

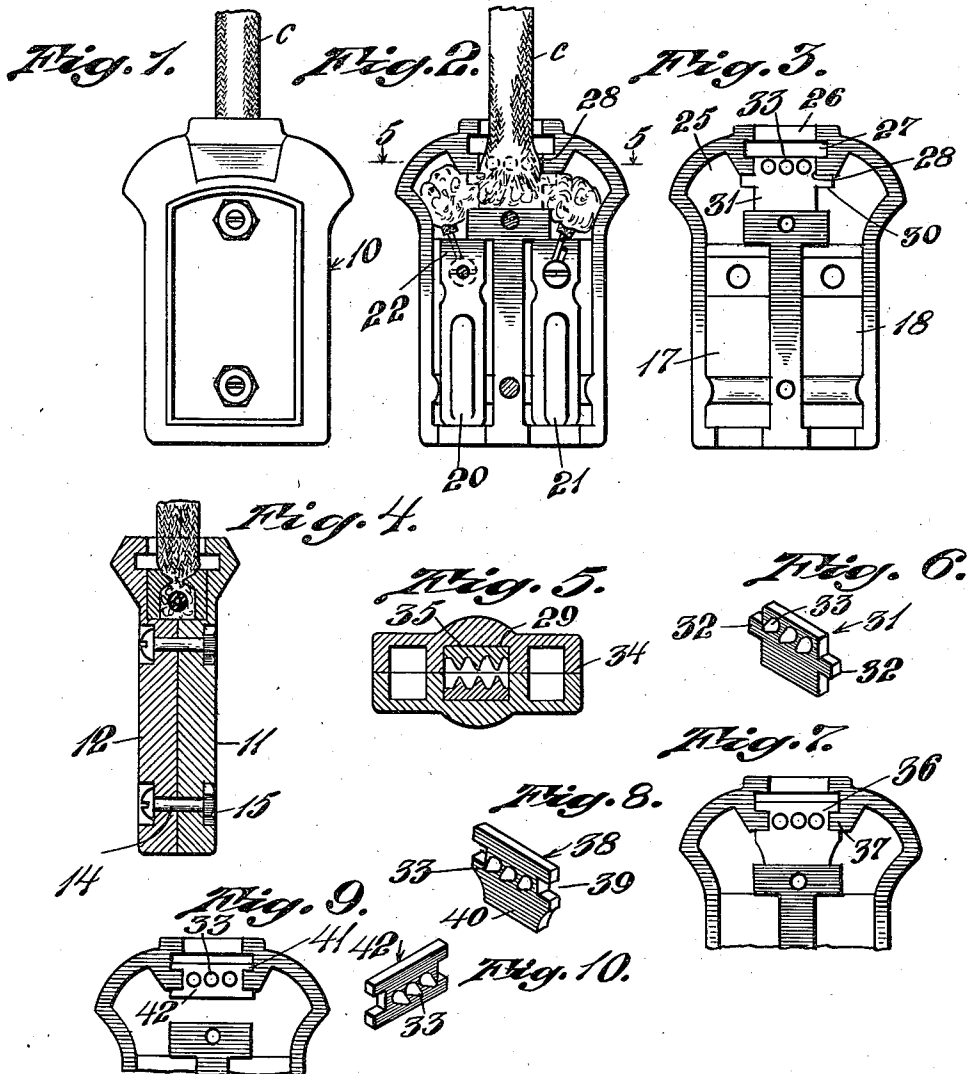
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G. H. BURT

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ELECTRICAL PLUG

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INVENTOR.

Guy H. Burt.
BY Parlow & Parlow
ATTORNEYS.

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ELECTRICAL PLUG

Guy H. Burt, Providence, R. I.

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2 Claims. (Cl. 173—322)

This invention relates to an electrical connector or plug, and more particularly to an improved electrical cord connector plug of the type commonly employed to attach a circuit cable or extension cord to a heater such as an electric iron, toaster or other electrical appliance.

An object of the invention is to provide an improved electrical connector construction having means whereby the electrical contacts and the connector wires attached thereto within the plug are relieved from extreme pulling strains such as when the plug is withdrawn from the socket of the appliance by seizure of the cable.

Another object of the invention is to provide an improved cord connector plug construction having means for firmly gripping and anchoring the extension cord or cable thereto whereby the plug may be easily separated from the socket by a straight axial pull on the cable without inflicting detrimental strain on either the connector wires or the contacts within the plug structure.

Another object of the invention is the provision of an electrical cord connector of the above character having anchoring means for the extension cord as it emerges from the plug designed so as to relieve the contact and connector wires within the structure from torsional strain when the extension cord is subjected to a torque by being twisted.

A further object of the invention is to provide an electrical plug and cord assembly in which the grip on the cord will be sufficient to prevent within certain tolerances a pull or torque applied to the cord outside of the plug from being so transmitted to the part of the cord within the plug as to cause a movement of the cord parts within the plug beyond certain limits.

A still further object of the invention is to provide an electrical plug which may be molded by cold molding of the main part of the structure and with the insert formed in a different operation, thus enabling molding by a process which is not readily adaptable at the present time for structure shown in my prior Patent #2,128,883, dated August 30, 1938.

With these and other objects in view, the invention consists of certain novel features of construction, as will be more fully described, and particularly pointed out in the appended claims.

In the accompanying drawing:

Fig. 1 is a vertical elevational view of an electrical cord connector plug formed of a pair of sections in opposed face to face relation embodying my invention;

Fig. 2 is an elevational view of the connector plug structure in Fig. 1 but with the front section removed;

Fig. 3 is a detail view, in elevation, of one of the sections showing the anchoring means for the extension cord;

Fig. 4 is a longitudinal central sectional view;

Fig. 5 is a section on line 5—5 of Fig. 2;

Fig. 6 is a perspective view of the insert member shown in Figs. 1 to 5;

Fig. 7 is an elevational view of a fragmental portion of one of the sections showing a modified recess;

Fig. 8 is a perspective view of the insert member for the arrangement of Fig. 7;

Fig. 9 is a detailed elevation of a fragmental portion of body section with modified construction;

Fig. 10 is a perspective view of the insert for the arrangement shown in Fig. 9;

It is well-known practice in the use of ordinary electrical cord attachment plugs that such devices are many times withdrawn from the socket of the electrical appliance by seizure and sudden jerking of the cable or extension cord, thereby causing extreme strain to be imposed on the connection wires of the cable with the contacts of the plug and consequently resulting in a rapid destruction and deterioration of the portion of the cable adjacent to the plug. Further twisting of the cord often occurs causing a different strain to be transmitted to and into the plug. The strain placed on these extension cords under these conditions often is of such force that many times the connector wires of the cable where they are attached to the metal contacts of the plug are broken and short circuits result; and in order to obviate such difficulties I have provided an electrical cord connector plug construction having means disposed within the plug so constructed and arranged as to prevent the connection between the wires and the contacts within the plug from being materially strained by reason of excessive tension or torque being transmitted thereto if the cable is pulled or twisted; and in order to accomplish these advantageous results I have provided in each of the sections of the connector plug adjacent the rear opening thereof through which the extension cord extends into the connector block, anchoring means adapted to bite into exterior portions of the cable or extension cord that is clamped between the sections for firmly gripping and holding the cord preferably at oppositely disposed points upon sections of the plug in op-

posed face to face relation whereby any force applied to the cable will be borne by such anchoring and gripping means of the plug and will so relieve the cord within the plug that these forces will not be imposed to a substantial degree or a degree to cause detrimental movement upon the connector wires within the plug; and the following is a more detailed description of the present embodiment of this invention, illustrating the preferred means by which these advantageous results may be accomplished.

With reference to the drawing, 10 designates generally the electrical cord connector or attachment plug and comprises a body member generally oblong in cross-section formed of opposed halves or sections 11 and 12 of hard rubber or other suitable hard insulating material. The sections 11 and 12 are of substantially identical construction and they are held in face to face contact with each other by means of suitable screws 14 and nuts 15 as is the usual construction of such connector plugs. The opposed faces of the sections 11 and 12 are formed with spaced complementary longitudinal grooves or recesses of generally rectangular cross-section 17 and 18 which cooperate to form parallel contact housing channels or sockets extending inwardly from the forward end of the connector plug when the body pieces 11 and 12 are clamped together. The shape of these channels is not material so long as they fit the contacts of the plug.

In each of these sockets in the front of the insulating plug comprising sections 11 and 12 there is mounted a pair of opposed resilient metal contacts 20 and 21 which are of the usual construction employed for connector plugs of this type, and are of substantially semi-tubular formation from sheet stock. The contacts 20 and 21 each present split terminal sockets for the reception of the contact prongs or blades carried by the electrical appliance. As shown in Fig. 2 the inner ends of each pair of contacts 20 and 21 are flattened, as indicated at 22, and they are fixed to the plug consisting of sections 11 and 12 in any suitable and well-known manner. The grooves 17 and 18 in the sections 11 and 12 are of a size sufficient to leave a slight clearance between the contact strips 20 and 21 respectively, in order to permit the same to expand laterally when in tight gripping engagement with the inserted terminal pins, blades or prongs of the usual appliance.

As shown in Fig. 2, the back end of the plug body is hollow and provided with a laterally disposed chamber 25 of generally V-shape formation for accommodating the connector wires of the extension cord C, the forward portion of the chamber 25 communicating with the rear end portions of the recesses 17 and 18 to permit attachment of the connector wires to the wiring terminal ends of said contacts 20 and 21. Formed in the rear wall of the sections are a series of axially disposed semi-cylindrical recesses 26 and 27 which are of stepped formation and which provide in the assembly of the sections of the plug a cylindrical opening. These openings communicate with the chamber 25 in the plug by means of an axially disposed opening 28 which is formed by opposed recesses in the inner end wall of the chamber 25. The opening 27 is made of larger diameter than the opening 26 and is adapted to receive and hold the usual flanged sleeve, not shown, through which the extension cord C extends into the interior of the connector plug, 75

and in which the usual cord encircling spring, not shown, is anchored, as the common construction of such cord connector plugs.

In order to tightly grip and anchor the cord secured to the plug connector against considerable torsional movement or excessive outward pulling and to prevent the transmission of strain to the connector wires and contacts within the plug, the inner surface of the opening 28 is recessed in each of the sections of the body as at 29 which recess has laterally projecting portions 30 so shaping it as to snugly receive the member 31 shown in perspective in Fig. 6 as consisting of a block of stock having lateral extensions 32 on either side and of a size and shape to fit the recesses 29 and 30.

Prongs or projections 33 are formed integral with the member 31 and extend from the member to a position just below the plane of the contacting surface 34 of the members. The shaping of the block 31 is such as to prevent its turning or rotation and also prevent its movement longitudinally or laterally of the body section. The member is of such construction, however, that it may be lifted from the recess altho it is desirable that the fit of the member be sufficiently snug that it will normally be held in position during assembly operations. An adhesive may be used for this purpose. However, when the cord is in position as shown in Fig. 4 the member 31 is forced firmly against the back wall 35 of the recess and there is no chance for the same to escape or move in any manner. By the arrangement of the prongs 33 with the central prong and a lateral prong at either side, the cord is gripped firmly in the center while the lateral prongs at either side prevent any relative twisting movement of the cord and prevent torsional strains from being transmitted within the block while effectively holding the cord against the transmission of strains longitudinally of the cord to a location within the body sections. The prongs 33, while sufficient to press into and deform the cord, are blunt ended and not sufficiently sharp to abraid or cut the covering of the cord.

Various modified mechanical arrangements of inserts may be provided. I have shown in Figs. 7 and 8 a recess 36 in somewhat of an H-shape by reason of the portion 37 extending into it, while the member 38 which is received in this recess has notches 39 at its opposite sides for the reception of the portions 37 of the section of the body member and also a downwardly extending portion 40 as can perhaps be best seen in Fig. 8. The prongs 33 exist on the member 38 as previously on the member 31. In Figs. 9 and 10 a slightly different arrangement of a recess 41 is provided for the reception of a member 42.

By the structure described a section minus the insert member may be cold molded or hot molded while the insert may be formed in a separate operation but molded to provide the prongs of a desired taper.

The foregoing description is directed solely towards the construction illustrated, but I desire it to be understood that I reserve the privilege of resorting to all the mechanical changes to which the device is susceptible, the invention being defined and limited only by the terms of the appended claims.

I claim:

1. An electrical cord connector plug having a

body of insulating material formed in two members providing, when the body members are placed together, a recess therein extending widthwise of said body, laterally spaced contact housing channels extending from one end of said body into said recess, and an electrical extension cord channel extending from the other end of said body generally parallel with said contact channels and opening into said recess, said body having an annular groove formed in the walls of said cord channel for the reception of a plug removing handle, in combination with removable insert members positioned in said cord channel opposite to each other and of a size to extend into said recess and annular groove, each insert member having tongue and groove connections between the marginal side edges thereof and the adjacent side walls of said recess and annular groove and each having a frictional surface thereon positioned to grip and flatten out an extension cord when it is placed in said cord channel.

2. An electrical cord connector plug having a

5 body of insulating material formed in two members providing, when the body members are placed together, a recess therein extending widthwise of said body, laterally spaced contact housing channels extending from one end of said body into said recess, and an electrical extension cord channel extending from the other end of said body generally parallel with said contact channels and opening into said recess, said body 10 having an annular groove formed in the walls of said cord channel for the reception of a plug removing handle, in combination with removable insert members positioned in said cord channel and said annular groove opposite to each other, 15 each insert member having interlocking connection between the marginal side edges thereof and the adjacent side walls of said cord channel and annular groove, each of said insert members having projections thereon to grip and flatten out 20 an extension cord when it is placed in said cord channel.

GUY H. BURT.