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MEANS FOR MOUNTING CONTACTS IN ELECTRICAL RECEPTACLES

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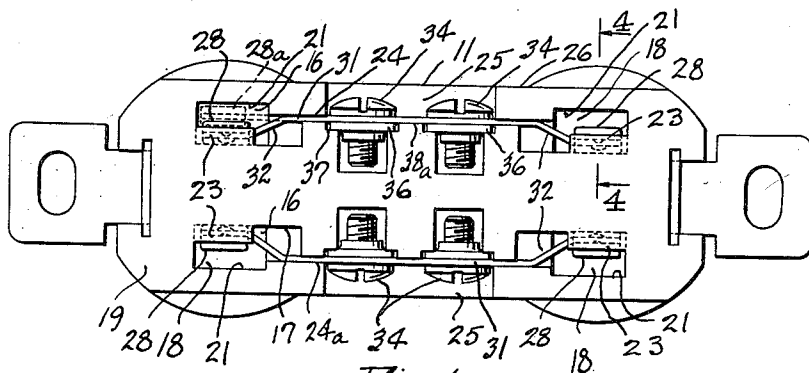


Fig. 1.

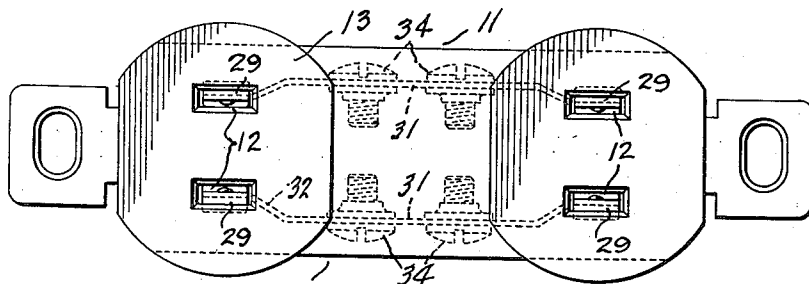


Fig. 2.

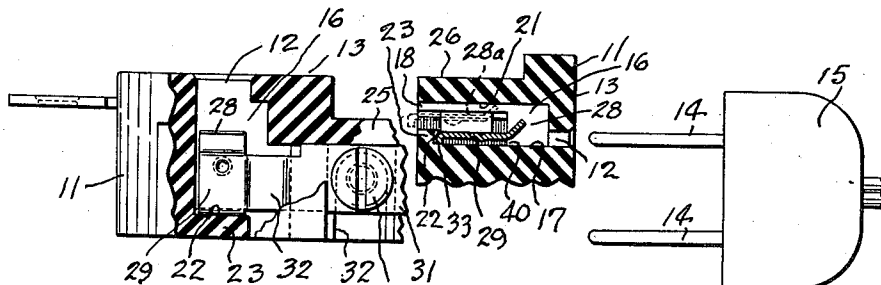


Fig. 3.

Fig. 4.

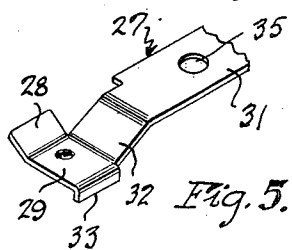


Fig. 5.

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MEANS OF MOUNTING CONTACTS IN ELECTRICAL RECEPTACLES

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4 Claims. (Cl. 339—164)

This invention relates to electric outlet receptacles such as wall outlets or the like, adapted for use with plug connectors to connect various electric fixtures to a house circuit, for example.

An object of this invention is to provide an improved and simplified construction of electric outlet receptacle.

Heretofore, outlet receptacles of this type have usually comprised a body member of insulating material having chambers and passages in which are mounted current conducting elements, and a separate cover member has been secured to the body member to protect and enclose the conducting elements and retain them in place in the body member. Like the body member, the cover is of insulating material. In making such devices it has, of course, been necessary to assemble the conducting elements in the base member, then apply the cover thereto and then fasten the cover by means of screws or the like. Such an assembling operation is time consuming and adds substantially to the cost of manufacture.

A further object of this invention is to provide an electric receptacle constructed and arranged to eliminate any necessity for a separate cover to protect or retain in place the current conducting elements.

A still further object is to provide an outlet receptacle in which the current conducting elements are automatically retained in operative position upon being pushed into place in the insulating body member.

With the foregoing and other objects in view, I have devised the construction illustrated in the accompanying drawing forming a part of this specification. It is, however, to be understood the invention is not limited to the specific details of construction and arrangement shown, but may embody various changes and modifications within the scope of the invention.

In this drawing:

Fig. 1 is a rear elevation of an outlet receptacle constructed in accordance with one embodiment of the invention;

Fig. 2 is a front elevation thereof;

Fig. 3 is a partial transverse section through one end portion of the construction shown in Figs. 1 and 2;

Fig. 4 is a section on the line 4—4 of Fig. 1, with an associated plug connector shown in elevation, and

Fig. 5 is a perspective view of one end of a contact strip forming a part of the invention.

The invention is illustrated in connection with an electric receptacle having a body member 11 of suitable insulating material. The receptacle shown is of the duplex type having a pair of blade-receiving slots 12 in the front face 13 at each end, through which the contact blades 14 of a plug connector 15 can be inserted in the usual manner into adjacent chambers 16 formed in the body member 11. Each blade-receiving slot 12 is located in the front face 13 at a point adjacent the inner wall 17 of the associated chamber 16, as shown in Fig. 4.

An entrance opening 18 communicates with the opposite side of each chamber 16 through the rear face 19

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of the body member 11 at a point adjacent the outer wall 21 of each chamber, as shown in Fig. 4. A retaining and positioning shoulder 22 for holding and positioning a conducting element, as hereafter described, is formed by a ledge 23 on the body member 11 adjacent the inner wall 17 of each chamber 16 next to each entrance opening 18 and opposite the blade entrance 12, the ledge 23 extending across a portion only of the inner edge of each opening 18, as shown in Fig. 1. A conductor strip-receiving slot 24 opens through the back 19 of the body member 11 and connects the contact receiving chamber 16 with a recess 25 formed in the side face 26 of the body member 11 for a purpose to be described.

As illustrated, current-conducting element 27 comprises a blade-engaging contact flange 28 extending outwardly at an angle from an offset contact plate 29 connected to a contact strip 31 by an angularly arranged section 32 of the contact strip 31, see Fig. 5. A positioning flange 33 extends outwardly from the offset contact plate 29 at substantially a right angle along the edge of the plate opposite to the blade-engaging contact flange 28 and in the opposite direction from such flange 28. In a duplex receptacle such as shown in the drawing, a single strip 31 has contact plates 29 and flanges 28 at each end, and a separate strip 31 is positioned in each of separate slots 24, 24a, see Fig. 1, adjacent each side of the body member 11 for connection to the two sides of an electric circuit such as a house wiring circuit. As illustrated, two binding screws are secured to each strip 31 to connect the usual lead wires thereto. Each binding screw 34 extends through an opening 35 in the associated strip 31 and is threaded through a washer 36 seating in a non-circular washer-retaining seat 37 in the end of a bore 38 in the bottom 38a of the recess 25 to accommodate the end of the associated binding screw 34 and increase the length of thread for mounting the conductor clamping or binding screw 34.

The inherent flexibility of the conducting strip 31 and the angular section 32 is employed to automatically retain the conducting elements in place in the body member upon insertion therein, without requiring a separate cover member, or the like. This flexibility is sufficient to allow the offset end plates 29 with flanges 28 at opposite ends of the strip 31 to be sprung laterally against the inherent spring action when the strip 31 is inserted into the strip-receiving slot 24, as indicated in broken lines 28a in Figs. 1 and 4, so that the entire conducting element can be pushed into the chamber 16 and slot 24, the contact plate 29 sliding across the ledge 23. As it enters the chamber 16 past the ledge 23 each flange 28 and contact plate 29 spring back behind the associated ledge 23 and locking shoulder 22, see Fig. 4, to automatically retain the conductor strip assembly in operative position with the flange 28 located opposite the blade-receiving slot 12, and properly spaced from the inner wall 17 of the chamber 16 by the flange 33 to provide a blade-receiving space 40 into which the blade 14 on a connector cap can be pushed. The width of the conducting strip 31 is such that the entire strip is housed within the confines of the slot 24 when the contact plates 29 are located in the chambers 16 behind the locking shoulders 22, see Fig. 3. As indicated in Fig. 4, when the blades 14 of a contact plug 15 are inserted into the blade-receiving slots 12, they engage the respective blade contact flanges 28 and are thereby directed into the spaces 40 to contact the plates 29 and complete the desired circuit.

No separate cover is required either to hold the current conducting elements in place or to insulate them, as they are held in place by the locking shoulder 22 engaging the flange 33, and no part of the strip is exposed except at the bottom of the recess 25 adjacent the binding screws 34.

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The specific details of the invention as described and illustrated can be variously modified and adapted within the scope of the appended claims.

Having thus set forth the nature of my invention, I claim:

1. An outlet receptacle comprising a body member of insulating material having a blade-receiving slot in the front face thereof communicating with a contact-receiving chamber in said body member, said body member having an open recess in one side thereof and a narrow conductor-strip-receiving slot between and connecting said chamber and said recess and opening outwardly through the back face of said body member, said body provided with an entrance opening extending through said back face to said chamber forming an enlarged extension of said strip-receiving slot, an inwardly facing shoulder extending part way only across the entrance to said chamber forming an inwardly facing locking surface in said chamber adjacent said entrance opening, a current-conducting element comprising a substantially flat conductor strip inserted into said strip-receiving slot so as to extend into said recess, a blade-engaging contact in said chamber in alignment with the blade-receiving slot in the front face of the body member connected to said strip and insertable into said chamber through said entrance opening when said strip is inserted in said strip-receiving slot, a shoulder engaging edge on said contact over said shoulder in said chamber to retain said contact in said chamber and said strip in said slot, said strip being flexible and resilient so as to flex to permit said blade-engaging contact to be inserted through said opening and to pass said shoulder when said element is inserted into said slot and to then snap into position behind said shoulder to engage said locking surface and retain said element in place, and lead wire connecting means on said strip in said recess in the side of said body member.

2. A duplex outlet receptacle comprising a body member of insulating material having blade-receiving slots in the front face thereof at opposite ends, each slot communicating with a contact-receiving chamber in the adjacent end of said body member, said body member having open recesses in opposite sides thereof between said chambers and a separate narrow conductor-strip-receiving slot connecting each chamber and said recess adjacent each side of said body member and opening outwardly through the back face of said body member, and said body being provided with a separate entrance opening through said back face communicating with each chamber at each end of said strip-receiving slots, a ledge extending inwardly from one side of each chamber forming an inwardly facing shoulder in each chamber adjacent the associated entrance opening, a current conducting element comprising a substantially flat conductor strip inserted into each of said strip-receiving slots, a blade-engaging contact at each end of each strip inserted into said chambers in alignment with the blade-receiving slots in the front face of the body member through said entrance openings, said elements being flexible and resilient to permit said blade-engaging contacts being shifted laterally to enter said chambers past the free edges of said ledges when said strips are inserted in said strip-receiving slots and then snap into position in back of said ledges over said shoulders to retain said elements in said body member, and binding screws mounted on said strips in each of said recesses.

3. An outlet receptacle comprising an elongated body member of insulating material provided with a contact

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receiving chamber and a contact blade-receiving slot in its front face leading to the chamber, said body being also provided with an open recess in its side wall to receive a binding screw for connection of a lead wire and a narrow slot opening through the rear wall of the body extending between the chamber and said recess and communicating therewith, said body further provided with an entrance opening in its rear wall leading to said chamber, a ledge extending inwardly from one side of said opening over a portion only of said opening and providing an inwardly facing shoulder, and a contact assembly comprising a substantially flat conductor strip seated in said narrow slot, a blade engaging contact connected to said strip adjacent one end and located in said chamber in alignment with the blade-receiving slot in the front face of the body member, a portion of the strip lying adjacent the inner wall of said side recess and carrying a binding screw, the end portion of the strip carrying the contact being located at the inner side of said shoulder and cooperating therewith to form the means of securing said assembly in the body, and said conductor strip being resilient so that as it is inserted in its slot this end portion may be flexed laterally to pass by the free edge of the ledge into the chamber and then spring backwardly behind the ledge and over the shoulder to retain the conductor strip and contact in the body.

4. An outlet receptacle comprising an elongated body member of insulating material provided with laterally spaced contact receiving chambers adjacent its opposite ends and contact blade receiving slots in its front wall leading to said chambers, said body being also provided with an open recess in each side wall between said chambers to receive connecting means for lead wires and narrow slots opening through its rear wall extending between and communicating with said recess and the adjacent chambers, said body further provided with an entrance opening in its rear wall leading to each chamber, a ledge extending inwardly from one side of each opening partway only across the opening and forming an inwardly facing shoulder in each chamber at one side of the adjacent opening, and a conductor assembly comprising a substantially flat conductor strip extending across each side recess and seated in the narrow slots on each side of the body, said assembly including a blade engaging contact at each end of the strip located in the adjacent chambers in alignment with the blade-receiving slots in the front wall of the body member, the end portions of each strip being located behind the shoulders in the chambers and cooperating therewith to retain the assembly in the narrow slots and connected chambers, said conductor strip being flexible and resilient so that as it is inserted in its slots each end portion may be flexed laterally to pass by the free edge of the ledge into its chamber and then spring backwardly behind the ledge over the shoulder, and means on the strips in the side recesses for connecting lead wires thereto.

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