Dec. 24, 1957 R. J. O'MARA 2,817,826

HEAVY DUTY ATTACHMENT PLUG RECEPTACLE

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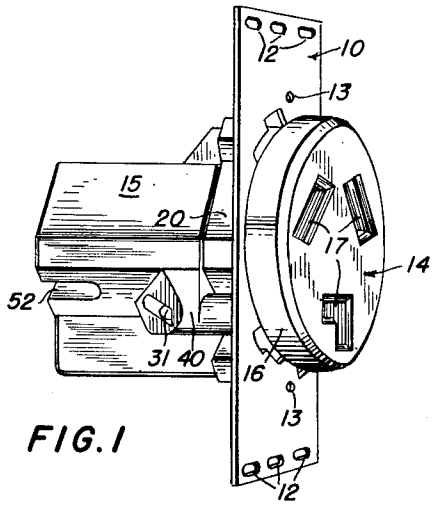


FIG. 1

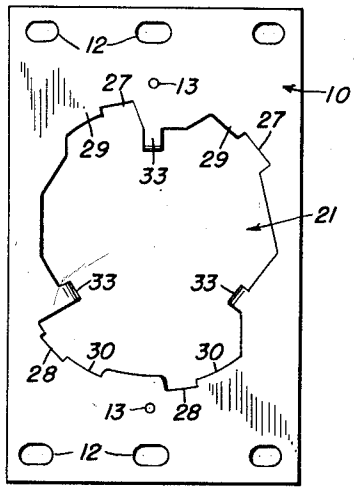


FIG. 2

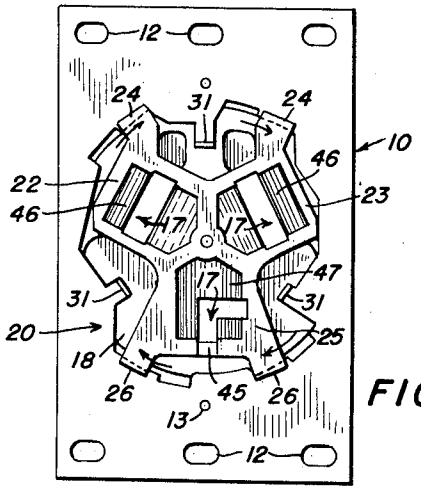


FIG. 3

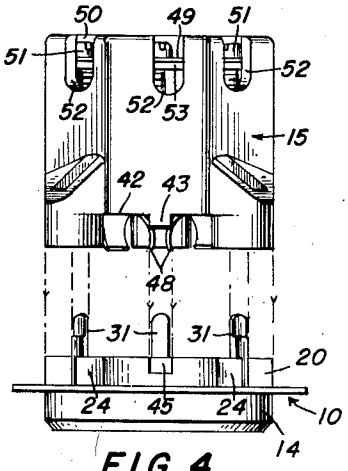


FIG. 4

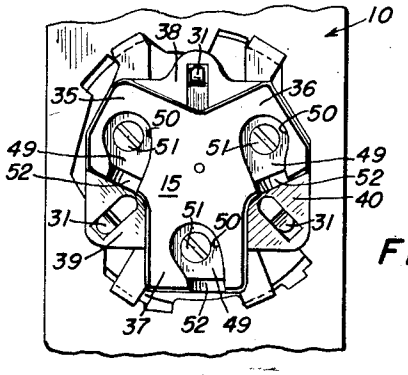


FIG. 5

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HEAVY DUTY ATTACHMENT PLUG RECEPTACLE

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10 Claims. (Cl. 339—126)

This invention relates to outlet plug receptacles of the wall or switch box type, and more particularly to the construction of such a receptacle and its assembly on its supporting or mounting plate.

It is a general object of the present invention to provide a novel and improved attachment plug receptacle.

One of the important objects of the receptacle of the present invention consists in the mounting of the two insulating components thereof on the mounting or supporting plate without the use of separate fastening elements for securing together the two insulation components.

Another important object of the invention resides in the construction and arrangement of the mounting plate and the insulation components, whereby they may be assembled without the use of any independent fastening elements and without showing any fastening elements on the front face of the receptacle.

A still further important object of the invention comprises the mounting of the front insulation portion of the receptacle in a cut-out in the flat mounting plate by a bayonet type of joint, and the attachment of the back portion of the receptacle containing the contacts, terminals and the like by means of integral prongs extending rearwardly from the mounting plate and staked over to hold the rear portion of the receptacle in interlocking relationship with the front portion whereby relative rotation of the two parts and the release of the bayonet joint is positively prevented.

One of the main features of the invention consists in the independent mounting of the front insulation portion of the receptacle on the supporting plate whereby it is unattached, except through the agency of the supporting plate, to the rear insulation portion.

Another important feature resides in the non-rotative interlock between the two insulating portions of the receptacle whereby the front is prevented from being separated from the mounting plate by its co-action with the rear, which latter is attached to the mounting plate through the agency of staked-over integral plate prongs.

Other and further objects and features of the invention will be more apparent to those skilled in the art upon a consideration of the accompanying drawing and following specification wherein is disclosed a single exemplary embodiment of the invention, with the understanding that such changes and modifications in the non-critical portions thereof may be made as fall within the scope of the appended claims without departing from the spirit of the invention.

In said drawings:

Fig. 1 is a perspective view of the attachment plug outlet receptacle fully assembled and ready for use;

Fig. 2 is a front view of the mounting plate with the insulation parts removed and showing the outline of the mounting opening punched therein;

Fig. 3 is a back view of the mounting plate showing the receptacle front positioned therein and interlocked therewith by means of its bayonet joints, the arrows showing the direction of rotation for locking;

Fig. 4 is a top plan of the two parts assembled as shown in Fig. 3 with the rear portion separated from but positioned to be assembled over the plate prongs; and

Fig. 5 is a view similar to Fig. 3 but showing the rear insulation portion fully assembled thereon.

In the heavily competitive field of electric wiring devices for household, office, store and factory use, the discerning purchaser is interested first in quality, second in cost, and third in appearance of the item. The present invention is related to outlet plug receptacles and provides for reducing cost and improving the appearance without in anywise depreciating the quality or operating characteristics of the product.

The specific embodiment of the invention illustrated is a heavy duty, three pole, polarized attachment plug receptacle, but obviously the principles of the invention apply with equal facility to many other electric wiring devices.

The article illustrated is built up of three principal components, the flat mounting plate **10**, the insulating front unit **14** and the back unit **15**, also of insulation. The plate **10** is of such a size as to substantially cover the face of a single gang outlet box, to which it may be attached by screws or the like through two or more of the end openings **12** therein. The plate is provided with two small threaded openings **13** for the reception of screws for positioning the finish or wall plate over the mounting plate **10** and exposing only the circular disc of the insulation part **14** hereinafter referred to as the receptacle "front." The insulating part **15** is hereinafter called the receptacle "back."

That portion of the receptacle "front" **14** which is exposed on the front face of mounting plate **10** is a circular disc **16** with chamfered edge. It is penetrated by an appropriate number and style of slots **17** for the entrance of the blades of an attachment plug. The disc is larger in diameter than most of the remainder of the front, thus exposing to the rear a rim **18** adapted to rest against the face of mounting plate **10**, when the three lobed portion **20** projects through the large irregular shaped opening **21** in the mounting plate to the position shown in Figs. 3 and 4.

Each of the upper lobes **22** and **23** is fitted with a narrow radial projection **24** extending outwardly beyond the diameter of the front disc **16** and spaced from the rim **18** on the back thereof by the thickness of the mounting plate **10**. In a corresponding manner the wider bottom lobe **25** is fitted with two radial projections **26** of the same character. These projections **24** and **26** are adapted to pass closely through notches **27** and **28** extending radially outwardly from the main opening **21** in the mounting plate. These are angularly offset so that when the projections pass through them the plug blade slots **27** are not symmetrically positioned in respect to the vertical axis of the mounting plate. After the lobed portion is passed through the plate opening the front unit is rotated in a counterclockwise direction as viewed in Figs. 1 and 2 until the interlocking projections **24** and **26** are engaged behind the plate portions **29** and **30** respectively, adjacent the cutouts **27** and **28**. This in effect provides a bayonet type of joint which prevents direct withdrawal of the receptacle front except upon reverse rotation. If this front can be prevented from rotating back to the position of insertion, then it will be permanently fixed in the plate.

Such permanent fixing is effected by interlocking the front **14** and the back **15** with each other and securing the back rigidly against rotation on the plate. For this purpose the material of the plate is struck out in the form of three prongs, **31**, best seen in Figs. 3 and 4, each of which extends rearwardly from the plate at right angles to the surface thereof and comprises the rearwardly

bent portion of a tongue 33 (Fig. 2) projecting inwardly slightly from the irregular outline walls of the plate opening 21.

Viewed from the rear, the back unit 15 has three lobes 35, 36 and 37 corresponding in outline to and superimposed over the lobes 22, 23 and 25 of the front. Between each pair of these lobes is a shallower area 38, 39 and 40 respectively, each of which is longitudinally perforated with an opening adapted to register with one of the plate prongs 31, as clearly seen in Fig. 5. These prongs are of sufficient length and preferably reduced in thickness on their outer ends so that they may be bent or staked over against the sloping surfaces at the rear of these intermediate areas to securely lock the back element against movement on the plate. The fronts 42 (Fig. 4) of lobes 35, 36 and 37 are set back from the fronts of areas 38, 39 and 40, which latter fit tightly against the rear face of the plate while the former firmly engage the correspondingly shaped opposed rear faces of lobes 22, 23 and 25 on the receptacle front.

The lower edge of lobe 25 on the "front" is deeply notched at 45 and a correspondingly positioned lug 43 (Fig. 4) is provided on the front of lobe 37 to be received therein. The securing of the back to the plate by means of prongs 31 maintains the interlocking relationship of notch 45 and lug 43 whereby rotation of the front toward a disengaging position from the plate is positively prevented and thus the whole device is assembled without there showing on the front face of disc 14 any fastening element. No fastening element except those integral with the plate are required and this materially simplifies the assembly operation and hence reduces the cost of the product.

In the example illustrated the plug blade slots 17 are seen in Figs. 1 and 3. In the latter figure they are seen entering into pockets 46 and 47 in the rear of these three lobes. Correspondingly shaped and mating pockets of greater depth are provided in the fronts of the three "back" lobes and receive plug blade engaging contact springs, of generally U-shape, the tips 48 of one pair of which are visible in Fig. 4, the parts designated by this number being the pair which engages the lowermost plug blade as viewed in Fig. 1. These contact springs are positioned merely by engagement with the side walls of the pockets and their bottoms. As seen in Figs. 4 and 5, the flat bottoms 49 of these springs are exposed through notches 50 in the rear walls of the lobes of the "back" element, providing for access to the terminal screws 51, on the spring bottoms. If wires are to be looped under the screw heads they exit through the back notches 50, in which the screw heads are shown, for so-called rear wiring, whereas if side wiring is desired the wires may be introduced through the side wall extensions 52 of these rear notches, as seen in Fig. 4, and the ends introduced between the bottoms 49 of the springs and nuts 53 engaged on the screws and serving to clamp the wires when the screw heads are rotated. These extensions are conveniently oriented in the same general direction as seen in Fig. 1.

The receptacle just described can be manufactured with a minimum of equipment and labor, is efficient, sturdy, simple and requires the minimum of assembly technique and time whereby the cost is low while the appearance is enhanced as an aid to sales.

I claim:

1. An electric outlet for use in a box, in combination, a metal plate adapted to be mounted across the face of a box and having a large opening therein, a front unit of insulation having a part adapted to extend through said opening and a part overlying the edge of said opening on the front of said plate, interengaging elements on the unit and the border of the opening to secure the plate and front unit together upon partial relative rotation thereof, a back unit of insulation for cooperation with the front unit to hold contact elements accessible through the front unit, means integral with said plate to engage and secure the back unit non-rotatively thereto, and interfitting parts on the front and back units to restrain the front unit from rotation relative to the plate.

2. An electric outlet, in combination front and back insulation units having mating areas and complementary pocket parts and a mounting plate therefor having an opening therein, lugs on said front, notches in the border of the opening in said plate receiving said lugs for interlocking relative rotation to connect the front and plate together, integral prongs extending rearwardly from said border and securing said back against the rear face of the plate and holding said areas in engagement, and interlocking parts on the front and back holding the units against relative rotation.

3. The outlet of claim 2 in which contacts are enclosed in said pockets, access ports for said contacts in said front and notches in the back exposing terminals for said contacts.

4. In an electric outlet, in combination, front and back insulation units having recesses and passages jointly forming contact pockets when the units are mated, a mounting plate having an opening receiving a reduced portion of the front, a bayonet joint connecting the front and plate on partial relative rotation, integral means on the plate and means in the back receiving said means for securing the back nonrotatively thereto and holding it in mating relation to the reduced portion of the front.

5. The outlet as defined in claim 4 in which the front and back are provided with interfitting parts to prevent relative rotation thereof.

6. The outlet as defined in claim 4 in which each pocket is fitted with a contact spring, a plug blade entrance into each pocket through said front, a terminal on each contact spring and opening at the rear of said back unit for access to said terminals.

7. An electric fitting for box front mounting, in combination, a mounting plate having a large central opening therein, an insulating front unit having a disc engaging the front face of said plate and a portion extending through said opening, means on said plate and unit locking the unit against withdrawal on relative movement after insertion, an insulating back having a portion engaging the rear of said plate and a portion interfitting with the said portion of the front to prevent relative movement therebetween, an opening in the back, and means extending from the plate into said last mentioned opening and securing the back rigidly thereto.

8. The fitting of claim 7 in which the said front and back have complementary pocket portions forming a substantially closed chamber, a contact and terminal floatingly positioned therein and means at the rear of said back providing access to said terminal.

9. The fitting of claim 8 in which access is provided to said contact through the disc of said unit.

10. The fitting of claim 7 in which the means extending from the plate comprise integral prongs passing through closely fitting openings in the back and being formed to engage over lateral extending areas of the back to prevent removal thereof.

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