Oct. 26, 1943. G. H. VON GEHR 2,332,766

ELECTRICAL OUTLET

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Fig. 1.

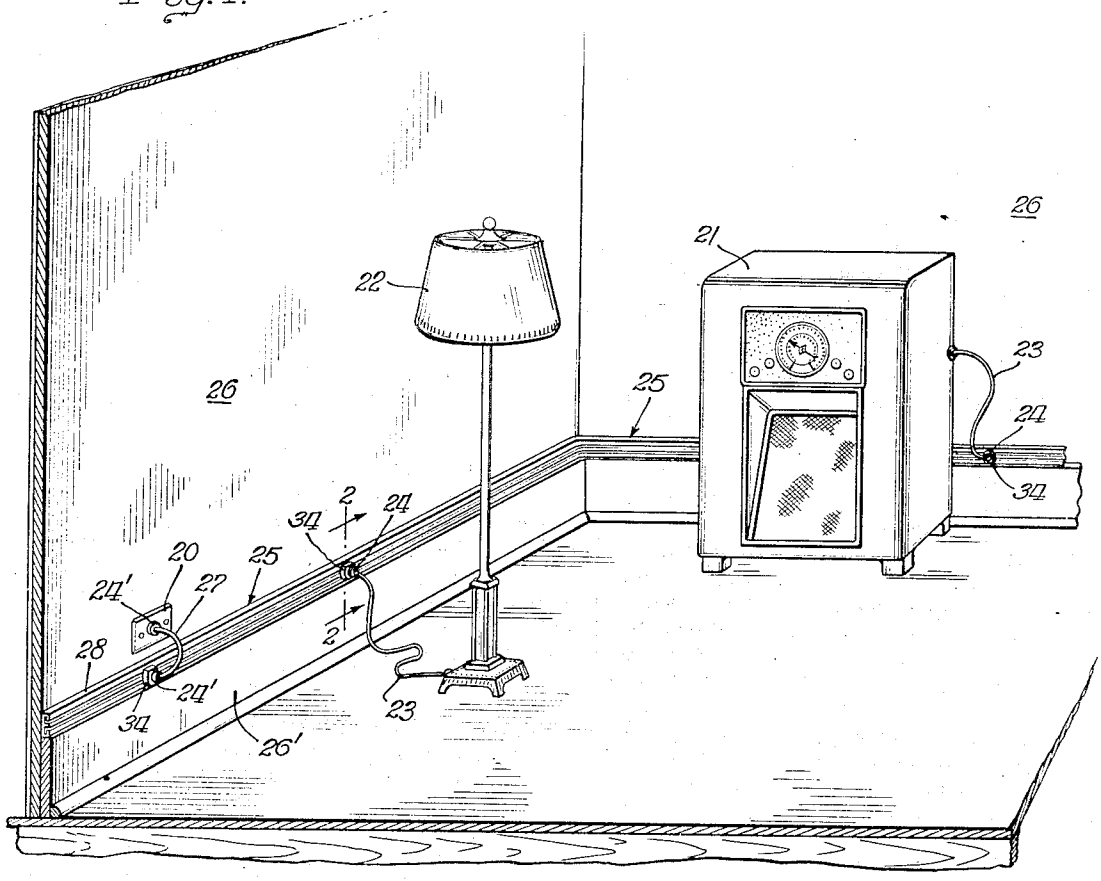


Fig. 2.

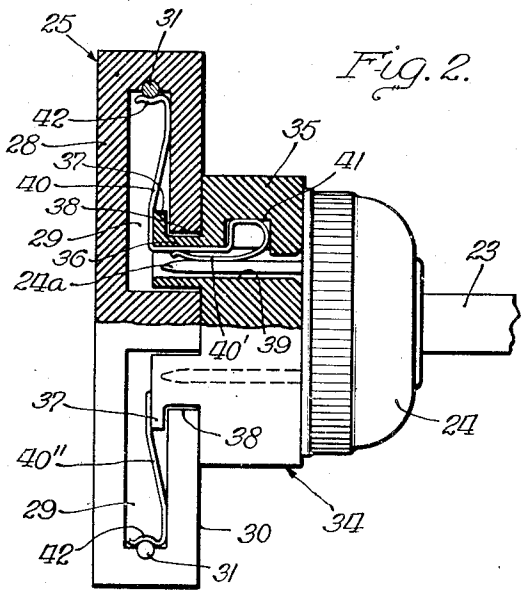
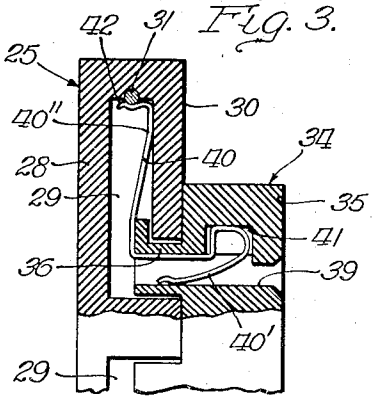


Fig. 3.



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Fig. 4.

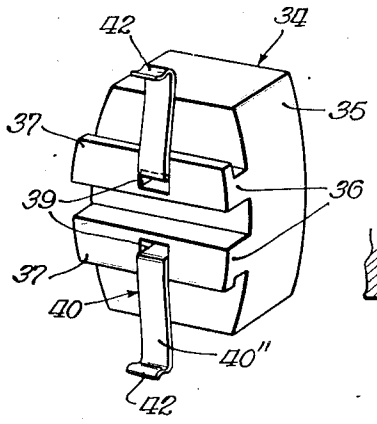
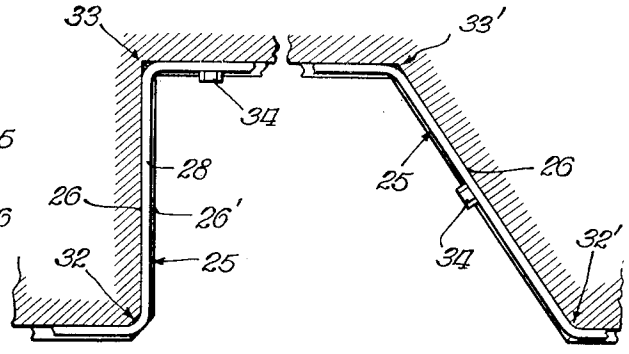


Fig. 5.



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ELECTRICAL OUTLET

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Application October 16, 1940, Serial No. 361,338

7 Claims. (Cl. 191—12)

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 objects of the present invention is to provide a continuous electrical outlet which is sufficiently flexible to conform to irregularities and corners of the wall surface to which it is attached.

Another object is to provide a relatively thin, flat, flexible continuous electrical outlet of such shape and configuration that the outlet can be wound up and marketed in the form of rolls.

Another object of the invention is to provide a continuous electrical outlet consisting of a relatively flat strip of flexible insulating material supporting flexible electrical conductors in its slot or slots, and one or more relatively flat adaptor plugs slidable along the length of the strip and adapted to receive a conventional attachment plug and to connect the same electrically with the flexible conductors.

The foregoing objects and various other objects, advantages and characteristics of the invention will be apparent from the following description and from the accompanying drawings forming part of the specification.

The accompanying drawings illustrate by way of example and more or less diagrammatically a number of embodiments of the present invention.

Fig. 1 is a fragmentary perspective view of a room equipped with a continuous electrical outlet embodying some of the features of the present invention.

Fig. 2 is an enlarged view, partly in end elevation, partly in section on the line 2—2 of Fig. 1, of the continuous outlet illustrated in Fig. 1 with an adaptor plug associated therewith and having a conventional attachment plug inserted.

Fig. 3 is a partial view similar to Fig. 2 but showing the adaptor plug without an attachment plug.

Fig. 4 is a perspective rear view of the adaptor plug of Figs. 2 and 3.

Fig. 5 diagrammatically illustrates in plan view how the continuous outlet can be conformed to irregularities in the supporting wall surface.

In many rooms only one conventional outlet **20** (Fig. 1) is employed for supplying electrical energy to electrical apparatus and appliances. At best only a few random outlets are employed and usually inconveniently located so that the arrangement of the furniture and electrical appliances in such rooms is more or less fixed without much regard for the interior decoration or arrangement subsequently decided upon. This dearth and random location of outlets has resulted in attempts by unskilled persons to adapt inconvenient and unsuited electrical supply conditions to frequently changing ideas of decoration and arrangement. These attempts are evidenced by dangerous, exposed wiring, unsightly and entangling extension or drop cords, and/or various other crude makeshifts for connecting an increasingly large number of electrical appliances with the source of electrical energy.

According to the present invention, various electrical appliances, such as a radio receiver **21** and a lamp **22**, may be arranged at any desired location in a room irrespective of the location of the outlet **20**, and may be supplied with electrical energy through cables or cords **23** having conventional attachment plugs **24** by "plugging in" a continuous outlet **25** secured to attaching surfaces or walls **26**. The continuous outlet **25** may be energized from the house wiring system, for example, by a cord **27** having a conventional attachment plug **24'** at each end thereof for connection with the conventional outlet **20** and with the continuous outlet **25** respectively.

Alternatively the continuous electrical outlet may be connected with the source of electrical energy through a connector block as hereinafter described.

In the embodiment shown in Fig. 1 and illustrated in greater detail in Figs. 2, 3 and 4, the continuous outlet **25** comprises a strip **28** having a pair of slots **29** which extend substantially throughout the entire length of the strip and open toward the exposed or front face **30** of the strip.

The strip **28** may be formed of electrical insulating material, or it may be formed of non-insulating material such as metal with the interior thereof electrically insulated. Also the strip **28** may be of rigid construction or it may be relatively thin, flat and flexible so that it can

be bent to conform to the wall surfaces to which it is attached, and so that it can be rolled upon itself and sold in roll form. Preferably the strip is made of rubber, which has the advantage of being a resilient material and thus resiliently supporting the electrical conductors 31, while at the same time being a material of high insulating properties and flexible so that it can be rolled up or bent to conform to irregular wall surfaces.

The electrical conductors 31 above referred to are elongated metallic members which are secured to the strip 28 within the slots 29 and extend substantially throughout the length of the strip. If the strip 28 is made of flexible or resilient material such as rubber, the conductors 31 are preferably likewise flexible, and in the embodiment shown they are illustrated as wires of circular cross-section. These conductors may be secured to the strip in any suitable manner, but where rubber is employed as the material for the strip they are preferably embedded in the rubber without employing any additional securing means. To this end the wires are embedded in the material of the strip to an extent exceeding half of their outer surface, or to a depth exceeding half of their diameter, so that the wires will have no tendency of becoming detached from the strip. Preferably these wires are so embedded during the manufacture or molding of the strip.

It will be noted that the outlet strip 28 is relatively thin or flat in a horizontal direction transversely to its length so that it can be readily bent to conform to corners in the supporting wall surface 26. The flexibility of the strip is further enhanced by the use of the relatively thin flexible conductors or wires 31.

The flexibility of the outlet and its adaptability to angularly related wall surfaces is clearly illustrated in Fig. 5 in which the strip 28 is bent around rectangular and obtuse projecting corners 32, 32' and about rectangular and obtuse receding corners 33, 33', of the wall 26. Any suitable means (not shown) may be employed for securing the strip in position on the wall 26. In Fig. 1 the strip is shown mounted directly above a baseboard 26'.

It will be noted that the electrical conductors 31 are positioned at the opposite extreme ends of the slots 29 and that as a consequence they are not easily accessible through the front openings of the slots. In this manner accidental short circuiting of the conductors, for example by children, is rendered substantially impossible.

Associated with the strip 28 is at least one and preferably a number of adaptor plugs 34 each of which slidably engages the slots 29 and is adjustable longitudinally of the strip 28 substantially throughout the entire length thereof. Each adaptor plug 34 comprises a body 35 of insulating material having two parallel ridges 36 on its rear surface for engagement with the respective slots 29, the ridges 36 having oppositely directed flanges 37 for engagement with the slot-defining portions or lips 38 of the strip 28 so as to prevent the adaptor plug from becoming detached from the strip 28. It will be understood that, the slots 29 being of uniform width throughout the length of the strip, the adaptor plug 34 can be inserted only through the ends of the strip which ends may thereafter be closed in any desired manner. By this expedient, the total number of adaptor plugs in a given length of outlet strip 28 can be definitely limited and safety against overloading of the electrical circuit is thus obtained.

Each adaptor plug 34 is provided with two parallel openings 39 extending through the entire thickness of the body 35 and arranged vertically one above the other. Each of the openings 39 receives a metallic contact member 40 suitably anchored in the body 34 of the plug, for example by being bent into a lodging recess 41 adjoining the opening 39 and so shaped that the contact member 40 cannot be accidentally detached from the plug. The forward end portion 40' of the contact member resiliently bears against the inner wall of the associated opening 39, thus tending to move the curved portion of the contact member deeper into the lodging recess 41 and at the same time tending to move the opposite or inner end portion 40'' of the contact member outwardly toward the conductors 31. As shown, the extreme ends 42 of the contact member portions 40'' are curved to bear resiliently against the conductors 31 so as to establish good electrical contact therewith.

It will be evident from Fig. 2 that the openings 39 are spaced apart a distance corresponding to the standard spacing of the prongs or contact arms 24a of a conventional "plug-in" or attachment plug 24. Such a plug is shown inserted into the adaptor plug 34 in Fig. 2, and it will be noted that the prongs 24a deflect the end portions 40' of the contact members outwardly and are in electrical contact therewith, whereby the current supplied to the conductors 31 is transmitted through the contact members 40 to the wires in the electrical cord 23 attached to the plug 24. At the same time, deflecting of the contact member portions 40' tends resiliently to urge the contact members as a whole outwardly or away from each other whereby both the lodgment of the curved portions of these contact members in the recesses 41 and the resilient engagement of the terminal portions 42 of these contact members with the conductors 31 are improved.

In some installations it may be desirable to keep the thickness of the adaptor plug 34 less than the standard length of the prongs or contact arms 24a of the attachment plug 24. It is for this reason that the opening 39 extend through the entire thickness of the adaptor plug 34 so that the extreme ends of the contact prongs 24a may project inwardly from the adaptor plug and into the slots 29. In any event it is advantageous to make the adaptor plugs 34 as flat as possible so that the continuous outlet strip 28 with a number of plugs 34 inserted may be wound up in the form of rolls and marketed in this form.

If desired, a special plug (not illustrated) may be employed for connecting the continuous strip 28 to the conventional outlet 20 through which the strip 28 is supplied with current. Such a plug would be similar to the adaptor plug 34, but instead of having openings for the insertion of a standard attachment plug it would be provided with means for the direct attachment of the cord 27 shown in Fig. 1, thus replacing the assembly of an adaptor plug 34 and the standard attachment plug 24', shown at the left hand end of Fig. 1, by a single plug.

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 of a thickness not materially exceeding the length of the contact prongs of conventional attachment plugs, a pair of spaced parallel slots extending lengthwise through said strip and opening toward the front face of the strip, an electrical conductor supported by said strip in each of said slots, and extending lengthwise thereof, at least one adaptor plug slidably engaged with said slots and adjustable substantially throughout the length of said strip, said adaptor plug having a portion locked within said slots to prevent withdrawal of the adaptor plug from the front face of the strip and carrying a pair of contact members and having spaced openings for receiving the prongs of a conventional attachment plug, each of said contact members having a portion adapted to engage one of said conductors, and integrally therewith another portion adapted to engage in one of said openings the prong of an inserted attachment plug.

2. A continuous electrical outlet as defined in claim 1, wherein each of said contact members consists of a strip of spring metal of substantially uniform width throughout.

3. An adaptor plug for use in connection with a continuous electrical outlet including a slotted strip of insulating material with electrical conductors supported by said strip and extending lengthwise thereof, said plug comprising a body of insulating material having a pair of spaced openings for receiving the contact prongs of a conventional attachment plug, and a pair of contact members each comprising an integral metal strip member supported by said body, each metal strip member being so shaped as to be capable of contacting, adjacent one end, a prong of an attachment plug inserted into said plug openings, and having its other end portion positioned for contact with one of said electrical conductors and adapted, upon insertion of the prong of the attachment plug into said opening, to be moved into firm electrical engagement with said electrical conductor.

4. An adaptor plug as defined in claim 3, wherein said contact members consist of bent spring metal of substantially uniform width throughout.

5. A continuous electrical outlet comprising a strip of insulating material of a thickness not materially exceeding the length of the contact prongs of conventional attachment plugs, a pair of spaced parallel slots extending lengthwise through said strip and opening toward the front face of the strip, an electrical conductor supported by said strip in each of said slots and extending lengthwise thereof, at least one adaptor plug slidably engaged with said slots and adjustable substantially throughout the length of said strip, said adaptor plug carrying a pair of contact members and having spaced openings for receiving the prongs of a conventional attachment plug, each of said contact members having a portion adapted to engage in one of said openings the prong of an inserted attachment plug, and having another portion positioned for contact wtih one of said electrical conductors and adapted, upon insertion of the prong of the attachment plug into said opening, to be urged into firm electrical engagement with said electrical conductor.

6. A continuous electrical outlet according to claim 5, wherein each of said contact members is generally L-shaped with one end portion of the L positioned for contact with one of said electrical conductors, and the other end portion of the L adapted to engage the prong of an attachment plug.

7. A continuous electrical outlet according to claim 5, wherein each of said contact members is generally L-shaped with one end portion of the L positioned for contact with one of said electrical conductors, and the other end portion of the L adapted to engage the prong of an attachment plug, and a loop at one end portion of the L for positioning within a recess in the adaptor plug.

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