July 13, 1937. R. E. QUANSTROM 2,087,004

CONTINUOUS RECEPTACLE FOR ELECTRICAL UTILITY PLUGS

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Fig. 1.

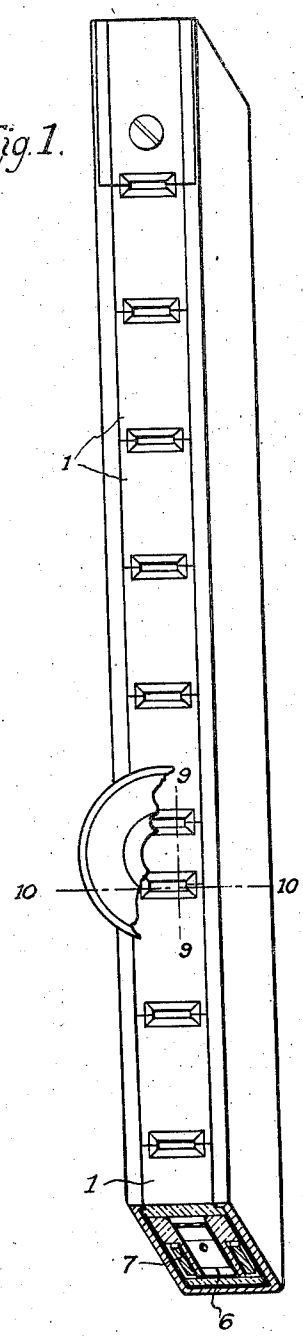



Fig. 3.

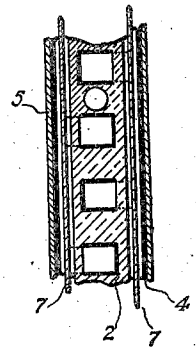



Fig. 2.

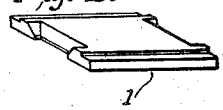



Fig. 4.

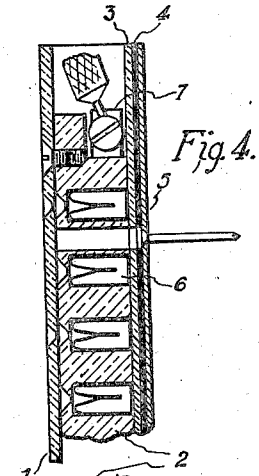



Fig. 5.

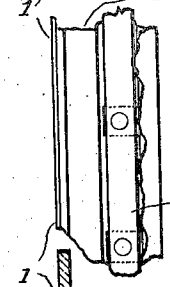



Fig. 6.

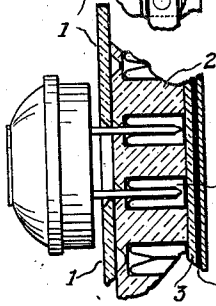
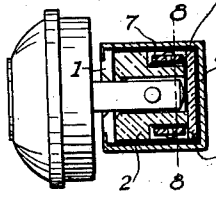



Fig. 7.




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Fig. 10.

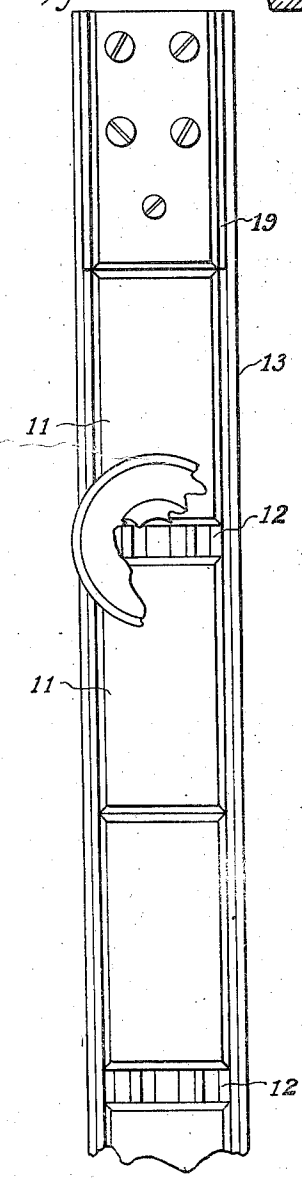



Fig. 11.

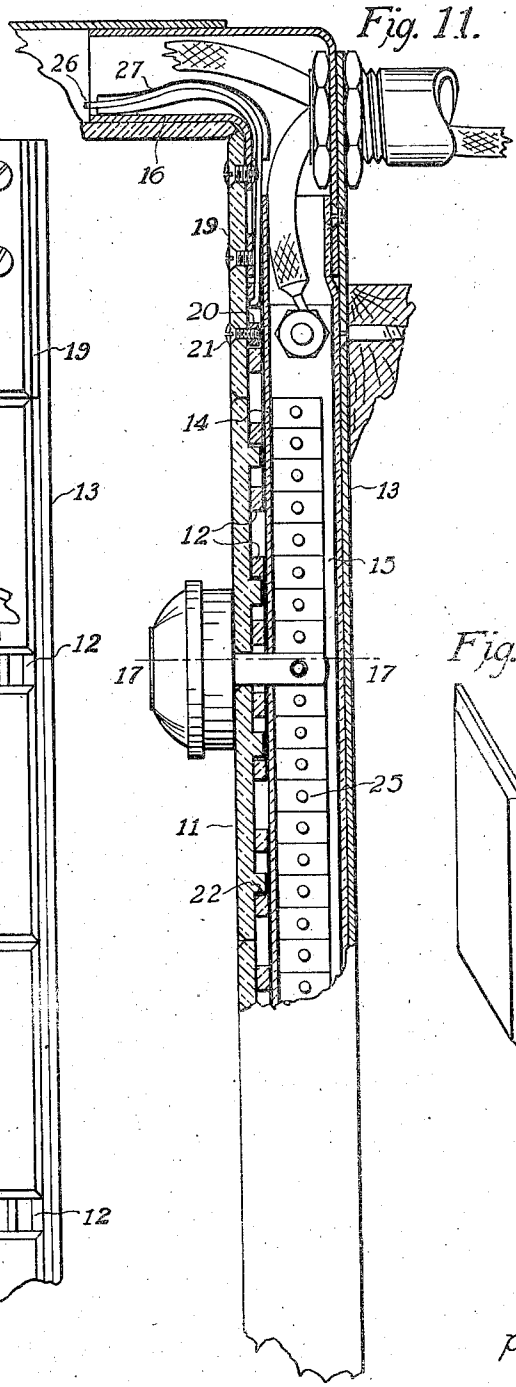



Fig. 12

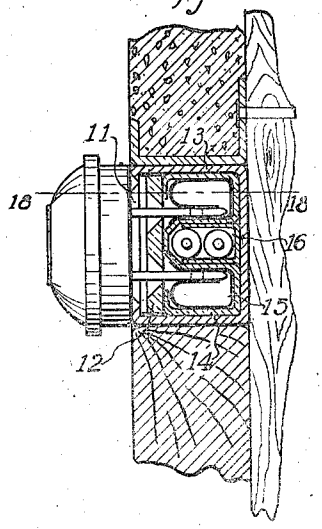



Fig. 8

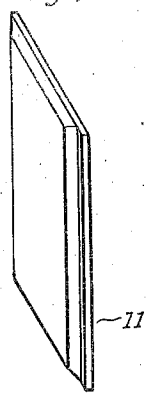
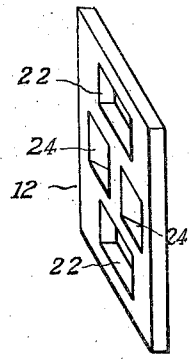



Fig. 9.




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Patented July 13, 1937 2,087,004

# UNITED STATES PATENT OFFICE

2,087,004

## CONTINUOUS RECEPTACLE FOR ELECTRICAL UTILITY PLUGS

Roy E. Quanstrom, Inglewood, Calif.

Application April 8, 1933, Serial No. 665,106

3 Claims. (Cl. 247—3)

My invention relates to improvements in electrical utility-plug receptacles which are ordinarily used in connecting portable light and appliance plugs to electrical circuits. The objects of my improvements are, first, to provide a receptacle of such unobstrusive appearance as to permit its harmonious use in any decorative scheme of a room; second, to make it easily possible to supply an adequate number of connecting points for electrical appliances in a room so that temporary and unsafe multi-tap plugs need not be used. Multi-tap plugs frequently cause ordinary stationary or sliding receptacles to be overloaded and this overloading constitutes a serious fire hazard which is minimized by my invention. Third, a further object is the elimination of long unsafe attachment cords with their attendant fire hazards by providing a truly convenient attachment point wherever a light or appliance is most likely to be used, namely, along any of the walls. Fourth, a further object is to encourage the installation of an adequate number of utility-plug connecting points in both new and old buildings by making one device accomplish the purpose of several separate devices.

I attain these objects by devices illustrated in the accompanying drawings, in which Figure 1 is a perspective view of one form of the receptacle with one end showing section; Figure 2 is a perspective view of the sliding panel which is the main feature of the invention; Figure 3 is a longitudinal section of the receptacle on line 8—8 Fig. 7; Figure 4 is a longitudinal section of one end of the receptacle on line 9—9 Fig. 1; Figure 5 is a view of one side of the receptacle with a wall and adjacent insulation cut away; Figure 6 is a longitudinal section of the receptacle on line 9—9 Fig. 1, showing the plug inserted; Figure 7 is a vertical transverse section on line 10—10 Fig. 1; Figure 8 is the sliding panel used in the second form of the invention; Figure 9 is a linking panel used only in the second form of my invention; Figure 10 is an elevation of one end of the second form of the receptacle; Figure 11 is a section on line 18—18 Fig. 12; and Figure 12 is a vertical transverse section on line 17—17 Fig. 11.

Similar numerals refer to similar parts throughout the several views.

The main housing 5 of the receptacle is a formed channel shown in section in Fig. 7. It is designed in lengths convenient for installation along the baseboard and flush with plaster line of a room. The inside of said housing 5 is lined with one piece of flexible sheet insulation 4. Immediately above and along the bottom of said insulation 4 is an additional strip of insulation 3 which I prefer to specify as being of hard phenol compound. Next above said insulating strip 3, is the main insulating body 2 which is seen in transverse section in Fig. 7, and in longitudinal horizontal section in Fig. 4. This insulator body 2 is preferably die-formed of phenol compound with a series of recesses along the center line equidistantly spaced substantially as shown in Figs. 3 and 4. Or, said recesses may be arranged in groups near the ends of panels 1, where said panels 1 are of considerable length. Contained within said recesses are contact clips 6 of any conventional form, the preferred form being shown in transverse section in Figs. 4 and 6. Said contact clips 6 are connected by riveting and/or soldering to the bus-bars 7—7 in the manner shown in Figs. 3, 5, and 7, where adjacent clips are of opposite electrical polarity. Thus any two adjacent clips may be plugged into and a circuit will be obtained. Bus-bars 7—7 are disposed in longitudinal recesses along each side of said insulating body 2 as shown in Figs. 1, 3, 5, and 7. Connection to the circuit feed wires is made by means of terminal screws on the end of said bus-bars 7, as shown in Fig. 4.

Above said insulating body 2 are sliding panels 1 which are also preferably of phenol-plastic compound. Panels 1 may be of any practical length, but not less than the longitudinal distance between any adjacent three of said contact clips. Thus, in order to connect a plug it is necessary to first spread apart two adjacent panels 1—1 until there is sufficient room between them for the plug contact blades as is evident in Fig. 6. Said panels 1 are held in place between the inwardly formed edges of said channel housing 5 and said insulator body 2. All these parts are sufficiently loose that said panels 1 may easily slide. The notch in each end of said panel 1 is an essential feature of panel 1 when it is used with the particular form of receptacle hereinbefore described. The depth of said notch must be at least one-half the thickness of the contact bayonet blades of the plug in order that the center of said contact clips 6 always be coincident with the end of a panel 1. Said notch may be additionally deformed to accommodate other blade placements of a plug. I prefer to bevel said notch to assist insertion of the plug contact blade. The total number of said panels is determined by the length of the receptacle minus the total spacing of the number of plugs to be connected. Said remaining distance is divided by

the length of said panel 1 to find the number of said panels 1 which is required. The space occupied by each plug is taken as the distance between the centers of the two contact blades. Thus a given number of plugs may be connected in a group near any point along the receptacle or, they may be spread out each to any desired location along the receptacle. But, the number of plugs which may at one time be directly connected to the receptacle cannot exceed the number of full spaces provided.

The plug-in spaces provided along one wall may be made available along another wall, which wall is at any angle to the first by including within the corner-piece 16 Fig. 11, a short flexible cable 26. Said cable 26 is attached to the nearest movable panels 1, or 11, at the adjacent ends of the two receptacles. Said cable 26 is surrounded by a close fitting tube 27 which is anchored securely at each end in said corner piece 16. The two panels nearest each other in the two receptacles thus move as a unit. In the second form of the receptacle the bar 20 is eliminated when this cable feature is employed.

Figure 10 is a perspective view of sliding panel 11 of insulating material which is used in another form of the continuous receptacle. Said panel 11 performs the same function in the assembly shown in Fig. 10, as does panel 1 in the assembly in Fig. 1.

Instead of one row of similar contact clips, this second assembly uses two rows of contact clips 15—15 shown in transverse section in Fig. 12 and in longitudinal section in Fig. 11. Each of these rows of clips 15 is formed of one strip of sheet spring-brass or bronze substantially as shown in Figs. 11 and 12. The flexible portion of clip 15 is divided into narrow strips as shown in Fig. 11. This allows the easy insertion of the bayonet contact blades and also makes a more perfect contact therewith. I prefer to punch upsets 25 in clip 15 which will engage with the hole found in the contact blades of most plugs. Each of said clips 15 is connected to the feed circuit wires by terminal screws as shown in Fig. 11. Said clips 15 are insulated from the channel housing 13 by a flexible sheet insulation 14.

Between said clips 15 and insulated therefrom by insulation 14 is a formed channel 16. This channel 16 serves to hold said clips 15 in position and also as an ordinary conduit for carrying extra wires.

Said panels 11 and sub-panels 12 slide in a groove formed in the same manner as hereinbefore described for panels 1 in Fig. 1. The boss 22 on the underside of panel 11 engages pocket 23 in sub-panel 12. Said panels 11—11 are thereby prevented from sliding apart to a greater distance than the width of the contact blades of a plug as illustrated in Figs. 10 and 11. In said sub-panels 12, I prefer to form the slots 24—24 with beveled edges to facilitate insertion of the contact blades. The bevel on the ends of panel 11 also assist insertion of the blades. The number of plugs which may be inserted in a given continuous-receptacle depends on the number of full width spaces left between the panels when finally assembled. A full width is taken as the width of the contact blades. The number of spaces so made available is fixed by local building ordinances.

Panel 19 is not movable but is attached to the corner-piece 16 and is furnished extra long so it may be cut off to proper length permitting proper alignment of the first panel 11 at time of installation. Part 20 is a bar secured by screw 21 which screw is located on panel 19 at time of installation. Said bar 20 serves the same purpose as boss 22 on panel 11.

These receptacles are ordinarily installed as a continuous element in the walls of a room and immediately above the base-board line as is evident in Fig. 12. The main channel-housings 5 and 13 are secured to the wall by flat-head screws as shown in Fig. 11. The use of a relatively short section of this receptacle along a wall does not change its purpose.

I claim:

1. An electrical receptacle of the class described, comprising, an elongated channel body of insulating material, elongated electrical conductors mounted within the channel body, contact means spaced at a plurality of points along the conductors to receive the prongs of an attachment plug through the open side of the channel body, a plurality of longitudinally slidable covers for the open side of the channel body the spacing between the contiguous cover ends being such as to permit the insertion of a predetermined number of plugs at any selected points along the body, but positively preventing the insertion of more than the predetermined number of plugs.

2. An electrical receptacle of the class described, comprising, an elongated channel body of insulating material, elongated electrical conductors mounted within the channel body, contact means spaced at a plurality of points along the conductors to receive the prongs of an attachment plug through the open side of the channel body, a plurality of longitudinally slidable covers for the open side of the channel body the spacing between the contiguous cover ends being such as to permit the insertion of a predetermined number of plugs at any selected points along the body, but positively preventing the insertion of more than the predetermined number of plugs, and slidable subcovers coacting with bosses on said covers to prevent the contiguous ends of the covers from separating farther than the width of a pair of contact prongs.

3. An electrical receptacle of the class described, comprising, an elongated channel body of insulating material, elongated electrical conductors mounted within the channel body, a plurality of longitudinally slidable covers for the open side of the channel body the spacing between the contiguous cover ends being such as to permit the insertion of a predetermined number of plugs at any selected points along the body, but positively preventing the insertion of more than the predetermined number of plugs, and attached to the end cover a wire slidably confined within a tube and its remaining end attached to an end cover plate of a duplicate associated receptacle causing the sliding motion of one end cover to be transmitted to its associated end cover thereby permitting the plug access restriction of one receptacle to be transferred to an associated receptacle.

ROY E. QUANSTROM.