Feb. 25, 1947. H. A. PETERSON 2,416,494

FUSE PLUG

Filed Feb. 9, 1944

Fig 1

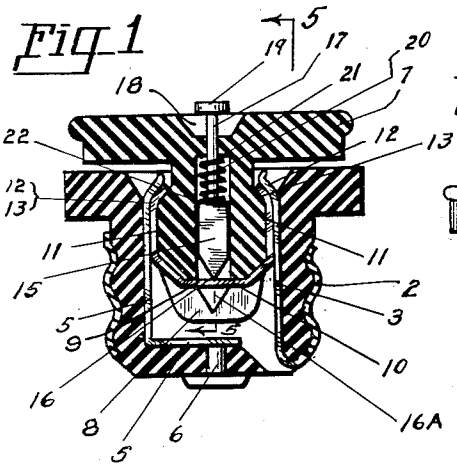
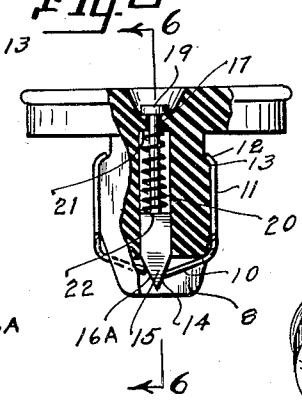


Fig 2



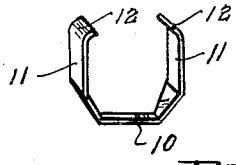


Fig 4

Fig 3

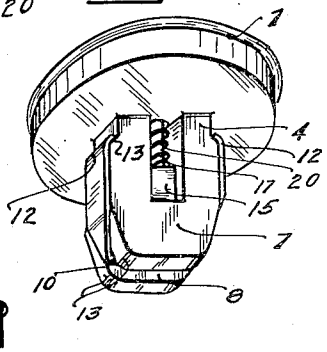


Fig 6

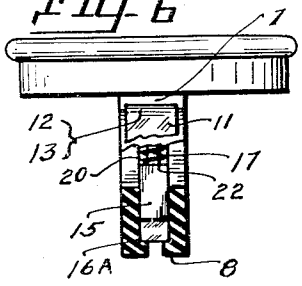


Fig 10

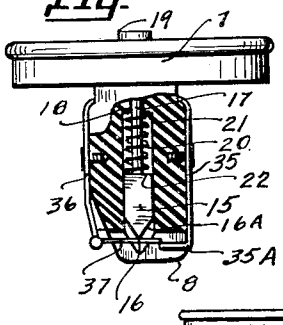


Fig 9

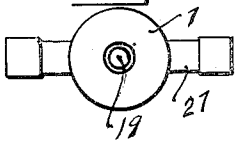
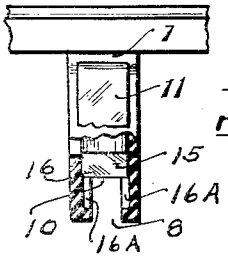


Fig 5



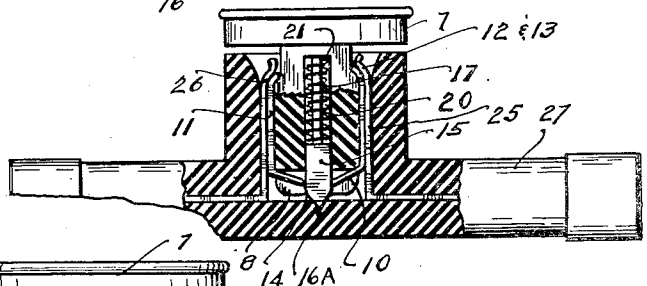


Fig 8

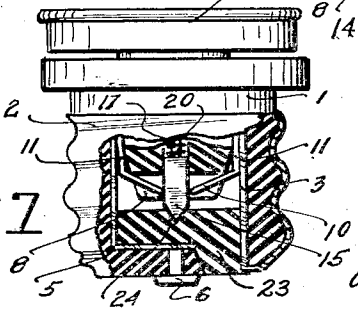


Fig 7

INVENTOR.

HAROLD A. PETERSON

BY

Atty

Patented Feb. 25, 1947 2,416,494

UNITED STATES PATENT OFFICE

2,416,494

FUSE PLUG

Harold A. Peterson, Cedar Mills, Oreg.

Application February 9, 1944, Serial No. 521,672

1 Claim. (Cl. 200—129)

1

This invention relates to fuse plugs and is particularly adapted to be used in connection with socket and cartridge fuses.

The present improvement consists of positively separating the fusing metal by insulation when an overload takes place, thereby preventing an explosion or arc continuing across the fuse break or gap. This improved mechanism for insulating the gap in the fuse also indicates the condition of the fuse without removing the plug.

The primary object of my invention is the applying of a pressure upon the fusing metal of a fuse plug that will cause a rapid and clean break in the electric circuit, at the same time providing an insulating wall between the fused points when the fusing takes place.

Another object of my invention is to provide a fuse plug that can be reconditioned by merely replacing the fuse metal.

A further object of my invention is to reduce arcing at the fusing point of the fuse when an overload takes place.

A still further object of my invention is that the renewable fuse element of a predetermined calibration will only fit the plug for which it was intended.

And another object of my invention is to provide a means of readily indicating when the fuse has been blown.

These and other incidental objects will be apparent in the drawings, specification and claims.

Referring to the drawings:

Figure 1 is a sectional side elevation of my new and improved fuse plug.

Figure 2 is a partial sectional view, illustrating the removable body portion of the fuse plug removed from its socket after the fuse has been separated.

Figure 3 illustrates the removable body portion of the fuse plug in perspective.

Figure 4 illustrates a fuse metal removed from the plug in perspective.

Figure 5 is an end view, partially in section, taken on line 5—5 of Figure 1.

Figure 6 is a fragmentary sectional end view taken on line 6—6 of Figure 2 illustrating the condition after the fuse has been separated or blown.

Figure 7 is a modification of the above views.

Figure 8 illustrates my new and improved plug adapted to be used on a cartridge type fuse, the view being partially in section for convenience of illustration.

Figure 9 is a plan view of the assembled plug as shown in Figure 8.

2

Figure 10 is a partial vertical section of a modification of the invention.

In the drawings:

The main body of the plug of the socket or screw-in type is indicated by numeral 1, having the metal screw band 2 encircling the same. The band 2 has an upright contact bar 3 extending up within the socket 4 of the body of the plug 1. Another contact bar 5 extends upwardly within the body or socket 4, being held in position by the contact terminal 6. Both the bars 3 and 5 are insulated apart within the body or socket 4 of the fuse plug.

A removable plug 7 is adapted to be inserted within the socket 4. This plug consisting of insulation, having a slot 8 across its lower end for receiving the fuse metal strip 9. The fuse strip consists of a calibrated bridge 10 and upright legs 11 which are turned in at 12 for engaging the shoulder 13 of the plug 7, holding the fuse metal in place on the plug.

These upright legs hold the fuse strip in place within the slot 8, at the same time provide for contact engagement with the bars 3 and 5 within the main body portion of the fuse plug. Referring to Figure 1, it will be seen that an electrical circuit has been completed through the terminal 6, bar 5, leg 11 of the fuse metal, the fusing metal at 10, leg 11, contact bar 3 and band 2. Referring to Figure 2, the fuse bar 10 is shown burned through, the fuse metal being separated at 14. In fuse plugs heretofore, there has been an arc created when the fuse metal was burned through by an overload. In my plug the fused ends of the fuse material are separated apart when the break takes place. A wedge 15 has its lower end resting on the fuse metal at its lower end 16, having a stem 17, extending upwardly therefrom terminating in an indicating button 19. The button 19 acting as an indicator of the condition of the fuse.

A spring 20 engages the main body of the plug at 21 at its upper end, having its lower end resting upon the wedge 15 at 22. The compression of this spring causes a downward pressure upon the wedge 15. The purpose of this pressure is to separate the fuse rapidly when the fusing takes place and instantly insulating the points of the fuse metal after the break takes place. This is one of the primary objects of my invention, the reducing of the arcing when the fuse is blown and the complete and permanent breaking of the electric circuit.

Referring to Figure 6, it will be observed that the wedge 15 completely bridges the slot 8 and

enters the socket 16A. This insures complete insulation at the break. The indicator 19 indicates the condition of the plug at all times.

Referring to Figure 7, a slight modification has been made in the operation of the plug, in that the lower part of the socket 4 is filled with an insulating material 23. This insulating material has a socket 24 for receiving the wedge 15 after it passes through the fused metal. This type of plug not only insures insulation between the fuse metal itself, but a complete partition or insulator between the contact bars 3 and 5 within the main body of the fuse plug.

Referring to Figure 8, my new principle is illustrated being adapted to the cartridge type of fuse. In this type, the insulating wedge completely separates the fuse metal itself within the plug 7 and the upright contacts 25 and 26 of the fuse body 27.

Figure 10 illustrates a modified embodiment of the invention wherein the plug 7 has two fusing strips 35 and 36 respectively. The lower end portion of the strip 35 is horizontally disposed, as shown at 35A. Hinged to the lower end of strip 36 is a bar 37 having its free end resting on the horizontal portion 35A. Wedge 15 bears against strip 37. This strip 36 is made of an element which curls or bends when subjected to a determinable maximum current, hence, when the current is increased beyond a predetermined maximum, strip 36 curls or bends and consequently disengages strip 37 from horizontal portion 35A, thus opening the circuit to which members 35 and 36 are connected. As the strip 37 becomes released from horizontal portion 35A, the plunger 15 moves downward and separates the two bodies, forming an effective dielectric therebetween.

I do not wish to be limited to this particular mechanical construction, as my invention may be adapted to other forms of embodiment, still coming within the scope of the claim to follow.

What I claim is:

A fuse plug interiorly formed to provide a socket fully open at the top, conducting strips on the interior of the plug connected to contacts on the outer wall of the plug, a member slidable in the

socket and having an exterior conductor in electrical contact with the conductors in the socket, the member being formed at its lower end with a transverse slot and with a vertical bore at right angles to the slot, the conductor on the member including a fusible section arranged in and bearing against the upper wall of the slot when the conductor on the member is in place, a wedge element movable in the bore and having a pointed end in contact with the fusible element of the conductor carried by the member, a spring in the bore overlying the wedge element and serving to move said element downwardly following fracture of the fusible element in the conductor carried by the member, the side walls of the slot being each formed with a recess to receive and limit the movement of the wedge element following fusion of the fusible strip, the slot being of a width to accommodate the similar dimension of the fusible strip, the recesses in the walls of the slot serving to receive the pointed end of the wedge member following fusion of the fusible strip to maintain the end of the wedge member in a fixed relation in the slot to insure complete separation of the fused ends of the fusible strip, to prevent arcing of the ends of the fusible strip and completely diverging the ends of the fuse strip within and between the walls of the slot.

HAROLD A. PETERSON.

REFERENCES CITED

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

UNITED STATES PATENTS

Number	Name	Date
2,129,309	Stewart	Sept. 6, 1938
590,750	Cartwright	Sept. 28, 1897
1,050,062	Johnston	Jan. 7, 1913
1,337,806	Wells	Apr. 20, 1920
1,751,055	Pelletier et al.	Mar. 18, 1930
710,056	Haskins	Sept. 30, 1902
1,061,894	Baker	May 13, 1913
1,952,279	Peterson	Mar. 27, 1934