March 22, 1938. L. S. BRACH 2,112,137

ATTACHMENT PLUG

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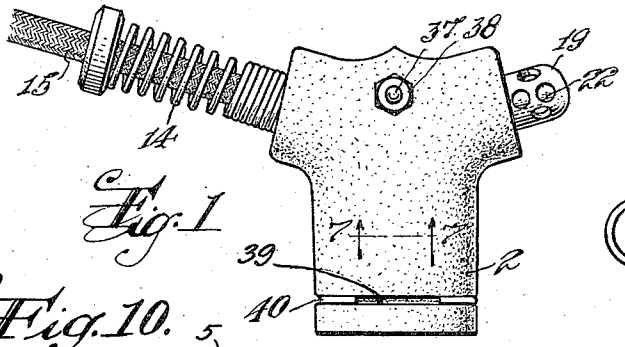


Fig. 1

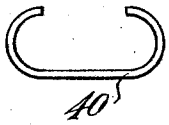


Fig. 4

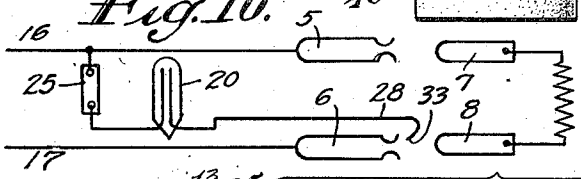


Fig. 10.

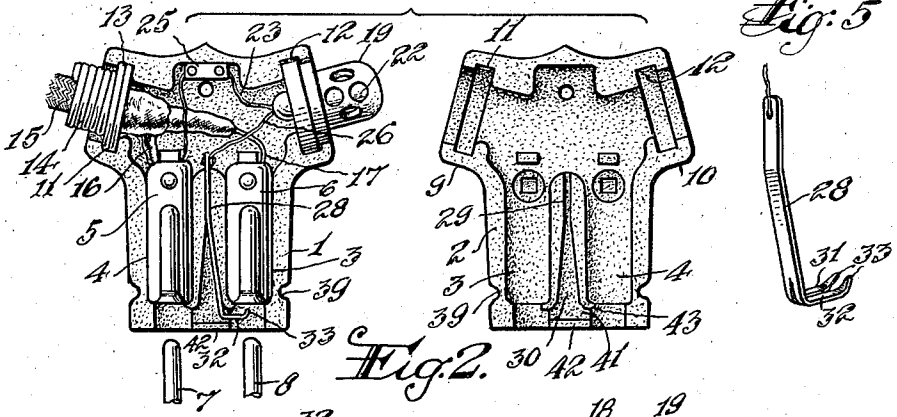


Fig. 2.

Fig. 5

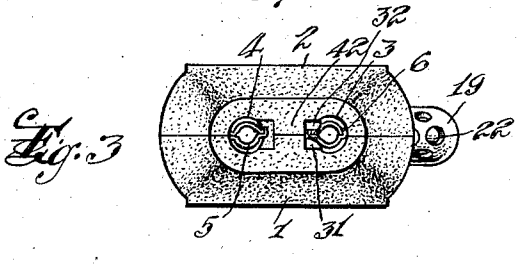


Fig. 3

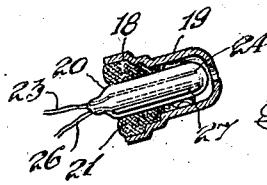


Fig. 6

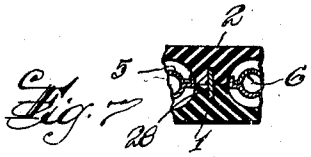


Fig. 7

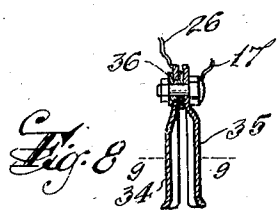


Fig. 8

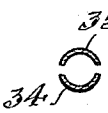


Fig. 9

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ATTACHMENT PLUG

Leon S. Brach, East Orange, N. J.

Application June 18, 1936, Serial No. 85,939

8 Claims. (Cl. 177—311)

This invention relates to an attachment plug particularly adapted for use in connection with electric flat irons.

Heretofore, it has been proposed to use low-voltage indicating lamps mounted on the base or handle portion of the flat iron, the lamp being lighted through a resistance mounted either in the iron or as a part of the current-conducting cord coming to the plug, but such constructions are open to many objections in that the use of the cord breaks the resistance wire running to the lamp. Where a 110-volt filament type of lamp is used, this is objectionable on account of its size and the heat given off by it.

By reason of my improved form of attachment plug, which will be hereinafter described in detail, I make use of a glow lamp, preferably of the neon gas-filled type. These lamp bulbs are very small and consume almost no current at all, especially when used in connection with a resistor as I have used them in prior devices.

It is the principal object of my invention to provide simple and relatively inexpensive means for giving an indication to the user of the flat iron that current is available at the plug and iron when the plug is inserted into operative position with the flat iron.

While attaining the principal object of my invention, it is another object to provide a current-indicating means that is efficient and economical in its operation.

Another object of my invention is to provide a current-indicating means in the plug which takes such a very small amount of current that substantially no heat is radiated therefrom, so that it is not injurious in any way to the insulating parts of the plug, and neither will it burn an operator who might accidentally come in contact with it.

Another object of my invention is to provide a current-indicating means that is visible from several directions.

My invention will be best understood by reference to the attached drawing wherein:

Figure 1 is a front elevational view of my improved form of attachment plug.

Figure 2 is a view of the two parts of the plug separated, showing the interior of these parts and the method of mounting the various pieces entering into the electrical circuit.

Figure 3 is a view of the flat iron end of the plug shown in Figure 1.

Figure 4 is a view of part of the means used for holding the parts of the plug together.

Figure 5 is a view of a contact spring member used in connection with my improved device.

Figure 6 is a sectional view through a preferred form of indicating means.

Figure 7 is a view on the line 7—7 of Figure 1.

Figure 8 is a sectional view of a modified form of spring member used for connecting the indicator in circuit.

Figure 9 is a section on the line 9—9 of Figure 8.

Figure 10 is a wiring diagram of applicant's plug.

In the various views, wherein like numbers refer to corresponding parts, 1 and 2 are complementary pieces making up the body of the plug. These pieces are made of any suitable insulating material. The interior portions of the parts 1 and 2 have complementary recesses 3 and 4 therein to receive and position contact-engaging members 5 and 6. These contact-engaging members 5 and 6 are usually made of two cooperative parts as shown in Figures 3 and 7, which parts are formed of metal that has some resilience in order to make engagement with cooperative contact members 7 and 8 shown as pins or terminals mounted on the flat iron. The plug parts 1 and 2, at the end opposite what I term the flat iron end, have similar cooperative projecting portions 9 and 10. These portions are recessed at 11 and 12 as shown so as to facilitate and speed up assembly, for it will be seen that the lamp guard, to be later referred to, can be mounted in either projecting portion. Furthermore, this symmetrical arrangement reduces the molding die cost and the cost of production. The recess 11 is adapted to receive the enlarged convolutions 13 of a spring guard member 14 that is ordinarily used to protect the incoming current cable 15, one of the conductors 16 being connected to the contact-engaging member 5, while the other conductor 17 is connected to the contact-engaging member 6.

The annular recess 12 of the projection 10 is adapted to encircle and hold a flange or shouldered portion 18 comprising part of a member 19 which serves both as a holder and guard for a neon gas-filled bulb 20. As will be seen from Figure 6, the bulb 20 is of the baseless type and is held in the holder in any satisfactory manner as by suitable packing 21 of asbestos or felt. The holder 19 is provided with a plurality of holes or orifices 22 through which the light from the bulb 20 may pass. One terminal 23 coming from the electrode 24 of the bulb 20 is connected

to the contact-engaging terminal 5 through a high resistor 25 which may be of the grid leak type. The other terminal 26 coming from the electrode 27 of the bulb 20 is connected to a spring 28 positioned in a channel 29 formed in the two parts 1 and 2 of the plug.

The channel 29 widens out at 30 somewhat as shown in Figure 2 to provide a space for the end of the spring 28 to move laterally therein. The end of the spring 28 is bent over and extends over the orifice leading to the contact-engaging member 6, about as indicated in the left-hand part of Figure 2. This bent over end of the spring 28 is preferably split into two forks 31 and 32 in order to give greater resilience to this bent end of the spring. Also, the forks 31 and 32 are preferably bent inwardly at 33 toward the contact-engaging member 6.

This arrangement and construction of the spring contact member 28 is such that when the plug is inserted into the iron, so that the terminals 7 and 8 engage the members 5 and 6, the member 8, for example, will engage the bent ends 33 of the forks 31 and 32, thereby providing a good electrical contact between the spring 28 and the member 8, and the contact-engaging member 6, thereby connecting the electrode 27 of the lamp bulb directly to one side of the current supply, causing the bulb 20 to be illuminated. It will be noted that the bent over end of the member 28 is positioned in an orifice 41 located between the wall portions 42 and 43, thereby preventing the spring contact member 28 from being displaced longitudinally out of its working position and into direct engagement with the contact-engaging member 6.

While I have shown the spring 28 associated with the contact-engaging member 6, it is obvious that it may be turned over and placed so as to cooperate with the member 5; also, it is obvious that the resistor 25 may be connected in the lead 26 going to the lamp bulb.

In Figure 8 I have shown a modified method of connecting the lamp bulb across the line. In this construction, the two parts 34 and 35 comprising the member 6 are separated by suitable insulators or bushings 36. The member 34 is connected to the terminal 26 of the bulb, while the member 35 is connected to the current-conductor 17. In this arrangement, when the plug is inserted in the iron, the terminal 8 thereof will connect 34 and 35 together, thereby connecting the bulb 20 across the circuit, thus giving the required indication that current is at the plug and iron.

The two parts 1 and 2 of the plug are held together at one end by a stud 37 and nut 38. At the flat iron end, the parts 1 and 2 are provided with an annular circumferential groove 39 within which is snapped a spring 40.

By using a neon gas-filled bulb in the manner indicated, the average user will not feel the necessity of pulling the plug out of the iron or out of the wall socket, or turning off some switch to save current taken by the lamp, as this is infinitesimal as compared to what is taken by the flat iron itself, and while the lamp may be permanently connected across the contact-engaging terminals 5 and 6 of the plug, I prefer to have the lamp illuminated only when the plug is inserted into the flat iron, so that a signal or indication is given the operator at that particular moment that current is on in the iron.

What I claim is:

1. In an attachment plug comprising a pair of complementary insulators forming a casing and having interior formations to receive contact-engaging members, adapted to be connected to the incoming conductors of a current supply cable; means for indicating, when the plug is inserted into the apparatus which is to receive it, that current is available at said contact-engaging members, said means including, a small gas-filled bulb mounted in the plug for visual indication, a spring contact member within the plug connected to one terminal of the bulb while the other bulb terminal is connected to one side of the current supply, and a high resistance connected in series with the bulb, said spring member being located so it will be connected to the other side of the current supply when the plug is inserted into the receiving apparatus.

2. An attachment plug as set forth in claim 1, further defined in that said spring contact member is positioned in a channel complementarily formed in both of said insulators and extends toward the flat iron end of the plug, the channel having its upper or inner end of a width which will securely hold said spring member, but having its lower or outer end of a width which will allow free movement of the contact end of said spring member and having a part formed so as to project into engagement with a contact member on the flat iron when the plug is inserted therein.

3. An attachment plug as set forth in claim 1, further defined in that said spring contact member is positioned in a channel complementarily formed in both of said insulators and extends toward the flat iron end of the plug, and having a part formed so as to project into engagement with a contact member on the flat iron when the plug is inserted therein, said projected part of the spring member being forked, the forked ends being bent inwardly toward one of said contact-engaging members.

4. An attachment plug as set forth in claim 1, further defined in that said spring contact member forms part of one of said contact-engaging members, and being insulated from the part connected to one of the incoming current conductors.

5. An attachment plug composed of two symmetrical insulators supplied with means for holding them together, said insulators having interior recesses extending to one end of the plug to receive contact-engaging members, the opposite end of the plug having similar slight projections at opposite corners, either projection formed to receive an incoming current supply cable and its protecting strain member, a combined perforated holder and guard locked in place in the other projection by the insulators when fastened together, the holder and guard extending beyond the projection, a discharge lamp carried within the holder so as to give visual indication therethrough, a spring contact member carried by the insulators between said contact-engaging members and extending in front of one of them as and for the purpose described, and a high resistance connected in series with the lamp, said spring member being connected to one terminal of the lamp while the other terminal of the lamp is connected through said resistance to the other of said contact-engaging members.

6. In an attachment plug having parts of insulating material for carrying contact-engaging members connected by a cable to a source of current, a discharge lamp such as a neon gas-filled bulb carried by the plug so as to be visible in several directions, a high resistance located within the plug and connected in series with

the lamp to one of said contact-engaging members, and means including a laterally movable contact located within the plug in cooperative relationship with the other of said contact-engaging members for causing the lamp to be excited when the plug is inserted into a device having contacts to engage said contact-engaging members of the plug.

7. An insulating casing member for an attachment plug body having an approximately rectangular plane face and having similar projecting portions at opposite corners at one end, said portions having similarly formed recesses whereby a cord protector or a combined lamp holder and guard may be interchangeably mounted in either of said recesses, said casing member further having interior formations to assist in holding contact-engaging members adapted to be connected to an incoming conductor of a current-supply cable, and a further formation to assist in holding a supplemental spring as described, and said body being formed symmetrically with respect to a central plane at right angles to the plane of said face.

8. A tubular holder and guard member enlarged at one end to form a clamping engagement shoulder, and perforated at the other end, a tubular baseless lamp of the neon type within the holder and guard member, and packing means between the inner wall of the holder and guard member and the lamp for holding the lamp in position, and located so as to permit passage of light rays from the lamp through the perforated portion.

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