Oct. 11, 1955 B. P. McKINLEY 2,720,636

SURFACE RECEPTACLE

Filed Jan. 26, 1953

Fig. 1

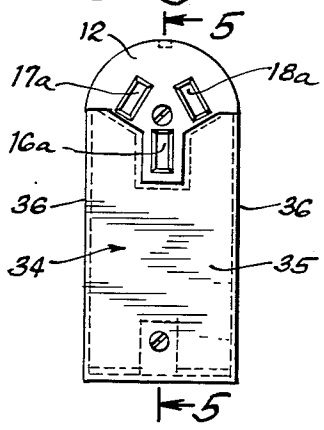


Fig. 2

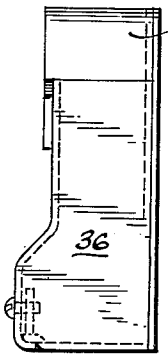


Fig. 3

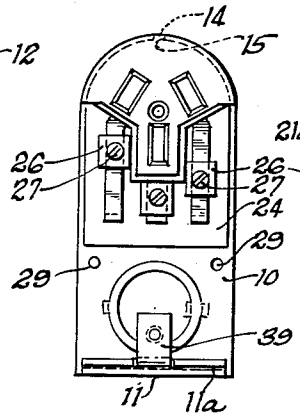


Fig. 4

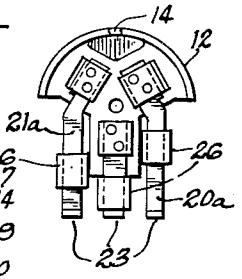


Fig. 5

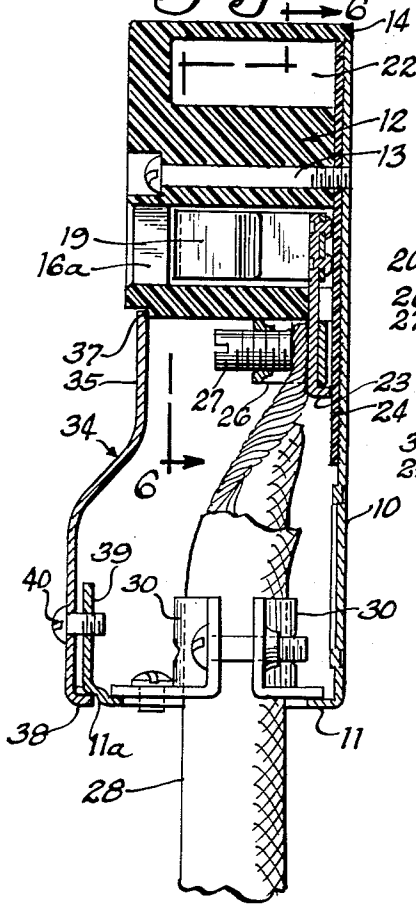


Fig. 6

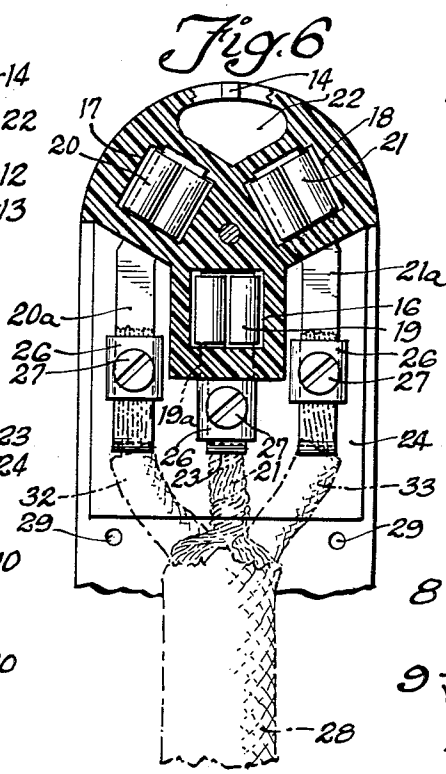


Fig. 8

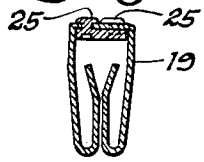


Fig. 9

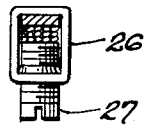
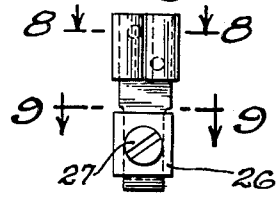


Fig. 7



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SURFACE RECEPTACLE

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3 Claims. (Cl. 339—192)

This invention relates to surface receptacles of the character adapted to be secured to a wall for receiving the plug of a cord for an electric range, for example, in supplying current to the latter.

Receptacles of the character under consideration usually are of the three terminal type for use in conjunction with the three wire systems generally employed in supplying current to electric ranges or other like current using apparatus. The conductors for the relatively heavy current supplied to such receptacles generally are in the form of cables consisting of two relatively large rather stiff conductors of several wires each and a third conductor consisting of wires of smaller gauge and of considerably greater flexibility. In making installations of such receptacles it is desirable that the terminals to which the conductors are to be attached be such that the attachment can be effected expeditiously by an electrician without having to sharply flex or bend the stiff cables in attaching them to the terminals and also without the necessity of handling separable parts of cable attaching means which may be dropped and lost or otherwise occasion loss of time of the electrician. In addition to providing a novel construction and arrangement of parts which facilitate installation and hook-up of the receptacle, it is an object of the invention also to provide a construction all the parts of which can be assembled readily into an operative unit for packaging at the factory without loose parts which must be individually handled and assembled by the workman at the time of installation of the receptacle.

Another more specific object of the invention is to provide a receptacle of the character mentioned which is provided, preferably, with three terminals for a three conductor supply circuit to which terminals the conductors can be attached without substantial flexing and bending into position for attachment, and at least two of which terminals have slidable clamping members for securing the relatively stiff conductors to the terminals.

Other objects of the invention relate to various features of construction and arrangement of parts which will be apparent from a consideration of the following specification and accompanying drawing wherein:

Figure 1 is a front elevational view of an assembled receptacle of a construction which is illustrative of the present improvements;

Fig. 2 is a side elevational view of the receptacle shown in Fig. 1;

Fig. 3 is an elevational view of the receptacle with the cover plate removed;

Fig. 4 is a bottom view of a detached molded three cell insulating housing for the receptacle contact members which are shown in position in the cells and illustrating also the conductor clamping means each forming a part of one of the contact members;

Fig. 5 is an enlarged longitudinal sectional view taken along lines 5—5 of Fig. 1;

Fig. 6 is a broken sectional view taken on line 6—6 of Fig. 5;

Fig. 7 is a plan view of the central terminal member shown in Fig. 6;

Fig. 8 is a sectional view of the terminal member taken on line 8—8 of Fig. 7; and

Fig. 9 is a sectional view taken on line 9—9 of Fig. 7.

In Fig. 1 of the drawing a front elevational view of the improved receptacle is shown in assembled relation, which in use is adapted to be secured to a wall at a convenient location with respect to the current using device which it is to serve, generally an electrical range of the type used domestically. The receptacle shown comprises a metal base **10** (see Fig. 5) integral with an end **11** which constitutes the lower end of the assembly when installed for use. Secured to the other or upper end of the base is an insulating receptacle or housing indicated generally by the numeral **12** which is attached to the base **10** after assembly therein at the factory of the spring contacts later described. The housing is attached to the base **10** by a single screw **13** as shown in Fig. 5. Preferably a nib or small projection **14** is provided on the perimeter of the end of the housing **12** which fits within a small cut out or recess **15** provided in the base for resisting angular displacement of the receptacle with respect to the base after securement of the parts together by means of the screw **13**.

The housing **12** has three cells **16**, **17** and **18** for receiving electrical contact members **19**, **20** and **21** prior to attachment of the housing to the base **10**. A fourth cavity **22** is shown but it is nonfunctional and is merely provided for reducing the quantity of plastic required in molding the housing **12**. The three cells **16**, **17** and **18**, as stated, are adapted to hold the contacts **19**, **20** and **21**, but the contacts are provided with terminal members which extend from the cells at the inner or lower ends thereof as shown in Fig. 6. The contacts per se are identical and are adapted to make electrical contact with the blades of a three blade plug (not shown) when the blades are pressed through restricted openings or slots **16***a*, **17***a* and **18***a* at the outer ends of the cells. While the contact members **19**, **20** and **21** are similar, each has a terminal bar or extension peculiar to its location in the unit. The terminals designated **19***a*, **20***a* and **21***a* of the respective contacts are of bar form, the terminal **19***a* being straight while terminals **20***a* and **21***a* are longer, as shown in Fig. 6, and are shaped anguiarly as indicated also in said figure to group the terminal ends in substantial parallelism with the terminal **19***a*. The free ends of the terminals mentioned are turned inwardly, as indicated at **23**, to space the terminals from an electrical insulating member **24** disposed between the contacts and terminals and the plate **10**.

The terminal members **19***a*, **20***a* and **21***a* are secured to the respective contacts **19**, **20** and **21** by any approved means, that shown in Fig. 8 being illustrative and consisting in partially punching from the end of the terminal strip the rivet-like extrusions **25** which are passed through openings in the contact and riveted over. Another attaching means may be used to provide good electrical contact between the terminal strips and the contact members which are of copper, usually. The heads of the rivet-like extrusions **25** cooperate with the inturned ends **23** in spacing the intermediate portions of the bar terminals from the insulator **24**.

Mounted on each of the terminal members **19***a*, **20***a* and **21***a* are cable receiving and clamping rings **26**. The rings are rectangular in side elevation as shown in Fig. 9 and each is provided with a threaded passage at the upper side as viewed in Fig. 6, which carries a cable or conductor clamping screw **27**. The ring **26** of the intermediate terminal strip **19***a* is closely disposed between the downwardly turned end **23** and the adjacent wall of the housing **12** and so is not slidable along the strip as are the rings **26**

of the terminal strips **20***a* and **21***a* when the clamping screws are loosened. These sliding clamping rings are of substantial convenience in connecting the conductors of a cable **28** to the terminals in the receptacle. With the cover of the receptacle removed and the base plates secured to a wall by screws passed through suitable openings, such as openings **29** indicated in Fig. 6, and with the insulating housing and contacts in assembled relation upon the base as the same comes from the factory, the cable is passed through a knock-out opening in the end **11** as shown or in the base **10** and clamped to the base by means of the usual outlet box clamps **30**. The cable **28** shown is of the three conductor type, the intermediate conductor **31** being the return or ground conductor. Such a conductor, as shown, is usually formed of wires of relatively small gauge and is quite flexible, and a workman has no difficulty flexing it and inserting the bared end into the ring **26** of the terminal **19***a*. Tightening the respective screw **27** completes the connection of the conductor **31**. The conductors **32** and **33** are formed of a number of wires of relatively heavy gauge and are quite stiff. Flexing the conductors and inserting them into openings, channels, or passages designed to receive them heretofore has sometimes constituted an annoying chore. With the present improvements the rings **26** of the terminals **20***a*, **21***a* are merely pushed back or upwardly along the terminals in a direction away from the free ends thereof and the workman then lays the stripped and bare end of the conductor successively upon the respective terminals after which he slides the respective rings over the bared wires and tightens the screws **27** to complete the electrical connections. The cover plate **34** is then placed in position on the receptacle.

The cover plate **34**, of metal or plastic, comprises a front wall **35** and side walls **36**. The forward edge of the front wall rests upon shoulders **37** provided in the plastic housing **12** and at the opposite end has an inwardly turned portion **38** which overlies the inwardly disposed outer edge **11***a* of the rear wall **11**. The wall **11** has a tab **39** provided with a threaded opening for receiving a screw **40** passed through an opening in the cover for holding the latter in position as shown in Fig. 5.

It will be noticed that the rings **26** of the several terminals are confined thereon by the downwardly turned ends **23** of the terminal bars and hence, even when the screws **27** are loosened the rings cannot drop off the bars. The screws **27** preferably are staked against complete withdrawal from the rings and hence when a workman removes the cover plate **34**, he has an integrated structure to attach to the wall and to which the electrical conductors are latter attached. The provision of the slidable rings **26** on the terminal bars **20***a* and **21***a* simplifies the work involved in attaching the relatively stiff conductors **32** and **33** as described.

While I have shown and described a surface receptacle which is illustrative of my improvements, various changes in details may be resorted to without departure from the invention defined by the following claims.

I claim:

1. An electrical receptacle of the class described comprising a base plate, an insulating housing attached to the plate and provided with three cells therein, electrical contacts in the cells, said cells having openings through which the blades of a plug can be inserted for electrical connection with said contacts, a terminal bar secured to each contact and extending from said housing at one side thereof along said base plate and a ring loosely surrounding each terminal bar and provided with a conductor clamping screw for clamping a bared end of a conductor within the ring into electrical contact with the respective bar, two of said bars projecting from said housing a distance adequate to enable the rings thereon to be slid along the bar over the ends of a conductor on the bar preparatory to clamping the conductor to the bar.

2. An electrical receptacle comprising a base plate adapted to be attached to a wall, an insulating housing secured to said plate and provided with cells for electrical contact members, said cells being open at the bottom ends and provided with passages at the outer ends for accommodating the blades of an outlet plug inserted therethrough for electrical connection with contact members within the cells, contact members within the cells provided with bar terminals extending longitudinally of the plate from one side of said housing and each having a free end turned toward said plate, an electrical insulating member disposed between the plate and said contact members and the bar terminals thereof and engaged by the inturned ends of said bar terminals for spacing the latter from said insulating member, and conductor receiving rings each loosely surrounding one of said bar terminals and confined thereon by said housing and the inwardly turned end of the respective bar and each provided with a clamp screw at least two of said bars being of sufficient length to accommodate sliding movement of the respective rings therealong to enable the rings to be slid upwardly of the bars and thus enable the bared ends of conductors to be placed upon the lower portions of the bars and thereafter slid downwardly over said bared ends for attaching said ends to the bars by the respective screws.

3. An electrical receptacle comprising a base plate adapted to be attached to a wall, an insulating housing secured to the plate at one end thereof and provided with cells for electrical contact members, said cells being open at the bottom ends and provided with passages at the outer ends for accommodating the blades of an outlet plug inserted therethrough for electrical connection with contact members within the cells, contact members within said cells provided with bar terminals extending from said housing longitudinally of the base and each provided with a free end directed inwardly toward said plate, an insulating member on the base beneath said contact members and bar terminals, and rings on said bar terminals between the inturned ends thereof and said housing and each provided with a clamping screw for clamping to the bar terminal a bared end of a conductor extending within the ring, at least two of said bar terminals being of sufficient length to enable said rings to be slid away from said free end portions a distance to enable the bared ends of conductors to be placed on said free end portions and thereafter moved to encompassing relation over said conductor ends prior to tightening the screws for clamping the conductor ends into firm electrical contact with said bar terminals.

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