Dec. 28, 1948. A. LA RIZZA 2,457,477

FUSE ATTACHMENT FOR ELECTRIC PLUGS

Filed Aug. 9, 1947 2 Sheets-Sheet 1

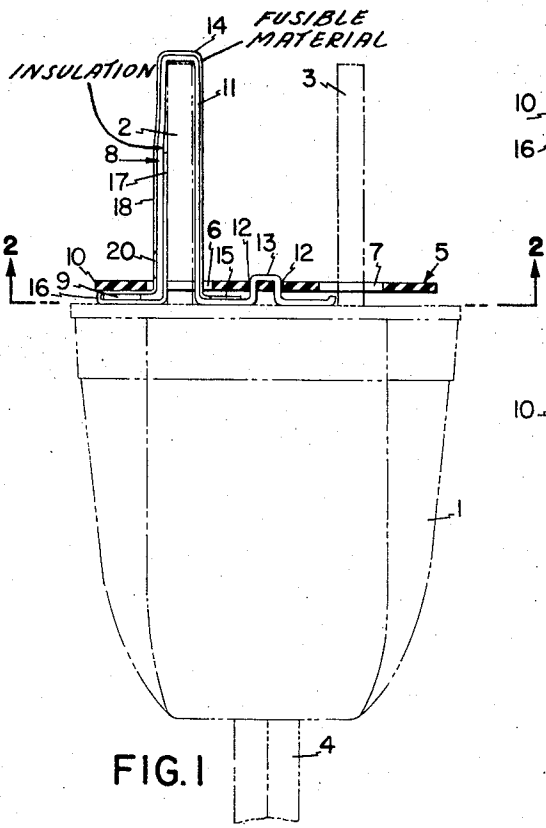

FIG. 1

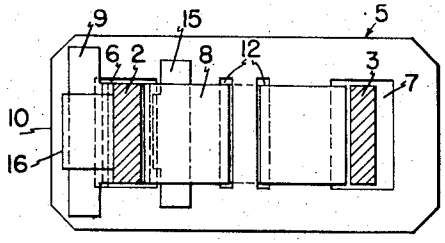

FIG. 2

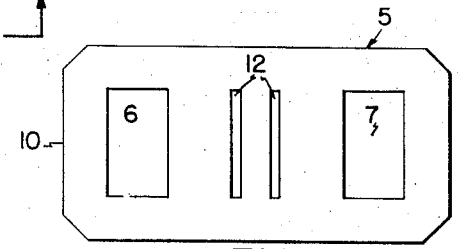

FIG. 3

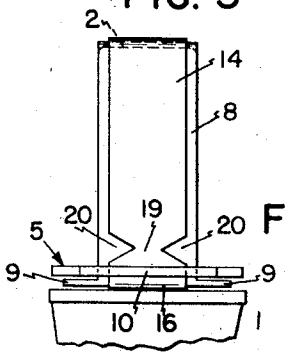

FIG. 6

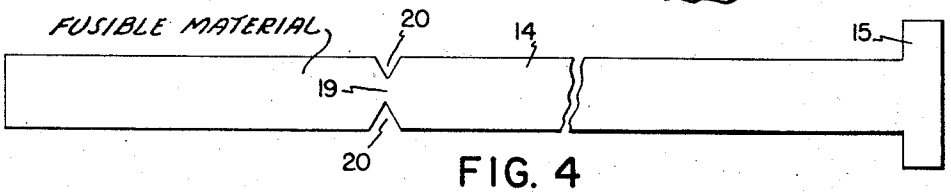

FIG. 4

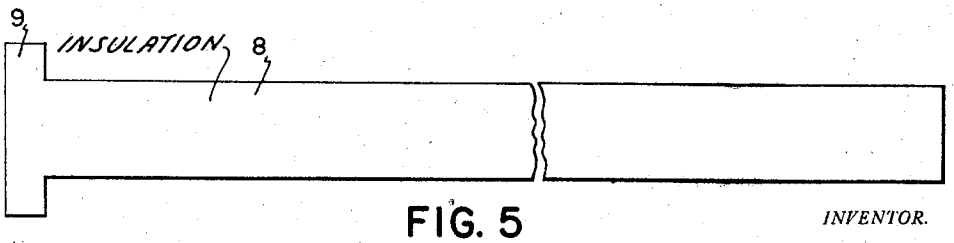

FIG. 5

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FUSE ATTACHMENT FOR ELECTRIC PLUGS

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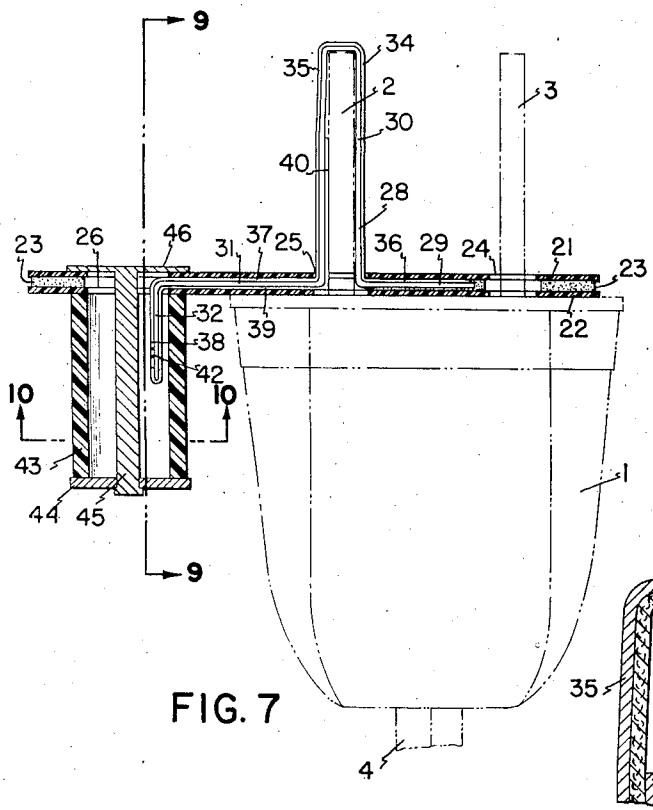

FIG. 7

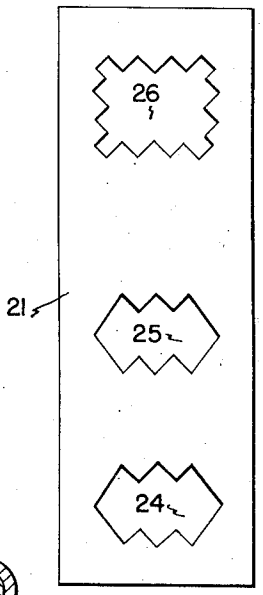

FIG. 8

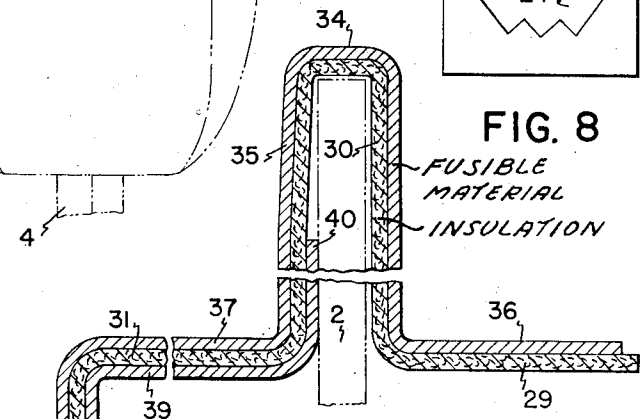

FIG. 11

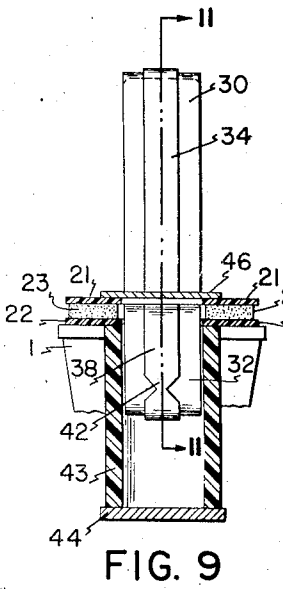

FIG. 9

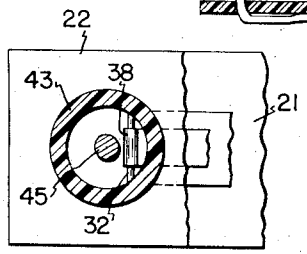

FIG. 10

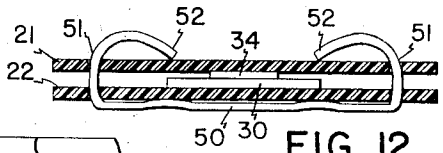

FIG. 12

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UNITED STATES PATENT OFFICE

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FUSE ATTACHMENT FOR ELECTRIC PLUGS

Anthony La Rizza, Revere, Mass.

Application August 9, 1947, Serial No. 767,671

6 Claims. (Cl. 200—115.5)

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This invention relates to a fuse attachment for an electric plug and it has for its object to provide a fuse attachment which can be mounted on one of the prongs of an ordinary electric plug thereby converting it into a fused plug.

Fused electric plugs are now commonly made with the fuse element built into the plug. With this construction if the fuse blows or melts, the plug becomes useless and must be replaced by another plug.

With my invention the fuse element can be applied to a prong of any ordinary plug, and if in use the fuse gives away, the fuse element may be removed from the prong of the plug and a fresh fuse element applied thereto. In other words, with my invention the blowing of the fuse does not render the plug itself inoperative, because in order to repair the damage, it is only necessary to remove the blown fuse element from the prong of the plug and replace it by a fresh fuse element.

Moreover, my invention has the further advantage that any ordinary plug can be converted into a fused plug by merely mounting the fuse attachment on the prong of the plug, and if at any time the plug is to be used under circumstances in which a fuse is not required, such fuse attachment can be demounted from the prong of the plug.

In order to give an understanding of the invention, I have illustrated in the drawings some selected embodiments thereof which will now be described after which the novel features will be pointed out in the appended claims.

In the drawings:

Fig. 1 is an enlarged view of an electric plug having one form of my improved fuse attachment applied thereto, parts of the attachment being shown in section.

Fig. 2 is a section on the line 2—2, Fig. 1.

Fig. 3 is a view of the retaining member of the attachment.

Fig. 4 is a view of the fusible element.

Fig. 5 is a view of the insulating strip used for insulating the fuse element from the prong of the plug.

Fig. 6 is a fragmentary perspective view of the fuse attachment.

Fig. 7 is a view similar to Fig. 1 but showing a different embodiment of the invention.

Fig. 8 is a view of one of the retaining strips.

Fig. 9 is a section on the line 9—9, Fig. 7.

Fig. 10 is a section on the line 10—10, Fig. 7.

Fig. 11 is an enlarged fragmentary sectional view showing a portion of the insulating strip and the fuse element.

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Fig. 12 is a fragmentary sectional view showing a still different embodiment of the invention.

Referring first to the embodiment of the invention shown in Figs. 1 to 6, 1 indicates an ordinary electric plug provided with the prongs 2 and 3 and connected to the cord 4 leading to the appliance to which the plug is connected. These parts may be such as are usually found in electric plugs and constitute no part of my present invention, which, as stated above, is a fuse attachment adapted to be removably mounted on one of the prongs of the plug.

The fuse attachment shown in Figs. 1 to 6 comprises a retaining member 5 of insulating material which is provided with two openings 6 and 7 to receive the prongs 2 and 3 of the plug 1. The attachment also comprises an insulating strip 8 made of paper or some other suitable insulating material which is provided at one end with a head portion 9. The insulating strip is assembled with the retaining member 5 by placing the head portion 9 beneath one end 10 of the retaining member 5 and threading the strip 8 through the opening 6 to form a loop 11 adapted to embrace one of the prongs of the plug 1, said strip 8 extending underneath the retaining member 5 and then being threaded through the two slots 12 with which the retaining member is provided as shown at 13 in Fig. 1.

The fuse attachment also includes a fuse element in the form of a strip 14 of conducting material which is provided at one end with a head portion 15. This fuse element 14 embraces the loop portion 11 of the insulating strip 8 and the head end of the fuse element extends through the opening 6. The head 15 thereof underlies the retaining member 5 and is confined between the latter and the insulating strip 8.

The other end of the fuse element 14 also extends through the opening 6 of the retaining member, and then extends around the head 9 of the insulating strip as shown at 16, the end portion 17 of the fuse element lying between the insulating strip 8 and the prong 2 and having contact with said prong. The leg portion 18 of the fuse element 14 is provided with a section of reduced cross sectional area as indicated at 19, this preferably being formed by providing notches 20 in one or both sides of the fuse element. The section of reduced cross sectional area is located in the leg 18 of the fuse element closely adjacent the retaining member 5 as indicated in Fig. 6.

A fuse attachment made up as above described

can be easily applied to any electric plug 1 by placing the retaining member 5 over the prongs of the plug and introducing one of the prongs into the loop 11 of the insulating member 8.

When the device is thus applied to the plug, the portion of the fuse element 14 which embraces the prong 2 is insulated therefrom by the insulating strip 8, but the end portion 17 of the fuse element which is located inside of the loop 11 of insulating material will contact with the prong 2.

When the plug thus equipped with a fuse attachment is plugged into a socket connection, the portion of the fuse element which embraces the prong 2 will contact with the complemental contact elements of the socket connection and a circuit will be established through the fuse element inasmuch as the end 17 thereof is contacting with the prong 2.

If, during use, abnormal current conditions arise which might injure the appliance to which the plug is attached, such abnormal current conditions will melt the fuse at the place 19 of reduced cross sectional area thereby breaking the circuit and preventing injury to the appliance.

The blowing of the fuse does not in any way effect the structure of the plug itself, for the plug with the blown fuse may be removed from the socket element and the fuse attachment removed from the plug and replaced by an attachment having a fresh fuse, thereby again putting the plug into condition for use.

In the construction shown in Figs. 1 to 6 the fusing point 19 of the fuse element is more or less exposed, and there is a possibility that when the fuse blows, the accompanying flash may blow out of the socket to which the plug 1 is connected.

In the embodiment shown in Figs. 9 to 12, I have shown a construction in which the fusing point of the fuse element is enclosed in a sealed casing, thus eliminating any possible danger from a flash occasioned by the blowing of the fuse.

In the form of the invention shown in Figs. 9 to 11, 1 indicates the plug having the usual prongs 2 and 3 and 4 indicates the cord connecting the plug to the appliance.

The fuse attachment illustrated in Fig. 9 is provided with two retaining members 21, 22 of insulating material which are spaced slightly from each other and are connected at their ends in any suitable way, as by means of cement 23. Each strip is provided with two openings 24, 25 to receive the prongs 2 and 3 of the plug, and each strip is also provided with an additional somewhat larger opening 26, the purpose of which will be presently described.

The fuse attachment shown in Fig. 9 also involves a strip 28 of insulating material similar to the strip 8 shown in Figs. 1 to 6. One end 29 of this strip is located between the two retaining members 21, 22 and said strip of insulating material is bent into a loop 30 which extends through the alined openings 25 of the retaining members 21, 22 and is of sufficient proportions to receive and embrace the prong 2 of the plug 1. The strip 28 also has a portion 31 extending between the two retaining members 21, 22, the end 32 of which is bent downwardly through the alined openings 26 of the retaining members as clearly seen in Fig. 9.

The fuse element is indicated at 34 and it is provided with a loop portion 35 that embraces the loop 30 of the insulating strip, one end 36 of the fuse element is confined between the retaining members 22, 23 and overlies the end portion 29 of the retaining strip. Another portion 37 of the

fuse element is also confined between the retaining members 21, 22 and overlies the portion 31 of the insulating strip. The fuse element is also provided with a loop portion 38 which embraces the down-turned portion 32 of the insulating strip and said fuse element further has a portion 39 located between the two retaining members 21, 22 and underlying the portion 31 of the insulating strip, the end portion 40 of the fuse element being located between one leg of the loop 30 of the insulating strip and the prong 2 and having contact with said prong.

The fusing portion or the portion of the insulating strip of reduced cross sectional area where the fuse element will melt is shown at 42 and is located in the loop portion 38 of the insulating strip which embraces the down-turned leg 32 of insulating material.

The loop portion 38 of the fuse element which contains the fusing point 42 is enclosed in a sealed casing 43. This casing may comprise a cylindrical shell of insulating material, the lower end of which is closed by a cap member 44. In the construction shown in Fig. 9 the cap 44 has a stud 45 anchored thereto which extends through the shell 43 and which has at its upper end a head 46 that engages the upper side of the top retaining member 21 and which also closes and seals the opening 26 in the retaining member.

The shell 43 is held tightly clamped against the underside of the lower retaining member and by means of this construction, the loop portion 38 of the fuse element is located within a sealed container.

The device shown in Figs. 7 to 11 operates in the same way as that shown in Figs. 1 to 6. The fuse attachment comprising the two retaining members 21, 22, the insulating strip 30, the fuse element 34, and the sealed casing 43 constitute a unitary structure which can be readily applied to the prongs of any plug 1. A plug having this fuse attachment applied thereto may be plugged into any socket element in the same manner as any ordinary plug, and when the plug is connected to the socket element, the prong 2 of the plug will have electrical connection through the corresponding terminal of the socket through the fuse element 34.

If, during use, abnormal current conditions arise which might injure the appliance connected to the plug 1, the fuse element will melt at the point 42 thereby breaking the circuit to the appliance. With the device shown in Figs. 7 to 11 any flash which might occur by the blowing of the fuse is contained entirely within the sealed casing 43.

The fact that the fuse attachment is separate from the plug but can be readily mounted thereon makes it possible to convert any ordinary electric plug into a fused plug by simply mounting my improved fuse attachment on one of the prongs thereof.

The fuse attachment has the further advantage that it is relatively simple in construction and can be inexpensively manufactured.

Instead of using cement for uniting the retaining members 21, 22, I may simply staple said members together as shown in Fig. 12 where they are connected by a staple element 50, the legs 51 of which extend through both retaining members and are bent or clinched over as shown at 52.

I claim:

1. The combination with an electric plug having prongs for insertion into a socket terminal, of a fuse attachment therefore comprising

a strip of insulating material adapted to embrace the sides and end of one of said prongs, and a fuse element embracing the insulating strip and provided with a fusible portion, one end of the fuse element being located between said insulating strip and said prong and in contact with the latter, said insulating strip insulating the remaining portion of said fuse element from said prong.

2. The combination with an electric plug having prongs for insertion into a socket element, of a fuse attachment for said plug comprising a strip of insulating material presenting a U-shaped formation to fit over one of said prongs, a fuse element embracing said U-shaped strip of insulating material, an end portion of the fuse element being bent around the end of the strip of insulating material and located on the inside of the U-shaped formation and in contact with said prong, the main portion of said fuse element being insulated from the prong.

3. The combination with an electric plug having a pair of prongs for insertion into a socket terminal element, of a fuse attachment therefor comprising a retainer member of insulating material having openings to receive said prongs, a strip of insulating material anchored at one end to said retainer and adapted to embrace one of said prongs, a fuse element in the form of a strip embracing the strip of insulating material and thus situated to contact the terminals of a socket element when the plug is plugged thereinto, one end of the fuse element being located between the insulating strip and the prong which it embraces and in contact with said plug, said fuse element having a fusible portion between said end thereof and the part which contacts with the socket terminal.

4. The combination with an electric plug having prongs for insertion into a socket terminal element, of a fuse attachment for said plug comprising a strip of insulating material adapted to embrace the sides and end of one of said prongs, a fuse element having a portion embracing the insulating strip and thus situated to contact the terminals of a socket element when the plug is plugged thereinto, one end of the fuse element being located between the insulating strip and the prong of the plug which it embraces, said fuse element having a fusible portion between said end thereof and the part which contacts with the socket element, and a sealed enclosure enclosing the fusible portion of the fuse element.

5. The combination with an electric plug having prongs for insertion into a socket terminal element, of a fuse attachment therefor comprising a two-part retainer member of insulating material having openings to receive said prongs, a strip of insulating material anchored at one end of said retainer and having a portion received between the two parts of the retainer and also having a loop portion which projects through an opening in one part of the retainer and embraces one of the said prongs and further having a laterally extended end portion, a fuse element in the form of a strip having a loop portion which embraces the loop portion of the insulating material and is thus situated to contact the terminals of a socket element when the plug is plugged thereinto, said fuse element having another portion embracing the laterally extending end portion of the insulating strip and provided with a fusible portion, the remaining portion of said fuse element being situated partly between the two parts of the retainer member and partly between one leg of said loop of insulating material and the corresponding prong of the plug, with which prong said fuse element has contact and a sealed casing enclosing the fusible portion of the fuse element.

6. The combination with an electric plug having prongs for insertion into a socket terminal element, of a fuse attachment therefor comprising a strip of insulating material having a portion which embraces one of said prongs, and a fuse element embracing said insulating strip and having one end interposed between the insulating strip and the prong and in contact with the latter, said insulating strip insulating the remaining portion of the fusible element from said prong.

ANTHONY LA RIZZA.

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

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Number	Country	Date
345,199	Great Britain	Mar. 12, 1931

Certificate of Correction

Patent No. 2,457,477. December 28, 1948.

ANTHONY LA RIZZA

It is hereby certified that errors appear in the printed specification of the above numbered patent requiring correction as follows:

Column 4, line 75, claim 1, for "therefore" read *therefor*; column 5, line 35, claim 3, for the word "plug" read *prong*; column 6, line 7, claim 5, for "end of" read *end to*; and that the said Letters Patent should be read with these corrections therein that the same may conform to the record of the case in the Patent Office.

Signed and sealed this 3rd day of May, A. D. 1949.

[SEAL]

THOMAS F. MURPHY,
Assistant Commissioner of Patents.

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Signed and sealed this 3rd day of May, A. D. 1949.

[SEAL]

THOMAS F. MURPHY,
Assistant Commissioner of Patents.