July 29, 1941. G. H. VON GEHR 2,250,513

ELECTRICAL OUTLET

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Fig. 1

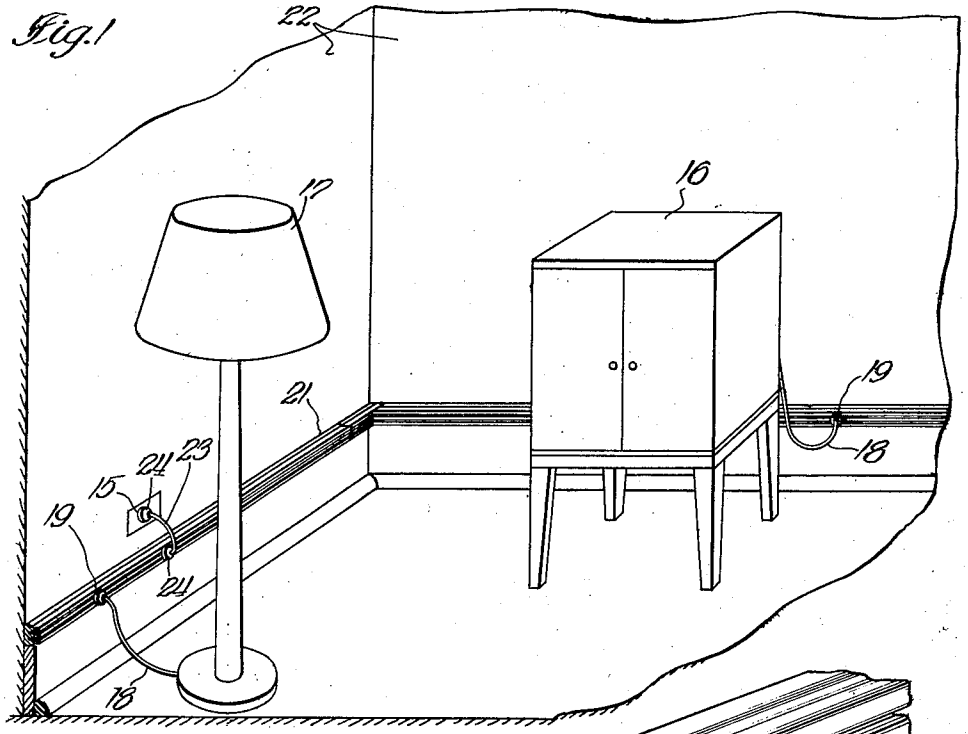


Fig. 2

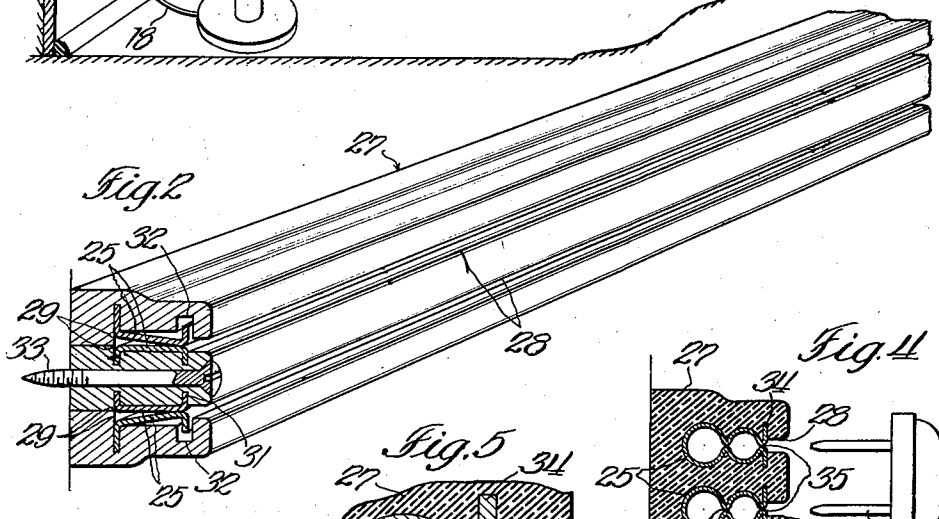


Fig. 3

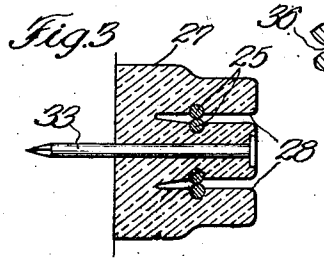


Fig. 5

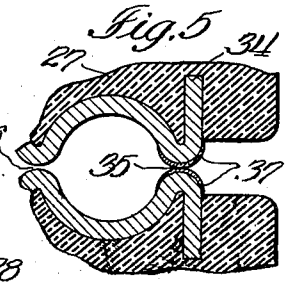


Fig. 4

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Fig. 6

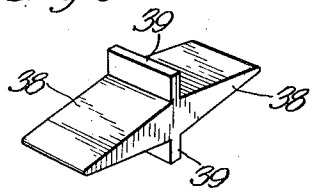


Fig. 7

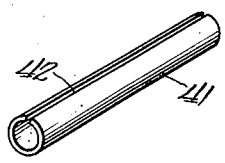


Fig. 8

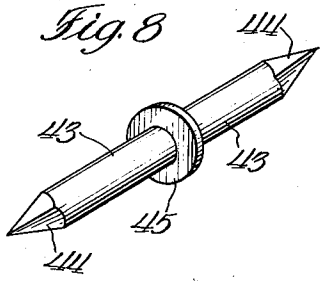


Fig. 9

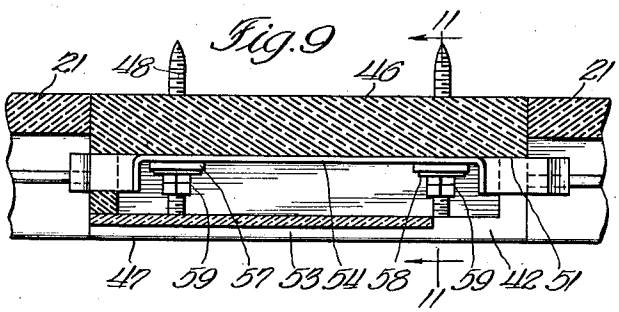


Fig. 13

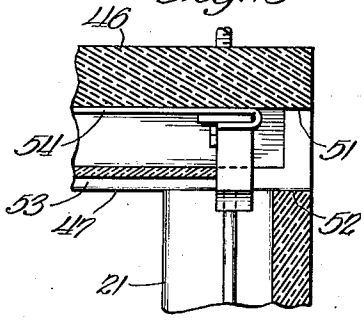


Fig. 10

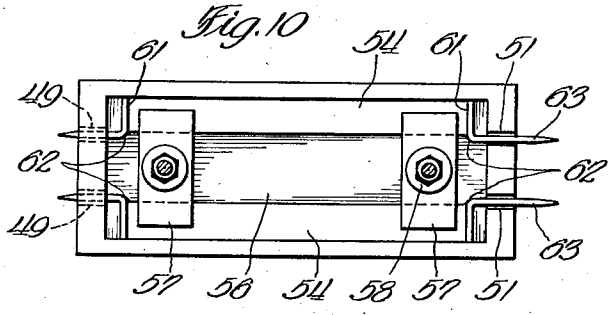


Fig. 12

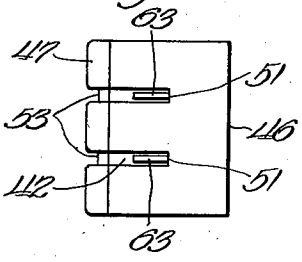
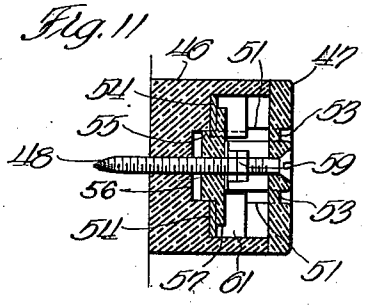


Fig. 11



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UNITED STATES PATENT OFFICE

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ELECTRICAL OUTLET

George H. Von Gehr, Chicago, Ill.

Application December 4, 1933, Serial No. 700,835

4 Claims. (Cl. 173—334.1)

This invention relates to electrical outlets and has for an object the provision of a continuous electrical outlet.

The continuous electrical outlet of the invention is adapted to be provided in strips of desired lengths that, throughout their length, are complementary to a usual outlet plug, a plurality of which may be attached thereto by "plugging in" for electrically connecting electrical apparatus to a source of electrical energy.

Such a novel outlet may be advantageously employed in domestic or household, automotive, 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.

Other objects of the invention include the provision of a continuous electrical outlet, and associated connectors for adapting the outlet to various electrical arrangements and to irregularities in supporting surfaces; attaching means facilitating attachment to such surfaces; a construction readily conformable to various schemes of decoration; and other novel constructions and arrangements of elements and combinations thereof as will appear from the following description which, taken in connection with the accompanying drawings, illustrates a preferred embodiment of the invention.

In the drawings:

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

Fig. 2 is an enlarged perspective view of a piece of the outlet shown in Fig. 1;

Figs. 3 and 4 are transverse sections through outlets of slightly different construction, but contemplated by the present invention, the outlet of Fig. 4 being illustrated with a usual or conventional outlet plug;

Fig. 5 is an enlarged fragmentary section similar to that shown in Fig. 4 and showing certain details of construction;

Figs. 6, 7 and 8 are perspective views of connectors for electrically connecting adjacent ends of successive, co-axial or transversely extending outlets;

Fig. 9 is a fragmentary, longitudinal section of another form of connector shown connecting adjacent ends of successive, co-axial outlets;

Fig. 10 is a front elevation, cover removed, of the connector shown in Fig. 9;

Fig. 11 is a cross section taken substantially along the lines 11—11 of Fig. 9;

Fig. 12 is an end view of the connector shown in Fig. 10; and

Fig. 13 is a fragmentary section similar to Fig. 9, showing the arrangement of the connector for connecting the adjacent ends of successive, transversely extending outlets.

In many rooms only one conventional outlet 15 is employed for supplying electrical energy to electrical apparatus and appliances. At best only a few random outlets are employed and usually in inconvenient locations, 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. The result of this dearth and random location of outlets is 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 the increasing number of electrical appliances that are becoming to be regarded as necessities.

According to the present invention, 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 outlet 15 and may be supplied with electrical energy through cables or cords 18 having conventional plugs 19 by "plugging in" a continuous outlet 21 secured to attaching surfaces or walls 22. The continuous outlet 21 is energized from the house wiring system by, for example, a cord 23 having a conventional plug 24 at each end thereof for plugging in the conventional outlet 15 and the continuous outlet 21.

The continuous outlet of the invention is useful and may be made for various arrangements, assemblies, and purposes. It is important, however, that a plurality of electrical conductors 25, substantially channel shaped as shown in Fig. 2, circular, as shown in Fig. 3, or hollow, as shown in Figs. 4 and 5, be made of, for example, resilient material and arranged for removably receiving prongs or contacting arms 26 of the conventional plugs in contacting relationship.

In the form shown in Fig. 2, two opposed channel shaped members 25 are employed to provide a contact for each prong 26. These channel shaped members 25 are embedded or otherwise secured in and extend longitudinally of a strip 27 of insulating material such as wood,

molded resins, such as "Bakelite," rubber, rubber composition, etc. This assembly in the insulating material is illustrated in Fig. 2 in connection with wood molding having a pair of spaced parallel slots or recesses 28 extending longitudinally thereof and having at their inner ends oppositely extending transverse slots 29 communicating with the slots 28. The slots 28 also communicate intermediate their ends with oppositely extending transverse slots 31 and 32.

The lower or inner flanges of the channel shaped members are secured in the slots 29 and the webs of each pair of the channels converge from these lower or inner flanges, outwardly to the outer flanges which extend into the slots 31 and 32. The outer flanges are secured in the slots 31, but are movable in the slots 32 in order that each pair of opposed channel shaped members 25 may be spread apart by a contact arm 26 of a conventional plug. Suitable mounting means 33 are provided for securing the outlet to the attaching surfaces. In such an outlet a plug electrically connected to any desired electrical appliance, or a plurality of such plugs may be plugged in anywhere along the entire length of the molding or outlet, the resilient members 25 providing good electrical contactors yieldably engaging opposite sides of each arm of the plug.

In Figs. 3, 4 and 5, the molding strip 27 is illustrated as being made of rubber, a composition thereof, or of some insulating material other than wood. In the case of rubber, the contacting pressure exerted by the members 25 on the contact arms 26 of the plug or plugs may be supplied by the elasticity of the rubber as illustrated in Fig. 3 or partially by the elasticity of the rubber and partially by the resiliency of the members 25 themselves, as shown in Figs. 4 and 5.

With more particular reference now to Fig. 3, it will be observed that the spaced plug arm receiving slots 28 are each provided with a pair of the conductors 25. In other words, a conductor 25 is embedded in each side wall of each slot 28 so that each plug arm 26 can be forced between a pair of the conductors, the elasticity of the rubber permitting the conductors to spread sufficiently to receive the arms and holding the contacting parts in good electrical contact.

In Figs. 4 and 5, each conductor 25 takes substantially the form of a figure 8 with oppositely extending flanges 34 embedded in the molding 27 and with a yieldable outer opening 35 and a yieldable inner opening 36. The prongs or plug arms 26 may be inserted into contact with the members 25 through the openings 35 and 36, spreading the members apart at each opening as the plug arms are forced therethrough. If desired, as shown in Fig. 5, an enamel or non-conducting coating 37 may be formed on the members 25 at opposite sides of the outer opening 35 whereby the current carrying members 25 are more completely isolated from the plug side of the molding.

The continuous outlet already described is adapted to be provided in strips of any desired length and a plurality of such strips may be electrically connected together end to end, in co-axial relationship, or angularly rotated to suit the particular configuration of the surface to which the electrified molding or continuous outlet is attached. Various forms of connectors suitable for this purpose are shown in Figs. 6 to 13. Since these connectors are provided in pairs, each being identical with the other in the pair, only one of each is illustrated and will be described.

Each connector of the type shown in Fig. 6 is provided with oppositely extending, wedge-shaped members 38 having stop lugs 39 at opposite sides thereof. This connector may be employed to connect the adjacent ends of two succeeding molding strips 27 together by inserting a member 38 into each of the slots 28 at an end and axially thereof, between the channel shaped conductors in Fig. 2, between the circular conductors in Fig. 3, or into the openings 35 and 36 in Fig. 4, up to the lugs 39. The adjacent end of the strip to be connected is then positioned so that the opposite members 38 are aligned with the slots 28 in the latter strip. This strip is forced axially thereof into abutting relationship with the lugs 39. In this position each connector electrically connects the corresponding conductor 25 in two co-axial molding strips or outlets.

On the other hand, where desired, the connectors, of the type shown in Fig. 6, may be inserted into the slots 28 at an angle to the outlet strip and another strip connected to the opposite ends of the connectors, as described above, to connect the strips together at an angle to one another.

A hollow tube 41 having a slit 42 longitudinally thereof to permit contracting the tube 41 to a diameter slightly less than the hollow lower portion of the figure 8 conductor shown in Fig. 4 may be employed to connect the corresponding conductors of this type in two strips or outlets. Each such tube, while being held in the contracted position slides into the lower portion of the corresponding conductors of the type shown in Fig. 4 and upon being released, expands and resiliently contacts the conductors embracing it.

Fig. 8 shows a connector that is solid and has arms 43 tapering at their ends 44 to permit sliding the arms into the conductors shown in Fig. 4. A flange 45 intermediate the ends of this connector serves as a limiting stop for the connector.

In Figs. 9 to 13, a housing or casing of substantially the same construction and appearance as the molding or insulating strip 27 is provided with a dished portion 46 and a cover portion 47 secured together and attachable to a mounting surface or wall by screws or other suitable attaching means 48. The housing or casing thus formed is provided at one end with spaced slots 49 in the dished member 46 of the casing and at its other end with spaced slots 51 in the end wall of the dished member 46 and spaced slots 52 in the end of the cover member 47 communicating with the slots 51. A pair of spaced, parallel grooves 53 in the cover member 47 simulate the slots 28 in the molding or continuous outlet.

A pair of conducting buses or strips 54 are secured on internal shoulders or ledges 55 at opposite sides of a central, longitudinal depression 56 inside of the casing by transverse, insulating straps 57 held in place by a washer 58 and nuts 59 on each screw 48. Each strip or bus 54 is provided at each end with an outstanding projection or lug 61 which is turned or formed outwardly as at 62 to provide a contacting arm 63 extending through a slot 49 at one end and a slot 51 at the other end of the strip or bus. These arms 63 are adapted to slide between the conductors shown in Figs. 2 and 3 either longitudinally or angularly thereof, or into the open-

ings 35 and 36 of Fig. 4, longitudinally or angularly of the conductors therein illustrated.

In order to provide for a corner connection, each bus or strip may be turned or folded outwardly, as illustrated in Fig. 13, to a position where the contacting arms project through the slots 52 in the cover member 47 of the casing. In this position the outstanding projections are folded back outwardly of the straps 57 to provide a thrust bearing for the contact arms.

By the term "mechanically separate" as employed in the claims is meant that the conductors are mechanically independent except insofar as they are supported in operative relationship by the insulating material. In other words, the conductors are not integrally connected in such a manner as to exert any substantial individual plug gripping tension except that due to the resiliency of the insulating strip.

While the invention has been described for use in connection with housewiring 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 plurality of electrical appliances.

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

1. A continuous electrical outlet adapted to receive throughout its length one or more outlet plugs in operative electrical contact, comprising a yieldable strip of insulating material having a pair of slots extending longitudinally thereof and adapted to receive the contact arms of an outlet plug, a pair of mechanically separate electrical conductors in each of said slots each conductor of each said pair of conductors being yieldably supported by a wall of said slot whereby said strip and said conductors are yieldable transversely of the outlet at plug inserting pressures so as to urge the conductors toward the arms of the plug.

2. A continuous electrical outlet adapted to receive throughout its length one or more outlet plugs in operative electrical contact, comprising a yieldable strip of insulating material having a pair of slots extending longitudinally thereof and adapted to receive the contact arms of an outlet plug, a pair of mechanically separate electrical conductors in each of said slots and yieldably mounted upon said strip whereby said strip and said conductors are yieldable transversely of the outlet at plug inserting pressures so as to urge the conductors toward the arms of the plug, said conductors being of such shape as to permit ready bending of the outlet whereby the outlet is substantially conformable to irregular wall surfaces.

3. A continuous electrical outlet adapted to receive throughout its length one or more outlet plugs in operative electrical contact, comprising a yieldable strip of insulating material having a pair of slots defined by elastically yieldable opposed walls extending longitudinally thereof and adapted to receive the contact arms of an outlet plug, a pair of mechanically separate electrical conductors in each of said slots and yieldably mounted upon said strip whereby said strip and said conductors are yieldable transversely of the outlet at plug inserting pressures so as to urge the conductors toward the arms of the plug, said conductors comprising wires extending longitudinally of the strip and mounted upon the yieldable walls of the slot whereby plug contacting pressures are exerted by the yieldability of the strip.

4. A continuous electrical outlet adapted to receive throughout its length one or more outlet plugs in operative electrical contact, comprising a yieldable strip of insulating material having a pair of slots extending longitudinally thereof and adapted to receive the contact arms of an outlet plug, a pair of mechanically separate electrical conductors in each of said slots and mounted in opposed relationship upon opposite walls of each slot, whereby said strip and said conductors are yieldable transversely of the outlet at plug inserting pressures so as to urge the conductors toward the arms of the plug.

GEORGE H. VON GEHR.