May 18, 1943 G. H. VON GEHR 2,319,375

ELECTRICAL OUTLET

Original Filed April 24, 1939 2 Sheets-Sheet 1

Fig. 1.

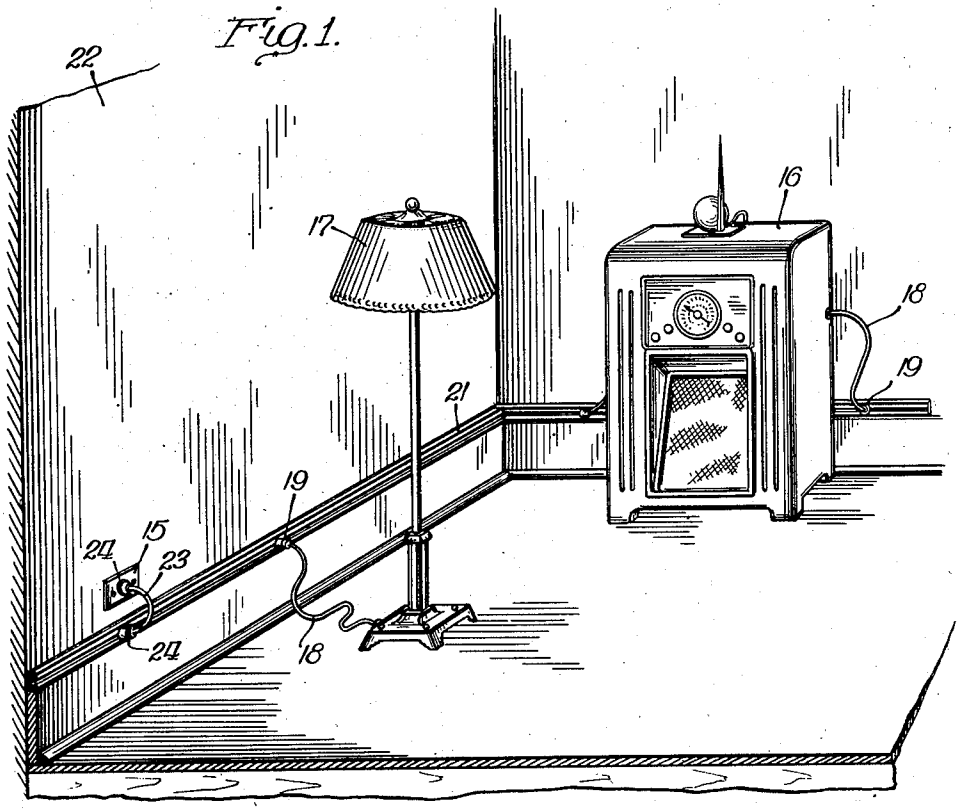
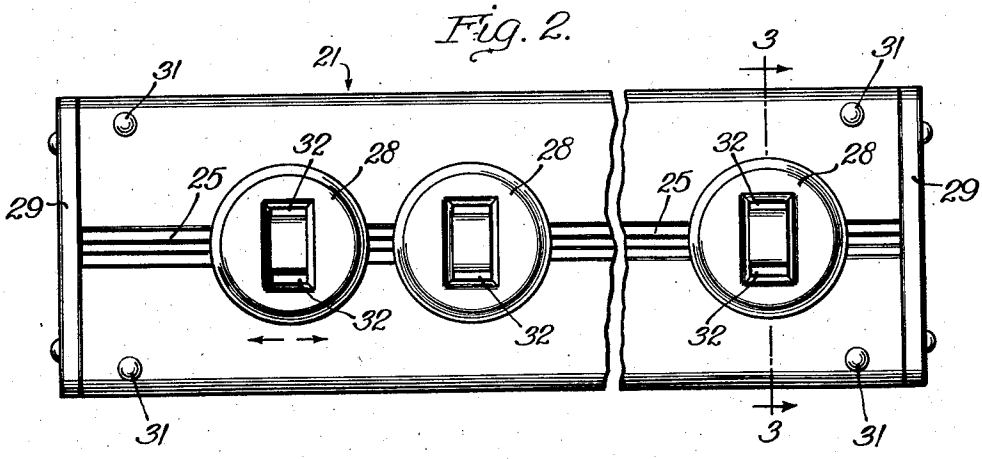


Fig. 2.



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Fig. 3.

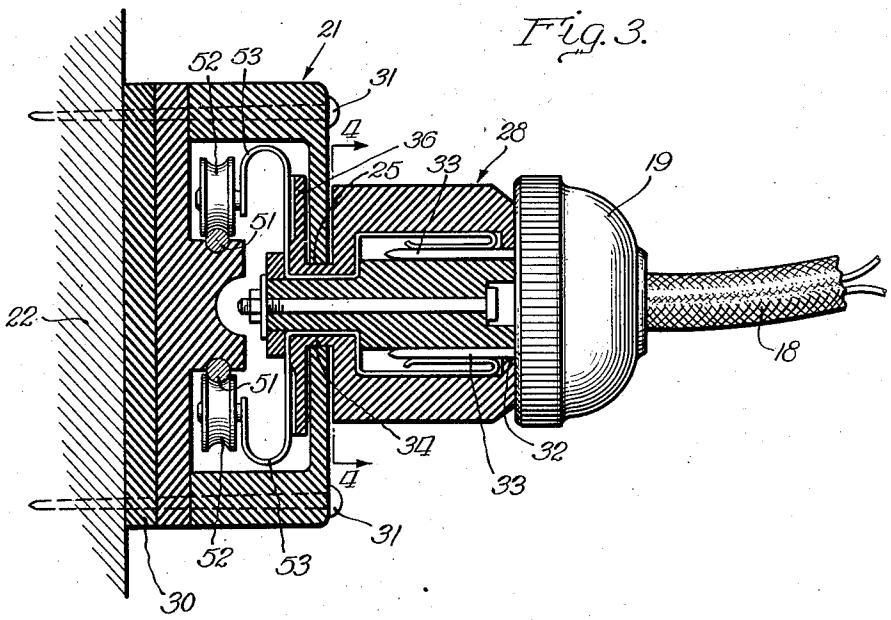
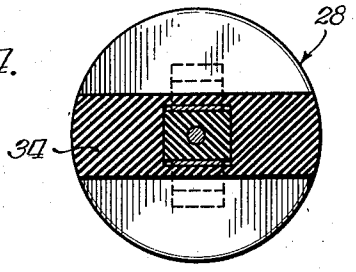


Fig. 4.



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UNITED STATES PATENT OFFICE

2,319,375

ELECTRICAL OUTLET

George H. Von Gehr, Chicago, Ill.

Original application April 24, 1939, Serial No. 269,553, now Patent No. 2,279,383, dated April 14, 1942. Divided and this application October 16, 1941, Serial No. 415,176

5 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 or adaptor 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 tends 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 enabling 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 line 3—3 of Figure 2; and

Figure 4 is a section along the line 4—4 of 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 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 16 and a lamp 17 may be arranged at any desired location in a room, irrespective of the location of the wall 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 face. It also has two continuous electrical conductors or bus bars 51 mounted in the interior thereof adjacent to but

protected from direct exposure to the continuous slot or opening 25. The conductors 51 comprise copper strips or wires mounted in the outlet strip for electrical contact with the cooperating conducting members on one or more outlet plugs 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 51.

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 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.

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 19 or 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 supporting the two contact springs 53, each carrying a roller 52 adapted to contact electrically with one of the conductors or bus bars 51 within the outlet strip. The neck portion 34 of the outlet plug 28 is square, rectangular (as shown in Fig. 4) or other suitable shape to prevent the plug 28 from turning or rotating in the slot 25.

The wires 51 are adapted to cooperate with the rollers 52 to provide electrical connection between the conductors 51 and the outlet plug 28. The springs 53 press the rollers 52 into good electrical contact with the circular conductors or wires 51. 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.

It will be understood that the molding 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 may be pressed against the cooperating contact members 52 and in this way supplement the pressure supplied by the springs 53.

The continuous electrical outlet herein 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 alignment or in an angular relationship to suit the particular configuration of the surface to which the continuous outlet is attached. The electrical connection between successive lengths of the electrical molding 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 the illustrated embodiment of the invention in which flexible circular conductors or wires are employed 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.

As the contact springs 53 provide resiliency not only for urging the rollers 52 into contact with the wires 51 but also in a direction longitudinally of the outlet plug 28, the effective contact between the rollers and wires will be maintained even where the molding strip 21 is slightly bent to conform to curvatures in the supporting wall structure.

Furthermore, where the composite outlet is a flexible composite structure, the entire structure can be wound 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.

This application is a divisional of my co-pending patent application Serial No. 269,553 for "Electrical outlet," filed April 24, 1939, now Patent No. 2,279,383, dated April 14, 1942.

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 yieldable insulating material having a slot extending longitudinally of the strip and adapted to receive at least one adaptor plug capable of adjustment substantially throughout the length of said slot, cylindrical electrical conductors or wires supported by said yieldable insulating material within said slot and extending longitudinally thereof, said adaptor plug having contact rollers cooperating with said cylindrical conductors or wires, each of said rollers having

associated therewith a spring for urging the roller into electrical engagement with the cooperating cylindrical conductor or wire.

2. 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 openings for receiving the prongs of a conventional attachment plug, said outlet plug having contact members cooperating with electrical conductors supported by said insulating strip, said electrical conductors being in the form of cylindrical conductors or wires, said contact members comprising rollers each of which has associated therewith a spring for urging the roller into electrical engagement with the cooperating cylindrical conductor, and the insulating strip comprising a strip of yieldable insulating material, whereby the cylindrical conductors mounted on said yieldable insulating strip are yieldably urged toward the rollers.

3. 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, said outlet plug having openings for receiving the prongs of a conventional attachment plug, flexible cylindrical conductors supported by said strip within said slot, said outlet plug having contact rollers each carried by a spring, said springs tending to urge said rollers toward each other and into engagement with said electrical conductors but adapted to yield also in the direction of the axis of the outlet plug, said conductors being supported on a portion of the strip extending between said springs.

4. An outlet plug for use in a continuous electrical outlet including a strip of insulating material having a slot extending longitudinally thereof and having electrical conductors supported by said insulating strip in parallel relation to said slot, said outlet plug comprising a body portion having in one end spaced openings for receiving the prongs of a conventional attachment plug, a reduced neck portion adjoining the opposite end of said body portion adapted to pass through said slot in said strip, an enlarged end portion adjoining said reduced neck portion, and a pair of contact members, each contact member comprising an integral strip of resilient metal having one end portion projecting into one of said prong-receiving openings, an intermediate portion passing through said reduced neck portion and a U-shaped opposite end portion adapted to extend into said slot, a contact roller being rotatably mounted on the free leg of said U-shaped portion, said contact members being arranged substantially in a single plane through the axis of the outlet plug and said U-shaped end portions being positioned symmetrically with respect to said axis and adapted to urge said rollers toward each other and into electrical contact with said conductors in said slot.

5. 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 adaptor plug capable of adjustment substantially throughout the length of said slot, a portion of said insulating material projecting into said slot and extending lengthwise thereof and being bounded on opposite sides by substantially flat, substantially parallel faces, wires of circular cross-section embedded within said projecting portion of said insulating material and extending longitudinally of said slot but having a portion of their cross-section projecting from said insulating material at said faces, said adaptor plug having openings for receiving the prongs of a conventional attachment plug, said adaptor plug having contact members, each contact member having its outer end portion extending into one of said openings and having a resilient U-shaped inner end portion projecting freely from said adaptor plug into said slot, the U-shaped inner end portions of said contact members being arranged in substantially a single plane through the axis of the adaptor plug and symmetrically to said axis, peripherally grooved contact rollers mounted at the free ends of said U-shaped end portions, said U-shaped end portions resiliently urging said rollers toward each other and into electrical engagement with the exposed portions of the wires on the opposite faces of said projecting portion of the insulating material.

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