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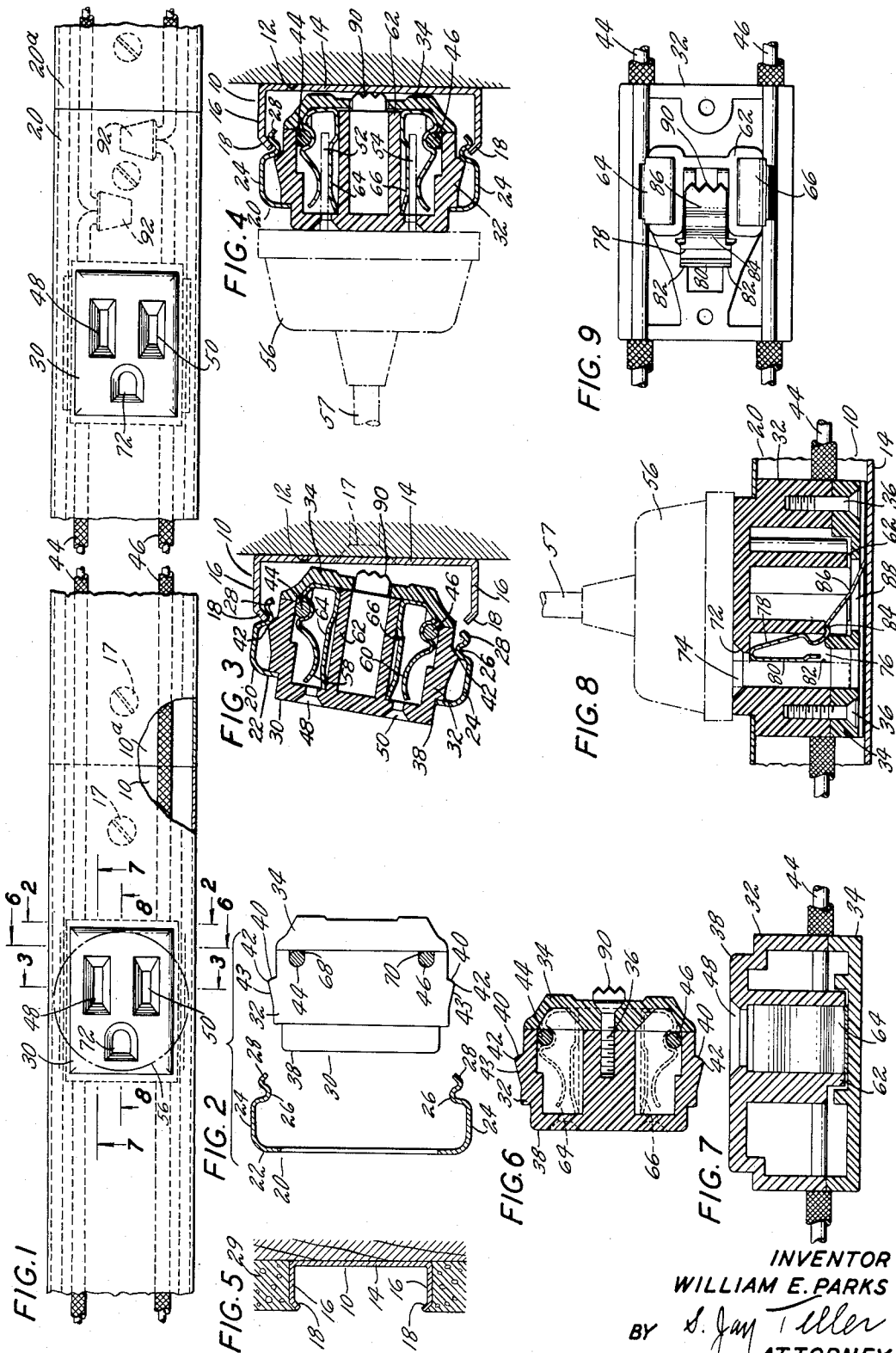
W. E. PARKS

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ELECTRICAL WIRING AND CONNECTION ASSEMBLY

Filed July 12, 1952

2 Sheets-Sheet 1



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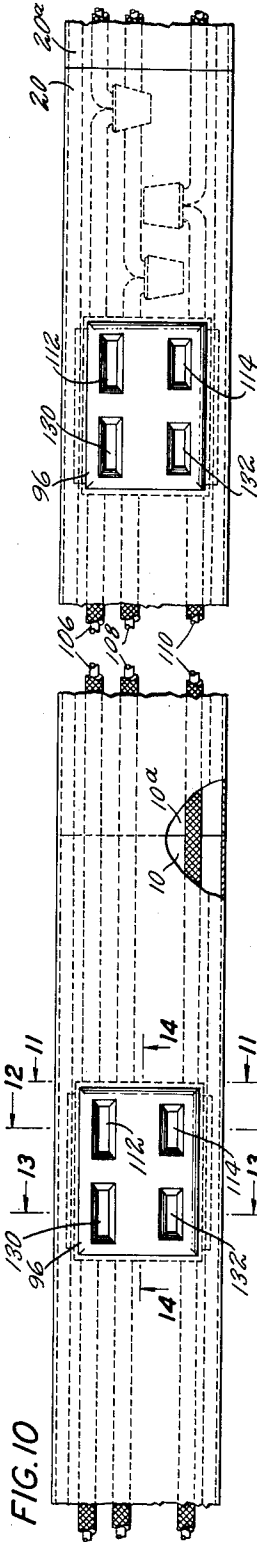
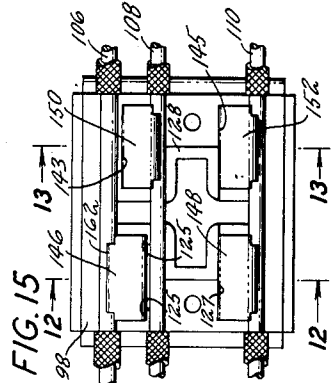
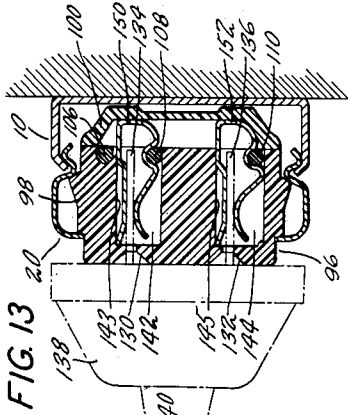
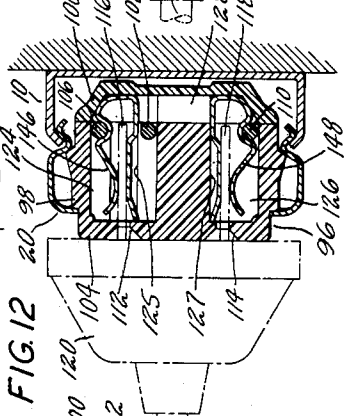
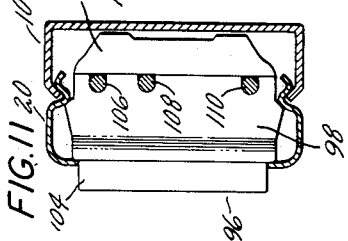
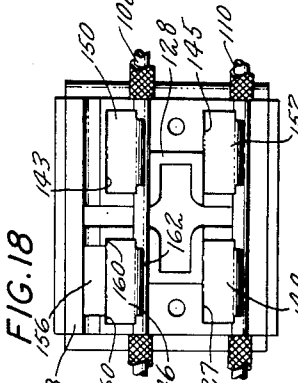
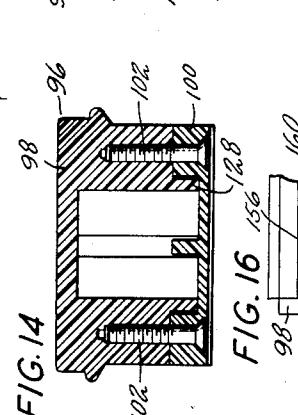
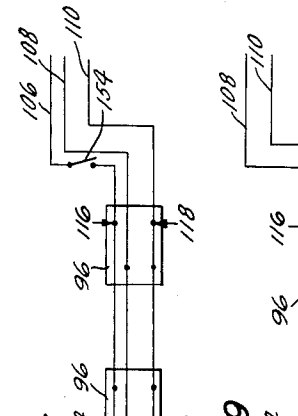
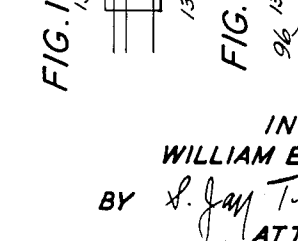
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ELECTRICAL WIRING AND CONNECTION ASSEMBLY

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2 Sheets-Sheet 2



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ELECTRICAL WIRING AND CONNECTION ASSEMBLY

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Application July 12, 1952, Serial No. 298,552

18 Claims. (Cl. 339—21)

The invention relates to an electric wiring and connection device or assembly comprising a longitudinal wire conduit adapted to be secured to a supporting wall and having one or more receptacles each accessible at the front and comprising contacts connected with conductor wires within the conduit and adapted for engagement with an electrical connection plug.

One object of the invention is to provide a device or assembly of the type mentioned having the parts thereof so constructed and arranged as to facilitate assembly in a novel and improved manner and more particularly to enable some of the parts to be readily assembled prior to installation, with the final assembly taking place during installation. In accordance with this phase of the invention, the receptacles and wires are connected with and carried by a channel member initially open at the rear, the said channel member and receptacles and wires constituting a subassembly which can be connected during installation with a base strip previously secured to the supporting wall.

Another object of the invention is to provide a device of the type mentioned wherein each receptacle has novel features of construction which serve to receive and retain the conductor wires and to provide simple and effective engagement of the conductor wires with the contacts which are engageable with the prongs of an electrical connection plug.

Another object of the invention is to provide a device of the type mentioned wherein each receptacle has three contacts engageable with three prongs of an electrical connection plug and wherein one of the contacts is electrically connectible with a part of the conduit to establish a grounding connection.

Other objects of the invention will be apparent from the drawings and from the following specification and claims.

The drawings show two embodiments of the invention, but it will be understood that various changes may be made from the constructions shown and that the drawings are not to be construed as defining or limiting the scope of the invention, the claims forming a part of this specification being relied upon for that purpose.

Of the drawings:

Fig. 1 is a front view of an electrical connection assembly embodying the invention.

Fig. 2 is an enlarged vertical transverse sectional view taken along the line 2—2 of Fig. 1, but omitting the base strip and showing the receptacle separated from the channel member.

Fig. 3 is an enlarged vertical transverse sectional view taken along the line 3—3 of Fig. 1 but showing the channel member and the receptacle partly separated from the base strip and in an intermediate stage of assembly.

Fig. 4 is a view similar to Fig. 3 but showing the channel member and the receptacle in fully assembled relationship with the base strip and also showing an electrical connection plug with two of its prongs engaged with two of the three contacts of the receptacle.

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Fig. 5 is a fragmentary transverse sectional view on the same scale as Fig. 1, this view being similar to the right portion of Fig. 3 but showing the base strip embedded in plaster.

Fig. 6 is an enlarged vertical transverse sectional view taken along the lines 6—6 of Fig. 1, the channel member and the base strip being omitted.

Fig. 7 is an enlarged horizontal longitudinal sectional view taken along the line 7—7 of Fig. 1, the channel member and the base strip being omitted.

Fig. 8 is an enlarged fragmentary horizontal longitudinal sectional view taken along the line 8—8 of Fig. 1 and also showing the electrical connection plug with its third prong engaged with the third of the three contacts of the receptacle.

Fig. 9 is a rear view of the receptacle with the rear member thereof removed.

Fig. 10 is a front view similar to Fig. 1 but showing an alternative electrical connection assembly embodying the invention.

Fig. 11 is a transverse sectional view taken along the line 11—11 of Fig. 10.

Fig. 12 is an enlarged vertical transverse sectional view taken along the lines 12—12 of Figs. 10 and 15 and also showing an electrical connection plug with its prongs engaged with two of the four contacts of the receptacle.

Fig. 13 is an enlarged vertical transverse sectional view taken along the lines 13—13 of Figs. 10 and 15 and also showing an electrical connection plug with its prongs engaged with the other two of the four contacts of the receptacle.

Fig. 14 is an enlarged longitudinal sectional view of the receptacle taken along the line 14—14 of Fig. 10.

Fig. 15 is a rear view of the receptacle with the rear member thereof removed.

Fig. 16 is a fragmentary view similar to the upper left portion of Fig. 15, but with the contact and wires omitted.

Fig. 17 is a diagram of electrical connections for the assembly as shown in Figs. 10 and 15.

Fig. 18 is a view similar to Fig. 15 but with one of the contacts in a different position and with one wire omitted.

Fig. 19 is a diagram of electrical connections for the contact arrangement as shown in Fig. 18.

Construction shown in Figs. 1 to 9

Referring to the drawings, more particularly Figs. 1 to 9 thereof, 10 is a metallic base channel member or strip adapted to be secured to a wall or other supporting surface and adapted to support the other parts of the assembly. For convenience of description the supporting wall will be referred to as vertical and the base strip will be referred to as extending horizontally. Such terms as "horizontal," "vertical" and the like are to be understood as merely setting forth a possible relationship of parts, and are not to be construed as limiting the scope of the invention.

The base channel member or strip 10 is relatively narrow vertically and is preferably formed of sheet metal. It may be provided in relatively long standard lengths, but for particular installations, as hereinafter more fully explained, the standard lengths may be cut to provide shorter lengths. The metal of the strip 10 is preferably relatively thick to meet established electrical standards and for other reasons. The strip 10 has a rear wall 14 adapted to directly engage the flat face of a rear supporting wall 12 as shown in Figs. 3 and 4, and it has forwardly projecting parallel top and bottom walls 16, 16. The said rear wall 14 of the strip is provided with knockouts for receiving screws 17, 17 for the attachment of the strip to the rear supporting wall 12. The said knockouts are of

such diameter that the heads of the screws do not project forwardly substantially beyond the front face of the wall 14. The top and bottom walls 16, 16 are inwardly bent at their edges to provide portions 18, 18 having vertically spaced rearwardly facing interior longitudinal shoulders which are spaced forwardly from the rear wall 14.

A cover or channel member 20 is provided which is generally U-shaped in cross section, the said channel member having a vertical front wall 22 and horizontal rearwardly extending top and bottom walls 24, 24 and the said channel member being initially open at the rear. The channel member 20 is preferably formed of resilient sheet metal bent to provide the required channel shape. The top and bottom walls 24, 24 have a normal generally parallel relationship and they are resiliently deflectable from the said relationship. The channel member 20 cooperates with the base strip 10 to constitute a conduit as hereinafter described. The channel member and the base strip are herein sometimes referred to collectively as a conduit.

Interengaging means are provided on the channel member 20 and on the base strip 10 for retaining the said channel member in a fixed predetermined position with respect to the said base strip. The said interengaging means preferably engage with an automatic snap action upon movement of the channel member into engaging relationship with the base strip. Preferably the top and bottom walls 24, 24 of the channel member are provided adjacent the rear edges thereof with inwardly projecting longitudinal beads 26, 26 which provide rearwardly facing shoulders. The said top and bottom walls are also provided with portions 28, 28 which are at the rear of the beads and which have inwardly inclined surfaces. The walls 24, 24 of the channel member are so spaced that the portions 18, 18 of the base strip will enter the grooves of the beads 26, 26 when the channel member is moved into fully engaged relationship with the said base strip. For reasons that will be more fully set forth, it is preferable, or even necessary, to first position the channel member at an angle with one base strip portion 18 entered in the groove of one bead 26. As shown in Fig. 3 the upper base strip portion 18 is entered in the groove of the upper bead 26. Then the channel member is swung angularly into its fully engaged relationship as shown in Fig. 4. In moving to the Fig. 4 position, the lower inclined portion 28 of the channel member engages the lower base strip portion 18 to deflect the walls 24, 24 out of their normal relationship and toward each other. As the groove in the lower bead 26 moves into register with the lower base strip portion 18, the walls 24, 24 resiliently return or snap to their normal relationship and away from each other so that the said lower base strip portion 18 is entered in the groove of the lower bead 26 as shown in Fig. 4. In this position the said channel member is retained and supported by the said base strip.

The channel member 20 when in place entirely conceals the screws 17, 17 which connect the base strip 10 with the supporting wall. The screws do not project substantially and they therefore do not in any way interfere with the hereinafter described receptacles and wires within the channel member.

The metal of the channel member 20 is preferably substantially thinner than that of the base strip 10. This provides relatively greater flexibility for the walls 24, 24. In addition a considerable economy of material is effected, as compared with a conventional construction wherein the conduit comprises an open-front channel member and a separate cover with the channel member having its rear wall directly secured to the supporting wall. With a conventional construction, the rear wall of the channel member must have a prescribed thickness to meet established standards and the top and bottom walls of the channel member unavoidably have

the same thickness as the rear wall. The said prescribed thickness is greater than that necessary or desirable for the said top and bottom walls. With the present construction the base strip and the channel member collectively constitute the conduit, but only the base strip walls have the greater thickness.

When the metal of the base strip is substantially thicker, the top and bottom walls thereof are substantially rigid and the rear portions of the channel member walls 24, 24 are readily deflectable as described. It will be understood that during snap engagement there is little or no flexing or deflection of the relatively thick substantially rigid walls 16, 16 of the base strip 10, the flexing or deflection taking place in the substantially thinner walls 24, 24 of the channel member 20.

Instead of being secured to the exposed flat face of a supporting wall, such as the wall 12 shown in Figs. 3 and 4, the said base strip 10 may be secured to the laths or other plaster base prior to the application of plaster. The depth of the base strip 10, that is, the forward projection of the walls 16, 16, is equal to the thickness of the plaster layer 29, as shown in Fig. 5, the walls 16, 16 of the base strip constituting a guide and support for the plaster. Inasmuch as the walls 16, 16 do not in any event substantially flex, the plaster does not in any way interfere with the described assembly of the channel member 20 with the base strip 10.

At least one receptacle 30 is provided and ordinarily there is a plurality of similar receptacles which are longitudinally spaced. Each receptacle is at least partly within the channel member 20 and has its front face exposed through an opening in the front channel member wall 22. When there is a plurality of longitudinally spaced receptacles the front wall 22 has a plurality of similarly spaced openings. Each receptacle is held in place in the channel member and it is preferably adapted to be assembled with the channel member by relative forward movement thereinto through the initially open rear thereof. The body of each receptacle is formed of insulating material and preferably comprises a main front member 32 and a rear member 34, the two members being connected by suitable means such as screws 36, 36. The front member 32 of each receptacle body preferably has a forward projection 38 which is shaped to project through and approximately fit the corresponding opening in the front wall 22 of the channel member.

Means is provided for attaching each receptacle to the channel member and for tending to hold it in fixed relationship therewith, this means preferably being of the snap acting type. In the construction as shown, the before-mentioned beads 26, 26 on the top and bottom walls of the channel member provide interior forward facing longitudinal shoulders. Each receptacle has portions which are engageable by the said shoulders so that the receptacle is held in place. As shown, the main front member 32 of the receptacle body has exterior rearward facing longitudinal shoulders 40, 40, the said shoulders being preferably provided by means of longitudinal ribs 42, 42 at the top and at the bottom of the said front member, the said ribs having inclined front faces 43, 43. The said ribs 42, 42 with their shoulders 40, 40 constitute the said receptacle portions that are engageable with the said shoulders on the beads 26, 26. As has been stated, the receptacle is adapted to be assembled with the channel member by relative forward movement, that is, by forward movement from the relative position shown in Fig. 2 to the relative position shown in Fig. 3. During such relative forward movement the projection 38 of the receptacle body enters the corresponding opening in the front wall 22 of the channel and the ribs 42, 42 on the receptacle engage the beads 26, 26 to deflect the channel member walls 24, 24 from their normal relationship and away from each other. Upon completion of forward movement of

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the receptacle, the channel member walls resiliently return toward each other and to their normal relationship so that the beads 26, 26 snap in front of the receptacle ribs 40, 40 as shown in Fig. 3. The rearward facing shoulders 40, 40 on the ribs engage the forward facing shoulders on the beads so as to resist relative rearward movement of the receptacle. The beads 26, 26 are so located that the said shoulders are in engagement when the front face of the front member 32 of the receptacle body engages the front wall 22 of the channel member. In the relative positions shown in Fig. 3, the parts tend to hold the receptacle in fixed position with respect to the channel member. The beads 26, 26 resist relative rearward movement and the front wall 22 prevents relative forward movement and the projection 38 prevents relative longitudinal movement.

The receptacles 30 are inserted in the channel member 20 prior to the engagement of the channel member with the base strip 10, as shown in Figs. 3 and 4. The beads 26, 26 are so spaced vertically that small clearances are provided between the inner faces of the said beads and the adjacent walls of the receptacle. These clearances permit the described deflection of the walls 24, 24 toward each other for snap engagement with the portions 18, 18 of the base strip 10. Preferably and as shown, the said clearances are relatively small, so that it is necessary to first engage the channel member with the base strip in the position shown in Fig. 3. As the channel member is moved from the Fig. 3 position to the Fig. 4 position, the walls 24, 24 are deflected only sufficiently to permit one base strip portion 18 to enter the groove in one rib 26. The said clearances as shown are not sufficient to enable the channel member to be assembled with the base strip by a straight rearward movement.

As has been stated, the interengaging means on the receptacle and on the channel member resist relative rearward movement of the receptacle, the said interengaging means being the ribs 42, 42 and the beads 26, 26. However, with the receptacle and channel member in the Fig. 3 relationship the receptacle could be moved relatively rearwardly upon the application of sufficient pressure, the walls 24, 24 being deflectable away from each other to permit such relative rearward movement of the receptacle. Preferably and in accordance with one phase of the invention, the base strip includes means which upon engagement of the channel member therewith serve to lock the interengaging means to cause them to positively prevent relative rearward movement of the receptacle. As shown, the portions 18, 18 of the base strip 10 serve, when the channel member is engaged therewith, to prevent any deflection of the channel member walls 24, 24 away from each other. In this manner the base strip serves to lock the interengaging means and to thus positively prevent any rearward movements of the receptacle with respect to the channel member.

When there is a plurality of receptacles, the several receptacles are connected, prior to assembly with the channel member, with two vertically spaced substantially straight longitudinal conductor wires 44 and 46 in the manner hereinafter described, the receptacles being longitudinally spaced along the wires in conformity with the spacing between the openings in the front wall of the channel member. The subassembly comprising the receptacles and the wires is assembled with the channel member, the receptacles and wires being moved relatively forwardly to insert the front face 38 of the receptacles in the channel member openings and to engage the ribs 42, 42 of the receptacles with the beads 26, 26. The subassembly comprising the cover or channel member and the receptacles and the wires as shown in the left portion of Fig. 3 is subsequently engaged with the base strip 10 by relative movement in the manner previously described.

The body of each receptacle 30 is provided at the

front of the forward projection 38 with two similar oppositely disposed upper and lower slots 48 and 50 of such size and so spaced as to be adapted to receive two prongs 52 and 54 of an electrical connection plug 56 having a conductor cord 57. Preferably the two slots have different lengths, the lower slot being shown as being somewhat shorter than the upper slot.

Within each receptacle body and communicating with the respective slots 48 and 50 is a pair of vertically spaced upper and lower recesses 58 and 60 which are symmetrically disposed with respect to a central horizontal plane, the said recesses preferably having the same shape but being reversely positioned. The said recesses are between the ends of the body and preferably have end walls and top and bottom walls. As shown, the said recesses are chiefly within the main front member 32 and the said recesses are closed at the rear by the said rear member 34. As clearly shown in Figs. 3, 7 and 9, the front member 32 is provided with a rearwardly projecting portion 62. The said recesses 58 and 60 are partly bounded by the said rearwardly projecting portion 62 and are partly within the rear member 34.

Located within the respective recesses 58 and 60 are two similar but reversely positioned contacts 64 and 66, engageable from the front through the said slots 48 and 50 by the respective plug prongs 52 and 54. Each contact is formed of resilient sheet metal and is generally U-shaped as shown, the two legs thereof extending forwardly and being positioned to receive or embrace the corresponding plug prong between them. The contacts are inserted in the recesses 58 and 60 from the rear prior to the assembly of the rear member 34 with the front member 32, and the rear member when in place closes the recesses and holds the contacts in position therein. The upper contact 64 engages the lower wall of the upper recess 58, being thus held against downward movement. Similarly, the lower contact 66 engages the upper wall of the lower recess 60, being thus held against upward movement.

The before-mentioned substantially straight conductor wires 44 and 46 extend through each receptacle. The said wires are insulated between each two receptacles, but the insulation is removed from the portions of the wires which extend through the receptacles. The end portions of the front member 32 are provided with two vertically spaced sets of longitudinal grooves 68 and 70 (see Figure 2) adapted respectively for receiving the upper wire 44 and the lower wire 46, the said grooves communicating respectively with the said recesses 58 and 60 and being initially open at the rear. It will be observed that the grooves are so located that the straight wires extend across the said recesses 58 and 60 respectively near the top and bottom thereof, the said wires being in contact with the upper and lower walls of the said recesses. The rear member 34 is so formed that it engages the wires 44 and 46 at the rear thereof to hold them in the aforesaid grooves 68 and 70.

The contacts 64 and 66 are shaped to engage the portions of the straight wires which extend across the recesses 58 and 60. Thus the contacts are electrically connected with the wires. One leg of each contact has a wire engaging portion which is bent to partly embrace the corresponding wire and the same leg has an inclined portion at the front of the said wire engaging portion which enables the contact to snap into engagement with the wire when the contact is moved forwardly into its recess and relatively to the wire. Each contact is initially so formed that its legs are spaced more widely than shown. During assembly the legs are forced toward each other to snap past the wires, and they then tend to separate to apply pressure to the corresponding wire. The pressure against the wire is increased when the contact legs are additionally separated by reason of their engagement with the corresponding plug prong.

Each receptacle is preferably also provided at the

front of the forward projection 38 with a third slot 72 of such size and so positioned as to be adapted to receive a third prong 74 on the said electrical connection plug 56. When the plug 56 has three prongs as shown and described, the cord 57 therefor has three conductors therein respectively connected electrically with the three prongs. The slot 72 is spaced longitudinally from the slots 48 and 50 and is centrally positioned.

Within each receptacle and communicating with the slot 72 is a recess 76 open at the rear. As shown, the said recess is chiefly within the front member 32. Located within the recess 76 is a contact 78 formed of resilient sheet metal and shaped and positioned to be engaged by the plug prong 74. The contact 78 has a forward portion in the form of an inverted U with one leg 80 vertical and engaging shoulders 82, 82 within the recess as shown in Fig. 9. The leg 80 is positioned for engagement with the plug prong 74. A portion 84 of the contact 78 engages a rearward facing surface on the body member 32, the said portion 84 serving to limit forward movement of the contact.

The contact 78 has an electrical grounding connection with the metallic conduit, preferably with the base strip thereof. This grounding connection is preferably provided by means of an integral rearwardly inclined extension 86 on the contact 78, this extension being connected with the portion 84. The extension 86 projects through an opening 88 in the rear member 34 and directly engages the rear wall 14 of the base strip 10. The extension 86 engages the base strip with considerable pressure to provide a good electrical contact therewith. Preferably the extension 86 is provided with teeth 90.

The subassembly comprising the channel member and the wires and the receptacles as shown in the left portion of Fig. 3 is assembled prior to final installation, this subassembly being designated for convenience as the "main unit." The main unit may be advantageously assembled at the factory to reduce to a minimum the labor during installation on the job. In assembling the main unit, the insulation is stripped from the wires at suitable intervals and the receptacles are connected with the stripped portions of the wires. In assembling the wires with the receptacles, the contacts are first engaged with the corresponding wires and then the contacts and the wires are moved forwardly into the front member 32. Thereafter the rear member 34 is put in place and secured to the front receptacle member to retain the contacts and the wires. Then the sub-assembly consisting of the receptacles and the wires are assembled with the channel member by relative forward movement from a position such as that shown in Fig. 2 to the position shown in the left portion of Fig. 3. The main unit may be provided in standard lengths, the wires 44 and 46 extending to or near the ends of the channel member so that the wires of two adjacent units with their channel members 20 and 20^a in end-to-end abutting relationship as shown in Fig. 1 may be readily connected with each other, as for instance by means of connectors 92, 92.

During final assembly the first step is to attach the base strip 10 to the rear wall, as shown in Figs. 3, 4 and 5 by the screws 17. In preparing the main units for engagement with the base strips it is desirable that each joint between two channel members will be out of register with any joint between two base strips. When the main units have been connected with each other they are then engaged with the base strips by relative movement as described to the position shown in Fig. 4. The overlapping of the joints enables the channel members to provide electrical grounding connections between the base strips. During final assembly the extensions 86 on the contacts 78 are moved into engagement with the base strips 10 as previously described.

The wires 44 and 46 are connected with main power leads in any suitable manner.

After installation an electrical connection plug such

as 56 may be engaged with any one of the receptacles 30. The plug prongs 52 and 54 engage the contacts 64 and 66, and the plug prong 74 and serves by means of the extension 86 on the contact 78 to provide a grounding connection to the base strip 10.

Each receptacle is also adapted for the connection of an alternative electrical connection plug, such as the plugs shown in Figs. 11 and 12, having only two prongs and not having the third grounding prong 74.

Construction shown in Figs. 10 to 19

Referring to Figs. 10 to 19, one or more base strips 10 and 10^a are provided which are or may be identical with the base strips previously described. One or more channel members 20 and 20^a are provided which are or may be identical with the channel members 20 and 20^a previously described. A plurality of receptacles 96, 96 is provided which receptacles as to details are different from the receptacles 30, 30 but which nevertheless are or may be similar to the said receptacles 30, 30 as to their relationship to and manner of engagement with the channel member and the base strip.

The body of each receptacle 96 is formed of insulating material and comprises a main front member 98 and a rear member 100, the two members being connected by screws 102, 102 as shown in Fig. 14. The front member of each receptacle body has a forward projection 104 which is shaped to project through and approximately fit the corresponding opening in the front wall of the channel member 20. The projection 104 has the same size and shape as the projection 38.

The body of each receptacle 96 is provided at the front of the forward projection 104 thereof with a pair of similar vertically spaced upper and lower slots 112 and 114 of such size and so spaced as to be adapted to receive the two prongs 116 and 118 of a conventional electrical connection plug 120.

Within each receptacle body and communicating with the respective slots 112 and 114 is a pair of vertically spaced upper and lower contact recesses 124 and 126. The upper recess 124 has a bottom wall 125 and the lower recess 126 has a top wall 127, as shown in Figs. 12, 15 and 16. The said recesses 124 and 126 are or may be of the same effective size and shape as the recesses 58 and 60 previously described. As clearly shown in Figs. 12, 15 and 14, the front member 98 is provided with a rearwardly projecting portion 128. The said recesses 124 and 126 are partly bounded by the said rearwardly projecting portion 128 and are partly within the rear member 100.

The body of each receptacle 96 is also provided at the front of the forward projection 104 thereof with another pair of similar vertically spaced upper and lower slots 130 and 132. The last said slots may be of the same size and shape as the slots 112 and 114 of the first pair and they are spaced horizontally and longitudinally therefrom. The slots 130 and 132 are of such size and so spaced as to be adapted to be engaged by the two prongs 134 and 136 of a conventional electrical connection plug 138.

Within each receptacle and communicating with the respective slots 130 and 132 is a second pair of vertically spaced upper and lower contact recesses 142 and 144 similar to, but spaced from those of the first pair.

Conductor wires 106, 108 and 110 extend through each receptacle, these wires being similar to the aforesaid wires 44 and 46. The receptacle front body member 98 is provided with three vertically spaced sets of grooves for the wires as shown in Fig. 11, the said grooves being similar to the grooves 68 and 70 and being initially open at the rear. The rear body member 100 is so formed that it engages the wires 106, 108 and 110 at the rear thereof to hold them in the grooves.

The wire grooves are so positioned that the upper wire 106 extends through the upper portion of the upper recess 124, that the intermediate wire 108 extends through

the lower portion of the upper recess 142, and that the lower wire 110 extends through the lower portions of both lower recesses 126 and 144.

Located within the respective upper and lower recesses 124 and 126 of the first pair are two similar contacts 146 and 148 which are similar to the previously described contacts 64 and 66 and are similarly positioned, as shown in Fig. 12. The said contacts 146 and 148 respectively engage the recess walls 125 and 127 and they respectively engage the upper and lower wires 106 and 110. They are adapted to be engaged respectively by the plug prongs 116 and 118.

Located within the respective upper and lower recesses 142 and 144 of the second pair are two similar contacts 150 and 152 which are or may be similar to the contacts 146 and 148, but the upper contact 150 is positioned reversely with respect to the upper contact 146. The said contacts 150 and 152 respectively engage the recess outer and inner walls 143 and 145 respectively and engage the intermediate and lower wires 108 and 110. They are adapted to be engaged respectively by the plug prongs 134 and 136.

The assembly as shown in Figs. 10 to 16 is assembled and installed in the same manner as previously described in connection with the assembly shown in Figs. 1 to 9.

The lower wire 110 is a grounded neutral wire and one of the wires 106 and 108 is directly connected with a main power lead in any suitable manner, the intermediate wire 108 preferably being so connected as shown in Fig. 17. The third or upper wire 106 may be connected with the same main power lead as the wire 108 but it is so connected by means of a switch 154, which may be a wall switch. It will be seen that any lamp or appliance connected with the assembly by means of a plug such as 120 located at the right end of a receptacle and engaged with the contacts 146 and 148, as exemplified by the arrows 116, 118, will receive current only when the switch 154 is closed. It will also be seen that any lamp or appliance connected with the assembly by means of a plug such as 138 located at the left end of a receptacle and engaged with the contacts 150 and 152, as exemplified by the arrows 134, 136, will receive current continuously and without regard to the opening or closing of the switch 154.

The assembly as shown in Figs. 10 to 17 is particularly adapted for home use wherein various different lamps and appliances are located in the same room. Lamps and appliances which are to be continuously operated or which are to be controlled solely by their own switches are connected with the assembly by means of plugs such as 138 located at the left positions on the receptacles, such lamps and appliances being thus connected with the wires 108 and 110. Lamps and appliances which are to be controlled by means of the switch 154 are connected with the assembly by means of plugs such as 120 located at the right positions on the receptacles, such lamps and appliances being thus connected with the switch controlled wire 106 and with the wire 110.

By making the slots 112 and 96 of different lengths than the slots 134 and 114, polarized connections may be insured.

Fig. 18 is similar to Fig. 15 but it shows one of the upper contacts, specifically the contact 146, in a reversed position. When the said contact is reversed, it engages the intermediate wire 108 instead of the upper wire 106. With the contact 146 reversed, the two contacts 146 and 148 are in the same positions as the two contacts 150 and 152 as shown in Fig. 13. Both of the upper contacts 146 and 150 engage the wire 108 and the upper wire 106 may be omitted.

To facilitate the described reversal of one of the upper contacts such as 146, the corresponding upper recess 124 may be provided at the top with a narrower upper portion 156 providing access to the upper wire 106, and is provided at the bottom with a downwardly extending narrower portion 158 similar to the portion 156 and provid-

ing access to the intermediate wire 108. The lower recess portion 158 interrupts the bottom wall 125 so as to provide two longitudinally spaced bottom wall portions as best shown in Fig. 16. The upper recess portion 156 similarly provides two longitudinally spaced top wall portions 160, 160 as also best shown in Fig. 16.

The contact, such as 146 which is reversible, has a portion 162 narrower than the main portion and adapted to enter either the said upper recess portion 156 for engagement with the upper wire 106 or to enter the said lower recess portion 158 for engagement with the intermediate wire 108. For convenience of manufacture each of the contacts may be similarly formed with a narrower portion 162 although this is needed for only the contact which is reversible.

With the several contacts in the positions shown in Figs. 12, 13 and 15, the innermost legs of the lower contacts 148 and 152 are respectively engaged with and supported by the innermost side walls 127 and 145 of the recesses 126 and 144, both of the said contacts engaging the lower wire 110. The outermost leg of the contact 150 is engaged with and supported by the outermost side wall 143 of the recess 142, the said contact engaging the intermediate wire 108. The innermost leg of the contact 146 is engaged with and supported by the wall portions 125, 125 of the recess 124, the narrower portion 162 of the said contact being in the outermost and narrower recess portion 156 and engaging the upper wire 106. When the wall portions 125, 125 of the recess 124 are engaged by the contact, the said recess can be regarded as having the same effective size and shape as the lower recess 126 of the same pair, but as being reversed as to position.

As shown in Fig. 18 all of the contacts are positioned and engaged as previously described, except that the contact 146 is reversed, with the outermost leg thereof engaged with and supported by the wall portions 160, 160 of the recess 124. When the contact is so positioned the narrower portion 162 thereof is in the lower recess portion 158 and engages the intermediate wire 108. When the wall portions 160, 160 of the recess 124 are engaged by the contact, the said recess can be regarded as having the same effective size and shape as the lower recess 126 of the same pair and as being similarly positioned.

With the several contacts positioned as shown in Fig. 18, the electrical connections are as shown in Fig. 19. This is an ordinary two wire system with the contacts of each pair engaged respectively with the two wires 108 and 110. Any plug, such as 120 or 138, may be electrically connected with both wires, when engaged at either end of any receptacle, as exemplified by the arrows 116, 118 and 134, 136.

When the receptacle is so formed that one of the contacts, such as 146, can be readily reversed as described, the device can be assembled in either of two ways to selectively provide a three wire connection as shown in Figs. 15 and 17 or a two wire connection as shown in Figs. 18 and 19. No change in receptacle construction is required, and the different connections can be provided merely by differently positioning one contact in the receptacle and by including or omitting one wire, such as the wire 106.

The invention claimed is:

1. An electric wiring device and duct combination comprising a base strip, a cover strip and a wiring device having shoulders on opposite side walls thereof, said cover strip having a front wall with an opening for said wiring device and flexible side walls which may be deflected to receive said wiring device as it is inserted from the rear, said cover strip having shoulders on its side walls engaging with said wiring device shoulders to cause said deflection of the cover-strip side walls as the wiring device is inserted in said cover strip, said side walls of the cover strip flexing back to engage and hold said wiring device after said insertion, interengaging means on

the side walls of said cover and base strips which become interlocked as the base and cover strips are pressed together with the wiring device in position in the cover.

2. The combination as claimed in claim 1 wherein the wiring device has exterior rearwardly facing shoulders on its opposite side walls, and said cover strip has interior forwardly facing shoulders engaging with said wiring device shoulders to cause said deflection of the cover-strip side walls as the wiring device is inserted in said cover strip.

3. The combination as claimed in claim 1 wherein the side walls of said base strip are relatively inflexible as compared to the side walls of the cover strip and engage and exert a force on the cover-strip walls to prevent flexure which would release said wiring device, and thereby aids retention of said wiring device in said cover strip.

4. A wired and fitted electric wiring duct comprising a sub-assembly composed of a plurality of wires adapted to run along the duct and a plurality of electric wiring devices mounted on and connected with the wires at spaced predetermined distances therealong; a cover member for the duct having a plurality of openings spaced similarly to said spaced predetermined distances to expose the wiring devices to access from the front of said cover member, said cover member being open toward the rear whereby said sub-assembly may be inserted from the rear into said cover member with the faces of said wiring devices in said openings to maintain the wiring devices in their predetermined longitudinal positions along the duct, and means engaging the wiring devices and maintaining them in position when they are inserted in the cover member, a base member for the duct having portions interengageable with a cover member as said cover member while bearing said sub-assembly is pressed into engagement with said base member, said interengagement thereupon maintaining said cover and base members and said sub-assembly together as a complete duct assembly.

5. A wired and fitted electric wiring duct as claimed in claim 4 in which said cover member has flexible side walls with forwardly facing shoulders, and said wiring devices having rearwardly facing shoulders over which said side walls shoulders deflect as the wiring devices are pressed into position whereby said wiring devices are held laterally and maintained against rearward movement.

6. A wired and fitted electric wiring duct as claimed in claim 4 wherein the base member has substantially rigid side walls which engage with the flexible side walls of the cover member and cause the latter to flex inwardly and thereafter maintain the cover and base members in assembled position, said base walls reinforcing the side walls of the cover member to lock the wiring devices in their assembled positions in the cover member.

7. An electric wiring device and duct combination comprising a channel shaped base strip, a cover strip and a wiring device, said cover strip having a front wall with an opening for said wiring device and rearwardly extending side walls, interengaging means formed integrally with the device and with the side walls of the cover strip which upon movement of the device into the cover strip abut and interlock the device and cover and resist relative rearward movement of the wiring device, means formed on the wiring device which abuts means formed on the cover strip to maintain said wiring device in predetermined longitudinal position along the duct, and interengaging means on the side walls of said cover and base strips which flex and become interlocked as the base and cover strips are pressed together after the wiring device has been interlocked in the cover.

8. In an electrical connection assembly, the combination of a receptacle having contacts exposed at the front, a longitudinal front channel member having a front opening for exposing the receptacle and comprising rearwardly

extending side walls, interengageable means formed integrally with the receptacle and with the channel member which, upon completion of movement of the receptacle into the channel member, abut and automatically interlock to resist relative rearward movement of the receptacle, means formed on the channel member and means formed on the receptacle and abutting said means on the channel to maintain said receptacle in predetermined longitudinal position along the channel, and a longitudinal rear base strip with which the channel member is engageable to constitute a longitudinal conduit, the said base strip including means which upon engagement of the channel member therewith lock the said interengaging means to cause them to positively prevent relative rearward movement of the receptacle.

9. In an electrical wiring conduit assembly, the combination of a receptacle having contacts exposed at the front, a longitudinal front channel member having a front opening for exposing the receptacle and rearwardly extending side walls having shoulders positioned for engagement with portions of the receptacle upon relatively forward movement of the receptacle into the channel member, the said walls during the said forward movement being resiliently deflectable to permit the said receptacle portions to pass the said shoulders and the said shoulders snap behind said receptacle portions, means formed on the channel member and means formed on the receptacle and abutting said means on the channel to maintain said receptacle in predetermined longitudinal position along the channel, and a longitudinal rear base strip with which the channel member is engageable to constitute a longitudinal conduit, the said base strip including means which upon engagement of the channel member with the base strip lock the said channel member walls and prevent deflection thereof and positively prevent relative rearward movement of the receptacle.

10. The combination in an electric wiring and connection assembly, of a longitudinal metallic base strip adapted to be secured to a supporting wall, a longitudinal channel member connectible with the base strip and having an opening in its front wall, two longitudinal wires within the channel member, a receptacle body within the channel member and exposed at the front through said opening, said receptacle body having three recesses therein open at the front and one also open at the rear, means for connecting the receptacle body with the channel member independently of the base strip, and three electrical contacts within said recesses for engagement respectively through the open fronts of the said recesses with three prongs of an electrical connection plug, two of the said contacts being electrically connected respectively with the two longitudinal wires, and resilient means electrically connected with the third contact and extending through the back of the receptacle to directly engage and maintain pressure upon the base strip when the channel member is connected with the said base strip.

11. The combination in an electric wiring and connection assembly, of a longitudinal metallic base strip adapted to be secured to a supporting wall, a longitudinal channel member having an opening in its front wall, two longitudinal wires within the channel member, a receptacle body within the channel member and exposed at the front through said opening, said body having three recesses therein open at the front and one also open at the rear, three electrical contacts within said recesses engageable with three prongs of an electrical connection plug, two of the said contacts being electrically connected respectively with the two longitudinal wires, means connected with the third contact projecting rearwardly through the open rear of its recess, interengaging snap acting means on the receptacle body and on the channel member serving upon relative forward movement of the receptacle and wires into the channel member through the open rear thereof for retaining the said receptacle and the wires in fixed predetermined positions with respect to the

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channel member, and interengaging snap acting means on the channel member and on the base strip serving upon relative rearward movement of the channel member and the receptacle and the wires toward the base strip for retaining the said channel member and receptacle and wires in fixed predetermined positions with respect to the said base strip and retaining the rearward projecting means in engagement with the base strip.

12. An electric wiring and connection device comprising a receptacle front body member within the conduit and having two spaced recesses therein open at the front and rear, the said front body member also having two spaced grooves in its rear transverse to and communicating with the said recesses and open toward the rear, two spaced straight wires within the conduit and respectively within the said grooves, two resilient electrical contacts respectively in the said front body member recesses each of which contacts is generally U-shaped with the portion transverse to its legs at the rear of the corresponding recess and with its leg extending forwardly to embrace the prong of an electric attachment plug, one leg of each contact having a portion between the rear and the front thereof bent to partially engage the wire in the corresponding recess, and a receptacle rear body member connected with the said front body member, said rear body member directly engaging the said wires and also the said contacts to prevent rearward movement thereof.

13. An electric connection device comprising in combination, a receptacle body having recesses for contacts, first and second and third conducting wires connected with the receptacle body in fixed relationship therewith and running longitudinally thereof, two longitudinally spaced similar first and second pairs of transversely spaced electrical contacts in said recesses with the contacts of each pair exposed at the front for engagement with the prongs of an electrical connection plug, means for holding the contacts of the first pair in engagement respectively with the said first and second wires, means for holding one of the contacts of the second pair in engagement with the said first wire, and means for holding the other contact of the second pair in its recess either in a position wherein it engages the said second wire or alternatively in a position wherein it engages the said third wire.

14. An electric connection device as set forth in claim 13, wherein the body has a recess formed therein for the said other contact of the second pair, the walls of said recess being shaped to receive and hold the said contact in either of two relatively reversed positions.

15. An electric connection device as set forth in claim 14, wherein each of the contacts is U-shaped with its legs extending forwardly, and wherein the said recess is formed with similar opposite walls notched, and wherein the contact in the said recess has one of its legs narrower than the other so that it can enter either of the said notches.

16. The combination in an electric wiring and connection device, of a longitudinal conduit adapted to be secured to a supporting wall and having an opening in its front wall, a receptacle front body member located at least partly within the conduit and having two longitudinally spaced first and second pairs of vertically spaced

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recesses all similar in effective size and shape and all partly open at the front which recesses of the first pair are positioned similarly to each other and which recesses of the second pair are positioned reversely with respect to each other, the said recesses being partly open at the front for exposure through the said conduit front wall opening and the said recesses being initially open at the rear, the said front body member also having three vertically spaced upper and intermediate and lower longitudinal grooves initially open at the rear which upper grooves communicate with the upper recess of the second pair and which intermediate grooves communicate with the upper recess of the first pair and which lower grooves communicate with the lower recess of each pair, three upper and intermediate and lower substantially straight longitudinal wires within the conduit and respectively within the said grooves, first and second pairs of similar electrical contacts each generally U-shaped with its legs extending forwardly to embrace the corresponding prong of an electrical connection plug, the contacts of the first pair being positioned similarly to each other at least partly in the similarly positioned recesses of the first pair and in engagement respectively with the intermediate wire and with the lower wire and the contacts of the second pair being positioned reversely with respect to each other at least partly in the reversely positioned recesses of the second pair and in engagement respectively with the lower wire and with the upper wire, and a receptacle rear body member connected with the said front body member which rear body member directly engages all of the said wires and also all of the said contacts to prevent rearward movement thereof.

17. An electric wiring and connection device as set forth in claim 16, wherein the receptacle rear body member has a recess therein open at the front and registering with the said recesses in the receptacle front body member, and wherein the rear portions of the said contacts are located in the said recess in the rear body member.

18. An electric wiring and connection device as set forth in claim 16, wherein the wire engaging leg of each contact has a portion bent to partly embrace the wire and has an inclined portion at the front of the said wire engaging portion which enables the contact to snap into engagement with the wire when the contact is moved forwardly relatively to the wire.

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