April 24, 1934. C. E. GILBERT 1,956,018

ELECTRIC SAFETY PLUG

Filed Aug. 20, 1930

Fig. 1.

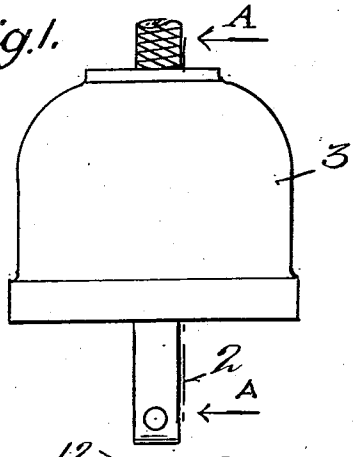
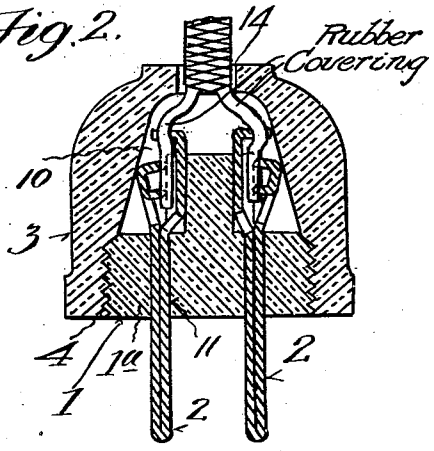


Fig. 2.



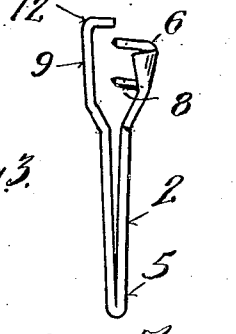
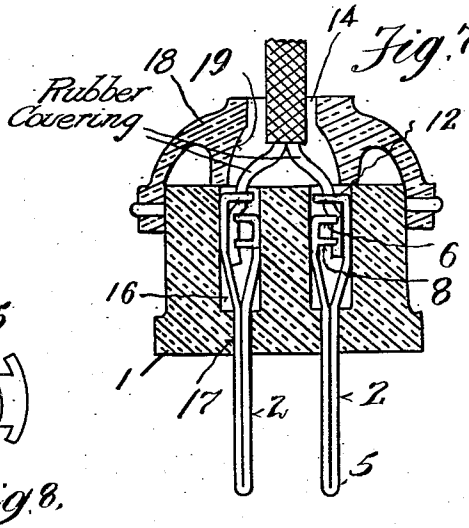
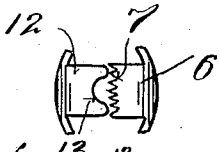


Fig. 3.

Fig. 7.





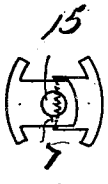


Fig. 5.

Fig. 8.

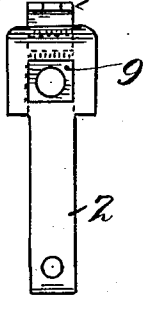
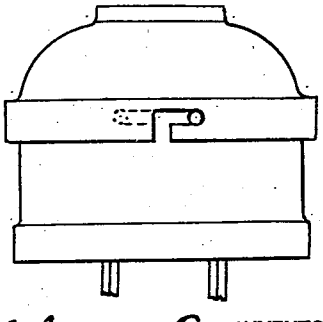


Fig. 4.

Fig. 6.



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UNITED STATES PATENT OFFICE

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ELECTRIC SAFETY PLUG

Charles E. Gilbert, New York, N. Y., assignor to Gilbert & Hertz, Inc., a corporation of New York

Application August 20, 1930, Serial No. 476,568

2 Claims. (Cl. 173—361)

This is a continuation in part of my application for United States Letters Patent No. 434,873, filed March 11, 1930.

Among the objects of this invention is that of obtaining an electric plug of cheap and rugged construction to which insulated electric wires may be easily and quickly connected without removal of the insulation on the wires, and which will hold such wires with great tenacity and with less danger of rupture than is obtained with plugs of usual construction.

My invention is particularly useful in the home, since lamp cords and the like may be easily and quickly attached thereto without the use of tools. Practically no skill or understanding of things electrical is required, whereas the proper attachment of wires to the kinds of plugs now in common use is a somewhat delicate and difficult task for an unskilled person. If the wires are insecurely or improperly connected, breakage or short-circuiting will soon occur. Actual tests of my plug have demonstrated that not only is proper attachment almost automatically secured by simply inserting the wires and assembling the plug, but also the wires will endure much greater abuse and strain before breaking away from the plug.

In the accompanying drawing I have selected two forms of my plug for purposes of illustration without thereby in any way intending to limit my invention thereto.

Figure 1 is a side elevation of one form of the plug completely assembled;

Fig. 2 is a vertical cross section of the plug taken along the line A—A of Fig. 1;

Figs. 3, 4, and 5 are detail drawings of one of the contact members;

Fig. 6 is a side elevation of another form of my plug assembled;

Fig. 7 is a vertical cross-sectional view of the plug of Fig. 6; and

Fig. 8 is a plan view of a modified contact member which may be employed, if desired, with either type of plug.

The character of the contact elements is clearly shown in Figs. 2 to 5. Each may be made from a single strip of stiff but somewhat springy metal, which is a good electrical conductor folded over upon itself, as best shown in Figs. 2 and 3. The end at which the fold occurs forms a prong 5 for insertion into the electrical socket or outlet. One of the two free ends 6 is bent inwardly and its edge 7 serrated to form a wire-clamping jaw. A second similar jaw 8 may be obtained by bending inwardly a square piece 9 of the strip 2, after first cutting it away from the strip on the top and both sides. When these jaws 6 and 8 are forced towards the other side 9 of the contact member an insulated wire inserted therebetween will not only be securely held, but the insulation will be pierced by the serrated edges and excellent electrical contact established. It will be observed that the other free end 12 of the contact strip is also bent inwardly and a groove 13 formed in the edge thereof.

The object of this construction is to provide a guide for the wire so that when it is in position a sharp bend in it will be produced between the clamping jaw 6 and the cable outlet 14, which materially assists in retaining the wire in position and renders it unnecessary to knot the wires just inside of the cap. The cap 3, also of non-conducting material, may be of any desired external shape. The interior thereof is conical, as shown in Fig. 2, and of such dimensions that when the cap is screwed or otherwise attached to the body the conical surface 10 will engage with the contact members to force the wire gripping jaws together, as heretofore described.

The body and cap may each be made in a single piece. Each contact member may be made of a single strip of metal. In this way I obtain a plug which may be very easily and inexpensively manufactured, which is unusually well insulated and which is entirely devoid of rivets, screws and other undesirable features.

The plug is assembled and used as follows: The cap is slipped upon the electric cable in the usual way. The prong ends 5 of the contact members are inserted in slots 11 in the body 1, which slots correspond in shape to the cross section of prongs 5 and are just large enough to permit them to be pushed therethrough. The ends of the wires with the rubber insulation exposed are inserted in the grooves 12 and between the gripping jaws 6 and 8.

The contact members are then pushed completely into slots 11 until they assume the position shown in Fig. 2, and the cap 3 is then screwed onto or otherwise connected to the body to force the jaws 6 and 8 through the insulation and hold them securely in position. A very secure electrical connection is thus made with the greatest ease and despatch and one which will stand a great deal of mistreatment.

The type of plug illustrated in Figs. 6 to 8 is based upon the same general principles. The contact members may be identical or, if desired, the end 12 may be provided with a hole 15 instead of groove 13, which will make it easier to posi-

tion the wires when attaching them. This same construction may, of course, be employed in the type of plug first described.

The body portion 1 illustrated in Fig. 7 has no upwardly projecting extension as in the other type of plug. Instead, it is provided with two recesses 16 rectangular in cross section, from the lower ends of which extend slots 17 similar to slots 11 in the first type of plug, through which the prongs of the contact members pass. The cap 18 may be in shape and general construction similar to the common type and may be equipped with any desired means for secure attachment to the body, such as threads or a bayonet joint.

This type differs from the type of plug heretofore described, principally in that the cap plays no part in causing the contact members to engage with the wires. In this instance prongs 5 are inserted in the slots 17 through the recesses 16, leaving the jaw elements still projecting above the top of the body. The wires are then inserted through hole 15 and between jaws 6 and 8, and the contact members forced downward until the jaw portions are entirely contained within recesses 16. The width of recesses 16 is, of course, such that when the contact members are thus seated the jaws will be forced together sufficiently to pierce the insulation and effect good electrical contact in the manner heretofore described. The cap is then placed in position upon the body.

To retain the contact members in the position described and as shown in Fig. 7 it is desirable to equip the cap with a tubular extension 19 of non-conducting material of such length that it will substantially contact with the upper surface of body 1 when the cap is in position and of such internal diameter that its edge will obstruct the entrances of recesses 16 sufficiently to lock the contact members therein. If the cap is of metal tubular extension 19 will also serve as an insulator. If the cap is of bakelite or other non-conductor the extension may of course be molded integrally with it.

This plug, it will be seen, is also composed of only four pieces, two of which may be of insulating material and two of a conducting material. No rivets or screws or other fragile and troublesome parts are required. Since the body and cap may be non-conductors, no insulating linings are required, even though the cap may be covered with a metallic shell, if desired, for decorative or protective purposes.

I claim:

1. In an electric safety plug, a contact member consisting of a forked metallic strip, the common end of which comprises a prong for connection to a source of electricity, one free end of which constitutes a guide for an insulated wire and the other free end of which comprises a wire gripping and insulation piercing jaw in cooperative relation with said guiding end to establish electrical contact between the prong and the wire through the insulation thereof.

2. An electric safety plug comprising a body provided with removable contact members which expand upon removal to permit the placing of insulated wires therein and contract upon insertion through contact with the body to grip said insulated wires, insulation piercing means upon said contact members, and means for maintaining said contact members in operative insulation piercing position within said body.

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