

Aug. 11, 1942.

P. WEEBER

2,292,554

ELECTRICAL PLUG

Filed June 2, 1939

2 Sheets-Sheet 1

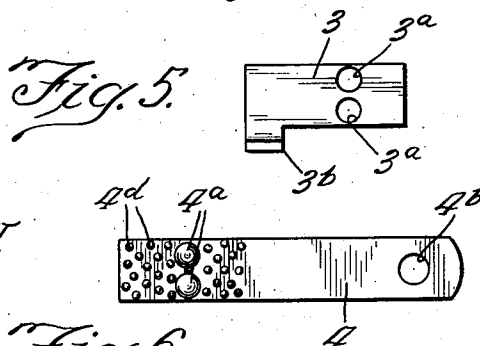
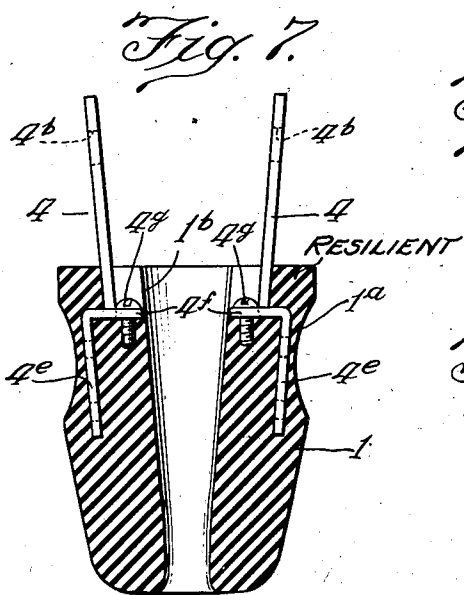
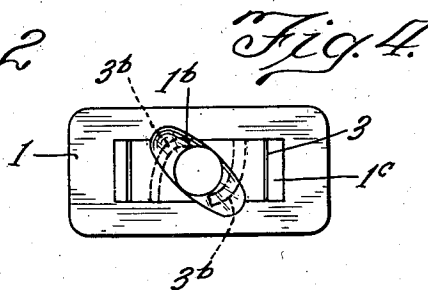
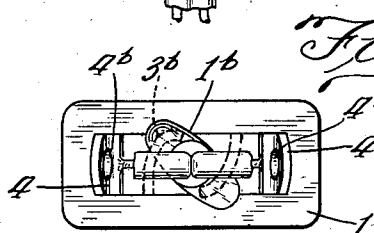
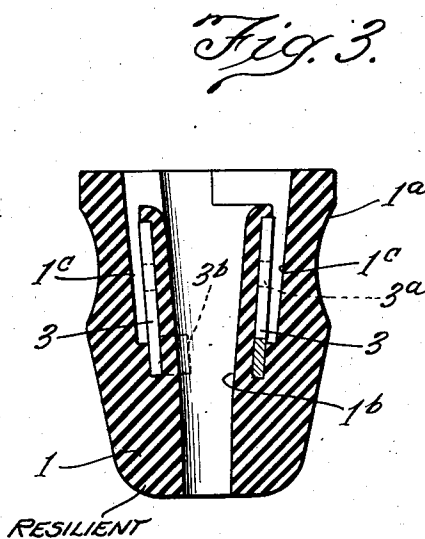
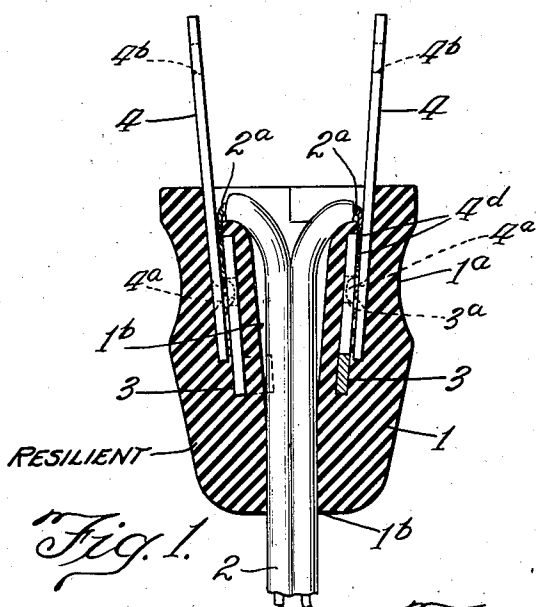


Fig. 6.

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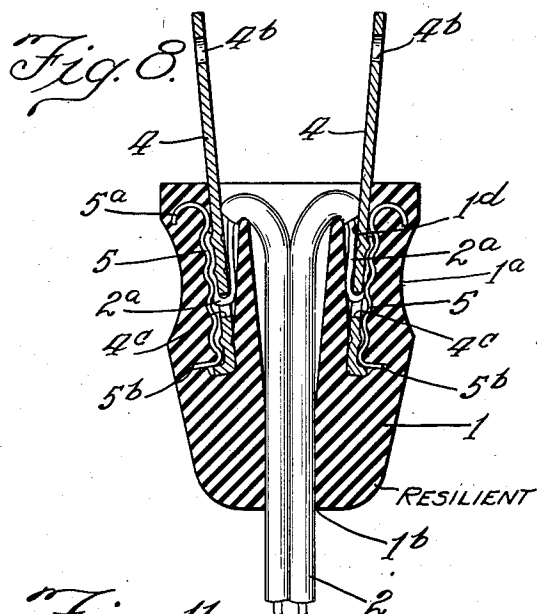


Fig. 9.

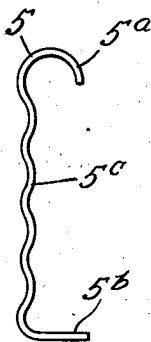


Fig. 10.

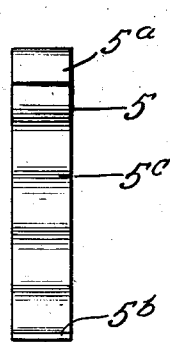


Fig. 11.

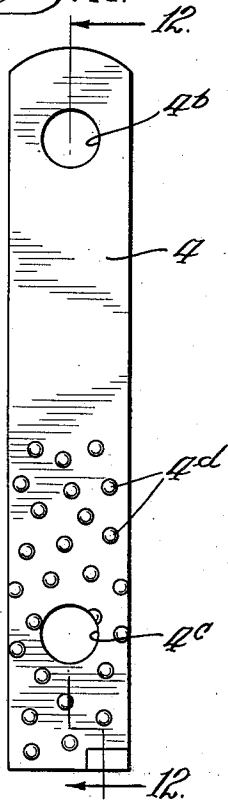


Fig. 12.

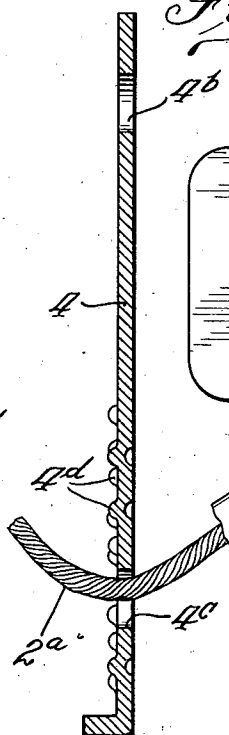
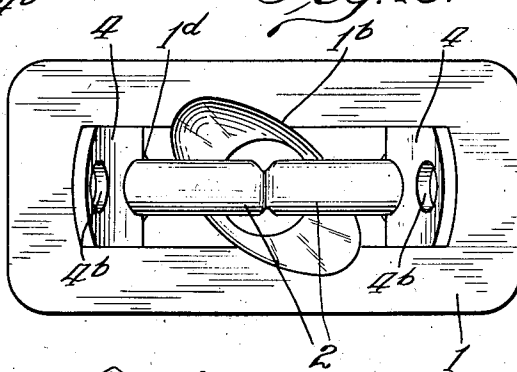


Fig. 13.



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UNITED STATES PATENT OFFICE

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ELECTRICAL PLUG

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3 Claims. (Cl. 173-361)

This invention pertains to plugs for electrical outlets and the like which have, as their primary purpose, the provision of an article of the described class which will be self-retaining in an electrical outlet under conditions which would normally cause displacement of a conventional electrical plug.

A further object of this invention is to provide an electrical plug having its contact prongs in non-parallel relation and especially with the prongs normally extending outwardly from one another at their exposed ends, with means for bringing the said prongs into parallel relation with one another whereby a more satisfactory connection in the outlet may be had and without damage to the outlet.

A further use of this invention is to provide an electrical plug having means for retaining the raw ends of current carrying wires without the necessity of employing screws or the like.

Other and further advantages of the invention will be apparent from the drawings and from the more detailed description of the said device, in both its preferred and modified forms, following.

On the drawings:

Fig. 1 is a cross sectional view of one type of plug made in accordance with my invention.

Fig. 2 is a top plan view of the entire construction shown in cross section in Fig. 1.

Fig. 3 is a cross sectional view of the form of plug shown in Figs. 1 and 2, with the contact prongs removed from the resilient body portion.

Fig. 4 is a top plan view of that portion of the invention shown in Fig. 3.

Fig. 5 is a plan view of a typical side of one of the internal metal contact members, shown in Figs. 1 and 3, when removed from the body of the plug.

Fig. 6 is a plan view of one of the insertable contact prongs, otherwise shown in Fig. 1.

Fig. 7 is a cross sectional view of a modified form of my invention otherwise shown on the drawings.

Fig. 8 is a further modified form of my invention, this modification differing slightly from the disclosure of Fig. 1.

Fig. 9 is a side elevational view of the metal contact member as used in the modified form of my invention shown in Fig. 8.

Fig. 10 is a front elevational view of the same element shown in Fig. 9.

Fig. 11 is an elevational view of the prong member used in the form of invention shown in Fig. 8.

Fig. 12 is a side elevational view of the element otherwise shown in Fig. 11.

Fig. 13 is a plan view of the plug shown in Fig. 8.

As shown on the drawings:

The numeral 1 is used to illustrate a body of resilient material preferably somewhat rectangular in end view and elongated as shown, preferably formed of rubber or the like, which is provided with a pair of opposed external recessed portions such as 1a, said recessed portions serving as a finger gripping portion to permit pressure to be applied to bring the prongs, hereinafter described, into parallel relation when the plug is inserted in a receptacle.

Body portion 1 may be highly resilient, if desired, as experience has shown that the resiliency of the body in my invention may vary within wide limits without adverse effect upon the successful maintenance of contact by the blades when the plug is in actual use.

Body portion 1 is provided with an internal aperture extending lengthwise of the body and extending entirely through the body from one end thereof to the other, the said aperture being indicated by the numeral 1b.

As indicated in Figs. 2 and 4, the aperture 1b is preferably elliptically shaped at that end of the plug nearest the prong portions and the longitudinal axis of the ellipse is preferably formed at an acute angle to the prongs and to the face portion of the plug area which contacts the electrical outlet. At its rearwardmost portion the aperture 1b is preferably circular, as shown. The electric wire 2 extends into said aperture longitudinally thereof, as shown.

In that form of my invention shown in Fig. 1, a pair of metal contact members 3 are imbedded in the resilient body portion 1 in normally outwardly non-parallel relation to one another in the direction of the face of the plug substantially as shown. Metallic members 3 are provided with a pair of apertures in spaced relation to one another, these said apertures being indicated by the numeral 3a, as particularly shown in Fig. 5.

Metallic members 3 may also carry the integral curved portions 3b, shown on the drawings, which serve the dual purpose of anchoring portion 3 and also serving as means for controlling distortion of aperture 1b under pressure applied to the plug when the prongs are brought into parallel relation.

As shown in Fig. 3, the body portion 1 is provided with a pair of outwardly extending non-parallel apertures extending substantially into

the body 1 and in spaced relation to the metallic members 3 and exposing the outer surfaces of metallic members 3, these said apertures being indicated by the numeral 1c.

Extending into the apertures 1c, as shown in Fig. 1, are a pair of spaced and oppositely mounted non-parallel prongs indicated by the numeral 4 which normally extend outwardly from one another in the direction of the face of the plug. As shown in Fig. 6, prong members 4 are provided with a pair of protrusions indicated by the numeral 4a which, when prong members 4 are inserted into apertures 1c, fall into juxtaposition with apertures 3a in metallic members 3, thereby substantially locking prong members 4 in spaced and contact forming relation to metallic members 3.

As is conventional in prong members, most outlets being provided with protrusions which fall into registry therewith, prong members 4 are each provided with apertures near the end thereof, indicated by numeral 4b.

In that modified form of my invention shown in Fig. 7, which may be used either as a conventional electric plug or as a safety cover for electric outlets, I provide a pair of outwardly extending, non-parallel prongs 4, substantially as shown, and form integral therewith the anchoring elements 4e which extend substantially into the body of the plug. Prongs 4 are slightly offset, as shown, to provide a shoulder 4f which may be threaded to receive the stub screws 4g for attachment of the ends of the electric wires. Where the plug is solely to be used as a safety cover, aperture 1b need not pass entirely through the plug, but it is sufficient, in this case, if the said aperture extends only deep enough in the body to permit compression of that end of the plug which is nearest to the electric outlet.

In using that form of my invention shown in Figs. 1 to 4, inclusive, the electrical wire 2 is threaded through the aperture 1b and the bared ends 2a of each of the wires conventional to the usual electric cord are inserted into apertures 1c so as to fall substantially in that area between each of apertures 3a. The prongs 4 may then be inserted into apertures 1c and pressed down until protrusions 4a fall into locked registry with apertures 3a. The normal resiliency of the body will maintain a sufficiently rigid connection between portions 3 and 4 to, at all times, maintain a satisfactory electric contact.

In Fig. 8 I show a further modified form of my invention in which, in place of straight metallic contact members 3, I employ a metallic contact member 5 which is provided with an upper anchor element 5a and a lower anchor element 5b. I preferably provide transverse ribs 5c on said metallic contact member, substantially as shown. It is to be noted that contact members 5 shown in Fig. 8, are mounted on opposite sides of the respective apertures with which they are in register.

As further shown in Fig. 8, body portion 1 is provided with a pair of longitudinally extending apertures 1d into which prongs 4 may be inserted, together with the exposed end of current carrying wire 2a, shown in Figs. 8 and 12.

As shown in Fig. 11, the prongs 4, as used in the modified form shown in Fig. 8, are each provided with an aperture 4c to receive the exposed wire 2a, and are further provided with the plurality of protrusions 4d for frictional contact with the exposed corrugations 5c of metallic contact member 5 in aperture 1d.

In putting that form of plug shown in Fig. 8 to use, each of wires 2a are threaded through aperture 4c and the prongs 4 are then forced into the aperture 1d. As it is obvious, the prongs and wires are then frictionally retained in the body portion 1.

The normal resiliency of the body 1 is substantially enhanced by the provision of an aperture such as that shown in the drawings and indicated by the numeral 1b. An elliptical aperture such as I provide gives maximum flexibility to the body and the prongs carried thereby, without causing appreciable distortion of the body when the prongs are brought into parallel relation. The placement of the elliptical aperture 1b on an acute angle to each of the contact prongs 4 also aids in permitting the adjustment of the said prongs 4 into parallel relation with one another without substantial distortion of the body or otherwise interfering with the normal relation of each of said prongs in cross registry with the other when inserted in the conventional electrical outlet.

The generic features of each of the various modified forms of my invention shown on all the drawings are believed to repose in the combination of the pair of non-parallel prongs, at a greater distance from one another at their tips than at their junction with the body portion, a highly resilient body, said body being provided with an elliptical aperture extending lengthwise thereof and preferably placed so that the longitudinal axis of the elliptical portion is at an angle to the blades, together with means for anchoring the said blades, in the aforementioned non-parallel relation to one another, in the body portion, and means for retention of electric wires.

Further generic features particularly common to the forms of my invention shown in Figs. 1 and 8, in addition to those above mentioned, are believed to be the removability of the blades, the pair of non-parallel, blade retaining apertures in the body and the metal contact members which repose in the body portion.

While I have described my invention in quite specific detail, I realize that various changes may be made in the embodiment of the invention herein specifically described without departing from or sacrificing any of the advantages of the invention or any features thereof, and nothing herein shall be construed as limitations upon the invention, its concept or structural embodiment as to the whole or any part thereof except as defined in the appended claims.

I claim:

1. In an article of the described class the combination of a one piece resilient body having a tapered elliptical aperture therein extending longitudinally thereof, said aperture tapering from a smaller elliptical opening near the rearward end of the body to a larger elliptical opening at the forward end of the body and terminating at the face of the plug in an aperture involving a substantial portion of the face area of the plug, said elliptical aperture having its long axis extending angularly with respect to a pair of spaced apart other apertures provided in the face of the plug said apertures extending from substantially the medial portion of the body in an outwardly direction and outwardly divergent relation toward the face of the body, a pair of non-parallel outwardly divergent metal members completely imbedded in the body of the plug parallel with the last aforementioned apertures so that the face of the metal members is exposed in

the apertures and extends angularly to permit nonparallel insertion of one end of outwardly divergent contact prongs, frictional elements on said metal members, a pair of stiff contact prongs, frictional elements on said contact prongs, each of said contact prongs being insertable in one of the apertures in register with the imbedded metal members, together with the raw ends of electric wires for locking the said electric wires in the plug body.

2. In an article of the described class the combination of an elongated one piece resilient plug body having an aperture therein extending longitudinally thereof, said aperture being elliptical in cross section and tapering from a smaller elliptical opening near the rearward end of the body to a larger elliptical opening at the forward end of the body and providing an opening at the face of the plug body involving a substantial portion of the face area of the plug body, said elliptical aperture having its long axis disposed angularly in the plug body with respect to the medial portion of a pair of spaced apart, outwardly diverging contact prongs insertable in the forwardmost end of the plug body, a pair of non-parallel outwardly diverging metal members completely imbedded in the plug body adjacent to apertures provided in the plug body and extending parallel to said metal members to permit insertion of contact prongs, friction elements on

said metal members, a pair of stiff contact prongs, friction elements on said contact prongs, said contact prongs being each insertable in an aperture in the face of the plug body together with the raw ends of one of a pair of electric wires for locking the same in the plug body substantially as and for the purposes set forth.

3. In an electrical plug the combination of a resilient body having an aperture therethrough for reception of an electric cord and to permit substantial compression of the body, a pair of substantially flat metal contact members imbedded in said body in non-parallel relation to one another, being widest apart at those ends nearest the face of the plug, the plug body also being provided with apertures therein in register with each metal contact member, said apertures opening on the face of the plug, and a pair of insertable prongs for part way insertion with the raw ends of the wires of the electric cord into the apertures for frictional locked connection with the metal contact members, said prongs also extending outwardly beyond the face of the plug in non-parallel relation, being widest apart at their outer extremities, providing a means whereby tensioned contact is maintained with the contacts in a conventional outlet when the plug body is compressed to place said prongs in parallel relation for insertion and use.

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