

Feb. 7, 1950

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2,496,413

POLARIZED FUSE PIN PLUG

Filed May 10, 1949

FIG. 1.

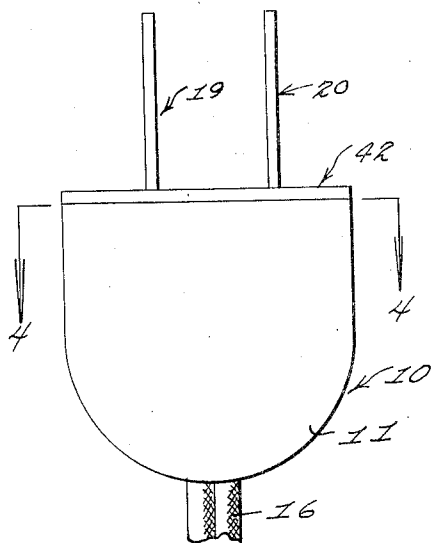


FIG. 2.

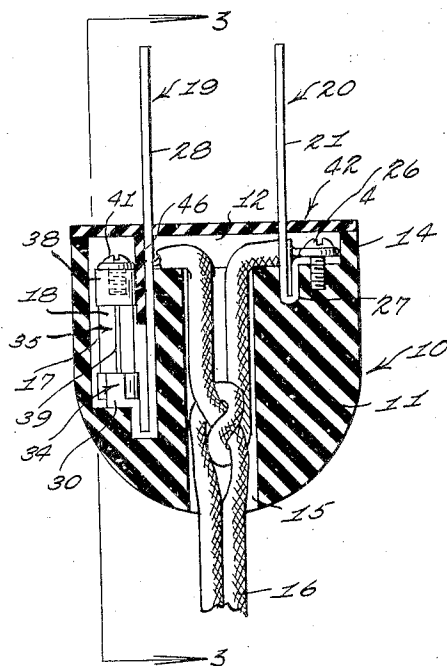


FIG. 3.

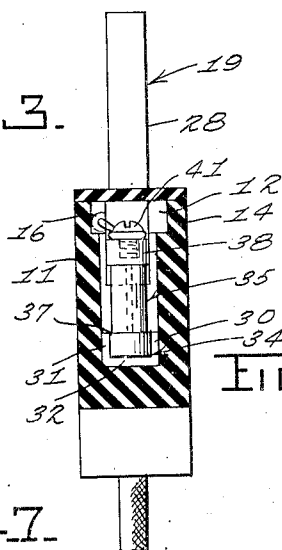


FIG. 4.

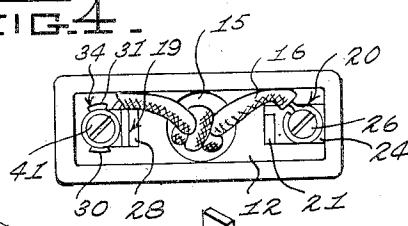


FIG. 5.

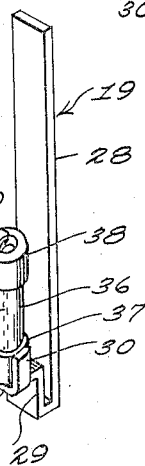


FIG. 6.

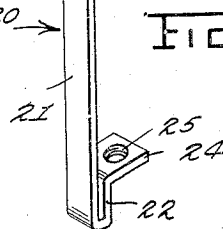
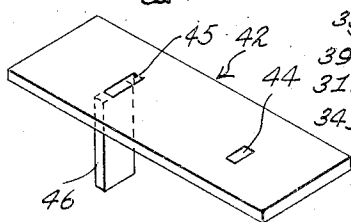


FIG. 7.



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## UNITED STATES PATENT OFFICE

2,496,413

## POLARIZED FUSE PIN PLUG

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Application May 10, 1949, Serial No. 92,308

2 Claims. (Cl. 200—115.5)

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This invention relates to an electric plug and more particularly to a novel plug having a fuse for protecting the particular appliance on which the plug is secured.

It is an object of this invention to provide a polarized fuse plug for attachment to the cord of an electric appliance in such a manner that the fuse may not be replaced or removed while it is plugged into an electrical outlet or socket.

Another object of this invention is to provide a polarized electrical plug having a removable fuse on the positive side of the line for breaking the circuit to the positive line in the event of a short circuit in a particular appliance. As the fuse is positioned on the positive side of the plug and the casing is of an insulated material, the plug may not be disassembled where the terminals will contact any line parts for short circuiting a line.

Still another object of this invention is to provide an electric plug of the kind to be more particularly described hereinafter which may be readily formed for high production and widespread retail distribution having fuses which may readily be replaced as the occasion arises.

A further object of this invention is to provide an electric plug of this kind having a fuse incorporated within the plug structure in such a manner that where an overload is applied to the particular appliance the fuse on the plug will fail before the fuse of the line on which the appliance is connected, in this manner protecting the particular appliance without breaking the main circuit on which other appliances may be connected. By applying fuse plugs of this kind on the various appliances the failure of any one particular appliance may readily be determined as only that appliance will be broken from the main electrical circuit and the faulty appliance will be readily determined.

With the above and other objects in view, my invention consists in the arrangement, combination and details of construction, disclosed in the drawings and specification and then more particularly point out in the appended claims.

In the drawings:

Figure 1 is a side elevation of a polarized fuse pin plug constructed according to an embodiment of my invention.

Figure 2 is a longitudinal section of the plug shown in Figure 1.

Figure 3 is a transverse section, taken on the line 3—3 of Figure 2.

Figure 4 is a horizontal, longitudinal section, taken on the line 4—4 of Figure 1.

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Figure 5 is a perspective view of the fuse bearing, conducting prong, removed from the assembly.

Figure 6 is a perspective view of the other conducting prong, removed from the assembly.

Figure 7 is a perspective view of the insulating plate for covering the open end of the fuse pin plug.

Referring to the drawings, the numeral 10 designates generally a polarized fuse pin plug, constructed according to an embodiment of this invention. The plug 10 is of a size similar to the size generally employed for conventional household appliances and the like, having an insulated body 11 which may be formed of rubber, "Bakelite" or other suitable insulating material. The plug body 11 is formed with an upwardly opening recess 12 on the upper side thereof defining a circumferential wall 14 at the upper open end. An elongated bore or central opening 15 is formed along the length of the body 11, extending through the center thereof, opening through the lower end and into the bottom of the recess 12 at the upper end. The bore or passage 15, together with the recess 12 are provided for enclosing within the body 11, the wires 16 or other circuit connecting means which are adapted to be connected to the prongs, to be described hereinafter. The wires 16 are of the conventional flexible type generally employed in household appliances and the like.

The body 11 is further formed with an upwardly opening recess 17 on one side thereof, the recess 17 opening through the bottom wall of the recess 12 at the upper end of the body, and being closed at its lower end. The recess 17 is particularly formed for enclosing within the body 11, the fuse element 18 which is carried by one of the outwardly extending prongs, as the prong 19.

A pair of prongs 19 and 20 are adapted to be connected in the body 11 and extend upwardly from the upper open end or recess 12. The prongs 19 and 20 are formed of brass or other suitable conducting material, in substantially the same manner as the conducting prongs of conventional types of plugs. One of the prongs, as the prong 20, is formed of an elongated strip of metal 21 being substantially rectangular in cross section. The strip 21 is bent at its lower end to provide a short overlying, upwardly extending, strip 22 which is adapted to overlie the lower end of the strip 21 and the extreme upper end of the overlying portion 22 is adapted to be bent at right angles to both the prong 20 and the upwardly

extending, overlying lower end 22. The outwardly extending flange 24, on the lower end of the prong 20 is formed with a central threaded recess 25 therein within which a screw 26 is adapted to be engaged for securing one end of the pair of wires 16 to the prong 20. The screw 26 together with the outwardly extending flange or arm 24 constitute a contact member with which the wire 16 is adapted to be secured within the body 11.

The reverted lower end of the prong 20, which constitutes the upwardly extending arm 21 and the parallel arm 22 at the lower end thereof are adapted to be securely engaged in a recess or socket 27 formed in the bottom wall of the recess 12. The arm 22 may be resiliently biased outwardly relative to the upwardly extending strip 21 whereby the engagement of the overlying strip and prong within the recess 27 will securely engage the prong 20 in the upper end of the body 11.

The other prong 19 is formed of an elongated strip of metal 28, also substantially rectangular in configuration, but having a cross sectional area or width substantially greater than the cross sectional area or width of the strip 21, of the other prong 20. By providing the prongs 19 and 20 of different cross sectional widths the plug 10 is particularly adapted for engagement in a socket wherein the plug 10 may be engaged only in a certain manner so that the prong 19 will be engaged in the same opening or receptacle of the socket at all times. The prong 19 is formed for engagement in only one opening of the respective socket so that at all times the wire 16 which will be connected to the prong 20 will always be engaged with the same wire which is connected to the respective contact member, not shown in the drawings, of the respective socket.

The strip 28 is bent upwardly at its extreme lower end to provide an upwardly extending arm 29 which extends upwardly only a short distance from the extreme lower end of the prong 19 or strip 28. The upper end of the arm 29 is bent outwardly at right angles to the prong 19, as clearly shown in Figure 5 of the drawings. A pair of upwardly extending arms 30 and 31 are fixed to or formed on the opposite side edges of the outwardly extending flange 32 defining a fuse receiving socket 34. The socket 34 is particularly adapted for receiving the lower end or ferrule of a small cartridge type fuse, particularly designed for engagement within the plug body 11.

The fuse 35, adapted to be engaged in the fuse socket 34 is formed of an elongated tubular and cylindrical transparent body 36 having a ferrule 37 recured on the lower end and a ferrule 38 secured on the upper end. The ferrule 37 closes the lower end of the transparent tubular member 36 and the fusible element 39 extends within the transparent member 36 from the lower ferrule 37 to the upper ferrule 38. The upper ferrule 38 is formed with a central threaded recess 40 therein, within which a screw 41 is adapted to be threadably engaged for securing the other wire of the cord 16 to the fuse 35 and the prong 19. With the fuse 35 engaged in the socket 34, the upper end of the upper ferrule 38 is adapted to be disposed substantially on a horizontal plane with the bottom wall of the recess 12 so that the screw 41 which secures the wire to the upper ferrule 38 will be disposed below the upper edge of the side walls 14, at the upper end of the body 11.

An insulated cover plate 42 is adapted to be engaged over the upper open end of the body 11, engaging the upper edges of the side walls 14, about the recess 12. The cover plate 42 is formed

of an elongated strip of "Bakelite" or other suitable flexible material, having an opening 44 at one end thereof through which the prong 20 is adapted to be engaged and an opening 45 at the other end through which the prong 19 may be slidably engaged. A depending arm or separator plate 46 is fixed on the lower side of the cover plate 42, depending therefrom and positioned adjacent the opening 45, through which the prong 19 is adapted to be extended. The separator plate or wall 46 is adapted to be extended downwardly into the recess 17, within the body 11 and is particularly designed to be positioned between the upper ferrule 38 of the fuse 35, and the outside surface of the strip 28 of the prong 19. The separator plate 46 is formed of insulating material for suitably insulating the prong 19 from the connection of the wire 16 with the upper end of the fuse 35.

The width of the separator member 46 is slightly less than the distance between the side walls 14 of the body 11, so that the wire 16 may be engaged about one side of the prong 19 and engaged with the screw 41 which is removably engaged with the upper ferrule 38 of the fuse 35. The separator plate 46 will hold the fuse and the wire from engagement with the prong 19 whereby the circuit connection between the prong 19 and the wire 16 must be through the fusible elements 39.

In the use and operation of the plug 10, the different sized prongs 19 and 20 particularly provide for the application of the plug 10 as a polarized plug to be used where the prong 19, which bears the fuse 35, will be connected to the positive side of the circuit. The cover 42 is frictionally engaged about the prongs 19 and 20, the separator plate 42 also being frictionally engaged between the prong 19 and the upper end of the fuse 35 for securing the cover plate 42 in place. For installing a fuse 35 within the plug body 11, the cover plate 42 may be slidably removed from the upper end of the prongs 19 and 20 and with the wire attached to the upper ferrule 38, the fuse 35 may be slidably removed from engagement in the resilient socket 34. The screw 41 will then be removed from the upper ferrule 38 for disconnecting the wire 16 from the fuse and from the plug 10. The screw 41 is then engaged in the recess 40 of a new fuse 35 and the wire 16 is adapted to be engaged between the head of the screw 41 and the upper ferrule 38. With the fuse 35 connected to the wire 16, the lower ferrule 37 is then slidably engaged in the socket member 34 for connecting the fuse and the wire 16 to the positive prong 19.

I do not mean to confine myself to the exact details of construction herein disclosed, but claim all variations falling within the purview of the appended claims.

I claim:

1. A fused electric plug, comprising a body portion formed of electrical insulating material and having a central longitudinal wire receiving opening extending therethrough and provided in its forward face with a relatively shallow transverse recess, the body portion having a side longitudinal fuse receiving recess leading into one end of the shallow recess and extending substantially parallel to the wire receiving opening, a first prong for the plug and extending longitudinally forwardly of the forward face of the body portion and including a lateral extension seated against the bottom of the shallow recess, a first terminal screw for connecting the lateral extension of the

first prong with the body portion, a first wire extending through the wire receiving opening and having its free end disposed within the shallow recess and connected with the first terminal screw, a second prong for the plug arranged in laterally opposed spaced relation to the first prong and extending into the fuse receiving recess and including a lateral extension seated upon the bottom of the fuse receiving recess, socket means secured to the lateral extension of the second prong, a fuse mounted within the fuse receiving recess and having its inner end connected with the socket means and its outer end disposed adjacent to the bottom of the shallow recess, the outer end of the fuse having a screw threaded opening, a second terminal screw mounted within the screw threaded opening of the fuse, a second wire extending through the wire receiving opening and having its free end arranged within the shallow recess and electrically connected with the second terminal screw, and an insulating plate for covering the shallow recess and having openings for receiving the first and second prongs, said insulating plate including a longitudinally inwardly extending strip for engagement between the fuse and second prong to maintain them electrically insulated.

2. A fused electric plug, comprising a body portion formed of insulating material and having a central longitudinal wire receiving opening extending therethrough and provided in its forward face with a relatively shallow transverse recess extending for substantially the entire width of the plug, the body portion having a side longitudinal deep fuse receiving recess arranged substantially parallel to and spaced laterally of the wire receiving opening and leading into the shallow recess adjacent to one end of the same, a first prong for the plug and extending longitudinally forwardly of the forward face of the body portion and including a lateral extension seated against the bottom of the shallow recess near one end of such recess, a first terminal screw for connecting the lateral extension of the first prong with the body portion, a first wire extending longitudinally through the wire receiving opening and having a forward lateral extension disposed within the shallow recess and connected with the first ter-

5 minal screw, a second prong for the plug arranged in opposed laterally spaced relation to the first prong, the second prong being substantially longer than the first prong and extending into and through substantially the entire length of the deep fuse receiving recess, the second prong including a lateral extension near its inner end and seated upon the bottom of the fuse receiving recess, upstanding laterally spaced socket arms secured to the lateral extension of the second prong and arranged near the bottom of the fuse receiving recess, an elongated longitudinally extending fuse mounted within the fuse receiving recess and having its inner end mounted between the socket arms and in electrical contact therewith, the outer end of the fuse being arranged adjacent to the bottom of the shallow recess and having a screw threaded opening, a second terminal screw mounted within the screw threaded opening of the fuse, a second wire extending through the wire receiving opening and having a forward lateral extension arranged within the shallow recess and connected with the second terminal screw, and a forward insulating cover plate for the shallow recess and having spaced openings to receive the first and second prongs, said insulating plate including a longitudinally inwardly extending strip projecting into the fuse receiving opening and arranged between the fuse and second prong.

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