# United States Patent

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[54] **SAFETY DEVICE FOR CONVENIENCE-OUTLET CONNECTIONS**
**6 Claims, 6 Drawing Figs.**

[52] **U.S. Cl.** ..... **317/9 R,** 339/42
[51] **Int. Cl.** ..... **H01r 13/44**
[50] **Field of Search** ..... 339/277, 203, 42, 61 C, 61 R, 60, 94 L, 40; 317/9 R

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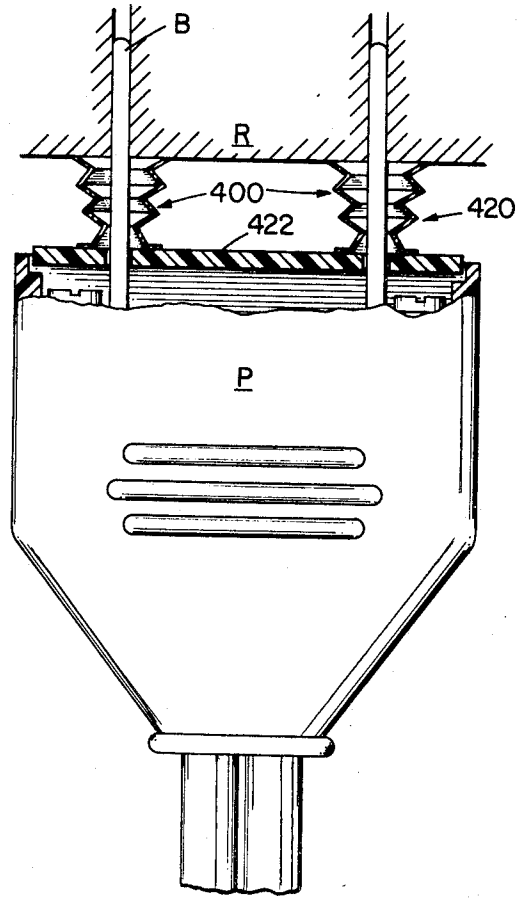
**ABSTRACT:** A collapsing flexible sleeve for insulating the blades of plugs connected with electrical convenience outlets is disclosed. In one embodiment the sleeve is a tapered rubber bellows which nests to minimum thickness on collapsing; in another embodiment the sleeve is an elastic spiral of insulative material.



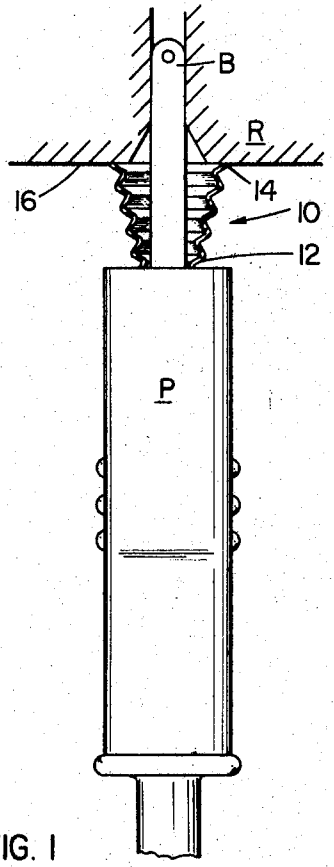



FIG. 1

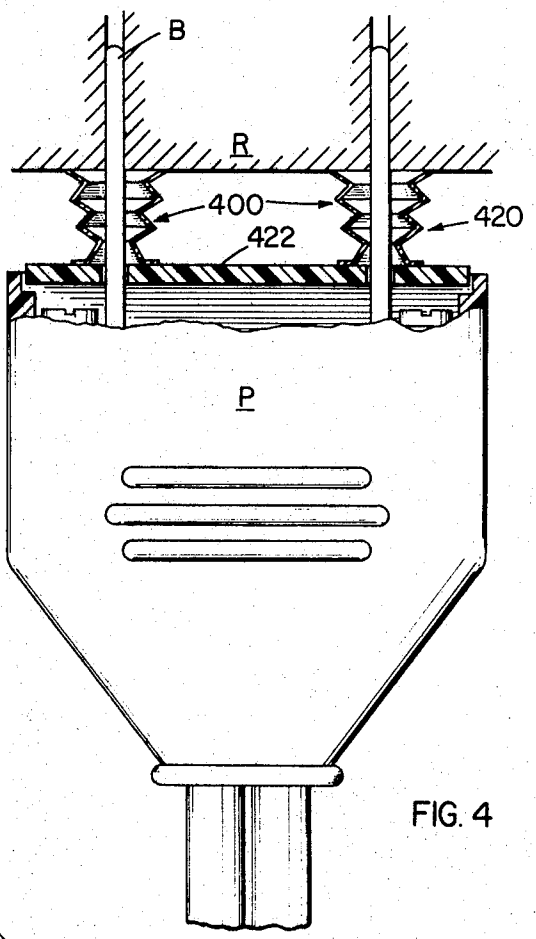



FIG. 4

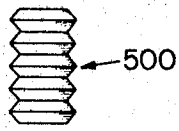



FIG. 5

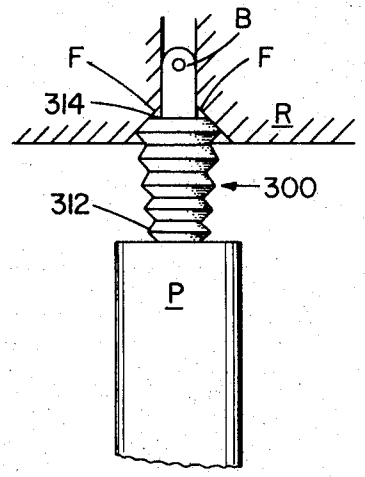



FIG. 3

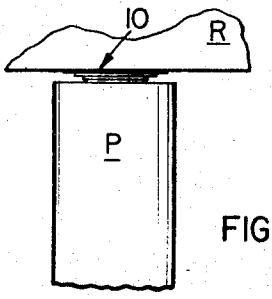



FIG. 2

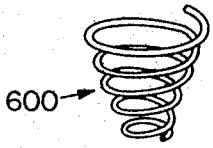



FIG. 6

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# SAFETY DEVICE FOR CONVENIENCE-OUTLET CONNECTIONS

This invention relates generally to electrical devices and specifically to insulative means for application to ordinary household convenience outlet connections.

Modern housewiring reflects the increasing use of plugin appliances. Convenience outlets are no longer scarce and inaccessible, but instead are supplied at close intervals throughout every room. Frequent connection and disconnection is the rule. At the same time, adults and children are being exposed to greater hazards of burn and shock through the use of "thin" two-prong plugs, which make it easy to touch both blades of a plug while it is partially inserted in a wall outlet or in the end of an extension cord. It is a common experience to find that receptacles on extension cords are too shallow to receive the full length of blades of a plug, causing continuous exposure of portions of "hot" blades. Paper clips, bobbypins, and the like can cause fires when they fall across or are placed by young children across such exposed terminals.

Spillage of conductive fluids such as salt water (including urine) and types of cleaning fluids onto exposed plugterminals can cause shock, explosion and fire.

Various means have been proposed in the prior art to eliminate these hazards, however they have been ineffective, unduly cumbersome, unsightly, expensive, or inconvenient to use.

It is a principal object of my invention to overcome all these difficulties and provide a safety device for insulating the blades of plugs connected with electrical convenience outlets which is safe, convenient, inconspicuous, cheap, easy to install, easy to use, adapted for use with various styles and sizes of convenience outlet connectors, and durable.

I embody these advantages typically in collapsing sleeves for fitting over the prongs or blades of electrical plugs, forming insulative combinations with outlet faces.

These and other advantages and objects of my invention will become apparent on examination of the following description and the drawings in which:

FIG. 1 is a side view of a plug-to-receptacle connection, partially in section, showing an embodiment of my invention in use;

FIG. 2 is a side detail of a plug-to-receptacle connection;

FIG. 3 is a side view of a plug-to-receptacle connection, partially in section, showing another embodiment of my invention in use;

FIG. 4 is a plan view of a plug-to-receptacle connection, partially in section, showing a further embodiment of my invention in use;

FIG. 5 is a side view of yet another embodiment of my invention; and

FIG. 6 is a detail of yet another embodiment of my invention.

Taking up the drawings in detail, FIG. 1 indicates in section at R an ordinary convenience outlet, wall receptacle extension cord receptacle, or the like. Partially plugged into the convenience outlet is an ordinary two prong plug P, having a blade B. Covering the exposed portion of the blade is a collapsing sleeve insulator **10**, shown in section. The sleeve is in the form of a flexible bellows, which is preferably of thin neoprene rubber or the like. It is tapered from the smaller end **12**, which grips the root of the blade, to the large end **14**, which is shown in contact with the face **16** of the convenience outlet. As the plug is farther inserted, the corrugations of the tapered bellows collapse, but not in a linear bundle. The tapered shape causes the corrugations to nest flatly as the sleeve collapses, so that little or no part of the plug travel is affected, and it can be pushed home as if the bellows were not in place.

FIG. 2 shows the bellows sleeve **10** collapsing as the plug is farther inserted.

FIG. 3 illustrates an embodiment **300** which differs only in degree of taper from the FIG. 1 device. The base **312** of sleeve **300** fits tightly around the blade B as before, but the open end **314** of the taper is small enough to fit within the sloped insulative faces F, which are provided in most convenience outlets.



This configuration allows the plug to be inserted completely into the receptacle, since the sleeve collapse and stores within the tapered recess in the receptacle.

FIG. 4 shows an alternative embodiment **420** of my invention in which the sleeves **400** are integral with the cover **422** of the plug. The cover **422** may be detachable as shown, or it may be integrally affixed to the plug. The sleeves may be cemented to the cover, laminated to it, or mechanically attached as by having a portion passing through the blade aperture in the cover. The cover may be fitted tightly to the blades and the sleeves may be made large enough to avoid touching the blades, so that any wear will be confined to the cover proper.

FIG. 5 shows a further embodiment **500** of my invention, in the form of a bellows of uniform average diameter. This may be fitted to a cover, and may be used with recessed receptacles as in FIG. 3, to provide the full collapse advantages desirable in such application. The inner diameter at one end is preferably constricted to grip the blade of the plug.

FIG. 6 shows an embodiment **600** of my invention generally similar in outer form to the FIG. 1 embodiment. However, this is a spiral of elastic material such as polypropylene, installed and used in the same way as the FIG. 1 embodiment. For clear exposition the spiral is shown of thin strand material, but in actual embodiment the strands are thicker. The convolutions almost overlap when extended and become concentric when the device is collapsed into a flat spiral.

It will be noted that the embodiments of FIG. 1–5, the bellows embodiments, tend to waterproof and explosionproof the connection in addition to insulating it from solid objects.

All embodiments of my invention are easy to install, are scarcely noticeable when the plug is disconnected, and are hidden when the plug is connected. Any housewife can purchase the safety devices of my invention for a small sum and install any of them without danger or difficulty, since they are self-orienting and self-aligning, and can thus eliminate a considerable potential for household accidents.

Obviously many modifications and variations of the present invention are possible in light of the above teachings. It is, therefore, to be understood that within the scope of the appended claims the invention may be practiced otherwise than as specifically described.

I claim:

1. A safety device for insulating the blades of plugs connected with electrical convenience outlets, comprising tapered plural corrugation collapsing sleeve means for covering a portion of the length of a plug blade and means for securing the collapsing sleeve means to a plug, thereby providing for the corrugations of said tapered plural corrugation bellows collapsing sleeve means to nest flat when collapsed by compression.

2. A safety device as recited in claim 1, wherein one end of the collapsing sleeve means is constricted for affixation to the root of a plug blade.

3. A safety device as recited in claim 1, wherein the plug is of the type adapted for use with a removable substantially flat cover having an aperture for a plug blade, and wherein the safety device includes a said cover integral with said collapsing sleeve.

4. A safety device as recited in claim 1, wherein the taper comprises a spiral of insulative material.

5. A safety device as recited in claim 1, wherein the taper comprises a continuous sleeve.

6. A safety device for insulating the blades of plugs connected with electrical convenience outlets, comprising tapered collapsing sleeve means for covering a portion of the length of a plug blade, a plug having a blade within said tapered collapsing sleeve means with the taper opening toward the free end of the plug blade, means for securing the tapered collapsing sleeve means to said plug blade, and an electrical convenience outlet of the type having an insulated face with a tapered aperture therein for receiving a plug blade the open end of the taper of the tapered collapsing sleeve means being adapted to fit within a portion of the tapered aperture in said electrical convenience outlet.