

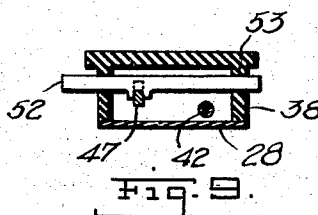
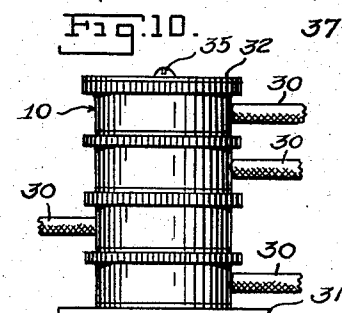
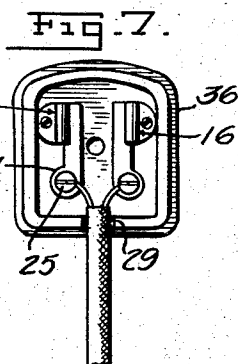
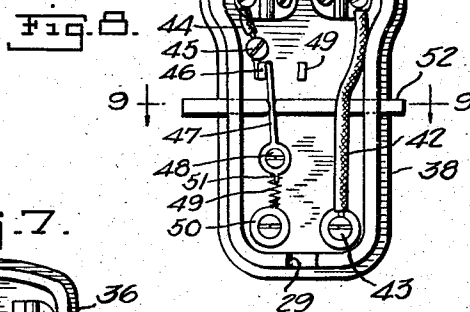
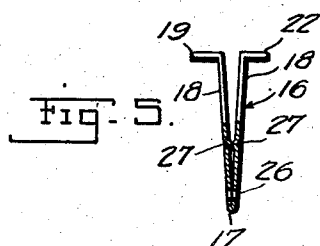
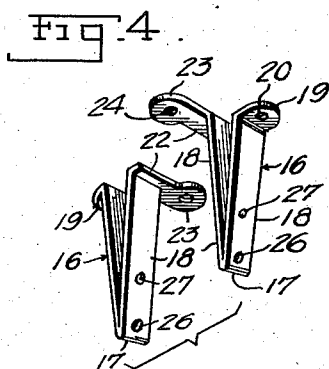
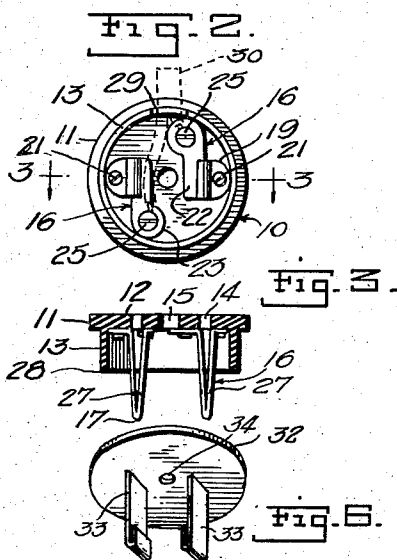
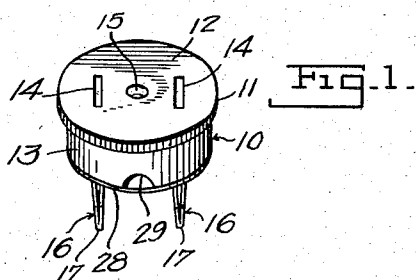
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ELECTRICAL PLUG

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ELECTRICAL PLUG

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1 Claim. (Cl. 200—51.02)

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This invention relates to electrical plugs.

Where it is desired to energize several electrical devices or appliances by plugging into a single outlet connection, it is the common practice to use a special connection plug having a single set of prongs insertable into the outlet connection and provided with a plurality of sets of slots in which are respectively insertable the plugs carried by the cords of the various appliances. The special plugs referred to are unsightly and clumsy and usually require insertion of the cord plugs at various angles.

An important object of the present invention is to provide a novel simple type of connection plug which may be used as standard equipment on all appliances and of such novel character as to permit the plugging in of the successive plugs of different appliances one on top of another without making a clumsy arrangement of plugs.

A further object is to provide a plug of this character which is exceptionally compact to minimize the projection from a wall of several of the plugs successively inserted in each other.

A further object is to provide such a plug wherein the insertable contacts projecting from each plug serve also as contacts receiving those of the next successive plug.

A further object is to provide a novel type of contact doubled back upon itself so that the projecting end of each contact firmly engages the contacts into which it is inserted, and which firmly engages each contact of the next successive plug and is expanded thereby to be more tightly held in position.

A further object is to provide a plug of the type referred to wherein the arrangement of parts is such that a succession of plugs, if desired, may be permanently bolted together as a single unit.

A further object is to provide, in combination with the type of plug referred to, a cover plate to positively close the openings of the last plug to prevent dirt or any foreign material from lodging in the contact openings, etc.

A further object is to provide a device of this character wherein each plug is provided at a readily accessible point with its own individual switch whereby any appliance can be cut out of operation without affecting the other appliances.

Other objects and advantages of the invention will become apparent from the following description.

In the drawing I have shown one embodiment of the invention. In this showing—

Figure 1 is a perspective view of one type of plug,

Figure 2 is a bottom plan view of the same showing the cover disk removed,

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Figure 3 is a transverse sectional view on line 3—3 of Figure 2,

Figure 4 is an enlarged detail perspective view of the pair of contact elements employed with the plug,

Figure 5 is a longitudinal sectional view through one of the contact elements,

Figure 6 is a perspective view of a cover plate adapted for use in connection with the device,

Figure 7 is a bottom plan view similar to Figure 2 showing a modified form of the device,

Figure 8 is a similar view showing a further modification,

Figure 9 is a transverse sectional view on line 9—9 of Figure 8, and,

Figure 10 is a plan view showing the arrangement of a plurality of the devices shown in Figures 1 and 7 as they would appear superimposed and in electrical engagement with a wall unit.

Referring to Figures 1 to 5 inclusive, the numeral 10 designates the body of the plug formed of insulating material and having an outstanding preferably milled flange 11 for convenience in inserting and removing the plug. As shown in Figure 3 the plug is formed with a head 12 of the edge of which the flange 11 is a continuation, and this head is formed integral with a cylindrical flange or skirt 13. The head 12 is provided with parallel prong receiving openings 14 and a central opening 15 for the reception of a bolt or screw for securing together a number of the plugs as will become apparent.

A pair of contact elements 16 of the type shown in Figures 4 and 5 are arranged in the skirt 13. The contacts 16 may be identical and as clearly shown in Figure 5 each contact is bent upon itself as at 17 to form integral spaced and slightly diverging contact strips 18 one of which is bent directly outwardly as at 19 and is apertured as at 20 to receive a fastening screw 21 (Figure 2) for holding the adjacent strip 18 fixed with respect to the head 12. The other contact strip 18 of each pair is bent outwardly as at 22 in the plane of the bent end 19 and is extended laterally with respect to the alignment of the two contacts 16 and terminates in an enlargement 23 apertured as at 24 to receive a screw 25 by means of which it is secured to the head 12. Adjacent the bend 17 of each contact unit 16 the strips 18 thereof are apertured as at 26 (Figures 4 and 5) and above such apertures each strip 18 is punched inwardly as at 27. This provides each strip 18 with an inwardly extending knob which will be received in the openings 26 of the next following contact 16, as will become apparent.

It will be apparent that the contact units 16 of each plug extend beyond the open end of the skirt 13 to be inserted through the openings 14 of an adjacent plug to be engaged between the

strips 18 of such adjacent plug. The open end of each plug is covered by a fiber disk 28 (Figure 1) which is conventional, this disk being apertured for the extension therethrough of the contact units 16. The skirt 13 is notched as at 29 for the reception of the lead wires extending into the plug. The disk 28 forms one wall of the opening defined by the notch 29 as will be apparent. The lead wire is indicated by dotted lines in Figure 2 and is designated by the numeral 30. The two individual wires thereof are connected to the respective contacts by the screws 25, these screws being somewhat larger than the screws 21 and serving as binding posts.

It will be apparent that a succession of the plugs referred to may be connected together with the prongs or contacts 16 of the first plug inserted into a conventional convenience outlet indicated generally in Figure 10 by the numeral 31. The outermost plug may be covered by a plate or disk 32 (Figure 6) which is preferably molded of hard insulating material and provided with projections 33 insertable in the openings 14 of the outermost plug. The projections 33 may be of any desired material and if formed of metal, they may be secured to the plate 32 in any suitable manner so long as they are electrically disconnected as will be obvious. The plate 32 is provided with an axial opening 34 to receive a bolt the head of which is indicated by the numeral 35 in Figure 10. Such bolt may extend through the openings 15 of the various plugs for securing them together as a unit.

In the form of the invention previously described the plug is circular in form and the binding posts 25 are arranged at opposite sides of the plug. Accordingly the respective lead wires will extend through the notch 29 and one will be directly connected to the adjacent binding post 25 while the other will extend across the plug as shown in dotted lines in Figure 2 to be attached to the other binding post 25. If both binding posts are desired to be arranged at the same side of the plug the form of the invention shown in Figure 7 may be employed. In this form of the invention the plug may be generally rectangular in shape, the body of the plug being indicated by the numeral 36. The plug body in cross-section will be substantially identical with the plug shown in Figure 3. In the form of the invention shown in Figure 7 the two contact units 16 will be the reverse of each other as will be obvious. Except for the portion to which the wires are connected, each of the contact units 16 will be identical with those previously described. Instead of having the enlargements 23 turned inwardly toward the center of the plug as in Figure 2, each of the contact units in Figure 7 will have an enlargement 37 turned outwardly and provided with the binding post 25. This arrangement permits both lead wires to be connected to their binding posts at the same side of the plug and spaces the binding posts a safe distance apart.

In the form of the invention shown in Figures 8 and 9 an elongated plug body 38 is employed to provide for a switch to cut off the electrical appliance connected to the plug. In the form of the invention shown in Figure 8 each of the strips 18 of each contact 16 may be directly turned outwardly as at 39, similar to the turned end 19 previously described. Each end of each contact is provided with an attaching screw the inner of which, indicated by the numeral 40, may be relatively small and the outer of which, indicated by

the numeral 41, may be somewhat larger to serve as a binding post. One of these binding posts is directly connected by a wire 42 to a binding post 43 in the remote end of the plug. The other binding post 41 is connected by a wire 44 to the binding post 45 of a switch contact 46. This contact is engageable by a switch arm 47 pivoted to the plug as at 48.

The switch arm 47 is shown in Figure 8 in engagement with the contact 46 and is movable into engagement with a stop 49 which may be formed integral with the top of the plug body. A snap-over spring 49 has electrical and mechanical connection with a binding post 50 and is engaged over a projection 51 carried by the switch arm 47 at the side thereof opposite the arm 47. Accordingly the spring 49 will hold the switch arm 47 in engagement with either the contact 46 or stop 49.

Referring to Figures 8 and 9 the numeral 52 indicates an operating rod for the switch arm 47. These two elements have notched engagement with each other as shown in Figure 9 and the rod 52 slides in openings 53 formed in the side walls of the plug. The rod 52 obviously may be pushed back and forth to open and closed position.

The operation of the form of the device shown in Figures 1 to 5 inclusive will be obvious from the foregoing description. Each contact unit 16 will be formed of resilient material and when the projecting portions or prongs of each contact unit are inserted into a wall outlet, these prongs will function in the same manner as conventional plug prongs. The prongs of the next successive plug will be inserted through the openings 14 and between the contact strips 18 of the pairs associated with the preceding plug. The second plug will be pushed inwardly until the base of the plug or the closure element 28 contacts with the top of the preceding plug. At such time, the openings 26 of the second plug will snap over the lugs 27 of the first plug to be effectively held in position thereby. It will be apparent that the inserting of the second plug tends to spread the strips of the preceding pairs 18 to cause them to more tightly hold within their socket and will also cause a relatively tight gripping action between the contact units 16 of the two plugs which are in engagement with each other. The same is true with respect to successive plugs as will be obvious. The simple construction of the device permits the plug to be made relatively shallow as indicated in Figures 1, 3 and 10 and accordingly a substantial number of the plugs may be inserted one on top of the other without making a bulky series of connections as is true with the use of a special multi-outlet connecting plug inserted into a wall socket. The assembly of the present plugs will be neat and compact and the structural features of the contact units 16 cause the plugs to be held in firm engagement with each other. Any tendency for the plugs to work loose or sag and destroy or impair the proper electrical connection will be greatly minimized. If desired, a plurality of the plugs, particularly if they are to be left permanently in position, may be bolted together as suggested in Figure 10.

So far as the plug-in features of the device is concerned, the operation of all of the forms of plug illustrated will be identical. The form of the plug in Figures 1 and 2 is advantageous over the plug shown in Figure 7 only because it is slightly smaller in outside dimensions, although it is no

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shallower in its axial depth. As stated, one of the lead wires must pass almost entirely across the device in Figure 2 for connection with the remote binding post 25. This is no particular disadvantage, but the arrangement shown in Figure 7 is preferred since both wires may be easily simultaneously cut and stripped the same length for connection with the binding posts 25 adjacent the inlet notch 29.

The form of the invention shown in Figure 8, while obviously slightly more expensive to manufacture and somewhat bulkier, is of the same depth as the other forms of the device and is advantageous for the reason that it provides a separate cutoff switch for controlling each individual appliance without affecting the others. The greater length of the plug in Figure 8 is slightly advantageous in that it further eliminates any tendency for the plugs to sag because of its substantial area.

The cover plate 32 may be employed in the form of the invention shown in Figures 1 to 5 inclusive to form a positive closure for the outermost plug. The same arrangement may be employed with the plugs shown in Figures 7 and 8 except that the plate 32 obviously will be shaped to correspond to the shape of the particular plug body.

It will be apparent that for economy in manufacture all of the plugs of a given type will be made identical with each other. However, if it is desired to extend the lead wires 30 of the several appliances in different directions, it will be apparent that the various plugs may be inserted 180 degrees with respect to each other. For example, in Figure 10 three of the lead wires 30 of different appliances have been shown extending toward the right whereas one of the lead wires is shown turned 180 degrees with respect to the other lead wires to extend toward the left.

It is to be understood that the form of the invention herewith shown and described is to be taken as a preferred example of the same and that various changes in the shape, size and arrangement of parts may be resorted to without depart-

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ing from the spirit of the invention or the scope of the subjoined claim.

I claim:

An electrical connection plug comprising a plug body having one wall provided with spaced parallel prong-receiving openings, a pair of contact elements connected to said body therewithin and having portions projecting from the side of said body opposite said openings, the projecting portions of said contact elements constituting prongs corresponding in arrangement to said openings, each of said contact elements comprising a pair of contact strips having their portions within said plug body forming contact sockets engageable with prongs inserted through said openings, said plug body having a hollow laterally projecting integral portion, a pair of binding posts carried by said projecting portion remote from said contact elements, and switch means within the projecting portion of said body for controlling electrical connection between said contact elements and said binding posts.

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