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2,429,278

ELECTRICAL CONNECTOR PLUG

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FIG. 1

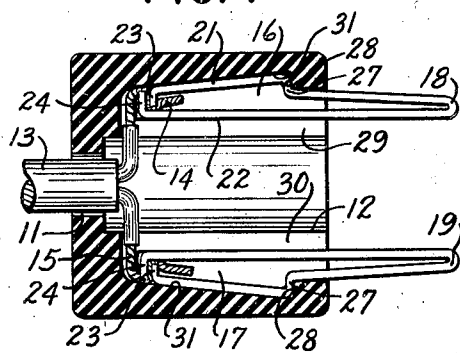


FIG. 2

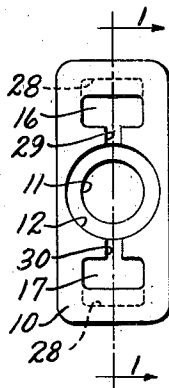
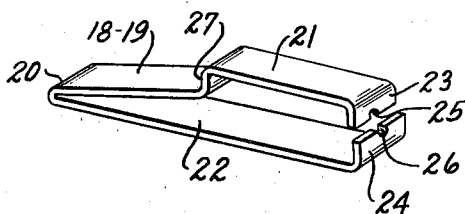


FIG. 3



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ELECTRICAL CONNECTOR PLUG

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3 Claims. (Cl. 173—361)

1 This invention relates to pronged electrical connector plugs for use on conductor cords for electrical appliances and the like, said connector plugs being engageable with outlet receptacles for connecting the appliances to a source of electrical energy.

It is an object of this invention to provide a neat-appearing, compact, rugged, efficient, and economically produced connector plug for use on conductor cords for electrical appliances and the like.

Another object is the provision of a connector plug having relatively few parts and of simple and economical construction, and one which may be assembled and disassembled with minimum difficulty and skill.

Another object is to provide a novel connector plug having terminal prongs which are easily and readily insertable into and separable from the rigid body portion of the plug without the use of tools.

Another object of this invention is to provide a novel connector plug having terminal prongs which firmly grip the ends of the conductor cord when the prongs are properly assembled in the rigid body portion of the plug, said prongs being easily and readily removable from and insertable into said body portion in case it becomes necessary and/or desirable to install a new cord.

With these and incidental objects in view, the invention includes certain novel features of construction and combinations of parts, the essential elements of which are set forth in appended claims and a preferred form or embodiment of which is hereinafter described with reference to the drawing which accompanies and forms a part of this specification.

In the drawing:

Fig. 1 is a cross-sectional view of the complete connector plug taken along line 1—1, Fig. 2.

Fig. 2 is a plan view of the outer end of the body portion of the connector plug.

Fig. 3 is a detail perspective view of one of the terminal prongs.

Description

Referring to the three figures of the drawing, the novel connector plug for use on electrical appliance cords or cables and which is the subject of this specification comprises a rigid body portion 10, which may be molded or otherwise formed of suitable plastic material having proper insulating qualities.

Preferably the body portion 10 is formed in one piece, but, if desirable, it may be formed of two

2 identical halves secured together by cementing or other suitable means.

The body 10 has a central bore 11 and a connecting counterbore 12, said bore 11 arranged to freely receive a connector cord or cable 13, and the counterbore 12 providing room for an "electrician's knot," if desirable, to relieve strain on the terminal ends 14 and 15 of the cord 13.

The body 10 has identical right-hand and left-hand recesses 16 and 17 for receiving identical terminal prongs 18 and 19, each of which is formed of a continuous strip of sheet metal having the proper conductive properties and hard enough to resist permanent deformation when the prongs are inserted into or removed from the recesses 16 and 17, as will be described later.

Each prong 18 and 19 is bent back upon itself at 20 (Fig. 3) to form legs 21 and 22, having, respectively, at their ends, oppositely-bent portions 23 and 24 having, respectively, terminal-receiving notches 25 and 26. The portion 24 overlies the portion 23 with sufficient clearance to provide room for the terminals 14 and 15 and to permit said portions to by-pass each other when the legs of the prongs are sprung together for assembly into the recesses 16 and 17.

Each leg 21 of the prongs 18 and 19 has formed thereon a shoulder 27, which engages a corresponding shoulder 28 (Fig. 1) formed in the recesses 16 and 17, when said prongs are inserted into said recesses, and serves to retain said prongs securely in said recesses.

Channels or slots 29 and 30, connecting the full length of the recesses 16 and 17 with the counterbore 12, provide clearance for the terminal ends 14 and 15 when the prongs 18 and 19 are inserted into said recesses 16 and 17.

To connect the terminal prongs 18 and 19 to the terminals 14 and 15 and to assemble said prongs in the recesses 16 and 17, the cord or cable 13 (Fig. 1) is first threaded through the bore 11 and the counterbore 12 until the terminals 14 and 15 thereof extend sufficiently beyond said counterbore to facilitate the connection of the terminal prongs 18 and 19 thereto. If desired, an "electrician's knot" may be tied in the terminals 14 and 15 before the prongs are connected thereto.

Normally the legs 21 and 22 of the prongs 18 and 19 are slightly sprung apart, as shown in Fig. 3, so that the bared ends of the terminals 14 and 15 may be threaded through the corresponding notches 25 and 26, after which said legs are pinched or sprung together to clamp the terminal ends 14 and 15 between the adjacent sur-

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faces of the corresponding portions 23 and 24, as shown in Fig. 1.

With the terminal ends 14 and 15 securely clamped between the legs 21 and 22, the terminal ends of the prongs 18 and 19 are inserted into the open ends of the corresponding recesses 16 and 17, the slots 29 and 30 providing the necessary clearance for said terminals 14 and 15. The prongs 18 and 19 are then forced inwardly until the shoulders 27 thereon move beyond or by-pass the corresponding shoulders 28 in the recesses 16 and 17, whereupon the slight releasing of the spring tension in the legs 21 and 22 causes said shoulders 27 to spring into the path of the corresponding shoulders 28 to yieldingly retain said prongs 18 and 19 in said recesses.

Tapered or angular surfaces 31 (Fig. 1), formed in the recesses 16 and 17 and cooperating with corresponding surfaces on the legs 21, force said legs inwardly to cause the oppositely-bent portions 23 and 24 thereof to firmly clamp the terminal ends 14 and 15 of the cord 13 therebetween to form a connection of superior qualities from both an electrical standpoint and a mechanical standpoint.

In case it is necessary or desirable to remove the prongs 18 and 19 from their respective recesses 16 and 17, all that is necessary is to pinch the exposed portions of the corresponding yieldable legs 21 and 22 together to disengage the shoulders 27 on the legs 21 from their corresponding shoulders 28 in said recesses 16 and 17 and remove said prongs outwardly through the open ends of said recesses.

The spacing of the exposed ends of the prongs 18 and 19 is such that insertion of said prongs into the connector recesses of an electrical receptacle forms a good electrical connection but does not tend to disengage the shoulders 27 from the corresponding shoulders 28, thus obviating the danger of pulling said prongs out of the recesses 16 and 17 when the plug is removed from the receptacle.

From the foregoing description, it is evident that the present invention is directed to a compact, rugged, and mechanically and electrically efficient connector plug having a rigid body portion with recesses for the reception of terminal prongs which may be removed from or inserted into said recesses at will and without the use of tools, in case, for any reason, it becomes necessary to change the cord. Likewise, the prongs are constructed to firmly clamp the terminal ends of the cord when said prongs are properly assembled in the body of the plug, but, when said prongs are removed from said body, they may be easily and quickly disconnected from said terminal ends and reconnected to new terminal ends without the use of tools, thus providing a connector plug of simple and efficient design which may be installed by persons not having unusual mechanical or electrical ability.

While the form of mechanism shown and described herein is admirably adapted to fulfill the objects primarily stated, it is to be understood that it is not intended to confine the invention to the one form or embodiment disclosed herein, for it is susceptible of embodiment in various forms all coming within the scope of the claims which follow.

What is claimed is:

1. A connector plug for connecting the terminal ends of an electrical conductor cord to a receptacle, said plug having a rigid body portion of insulating material with a central bore and

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a counter-bore to accommodate the cord, the combination of a terminal blade formed of a strip of conducting metal of uniform thickness and having the properties to withstand repeated flexings, said strip folded back upon itself to form overlying legs, connected at one end free at the other, said connected end forming a prong for inserting in the receptacle; a terminal clamping extension formed on the free end of one of the legs, and substantially at right angles thereto; a terminal clamping extension formed on the free end of the other leg and substantially at right angles thereto, said latter extension arranged to overlie the former extension to clamp the bared terminal end therebetween; coacting notches formed in the contiguous edges of the extensions to receive and guide the bared terminal end; a recess formed in the body of the plug and open at its outer end to receive the free ends of the legs, said recess connected by a slot to the counter-bore to provide clearance for the terminal end when the blade is assembled in the recess; a shoulder formed in the recess; and a shoulder formed on one leg of the blade and arranged to removably and yieldingly engage the shoulder in the recess, when the said blade is properly assembled therein, with sufficient firmness to prevent unintentional displacement of said blade during normal use of the connector plug, said shoulders readily disengageable for the removal of said blade from said recess.

2. In a connector plug for electrical conductor cords, said plug having a rigid body portion of insulating material with a bore and a counter-bore formed therein to accommodate the cord, the combination of a terminal blade formed of a strip of yieldable conducting material of uniform thickness, said strip folded back upon itself to produce overlying legs connected at one end to form a contact portion and free at the other end; substantially parallel overlapping extensions formed on the free ends of the legs and effective to clamp the bared terminal end of the cord therebetween; coacting notches formed in the edges of the extensions to receive and guide the terminal end of the cord; a recess formed in the body of the plug and open at its outer end to receive the free ends of the legs, said recess connected by a slot to the counter-bore to provide clearance for the terminal end; a shoulder formed in the recess; and a shoulder formed on one leg of the blade and arranged to yieldingly by-pass and then spring into the path of the shoulder in the recess when said blade is inserted therein, to retain said blade against displacement during normal use of the connector plug, said shoulders readily disengageable for the removal of said blade from said recess.

3. In a connector plug for electrical conductor cords, said plug having a rigid one-piece body portion of insulating material with recesses therein to accommodate the cord, the combination of a terminal blade formed of a strip of yieldable conducting metal of uniform thickness, said blade folded back upon itself to produce overlying legs connected at one end to form a contact prong and free at the other end; overlying terminal clamping extensions formed on the free ends of the legs; coacting terminal engaging and guiding notches in the clamping extensions; a recess in the body portion conforming to the shape of the free ends of the legs, said recess open at its outer end to receive said free ends of the legs; a retaining shoulder formed in the recess; and a shoulder formed on one of the legs of the blade

and arranged to yieldingly by-pass and then spring back into the path of the shoulder in the recess, when said blade is inserted therein, to removably retain said blade in said recess.

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REFERENCES CITED

The following references are of record in the file of this patent:

UNITED STATES PATENTS

Number	Name	Date
1,956,018	Gilbert -----	Apr. 24, 1934
2,173,820	Andre -----	Sept. 26, 1939
2,183,016	Gilbert -----	Dec. 12, 1939
2,136,193	Karst -----	Nov. 8, 1938
2,301,919	Petry -----	Nov. 17, 1942
2,309,311	Grohsgal -----	Jan. 26, 1943