

May 15, 1928.

1,669,549

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ELECTRICAL CONNECTER DEVICE

Filed July 23, 1921

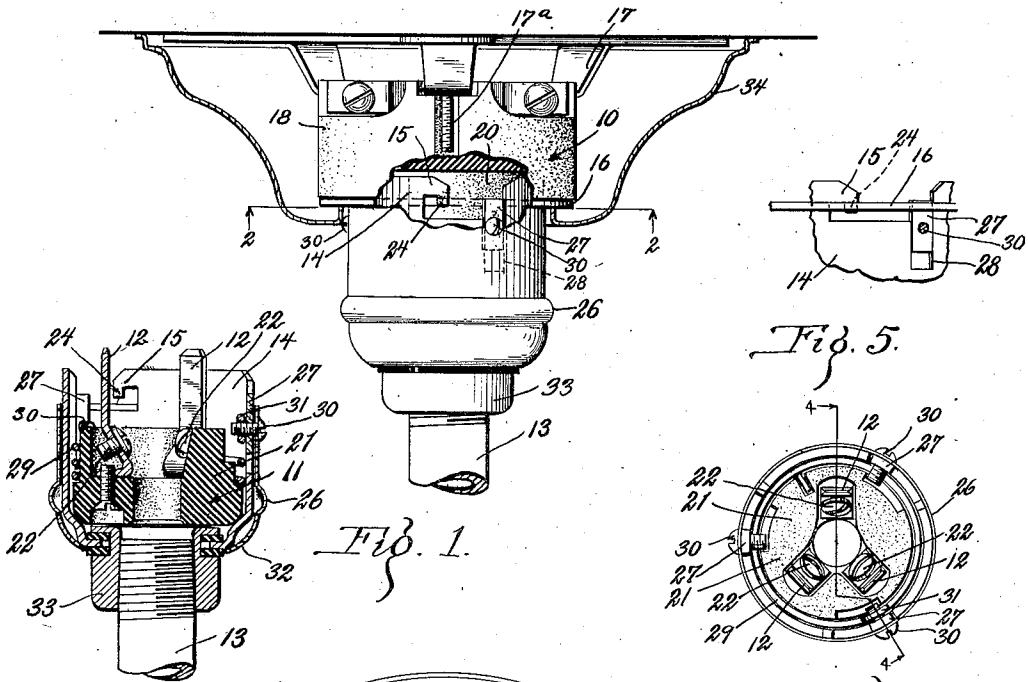
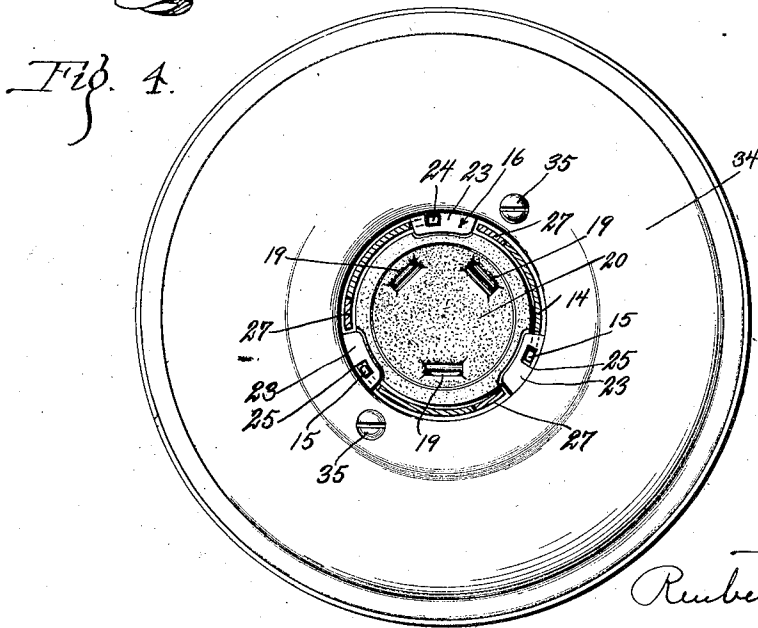


Fig. 2. By Jones, Addington, Ames & Seibach. Attys.

Inventor: Ruben B. Benjamin

UNITED STATES PATENT OFFICE.

REUBEN B. BENJAMIN, OF CHICAGO, ILLINOIS, ASSIGNOR TO BENJAMIN ELECTRIC MANUFACTURING COMPANY, OF CHICAGO, ILLINOIS, A CORPORATION OF ILLINOIS.

ELECTRICAL CONNECTER DEVICE.

Application filed July 23, 1921. Serial No. 486,999.

My invention relates to electrical connector devices, and more specifically to means for electrically 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.

A further object of my invention is to provide such a construction which will be durable and efficient in use, simple in construction and cheap to manufacture.

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

In the drawings in which an embodiment of my invention is shown—

Figure 1 is an elevational view showing a receptacle, a fixture and a connector;

Fig. 2 is a section substantially on the line 2—2 of Fig. 1;

Fig. 3 is a top plan view of the connector member;

Fig. 4 is a section substantially on the line 4—4 of Fig. 3; and

Fig. 5 is a detail view showing a latching construction.

Referring now to the drawings in detail, the construction shown therein comprises a receptacle 10, a plug-in device 11, having push-in contact blades 12 for engagement with the receptacle contacts, a fixture 13, (the stem alone being shown) and a cup-shaped swivel connecting member 14, having a limited swivelling movement with respect to the plug-in device 11, and provided with a plurality of hook members 15, for engagement with a supporting plate 16. The receptacle 10 and supporting plate 16 may both be mounted on a suitable supporting bracket 17, any suitable securing means being provided, such as screws 17^a extending through the supporting plate and receptacle and threaded into the bracket. The receptacle 10 comprises a circular insulating base 18, provided with a plurality of entrance openings 19, to receive the contact blades 12, and provided also with an annular groove or channel 20 in its outer face, to permit the entry of the curved connecting hooks 15 into position for engagement with the supporting plate 16.

The plug-in device 11 comprises in addition to the contact blades 12, an insulating base 21 on which the contact blades are

mounted, and binding screws 22 threaded into the respective contact blades.

The swivel member 14 is connected to the supporting plate 16 by bringing it into position for the curved hook members 15 to enter the annular space 20 in the insulating base of the receptacle, pushing the swivel member 14 inwardly, to cause the hook members 15 to be moved in back of the supporting plate 16, (the contact blades 12 at the same time entering into engagement with the contacts of the receptacle) and then giving the swivel member 14 a slight turn to bring the hook members 15 on top of the inwardly extending lugs or shelves 23 on the supporting plate 16.

If desired, the hook members 15 may be provided with downwardly extending projections 24, which enter openings 25 in the lugs or shelves 23 to prevent the hook members 15 from becoming disengaged.

In addition to the downwardly extending projections 24, means are provided for positively preventing the hook members 15 from becoming disengaged. These means comprise a cup-shaped member 26, surrounding and slidably mounted on the cup-shaped connecting member 14, and provided with upwardly extending latching members 27 which slide in notches 28 in the cup-shaped member 14, and engage the inwardly extending ears or shelves 23 when in latched position to prevent swivelling motion of the swivel member 14, and thus prevent disengagement of the hook members 15.

In order to hold the latching members 27 in latching position, a coil compression spring 29 is provided, the lower end of which seats on the insulating base 21 of the plug-in device 11, and the upper end of which is operatively associated with the sliding latching members by means of screws 30. The upper end of the coil spring is secured to one of the screws 30 as indicated at 31, while the other two screws 30 are located just above the upper coil of the spring in position to be engaged by it, and to receive the upper thrust of the spring. The upward movement of the outer slidable latching member 26 is limited by engagement of its lower portion 32 with the bottom of the inner cup-shaped supporting member 14. This outer slidably mounted member 26 may be of ornamental appearance to give a

finished appearance to the device. The screws 30, which engage the spring 29, may also be used to secure the latch members 27 to the outer cup member 26.

- 5 The fixture stem 13 may be connected with the inner cup-shaped member 14 by means of a bushing 33, riveted onto the cup-shaped member 14, into which bushing the stem 13 is threaded. A suitable canopy 34 may be
10 provided, which may be secured to the supporting plate 16 in any suitable manner as by means of screws 35.

- In making the connection, the fixture, carrying the plug-in device and swivel connector member, is presented in position so
15 that the blades 12 can enter the apertures 19 in the receptacle, and so that the hook members 15 are in position to enter the annular groove 20. The entire device is then pushed
20 in to cause the blades 12 to enter the receptacle, and the hook members 14 to move in back of the supporting plate 16. As the hook members 15 are pushed upwardly the latching members 27 are pressed down-
25 wardly, because of their engagement with the inwardly extending lugs or shelves 16. After the device has been pushed inwardly far enough to bring the ends of the hooks 15 above the supporting plate 16, the stem 13 is
30 rotated, to cause a limited swivelling movement of the swivel member 14 about the plug-in device 11, and to bring the ends of the hooks 15 in above the shelf or lug portions 23. As soon as the swivel member 14
35 has been rotated far enough to cause the latching members 27 to clear the inwardly projecting shelves 23, the compression spring 29 will raise the outer cup member 26 together with the latch members 27 carried
40 thereby, causing the upper ends of the latching members to rise above the plane of the shelves 23 in position to prevent backward rotation of the swivel member 14. As back-
45 ward rotation of the swivel member 14 is prevented, the hook members 15 cannot be disengaged from the supporting plate 16.

- When it is desired to disconnect the fixture and plug-in device, one grasps the outer cup-shaped member 26, and pulls down on it, bringing the upper end of the latching
50 members 27 down below the plane of the inwardly projecting shelf portions 23. When the latching members 27 have been thus withdrawn, the swivel cup-shaped
55 member 14 can be turned to release the hook members 15 from engagement with the shelves 23, the fixture and cup-shaped member 14 being raised slightly if necessary to free the downwardly extending lugs 24 of
60 the hook members from engagement with the openings 25 of the shelves. After the swivel member 14 has been rotated sufficiently to cause the hook members 15 to clear the shelves 23, the entire device including
65 the fixture, the plug-in device and the cup-

shaped member 14 may be withdrawn from the receptacle 10.

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 plug-in device having push-in contacts for engaging receptacle contacts, of means for supporting said plug-in device in position with respect to a flat apertured supporting plate associated
75 with said receptacle, comprising, a connecting member swiveled with respect to said plug-in device, and having hook members engageable with said supporting plate by movement of said swivel member toward said
80 plate and swivelly with respect to said plug, to move the hook members through the apertures in the plate and cause them to engage behind the plate, and means for holding said hooks connected, comprising a latching member surrounding said swivel member and
85 slidably mounted thereon.

2. The combination with a plug-in device having push-in contacts for engaging receptacle contacts, of means for supporting said
90 plug-in device in position with respect to a flat apertured supporting plate associated with said receptacle, comprising a connecting member swiveled with respect to said plug-in device, and having hook members
95 engageable with said supporting plate by movement of said swivel member toward said plate and swivelly with respect to said plug, to move the hook members through the apertures in the plate and cause them to en-
100 gage behind the plate, and means for holding said hooks connected, comprising a latch member engaging said plate, and a spring acting between said plug-in device and latch-
105 ing member for holding said latching member in latching position.

3. The combination with a plug-in device having push-in contacts for engaging receptacle contacts, of means for supporting said
110 plug-in device in position with respect to a flat apertured supporting plate associated with said receptacle, comprising a connecting member swiveled with respect to said plug-in device, and having hook members
115 engageable with said supporting plate by movement of said swivel member toward said plate and swivelly with respect to said plug, to move the hook members through the apertures in the plate and cause
120 them to engage behind the plate, and means for holding said hooks connected, comprising a latching member surrounding said swivel member and slidably mounted thereon, and a spring acting between said plug-in
125 device and latching member for holding said latching member in latching position.

In witness whereof, I have hereunto subscribed my name.

REUBEN B. BENJAMIN,