F. E. CARLSON.

CIRCUIT COUPLING FOR ELECTRICALLY HEATED UTENSILS.

APPLICATION FILED NOV. 28, 1914.

1,222,585. Patented Apr. 10, 1917.

Fig. 2.

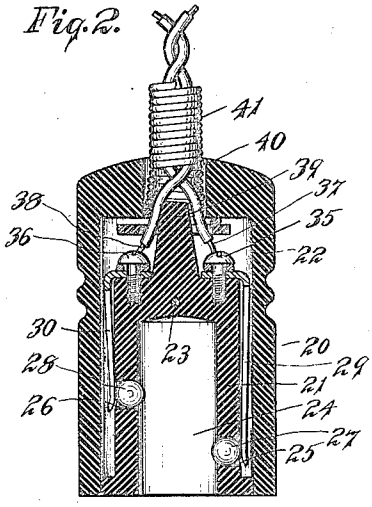


Fig. 3.

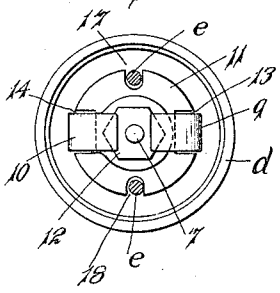


Fig. 1.

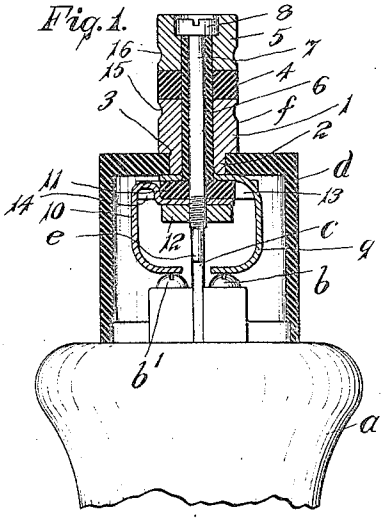
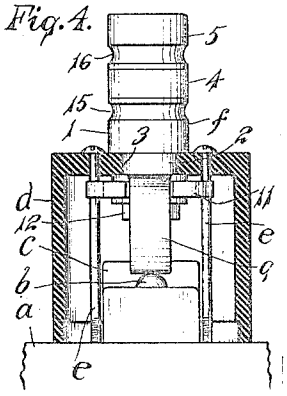


Fig. 4.



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CIRCUIT-COUPLING FOR ELECTRICALLY-HEATED UTENSILS.

1,222,585. Specification of Letters Patent. Patented Apr. 10, 1917.

Application filed November 28, 1914. Serial No. 874,495.

To all whom it may concern:

Be it known that I, FREDERICK E. CARLSON, a citizen of the United States, and a resident of New Britain, in the county of Hartford and State of Connecticut, have invented certain new and useful Improvements in Circuit-Couplings for Electrically-Heated Utensils, of which the following is a specification.

This invention relates particularly to means for connecting electrically heated utensils of various sorts, such for instance as curling irons, combs, etc., into an electrical circuit, and has for its object the provision of a swivel connection which will permit of the utensil being turned without twisting the cord, and which is simple and inexpensive to manufacture and assemble, effective in providing a good electrical contact and easy to manipulate.

The invention is shown as applied to the handle of a utensil such as a curling iron, and—

Figure 1 is a central vertical section of the plug attached to the handle.

Fig. 2 is a central vertical section of the receptacle.

Fig. 3 is a bottom view of the plug member.

Fig. 4 is a side view of the plug looking from the right of Fig. 1, the cap being shown in section.

Referring to the drawings, *a* denotes the handle, *b*, *b'*, the terminals of the heater circuit of the utensil, these terminals being separated by a wall *c*, of insulation. *d* is a cap of insulating material secured to the end of the handle, as by the screws *e*, and on which the contact plug *f* is mounted.

This plug comprises a metallic sleeve 1, reduced in diameter at its end as indicated at 2, to fit in an aperture 3 in the top of the cap *d*, and providing a shoulder which rests upon the cap at the edge of the aperture. Above this sleeve is located an insulating washer 4, and above this washer, a second metallic sleeve 5. A tubular bushing 6 of insulating material passes through these sleeves and washer, completely insulating the lower sleeve 1 from the upper sleeve 5. Through this bushing passes a screw 7, the head 8 of which is in electrical contact with the upper sleeve 5. Within the cap *d* and mounted on the end of the insulating bushing 6 so that it is in electrical contact with the sleeve 1 is a spring contact 9 adapted to bear upon and make electrical contact with one terminal *b* of the heater circuit. A second spring contact 10, separated from the contact 9 by an insulating washer 11, is in electrical connection through the screw 7 with the sleeve 5, and is adapted to make electrical contact with the other heater circuit terminal *b'*. The spring contacts 9, 10, are passed through notches 13, 14, in the edges of the washer 11, to prevent them from turning relatively thereto, and the screws *e* extend through other notches 17, 18, in the edge of the washer to prevent the washer turning if the nut 12 should become loosened. This insures that under all conditions the spring contacts will be held in proper position to engage the ends of the terminal screws, *b*, *b'*. These sleeves, insulating washers and spring contacts, are held in assembled position on the screw 7 by the nut 12, and it will be seen that the circuit from the heater terminal *b* is through the spring contact 9 to the sleeve 1, and from the heater terminal *b'* through the spring contact 10, screw 7, screw-head 8, to the metallic sleeve 5. The sleeves 1 and 5 are circumferentially grooved as at 15, 16.

The complete receptacle shown in Fig. 2 and indicated generally by 20, comprises an inner shell 21 and an inclosing casing 22, these two parts being secured together as by a pin 23. The shell 21 is chambered as at 24 to receive the plug *f* which fits closely therein. The wall of the chamber in opposite sides and in alinement with the circumferential grooves 15, 16, is apertured as at 25, 26, to receive contact members such as the balls 27, 28, held in place by the springs 29, 30, so that they project slightly into the chamber 24, the apertures 25, 26, being so shaped that the balls cannot be pushed through them and fall out when the plug is removed. The springs 29, 30, are fastened to the shell 21 as by the screws 35, 36, under the heads of which the ends of the circuit wires 37, 38 are fastened, the shell having an upstanding wall 39 which is of course of insulating material and isolates the two circuit terminals to avoid any possibility of short-circuiting at this point. The end of

the shell is apertured as at 40 to receive the circuit wires and the encircling spring guard 41.

It is apparent that the form of the electrical connection between the plug and the receptacle is such that there is a good mechanical connection for both sides of the circuit by the fitting of the exposed parts of the balls into the grooves, and that this connection is a complete and easily operating swivel which will permit the utensil to be turned without limit and avoid twisting of the cord. The plug is generally of uniform diameter and it is single so that there can be no doubt as to the proper method of its connection with the receptacle. The circuit terminals are inclosed within the shell and out of alinement with one another, making it quite difficult, if not impossible, to accidentally short-circuit them, and the manner of connecting up the plug with the heater terminals avoids the use of wire connections.

I claim as my invention:

1. The combination with exposed circuit terminals, of a cap inclosing said terminals and secured in position, a plug supported by said cap, contacts carried by said plug and adapted for electrical engagement with said exposed terminals, sleeves of conducting material forming a part of said plug insulated from one another, electrical connection between one of said sleeves and one of said contacts, and between the other of said sleeves and the other contact, circumferential grooves formed exteriorly of each sleeve, a receptacle chambered to receive said plug, contact members located in the walls of said receptacle in alinement with and adapted to fit in said grooves, yielding means for holding said contact members in place, and electrical conductors connecting said contacts with a supply circuit.

2. The combination with exposed circuit terminals, of a cap inclosing said terminals, a plug supported by said cap, said plug comprising a pair of spring contact members located within said cap, electrically insulated from one another at one end and having their opposite ends adapted for electrical contact with said terminals, sleeves of electrical conducting material located outside of said cap insulated from one another, electrical connection between one of said sleeves and one of said contact members, and between the other sleeve and the other contact member, a circumferential groove in the exterior surface of each of said sleeves, and means for securing said cap and its supported parts in place.

3. The combination with exposed circuit terminals, of a plug connector comprising a cap inclosing said circuit terminals and secured in position, a sleeve of conducting material arranged outside of said cap and having an end shouldered and reduced to bear against the end of said cap and fit into an aperture therein, an insulating washer located against the end of said sleeve, a second sleeve of conducting material located next said washer, circumferential grooves in the exterior surface of both of said sleeves, a tubular bushing of insulating material extending through said sleeves and washer, a contact mounted upon said bushing within said cap and in electrical connection with the first mentioned sleeve, a screw extending through said tubular bushing and having electrical contact with the second mentioned sleeve, an insulating washer mounted on said screw next to said contact member, and a second spring contact member mounted on said screw against said washer, and a nut engaging said screw to unite the parts of said plug to said cap, said contact members being adapted to make electrical contact with said circuit terminals.

4. In a device of the character described, a receptacle chambered to receive a plug, apertures in the wall of said receptacle out of alinement with one another, ball contacts located in said apertures and normally projecting into said chamber, yielding means for holding said contacts in normal position, and electrical connections between said contacts and a supply circuit in combination with a plug fitting the chamber, said plug including contact members insulated from one another and circumferentially channeled to electrically and mechanically engage with said ball contact and permit relative rotation between said plug and receptacle.

5. In a device of the character described, a chambered receptacle, a plug to fit said chamber, and a single means supported and movable in the wall of said receptacle for detachably uniting said parts both electrically and mechanically to permit relative rotation between them.

6. The combination with exposed circuit terminals, of a cap inclosing said terminals, a plug supported by said cap and having contact sleeves insulated from one another, contacts mounted on the end of said plug within said cap and adapted to engage said circuit terminals, and an insulating washer separating said contacts and having its edge notched to receive said contacts.

7. The combination with exposed circuit terminals, of a cap inclosing said terminals, a plug supported by said cap and having contact sleeves insulated from one another, contacts mounted on the end of said plug within said cap and adapted to engage said circuit terminals, and a washer of insulating material located between said contacts, notches in the edge thereof to receive said contacts, and means for preventing the rotation of said washer and contacts relative to said plug.

8. The combination with exposed circuit terminals, of a cap inclosing said terminals, a plug supported by said cap and having contact sleeves insulated from one another, spring contacts mounted on the end of said plug within said cap and adapted to engage said circuit terminals, and a washer of insulating material located between said spring contacts, notches in the edge thereof to receive said spring contacts, and fastening screws for securing said cap with its supported plug in position, said screws passing through notches formed in the edge of said washer.

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