April 15, 1930. S. G. GARRETT 1,754,312

TWO-PIECE ELECTRICAL CONNECTION PLUG

Filed Sept. 25, 1928

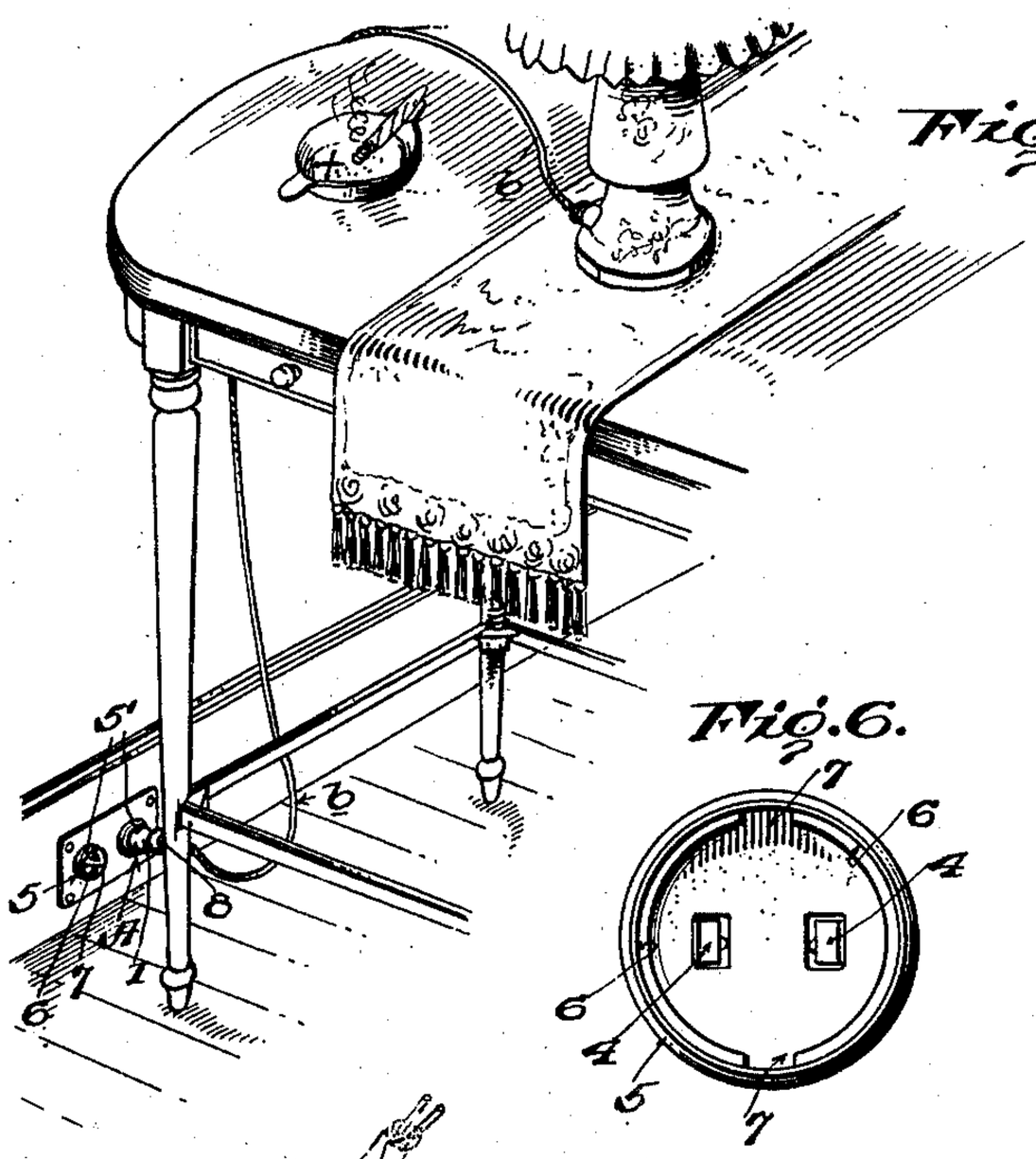


Fig. 1.

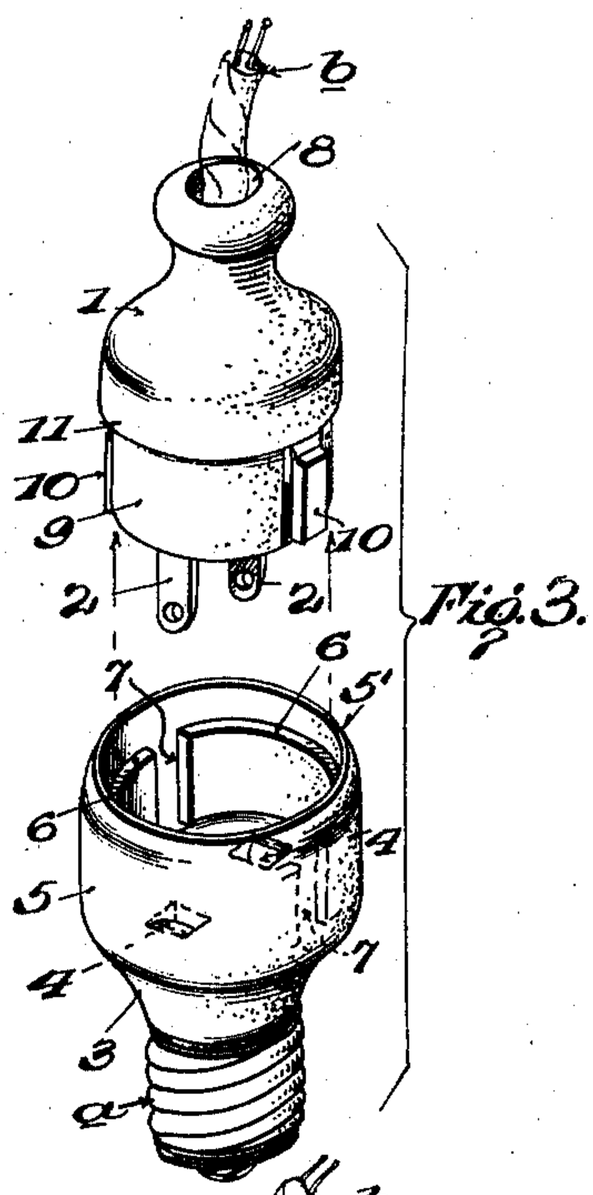


Fig. 3.

Fig. 6.

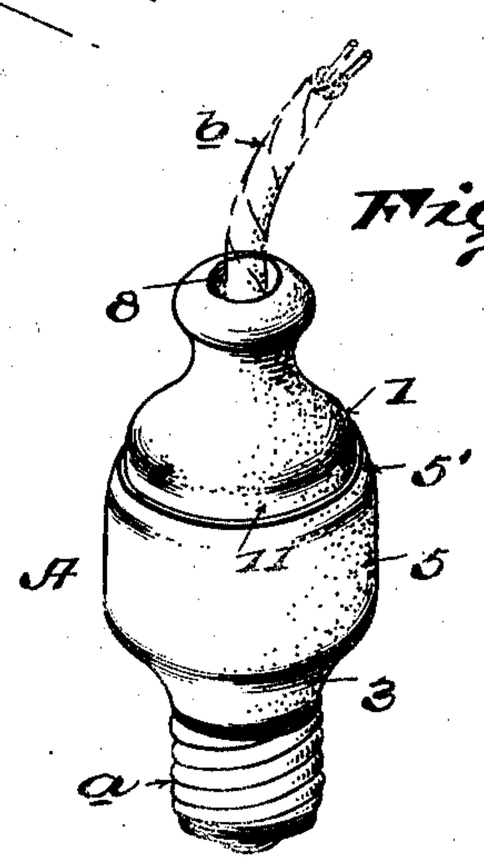


Fig. 2.

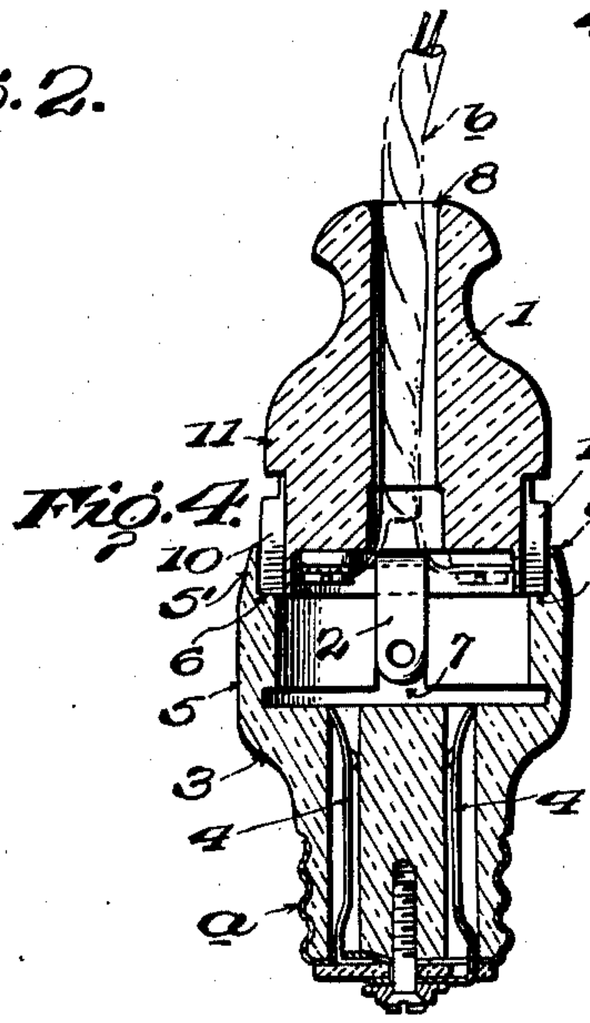


Fig. 4.

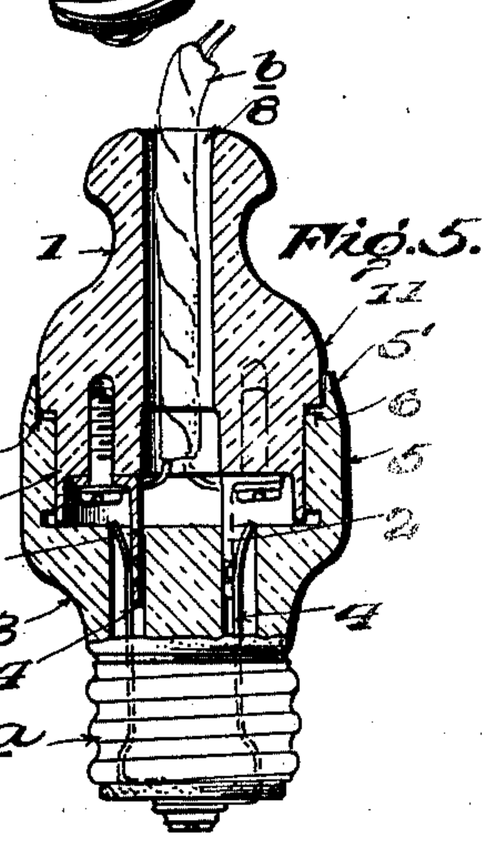


Fig. 5.

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UNITED STATES PATENT OFFICE

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TWO-PIECE ELECTRICAL CONNECTION PLUG

Application filed September 25, 1928. Serial No. 308,257.

This invention relates to two-piece or so-called "split" electrical plugs, and has for its object to provide a plug of this class in which the two parts may be quickly and readily assembled by an unskilled person even in the dark, which shall be safe, and which shall avoid any undue twisting of the electrical wires connected thereto. With these objects in view, the invention consists in the construction and combination of elements hereinafter described and then defined in the appended claims. For the purpose of illustrating the invention, one embodiment of the inventive idea is illustrated in the accompanying drawings, in which—

Fig. 1 is a perspective view showing the plug in practical use;

Fig. 2 is a side elevation of the plug;

Fig. 3 is a perspective view of the two parts of the plug separated from each other;

Fig. 4 is a longitudinal vertical section through the plug when the parts are in the act of being assembled and the two contacts of the plug are out of register with the contact-receiving slots in the socket;

Fig. 5 is a view similar to Fig. 4, but showing the plug carrying the contacts turned to bring said contacts into register with the contact-receiving slots and the parts pushed together into operative position; and

Fig. 6 is a plan view of the socket portion of the plugs.

Referring to the drawings, in which the parts are indicated by the same reference characters throughout the several views, A, Fig. 2, indicates the plug as a whole, and, as here shown, may be provided with the usual screw-threaded end, *a*, for insertion into the usual electrical wall socket as shown in Fig. 1, and the usual electrical wires, *b*, for making connection with a lamp, radio, or other device. The plug A is composed of the part 1 carrying the contact prongs 2, 2, and the part 3 having the usual electrical terminals 4, 4, the part 1 constituting a plug member and the part 3 a socket member. The part 3 is of insulating material and has an outwardly-projecting annular shell or wall 5, on the interior face of which is an annular shoulder 6, which shoulder is located well within the outer rim 5′ of the said wall 5, as will be readily seen by an inspection of Figs. 3, 4 and 5. This shoulder is preferably formed by reducing the inner diameter of the wall 5, and has two oppositely-disposed slots 7, 7, formed therethrough, and extending from the top of the shoulder to the bottom of the shell formed by the wall 5, see Fig. 3.

The part 1 is of insulating material, as hard rubber, and has the usual axial opening 8, therethrough for the wires *b*, and carries on its inner end, 9, the usual or any suitable contact prongs 2, 2. The diameter of this end portion 9 is approximately the same as the interior diameter of the annular shoulder 6. Projecting radially from the outer surface of the end portion 9 are two oppositely-disposed lugs 10, 10, whose outer surfaces are formed on the arc of a circle defined by the inner wall of the rim 5′ above the annular shoulder 6, so that when the lugs are inserted within the rim 5′ and rest on the shoulder 6, they may be turned within and be guided by said rim 5′. The width of the lugs 10, 10, is such that they may enter and yet fit snugly within the slots 7, 7, and the height of the shoulder 6 above the bottom of the shell 5 is such that when the lugs 10, 10, rest upon said shoulder the prongs 2, 2, clear the bottom of the shell 5 (see Fig. 4). Preferably, and as here shown the slots 7, 7, are diametrically opposite each other and on a diameter at right angles to the diameter passing centrally through the terminals 4, 4 (see Fig. 6).

The arrangement of the parts is such that when the lugs 10, 10, enter the slots 7, 7, the prongs 2, 2, are in register with the recesses in which the terminals 4, 4, are located, and hence readily enter such recesses when the end 9 of the part 1 enters the shell 5, and the lugs 10, 10, enter and slide within the slots 7, 7, of the annular shoulder 6 (see Fig. 5). The diameter of the part 1 at 11 is such that, when the parts are assembled, it fits snugly within the rim 5′; in other words the diameter at 11 is the same as the diameter passing through the lugs 10, 10 (see Figs. 4 and 5).

Operation: When it is desired to make the electrical connection, the end portion 9 of part 1 is inserted within the rim 5′ until the lugs 10, 10 rest upon the shoulder 6 (see Fig. 4). In this position of the parts the arc shaped faces of the lugs bear against the inner wall of the rim 5′, and the prongs 2, 2 are above and out of register with the recesses containing the terminals 4, 4. The part 1 is now turned about its longitudinal axis until the lugs 10, 10 register with the slots 7, 7. During this turning movement, the lugs are under the combined control of the rim 5′ and the shoulder 6. The rim prevents the escape of the lugs from the shoulder, and the latter prevents the further inward movement of the lugs until they register with the slots 7, 7 and the prongs 2, 2 register with the recesses containing the terminals 4, 4. The turning movement necessary to effect this registration can never exceed an angle of 90°, and in the majority of cases will be less than 90° so there can be no injurious twisting of the wires *b*. Moreover, once the prongs 2, 2 enter the rim 5′, it is impossible for any foreign object to drop across the prongs, and this provides a factor of safety against short circuiting. When the lugs 10, 10 are brought into register with the slots 7, 7, a simple inward thrust of the plug member 1 completes its insertion into the socket member 3 and the contact of the prongs 2, 2 with the terminals 4, 4. This insertion of the plug into the socket is quickly and accurately accomplished, even in the dark or by a blind person, and this even though the socket be located in a place difficult of access.

It will be readily appreciated by those skilled in the art that changes may be made in the specific construction of the device as herein shown and described without departing from the true scope of the invention. For example, the lugs 10 may be formed within the socket and the annular shoulder on the end portion 9 of the plug. All such changes as fall within the scope of the appended claims are to be recognized as but different mechanical expressions by my inventive idea.

What is claimed is:

1. A two-piece electrical plug connection comprising a socket member having electrical terminal recesses, and an annular shoulder formed on the interior wall of the socket, said shoulder having a slot extending therethrough, an annular rim on said socket extending outwardly from said shoulder, and a plug member whose inner end portion fits snugly within said annular shoulder and bears contact prongs, said plug having a radially extending lug to enter into said slot when said prongs register with said terminal recesses.

2. A two-piece electrical plug connection comprising a socket member having electrical terminal recesses and having an annular shoulder formed on the interior wall thereof, said shoulder having two oppositely disposed slots extending therethrough, an annular rim on said socket extending outwardly from said shoulder and a plug member bearing contact prongs having two radially extending lugs fitting snugly within said rim and resting on said shoulder during the assemblage of the parts, said lugs entering said slots when said prongs register with said recesses.

3. A two-piece electrical plug connection comprising a cylindrical socket member having electrical terminal recesses, a rim portion on said socket member having an internal diameter exceeding that of the main portion of said member, whereby an interior annular shoulder is formed on the wall thereof, two oppositely disposed slots formed in the interior wall of said socket and extending through said shoulder, and a plug member carrying contact prongs on its inner end for entering said terminal recesses when the parts are assembled, two oppositely disposed radially extending lugs on the inner end portion of said plug, the diameter of said end portion approximating the interior diameter of the said socket, said prongs registering with said recesses when said lugs register with said slots.

4. A two-piece electrical plug connection comprising a socket member having electrical terminal recesses, a rim portion on said socket member having a diameter exceeding that of the main portion of said member, whereby an interior annular shoulder is formed on the wall thereof, two oppositely disposed slots formed in the interior wall of said socket and extending through said shoulder, and a plug member carrying contact prongs on its inner end for entering said terminal recesses when the parts are assembled, the inner end portion of said plug being of a diameter to fit snugly within the socket below said annular shoulder and having two oppositely disposed radially extending lugs on said end portion, the diameter of said end portion taken through said lugs approximating the interior diameter of said rim, said prongs registering with and entering said recesses when said lugs register with and enter said slots.

5. A two-piece electrical plug connection comprising a cylindrical socket member having electrical terminal recesses, said socket having a slotted annular shoulder on its interior wall and a guide rim surrounding said shoulder, and a plug member carrying contact prongs on its inner end, said plug having radially extending lugs fitting snugly within said rim and resting on said shoulder during assemblage of the plug and socket but passing through the slotted shoulder

when said prongs register with said recesses.

6. A two-piece electrical plug connection comprising a cylindrical socket member having electrical terminal recesses, a plug member carrying contact prongs on its inner end, a slotted annular shoulder on one of said members and a lug on the other member coacting with said slotted shoulder when the plug member is inserted in the socket member, and a guide rim on the socket member controlling the movement of the parts when the plug is inserted in the socket.

In testimony whereof I have signed this specification.

STUART G. GARRETT.