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ELECTRIC PLUG

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4 Claims. (Cl. 173—361)

This invention relates to electric plugs, and more particularly to such a plug connected at the end of a flexible lead cord for lamps and the like, and adapted for insertion in a wall outlet.

5 The object of the present invention is to generally improve such plugs. More particular objects of the invention reside in the provision of a plug of improved appearance, inconspicuous structure, and of such small dimension as not to interfere with the placing or moving of furniture along the wall. Another object of the invention is to so devise the plug that not only will the plug structure lie close to the wall, but it will in turn tend to hold the flexible cord leading therefrom close to the wall. A further and related feature and object of my invention is to avoid the customary bending of the lead wire coming from the plug, thereby minimizing wear and short-circuiting of the cord at the plug. A still further object of the invention is to discourage pulling of the lead wire to remove the plug from the wall outlet.

A further object of my invention is to provide a plug which will be particularly safe against accidental short-circuits, first, by avoiding a tendency to spread out the strands of the flexible wire when attaching the same to the contact prongs of the plug, and, secondly, by the interposition of an insulating wall or partition between the plugs. Still another object is to provide securing or attaching means for locking the flexible wire in contact with the prongs in a quick and facile manner without requiring a screw driver, and providing a self-tightening anchorage of the wire against the prong. Further objects are to provide a plug which will be cheap in cost of material, which will require but few and simple manufacturing operations, and which may therefore be made and sold inexpensively.

40 To the accomplishment of the foregoing and such other objects as will hereinafter appear, my invention consists in the electric plug elements and their relation one to the other, as hereinafter are more particularly described in the specification and sought to be defined in the claims. The specification is accompanied by a drawing in which:

50 Fig. 1 is a perspective view showing a plug embodying features of my invention as applied to a conventional wall outlet;

Fig. 2 is a section taken in the plane of the line 2—2 of Fig. 1;

Fig. 3 is a plan view of a covering disc used on the plug;

Fig. 4 shows the inner face of the plug with the covering disc removed;

Fig. 5 is a similar view prior to attachment of the conductors;

Fig. 6 is a section taken in the plane of the line 6—6 in Fig. 4; and

Fig. 7 is a perspective view of one of the prongs.

Referring to the drawing, the plug of my invention comprises an insulation body 12 which in form is a relatively thin flat disc-like member having a preferably smooth and unmarred outer face wall 14. The body 12 is partially hollowed out on its inner face and carries a pair of contact prongs 16. The flexible cord 18 leading to the plug passes through an aperture 20 in the side wall thereof, this aperture preferably being formed by recessing or cutting away the wall from the inner toward the outer face of the plug. With this arrangement it will be seen that the plug itself lies close to and relatively flush on the wall outlet plate, instead of projecting a substantial distance at right angles to the wall. It thus in no way interferes with the placing or moving of furniture along the wall of the room. At the same time the flexible cord 18 leading to the plug is held close to the wall by the plug itself, thereby avoiding the conspicuous and unsightly sweep which such a cord usually takes from the plug back toward the wall. The present device is small, neat, inconspicuous, and in use greatly improves the appearance of the wall at the power line outlet.

Considering the arrangement in greater detail, the insulation body 12 may be made of any appropriate and preferably moldable material such as hard rubber, cellulose acetate, or synthetic resin products such as the condensation products or phenol or urea. The plug body is molded complete in a single molding operation and leaves the mold in finished form. During the molding operation there preferably are embedded in the insulation material a pair of rivets 24 or other appropriate fastening elements for subsequently attaching the prong 16 in place. The outer wall of the body 12 may be provided with a flange or ledge 26, for this not only adds to the attractive appearance of the plug but facilitates removal of the plug from the receptacle. As is best shown in Fig. 5, the inner side of the insulation body is partially recessed or hollowed to provide an entrant channel 30 diverging into a pair of conductor channels 32 leading to terminal hollows 34 properly dimensioned to receive the base of the prong and to provide space around the contact pin of the prong for wrapping

the conductor therearound. A substantial wall or partition of insulation material 36 is thereby left between the prongs 16. Substantially the entire inner wall of the plug body is recessed for a slight depth, thereby forming a relatively shallow peripheral wall 38, best shown in Fig. 5 and adapted to subsequently receive a covering plate or washer 40, this member being clearly illustrated in Figs. 2 and 3.

The prongs 16 may be struck in a single operation from relatively heavy sheet metal and are preferably made of a conductive metal such as brass or a brass alloy. It is L-shaped in configuration, the longer arm being tapered at the end 42 and acting as a contact pin, for which purpose it may be additionally perforated at 44. The shorter arm acts as a base 46 for attaching the prong to the plug body. For this purpose the base is apertured at 48 to receive the ends of rivets 24 which are then swaged to form the rivet heads 50. It will be understood that the prong is held in the plug by the rivet, and that it is additionally locked against movement by the close fit of the mating recess receiving the base of the prong.

The prong is preferably provided with appropriate means for securing the usual stranded or flexible conductor thereto. The conventional screw suffers from many defects, for as it is tightened it causes the strands to spread, and the opposite wires frequently move into contact with one another and short-circuit the line. In the present plug I have improved the conventional securing means by the provision of notches 52 and 54 and a locking finger 56 cooperating therewith. The notch 52 is preferably made V-shaped and is disposed remote from the cord passage 20. Notch 54 may be relatively rounded and is located on the side of the prong opposite the V-shaped notch 52. Locking finger 56 is most simply formed by striking the same integrally from the base 46 of the prong. When the plug is sold, the locking finger 56 is in the upward position shown in Figs. 5 and 7. In use the end of the stranded conductor is passed along the inner side of the prong, then through notch 52, and around the outer side of the prong past notch 54, in the manner shown in Fig. 4. With the conductor in this position the locking finger 56 is bent downwardly, thereby bending the flexible conductor, as is best shown in Fig. 6, and wedging a portion thereof into the V-shaped notch or recess. No screw driver is required. There is no tendency to spread or fan out the strands of wire. In any case, short-circuiting is effectively prevented by the positive interposition of the insulation wall 36 between the prongs. The anchorage of the wire around the prong is self-locking in nature, for any pull on the conductor simply tightens rather than loosens the grip provided, since the conductor tends to wedge into the V-shaped notch 52.

As soon as the ends of the cord have been locked in place, the cover 40 may be re-applied to finish the plug structure. This cover is simply a disc of insulation material such as fibre. It is slotted at 60 to receive the contact pins of the prongs 16. Its outer diameter is sufficiently small to be received within the flange wall or skirt 38 of the plug body. When pressed in place, it assumes a position as illustrated in Fig. 2 of the drawing.

It is believed that the mode of constructing and using, and the many advantages of my improved electric plug, will be apparent from the foregoing

description thereof. The plug possesses a novel and attractive appearance, is inconspicuous, and presents no interference or obstruction on the wall. There is little possibility of accidentally loosening or knocking the same out of place, because it lies almost flush on the wall outlet. It holds the cord or lead wire against the wall, thereby making a neat rather than an unsightly connection between a lamp or other accessory and the wall outlet. There is no tendency to bend the wire at the plug, leading to wear or short-circuiting, and the plug is not readily susceptible of being removed from the socket by pulling the conductor. Instead, a conveniently accessible finger ledge is provided for removal of the plug. The plug is particularly safe against accidental short-circuit because there is no tendency to spray or fan the wire strands, and, even more importantly, a definite and substantial insulation wall is interposed between the prongs. The wire is secured to the prong by a quick-acting fastener requiring no screw driver and holding the wire with a self-tightening grip. The plug is simple in construction and requires but little material, there being merely a small body of insulation moldable in a single molding operation, a pair of contact prongs which need not carry even the usual attaching screws, and a closure or cover disc of fibre. The manufacturing operations are few and simple, so that the plug may be manufactured and marketed inexpensively.

It will be appreciated that the invention may be considered in either of two aspects: first, that directed to the construction of the body of the plug, and secondly, that directed to the construction of the prongs of the plug; and that either of these inventions may, if desired, be used separately from the other. For example, a plug body substantially resembling that here shown may be employed while using contact prongs having screws for attaching the conductors thereto. On the other hand, the prongs herein disclosed, with the self-contained locking arrangement for engaging and holding the conductor, may, if desired, be used with plugs wholly different in form and configuration from that here disclosed. It will therefore be apparent that while I have shown and described my invention in preferred form, many changes and modifications may be made in the structure disclosed, without departing from the spirit of the invention, defined in the following claims.

I claim:

1. A prong for an electrical contact plug, said prong comprising a generally L-shaped strip of metal the long arm of which acts as a contact pin and the short arm of which acts as a base, said prong being provided at the base with a pair of opposed notches for receiving a flexible conductor wrapped therearound, and a locking finger formed integrally with and bent upwardly from the base of the prong at one side thereof and adapted to be forced downwardly upon said flexible conductor in order to lock the same in the notches.

2. An electric plug comprising a relatively thin one-piece body of insulation having an impermeate outer face and a partially hollowed inner face, a pair of contact prongs secured to said body with the prongs projecting from the inner face, each of said prongs consisting of a generally L-shaped strip of metal one arm of which acts as a contact pin and the other arm of which is fixedly secured to the insulation body, said prong being provided at its base portion with a notch for re-

ceiving a flexible conductor wrapped therearound, and a locking finger formed integrally with and adapted to be forced downwardly upon said flexible conductor in order to lock the same in place, the side wall of said insulation body being cut away to receive the conductors, and a wall of insulation material being left intact between the bases of the prongs to prevent short-circuit therebetween.

3. An electric plug comprising a thin body of insulation having an imperforate outer face and a partially hollowed inner face, a pair of contact prongs secured to said body with the prongs projecting from the inner face, each of said prongs consisting of a generally L-shaped strip of metal the long arm of which acts as a contact pin and the short arm of which is secured to the insulation body, said prong being provided with a pair of opposed notches for receiving a flexible conductor wrapped therearound, and a locking finger formed integrally with the prong and adapted to be forced downwardly upon said flexible conductor to lock the same in the notches, the side

wall of said insulation body being cut away to receive the conductors, and the outside of the body being formed with a ledge to facilitate removal of the plug.

4. An electric plug comprising a thin disc-like body of insulation having an imperforate outer face and a partially hollowed inner face, a pair of contact prongs secured to said body and projecting from the inner face, each of said prongs consisting of a generally L-shaped strip of metal the long arm of which acts as a contact pin and the short arm of which is secured to the insulation body, said prong being provided with a pair of opposed notches for receiving a flexible conductor wrapped therearound, and a locking finger formed integrally with the prong and adapted to be forced downwardly upon said flexible conductor to lock the same in the notches, the side wall of said insulation body being cut away to receive the conductors, and a wall of insulation material being left intact between the bases of the prongs to prevent short-circuit therebetween.

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