ELECTRIC ATTACHMENT PLUG RECEPTACLE

Inventor

THOMAS W. SHENTON

by his attorneys

Houston and Houston
This invention relates to electric attachment plug receptacles. More particularly, it relates to a duplex electric attachment plug receptacle constructed so that it may be "wired" from the side or through the bottom.

It is an object of the invention to provide means to enable an electric attachment plug receptacle to have the bared end of a conductor wire connected to it either at the side or by insertion through an aperture in the bottom, or both.

Another object of the invention is to provide a duplex receptacle of the above type with means to enable the pairs of contacts of opposite polarities at the opposite ends of the receptacle to be connected to separate circuits, said means consisting of a destructible connector, which, when removed, makes the contacts independent of one another.

Another object of the invention is to provide a duplex attachment plug receptacle with separate devices for clamping, individually, the ends of the feed wires to spaced or separated terminal portions of contact and terminal members. Another object of the invention is to provide a supporting strap or bridge for a receptacle of the above type, which will be remote from the ends of the conductor wires at the points where they enter the receptacle and which at the same time will be completely insulated from the current-carrying parts of the receptacle.

Other objects and advantages of the invention will become apparent as it is described in connection with the accompanying drawing.

In the drawing—

Fig. 1 is a plan view of a receptacle embodying the principles of the invention with the cover portion removed;

Fig. 2 is an interior plan view of the cover portion;

Fig. 3 is a detail view of one of the contact and terminal members and its associated clamping devices;

Fig. 4 is a side elevation view of the invention partly broken away;

Fig. 5 is a transverse section view taken along the line 5—5 of Fig. 4.

Referring to the drawing, the insulating body having a bottom part 10 and a top part 12 is recessed for the accommodation of identical combined contact and terminal members, one of which is illustrated in Fig. 3. These contact and terminal members, when within the receptacle body, are separated by a central portion or spine 14 running longitudinally of the bottom part of the body. A central transverse wall 16 physically separates one end of each of the contact and terminal members from the other end.

Referring more particularly to the construction of the combined contact and terminal members, it will be noted that there are contact portions 20 and 22 located at opposite ends and seated in substantially rectangular pockets or recesses 24 at opposite ends of the receptacle on the same side of the spine 14. The contact portions are of conventional form, being provided with pairs of contact fingers 20a facing one another and a third contact finger 20b facing at right angles to the other fingers in order that the contact portions may make contact with the prongs of an attachment plug cap of either tandem or parallel blade type. The combined contact and terminal members also have terminal portions 26 and 28 which extend along the side of the bottom part 10 of the receptacle body. These terminal portions are of flat, plate-like form and are formed integrally with the contact portions. Terminal portions at opposite ends, however, are connected by a destructible bridge 18 which is attached to or formed integral with the terminal portions and extends over the top of the transverse wall 16. Preferably the whole combined contact and terminal member is formed as a single stamping from sheet metal.

The joint between the bridge 18 and the terminal portions 26 and 28 may be scored as at 30 to facilitate breaking away of the bridge from the terminal portions. Also, to facilitate this breaking, a slot 32 may be formed in the bridge 18 for the reception of the end of the screw driver which may thereby be used to bend the bridge and cause it to break away from the terminal members.

In order that the terminal portions may remain in position when pressure is applied to them as the feed wires are connected thereto, tongues 50 extend from the upper edges of the terminal portions into pockets 52 provided therefor in the cover part of the receptacle body. At their bottom edges the inside surfaces of the terminal members, about shoulders 54 on the floor of the bottom of the receptacle body. By this means the terminal portions are supported at both their top and bottom edges.

Bored through the bottom face of the bottom part of the receptacle body are four apertures, such as 34 and 36. Through these apertures the bared ends of feed wires may be inserted in position to be clamped between the inside face of a terminal portion (for exam-
ple, terminal portion 28) and a clamping member 40. The clamping member 40 may be stamped from sheet metal into substantially H-form, with its ends or arms bent toward the inner face of the terminal member. Identical clamping members 40 are provided for each terminal portion. In order to move the clamp member 40 toward the terminal, there is provided in each terminal portion a terminal screw 41 whose shank passes through the terminal portion, for example 28, to take into a threaded aperture in the central portion of the clamp member. In this manner, the bared end of the feed wire inserted through one or another of the apertures, for example 34, can be clamped tight between the clamping member 40 and the terminal member 28 as the terminal screw is tightened.

In order that the ends of feed wires may be bent around the shank of and beneath the head of the terminal screw and secured against the outside face of the terminal member, for example the terminal member 28, there is provided a ledge 42 on the floor of the bottom portion of the receptacle body against which the bottom edge of the clamp member 40 will move and prevent the clamp member from moving into the receptacle further than the distance required to permit insertion of the end of the largest feed wire which the receptacle may be designed to receive. When the wire-man presses upon the terminal screw as he tries to twist it or back it out of the clamp member, his effort will cause the clamp member to push against the ledge 42 and stop, whereby the turning or backing out of the terminal screw will cause the head of that screw to move away or outwardly from the terminal member to permit the end of a feed wire to be wrapped around the shank beneath the terminal screw head. This permits the device to be wired from the side (commonly called "side-wiring") in the same manner as conventional attachment plug receptacles now on the market. At the same time, it will be possible to wire the device by inserting the bared end of the feed wire through the aperture provided therefor in the bottom portion of the receptacle body, as hereinbefore described. Since the connection of feed wires to the conducting parts of the receptacle by the "side-wiring" or "bottom-wiring" methods is alternative, this invention has a wide field of usage.

Since the invention provides for bottom-wiring, it is desirable to keep the supporting bridge 60 away from the bared ends of the feed wires entering the bottom of the receptacle. In order to provide for this (see Fig. 2), I form the top part of the receptacle body with a channel running lengthwise thereof and receiving the mid-portion of the bridge 60. This mid-portion preferably is straight and flat, being stamped from sheet metal and provided with enlarged end portions 62 having apertures therein by means of which the bridge may be secured within an outlet box in the usual manner. The seating of the bridge 60 in the channel, whose sides are closely fitted to closely fit around the bridge, affords means to insulate or shield the bridge from the current-carrying parts of the device, when the top and bottom are fitted together. In this connection, it may be noted that the end portions of the spines 14 are designed to fit within the end portions of the channel and they, together with the whole central portion of the spine, form the bridge up in said channel in shielded position. The top may be secured to the bottom of the receptacle by a pair of bolts 64 passing through passages 66 from the bottom of the receptacle to permit the upper ends of the bolts to have screw-threaded engagement with the top part of the receptacle body, as may best be seen in Fig. 5. For this purpose, aperture 68 are provided in the supporting bridge or strap 66.

In order that the device may be polarized, a raised tongue 70 is provided on the top of one side of the transverse barrier 16 (see Fig. 1) and a suitable recess 72 of like form to the tongue 70 is provided in the underside of the cover portion of the receptacle body (see Fig. 2). Also for polarization, the top of the casing may be provided with dissimilar slots for the prongs of an attachment plug cap.

From the foregoing, it may be observed that the invention is adapted for a variety of uses. It may be used in the same manner as a conventional side-wired duplex attachment plug receptacle, or it may be used as a bottom-wired duplex attachment plug receptacle, or it may be used as a two-circuit duplex attachment plug receptacle of either side or bottom-wired type, by breaking away the connecting bridge 18. The provision of separate clamping devices not only insures that each feed wire may be held very securely in position, independently of the engagement of other feed wires with other parts of the terminal member, but also enables the device to be used as a two-circuit bottom-wired receptacle when the connecting bridge 18 is broken away.

Modifications within the scope of my invention will occur to those skilled in the art. Therefore I do not limit it to the specific embodiment described and illustrated.

I claim:

1. An attachment plug receptacle comprising an insulating body having top and bottom portions recessed to receive contact members, combination contact and terminal members of opposite polarity received within said body in insulated relation and having their terminal portions extending along opposite sides of said body, with terminal screws in said terminal portions in position for side-wiring of the receptacle, said bottom portion having apertures for insertion of the bared ends of feed wires, clamp members within said body moved by said terminal screws to grip said bared ends between said clamp members and the inside surface of said terminal portions, and means formed on said body to limit to a predetermined distance the movement of said clamp members inwardly within said body so that as said terminal screws are unscrewed, they will back themselves out causing their heads to move away from said terminal portions and allow feed wires to be inserted and secured beneath said heads.

2. An attachment plug receptacle comprising an insulating body having top and bottom portions recessed to receive contact members, combination contact and terminal members of opposite polarity received within said body in insulated relation and having their terminal portions extending along opposite sides of said body, with each of said members having a plurality of contact portions and a plurality of terminal portions, terminal screws in said terminal portions in position for side-wiring of the receptacle, said bottom portion having apertures for insertion of the bared ends of feed wires, an aperture being

3. A receptacle as claimed in Claim 1, in which said terminal member is provided with an edge-member 48 adapted to be inserted through the terminal portion and having means for securing the feed wire to said edge-member.

4. A receptacle as claimed in Claim 1, in which said bottom member is provided with an edge-member 48 adapted to be inserted through the terminal portion and having means for securing the feed wire to said edge-member.
located beneath each terminal portion so that an individual bared wire end may be connected with each terminal portion, separate clamp members within said body for each terminal portion, said clamp members being moveable by said terminal screws to grip said bared ends between said clamp members and the inside surface of said terminal portions, and means formed on said body to limit to a predetermined distance the movement of said clamp members inwardly within said body so that as said terminal screws are unscrewed, they will back themselves out causing their heads to move away from said terminal portions and allow feed wires to be inserted and secured beneath said heads.

3. An attachment plug receptacle comprising an insulating body having top and bottom portions recessed to receive contact members, combination contact and terminal members of opposite polarity received within said body in insulated relation and having their terminal portions extending along opposite sides of said body, each of said members having a plurality of contact portions and a plurality of terminal portions, means on the receptacle body separating adjacent terminal portions on the same side of the body, a destructible element connecting said adjacent terminal portions and spanning said separating means, whereby removal of said connecting element makes said adjacent terminals electrically independent and physically shielded from each other by said separating means, terminal screws in said terminal portions in position for side-wiring of the receptacle, said bottom portion having apertures for insertion of the bared ends of feed wires, an aperture being located beneath each terminal portion so that an individual bared wire end may be connected with each terminal portion, separate clamp members within said body for each terminal portion, said clamp members being moveable by said terminal screws to grip said bared ends between said clamp members and the inside surface of said terminal portions, and means formed on said body to limit to a predetermined distance the movement of said clamp members inwardly within said body so that as said terminal screws are unscrewed, they will back themselves out causing their heads to move away from said terminal portions and allow feed wires to be inserted and secured beneath said heads.

4. An electric wiring device comprising an insulating body, a terminal member mounted on said body, a clamp member having a screw-threaded aperture therein, a terminal screw passing loosely through a hole in said terminal member and entering said threaded aperture in said clamp member, and means to limit to a predetermined distance the movement of said clamp member away from said terminal member as pressure is applied to the screw head in turning said screw, whereby as said screw is unscrewed it will back itself out of said hole causing its head to move away from said terminal member to allow a feed wire to be inserted and secured beneath the screw head, said insulating body having a recess for passage of a feed wire from the rear to between said clamp and terminal members.

5. An electric wiring device comprising an insulating body, a terminal member mounted on said body, a clamp member having a screw-threaded aperture therein, a terminal screw passing loosely through a hole in said terminal member and entering said threaded aperture in said clamp member, and means formed on said insulating body and engageable by said clamp member to limit to a predetermined distance the movement of said clamp member away from said terminal member as pressure is applied to the screw head in turning said screw, whereby as said screw is unscrewed it will back itself out of said hole causing its head to move away from said terminal member to allow a feed wire to be inserted and secured beneath the screw head, said insulating body having a recess for passage of a feed wire from the rear to between said clamp and terminal members.

THOMAS W. SHENTON.