June 2, 1936. J. BERNFELD 2,042,580

CORD TERMINAL PLUG

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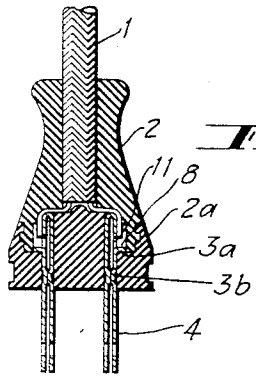


Fig. 1

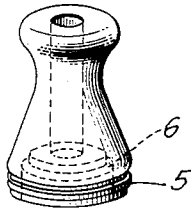


Fig. 2

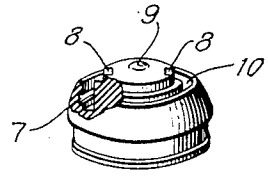


Fig. 3

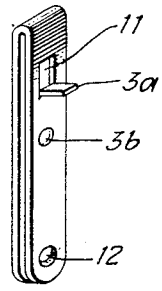


Fig. 4

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CORD TERMINAL PLUG

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4 Claims. (Cl. 173—361)

The principal object of my invention is the provision of a new type of electric plug constituting a terminal for an electric cord or wire, said plug to be composed of separate halves, an upper and a lower, separable and combinable, held together by the lower portion of the upper half being fitted snugly into a band-like receptacle forming the upper portion of the lower half as well as by the cord or wire used in conjunction therewith, and featuring a novel construction of a male member or prong which will fit tightly either a new or worn socket, thus insuring good electrical contact at all times and thereby avoid the possibility of electric shocks and fire hazards.

Another object of my invention is to provide a plug wherein all the terminal cord connections are completely concealed and the wires kept easily apart, thus avoiding the possibility of electric shocks, short circuits and fire-hazards.

A further object of my invention is the provision of a prong for such or any other type of electric plug which can be cheaply manufactured and easily assembled in the base portion of the plug.

Another object of my invention is to minimize the number of parts required for the production of an electric plug.

A further object of my invention is to provide a plug all parts of which can be very easily assembled.

Another object of my invention is the provision of a plug which can be easily attached to an electric cord or wire.

Other objects and advantages of the invention will hereinafter appear.

Heretofore electric plugs have been made of one piece, all the wiring taking place at the bottom of the plug, which wiring was usually unprotected since the only provision for such protection was by a loose shield sometimes being fitted over the prongs which shield is usually lost or destroyed after a little use.

Heretofore also, electric plugs have been provided with male contact members or prongs fabricated of straight strips of brass which in use soon become loose in the receiving apertures of the companion socket. This looseness not only sometimes breaks the circuit altogether, but leads to sparking or arcing of the circuit with its attending consequences, and also necessitates new installations with the accompanying expense.

According to a preferred embodiment of my invention the plug is of resilient insulating material, for example rubber, and made of two parts, an upper and a lower, the electric cord or wire being drawn through a hole of the upper part and the terminal wires being connected to the upper ends of the prongs which extend through the lower part of the plug. Thus when the two halves are pressed together, the wiring is entirely concealed, the upper half forming a permanent shield.

Also, according to my invention the prongs are made of resilient brass or other conducting materials, doubled over hair-pin fashion in the center and pressed together to provide resilient oppositely disposed spaced apart parallel contact arms which frictionally engage the walls of the receiving apertures in a socket regardless of their worn condition. Inwardly extending depressions intermediate the ends of each contact arm of the prong provide inside contact points on the arms which tends to keep apart the open ends of the contact prong and make for greater resiliency of the contact arm. The lower and upper portions of the contact member are provided with wire-receiving apertures so as to make them adaptable to this or the old type of plug, and from the aperture at the upper portion a tang is struck outwardly at right angles to said member to position the prongs when loosely inserted in the lower half of this type of plug or as a means for bonding the member when moulded in the old type base. These contact members or prongs may be made detachable if desired or may be permanently moulded within the base portion of the plug.

The accompanying drawing illustrates certain embodiments of the invention which will now be described more fully, it being understood that the invention is susceptible of design, shape and other modifications in certain details thereof without departing from the scope of the appended claims.

Referring to the drawing, Fig. 1 shows a complete vertical sectional view of the plug and prongs attached to an electric cord.

Fig. 2 shows the upper half of the plug which fits into the lower half.

Fig. 3 shows the lower half of the plug.

Fig. 4 shows a perspective view of the prong.

Referring to the drawing in Figure 1, my electric plug of resilient insulating material, for example rubber, consists of two parts, an elongated upper part 2 and a lower part 2*a* of larger diameter, which parts can be interlocked with each other to position and secure the double arm contacts or prongs 4 and cord 1, the conductors or wires of which are secured to these contacts so as to provide a firm support for the contacts and

provide against short circuits between the separate conductors or wires.

As shown in Figure 3 the lower part 2—*a* of the plug shown comprises an annular member having a central upwardly projecting portion or projecting knob 9 having slots 8 therein which extend entirely thru the bottom portion as shown most clearly in Figure 1 to receive the contacts 4 when positioned therein. This bottom portion of the plug is provided with an annular groove 10, the outer wall of which is provided with an annular recess 7. As best shown in Figure 2 the upper portion 2 of the plug is provided with a central bore or hole thru which the cord 1 is extended and has on its outer periphery a bead or annular ridge 5 which cooperates and interlocks with the annular recess 7 in the lower portion as shown in Figure 1 when the two portions of resilient material 2 and 2*a* are forced together. The upper part 2 is provided at its lower end with a cup-shaped depression or recess 6 for receiving the projection 9 on part 2*a*, the two parts of the plug fitting closely together as shown in Figure 1 to form a substantially solid plug to hold the wires of the cord 1 firmly in place and to position and secure the contacts 4 in the plug.

The contact member or prong 4, which is best shown in Figure 4, comprises a U-shaped resilient metal strip bent in the form of a U so as to provide two oppositely disposed and spaced parallel resilient contact arms which engage in a cooperating contact in a socket, the two arms being spring pressed toward each other and providing a good frictional electrical contact when inserted in a socket. The contact has a struck-up portion or tang 3*a* which cooperates with the bottom of the annular depression 10 in the bottom portion 2*a* of the socket to position the contact prong within the socket and when the plug is assembled prevents longitudinal movement of the contact prong. The struck-up portion leaves aperture 11, which may be used to receive the conductors of the cord 1. I provide on the contact arms intermediate the ends small projections 3*b* which extend toward and contact with each other to keep the arms separated.

It will be observed that when the two portions of the plug are fitted together, which can be accomplished by deforming the outer wall of the annular depression 10, to receive the lower part of the upper portion which carries the bead 5 that a continuous surface is presented giving the appearance of a solid plug. In addition to providing a firm support for the contacts and insuring insulation between the wires of the cord 1 this arrangement securely locks all parts of the plug, wires and contacts together. But because both parts of the plug may be gripped separately on their outside peripheries it is possible to easily release the two parts of the plug so that new prongs can be substituted for the old ones or a new cord substituted for the old one. Thus while the plug presents a unitary appearance and possesses all of the desirable characteristics of a unitary plug, it may easily and simply be taken apart for repairs. The wires of the conductor may be held against the contact pieces only by the upper portion of the plug or may be soldered to the contact prongs.

While I have indicated the preferred embodiments of my invention of which I am now aware and have also indicated only one specific application for which my invention may be employed, it will be apparent that my invention is by no means limited to the exact forms illustrated or the use indicated, but that many variations may be made in the particular structure used and the purpose for which it is employed without departing from the scope of my invention as set forth in the appended claims.

Having thus described my invention, what I claim is:

1. A male terminal for electric cords having a body portion of fabricated insulating material and contact members of flat strip spring material, each of said contact members being formed of a single strip of a U-shape to provide a pair of elongated legs and having a portion engaged and supported by said body portion and provided with means for securing said contact members to said body portion, the legs of the contact forming a pair of free ended, oppositely disposed, substantially parallel, flat resilient arms extending clear of the body portion of insulating material and adapted to be spring pressed toward each other to provide a tight frictional contact of large surface area when engaged by a cooperating contact member, said legs being formed to have intermediate their ends portions extending toward and contacting with each other to maintain the legs separated at their ends.

2. A male terminal for electric cords having a body portion of fabricated resilient insulating material and contact members of flat spring material, each of said contact members being U-shaped to provide a pair of legs and having a portion engaged and supported by said body portion and provided with a tang for securing said contact member to said body portion, the legs of the contact forming a pair of free ended, oppositely disposed, substantially parallel, spaced flat resilient arms extending clear of the body portion of insulating material and adapted to be spring pressed toward each other to provide a tight frictional contact of large surface area when engaged by a cooperating contact member, said legs being provided with projections intermediate their ends and within the body portion of insulating material and extending toward and contacting with each other.

3. A two-part electric plug comprising a part of resilient material having a central bore for receiving an electric cord and having a cup-shaped recess at one end and a cooperating part of resilient material provided with an annular groove for receiving the cup-shaped recessed end of the other part and having a recess on the inner surface of the outer wall of said groove and means on the periphery of the other part received within said recess to lock the two parts of the plug together, and contact members of flat spring material supported between the two parts of the electric plug and provided with a tang for securing said contact member to said plug, said tang engaging the groove on said cooperating part, each contact member having a pair of legs, the legs of each contact forming a pair of free ended, oppositely disposed, substantially parallel, spaced flat resilient arms extending clear of the plug and adapted to be spring pressed toward each other to provide a tight frictional contact of large area when engaged by a cooperating contact member, said legs being provided with projections intermediate their ends within the body of the resilient material and extending toward and contacting with each other to maintain the legs of the contact separated from each other.

4. An electric plug comprising an elongated part of resilient material having a central bore

for receiving an electric cord and having a cup-shaped depression at one end and a bead around the periphery of the same end, a cooperating part of resilient material having a central projection received within and contacting the surface of the cup-shaped depression and an annular groove around said projection for receiving the end of the elongated part provided with the bead, the outer wall of said annular groove having a recess on the inside surface thereof for receiving the bead on said elongated part to lock the two parts together, and contact members of flat spring material supported between the two parts of the electric plug and provided with a tang for securing said contact member to the plug, said tang engaging the bottom of the groove of said cooperating part to lock said contact members between the two parts of the plug.

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