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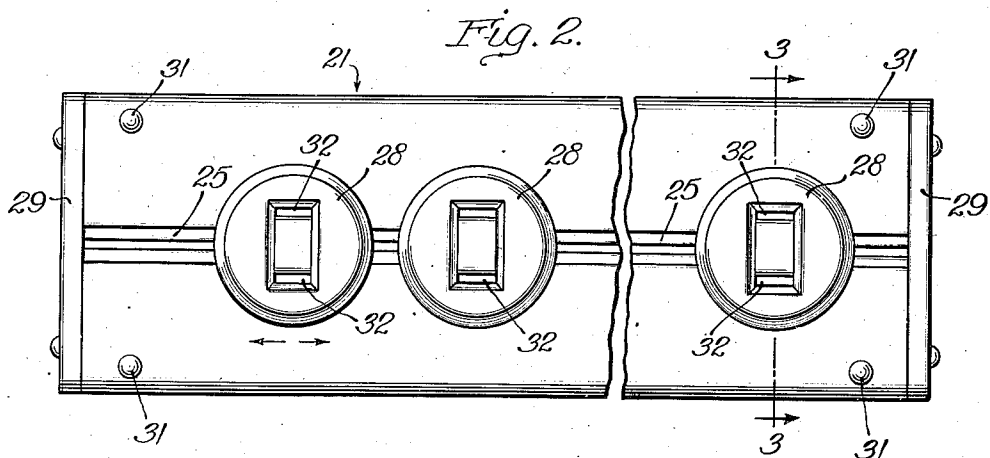
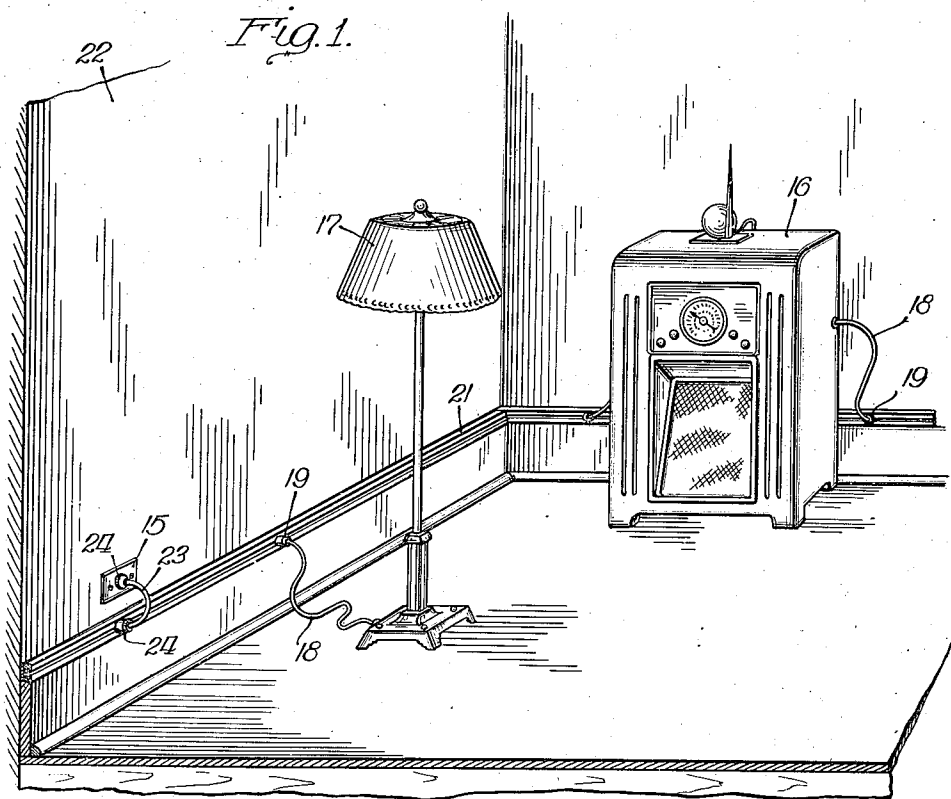
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2,279,383

ELECTRICAL OUTLET

Filed April 24, 1939

2 Sheets-Sheet 1



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April 14, 1942.

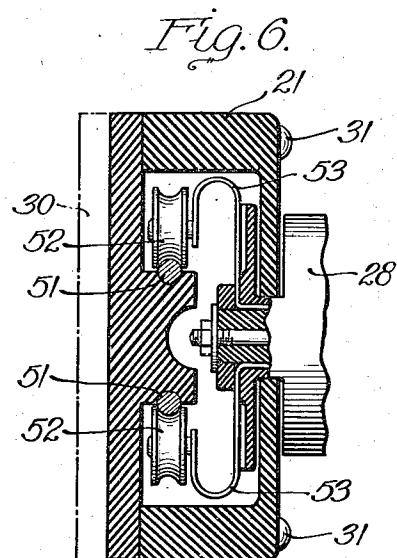
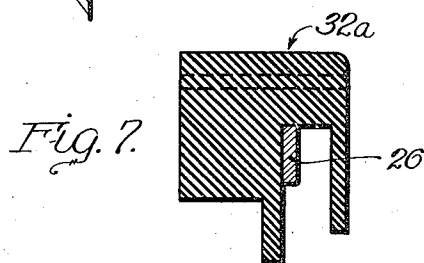
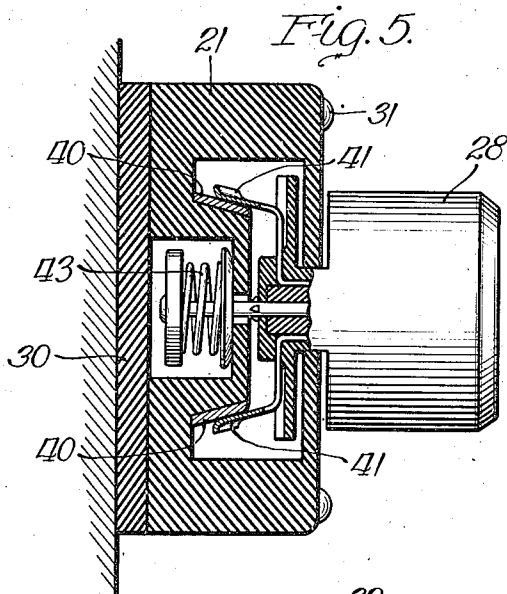
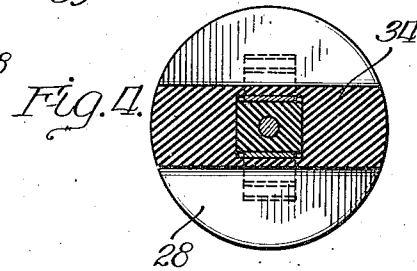
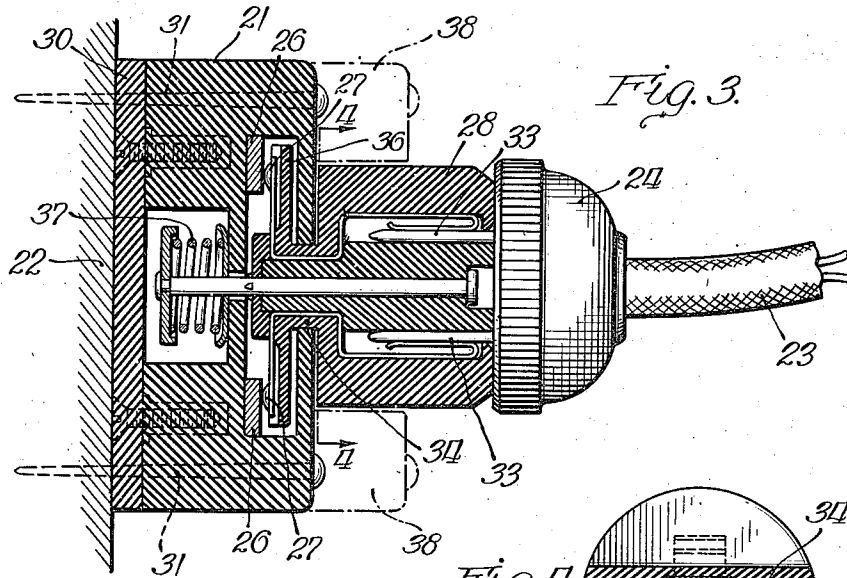
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ELECTRICAL OUTLET

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2 Sheets-Sheet 2



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UNITED STATES PATENT OFFICE

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ELECTRICAL OUTLET

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10 Claims. (Cl. 191—23)

This invention relates to electrical outlets, and particularly to continuous electrical outlets.

The continuous electrical outlet of the present invention is adapted to be provided in strips of any desired length, having associated therewith and adjustable along such length, one or more outlet plugs which are adapted to cooperate with the usual attachment plugs connecting electrical apparatus to a source of electrical energy.

Such a novel continuous electrical outlet may be advantageously employed in domestic or household, automotive, laboratory or other electrical distribution systems for providing convenient terminals for electrical apparatus to obviate long, unsightly and awkward drop or extension cords and the dangers attending amateur wiring.

One of the difficulties encountered in prior so-called continuous electrical outlets is that such outlets are provided with two slots opening directly upon electrical conductors or bus bars, thus permitting direct electrical connection with the prongs of a conventional attachment plug. These prior constructions are unsatisfactory in that they permit direct access to the electrical conductors, so that children are unnecessarily and dangerously exposed to electrical shocks.

In the construction of the present invention, only a single continuous slot or opening is provided along the front face of the continuous electrical outlet, and the electrical conducting members or bus bars within the continuous electrical outlet are positioned relatively remotely from the single continuous slot or opening so that accidental connection with the current conducting members cannot be made from the exterior of the device.

A further disadvantage of prior constructions providing two continuous slots for the insertion of the prongs of attachment plugs therein at any point along the length of the device resides in the fact that an undesirably large number of such attachment plugs may be connected to the outlet at any one time, resulting in overloading of the circuit, with corresponding fire hazards.

The present invention is arranged to avoid such overloading of the electrical circuit by the provision of a definite number of outlet plugs calculated in accordance with the normal load permissible in the electrical circuit involved. Thus in accordance with the present invention, a predetermined desired number of electrical outlet plugs are operatively associated with the continuous electrical outlet, and are adjustable substantially along the entire length of the outlet, in the single slot or opening provided therein, thus en-

abling such outlet plugs to assume any desired position along the length of the continuous electrical outlet. The number of outlet plugs is predetermined by the electrical capacity of the circuit to which the continuous electrical outlet is connected, thus tending to prevent electrical overloading of the circuit as a whole, while at the same time providing great flexibility of position of the outlet plugs, since any given plug can be adjusted along substantially the entire length of the continuous electrical outlet.

In the accompanying drawings:

Figure 1 is a fragmentary elevation of a room employing a continuous electrical outlet embodying the features of the present invention;

Figure 2 is an enlarged front view of a section of the continuous electrical outlet shown in Figure 1;

Figure 3 is an enlarged section along the lines 3—3 of Figure 2;

Figure 4 is an enlarged section along the lines 4—4 of Figure 3;

Figure 5 is an enlarged section similar to that shown in Figure 3, but illustrating a modification of the invention;

Figure 6 is a section similar to Figure 3 but showing a further modification of the invention; and

Figure 7 is a section of one portion of the continuous electrical outlet shown in Figure 3.

The invention comprises a continuous electrical outlet strip having a single continuous opening or slot therein adapted to receive one or more outlet plugs, each of which is adjustable throughout substantially the entire length of the outlet strip.

The outlet strip may be formed of electrical insulating material such as a rubber, or it may be formed of non-insulating material such as metal, with the interior thereof electrically insulated. Also the outlet strip may be of rigid construction or it may be flexible so as to enable it to be bent upon itself to conform to the wall surface to which it is to be attached, and also to enable the flexible strip to be rolled upon itself and sold on the market in rolls.

Referring to Figure 1, various electrical appliances, such as a radio 15 and a lamp 17 may be arranged at any desired location in a room, irrespective of the location of the outlet 15 and may be supplied with electrical energy through cables or cords 18 having conventional attachment plugs 19 by "plugging in" a continuous outlet 21 secured to supporting surfaces or walls 22. The continuous outlet 21 is energized from the

house wiring system by, for example, a cord 23 having a conventional attachment plug 24 at each end thereof for plugging in to the conventional outlet 15 and the continuous outlet 21.

The outlet strip 21 has a single continuous opening or slot 25 in its front base. It also has two continuous electrical conductors or bus bars 26 mounted in the interior thereof adjacent to but protected from direct exposure to the continuous slot or opening 25. The conductors 26 comprise copper strips or wires mounted in the outlet strip for electrical contact with the cooperating conducting members 27 on the outlet plug 28, but sufficiently inaccessible to the single continuous slot 25 in the front face of the outlet strip 21 so that objects accidentally or mischievously inserted in the slot 25 will not contact the copper strips or bars 26.

In the embodiment of the invention shown in Figure 3, the copper strips or bars 26 are mounted to face the front of the device. The ends of the copper strips or bars can be bent over the ends of the outlet strip and fastened thereto in any suitable manner, for example by the use of the usual fastening members such as nails, screws or the like, or by bonding the copper strips or bars to the outlet strip by means of cement or the like. Also the copper strips or bars may be bonded throughout their length or at spaced intervals along their length to the outlet strip by cement or the like, or in any other known manner.

The outlet strip 21 is arranged so that the outlet plugs 28 can be inserted into the outlet strip at, for example, an end thereof. The ends of the strip are closed by detachable end plates 29. Thus a given number of outlet plugs 28 may be inserted in the outlet strip 21, depending upon the electrical capacity of the circuit to which the strip is attached, thus tending to prevent electrical overloading while at the same time providing great flexibility of position of the outlet plugs, since any given plug can be adjusted along substantially the entire length of the strip.

The back of the strip may be open and can be attached directly to the wall structure 22, or a backing plate 30 can be provided for the outlet strip. The outlet strip 21 or the backing plate 30 together with the outlet strip 21 can be fastened to the wall structure 22 in any known manner, for example by nails, screws or the like 31.

If desired, the outlet strip can be constructed in two sections, as shown in Figure 7, each section 32a carrying one of the conductors or bus bars 26 and each section being adapted to be locked in cooperating position with respect to the other section by means of the nails, screws or the like 31 which fasten the outlet strip to the wall structure 22 or to the backing plate 30. If desired, the two sections can be of precisely the same cross-sectional contour so as to facilitate the manufacture thereof.

The outlet plug 28 is adapted at its inner end by means of contact members 27 to provide electrical connection with the conductors or bus bars 26 in the outlet strip 21. The outer face of the outlet plug 28 is provided with the usual two openings 32 adapted to receive the usual prongs 33 of the conventional attachment plug 24. The outlet plug 28 has a restricted portion 34 intermediate its two ends adapted to pass through the single continuous slot 25 in the outlet strip 21, and an enlarged portion 36 carrying the two contact members 27, each adapted to

contact electrically with one of the conductors or bus bars 26 within the outlet strip. The neck portion 34 of the outlet plug 28 is square, rectangular or other suitable shape to prevent the plug 28 from turning or rotating in the slot 25.

The outlet plug 28 is pressed by a spring 37 in a direction to cause electrical contact between the contact members 27 on the plug 28 and the conductors or bus bars 26 within the continuous outlet strip 21. The outlet plug 28 fits sufficiently loosely within the opening or slot 25 in the continuous outlet strip so that it may be moved outwardly out of contact with the conductors or bus bars 26 in the continuous strip 21, against the pressure of the spring 37, and adjusted to any position along the continuous electrical outlet 21, and when released, the spring 37 will again automatically press the contact member 27 on the outlet plug into electrical contact with the conductors or bus bars 26 within the continuous outlet strip. Alternatively, the outlet plug can be adjusted along the slot 25 merely by sliding the plug 28 and the contact members 27 mounted thereon, along the surface of the conductors or bus bars 26.

If desired, the outlet strip can be extended forwardly as shown in dotted lines in Figure 3, and designated by the numeral 38, so as to complement the outer surface of the plug 28. The portion 38 may extend for the entire depth of the plug 28 or any portion of the depth of the plug 28, depending upon the desired appearance of the composite structure, and upon whether the outlet strip 21 will be set into a recess in the supporting or wall structure 22 or mounted upon the surface thereof.

Figure 5 shows a modification of the construction of the outlet plug 28 in which the electrical conductors or bus bars 40 are mounted so that one of the electrical conductors or bus bars faces upwardly and the other faces downwardly for electrical contact with cooperating inclined electrical contact members 41 on the plug 28. When thus mounted, the conductors or bus bars 40 can be mounted at a slight angle from the horizontal so that the contact members 41 on the outlet plug are pressed into contact with the conductors or bus bars 40 by means of the spring 43. In this way the contact members 41 are moved by spring pressure into wedging electrical contact with the conductors or bus bars 40 and thus improve the electrical contact between the same. In all other respects the outlet strip and the outlet plug are the same as in the construction illustrated in Figure 3. In this embodiment the contact members 41 slide along the surface of the inclined conductors 40 as the outlet plug 28 is adjusted along the length of the outlet strip, or conversely, sufficient clearance is provided so that the plug 28 can be moved slightly outwardly, against the pressure of the spring 43, and thereafter move along the length of the outlet strip while the contact members 41 are out of contact with the conductors 40, the same as explained in connection with the construction shown in Figure 3.

Figure 6 discloses a further modification of the invention in which the conductors in the outlet strip are in the form of circular conductors or wires 51. These wires are adapted to cooperate with rollers 52 to provide electrical connection between the conductors 51 and the outlet plug 28. The rollers 52 are mounted by means of springs 53 which press the rollers 52 into good

electrical contact with the circular conductors or wires 51. In this embodiment the rollers 52 roll over the circular conductors or wires 51 as the outlet plug 28 is adjusted along the length of the continuous outlet. In all other respects the construction shown in Figure 6 is the same as shown in Figure 3 except that no additional spring means need be provided in view of the fact that the rollers 52 are pressed against the circular conductors or wires 51 by the leaf springs 53 by which they are supported. It will be appreciated of course that instead of using flat conductors 26 in Figure 3, or conductors 40 as shown in Figure 5, circular conductors or wires could be employed, and the same sliding contact could be made with these circular conductors in the manner explained in connection with Figures 3 and 5.

In each of the three embodiments, it will be understood that the moulding strip 21 may be made of rubber, a rubber composition, or some other insulating material such as wood or Bakelite. In the case of rubber, the rubber may be of a resilient type, thereby providing elasticity by which the conductors 26, 40 or 51 may be pressed against the cooperating contact members 27, 41 or 52 and in this way supplement the pressure supplied by the springs 31, 43 or 53.

The continuous electrical outlet already described is adapted to be provided in strips of any desired length and a number of such strips may be electrically connected together end-to-end, in coaxial relationship, or in angular relationship to suit the particular configuration of the surface to which the electrified moulding or continuous outlet is attached. The electrical connection between successive lengths of the electrical moulding can be effected by soldering or connecting together in any known manner adjacent edges of the conductors 26. Of course where two successive lengths are positioned adjacent to each other, the detachable end plates between these two successive lengths can be omitted.

In those embodiments of the invention in which circular conductors, wires or other flexible conductors are employed as the conductors for the outlet strip, and where such flexible conductors are used in conjunction with a strip of flexible rubber, the composite structure will be flexible. Accordingly, such a structure can be made to conform to the supporting or wall structure to which it is attached, without requiring connections between successive lengths, as the entire outlet can be made in a single length, and conformed to the various variations and corners in the supporting or wall structure. Furthermore, where the composite outlet is a flexible composite structure, the entire structure can be arranged in rolls, which will facilitate its transportation and sale to the general public. It will be appreciated of course that such composite flexible structure need not have the outlet plugs 28 applied thereto while the structure is in the form of a roll, as such outlet plugs can be inserted for example at an end thereof, after the flexible structure has been unrolled and prepared for attachment to the supporting structure or wall to which it is to be applied.

While the invention has been described for use in connection with house wiring systems, it will be understood that the continuous outlet may be employed in various other electrical systems where attaching surfaces are provided and where

it is desirable to distribute electrical energy to a number of electrical appliances.

Various changes in the specific construction and arrangement of the parts will be apparent to one skilled in the art, and accordingly no limitation is to be understood from the specific disclosure of the invention, except as hereinafter set forth in the claims.

Having thus described the invention, what is claimed and desired to secure by United States Letters Patent is:

1. A continuous electrical outlet comprising a strip of flexible insulating material having a slot of uniform width throughout extending longitudinally of the strip and adapted to receive at least one outlet plug capable of adjustment substantially throughout the length of said slot, electrical conductors supported by said strip within said slot, said outlet plug having contact members cooperating with said electrical conductors, said outlet plug having means for preventing rotary movement of said plug as it is being adjusted along the length of said slot, resilient means arranged within said strip and operatively associated with said plug for urging said plug in a direction to enhance the electrical contact between said contact members and the electrical conductors.

2. A continuous electrical outlet comprising a strip of insulating material having a slot extending longitudinally thereof and adapted to receive at least one outlet plug capable of adjustment substantially throughout the length of said slot, electrical conductors supported by said strip within said slot, said outlet plug having contact members cooperating with said electrical conductors, said outlet plug being capable of limited movement transversely of said strip relative to said slot in a direction toward and away from said conductors, a recess extending longitudinally of the strip along the back face thereof, and spring means arranged within said recess and operatively associated with said plug for drawing said plug inwardly in said slot in a direction to enhance the electrical contact between said contact members and said electrical conductors.

3. A continuous electrical outlet comprising a strip of yieldable insulating material composed of two parallel symmetrical separable sections defining therebetween a slot of uniform width extending longitudinally of the strip and adapted non-rotatably but slidably to receive at least one outlet plug capable of adjustment substantially throughout the length of said slot, a pair of electrical conductors each supported by one of said strip sections, said outlet plug having a portion engaging behind said slot and of greater width than said slot and having contact members cooperating with said electrical conductors, said electrical conductors being yieldably supported by said strip sections whereby they are yieldably urged toward said contact members.

4. A continuous electrical outlet comprising a strip of insulating material composed of two parallel symmetrical separable sections, each section having a sloping surface and supporting thereon an electrical conductor extending longitudinally of such section, said sections defining therebetween a slot extending longitudinally of the strip and adapted to receive at least one outlet plug capable of adjustment substantially throughout the length of said slot, said sloping surfaces converging toward the forward face of

the strip, said outlet plug having contact members inclined parallel to the sloping surfaces of said sections and cooperating with said electrical conductors, and spring means arranged between said strip sections and operatively associated with said outlet plug to urge the same relative to said strip sections in a direction to enhance the contact between said contact members and said electrical conductors.

5. A continuous electrical outlet according to claim 4, wherein said two sections are of identical cross-sectional contour.

6. A continuous electrical outlet comprising a strip of insulating material having a single slot extending longitudinally of the strip and adapted to receive at least one outlet plug capable of adjustment substantially throughout the length of said slot, said strip supporting within said slot electrical conductors extending lengthwise of said slot, said conductors having within said slot exposed surfaces inclined toward each other and converging toward the entry end of said slot, said outlet plug having contact members inclined similarly to said exposed surfaces for electrical engagement therewith, said plug being non-rotatably and non-removably associated with said slot, and means in said slot for resiliently urging said contact members into electrical engagement with said exposed surfaces.

7. A continuous electrical outlet comprising a strip of flexible insulating material having a slot extending longitudinally of the strip and adapted to receive at least one outlet plug capable of adjustment substantially throughout the length of said slot, a pair of flexible electrical conductors supported by said strip within said slot in mutually insulated relationship, said outlet plug having openings at one end for receiving the prongs of a conventional attachment plug, said outlet plug having contact members at its other end cooperating with said electrical conductors, and resilient means arranged within said strip and operatively associated with said plug for urging said plug in a direction to enhance the elec-

trical contact between said contact members and said flexible conductors.

8. A continuous electrical outlet according to claim 3, wherein said two strip sections are of identical cross-sectional contour.

9. A continuous electrical outlet comprising a strip of insulating material having a single slot extending longitudinally of the strip and adapted to receive at least one outlet plug capable of adjustment substantially throughout the length of said slot, said strip including a portion having oppositely inclined faces within said slot converging toward the inlet end of said slot, said portion supporting electrical conductors extending longitudinally of said slot, each of said conductors being exposed to said slot at one of said oppositely inclined faces, said outlet plug having contact members inclined similarly to said oppositely inclined faces of the strip for electrical engagement with said conductors, and means in said slot operatively associated with said plug for urging said plug in a direction causing said contact members to ride up on said oppositely inclined faces of the strip so as to enhance the electrical engagement of said contact members with said electrical conductors.

10. A continuous electrical outlet comprising a strip of insulating material having a slot extending longitudinally of the strip and adapted to receive at least one outlet plug capable of adjustment substantially throughout the length of said slot, said outlet plug having a portion of insulating material passing through said slot and carrying contact members, electrical conductors supported by said strip within said slot and extending lengthwise thereof, said conductors having contact faces positioned on an incline relative to each other and converging toward the entry end of said slot, the ends of said contact members being relatively rigid and directed substantially parallel to said contact faces for electrical engagement with said electrical conductors.

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