R. A. SCHOENBERG.

FUSE PLUG.

APPLICATION FILED NOV. 11, 1914.

1,301,009.

Patented Apr. 15, 1919.

Fig. 1.

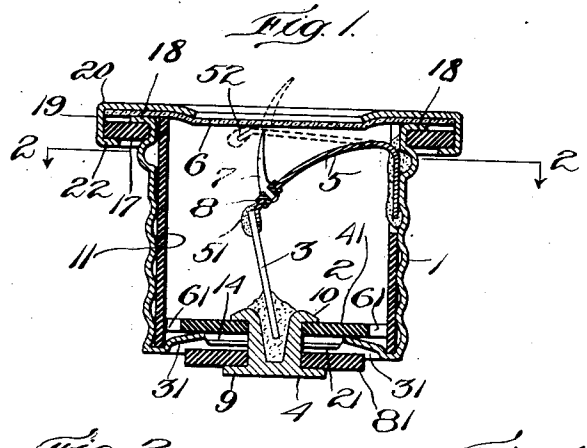


Fig. 2.

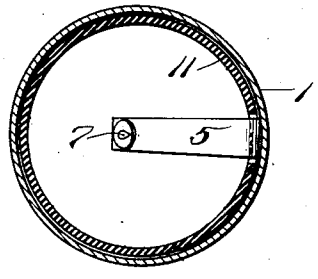
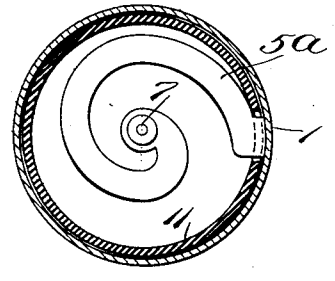


Fig. 3.



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UNITED STATES PATENT OFFICE.

RALPH ABRAHAM SCHOENBERG, (NOW BY JUDICIAL CHANGE OF NAME RALPH A. BELMONT,) OF NEW YORK, N. Y., ASSIGNOR TO THE CONNECTICUT ELECTRIC MFG. CO., OF BRIDGEPORT, CONNECTICUT, A CORPORATION OF CONNECTICUT.

FUSE-PLUG.

1,301,009. Specification of Letters Patent. Patented Apr. 15, 1919.

Application filed November 11, 1914. Serial No. 871,609.

To all whom it may concern:

Be it known that I, RALPH A. SCHOENBERG, of New York, in the county of New York and State of New York, have invented a new and useful Fuse-Plug, of which the following is a specification.

It very often happens when a fuse is blown out that the arc is drawn between the two terminals and one object of my invention is to overcome this defect by providing means which increase the distance between the terminals upon the blowing of the fuse and in the preferred form this separation of the terminals is done automatically and instantly and to a very great extent by an element such as a spring which snaps away from a fixed terminal. Another defect in fuse plugs heretofore has been that when a blow out has taken place no efficient means has been provided to indicate which one of a number of fuses has blown out and I overcome this objection by providing indicating means which are independent of the gases formed on the blowing of the fuse and which act efficiently to indicate that a fuse has blown and in my preferred form I provide a spring held under tension by the fuse and when the fuse is blown the spring instantly and automatically changes its position and indicates that the fuse has blown.

A feature of my invention consists in providing a member to give such indication by piercing the usual mica disk and this member may be a pin or equivalent device carried by the above-mentioned spring and it is desirable in many cases to have the pin insulated from the spring so as to prevent a shock to any person touching the protruding pin in case, for example, such person were standing on a metal or damp floor.

In the accompanying drawings:

Figure 1 is a central longitudinal sectional view of a fuse plug constructed in accordance with this invention;

Fig. 2 is a section on line 2—2 of Fig. 1; and

Fig. 3 is a sectional view illustrating another form.

Having reference to the drawing 1 represents the body of my improved fuse plug, said body being made with an interior chamber 2 within which is arranged the fuse wire 3. The fuse wire 3 is soldered at one end to a terminal which is the center contact 4 of the plug and at its opposite end to another terminal being soldered to one end of a metal spring indicator member 5 fastened by solder or otherwise to the threaded metallic shell of body 1. The top wall of the plug consists of a thin transparent sheet or disk of mica 6 immediately beneath which the member 5 is arranged, and the latter has attached thereto a pointed pin or spear 7 disposed with its point toward the thin mica wall 6.

The spring indicator member 5 is held under tension by fuse wire 3 and when the latter is blown or burnt out the member 5 snaps toward the mica sheet 6 driving the prong 7 through said mica. Thus when a set or group of plugs is being examined to locate the blown plug, the mere change of position of the spring will indicate that the fuse has been blown and the prong protruding from the mica sheet is also a tell-tale or indicator by means of which the blown fuse may be quickly located.

I prefer to provide an insulating washer 8 between the member 5 and prong 7 so that the latter will not be electrically connected with the outside screw-threaded metallic shell of the plug. This makes it impossible for one to receive a shock from contact with prong 7 while removing the burnt out plug.

In Figs. 1 and 2 the spring indicator member 5 is a straight arm of sheet metal while in Fig. 3 I have shown a helical spring member 5^a.

It will be clear that when the fuse blows the spring member will instantly and automatically move to the position shown in dotted lines so that the distance between the terminals will at once be increased by the distance from the point 51 to the point 52 and in this way arcing will be effectively prevented.

The shell 1 is formed with exterior screw threads so that the plug can be screwed into a socket in the usual fashion. The inner end of shell 1 is made with an inturned flange 21 that is formed with four crimps 31 which provide as many elevated seats upon the inner side of said flange and four radial channels or grooves upon the outer side of said flange. The four seats pro-

vided by the crimps 31 support a washer 41 of non-brittle insulating material, preferably compressed fiber, provided with a central aperture and peripheral notches 61. The central aperture accommodates the center contact 4 of the plug which, at its outer end has mounted upon it a washer 81 of non-brittle insulating material, preferably compressed fiber, that is held in position against the outer side of flange 21 by the head 9 of contact 4. The shank of contact 4 consists of two prongs 10 which are bent or upset so as to clamp washers 41 and 81 firmly to flange 21. Within the shell 1 is arranged a lining 11, of non-brittle sheet material, preferably compressed fiber, that snugly fits the interior of shell 1 and within which the washer 41 fits snugly. This lining 11 is made from a strip of sheet material of the character specified, formed at one corner with a notch for spring 5 and rolled into cylindrical form.

When the fuse burns out the gases are free to pass out of shell 1 through the notches 61, the space 14 between washer 41 and flange 21 the aperture surrounded by flange 21 and the channels provided upon the exterior of the latter by crimps 31.

Near its outer end the shell 1 is made with an annular crimp which provides a shoulder against which a ring 17 is clamped by an out-turned flange 18 at the outer end of shell 1. This ring 17 is of non-brittle insulating material, preferably compressed fiber. A disk 6 of mica or other suitable transparent insulating material is placed against said flange and held in place by a metal ring 19 surrounding said disk and ring 17, said metal ring having at its outer end an inwardly extending flange 20 bearing against the outer side of disk 6 and being turned or crimped inwardly against ring 17 as at 22 so that the disk 6, flange 18, ring 17 and ring 19 are clamped securely together and cannot be rotatively displaced relatively when ring 19 is grasped and rotated to insert the plug in its socket or remove it therefrom.

I have above described a very desirable form of fuse plug body but it will be clear that any suitable body may be used.

What I claim is:

1. A fuse plug comprising a screw shell; an air chamber; a vent for said chamber; a fuse in said chamber; terminals connected by the fuse, one of said terminals being connected to the shell; and means to increase the distance between said terminals upon the blowing of the fuse.

2. A fuse plug comprising a screw shell contact member; a center contact member; a fuse; and a self-active means held inactive by the fuse, said fuse and means connecting said members and increasing the distance between said center contact member and said self-active means upon the blowing of the fuse to indicate that the fuse has blown.

3. A fuse plug comprising a conducting screw shell member; a center contact member; a fuse connected to one of said members; a spring terminal connected to the fuse and also to the other of said members, said spring terminal being held in abnormal position by the fuse but returning to normal position on blowing of the fuse and thereby increasing the distance between said spring terminal and that member to which said fuse is connected.

4. A fuse plug comprising a screw shell body member; a lining for said member; a center contact; a fuse; terminals connected by the fuse, one of said terminals being the center contact and the other a spring held in abnormal position when connected to the fuse but returning to its normal position upon the blowing of the fuse to increase the distance between said terminals.

5. A fuse plug comprising a conducting screw shell; a spring indicator terminal directly connected to the shell; a second terminal; and a fuse connecting the two terminals, said spring indicator terminal acting upon the blowing of the fuse to increase the distance between the terminals.

6. A fuse plug comprising a screw shell; a center contact; a fuse connected to said contact; a self-active terminal for said fuse which is directly connected to said shell; and means carried by said terminal to indicate when the fuse has blown.

7. A fuse plug comprising a body; a chamber within said body; a self-active terminal within said chamber; a fuse to hold said terminal inactive; and an indicating portion insulatively attached to said terminal to indicate that said fuse has blown when said blowing releases the terminal.

8. A fuse plug comprising a screw shell contact; a center contact; a self-active terminal and a fuse to directly connect said contacts; said terminal being held inactive by the fuse and released on blowing of the fuse to indicate that the fuse has blown.

9. A fuse plug comprising a conducting screw shell; a transparent cover; a center contact; a fuse connected to said contact; a spring connected at one end to the shell and at the other to the fuse, said spring being held in abnormal position by the fuse but movable toward said cover to normal position upon the blowing of the fuse to indicate that the fuse has blown.

10. A fuse plug comprising a fuse; a spring held under tension by the fuse; a pin carried by the spring; a fuse chamber for said fuse; and a mica sheet closing said chamber, said spring acting upon the blowing of the fuse to force said pin to penetrate said sheet.

11. A fuse plug comprising a fuse chamber; a fuse in said chamber; a spring normally held under tension by the fuse; a pin carried by the spring but insulated therefrom; and a mica sheet closing said chamber, said spring acting to force said pin to penetrate said sheet.

12. A fuse plug comprising a shell; a fuse chamber; a fuse in said chamber; a spring electrically connected to the shell and held under tension by the fuse; a pin carried by the spring; and a mica sheet closing said chamber, said spring acting upon the blowing of the fuse to force said pin to penetrate said sheet.

13. A fuse plug comprising a screw shell body member; a lining for said member; a chamber within said lining; a cover for said chamber; means to attach said cover, said means being insulated from the shell body member; a fuse; a terminal for said fuse directly attached to said shell body member; a center contact member; and an insulating support for attaching said center contact member to said shell; said fuse and terminal electrically connecting said members.

14. A fuse plug comprising a screw shell body member; a tubular lining for said shell; a fuse; a fuse terminal connected to said shell; a center contact at one end of the plug connected to said fuse; an insulating support for attaching said center contact to said shell; a cover for the other end of the plug; and metallic means insulated from the conducting member to connect said cover to said plug.

15. A fuse plug comprising a screw shell body member; a cover therefor; means to attach said cover to said body member; a fuse; terminals electrically connected by the fuse; and a self-active means to increase the distance between the terminals on the blowing of the fuse.

16. A fuse plug comprising a screw shell body member; a cover; means to attach said cover to said plug; a fuse; terminals connected by the fuse; and self-active means within the body and directly connected thereto held inactive by the fuse, and released on blowing of said fuse to increase the distance between said terminals and give indication outside of the body that said fuse has blown.

17. A fuse plug comprising a shell contact; a vented fuse chamber; a center contact at one end of said chamber; a fuse within the chamber; terminals connected by the fuse; means to increase the distance between the terminals on blowing of the fuse; and an indirect gas outlet at the center contact end of the plug.

18. A fuse plug comprising a screw shell body member; a non-brittle insulating lining therefor; a center contact; a plurality of spaced washers connecting said center contact with the screw shell body; a cover of insulating material; a hand hold; a spring terminal connected to said shell body and carrying a pin; and a fuse connecting said center contact and said terminal, said spring terminal acting on the blowing of the fuse to increase the distance between said center contact and said terminal, said pin extending outside of the plug on the blowing of the fuse to indicate that the fuse has blown.

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