1 and L2 connecting means on the ends of cross-polarized adaptors have been cross connected within the body of the adaptor by various joined connections, such as soldered leads. These cross connections are subject to disruption and breakage making them dangerous and unsuitable for Underwriter Laboratories approval.

SUMMARY OF THE INVENTION

In accordance with this invention, the L1 and L2 connections are carried integrally and unbroken straight through the adaptor. The ground connection is also integral and passes through the body of the adaptor between the L1 and L2 connectors so that it is disposed on opposite sides of the L1 and L2 connecting means at the opposite ends of the adaptor. This electrically cross-polarizes the L1, L2 connecting means on the opposite ends of the body without physically affecting their structure.

BRIEF DESCRIPTION OF THE DRAWINGS

Novel features and advantages of the present invention will become apparent to one skilled in the art from a reading of the following description in conjunction with the accompanying drawings wherein similar reference characters refer to similar parts and in which:

FIG. 1 is a view in elevation of one embodiment of this invention;

FIG. 2 is a top plan view of the embodiment shown in FIG. 1;

FIG. 3 is a bottom plan view of the embodiment shown in FIG. 1;

FIG. 4 is a cross sectional view taken through FIG. 2 along the line 4—4; and

FIG. 5 is a cross sectional view taken through FIG. 2 along the line 5—5.

DESCRIPTION OF THE PREFERRED EMBODIMENTS

In FIGS. 1–5 is shown an electrical adaptor **10** including: lug **11** for the L1 connection, lug **12** for the L2 connection and lug **13** for the ground connection. Adaptor **10** converts between female connecting means **11A**, **12A** and **13A** inserted within sockets **11C**, **12C** and **13C** on one end **14** of adaptor **10** and male connecting means **11B**, **12B** and **13B** on the other end **18**. Female connecting means **11A**, **12A** and **13A** are in a grounded U configuration. Connector **11A** is the L1. Connector **12A** is the L2 and connector **13A** is the ground. They are representative of any female type configuration, for example, any NEMA (National Electrical Manufactures Association) configuration, of the U or "Crowsfoot" type. They are illustratively shown as a Nema 5–15R grounded U receptacle.

Connectors **11B**, **12B** and **13B** at the other end of adaptor **10** are representative of any male configuration and are shown in a Nema 10–20P plug of the "crowsfoot" type. Terminal **11B** is the L1 hot connection. Terminal **12A** and **13A** and male connections **11B**, **12B** and **13B** is the ground. As previously mentioned, plug configuration **11B**, **12B** and **13B** is representative of any male plug configuration.

FIGS. 4 and 5 show how female connections **11A**, **12A** and **13A** and male connections **11B**, **12B** and **13B** are opposite ends of integral or solid electrical conductor lugs **11**, **12** and **13** extending through insulated body **22** within which they are molded. Body **22** can be any moldable insulating material, such as rubber or phenolic resin. Molded body **22** is however illustrative of any feasible insulating body for an electrical adaptor and could be hollow or split or any other workable configuration.

Lugs **11**, **12** and **13** are integral strips of electrical conducting material, such as an electrical copper alloy. Female ends **11A**, **12A** and **13A** are of the forked type for receiving the tips of a male connector. Ground lug **13** passes between lugs **11** and **12** in connecting its female end **13A** to its male end **13B**. Female end **13A** and male end **13B** comprise substantially parallel legs of lug **13**. Ends **13A** and **13B** are connected by bar **13D** within body **22**.

Ground connections **13A** and **13B** are, as shown in FIGS. 2 and 3, disposed on opposite sides of the L1, L2 connections **11A**, **12A** and **11B**, **12B**. In other words ground connections **13A** and **13B** are reversed 180° relative to each other with respect to their associated L1, L2 connections. Lug **13** passes within body **22** between the L1, L2 lugs **11** and **12** in connecting its female and male ends **13A** and **13B**. This electrically cross-polarizes the L1, L2 connections **11A** and **12A** with **11B** and **12B**, even though they do not mechanically cross each other inside adaptor **10**. This cross-polarized structure is necessary to insure that current is carried through connected lines in a continuous way without the previously necessary physical cross connection of the L1, L2 lugs. Adaptor **10** therefore satisfies the most stringent safety requirements for cross-polarized adaptors with a remarkably simple structure.

I claim:

1. An electrical adaptor for converting between male and female connecting means of the L1, L2, ground type comprising an insulating body, spaced male connecting means of said type on one end of said body, spaced polarized female connecting means of said type on the other end of said body, said connecting means extending through said body from one end to the other, and said ground connecting means being disposed on opposite sides of said L1 and L2 connecting means on the male and female ends of said adaptor whereby said male and female connecting means on said ends are electrically cross-polarized relative to each other.

2. An electrical adaptor as set forth in claim **1** wherein said male and female connecting means are interchangeably "crowsfoot" and U type.

3. An electrical adaptor as set forth in claim **1** where-

in said ground connecting means includes a pair of parallel legs at said ends of said body and a bridging bar within said body.

4. An electrical adaptor as set forth in claim 3 wherein said bridging bar is disposed substantially at right angles to said legs.

5. An electrical adaptor as set forth in claim 3 wherein said male and female connecting means are interchangeably crowsfoot and U type.

6. An electrical adaptor as set forth in claim 5 wherein said bridging bar is disposed substantially at right angles to said legs.

7. An electrical adaptor as set forth in claim 1 wherein said connecting means include flat bars.

8. An electrical adaptor as set forth in claim 1 wherein said ground connecting means is integral.

9. An electrical adaptor as set forth in claim 8 wherein all said connecting means are integral and solid.

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U.S. Cl. X.R.

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