

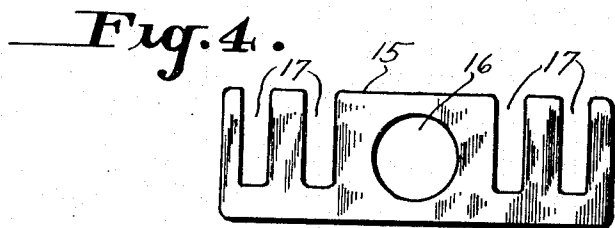
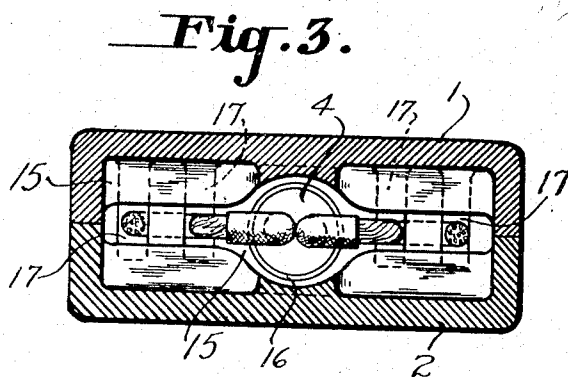
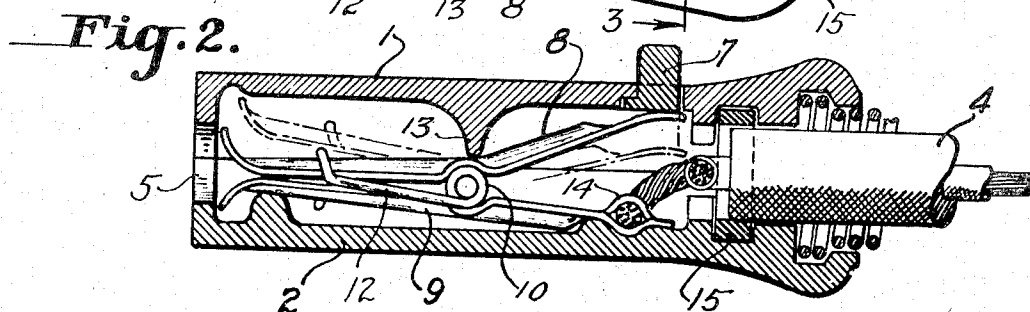
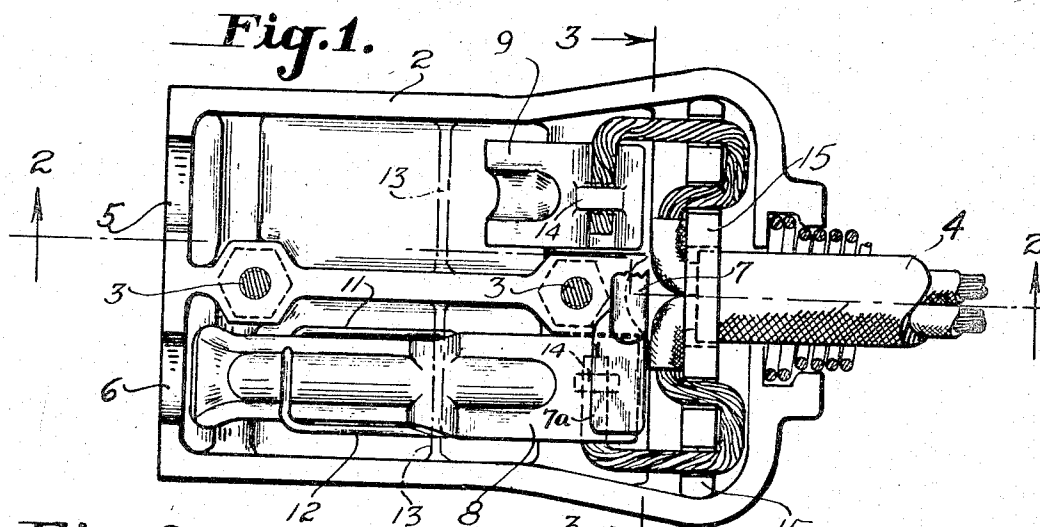
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ELECTRIC PLUG

Filed May 9, 1938



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2,240,394

ELECTRIC PLUG

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Application May 9, 1938, Serial No. 206,821

3 Claims. (Cl. 173-322)

This invention relates to the art of electric plugs and is an improvement upon that disclosed in my co-pending application Serial No. 167,553, filed October 6, 1937. Certain subject matter shown and not claimed in this application is shown and claimed in my co-pending application Serial No. 206,822, filed May 9, 1938.

As explained in my companion application, supra, the electric wire connections to the plug are subjected to considerable strain and there is always the danger of these wires becoming accidentally disconnected or at least loosened, with the result that there is danger of sparking. This situation has long been regarded by the insurance companies as being very serious and accordingly they have required such connections to withstand a strain of twenty-five pounds and this requirement has now been increased to fifty pounds, so it is understood, as a still further safeguard.

The present form of invention involves the same principle as in the companion case, supra, and is considered to be simplified and hence less expensive to manufacture, without however sacrificing its efficiency and dependability.

Accordingly, the object of this invention is to provide a simplified means for relieving the strain to which the electric wire connections would otherwise be subjected, such means being capable also of easy application to the electric plug.

Other objects will appear from the following description and claims when considered together with the accompanying drawing.

Fig. 1 is a view showing the interior of an electric plug in which my present improvement is embodied;

Fig. 2 is a view taken on line 2-2 of Fig. 1;

Fig. 3 is a view taken on line 3-3 of Fig. 1; and

Fig. 4 is a view of the strain-relieving means itself.

It is to be understood that the present form of disclosure is merely for purposes of illustration and that there may be devised various modifications without departing from the spirit of my invention as herein described and claimed.

Referring to the accompanying drawing, the plug casing comprises the upper and lower members 1 and 2 which are secured together by the usual bolts 3. The inside surfaces of the casing members are formed so as to receive the clip members which are adapted to engage the terminals or prongs of the electric toaster or the like, and the plug casing has openings at the forward end thereof to permit such engagement and has a rear opening through which the elec-

tric cable extends, this cable being indicated by reference numeral 4 while the forward openings are indicated by reference numerals 5 and 6. The clip members are of duplicate form and will now be described, with the explanation that these clip members are adapted to be opened by means of the presser button 7 which extends through the upper casing member 1, in accordance with the same general manner of operation as is more fully explained in my prior Patent No. 1,905,452, April 25, 1933.

The principal form of clip herein illustrated comprises the upper clip member 8 and the companion lower clip member 9, which are pivotally mounted about the coil 10 of a spring which normally tends to close these clip members, as will be understood. The end portions 11 and 12 of the spring, in each instance, extend angularly along the sides of the clips and terminate in lateral extensions across the forward end portions of the clip members. As indicated in the drawing, the clip members are cut back along the sides thereof so as to keep down the over-all width thereof. The middle parts of the clip members are formed with transversely curved portions to accommodate the coil 10 of the spring and to permit pivotal movement of the upper clip member thereabout. It is to be understood that the upper clip member alone is given such pivotal movement while the lower clip member remains substantially still.

As a means of maintaining the clips in proper position in the plug casing during operation as well as at other times, I have provided the inner surface of the upper casing member with the transverse ribs 13 which are located upon the two sides of the usual partition between the clip areas and which are adapted to engage the curved portion of the upper clip member just rearwardly of the vertical plane through the axis of the spring coil 10. The ribs are tapered to a sufficiently restricted edge form in order to afford the engagement and function desired. Theoretically, the ribs 13 might engage the clip members 8 at exactly the plane of the axis of the spring coil but the present arrangement is adopted as a means of ensuring against accidental engagement of the ribs forwardly of the axial plane just referred to.

The presser button 7 has lateral arms or extensions 7a which are adapted to engage the rear end portions of the upper clip members for the purpose of opening the clips for attachment or removal of the plug. The presser button will be applied from the inside of the upper casing mem-

ber by extending the button portion through the opening in the casing member, while the lateral extensions 1a will then prevent removal of the same from assembly.

Immediately beneath the rear ends of the upper clip members, the lower clip members are provided with integral loop portions for attachment of the electric wires, as indicated at 14. Upon inserting the wire ends into the loops, they are clamped into firm engagement therewith, and this form of connection is especially well adapted for use in connection with the presser button type of clips.

The means for relieving strain to which the wire connections would otherwise be subjected, consists of the sheet form of fibre or other electric insulating material 15 which is provided with the middle aperture 16 and the open-end slots 17 upon each side of the opening 16. The cable 4 is adapted to be threaded through the aperture 16 and the bared wires extended individually through the slots, in the manner indicated in Fig. 1, the ends of the individual wires being attached to the loops 14, as above explained.

It will be observed that the number of slots upon each side of the middle aperture 16 is such that the wire end portions extend forwardly after the wires have been placed in the slots in the manner explained. By having the open-end slots, the wires can be more readily placed within the same, it being understood that the wires are so arranged in the slots before placing the strain-relieving device within the plug casing. If so desired, two separate apertures could be provided instead of the single middle aperture 16; in which case, the outer sheath of the cable 4 would be removed and the individual insulated wires extended through the individual apertures.

When the strain-relieving device has been applied to the wires in the manner just explained, and the ends of the wires have been connected to the clip members, as also explained, these parts are placed within the casing members which are then secured together by means of the bolts 3. For this purpose, the inner surfaces of the casing members 1 and 2 are provided with grooves for receiving the edge portions of the sheet member 15. These grooves serve not only to position the strain-relieving device 15 but they serve also to close the ends of the slots 17 which are thereby converted into what virtually become apertures. The walls of these grooves are higher upon the two sides of the aperture 16 than they are at the aperture 16 so as to provide secure means of engagement for the strain-relieving means 15 and also to restrict the apertures, which are formed thereby, to the desired size. It will be observed from Fig. 3 that the passages at the sides of the middle aperture are in lateral alignment therewith. By making the slots of substantial depth, as herein indicated, the insertion of the wires is greatly facilitated but without interfering with the required strength of the body 15 which is afforded substantial support and reinforcement by the manner of engagement in the deepened grooves for the side portions of the body 15, as above explained.

As indicated in Fig. 1, the strain-relieving device 15 is so positioned in the plug casing that there is allowed sufficient space for the turns of the wires forwardly and rearwardly thereof. The aperture through the rear end of the plug casing is of just sufficient size to accommodate

the cable 4, and an annular groove is provided, just outside of the cable aperture, to receive the larger end of the familiar wire sheath around the cable 4. Thus the end portions of the electric wires are effectively enclosed within the casing and there is afforded effective insulation throughout. In fact, the strain-relieving device itself serves also in the capacity of an electric insulation wall.

My present form of strain-relieving device can be stamped out of sheet material at comparatively little cost, the open-end slots permit the application of the wires thereto in a comparatively easy manner, and this device can be applied to the plug casing in a simple manner and with ample strength to withstand the strain to which the wire connections would otherwise be subjected. Virtually, the strain-relieving device, as herein provided, becomes a part of the plug casing itself when in assembly. Needless to say, the wires are effectively maintained against dislodgment by the strain, by virtue of the tortuous manner in which they are threaded through the passages provided in the strain-relieving device.

It is to be understood that so far as the strain-relieving device itself is concerned, it may be employed in connection with other forms of clips and not only with the particular form of clip herein disclosed.

What I claim is:

1. An electric appliance including a longitudinally divided chambered insulation body, terminals within said body for connection of electric wires thereto, said body having an aperture for passage of the electric cable therethrough, and anchoring means located within said body and between said aperture and said terminals, for relieving said wire connections from strain to which the electric cable might be subjected outside of said body, said anchoring means comprising a substantially rectangular insert of electric insulation material arranged in a plane substantially normal to the longitudinal axis of said body and having a plurality of sets of laterally spaced open-end transverse slots for the tortuous passage therethrough of the individual wires, the companion halves of said body having inner companion recesses transversely of the inner surfaces and of the longitudinal axis thereof for positioning said anchoring means therewithin against displacement in either direction and for closing the open ends of said slots when in assembly.

2. An electric appliance including a longitudinally divided chambered insulation body, terminals within said body for connection of the electric wires thereto, said body having an aperture for passage of the electric wires therethrough, and anchoring means located within said body and between said aperture and said terminals, for relieving said wire connections from any strain to which the electric wires might be subjected outside of said body, said anchoring means comprising a substantially rectangular insert of electric insulation material arranged in a plane substantially normal to the longitudinal axis of said body and having aperture means through the middle part thereof and having upon each side of said aperture means a plurality of open-end slots each extending transversely thereof and arranged therealong for the tortuous passage therethrough of the individual wires, the companion halves of said body having companion recesses transversely of the inner surfaces of the

chambered portions thereof for positioning said anchoring means therewithin against displacement in either direction and for closing the open ends of said slots when in assembly, the walls of said recesses being sufficiently deep and of substantially equal depth in the side portions of said body and hence in the regions of said slots to restrict said slots to virtually closed transversely spaced apertures, and the walls of said recesses in the middle part of said body being sufficiently shallow to permit unrestricted use of said aperture means.

3. An electric appliance including a longitudinally divided chambered insulation body, a terminal within said body for connection of the electric wire thereto, said body having an aperture for passage of the electric wire therethrough, and anchoring means located within said body and between said aperture and said terminal for relieving said wire connection from any strain

to which the electric wire might be subjected outside of said body, said anchoring means comprising a substantially rectangular insert of electric insulation material arranged in a plane substantially normal to the longitudinal axis of said body and having a plurality of open-end slots extending transversely thereof and spaced therealong for the tortuous passage thereof through of the wire, the companion halves of said body having companion recesses transversely of the inner surfaces of the chambered portions thereof for positioning said anchoring means therewithin against displacement in either direction and for closing the open ends of said slots when in assembly, and the walls of said recesses being sufficiently deep in the regions of said slots to restrict said slots to virtually closed transversely spaced apertures for the wire.

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