Feb. 20, 1940. W. P. HERMAN 2,191,385

CONTACT PLUG

Filed April 11, 1936

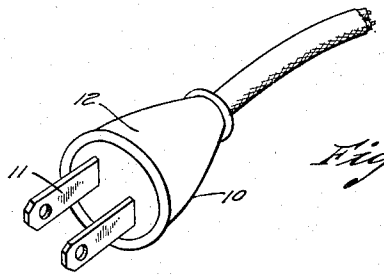


Fig. 1

Fig. 2

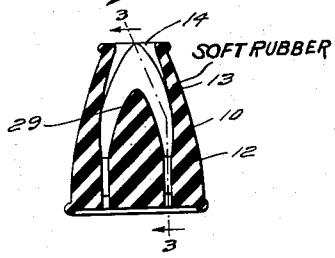


Fig. 3

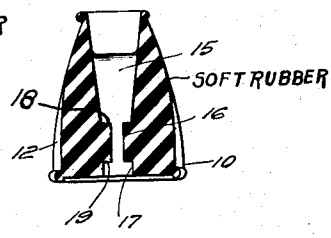
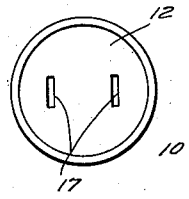


Fig. 4



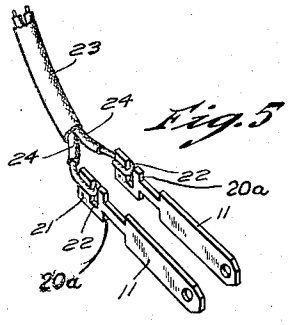


Fig. 5

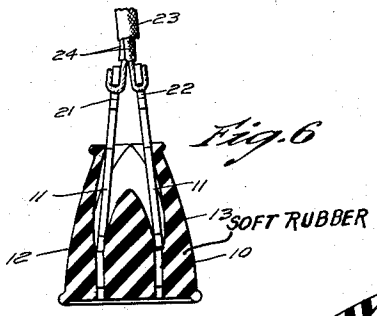


Fig. 6

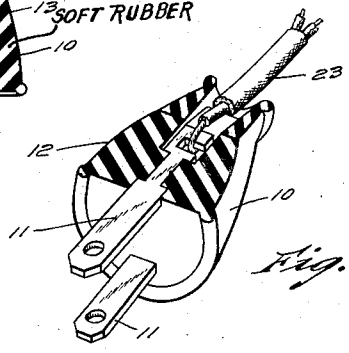


Fig. 7

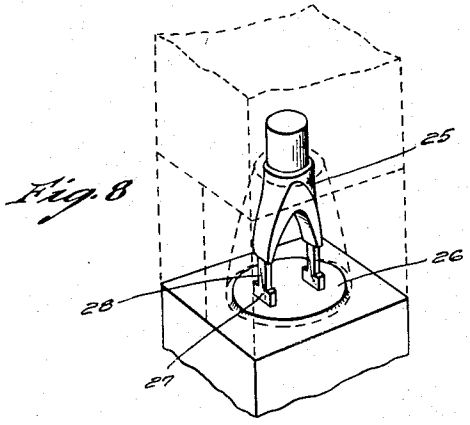


Fig. 8

Inventor
William P. Herman
By Nathaniel Frucht
Attorney

Patented Feb. 20, 1940 2,191,385

UNITED STATES PATENT OFFICE

2,191,385

CONTACT PLUG

William P. Herman, Providence, R. I., assignor to Electrix Corporation, a corporation of Rhode Island

Application April 11, 1936, Serial No. 73,901

7 Claims. (Cl. 173—361)

My present invention relates to the manufacture of electrical fixtures and has particular reference to a novel construction for contact plugs.

It is a principal object of my invention to devise a contact plug construction in which the contact blades may be locked into the plug body by insertion from the neck.

It is a further object of my invention to devise a plug construction which will eliminate any tendency to short circuit between the wires attached to the contact blades.

It is an additional object of my invention to provide a contact blade which will facilitate the insertion and securing of the wire ends thereto.

It is an additional object of my invention to simplify the manufacture of the plug body.

Another object of my invention is to provide structures for the plug body and the contact blades that will facilitate assembly of the parts.

With the above and other objects and advantageous features in view, my invention consists of a novel arrangement of parts more fully disclosed in the detailed description following, in conjunction with the accompanying drawing, and more specifically defined in the claims appended thereto.

In the drawing,

Fig. 1 is a perspective view of the novel contact plug;

Fig. 2 is a vertical section of the plug body prior to assembly of the contact blades therein;

Fig. 3 is a section on the line 3—3 of Fig. 2;

Fig. 4 is a bottom plan view of the plug body;

Fig. 5 is a perspective view showing the novel contact blades prior to assembly;

Fig. 6 is a sectional view showing the method of insertion of the contact blades;

Fig. 7 is a perspective view of the assembled plug, parts being broken away to show the locking engagement of the blades in the body; and

Fig. 8 is a perspective view showing the arrangement of the die parts for producing the body.

It has been found desirable to manufacture a contact plug in which the blades are inserted through the neck of the plug and are locked in the plug body against accidental removal, whereby no parts of the assembly are exposed to view, and no end washers or discs are necessary. To this end I have devised a novel manufacture for a plug body which provides lock landings for locking the contact blades in position when the blades are assembled from the neck end, and I have improved the blade construction so as to simplify the assembling and securing of the lead wires thereto. Moreover, I have so formed the plug body that the lead wires are separated by part of the body interior so as to eliminate short circuiting between the lead wires.

Referring to the drawing, the novel contact plug 10 is shown in perspective in Fig. 1 and includes two contact blades 11 rounded or shaped at their ends in the usual manner to facilitate entrance into the contact socket slots. The contact plug includes a plug body 12, see Figs. 2 and 3, which has a neck 13 having a central opening 14, the body being shaped to provide two diverging passageways extending downwardly through the plug body. Each passageway comprises an upper channel portion 15 communicating with a lower flat blade receiving slot portion, the slot portion having its walls extending laterally toward each other to form a restricted passage 16 which terminates in a wider end slot 17; the passage walls being provided with lock shoulders or landings 18 and 19 for a purpose hereinafter to be described.

Referring now to Fig. 5, two contact blades 11 of metal, such as brass, each having a reduced portion conforming in shape with the restricted passage 16 and having shoulders 20a for contact with the shoulders or landings 18 and 19, and having a head portion 21, each provided with a transverse slot 22. The cord 23 has the usual insulated lead wires 24, the ends of which when stripped of insulation may be readily inserted through the slots 22 and turned over and molded, dipped or soldered in place, the assembly operation thus being greatly simplified. With the parts assembled as shown in Fig. 5, the parts may then be inserted into the plug body as disclosed in Fig. 6, the ends of the blades 11 being forced downwardly through the restricted passages 16, which give, as the plug body is preferably made of a flexible insulated material such as soft rubber, and then return to lock the blades in place as indicated in Fig. 7, the shoulders or landings 18 and 19 firmly locking each blade against accidental removal from the plug base, and interposing a strong resistance to intentional removing.

The manufacture of the novel plug body is greatly simplified by using dies of the type shown in Fig. 8, comprising a bifurcated upper die 25 and a lower die 26 which has spaced upstanding portions 27 terminated in reduced portions 28, whereby the plug body may be readily molded, the dies then being removed by moving in opposite directions. The improved construction therefore includes a novel plug body which has separated passageways for each blade and its wire, the space between the passageways being in the form of an insulating cone 29, see Fig. 2, thus eliminating short circuiting between the ends of the two wires. The two wires are readily assembled to the blades by use of the transverse slot described and illustrated, which eliminates any need for passing the wire end through a blade opening, as has been standard practice

heretofore, as the wire ends are readily slipped into the slot, and the landings formed at the ends of the restricted passages 16 effectively prevent accidental removal of the blades from the plug body. The blades remain in the plug body without any distortion of the rubber, whereby there is no tendency to decrease the resilience or the effective life of the base as the result of internal strain, and there are no exposed connecting parts, whereby no insulating washers such as hitherto employed are required.

The preliminary securing of the wire ends to the blades permits a quick assembly into the plug body, which may be a hand or preferably a machine assembly, whereby the manufacturing cost is greatly reduced.

The conical insulating section has an important advantage in use, in that the resilient plug body cannot be squeezed by the user so as to move the lead wires or the blade inner ends towards each other so as to produce a short circuit. The plug body is preferably molded in one piece, but may, if desired, be of two or three piece construction. Moreover, although the passageways are disclosed as having reduced sections, providing landings engaged by the blade shoulders, the construction of the parts can be reversed, the passageways having enlarged sections or wall recesses, by using collapsible cores, or by having sufficiently resilient rubber material; the blades are formed with corresponding intermediate portions.

Although I have described the plug body as made of molded rubber, it may be made of any insulating material having the same properties; if desired, the blades may be directly locked to the body by molding the body around them.

While I have described a specific constructional embodiment of my invention and specific formations for the plug body, any desired changes in the material used for the parts, in their relative arrangement and assembly and in their relative proportions may be made to suit the requirements for different contact plug designs, without departing from the spirit and scope of the invention as defined in the appended claims.

I claim:

1. In a contact plug, a one piece base of resilient flexible material having an upper central recess and two passageways diverging downwardly therefrom and extending through the plug, said base having integral spaced parallel portions in each passageway extending towards each other to form restricted passages intermediate the ends of said passageways, and straight contact blades seated in said passageways, recessed portions in the blades engaging the parallel portions, the upper ends of said blades extending into the upper portions of said passageways, said upper ends having transverse slots for connecting the cord lead wires.

2. In a contact plug, a one piece base of resilient flexible material having an upper central recess and two passageways comprising flat slots diverging downwardly therefrom and extending through the plug, said base having integral spaced separate parallel portions in each slot extending towards each other to form restricted passages intermediate the ends of said slots, and straight flat contact blades seated in said slots and having recessed portions in the blades engaging the parallel portions, the upper ends of said blades extending into the upper portions of said passageways, said upper ends having means for connecting cord lead wires thereto.

3. In a contact plug, a one piece base of resilient flexible material having an upper central recess adapted to receive a cord and two passageways comprising flat slots diverging downwardly therefrom and extending through the plug, said base having integral spaced separate parallel portions in each slot extending towards each other to form restricted passages intermediate the ends of said slots, and straight flat contact blades seated in said slots, said blades having reentrant portions adapted to receive said projecting parallel portions in said slots.

4. In a contact plug, a one piece base of resilient flexible material having an upper central recess adapted to receive a cord and two passageways comprising flat slots diverging downwardly therefrom through the plug, the body of said plug between said passageways tapering into said upper central recess to form an insulating core adapted to dielectrically separate the ends of the cord wires, said base having integral spaced separate portions in each slot projecting towards each other to form restricted passages intermediate the ends of said slots, said projecting portions having blade lock shoulders at each end thereof.

5. In a contact plug, a one piece base of resilient flexible material having an upper central recess and two passageways comprising slots diverging downwardly therefrom and extending through the plug, said base having integral spaced parallel portions in each slot extending towards each other to form restricted passages in said slots, and straight contact blades seated in said slots having recessed portions engaging the parallel portions, the upper ends of said blades extending into the upper portions of said passageways, said blades having transverse slots for connecting cord lead wires thereto.

6. In a contact plug, a one piece base of resilient flexible material having an upper central recess and two passageways comprising flat slots diverging downwardly therefrom and extending through the plug, said base having integral spaced separate parallel portions in each slot extending towards each other to form restricted passages in said slots, and straight flat contact blades seated in said slots having recessed portions engaging the parallel portions, the upper ends of said blades extending into the upper portions of said passageways, said blades having means for connecting cord lead wires thereto.

7. In a contact plug, a one-piece base of resilient flexible material having an upper central recess adapted to receive a cord and two passageways diverging downwardly and comprising flat slots extending through the base, the body of said plug between said passageways tapering into said upper central recess to form an insulating baffle adapted to dielectrically separate the ends of the cord wires, one wall of each slot having a portion projecting towards the opposite wall of the slot in parallel relation thereto to form a restricted passage having lock shoulders at each end thereof, and flat contact blades seated in said slots and having integral cooperating lock parts engaging said lock shoulders.

WILLIAM P. HERMAN.