April 7, 1942. C. H. JUDISCH 2,279,265

HEATER PLUG

Filed Nov. 2, 1940

Fig. 1

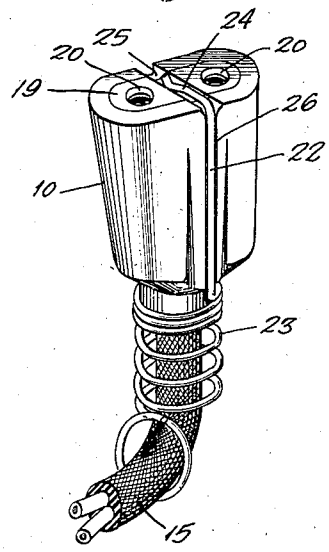


Fig. 2

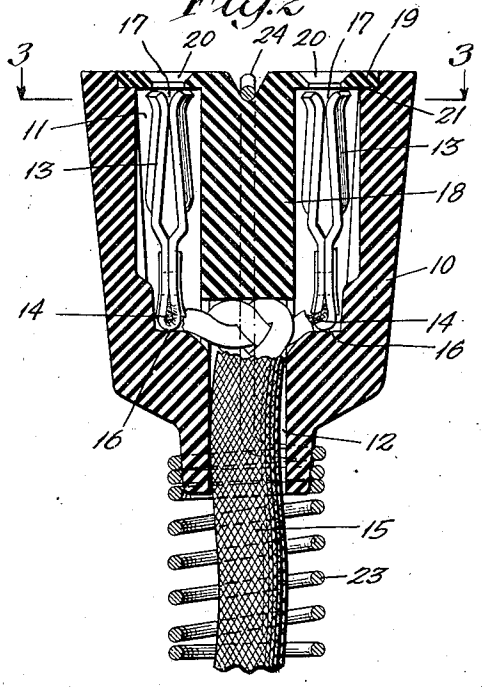


Fig. 3

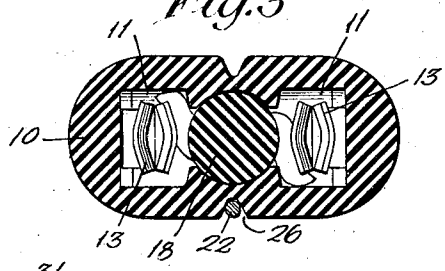
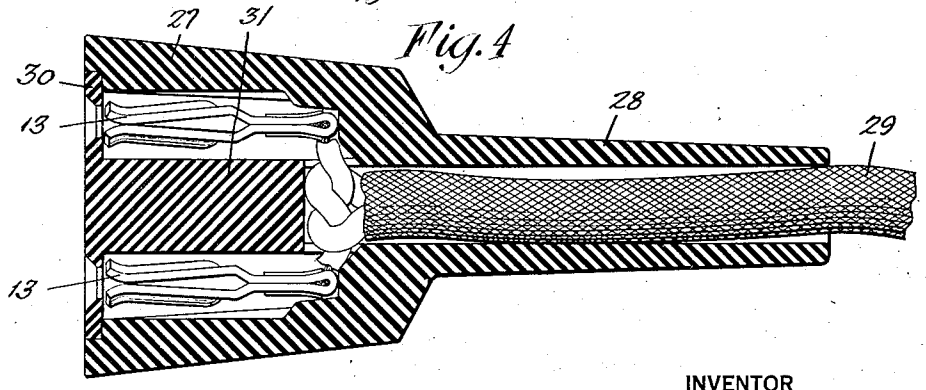


Fig. 4



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Patented Apr. 7, 1942 2,279,265

UNITED STATES PATENT OFFICE

2,279,265

HEATER PLUG

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Application November 2, 1940, Serial No. 363,995

5 Claims. (Cl. 173—332)

This invention relates to an electrical appliance plug connector, and, more particularly, to that type of connector having a pair of socket members for receiving the contact prongs of an electrical appliance.

Electrical appliance connector plugs, generally termed heater plugs, have heretofore been formed in most instances with two substantially identical halves which, when placed together, formed a plug having a pair of contact-receiving channels therein and a cord or conductor-receiving cavity into which the conductor extended.

In these previously proposed heater plugs, various means have been used for holding the two halves of the plug together, such as rivets, screws or the like as well as spring clips which embrace the two sections, and the assembly of the plug has been somewhat complicated.

In the plug of the present invention, the body of the plug is formed in one piece of moldable material such as Bakelite, heat-resisting rubber or the like. The body of the plug is provided with a large recess open at one end of the plug and a cord-receiving cavity open at the opposite end. A pair of spaced contact members are disposed within the recess and present adjacent the open end of the plug body a pair of prong-receiving contact sockets.

To hold the contacts apart, an insert is employed which is disposed intermediate the contacts which hold the same in the proper position, and also prevent the contacts from touching such as to cause a short circuit.

A plate of insulating material is disposed across the open end of the plug to form a transverse closing wall.

To permit access to the contact sockets, the closing wall is provided with a pair of openings forming channels leading to the contact sockets within the plug body.

In the broader aspects of the present invention, the contact separating member and the closing wall may be made separate, but, in the preferred form of the invention, as herein disclosed, the separating member and the closing wall are molded as one integral piece.

The walls of the recess are formed with guides for receiving and guiding the separating member during assembly to insure that the separating member is properly disposed within the recess and that the end closing wall is properly positioned across the open end of the plug.

The proper disposition of the separating member and end closing wall insures also that the openings forming the channels leading to the contact sockets are in alignment with the contact sockets.

Any means may be employed to hold the separating member and end closing wall in position relative to the plug body, and in the one form of the present invention the one end of the usual wire conductor guard is extended down over the side wall of the plug and formed with means to engage the plate. The plate engaging means preferably comprises a spring clip which is snapped over the plate and holds the same as well as the contact separating member in proper position relative to the plug body.

In another form of the present invention, the plug body is molded of heat resistant rubber, and, in this form of the invention, the usual wire conductor guard has been displaced by a sleeve formed integral with the plug body. The plate forming the end closing wall in this form of the invention is cemented in place across the open end of the plug body.

Other features and advantages will hereinafter appear.

In the accompanying drawing:

Figure 1 is a perspective view of the heater plug of the present invention.

Fig. 2 is a sectional view of the heater plug showing the disposition of the contact members within the recess.

Fig. 3 is a sectional view taken along line 3—3 of Fig. 2.

Fig. 4 is a view somewhat similar to Fig. 2, but showing a modified form of the present invention.

The heater plug of the present invention, referring now to Fig. 2, comprises a one-piece body 10 of suitable insulating material.

The body 10 is preferably formed by a molding operation and is provided with an internal recess 11 open at one end of the body. The body 10 is also formed with a conductor-receiving channel 12 leading from the opposite end of the plug into the recess 11.

A pair of contact members 13 each attached to the bared ends of conductors 14 of a twin conductor cord 15 are mounted within the recess and are supported at their inner ends upon seats 16 formed on an inner wall of the recess 11.

The contacts 13 may be, as shown, of the usual resilient U-shaped type of contact generally used with plugs of this type and present adjacent the open end of the body 10 a pair of spaced prong-receiving sockets 17.

The contacts 13 in the present invention are

so disposed within the recess that the longer axis of each socket is normal to the horizontal plane in which the prongs of the appliance are disposed. In previous heater plugs the reversal was true and it has been found that less likelihood of poor electrical connection is had in the present arrangement.

To hold the contacts 13 on the seats 16 and to prevent the contacts coming into engagement with each other, there is provided in the present invention a separating member 18 which is disposed within the recess to form a wall separating the two contacts 13.

It will be seen that the member 18 forms within the plug body a pair of contact-receiving cavities within which the contacts are confined.

To prevent the contacts 13 from being pulled out of the body 10, the open end of the body is closed by a plate 19 having formed therein a pair of openings 20 which, as will be seen, form channels leading to the contact sockets 17.

In the broader aspects of the present invention, the plate 19, formed the end-closing wall, may be formed separate from the separating member 18, but, in the preferred form of the invention as herein illustrated, the plate 19 and separating member 18 are integrally molded as one.

This, as will be appreciated, facilitates assembly operations and lessens the manufacturing costs of the plug. The plate 19 is supported at its opposite ends on seats 21 formed adjacent the open end of the plug body 10 and any means may be employed to hold the plate 19 in its proper position across the open end of the body 10.

To facilitate assembly of the plug, opposite walls of the recess 11 are provided with channel-like guides adapted to receive and guide the separating member 18 when the same is positioned within the recess 11. The channel-like guides insure that the separating member is properly disposed within the recess and that the plate forming the end-closing wall is also positioned across the open end of the plug so that the openings forming the channels leading to the contact sockets will be in alignment with the same.

In the form of the invention illustrated in Fig. 2, the plate 19 is held across the open end of the body 10 by means of a spring clip arm 22 formed by extending the one end of the usual wire cord guard 23. The arm 22 is provided, as shown in Fig. 1, with a hook-like detent 24 which is snapped across the plate 19. The detent 24 as well as the arm 22 are preferably received within suitably shaped grooves 25 and 26 formed on the exterior surface of the plate 19 and side wall of the body 10 respectively.

The arm 20, as well as the detent 24, are resilient and as the convolutions of the guard 23 seat at the opposite end of the body 10, the arm and detent will resiliently hold the plate 19 and the contact separating member 18 in their proper position relative to the body and the contacts therein.

The heater plug of the present invention is very easily assembled, and, in the assembly operation, the contacts 13 are secured to the bared ends of the twin conductor and the conductor cord threaded through the channel 12 whereupon the contacts are drawn into the recess against the seats 16.

The plate 19, carrying the contact separating member 18, is now placed in position as shown in Fig. 2, the channel members receiving and guiding the separating member 18 as the same is inserted into the recess and moved to its proper position. The spring clip arm 22 with its detent 24 can be now snapped into the grooves 25 and 26 to complete the assembly of the plug.

In the form of the invention shown in Fig. 4, the body 27 is formed of some suitable heat-resistant rubber, and is provided with an integral sleeve 28 through which the cord 29 extends. The sleeve 28 is somewhat flexible and serves the function of the wire guard 23 in the form of the invention shown in Fig. 2. The plug of Fig. 4 is substantially like that shown in Fig. 2, with the exception that the plate 30 formed integral with the contact separating member 31 is cemented in place across the open end of the plug body 27.

Variations and modifications may be made within the scope of this invention and portions of the improvements may be used without others.

I claim:

1. An electrical appliance plug connector comprising a hollow thin walled body of insulating material open at one end; ribs formed on a pair of opposing walls of said recess for reenforcing said body, each rib having a substantially semitubular channel formed therein; a pair of contacts within said recess presenting adjacent said open end a pair of spaced prong-receiving contact sockets; a twin conductor cord extending into said body through an opening formed in a wall thereof, each conductor thereof being connected to a contact; a tubular member of insulating material received by said channels and held in a predetermined position by the walls thereof, said tubular member forming a separating wall to hold said contacts spaced apart; a plate formed integral with said tubular member forming a transverse end wall for closing the open end of said body, said closing wall having a pair of predeterminedly spaced openings therein in alignment with said sockets to permit contact prongs to pass therethrough and engage with said sockets; and a wire cord guard carried by said body exteriorly thereof, said guard including a resilient clip engaging the exterior of said plate for holding the same in proper position within the open end of said connector.

2. An electrical appliance plug connector comprising a one-piece molded body provided with an internal recess open at one end of said body; a pair of contacts within said recess presenting adjacent said open end a pair of spaced prong-receiving contact sockets; a twin conductor cord passing through the opposite end of said body, each conductor thereof being electrically connected to a contact; a molded insert disposed within and closing said open end, said insert being formed with openings in alignment with said sockets to permit prongs to pass therethrough and into engagement with said sockets; a finger disposed within said recess and formed integral with said insert for holding said contacts in spaced relationship within said body; and a length of resilient wire spiralled about said cord adjacent the connector and forming a guard for said cord, the one end of said wire being projected down and terminating in a resilient clip disposed in a groove formed in the exposed face of said insert for holding the same in place within the open end of said connector.

3. An electrical appliance plug connector comprising a one-piece molded body of insulating material having a recess formed therein opening at one end thereof and a cord-receiving passageway leading from the opposite end of said body an communicating with said recess; said body

having at least one groove longitudinally formed in the medial portion of the outer surface of a side face thereof, at least one wall of said recess having a strengthening rib for reenforcing that portion of the body in which said groove is formed, the rib having a channel formed therein; a pair of contacts within said recess presenting adjacent the open end of said body a pair of prong-receiving sockets; a twin conductor cord extending through said passage with each conductor thereof connected to a contact; a plate of insulating material closing the open end of said body, said plate being provided with spaced openings in alignment with and forming channels leading to said sockets; a member formed integral with said plate for disposition within said recess, said member having a portion received within and held by said channel whereby the member is held in a predetermined position within said recess intermediate said contacts; and a length of resilient wire spiralled about said cord adjacent the connector and forming a guard for said cord, the one end portion of said wire being disposed within said groove and terminating in a resilient clip engaging said plate and holding the same in place within the open end of said connector.

4. In an electrical appliance plug connector comprising a hollow, relatively flat body open at one end thereof, said body having a pair of grooves formed in the outer surfaces of the longer walls thereof, said walls being thickened intermediate the ends thereof to form internal ribs for reenforcing the body, each integral rib having a channel formed therein; a pair of contacts within said body presenting adjacent said open end a pair of prong-receiving contact sockets; a twin conductor cord extending into said body through a passage formed in the closed end thereof, each conductor of said cord being secured to a contact; a separating member having the opposite edges thereof received within and guided by said channels during its assembly with said body, said member held between walls of said channels in a predetermined position within said body and holding said contacts spaced apart; an internal seat formed about the open end of said body; a member formed integral with said separating member and disposed on said seat for closing the open end of said body, said member having a pair of openings formed therein in alignment with the contact sockets and forming channels leading thereto, said closing member having a groove formed in the exposed surface thereof joining the grooves formed in the side walls of said body; and a length of resilient wire spiralled about the said cord and forming a guide therefor, said wire having its intermediate portion secured to said body adjacent said cord-receiving passage and an end portion extending through one of the grooves formed in the side walls of said body and terminating in a resilient clip disposed in the groove of said closing member for holding the same on its seat.

5. An electrical appliance plug connector comprising a relatively flat body of insulating material provided with an internal relatively wide recess opening at one end of said body, the medial portion of each of the wider walls of said recess being formed with a raised guide extending longitudinally of said connector from the open end thereof to a point adjacent the inner wall of said recess; a cord-receiving passage extending from the opposite end of said body and communicating with said recess adjacent the inner ends of said guides; a pair of seats formed on said inner wall on opposite sides of the entrance of said passage into said recess; a contact disposed on each seat, said contacts extending to a point adjacent the open end of said body and presenting adjacent said open end a pair of spaced prong-receiving sockets; a twin conductor cord extending into said passage, each conductor thereof being connected to a contact; an insulating member, the opposite edges of said member being slidably received and held by said guides, said member forming a separating wall for holding said contacts against movement transversely of said connector and being provided at its inner end with a cord-engaging face for holding said cord against accidental entry into said recess; a relatively wide plate formed integral with and extending transversely of said member at the outer end thereof, said plate forming a transverse wall for closing the open end of said body; and means for holding said plate against movement relative to said connector, said plate holding said contacts on said seats against movement longitudinally of the connector and having prongpassing openings therein in alignment with said spaced apart prong-receiving sockets.

CARL H. JUDISCH.