United States Patent

Drapkin

[15] **3,639,883**

[45] **Feb. 1, 1972**

[54] GROUND CONTACT FOR RECEPTACLE

[72] Inventor: **William Drapkin,** Centereach, N.Y.

[73] Assignee: **Slater Electric Inc.,** Glen Cove, N.Y.

[22] Filed: **Sept. 21, 1970**

[21] Appl. No.: **73,744**

[52] **U.S. Cl.**.....**339/14 R,** 339/95 R, 339/133 R, 339/156 R

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

[58] **Field of Search**.....339/14, 154, 156, 133, 95, 339/164, 166, 176, 194

[56] **References Cited**

UNITED STATES PATENTS

2,519,121	8/1950	Del Camp	339/194 R
2,686,297	8/1954	Hutt	339/14 R
3,036,285	5/1962	Smith	339/133 R X
3,064,224	11/1962	Wiley	339/14 R
3,432,793	3/1969	Muska et al.	339/14 R

Primary Examiner—Marvin A. Champion

Assistant Examiner—Robert A. Hafer

Attorney—George B. Finnegan, Jr., Granville M. Pine, John D. Foley, Jerome G. Lee, Thomas P. Dowling, John A. Diaz, Warren H. Rotert, John C. Vassil, Alfred P. Ewert and Thomas R. MacDonald

[57] **ABSTRACT**

A ground contact for use with an electrical receptacle comprises an integral metal stamping having two generally U-shaped bridges interconnected by two connecting portions at their open ends, and two leaf springs extending from respective connecting portions into a prong-receiving opening of the receptacle mounting strap. When a grounding prong is inserted into this opening, it forces the leaf springs against edges of the mounting strap so that the springs can be flexed against these edges. As a result, the flexed leaf springs apply substantial holding pressure to the grounding prong.

3 Claims, 5 Drawing Figures

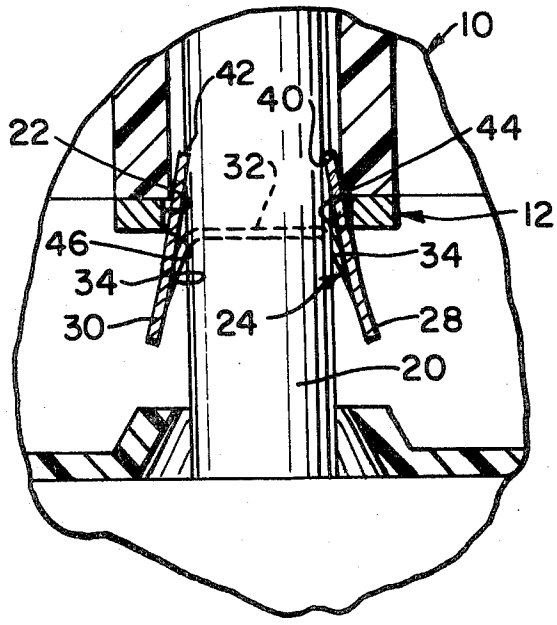
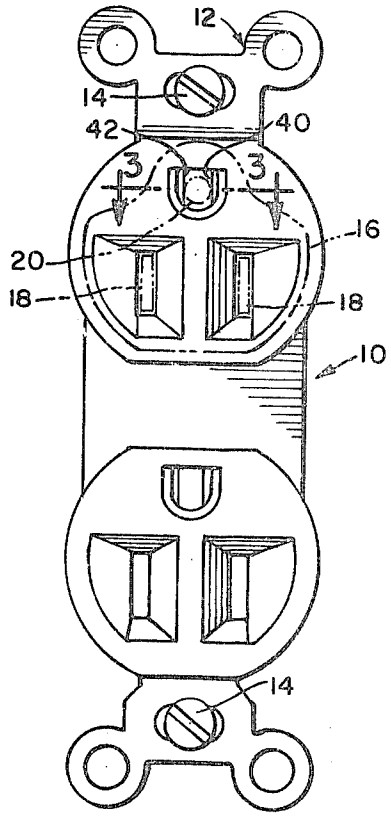


FIG. 1



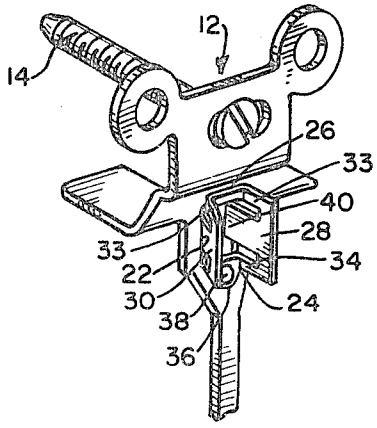


FIG. 2

FIG. 3

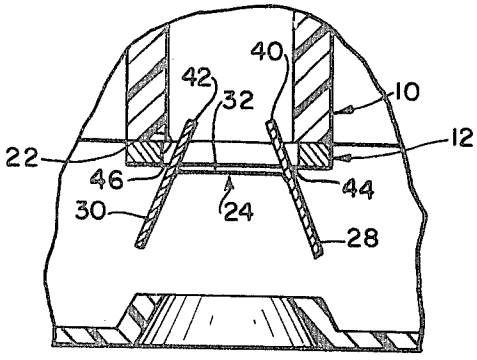


FIG. 4

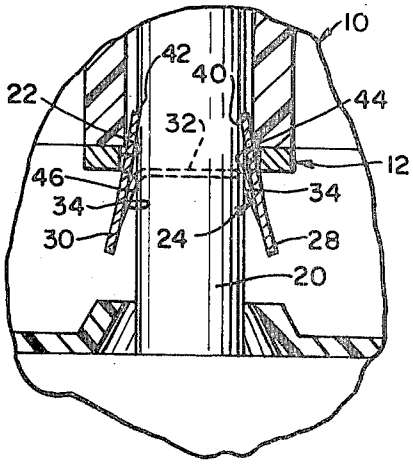
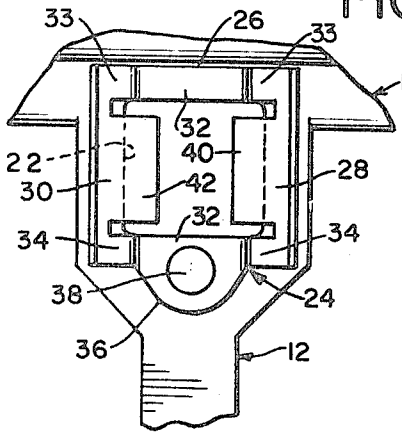


FIG. 5



INVENTOR.
WILLIAM DRAPKIN

BY

Darby & Darby

ATTORNEYS

GROUND CONTACT FOR RECEPTACLE

This invention relates to electrical connecting devices. More specifically, the present invention relates to an improved contact of the type used with standard electrical receptacles to make an electrical connection to the grounding prong of an electrical plug.

For well-known reasons, electrical wall receptacles generally include grounding sockets which are adapted to receive the grounding prong of an electrical plug. Essentially, this is to ensure that the exposed metallic portions of the appliance being operated will be grounded in the event of any circuit malfunction or wiring fault. Thus, it is common practice for electrical plugs to include a separate grounding prong, in addition to the regular connecting prongs, to provide a third or grounding electrical path.

Since the purpose of the grounding path is to prevent the existence of a substantial voltage on the exposed parts of an appliance, it is obviously desirable that the impedance of this grounding path be as low as possible. Accordingly, it is desirable that a good electrical connection be made between the grounding prong of the plug and the receptacle, as well as between the receptacle and the system ground (i.e., the outlet box). The present invention provides an improved contact for providing an electrical connection between the mounting strap of the receptacle and the grounding prong. It is improved primarily by virtue of the increased holding pressure applied to the grounding prong without resulting in added manufacturing expense of inconvenience.

Briefly, in accordance with the invention, a ground contact comprises an integral metal stamping having two generally U-shaped bridges connected by two connecting portions from which leaf springs extend into the prong-receiving opening of the mounting strap. In the preferred embodiment, insertion of the prong causes the leaf springs to be flexed against edges of the mounting strap to increase the force applied to the prong by the springs.

The invention is described in further detail below with reference to the attached drawings, wherein:

FIG. 1 is a front elevation view of a typical duplex wall receptacle;

FIG. 2 is a perspective view of a portion of the mounting strap of the receptacle shown in FIG. 1 illustrating the invention;

FIG. 3 is a detailed sectional view along the line 3—3 of FIG. 1, showing the contact without the grounding prong;

FIG. 4 is a sectional view similar to FIG. 3 in which the grounding prong has been inserted into the contact; and

FIG. 5 is an enlarged front view of a portion of the improved contact according to the invention.

In the drawings, a standard duplex wall receptacle is shown at 10. Receptacle 10 is conventional and is secured in a known way to a mounting strap 12 which is intended to be secured within a standard outlet box (not shown) by connecting means such as screws 14. The connection should be such that the mounting strap 12 is mechanically secure within the outlet box and electrically connected to it since the outlet box will be at the electrical ground of the system. In FIG. 1, the outline of a connecting plug is shown in phantom lines at 16. The plug includes the usual connecting prongs 18 and a grounding prong 20 which is circular in cross section. The prongs 18 and 20 are received within standard sockets (not numbered) within the receptacle.

The contact according to the invention provides an improved electrical connection between prong 20 and mounting strap 12. Mounting strap 12 includes a grounding prong receiving opening 22. Opening 22 also is conventional and

may be of the type used with known ground contacts. The contact is an integral metal stamping consisting of generally U-shaped bridges 24 and 26 interconnected at their free ends by respective connecting portions 28 and 30. Each of the bridges includes a flat central strip 32 from which angularly disposed legs 33 and 34 extend outwardly (i.e., away from the mounting strap 12). The central strips 32 are in contact with mounting strap 12 at opposite ends of the opening 22 (see FIG. 5). Thus, opening 22 is "framed" by the bridges 24, 26 and the connecting portions 28 and 30. A tablike projection 36 extends horizontally from central strip 32 of bridge 24. Tab 36 includes a semicircular opening (not numbered) which receives a similarly shaped projection 38 extending outwardly from mounting strap 12. The projection 38 may be swedged over the tab 36 in a conventional fashion to secure the entire contact construction to the mounting strap both mechanically and electrically.

The contact further comprises a pair of opposed leaf springs 40 and 42 which extend from respective connecting portions 28 and 30 into the opening 22 of strap 12. As shown in FIG. 3, the leaf springs 40 and 42 extend toward each other in close proximity to the respective edges 44 and 46 which define the opening 22.

When a plug containing a grounding prong 20 is inserted into the receptacle, the grounding plug 20 passes between leaf springs 40 and 42 (see FIG. 4) forcing the springs against the respective edges 44 and 46. When the springs abut against these edges, the edges serve as a stop against which the springs can be flexed. As a result, the flexed springs 40 and 42 apply a considerable force against the contiguous surface of prong 20. The electrical and mechanical connection is also increased to an extent because the sharp edges (not numbered) of the spring 40 and 42 contact prong 20 to provide a "line" contact along which considerable pressure is applied.

The thickness of the metal used to stamp the contact and the material used will vary, depending upon various factors. Where the invention is used in connection with a standard wall receptible capable of handling twenty amps, it is contemplated that the contact may be made of ¾ hard brass sheet, with the thickness of the sheet approximately 0.030 inch. Obviously, the invention contemplates all usable materials and dimensions within the scope of the appended claims.

What is claimed is:

1. A ground contact for use with an electrical receptacle having an electrically conductive mounting strap which is adapted to be secured within an electrical outlet box and including an opening to receive the grounding prong of an electrical plug, comprising

an integral metal stamping having

two generally U-shaped bridges, said bridges each including a central strip overlying said strap in a region adjacent said opening and two outwardly extending legs, two connecting portions interconnecting said bridges at their open ends, said connecting portions disposed to receive said prong therebetween,

a pair of leaf springs extending from respective ones of said connecting portions into said opening, and

means for mechanically, and electrically connecting said metal stamping to said mounting strap.

2. A ground contact according to claim 1, wherein said leaf springs are sufficiently close to the edges of the strap which define said opening to cause said leaf springs to be flexed against said edges when said prong is inserted between said springs.

3. A ground contact according to claim 2, wherein said leaf springs extend toward each other.

* * * * *