United States Patent [19]

Garrett

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[54] **GROUND PRONG FOR AN ELECTRICAL PLUG**

[76] Inventor: **Lewis B. Garrett,** 1020 W. 47th St., Hialeah, Fla. 33012

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[52] **U.S. Cl.** ..... **339/14 P,** 339/95 R

[51] **Int. Cl.** **H01r 3/06**

[58] **Field of Search** ... 339/14, 95, 252, 278, 256 C, 339/258 C, 195, 196

[56] **References Cited**

UNITED STATES PATENTS

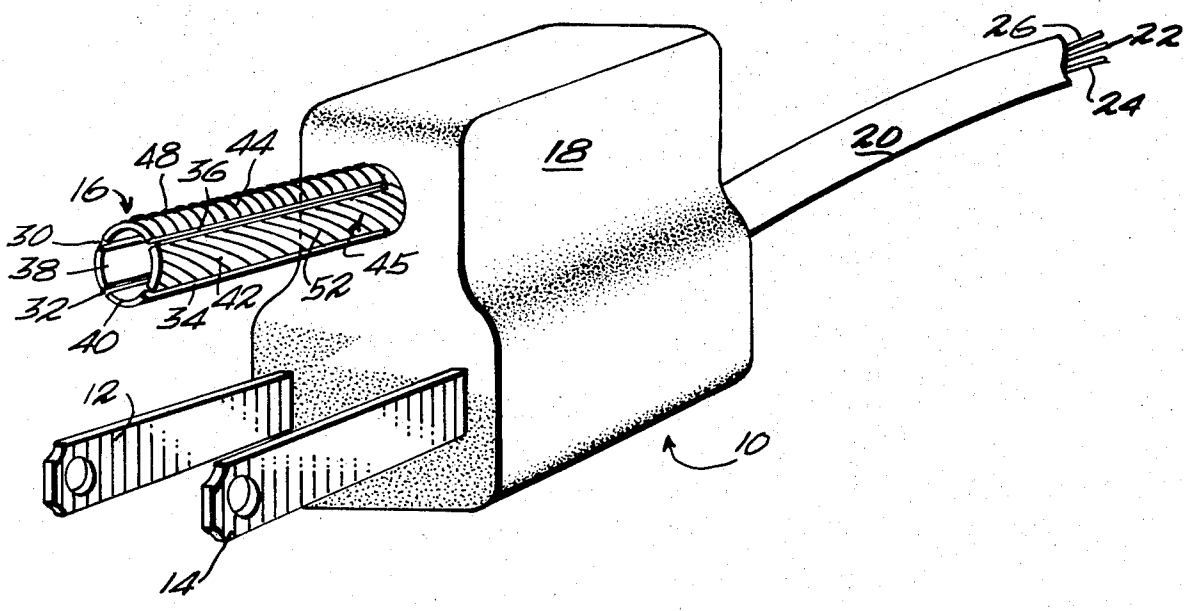
1,627,442	5/1927	Luthy	339/95 B
1,650,546	11/1927	Strahan	339/258 C
1,671,226	5/1928	Caruso	339/258 C
2,049,560	8/1936	Ezzo	339/196 R
2,248,082	7/1941	Herman	339/195 R
2,861,324	11/1958	Klumpp	339/14 P
2,873,988	2/1959	Bartholomew	339/95 R
3,013,242	12/1961	Terlinde	339/14 RP
3,644,869	2/1972	Newman	339/19

Primary Examiner—Roy D. Frazier
Assistant Examiner—Robert A. Hafer

[57] **ABSTRACT**

A ground prong for an electrical plug of the type providing two current-carrying prongs and a ground prong for connection to a three-wire electrical system, the ground prong being provided with a plurality of spaced apart, radially outwardly extending ridges along its length to make a better ground connection with the conventional ground contact in a three-prong electrical wall receptacle.

6 Claims, 4 Drawing Figures



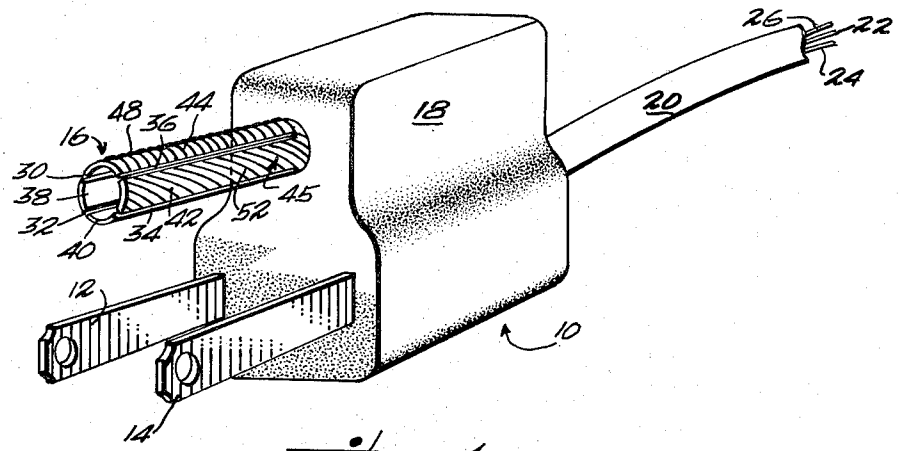


Fig. 1

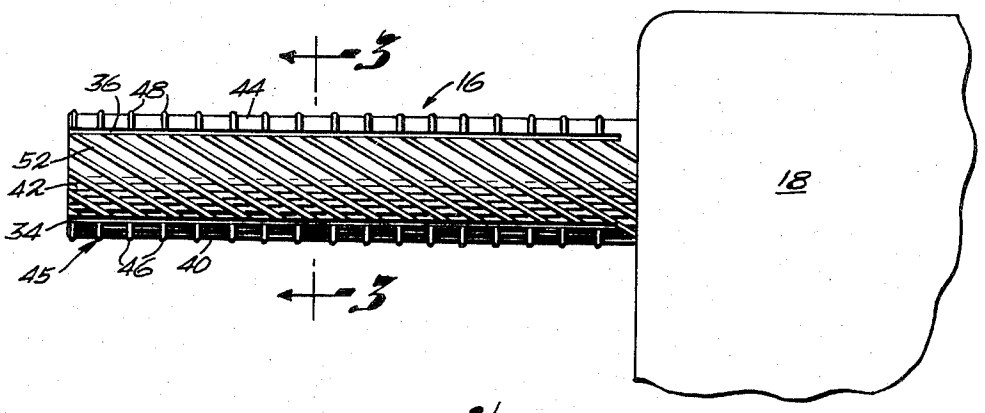


Fig. 2

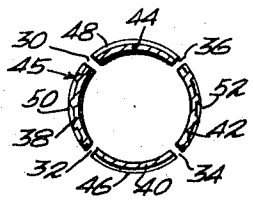


Fig. 3

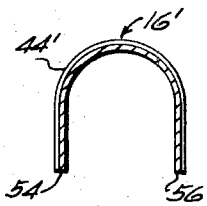


Fig. 4

GROUND PRONG FOR AN ELECTRICAL PLUG

STATE OF THE PRIOR ART

Conventional three-prong electrical plugs of the type commonly connected to a three-wire electrical system are comprised of two current-carrying prongs and a ground prong. The ground prong is generally round or horseshoe shaped in vertical, transverse cross section and provides a smooth outer surface for contact with an internal contact member in a threeprong wall receptacle.

Three-wire electrical systems are generally provided for electrical devices such as household appliances and power tools which come in contact with human being while in operation. The safety factor of such three-wire electrical systems is dependent entirely on the ground connection between the ground prong on the plug and the internal ground contact in the female wall receptacle.

BACKGROUND OF THE PRESENT INVENTION

The present invention pertains to a ground prong for an electrical plug of the type commonly connected to a three-wire electrical system by a cable extending therebetween. Electrical plugs of this type provide a pair of current-carrying prongs and a ground prong for reception in a conventional three-prong wall receptacle or in a three-prong adaptor plug which provides receptacle means in one end for the three prongs and two current-carrying prongs, extending outwardly from the opposed end, for reception in a conventional two-prong wall receptacle. Adaptor plugs of this nature include a wire connection, commonly called a pigtail, between the internal ground contact and a wall box, containing the receptacle. The pigtail generally provides a forked end for reception between a screw and a cover plate over the wall box, the screw forming a ground connection to said wall box.

The effectiveness of the ground connection between the ground prong on the plug and the ground contact in the wall receptacle or adaptor plug is entirely dependent on the nature of the contact therebetween. Because of the considerable periods of time that often elapse between the usage of many household appliances and hand-operated power tools, a considerable degree of oxidation forms on the surfaces of both the ground prong, carried by the plug, and the ground contact in the wall receptacle. As a result, a poor electrical circuit is formed therebetween.

To obviate this condition, the ground prong of the present invention is provided with a plurality of spaced apart, radially outwardly extending ridges along its length to provide a better electrical ground connection between said prong and the receptacle ground contact. The apex of each ridge provides a scraping action along the length of the receptacle contacts every time the plug is inserted into or withdrawn from the receptacle which removes the oxidation from the surfaces of both elements.

The internal ground contact means of most conventional three-prong wall receptacles or adaptors generally comprises one or more copper spring leaves which flex radially outwardly when the plug is inserted therein.

To further enhanace the degree of contact between the ground plug and the receptacle ground contact, the

ground plug of the present invention may be provided with a plurality of longitudinal slits, substantially along its length, to form a plurality of somewhat flexible segments which conform with the internal, flexible receptacle contacts to insure a ground contact, therebetween, along their respective lengths.

BRIEF DESCRIPTION OF THE DRAWINGS

FIG. **1** is a perspective view of a three-prong electrical plug including a ground prong in accordance with the present invention;

FIG. **2** is an enlarged, fragmentary, side elevational view of the ground prong of FIG. **1**, extending outwardly from the plug;

FIG. **3** is a cross sectional view, taken along the line **3—3** of FIG. **2**; and

FIG. **4** is a cross sectional view similar to FIG. **3**, illustrating a modified form thereof.

DETAILED DESCRIPTION OF THE DRAWINGS

With reference to the drawings in which like reference characters designate like or corresponding elements throughout the various views and with particular reference to FIG. **1**, a three-prong electrical plug, designated generally as **10**, is illustrated with a pair of current-carrying prongs **12** and **14** and a ground prong **16**, extending outwardly from a first end thereof. The plug **10** includes an insulating main body portion **18** and a conduit **20**, extending outwardly from a second end enclosing two current-carrying wires **22** and **24** connecting with the prongs **12** and **14**, and a ground wire **26** connecting with the ground plug **16**. The various prongs **12, 14** and **16**, and the conduit **20** include end portions molded into the main body portion **18** in a conventional manner with the various wires **22, 24** and **26** being connected with the respective prongs **12, 14** and **16** therein.

As best illustrated in FIGS. **1** and **2**, the ground prong **16** is preferably of a thin walled tubular configuration being longitudinally slotted, substantially along its length, as at **30, 32, 34** and **36** to form four outwardly extending segments **38, 40, 42** and **44**. Each segment is provided with radially outwardly extending ridges, designated generally at **45**. In one preferred form, illustrated in FIGS. **1, 2** and **3**, the segments **38, 40, 42** and **44** form a generally tubular transverse configuration, the ridges **46** and **48** on the bottom and top segments **40** and **44** being formed generally in a parallel, transverse disposition and the ridges **50** and **52** on the respective, opposed side segments **38** and **42** being formed in an angular relationship with the slots **30, 32, 34** and **36**. The disposition of the ridges as above described are by way of example only and are not intended as a limitation of the present invention.

FIG. **4** illustrates a modified form of the present invention in which the ground prong **16'** is generally horseshoe shaped in cross sectional configuration. In this form, ridges **44'** are radially, outwardly formed from the outer surface thereof in a spaced apart, parallel transverse disposition or in an angular relationship to the respective edges **54** and **56** thereof. The prong **16'** may be longitudinally slotted to form two or more segments, the ridges **44'** may also be provided in any combination of transverse and/or angular dispositions on the respective segments.

What is claimed is:

1. An electrical plug including an insulating main body portion having a first end with a pair of current-carrying prongs and the ground prong, extending outwardly therefrom, for reception in a conventional three-prong receptacle and a second end having a three-wire conduit extending outwardly therefrom, the prongs and conduit including inner end portions, fixed relative to the main insulating body portion thereof with the three wires being connected therein with the respective prongs, said ground prong comprising an elongated member having an outer surface with a plurality of spaced apart, outwardly extending ridges thereon, said ground prong being of a generally thin walled tubular configuration and longitudinally slotted substantially along its exposed length, to define a resilient prong, said prong being provided with said ridges which extend generally radially outwardly therefrom, said resiliency allowing said ground prong to compress radially as it engages a socket, substantially along the exposed length thereof.

2. The ground prong as defined in claim 1 wherein said inner end portions are molded in said main insulating body portion.

3. The ground prong as defined in claim 1 wherein said ground prong is slotted to define four generally equal sized prong segments.

4. The ground prong as defined in claim 3 wherein a first opposed pair of said prong segments provide ridges in a spaced apart, generally parallel, transverse disposition and a second opposed pair of said prong segments provide ridges in an angular relation to said slots.

5. The ground prong as defined in claim 1 wherein said prong is of a generally horseshoe, transverse configuration.

6. The ground prong as defined in claim 1 wherein said prong is longitudinally slotted, substantially along its exposed length, to define a plurality of extending prong segments.

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