June 27, 1950 F. A. GRETSCHEL 2,512,932

FUSE COMBINATION WITH REPLACEABLE FUSE ELEMENT

Filed Oct. 20, 1947

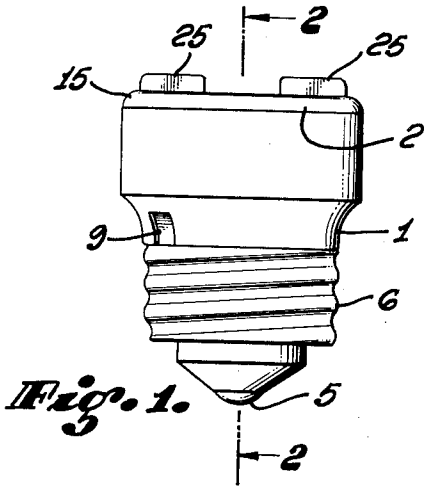


Fig. 1.

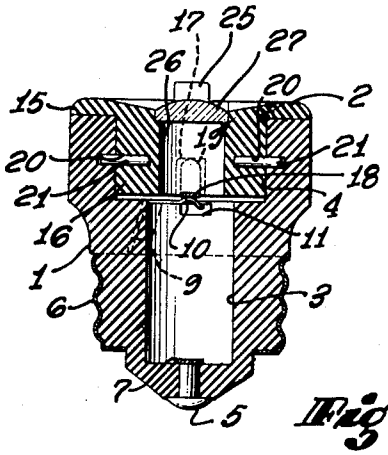


Fig. 2.

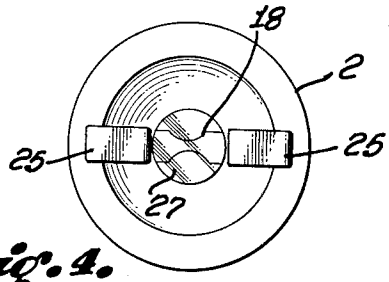


Fig. 4.

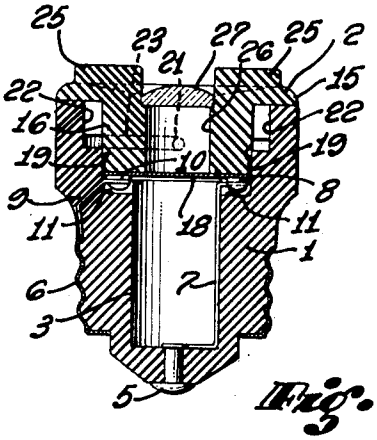


Fig. 3.

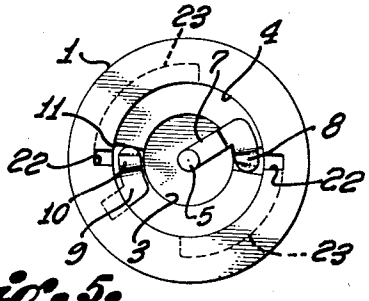
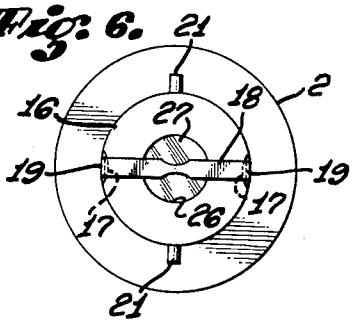


Fig. 5.

Fig. 6.



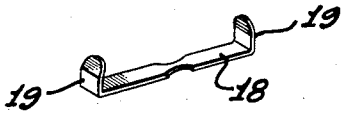


Fig. 7.

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Patented June 27, 1950 2,512,932

UNITED STATES PATENT OFFICE

2,512,932

FUSE COMBINATION WITH REPLACEABLE FUSE ELEMENT

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Application October 20, 1947, Serial No. 780,791

5 Claims. (Cl. 200—130)

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The present invention relates to improvements in fuse plugs such as commonly used in electric light circuits.

It is the general object of my invention to provide a fuse plug which is fitted with a replaceable fuse element. It is a further object to provide a fuse plug combination designed for insertion and removal from a conventional type of socket and the parts of which may be separated after removal from the socket for replacement of a burned-out fuse element.

With these and other objects in view, the invention resides in the combination hereinafter described in detail and drawings are hereto appended in which a preferred form of the invention is illustrated.

In the drawings:

Fig. 1 is a side elevational view showing the general outline of the structure of the invention;

Fig. 2 is a cross-sectional view taken on line 2—2 of Fig. 1 in the direction of the arrows;

Fig. 3 is a cross-sectional view through the center of Fig. 1 and at right angles to Fig. 2;

Fig. 4 is a plan view of the device of Fig. 1;

Fig. 5 is a plan view of the lower portion of Fig. 1 as it appears when removed from the upper portion thereof;

Fig. 6 is a bottom view of a portion of Fig. 1; and

Fig. 7 is a detail view showing a preferred form of replaceable fuse element.

The structure of the invention in the form illustrated in the drawings comprises generally a plug section 1 into which is seated a cap section 2. The plug section 1 is recessed substantially as indicated at 3 and the upper portion of this recess is enlarged to form a shoulder portion 4 within which the cap 2 is seatable.

The plug section 1 is fitted at the bottom thereof with a conventional contact stud 5 and a threaded contact band 6 encompasses the intermediate portion of the plug in the usual commercially well known manner.

A contact strip 7 is suitably secured to the stud 5 and it extends upward therefrom along the inner wall of the recess 3 terminating at the top in a lip 8 which is bent at right angles to the main portion of the strip and takes the position at the bottom of the enlarged recessed portion 4.

A second contact strip 9 extends upwardly through the wall of the plug section and it terminates at the top in a lip portion 10 which may be identical with the lip portion 8 except that it is extended in the opposite direction. It is important to note that the lip portions 8 and 10 are slightly upwardly curved in order to rise above the annular bottom of the recessed portion 4. It is also to be noted that shallow pockets 11 are sunk into the bottom of the recess to provide clearance below the lips 8 and 10.

The cap 2 comprises a relatively thin annular

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flange 15 which seats on the top of the plug section in continued alignment with a cylindrical outer surface thereof. A cylindrical shoulder portion 16 extends downward from a flange 15 and it is made snugly to fit within the outer recess 4 of the plug section but does not quite reach to the bottom thereof. Diametrically opposed notches 17 are provided in the cylindrical surface of the portion 16 at the lower end thereof and these notches are shaped to receive the fusible element of the device. The latter is, in Fig. 7, shown to include a narrow strip 18 from which rise lips 19 and the latter are shaped to fit into the notches 17 when the element is placed in position on the cap substantially as indicated in Fig. 3. In this position it is noticed that the strip 18 comes to rest against the bottom surface of the portion 16 and that the lips 19 do not project beyond the cylindrical surface of the part 16 but may even be placed a slight distance within this surface.

The cap 2 is seatable within the plug section 1 in the following manner. Diametrically aligned sockets 20 are sunk into the cylindrical surface of the cup portion 16 and pins 21 are driven into these recesses to form studs outwardly projecting a short distance. As best shown in Fig. 5, recesses 22 are sunk into the cylindrical inner wall of the plug section in alignment with the projecting ends of the studs 21 and it is important to note that annular grooves 23 extend from the bottom of these notches in opposite direction along the inner cylindrical wall of the plug section within which the studs 21 are caused to lodge when the cap is manually rotated relative to the plug section. It is also important to note that the length of these annular recesses is calculated to bring the fuse element 18 into alignment with the curved portions of the lips 8, 10 of the contact strips. When brought into engagement with the lips of the contact strips in this manner, it is found that the latter become slightly depressed within the notches 11 thereby assuring a perfect contact between the element and these lips.

When the thin flange 15 of the cap 2 is shaped not to extend beyond the cylindrical surface of the plug section, it is seen that the assembled plug may be screwed into its socket and removed therefrom without disturbing the relation of the cap to the plug section. It is furthermore seen that the cap section may be rotated on the plug section, after the plug has been removed from its socket, to bring the studs into alignment with the notches 22 whereupon the cap may be withdrawn from the plug section to remove a blown fuse and inserting a replacement fuse. In order to facilitate seating and removal of the cap from the plug section, it may be found convenient to mount a pair of finger grips 25 on the upper surface of the cap.

The cap is preferably made from transparent material in order that the fuse element may al-

ways be visible therethrough or, if preferred, the inner recess 26 of the cap may be extended through the top thereof and a transparent lens 27 may be fitted into the upper end of the perforation in this manner formed. When a magnifying lens is used, the fuse element is rendered more distinctive.

I claim:

1. A fuse plug combination comprising, a plug section having a cylindrical recess axially sunk therein, the upper portion of said recess being enlarged to form a shouldered seat therein, a contact stud extending into the bottom of the recess, a threaded contact band encircling the lower portion of the plug section, diametrically opposed contact strips extending from said stud and band, the upper ends of said strips being bent to form lips annularly extending along the shoulder of the recess, a cap mountable in said recess, a fuse element seatable on the bottom surface of said cap, there being annular grooves sunk into the enlarged portion of said recess and slots axially extending from said grooves to the top of the plug section, and axially aligned studs radially projecting from said cap for passage through said slots, rotation of the cap causing the studs to move through said grooves thereby to cause the fuse element to move on to said lips and the cap to become locked in position in the plug section.

2. A fuse plug combination comprising, a plug section having a cylindrical recess axially sunk therein, the upper portion of said recess being enlarged to form a shouldered seat therein, a contact stud extending into the bottom of the recess, a threaded contact band encircling the lower portion of the plug section, diametrically opposed contact strips extending from said stud and band, the upper ends of said strips being bent to form lips annularly extending along the shoulder of the recess there being indentations in the shoulder of the recess below said lips, a cap mountable in said recess, a fuse element seatable on the bottom surface of said cap, and elements on the cap engaging the plug section to lock the cap in position therein upon rotation of the cap within the plug section to cause the fuse element to move into contact with and to depress said lips.

3. A fuse plug combination comprising, a plug section having a cylindrical recess axially sunk therein, the upper portion of said recess being enlarged to form a shouldered seat therein, a contact stud extending into the bottom of the recess, a treaded contact band encircling the lower portion of the plug section, diametrically opposed resilient contact strips extending from said stud and band, the upper ends of said strips being bent to form lips annularly extending along the shoulder of the recess, the shoulder being slightly recessed below said lips, a cylindrical cap mountable in said recess, said cap having near the bottom thereof diametrically opposed indentations, a fuse element seatable on the bottom surface of said cap, said fuse element having upwardly and inwardly extending fingers engaging said indentations to lock the fuse element in position on the cap, and elements on the cap engaging the plug section to lock the cap in position therein upon rotation of the cap within the plug section and to move said fuse element on to and slightly to depress said lips.

4. A fuse plug combination comprising, a plug section having a cylindrical recess axially sunk therein, the upper portion of said recess being enlarged to form a shouldered seat therein, there being diametrically opposed grooves horizontally sunk into the wall of said enlarged portion of the recess and slots axially rising from said grooves, a contact stud extending into the bottom of the recess, a threaded contact band encircling the lower portion of the plug section, diametrically opposed to contact strips extending from said stud and band, the upper ends of said strips being bent to form lips annularly extending along the shoulder of the recess, the shoulder being slightly recessed below said lips, a cylindrical cap mountable in said recess, said cap having diametrically opposed indentations near the bottom thereof and a cylindrical passage axially therethrough, a fuse element seatable on the bottom of said cap, said fuse element having upwardly and inwardly extending fingers engaging said indentations to lock the fuse element in position on the cap, elements on the cap extendable through the slots of the plug section in mounting the cap, rotation of the cap causing said elements to move through the said grooves thereby to lock the cap in position therein and to cause the fuse element to move on to and slightly to depress said lips, and a transparent lens closing the top of said passage.

5. A fuse plug combination comprising, a plug section having a cylindrical recess axially sunk therein, the upper portion of said recess being enlarged to form a shouldered seat therein, there being diametrically opposed grooves horizontally sunk into the walls of said enlarged portion of the recess and slots axially rising from said grooves, a contact stud extending into the bottom of said recess, a threaded contact band encircling the lower portion of the plug section, diametrically opposed contact strips extending from said stud and band, the upper ends of said strips being bent to form lips annularly extending along the shoulder of the recess, a cylindrical cap seatable in said recess, a fuse element seatable on the bottom surface of said cap, said fuse element having upwardly and inwardly extending fingers engaging said indentations to lock the fuse element in position on the cap, elements on the cap engaging the slots of the plug section in seating the cap and movable into said grooves to lock the cap in position therein upon rotation of the cap to move the fuse element into contact with said lips, and projections rising from the cap for facilitating such rotation.

FREDERICK A. GRETSCHEL.

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