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ELECTRICAL CONNECTOR DEVICE

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Fig. 1.

Fig. 2.

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ELECTRICAL CONNECTOR DEVICE.

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My invention relates to electrical connector devices, and more specifically to means for electrically connecting and mechanically connecting and supporting a fixture in position with respect to a receptacle in such a manner that it can be readily connected and disconnected both electrically and mechanically.

Further objects will appear from the detailed description to follow and from the appended claims.

In the drawings in which two embodiments of my invention are shown—
Figure 1 is a vertical sectional view showing an outlet box, receptacle, and means for electrically and mechanically supporting a fixture with respect to the receptacle;
Figure 2 is a horizontal sectional view substantially on the line 2—2 of Fig. 1;
Figure 3 is a bottom view of the receptacle and a portion of the outlet box plate;
Figure 4 is a top plan view of the plug-in device, and the cup in which it is seated;
Figure 5 is a section on the line 5—5 of Fig. 4, showing a different form of canopy than shown in Fig. 1;
Figure 6 is a section on the line 6—6 of Fig. 2;
Figure 7 is a vertical sectional view showing a different form of my invention; and
Figure 8 is a plan view of the construction shown in Fig. 7.

Referring first to Figs. 1 to 6 inclusive, the construction shown therein comprises an outlet box 10, a receptacle 11 mounted therein, and means 12 for electrically connecting and mechanically connecting and supporting a fixture with respect to the receptacle 11.

The receptacle 11 is mounted on a horizontal supporting plate 13, which is secured to the outlet box 10 by means of screws 14, and forms a sort of cover for the outlet box. The means 12 for electrically and mechanically connecting the fixture with respect to the receptacle comprises in addition to the supporting plate 13, a cup-shaped sheet metal bracket 15, having a sort of bayonet joint connection with respect to the supporting plate 13, and a plug-in device 16 swiveled in the cup or bracket 15. The swivel connection between the plug-in device 16 and cup 15 permits the limited rotary movement of the cup 15, which is necessary to enable the bayonet joint connection between the cup 15 and the supporting plate 13 to be effected.

This bayonet joint connection comprises a plurality of hook members 17 (three in number), formed as an integral part of the cup 15, these hook members being insertable into openings or notches 18 in the supporting plate 13, the hook portions 17 being movable to overlie inwardly extending lugs or shoulder portions 19 on the supporting plate 13.

For preventing the hook members 17 from being turned backward after they have been connected, the ends of the hooks are provided with downwardly extending projections 20 which drop into holes 21 formed in the supporting plate 13. In order to prevent the cup member 15 from being accidentally lifted up and thus releasing the projections 20 from their engagement in the holes 21, a coil compression spring 22 is provided which acts between the plug-in device 16 and the bottom of the cup member 15, tending to force the cup member 15 downwardly and to hold the projections 20 in the openings 21. As an additional safeguard against the disengagement of the hook members 17, the cup-shaped finishing housing 23 shown in Fig. 1 may have a threaded engagement at 24 with the bushing 25 to which the fixture stem is secured, and the upper edge of this finishing housing may engage against the supporting plate 13 as shown at 26 thus securely holding the cup-shaped member 15 against any possibility of its being lifted up to disengage the projections 20 from the holes 21.

The plug-in device 16 may be held in the cup member 15 by means of lugs 27, bent inwardly from the material of the cup member 15, and extending into arcuate recesses 28 in the insulating base 29 of the plug-in device 15. The arcuate recesses 28 are of sufficient extent to permit the swivelling movement which is necessary in effecting the bayonet joint connection between the hook members 17 and the supporting plate 13.

The plug-in device 16 is provided with a plurality of contact blades 30 (three being shown), which are insertible through the openings 31 in the receptacle cover 32, into engagement with the receptacle contacts 33. Binding screws 34 for the wires for the fixture are threaded into the base portions of the contact blades 30. The main insulating base 35 of the receptacle is provided with a plurality of foot portions 36 (three in num-
ber) which rest on the inwardly extending lugs or projections 19 of the supporting cover 13, the insulating base 35 being secured to the cover 13 by means of screws 37 which extend through the insulating base 35 and the foot portions 36 and are threaded into the inwardly extending lugs 19.

The insulating cover 32 of the receptacle may be secured in place on the main insulating base 35 of the receptacle by means of a screw 38 extending through an opening in the cover 32, and threaded into an eyelet 39 secured to the insulating base 35.

The supporting cover 13 is provided with a plurality of key-hole openings 40 for cooperation with the screws 14, the enlarged portions of the key-hole openings being large enough to permit the heads of the screws 14 to pass therethrough, to enable the plate 13 to be secured to the outlet box 10 by a sort of bayonet joint connection.

If desired, a canopy 42 as shown in dotted lines in Fig. 1 may be substituted for the two finishing members 23 and 41. This canopy 42 may be held in place by means of a nut 43 threaded onto the bushing 24. The canopy 42 may be separate from the nut 43 or may be soldered thereto if desired. The supporting plate 13 may be provided with additional key-hole openings 44 to enable the supporting plate to be used with various sizes of outlet boxes.

The bayonet joint connection between the finishing plate 41 and the supporting plate 13 will be described more in detail hereinafter in connection with the description of Figs. 7 and 8.

Fig. 5 shows a somewhat different form of canopy 45, held in place by means of a threaded sheet metal member 46, having a threaded portion 47 for engagement with the bushing 24, to which the fixture stem 48 is secured, and having an outwardly beaded portion 49 for engagement with the lower edge of the canopy 45. In this form also, screwing up the screw-threaded member 46, holds the canopy 45 firmly against the supporting surface 50, and holds the cup member 15 down to hold the projections 20 of the hook portions 17 in the openings 21 and supporting plate 13.

In Figs. 7 and 8 is shown a construction in which the cup-shaped member 15 is not used to support a fixture stem, but in which the wires 50 which lead from the plug-in device 16 may be connected with any desired electrical translating device. The receptacle 11 is supported from a downwardly projecting spider or bracket 51 secured to the supporting plate 52. The cup-shaped member 15 is connected with the spider or bracket 51 in substantially the same manner as the cup-shaped member 15 in Fig. 1 is connected with the supporting plate 13. The receptacle 11 also is connected with the bracket 51 in just the same manner as the receptacle 11 in Fig. 1 is connected with the supporting plate 13.

The supporting plate 52 may be connected with an outlet box just as the supporting plate 13 is connected with the outlet box 10. A cup-shaped finishing housing 53 may be secured outside the cup-shaped bracket 15 in any suitable manner as by soldering.

A canopy 54 may be secured to the supporting plate 53 by means of a sort of bayonet joint connection as shown in Fig. 8. To effect this bayonet joint connection, the inwardly extending flange 55 of the canopy 54 is cut away at several places as indicated at 56 sufficiently to permit the entry of the down-turned corner portions 57 of the supporting plate 52. To effect the connection between the canopy 54 and the supporting plate 52, the canopy is placed in position with respect to the supporting plate to bring the notches 56 in registration with the down-turned corner portions 57, the canopy is moved toward the supporting plate 52 to cause the down-turned corner portions 57 to enter the notches 56, and then turned to bring the parts into the position shown in Fig. 8.

Having thus described my invention what I claim as new and desire to secure by Letters Patent of the United States is:

1. The combination with a fixture, of means for electrically connecting and mechanically connecting and supporting said fixture with respect to a receptacle, said means comprising a plug-in device, a cup in which said plug-in device is swivelly mounted, and means for holding said fixture and receptacle mechanically connected, said last means comprising a spring inside said cap acting between said plug and cap to force said fixture away from said receptacle.

2. The combination with a fixture, of means for electrically connecting and mechanically connecting and supporting said fixture with respect to a receptacle, said means comprising a plug-in device, a cup in which said plug-in device is swivelly mounted, and means for holding said fixture and receptacle mechanically connected, said last means comprising a coil spring inside said cup acting between said plug and cap to force said fixture away from said receptacle, said coil spring being coaxial with the stem of said fixture.

3. The combination with a plug-in device having push-in blades for engagement with receptacle contacts, of means for supporting said plug-in device in position with respect to said receptacle, comprising an apertured supporting plate and a plurality of hook members insertable through apertures in said plate, and spring means acting between said plug-in device and supporting means to force said hook members away from said plate to hold the hook members connected.
4. The combination with a plug-in device having push-in blades for engagement with receptacle contacts, of means for supporting said plug-in device in position with respect to said receptacle comprising an apertured supporting plate, a cup in which said plug-in device is swivelly mounted, said cup being provided with hook members extending through the apertures in said supporting plate, and means for holding said hook members connected comprising a spring inside said cup member acting between said plug-in device and cup member to force said cup member away from said plate.

5. The combination with a plug-in device having push-in blades for engagement with receptacle contacts, of means for supporting said plug-in device in position with respect to said receptacle comprising an apertured supporting plate, a cup in which said plug-in device is swivelly mounted, said cup being provided with hook members extending through the apertures in said supporting plate, and means for holding said hook members connected comprising a coil spring inside said cup member acting between said plug-in device and cup member to force said cup member away from said plate, said coil spring being coaxial with said cup.

In witness whereof, I have hereunto subscribed my name.

REUBEN B. BENJAMIN.