ELECTRIC CONNECTOR ADAPTER

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2 Claims. (Cl. 173—343)

1. The invention relates generally to plugs and receptacles for connecting electric appliances to a power supply, and more particularly to an adaptor for facilitating making the connection between the appliance conductor cord and a wall or base board receptacle.

In the ordinary dwelling or office building the receptacles or outlets connected to electric current supply are usually located in the base board of the room or in the wall near the floor or base board. In attaching the standard plug carried on the conductor cord of a lamp or appliance, the user pushes the two prongs of the plug into the spaced sockets of the receptacle and the prongs contact conductors therein and make electrical connection with the power supply.

However, in attaching or removing the plug, it is necessary to reach the receptacle from a point directly in front of the same, in order to pull straight into or pull straight out from the receptacle. Moreover, when removing the plug it should be grasped in the fingers, because a pull or jerk on the conductor cord itself tends to loosen the conductor wires from the terminals in the plug.

Consequently, when the base receptacles are located behind or under articles of furniture and the like, it becomes necessary to move such articles every time a plug is connected to the receptacle. If the obstructing article is not removed when the plug is detached from the receptacle, but the plug is detached by a pull or jerk on the cord, this tends to loosen the conductor wires from the plug terminals which may cause short circuiting.

It is an object of the present invention to provide a novel electric connector adaptor which provides for plugging into a wall receptacle without pushing the plug directly into the wall.

Another object is to provide a novel connector adaptor which makes it practical to connect or disconnect the plug by grasping the conductor cord a substantial distance above the receptacle and pulling upwardly on the cord.

Another object is to provide a novel electric connector adaptor which has means preventing loosening of the conductor wires from the plug terminals when a pull is applied to the cord.

A further object is to provide a novel connector adaptor which insures a good electrical connection between the appliance cord and the power supply.

A still further object is to provide a novel adaptor which is applicable to be used with a standard plug and a base receptacle for making a connection between the same without reaching to or close to the receptacle.

These and other objects are accomplished by the parts, improvements and combinations comprising the present invention, a preferred embodiment of which is set forth by way of example in the following description and shown in the accompanying drawing, the nature of which is set forth in the following general statement, and which is particularly and distinctly pointed out and set forth in the appended claims forming part hereof.

In general terms, the novel adaptor comprising the present invention includes a female adaptor member detachably connected to the base receptacle for making electrical connection with a power supply, said female member having conductors leading from the receptacle to contacts in opposed vertical slots which communicate with a vertical channel formed in said member, there being inclined guide surfaces on the bottom of said female member leading to said slots, and a male adaptor member having sockets for receiving the prongs of a connector plug and laterally projecting fins connected to said sockets and adapted to be guided by said guiding surfaces into the slots of the female member for engaging the contacts therein.

Referring to the drawing forming part hereof, in which a preferred embodiment of the invention is shown by way of example;

Figure 1 is a vertical sectional view through a base board receptacle, showing the female adaptor member in section and the male member in elevation, the male member in the operation of being entered into the female member;

Fig. 2 is a similar view showing the male member fully entered into circuit closing position;

Fig. 3 is a fragmentary sectional view as on line 3—3, Fig. 2, the adaptor being detached from the receptacle;

Fig. 4 is a detached plan sectional view of the female adaptor member;

Fig. 5 is a detached plan sectional view of the male adaptor member; and

Fig. 6 is a sectional view as on line 6—6, Fig. 5, showing a standard plug connected to the male adaptor member.

Similar numerals refer to similar parts throughout the several views of the drawing.

In the drawing, the device is shown attached to a conventional receptacle indicated generally at 10 and located in a base board 11, but it will be understood that the female adaptor indicated generally at 12 may be otherwise attached to
the base board receptacle or may be more or less a permanent part of the base board with the electric current connected thereto in any usual manner. The receptacle may be having two sockets spaced one above the other for receiving the prongs 14 of the adaptor, which prongs correspond to the usual prongs of an appliance plug. It will be understood that where the socket and the receptacle are laterally spaced instead of vertically, the female adaptor member will have the prongs 14 arranged likewise. As shown, the receptacle 10 has electrical contacts 15 in the sockets 13 for engaging the prongs 14 to electrically connect the prongs with the power supply, and the receptacle 10 is preferably constructed of suitable insulation material, all in usual fashion.

The female adaptor member 12 is also constructed of insulation material and is generally U-shaped with forwardly extending wings 18 forming a vertical channel 17 extending entirely through the member. At each side of the channel 17 is a vertical slot 18 which communicates with or opens into the channel 17, and a spring contact strip 19 is located in each slot. One of the contact strips 19 is electrically connected to one end of the member, and the other contact 19 is similarly connected by a conductor 21 to the other prong 14.

The bottom surfaces of the wings 16 are provided with inwardly and upwardly inclined guide surfaces 22 which terminate at and merge into the vertical slots 18. Preferably, the female member 12 is anchored to the base board by a bracket strip 23 which is fastened at its lower end to the base board by a screw 24, and is fastened at its upper end to the bottom of the female member by a screw 25. As shown, the upper end of the bracket strip 23 is rearwardly bent to provide a resilient knob 26 extending slightly into the bottom of the channel 17.

The male adaptor member is indicated generally at 28 and preferably includes a substantially cylindrical body 29 which is adapted to fit rather snugly into the vertical channel 17 of the female member. The body 29 is provided with a pair of sockets 30 having spring contact strips 31 therein for making good electrical connections with the prongs 32 of a standard appliance plug 33 engaging a conductor cord electrically connected to the prongs.

Thus, the body 29 is adapted to receive and make electrical connection with the appliance plug in the same way as the usual base receptacle, except that the body 29 receives the plug in a vertical position. The body 29 is provided with laterally projecting metal fins 35 which are electrical conductors and which are electrically connected with the spring contacts 31 by conductor portions 36 extending into the body 28. The fins are located laterally opposite each other and are of such dimensions that they will fit slidably in the slots 18 of the female member 12 and will engage the spring contacts 19 therein to make good electrical connections with said contacts. Thus if the body 29 of the male member is brought toward the female member from in front of and below the same until the fins 35 engage the guide surfaces 22, as indicated in Fig. 1, and as the body is moved upwardly the surfaces 22 will guide the fins 35 into the slots 18 and thus guide the body 29 into the channel 17.

Accordingly, the conductor cord 34 can be electrically connected to the base receptacle 10 by grasping the cord 34 at a substantial distance above the plug, and dangering it in front of the female member 12 so that the fins 35 guide the body 29 into the channel 17. When the male member 29 engages the spring contacts 19, the electrical circuit between the cord 34 and the receptacle 10 is completed.

The body 29 of the male member is preferably provided at its lower inner edge with a projection 36 which engages under the knob 26 when the male member is in the circuit closing position shown in Fig. 2, to frictionally restrain the male member in said position. Thus, as the body 29 is pulled upwardly into the channel 17 the operator can feel the projection 36 engage the knob 26 and knows that the body is in the circuit closing position. In order to disconnect the circuit by removing the body 29 of the male member from the channel 17 of the female member, it is only necessary to grasp the cord and pull or jerk upwardly on the same with sufficient force to overcome the frictional resistance provided by the knob 26 engaging the projection 36.

In order to prevent the pull on the cord from loosening the connection of the conductor wires with the terminals within the plug 33, a bracket 40 is mounted on the front side of the body 29 of the male member, as shown, and upwardly a substantial distance above the plug 33. The bracket 40 has an inwardly extending flange 42 at its top end which projects past the conductor cord, and a clamp piece 43 is secured to the flange 42 by a screw 44 and arranged tightly to grip the conductor cord and relieve the conductor wires of any pull applied to the cord. As indicated in Fig. 3, the bracket 40, being located on the front side of the body 29, does not interfere in any way with entering the male adaptor member into the channel 17.

The novel adaptor connector provides for making connections between a conductor cord plug and a base receptacle which is located behind furniture and the like, merely by suspending the plug from above the construction and entering the male part of the adaptor into the female part by pulling upwardly on the cord until the plug is in the channel in circuit closing position. The plug is quickly and easily disconnected by an upward pull or jerk on the cord without damaging the terminal connections in the plug, so that the device not only eliminates the need for moving the furniture in order to connect or disconnect the appliance plug with the base receptacle, but also eliminates the need of stooping to push the plug into the receptacle. Moreover, the device provides for connecting an appliance plug to a base receptacle and extending the appliance cord directly upwardly without causing a sharp bend in the cord as is normally required with the conventional plug and receptacle.

In the foregoing description, certain terms have been used for brevity, clearness and understanding, but it is not intended that the invention be limited thereby, and it is the intent of the inventor that the present invention is not limited to the exact details of construction.

Having now described the invention, the construction, the operation and use of a preferred embodiment thereof, and the advantageous new and useful results obtained thereby, the new and
useful constructions, and reasonable mechanical equivalents thereof obvious to those skilled in the art, are set forth in the appended claims.

I claim:

1. An adaptor for making electrical connection between a conductor cord plug and power supply receptacle, including a female adaptor member having prongs for electrical connection with said receptacle and having a vertical channel, said member having open-ended vertical slots communicating with opposite sides of said channel, contacts in said slots electrically connected with said prongs, inwardly and upwardly inclined guiding surfaces on the underside of said member on opposite sides thereof leading to said slots, a male adaptor member having a body for slidably fitting in said female member channel, laterally opposite fins on said body adapted to be guided into the bottom ends of said slots by said guiding surfaces for upwardly releasably engaging the contacts therein when said body is received in said channel, said body having sockets electrically connected to said fins and adapted for receiving and detachably electrically contacting the prongs of a connector cord plug, and a bracket on said body carrying clamping means for gripping the conductor cord of the connector plug, whereby an upward jerk on the conductor cord will release the fins from engagement with said contacts and said adaptor body from said channel.

2. An adaptor for making electrical connection between a conductor cord plug and power supply receptacle, including a female adaptor member having prongs for electrical connection with said receptacle and having a vertical channel, said member having open-ended vertical slots communicating with opposite sides of said channel, contacts in said slots electrically connected with said prongs, inwardly and upwardly inclined guiding surfaces on the underside of said member on opposite sides thereof leading to said slots, a male adaptor member having a body for slidably fitting in said female member channel, laterally opposite fins on said body adapted to be guided into the bottom ends of said slots by said guiding surfaces for upwardly releasably engaging the contacts therein when said body is received in said channel, and said body having sockets electrically connected to said fins and adapted for receiving and detachably electrically contacting the prongs of a connector cord plug.

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