

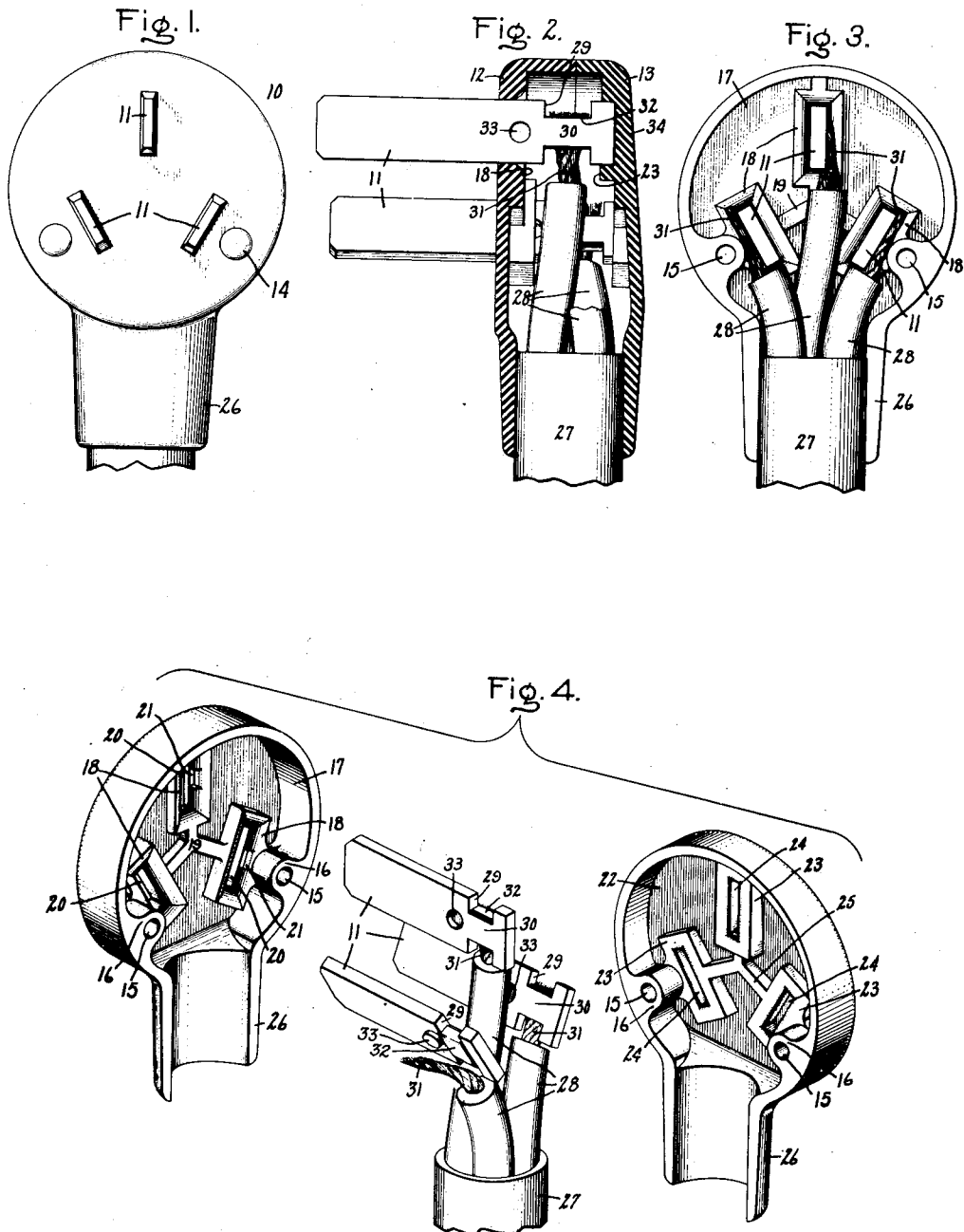
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ELECTRIC PLUG

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ELECTRIC PLUG

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5 Claims. (Cl. 173—361)

My invention relates to wiring devices such as electric plugs, and more particularly to electric plugs for use with electric ranges.

It is an object of my invention to provide an improved construction and arrangement in plugs of the type described which is composed of relatively few parts easily assembled, which is rugged in construction and which may be manufactured at low cost.

In the accompanying drawing Fig. 1 is an end view of the plug; Fig. 2 is a sectional view through the plug taken at right angles to the view of Fig. 1; Fig. 3 is a view of the interior of the plug with the end cap removed, and Fig. 4 is an exploded view of the elements of the plug.

Referring to the drawing, an electric plug body 10 is shown provided with a plurality of contact prongs 11 spaced in the body of the plug. In the form of the invention illustrated three contact prongs are shown spaced symmetrically in the plug body, so that they form an electric plug of the type customarily used with electric ranges; however, it will be manifest that the number of prongs may be increased or decreased at will depending upon the types of wiring systems and the devices with which the plug is to be used.

The body 10 comprises a base 12 and a cap 13 formed of insulating material, such as a phenolic condensation product. They are secured together in assembled relationship by rivets 14 which pass through openings 15 formed in shoulders 16 provided on both the cap and base member. The base member 12 is provided with a recess 17 and upstanding from the bottom of the recess are a plurality of bosses 18. One of the bosses 18 is disposed centrally of the base and the remaining bosses are disposed at an angle in symmetrical relationship on each side of the center boss. A plurality of ribs 19 interconnect the bosses 18 and serve as a reinforcing means for the bottom of the recess which is of relatively thin cross-section. In order to receive the contact prongs 11, each of the bosses is provided with an opening 20 extending through the base member and a groove 21 is provided in each of the bosses along the side of the opening 20 for a purpose to be described later.

The cap member 13 is constructed in a manner similar to the base 12 and is provided with a recess 22, the bottom of the recess being formed with bosses 23, one of the bosses being disposed centrally of the cap and the remaining bosses being disposed at an angle in symmetrical relationship on each side of the central boss and in an arrangement complementary to that of the bosses 18 formed in the base member 12, so that the bosses on the base and cap members are in axial alignment when the latter are in assembled position. In order to receive the ends of the contact prongs 11 the bosses 23 are each provided with

a recess or slot 24. A plurality of ridges 25 interconnect the bosses 23 and serve to reinforce the back of the cap 13. Both the base 12 and the cap 13 are provided with extensions 26 which serve as a housing and protection for the end of a cable to be connected to the contact prongs.

In the form of the invention illustrated a three-conductor cable 27 is provided with the individual conductors 28 connected to the contact prongs 11 within the confines of the plug body, as shown by Figs. 2 and 3. The contact prongs 11 are formed of plain flat strip stock of rectangular configuration and are provided with slots 29 extending inwardly from opposite edges thereof near the inner end to provide a neck portion 30. The individual conductors of the cable are provided with bared ends 31 which are laid across the neck portions 30 of the contact elements and are spot welded thereto, as shown by Fig. 4. In order to provide an effective weld between the conducting wires and the contact prongs a brazing strip 32 is placed between the bared ends of the conductors and the contact prongs prior to the welding operation. The brazing strip is of U-shape and slips over the neck portion 30 with the ends of the U resting in the slots 29. This construction makes it possible to hold the brazing strips in position easily prior to the welding operation and the neck portion 30 being smaller than the width of the prong makes it possible to utilize a smaller length of the brazing strip, thereby effecting a considerable saving in cost, as the brazing strip is formed of relatively expensive material. In addition, the spot weld of the conductors to the contact prongs at the neck portion 30 forms an electrical connection of unusual strength and one which will absorb any pulls or twists applied to cable 27 and which, at the same time, forms a connection capable of carrying the heavy currents incident to the use of the plug with electric ranges, or the like. Each of the contact blades is provided with a punched-out projection 33 for the purpose of locating the blades accurately within the plug body. Inasmuch as the contact prongs are formed of strip stock the projection 33 and the slots 29 may be punched in a single operation.

In assembling the device the contact blades or prongs are first welded to the individual conductors of the cable in the manner described above, and the contact prongs are then inserted through the openings 20 in the base member 12, with the projections 33 resting in the grooves 21 formed adjacent the openings. The projections 33 and the grooves 21 cooperate to prevent the contact prongs from passing through the openings in the base and, at the same time, the prongs are accurately centered and positioned within the plug body by the cooperation of these elements. The cap 13 is then placed over the

base member 12 and the ends of the contact prongs are seated within the recesses 24, and the parts of the body secured together by means of the rivets 14. It will be seen from an examination of Fig. 2 that the prong elements are held securely within the plug body by virtue of the fact that the inner ends of the prongs are supported securely and accurately within the cap recesses 24 and the intermediate portions of the prongs are supported by the openings 20 formed in the base 12. This structure mounts the prongs rigidly and securely in position and prevents them from moving relatively to the plug body.

As shown more particularly by Fig. 2, the face of the cap member 13 is beveled inwardly at 34 from the extension 26 to the top of the cap. This makes it possible to locate the center boss 23 and the corresponding recess 24 above the level of the other recesses 24, so that the center contact prong 11 is extended forwardly to project beyond the ends of the other contact blades. In a corresponding manner the groove 21 and the central projection 18 are made shallower than the remaining grooves 21 so that the projection 33 may be seated therein to locate the central prong in extended position in the manner indicated. This construction permits the central prong to make contact with the center contact of the receptacle with which the plug is used before the other prongs engage their contacts, and inasmuch as the center contact is connected to neutral or ground, no damage from possible short circuits between the other prongs can occur to the holder of the plug. At the same time, the construction makes it possible to form all the contact prongs of the same length, thereby effecting a considerable saving in the cost of manufacture.

Due to the fact that the contacts are formed of flat strips with the conductors welded thereto, it is possible to arrange these elements within a housing of reduced size. This would not be possible if other connecting means, such as screws were utilized to connect the conductors to the contacts. Inasmuch as the bosses 18 and 23 are formed of substantial thickness, they provide adequate support for the contact prongs and hold them securely in position. Since the bosses are constructed of considerable thickness, it is possible to reduce the general overall thickness of the cap and base thereby effecting a considerable saving in material.

What I claim as new and desire to secure by Letters Patent of the United States, is:

1. In an electric plug, a base having a central boss and a boss disposed at an angle on each side of said central boss, each of said bosses being provided with an opening therein extending through the base, a cap member having a recess therein, a central boss and a boss disposed at an angle on each side of said central boss extending from the bottom of the recess in said cap and themselves provided with slots therein, contact prongs having their ends seated in said slots and projecting through the openings in said base, a projection on each of said contacts engaging the walls of the corresponding boss in said base for positioning the contacts in said openings, a conductor secured to each of said contacts, and means securing said base and cap together.

2. In an electric plug, a base having a recess therein, a central boss and a boss disposed at an angle on each side of said central boss extend-

ing from the bottom of said recess, each of said bosses being provided with an opening therein extending through the base and having a groove adjacent said opening, a cap member having a recess therein, a central boss and a boss disposed at an angle on each side of said central boss and extending from the bottom of the recess in said cap and themselves being provided with slots therein, contact prongs having their ends seated in said slots and projecting through the openings in said base, projections on said contacts engaging the grooves in the bosses of the base for positioning the contacts within said openings, a conductor secured to each of said contacts, and means securing said base and cap together.

3. In an electric plug, a plurality of contact prongs each being formed of a flat rectangular strip having slots placed in opposite edges thereof to provide a reduced neck portion and being further provided with a projection adjacent said neck portion, U-shaped brazing strips overlying said neck portion with the arms of the U's resting in said slots, insulated conductors having bared ends welded to said brazing and contact strips, a casing having a base and a cap, said cap having recesses formed therein for receiving the ends of the contact strips, said base having openings therein through which said contact strips extend, the projections on said contact strips engaging the base for positioning the contacts within said opening.

4. In an electric plug, a plurality of contact prongs each being formed of flat strip material of substantially equal length, a projection extending from each of said contact prongs, a base having a central boss and a boss disposed at an angle on each side of said central boss, each of said bosses having an opening therein and said central boss being of less height than the others, a cap member having a central boss and a boss disposed at an angle on each side thereof with the central boss being of greater height than the others, and with each of said cap bosses having a recess therein, the ends of said contact prongs resting in said recesses and extending through said openings with the projections engaging the bosses in said base to position the prongs within said openings, the central bosses in said base and cap cooperating with the end and projection of the central contact prong to project it beyond said other prongs, and means securing said base and cap together.

5. In an electric plug, a plurality of contact prongs each being formed of strip material of substantially equal length, means projecting from each of said contact prongs, a base having a central opening and an opening disposed at an angle on each side of said central opening, a cap member having a central recess and a recess disposed at an angle on each side thereof with the central recess being of greater height than the others, the ends of said contact prongs resting in said recesses and the bodies of said prongs extending through said openings with the projecting means engaging the wall of the base adjacent the openings to position the prongs within said openings, the central recess in said cap cooperating with the end of the central contact prong to project it beyond said other prongs, a conductor secured to each of said contact prongs, and means securing said base and cap together.

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