May 23, 1950

T. OSHINSKY

2,508,770

RENEWABLE FUSE TAP RECEPTACLE

Filed May 20, 1948

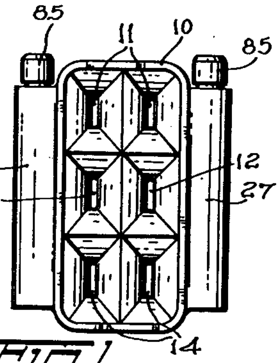

FIG. 1.

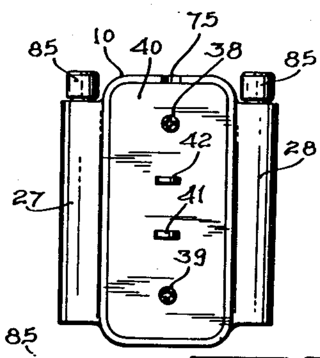

FIG. 2.

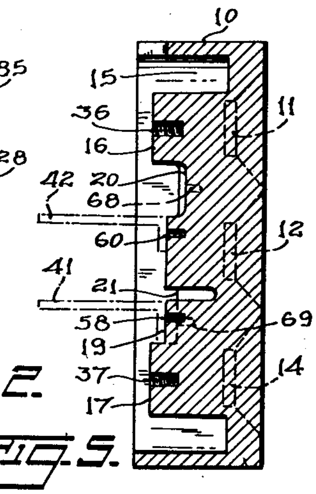

FIG. 5.

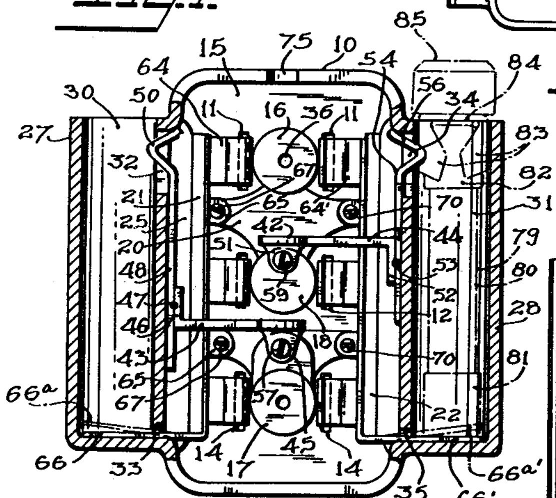

FIG. 3.

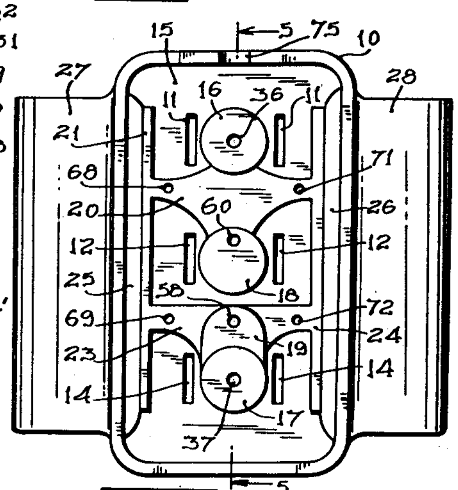

FIG. 4.

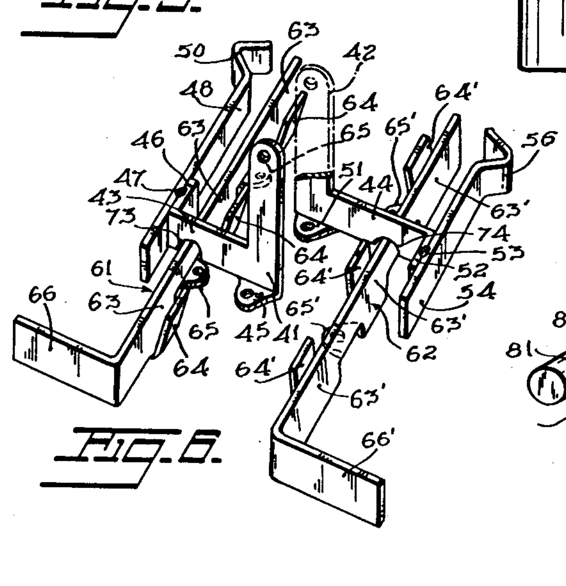

FIG. 6.

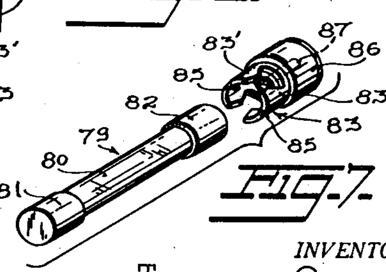

FIG. 7.

INVENTOR.
THEODORE OSHINSKY
BY
Zoltan Polachek
ATTORNEY

Patented May 23, 1950

2,508,770

UNITED STATES PATENT OFFICE

2,508,770

RENEWABLE FUSE TAP RECEPTACLE

Theodore Oshinsky, Brooklyn, N. Y.

Application May 20, 1948, Serial No. 28,065

6 Claims. (Cl. 200—115.5)

1

This invention relates to new and useful improvements in electrical devices, and, more particularly, aims to provide a novel and valuable fused attachment plug.

According to the invention, a plug is provided for attachment to a source of current supply, as a wall receptacle, and itself adapted to act as an intermediate receptacle, that is, for having attached thereto an ordinary type of plug such, for instance, as connected to a lamp, a toaster, a radio or any electrically operative device or apparatus.

As preferably embodied, the fused attachment plug of the present invention is provided with a plurality of socketing means, as, for example, three thereof, so that one or more or all of them may be used as the occasion may require, each for a plug connected to an individual such electrically operative device or apparatus.

A salient feature of the present invention is that a fuse means is incorporated in the new attachment plug, in such manner that the current flowing through the plug must traverse a fuse element, if only one such be present, or a plurality of fuse elements in series relation, thereby to insure that, should any one or more of said electrically operative devices or apparatus, then being served by way of the new plug as an intermediary, cause a surge of current of an amperage so high as otherwise to blow a main fuse at a remote point and usually difficult or at least troublesome to locate, the fuse means in the new attachment plug will, instead, be blown; with the arrangement such that the fuse means of the new plug includes one or more fuses of the cartridge type, and with the arrangement further such that the single or any one of several such cartridge fuses present may be easily and instantaneously removed for inspection, by straight-line endwise pull, and the same or a substitute cartridge fuse may be inserted with equal convenience and dispatch and by straight-line endwise push.

In this connection, the new plug is in a casing incorporating a main compartment and one or more minor well-like compartments each open at one end, these minor compartments being provided to the number of cartridge fuses to be used and each for one cartridge fuse. As the invention is preferably embodied, two such minor compartments are present, these preferably at opposite sides of said main compartment. The main compartment is for carrying the aforesaid socketing means, which latter as here shown includes a plurality thereof; each of such socketing means

2

comprising a pair of slots for insertion of the prongs of an ordinary attachment plug.

Even with fused cartridge insertable and withdrawable from the new attachment plug as already explained, there is no danger of a fuse dropping out of the plug, or of a fuse shifting therein to cause an unintended circuit interruption; this objective being attained by the manner in which an electrically conductive part, inbuilt into the plug and extended from its main compartment into each minor compartment for the housing of a cartridge fuse, acts not only to place the fuse in circuit but also to frictionally engage the fuse in such manner as to grip the same in a unique way, that is, more specifically, in an absolutely secure way, yet impositively.

When a standard cartridge fuse is employed, which is a preferred contemplation of the invention, such a fuse having a glass or other transparent and non-conductive tube having a fusible ribbon lengthwisely extended therethrough and connected at opposite ends to metal end caps on the tube, this fuse can be inserted fully into its compartment, to obtain the advantages aforesaid, and yet in a way to permit the fuse to be instantly manually withdrawn from said compartment without possibility of electrical shock. This safeguard results from the provision of a re-usable auxiliary metal cap, snappable over either of the first-named end caps, and carrying a finger-piece, as one in the form of a small knob, suitably insulated from the auxiliary cap.

Further features of the invention are, among others, that said auxiliary cap is securely yet merely frictionally held on an end cap of the fuse, thereby to permit immediate and easy transfer of said auxiliary cap, from a fuse which has blown, to a new fuse; and that one electrically conductive part projected into a fuse compartment is so shaped and arranged that, in coaction with another such part projected into the fuse compartment for engaging the fuse's end cap at that end of the fuse which is at the bottom of the compartment, the fuse is maintained in circuit.

For further comprehension of the invention, and of the objects and advantages thereof, reference will be had to the following description and accompanying drawings, and to the appended claims in which the various novel features of the invention are more particularly set forth.

In the accompanying drawings forming a material part of this disclosure:

Fig. 1 shows in front elevation a now favored embodiment of the invention.

Fig. 2 is a rear elevation thereof.

Fig. 3 is also a rear elevation, but with a back plate and its attaching screws omitted; this view being partially in section, at two fuse compartments, and with one fuse, carrying the aforesaid auxiliary cap, indicated in dot and dash lines as positioned in one of said fuse compartments.

Fig. 4 is entirely a rear elevation, with said back plate omitted, and also with all conductive elements omitted, so as more clearly to show various conformations in the main compartment.

Fig. 5 is a longitudinal section, taken on the line 5—5 of Fig. 4, further to clarify said conformations.

Fig. 6 is a perspective view showing the complete collection of conductive elements omitted from Figs. 4 and 5, in substantially true relative spatial arrangement.

Fig. 7 is an exploded perspective view, of a fuse, and of a detachable device to be carried thereby, said device comprising the auxiliary cap and finger-piece aforesaid.

Referring to the drawing more in detail, the fused plug illustrated comprises a casing 10, having a box-like main central compartment provided through its front wall with three pairs of oppositely spaced and aligned slots 11, 12 and 14. Each of these slots, as is conventional, desirably has its outer end at the bottom of a frusto-pyramidal depression, as indicated in Figs. 1 and 5, at the front of the casing, for facilitating entry into a selected slot pair of the pair of prongs carried in the well-known manner by an ordinary plug.

The slots 11, 12 and 14 all enter the said main compartment 15, which latter is interiorly shaped, as shown best in Figs. 4 and 5, to have a high cylindrical projection 16 between the slots 11, an equally high cylindrical projection 17 between the slots 14, a lower cylindrical projection 18 between the slots 12, an extension 19 from the projection 17 and of the same height as the projection 18, a web 20 joining the adjacent portions of the projections 16 and 18 and laterally extended at opposite sides to merge with a pair of straight and parallel ribs 21 and 22, a pair of oppositely directed webs 23 and 24 extended from the lower portion of the projection 17 and also merging with the said ribs 21 and 22, and a channel 25 beyond the outer side of the rib 21 and a channel 26 beyond the outer side of the rib 22.

With the projection 18 as just stated lower than the projections 16 and 17, the webs 20, 23 and 24 are lower than the projection 18. At the same time the ribs 21 and 22 are a trifle higher than the said webs.

The casing 10, together with the lateral side extensions 27 and 28 thereof, is desirably made by moulding, from any suitable plastic material having good dielectric properties. The above described or other suitable interior formations may be readily incorporated in the casing 10 during moulding thereof; and while in part the said formations as above described are more or less conventional, all of said formations have been discussed in considerable detail in order to render clearer the manner in which the conductive parts permanently to be included in the new plug may be practicably and inexpensively mounted in place.

Within each of the side extensions 27 and 28 from the main central portion of the casing 10, and which extensions may be laterally rounded along their sides remote from the main central portion of the casing 10, is a generally cylindrical compartment 30 or 31, open at one end. Near its open end the compartment 30 connects with the main compartment 15 by way of a slot 32, and adjacent its opposite end said compartment communicates with said main compartment by way of an opening 33. Similarly, near its open end the compartment 31 has a slot 34 and at the inner end thereof an opening 35.

The projections 16 and 17 have tapped holes 36 and 37, these for taking screws 38 and 39 (Fig. 2), passed through a suitable back plate 40, as one of cardboard, fibre or any suitable material; said back plate having a pair of slots through which are projected, rearwardly of the plug, the two prongs 41 and 42 carried by the plug and to be inserted into slots in a wall receptacle or the like.

Referring to Figs. 3 and 6, the prongs 41 and 42 are shown as upstanding extensions from L-shaped conducting members 43 and 44.

The member 43, below the bottom of the prong 41, has a horizontal, apertured ear 45; and at the outer end of the horizontal limb of said member is an offset extension 46, suitably secured, as by soldering as indicated at 47, to a thinner and resilient conductive strip 48 having at its upper end an outwardly arched lip 50.

The member 44, below the bottom of the prong 42, has a horizontal, apertured ear 51; and at the outer end of the horizontal limb of said member is an offset extension 52, suitably secured, as by soldering as indicated at 53, to a thinner and resilient conductive strip 54 having at its upper end an outwardly arched lip 46.

With the main length of the strip 48 in the channel 25, and then with said lip 50 projected into and through the slot 32 and thus resiliently entered into the compartment 30 near its upper open end, all the parts 41—48 and 50 are secured in place as shown in Fig. 3, and with the flat of said main length close against the outer side of said channel, by applying the screw 57 through the aperture of the ear 45 and into a tapped hole 58 in the extension 18 from the projection 17.

Similarly, with the main length of the strip 54 in the channel 26, and then with said lip 56 projected into and through the slot 34 and thus resiliently entered into the compartment 31 near its upper open end, all the parts 42, 44, 51—54 and 56 are secured in place as shown in Fig. 3, and with the flat of said main length close against the outer side of said channel, by applying a screw 59 through the aperture of the ear 51 and into a tapped hole 60 in the projection 18.

However, before thus mounting the prongs 41 and 42 and their carried parts, two fitments 61 and 62, made of thin resilient sheet metal stock, are mounted in place.

The fitment 61 is a strip having tine-like lateral extensions 63, each bent up on itself to a V-shaped formation including a spring leaf 64. These formations are so spaced along the length of the strip, in the present case, that with one leaf 64 lying alongside the projection 17, another of these leaves lies alongside the projection 18 and the other leaf lies alongside the projection 16. Between two adjoining ones of said formations the strip has an inbent apertured ear 65, and between the other two adjoining ones of said formation the strip has an inbent apertured ear also marked 65.

At one end, the fitment 61 is prolonged beyond said formations 63 and is bent to incorporate an outwardly offset extension 66, which, beyond the

adjacent end of the rib 21, passes through the opening 33 and so into the bottom of the compartment 30. Said extension 66, which may be arranged to lie flat in the bottom of the fuse compartment 30, as shown in full lines in Fig. 3, is desirably resiliently biased so as always to tend to assume the disposition indicated in dot and dash lines at 66a.

The fitment 62 is exactly like the fitment 61, with all the parts thereof to which reference numerals with added primes are applied corresponding to the parts of the fitment 61 to which reference numerals without primes are applied; except that the offset extension 66' is projected in a direction opposite to the direction of projection of the extension 66, so that the extension 66' passes beyond the adjacent end of the rib 22 and thence through the opening 35 and so into the bottom of the compartment 31.

The fitments 61 and 62, so far as is concerned their inclusion of such elements as the formations 63 and 63' and the leaves 64 and 64', are conventional in the art.

For mounting the fitment 61, by way of its two ears 65 and by use of screws 67, 67, a tapped hole 68 is provided at one side of the web 20 and a tapped hole 69 is provided in the web 23. For mounting the fitment 62, by way of its two ears 65', and by the use of screws 70, 70, a tapped hole 71 is provided at the other side of the web 20 and a tapped hole 72 is provided in the web 24.

With both fitments 61 and 62 thus mounted, against the side of the projection 16 opposite the side thereof against which lies a spring leaf 64 will lie a spring leaf 64', against the side of the projection 18 opposite the side thereof against which lies a spring 64 will also lie a spring leaf 64', and against the side of the projection 17 opposite the side thereof against which lies a spring leaf 64 will also lie a spring leaf 64'. Thus, at any of said three projections, the pair of slots 11, 12 or 14, as the case may be, will be served by a pair of spring leaves 64 and 64', in such manner that on inserting the prongs of an ordinary plug into any of said slot pairs, the fitments 61 and 62 will be bridged by a circuit subdivision including the wiring from the plug last-mentioned.

The member 43, it will be noted, is undercut at 73, further to insure against accidental contact between said member and the fitment 61. Similarly, and for a like purpose, relative to the fitment 62, the member 44 is undercut, at 74.

In Fig. 3, also, a cartridge fuse 79 is illustrated as fully inserted into the compartment 31. Referring to Fig. 7, such fuse is shown as a conventional one, incorporating a glass tube 80, and metal end caps 81 and 82. The aforesaid auxiliary metal cap, marked 83, is shown as drawn from a thin resilient sheet metal so as to include a disk-like central portion 84 having extended therefrom two laterally rounded and apron-like side walls 83', these walls resiliently biased toward each other for fairly tight frictional clasp on either of the end caps 81 and 82. To facilitate this grip, said walls are shown as shaped along their side edges to provide oppositely located openings approximately of hourglass outline, and each of said walls is shown as having a slit 85.

Rigidly carried by the auxiliary cap 83, at the side of said disk-like portion 84 opposite to the side thereof from which are extended the apron-like walls 83', is a knob-like finger-piece 86, of insulating material. This element 86 may be fixedly secured to the auxiliary cap in any suitable way, as, for instance, by a screw or the like sent through a central aperture in to disk-like portion 84. Such screw or the like could be partially embedded in the finger-piece 86, as during the molding of the latter from a plastic. The thus embedded element is indicated in Fig. 7 at 87 as a headed one. In that case, the outer end of said embedded element could be somewhat projected beyond an end of the finger-piece, for being headed over after being passed through said central aperture.

As will be now understood, a circuit through the new plug can be closed only if neither of the fuses in the compartments 30 and 31 are blown. Immediately an overload occurs in a circuit subdivision including conductive parts of the new plug, one of the fuses will blow, and such circuit subdivision will fail. Then, instantaneously, a fuse may be withdrawn by straight endwise movement thereof, and a glance will show whether that fuse is still good; and if still good, the other fuse will be similarly withdrawable for quick inspection. The fuse found to be blown will be discarded, the auxiliary cap removed therefrom and substituted on a new fuse, and the new fuse with the auxiliary cap thereon will be inserted, again instantaneously and merely by straight endwise movement thereof.

On thus inserting a new fuse, there is no need to give the same any particular angular adjustment, since when the fuse is fully inserted, its then lowermost cap 81 or 82 will contact the extension 66 or 66' at the bottom of the compartment, and then the spring lip 50 or 56 will bear tightly against either one of the apron-like walls 83' of the auxiliary cap or directly against the then uppermost end cap 81 or 82 of the fuse.

The circuit through the new plug may be traced as including the prong 41, the member 43, the strip 48, the lip 50, the fusible ribbon of the fuse in the compartment 30, the extension 66 of the fitment 61, a leaf 64 of said fitment, the leaf 64' which on the fitment 62 is opposite said leaf 64, said fitment 62, the extension 66' of said fitment, the fusible ribbon of the fuse in the compartment 31, the lip 56 of the strip 54, said strip, the member 44, and the prong 42.

As will be understood, the invention may be carried out by providing only one compartment for a cartridge fuse, as merely the compartment 30 or 31 or an equivalent. In such case, one of the fitments 61 and 62 would have its extension 66 or 66' omitted, and that fitment would be connected directly to one of the members 43 and 44; while there would also be omitted that one of the strips 48 and 54 then unnecessary to be present.

While I have illustrated and described the preferred embodiment of my invention, it is to be understood that I do not limit myself to the precise construction herein disclosed and the right is reserved to all changes and modifications coming within the scope of the invention as defined in the appended claims.

Having thus described my invention, what I claim as new, and desire to secure by United States Letters Patent is:

1. Fuse means for an electrical outlet plug having a hollow casing enclosing spaced contact fitments and including a front wall formed with spaced sets of aligned slots through which the prongs of conventional electrical plugs can be extended to engage the contact fitments and spaced side walls, comprising cylindrical compartments formed on the side walls and extended

laterally therefrom, each of said compartments being closed at one end and open at the other end for endwise insertion of a cartridge fuse of the type having metallic end caps, said side walls being formed adjacent the closed ends of said compartments with openings and adjacent the open ends of said compartments with slots connecting the interior of said compartments with the interior of the casing, conductive strips within the casing extended parallel to but spaced from the contact fitments, conducting members connected to one of the ends of each of said conductive strips and extended from the casing to be attached to a source of electric current, and an outwardly arched lip formed on the other end of each of said conductive strips and projected through said slots into said compartments for making electrical contact with the end caps at one end of each of the cartridge fuses, each of the contact fitments having one of its end portions bent into an offset extension, said offset extensions being projected through said openings into said compartments for making electrical contact with the end caps at the other end of each of the cartridge fuses.

2. Fuse means for an electrical outlet plug having a hollow casing enclosing spaced contact fitments and including a front wall formed with spaced sets of aligned slots through which the prongs of conventional electrical plugs can be extended to engage the contact fitments and spaced side walls, comprising cylindrical compartments formed on the side walls and extended laterally therefrom, each of said compartments being closed at one end and open at the other end for endwise insertion of a cartridge fuse of the type having metallic end caps, said side walls being formed adjacent the closed ends of said compartments with openings and adjacent the open ends of said compartments with slots connecting the interior of said compartments with the interior of the casing, conductive strips within the casing extended parallel to but spaced from the contact fitments, conducting members connected to one of the ends of each of said conductive strips and extended from the casing to be attached to a source of electric current, and an outwardly arched lip formed on the other end of each of said conductive strips and projected through said slots into said compartments for making electrical contact with the end caps at one end of each of the cartridge fuses, each of the contact fitments having one of its end portions bent into an offset extension, said offset extensions being projected through said openings into said compartments for making electrical contact with the end caps at the other end of each of the cartridge fuses, said conductive strips being formed of flexible material and the said one ends of said conductive strips being retained against movement by reason of the attachment to said conducting members, said arched lips being extended into said compartments so that the space between said lips and the opposed walls of said compartments will be less than the diameter of the engaged end caps of the fuses pressing the engaged end caps into frictional contact with the opposed walls retaining the fuses in position within said compartments and retaining each of the end caps at the other end of the fuses in engagement with said offset extensions of the contact fitments.

3. Fuse means for an electrical outlet plug having a hollow casing enclosing spaced contact fitments and including a front wall formed with spaced sets of aligned slots through which the

prongs of conventional electrical plugs can be extended to engage the contact fitments and spaced side walls, comprising cylindrical compartments formed on the side walls and extended laterally therefrom, each of said compartments being closed at one end and open at the other end for endwise insertion of a cartridge fuse of the type having metallic end caps, said side walls being formed adjacent the closed ends of said compartments with openings and adjacent the open ends of said compartments with slots connecting the interior of said compartments with the interior of the casing, conductive strips within the casing extended parallel to but spaced from the contact fitments, conducting members connected to one of the ends of each of said conductive strips and extended from the casing to be attached to a source of electric current, and an outwardly arched lip formed on the other end of each of said conductive strips and projected through said slots into said compartments for making electrical contact with the end caps at one end of each of the cartridge fuses, each of the contact fitments having one of its end portions bent into an offset extension, said offset extensions being projected through said openings into said compartments for making electrical contact with the end caps at the other end of each of the cartridge fuses, a cartridge fuse in each of said compartments having end caps engaged by said lips and said offset extensions, and means on the end caps at the open ends of said compartments by which said fuses can be gripped for pulling them out of the open ends of said compartments .

4. Fuse means for an electrical outlet plug having a hollow casing enclosing spaced contact fitments and including a front wall formed with spaced sets of aligned slots through which the prongs of conventional electrical plugs can be extended to engage the contact fitments and spaced side walls, comprising cylindrical compartments formed on the side walls and extended laterally therefrom, each of said compartments being closed at one end and open at the other end for endwise insertion of a cartridge fuse of the type having metallic end caps, said side walls being formed adjacent the closed ends of said compartments with openings and adjacent the open ends of said compartments with slots connecting the interior of said compartments with the interior of the casing, conductive strips within the casing extended parallel to but spaced from the contact fitments, conducting members connected to one of the ends of each of said conductive strips and extended from the casing to be attached to a source of electric current, and an outwardly arched lip formed on the other end of each of said conductive strips and projected through said slots into said compartments for making electrical contact with the end caps at one end of each of the cartridge fuses, each of the contact fitments having one of its end portions bent into an offset extension, said offset extensions being projected through said openings into said compartments for making electrical contact with the end caps at the other end of each of the cartridge fuses, a cartridge fuse in each of said compartments having end caps engaged by said lips and said offset extensions, and means on the end caps at the open ends of said compartments by which said fuses can be gripped for pulling them out of the open ends of said compartments, said means on said end caps, com-

prising an auxiliary cap for each of said fuses having disc-like central portions engaging the ends of the respective fuse caps and a pair of opposed laterally rounded side walls frictionally gripping the respective fuse caps, and finger-pieces mounted on said central portions and projected from the open ends of said compartments.

5. Fuse means for an electrical outlet plug having a hollow casing enclosing spaced contact fitments and including a front wall formed with spaced sets of aligned slots through which the prongs of conventional electrical plugs can be extended to engage the contact fitments and spaced side walls, comprising cylindrical compartments formed on the side walls and extended laterally therefrom, each of said compartments being closed at one end and open at the other end for endwise insertion of a cartridge fuse of the type having metallic end caps, said side walls being formed adjacent the closed ends of said compartments with openings and adjacent the open ends of said compartments with slots connecting the interior of said compartments with the interior of the casing, conductive strips within the casing extended parallel to but spaced from the contact fitments, conducting members connected to one of the ends of each of said conductive strips and extended from the casing to be attached to a source of electric current, and an outwardly arched lip formed on the other end of each of said conductive strips and projected through said slots into said compartments for making electrical contact with the end caps at one end of each of the cartridge fuses, each of the contact fitments having one of its end portions bent into an offset extension, said offset extensions being projected through said openings into said compartments for making electrical contact with the end caps at the other end of each of the cartridge fuses, a cartridge fuse in each of said compartments having end caps engaged by said lips and said offset extensions, and means on the end caps at the open ends of said compartments by which said fuses can be gripped for pulling them out of the open ends of said compartments, said means on said end caps, comprising an auxiliary cap for each of said fuses having disc-like central portions engaging the ends of the respective fuse caps and a pair of opposed laterally rounded side walls frictionally gripping the respective fuse caps, and finger-pieces mounted on said central portions and projected from the open ends of said compartments, said laterally rounded side walls being formed with slits rendering them flexible for gripping the respective fuse caps.

6. Fuse means for an electrical outlet plug having a hollow casing enclosing spaced contact fitments and including a front wall formed with spaced sets of aligned slots through which the prongs of conventional electrical plugs can be extended to engage the contact fitments and spaced side walls, comprising cylindrical compartments formed on the side walls and extended laterally therefrom, each of said compartments being closed at one end and open at the other end for endwise insertion of a cartridge fuse of the type having metallic end caps, said side walls being formed adjacent the closed ends of said compartments with openings and adjacent the open ends of said compartments with slots connecting the interior of said compartments with the interior of the casing, conductive strips within the casing extended parallel to but spaced from the contact fitments, conducting members connected to one of the ends of each of said conductive strips and extended from the casing to be attached to a source of electric current, and an outwardly arched lip formed on the other end of each of said conductive strips and projected through said slots into said compartments for making electrical contact with the end caps at one end of each of the cartridge fuses, each of the contact fitments having one of its end portions bent into an offset extension, said offset extensions being projected through said openings into said compartments for making electrical contact with the end caps at the other end of each of the cartridge fuses, a cartridge fuse in each of said compartments having end caps engaged by said lips and said offset extensions, and means on the end caps at the open ends of said compartments by which said fuses can be gripped for pulling them out of the open ends of said compartments, said means on said end caps, comprising an auxiliary cap for each of said fuses having disc-like central portions engaging the ends of the respective fuse caps and a pair of opposed laterally rounded side walls frictionally gripping the respective fuse caps, and finger-pieces mounted on said central portions and projected from the open ends of said compartments, said finger-pieces being formed of insulation material.

THEODORE OSHINSKY.

REFERENCES CITED

The following references are of record in the file of this patent:

UNITED STATES PATENTS

Number	Name	Date
776,326	Hubbell	Nov. 29, 1904
1,718,518	Barnett	June 25, 1929
1,974,700	Adams	Sept. 25, 1934
2,207,837	Sundt	July 16, 1940
2,258,231	Alden	Oct. 7, 1941
2,437,802	Adler	Mar. 16, 1948
2,454,024	Alemaghides	Nov. 16, 1948

FOREIGN PATENTS

Number	Country	Date
369,580	Germany	Feb. 20, 1923