United States Patent

[11] **3,579,175**

[72] Inventor **Larry L. Shroyer**
Kendallville, Ind.

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[73] Assignee **Lyall Electric, Inc.**
Albion, Ind.

[54] **ELECTRIC CIRCUIT ADAPTER MEMBER**
5 Claims, 5 Drawing Figs.

[52] **U.S. Cl.** **339/156,** 339/170
[51] **Int. Cl.** **H01r 13/50**
[50] **Field of Search** ..... 339/14, 49, 76, 77, 78, 79, 154, 155, 156, 157, 170, 159, 176 (RM), 176 (S)

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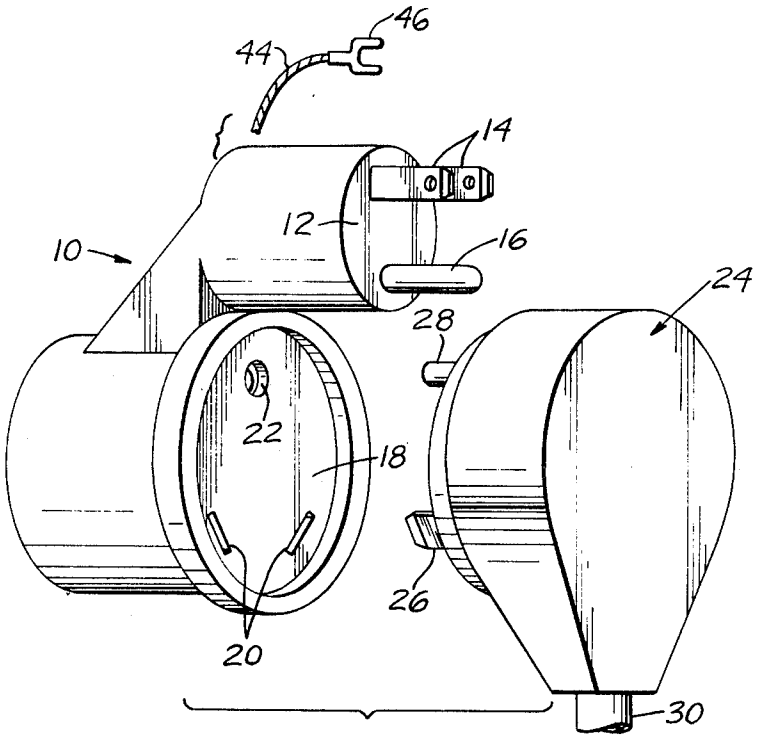
Primary Examiner—Stephen J. Novosad
Assistant Examiner—Lawrence J. Staab
Attorney—Jeffers and Rickert

ABSTRACT: The invention relates to an adapter member having a body of electrical insulating material with elements of a male fitting projecting therefrom to permit the adapter to be plugged into a receptacle. The body has elements of a female fitting therein adapted for receiving the male fitting on the end of an electric cable. The female fitting portion of the body may receive a larger male plug than can be received in the receptacle, or a male plug of a different character than can be received in the receptacle. The male fitting portion and female fitting portion of the adapter preferably have their axes parallel and offset so that the female fitting portion can be disposed below the male fitting portion and thereby reduce the load on the receptacle.



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SHEET 1 OF 2

FIG-1

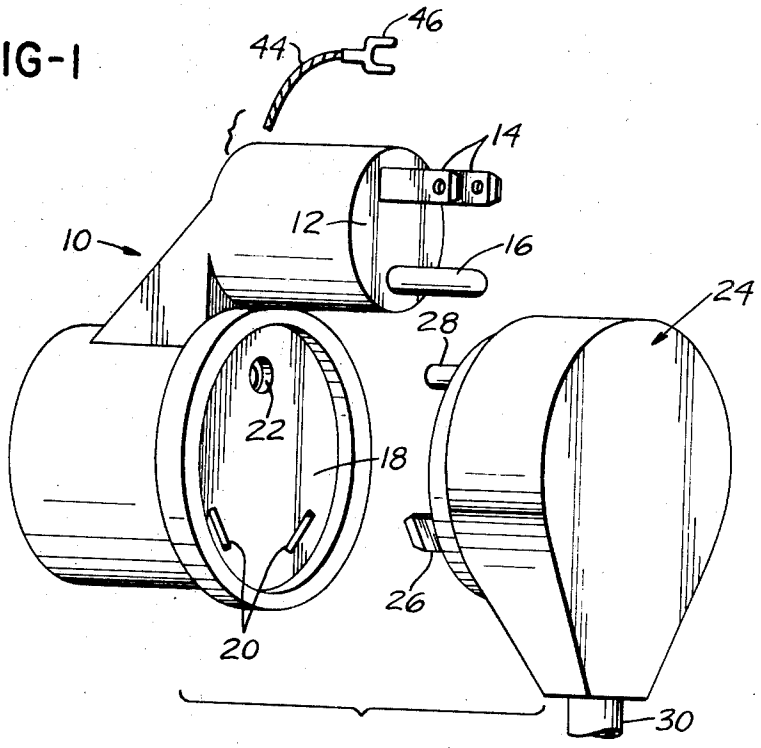
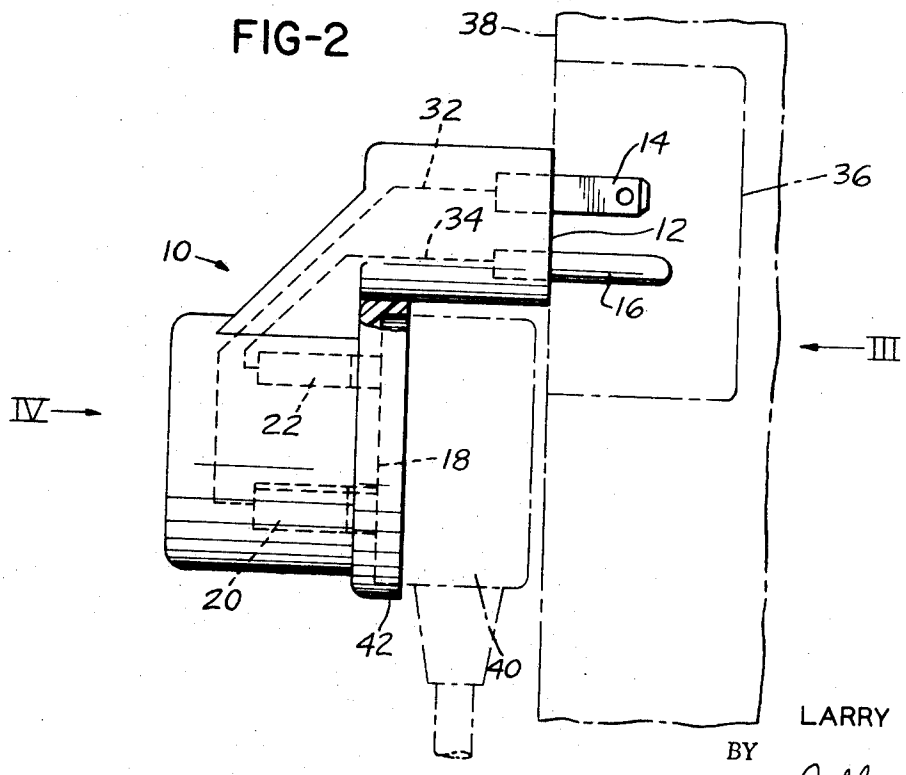


FIG-2



INVENTOR.
LARRY L. SHROYER

BY

Jeffers and Young
ATTORNEYS

FIG-3

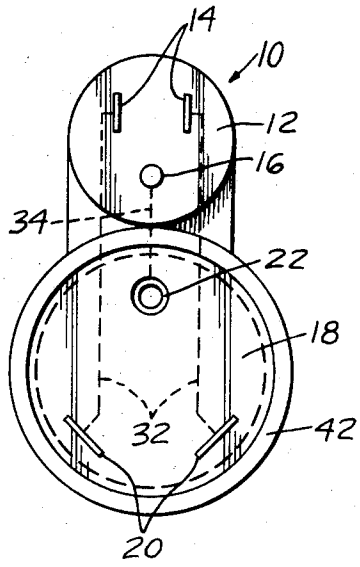


FIG-4

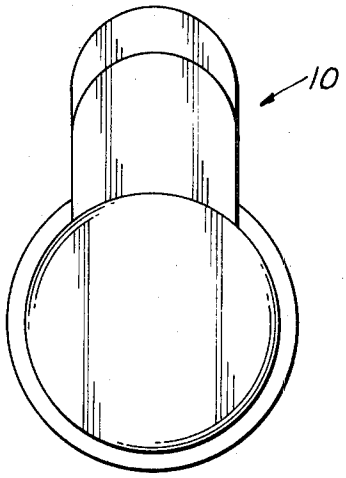
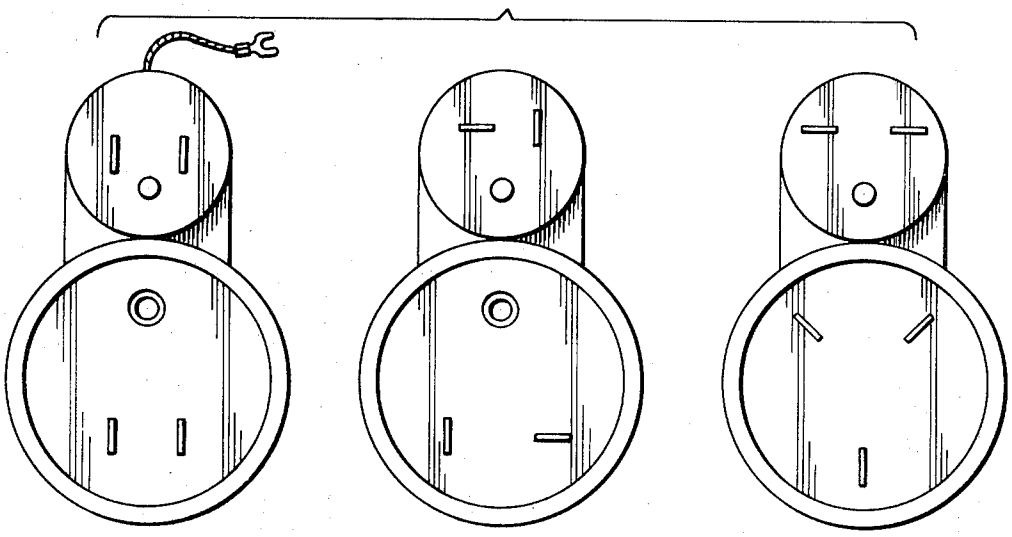


FIG-5



INVENTOR.
LARRY L. SHROYER

BY

Jeffers and Young

ATTORNEYS

ELECTRIC CIRCUIT ADAPTER MEMBER

The present invention relates to an adapter member for use in connecting an electric cable, or cord, to an electrical receptacle.

A great many electrically operated devices, such as power tools and the like, are provided with electric cords having male fittings, or plugs, on the free ends thereof for plugging into an electrical receptacle of the proper voltage.

For small tools and the like with relatively light cords, no difficulty is encountered in making and maintaining the connection to a conventional receptacle unless the cord is moved about a great deal, or is pulled on. However, with devices having heavier cords there is the possibility that the plug will be pulled out from the receptacle, or that the receptacle will become damaged.

In still other cases, the plug on the end of the cord and the receptacle may be of a different size, or a different character, and under such circumstances the plug cannot be received in the receptacle.

With the foregoing in mind, a primary objective of the present invention is the provision of an adapter member for plugging into a receptacle and having a female fitting portion for receiving the male plug on the end of an electric cord, which overcomes the difficulties referred to above.

Another object of the present invention is the provision of an adapter member of the nature referred to which will relieve the receptacle of the load of the cord.

Still another object of this invention is the provision of an adapter member of the nature referred to which permits plugs and receptacles which do not match each other physically to be electrically interconnected.

It is also an object of this invention to provide an adapter member of the type referred to in which the plug is prevented from being pulled out of the adapter member by accidental tensions that may be applied to the cord.

Still another object of the invention is the provision of an adapter member of the nature referred to which is easy to manufacture and inexpensive in cost and which is not subject to failure.

It is a further object of the present invention to provide an adapter plug which would allow appliances such as for example a refrigerator to be set considerably closer to a wall receptacle than is allowed by prior adapter plugs.

The foregoing objects, as well as still other objects and advantages, of the present invention will become more apparent upon reference to the following specification, taken in connection with the accompanying drawings, in which:

FIG. 1 is a perspective view showing an adapter member according to the present invention;

FIG. 2 is a side elevational view of the adapter member;

FIG. 3 is a view looking in at the adapter member from the right side of FIG. 2;

FIG. 4 is a view looking in at the adapter member from the left side OF FIG. 2; and

FIG. 5 schematically illustrates various combinations of male and female fittings to be interconnected by the adapter member.

Referring to the drawings somewhat more in detail, and with particular reference to FIGS. 1 to 4, the adapter member will be seen to comprise a body part 10, which is advantageously in the form of a molding made of electrical insulating material. The body is free of holes and the like, which would require coring and can, thus, be molded in a simple cavity.

Body member 10 had a first area 12 formed thereon from which projects blades or terminals 14 forming a part of a male fitting adapted for being received in a receptacle. Area 12 may, furthermore, have ground terminal 16 projecting therefrom arranged conventionally with respect to terminals 14.

Body member 10 has a second area 18 thereon in a plane parallel to the plane of area 12. Areas 12 and 18, preferably, face in the same direction and are laterally offset from each other and area 12 is disposed at one extreme end of body 10, whereas area 18 is disposed intermediate the ends of body 10.

Extending into area 18 are the openings 20 for receiving the terminals of a male plug and a further opening 22 for receiving the ground terminal of the male plug. In FIG. 1, such a plug is indicated as 24 and comprises active terminals 26, only one thereof being shown, for being received in apertures 20, and a ground terminal 28 adapted for being received in aperture 22. Plug 24 is connected to an electric cord or cable 30 leading to an electrically operated device, such as a power tool.

Within the openings 20 and 22 are resilient conductive terminals elements forming the elements of a female fitting for making electrical connection with terminals 26 and 28 of the plug.

Within body 10, wires 32 are molded leading from the contact elements in apertures 20 to the aforementioned terminals 14. A further wire 34 in the body leads from the contact element in aperture 22 to the aforementioned ground terminal 16. The terminals 14 and 16 pertaining to area 12 and the conductive terminal elements in holes 20 and 22 can be molded directly in body 10 according to conventional and well known practices in the art of manufacturing male and female electrical fittings of moldable materials. Prior to molding body 10, the bores 32 and 34 are connected to the pertaining terminals and will, thus, be embedded in the body when the body is molded.

As will best be seen in FIG. 2, the terminals 14 and 16 are adapted for being received in a wall mounted receptacle, schematically indicated by dot-dash lines at 36. Receptacle 36 is mounted in a wall, or the like, presenting a substantially planar surface 38.

As will be seen in FIG. 2, surface 18 is spaced form wall 38 sufficiently far to accommodate the plug, indicated at 40, which has elements extending into the holes formed through area 18.

Advantageously, area 18 has a rim part 42 upstanding therefrom for embracing the periphery of plug 40 and assisting in supporting the plug on the adapter member.

As will be seen in FIG. 2, the female fitting portion of the adapter member, represented by the portion of the body including area 18, and the holes 20 and 22 extending therein, and the terminal elements in the holes, is adapted for receiving a male plug of a different character that can be received in the receptacle into which terminals 14 of the male portion of the adapter member are received. The male plug adapted for being received in the female portion of the adapter member may merely be larger than the said receptacle, or it may have a different arrangement of the terminals.

In addition to the adapter member providing means for effecting electrical connections between a plug of one character and a receptacle of another character, it also offers the benefit of supporting the plugged-in cord in such a manner as to relieve the receptacle in which the male portion of the adapter member is plugged from excessive loads. This will be appreciated upon reference to FIG. 2, wherein it will be seen that the cord and plug pull downwardly on the adapter member instead of outwardly thereon and, furthermore, the adapter member is prevented from tilting any appreciable amount in the receptacle because the back of the plug 40 will engage wall 38 if the adapter member tilts more than a very small amount in the receptacle.

Also, any pull on the cord leading to plug 40 cannot dislodge plug 40 from the adapter member and, rather than exerting a direct pull on the adapter member that might dislodge it from the from the receptacle, it will tend to tilt the adapter member in the receptacle making it much less likely that the adapter member will be pulled from the receptacle by tensions accidentally exerted on the cord.

The adapter member has been shown with a ground terminal 16 on the male fitting portion thereof, but for use of the adapter member in regions where the receptacles do not have ground terminals, as in the case of older receiving installations, terminal 16 could be eliminated and, instead, wire 34

could be connected with a lead 44 having a terminal portion 46 for connection to a ground point.

In addition to the arrangement of the terminals of the male and female portions of the adapter member illustrated in FIGS. 1 to 4, other arrangements could be arrived at as shown in FIG. 5. FIG. 5 shows several different combinations of terminal arrangements and sizes, all conventional in the trade, and any combination of which is adapted for being incorporated in an adapter member according to the present invention.

Modifications can be made within the scope of the appended claims.

I claim:

1. An adapter member for use in connecting an electric cable having a male fitting to a receptacle having a female fitting, said adapter member comprising: a body of electrical insulating material, said body having two spaced portions each having a planar area thereon, said portions comprising a first portion having a first said area at one extremity of the body and a second portion having the said second area and spaced from said first portion, elements of a male fitting projecting from said first area for being received in a female receptacle whereby said first portion forms a male fitting portion, elements of a female fitting in a said second area for receiving the elements of a male fitting whereby said second portion forms a female fitting portion, and conductors in said body electrically connecting said male elements with said female elements; said first and second areas being parallel and offset from each other laterally and longitudinally, said areas facing in the same direction.

2. An adapter member according to claim 1 wherein said first area is at one extreme end of said body while said second area is intermediate the ends of said body.

3. An adapter member according to claim 2, in which the said male elements of said male fitting portion project from said first area in such oriented relation that when inserted in a conventional female fitting the said female fitting portion will be at a level vertically beneath the level of said male fitting portion.

4. An adapter member according to claim 3, in which the longitudinal distance between said areas is such that when said male fitting portion is plugged into a female fitting mounted in a planar surface, a male fitting inserted in said female fitting portion will have its side remote from said second area closely adjacent said planar surface.

5. An adapter member according to claim 4, in which said body is in the form of a substantially solid block of molded electrical insulating material.