May 26, 1942. H. ALTSCHULE 2,284,600

MULTIPLE FUSE

Filed Feb. 24, 1941

Fig. 1.

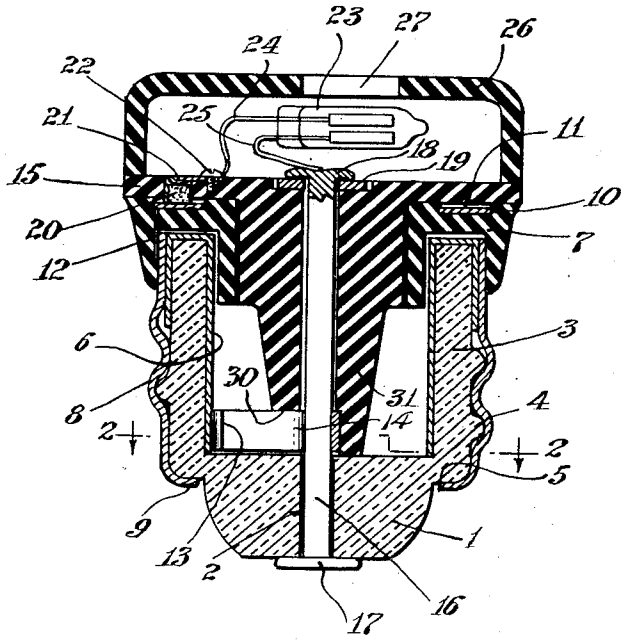
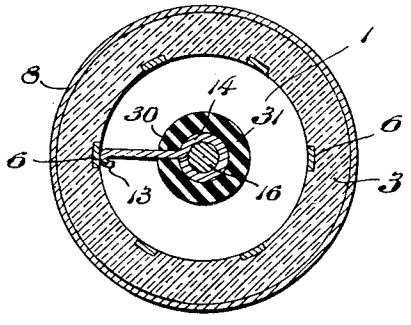


Fig. 2.



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Patented May 26, 1942 2,284,600

UNITED STATES PATENT OFFICE

2,284,600

MULTIPLE FUSE

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Application February 24, 1941, Serial No. 380,123

3 Claims. (Cl. 200—125)

This invention relates to new and useful improvements in multiple fuses, and particularly in plug fuses of the indicator type.

It is the object of the present invention to provide a plug type multiple indicator fuse which can be readily assembled of simple and inexpensive parts, and which will withstand the fusing of the links.

With this object in view, I shall now describe a preferred embodiment of the invention and certain modifications thereof.

In the drawing Fig. 1 is a vertical cross-section of a preferred embodiment of the invention and Fig. 2 is a horizontal cross-section along the lines 2—2 of Fig. 1.

1 is a base partly enclosing an explosion chamber and having a perforation 2 through its bottom. The side walls 3 of the base are substantially straight and are provided on the outside surface with a helical ridge 4 forming a screw thread. Near the bottom a shoulder 5 is formed in the base. The inside surface of the walls 3 is provided with six equally spaced vertical grooves extending from the bottom of the chamber to the top and then continuing across the rim down halfway along the outside surface of the wall 3. Each of these grooves is approximately $\frac{3}{16}$ of an inch wide and seats a link 6 of fusible material extending throughout the length of the groove and having a weakened portion of a width of approximately $\frac{1}{16}$ of an inch on top of the rim of wall 3.

The strips of fusible material are held in place within the grooves by an annular yoke 7, or ring of yoke-shaped cross-section straddling the rim of the wall 3, but spaced therefrom at point in alignment with the links.

A screw-threaded shell 8 engages the screw thread formed by the ridge 4 and contacts at its upper end with the strips of fusible material 6 lying within the grooves of the outside face of the wall 3. The lower end of the shell 8 is turned in as indicated at 9 and engages the shoulder 5 in the base 1.

The upper surface of the yoke 7 has an annular groove 10 within which is located a brass contact ring 11. A conductor 12 connected with ring 11 projects through a vertical perforation through the yoke 7 into contact with the shell 8.

Before the yoke 7 is placed astride the wall 3, a phosphor bronze wiper 13 approximately $\frac{3}{16}$ of an inch wide is placed with its looped end 14 over the rivet 16 until it rests on the bottom of the chamber. In this position the wiper engages the inside surface of the side wall 3 and the strips of fusible material lying within the grooves thereof.

The next operation in the assembly is the placing of the yoke 7 on the rim of the base whereupon cover 15 is placed on top of the yoke 7. The cover 15 has a centrally perforated sleeve projecting into the chamber formed within the base 1, and surrounds the rivet 16 projecting therethrough. The upper end of rivet 16 is headed over as indicated at 18 and engages a washer 19 placed within a recess formed in the top surface of the cover 15.

A resistor 20 is seated through a perforation in the cover 15 on the ring 11 and is pressed against it by means of a leaf spring 21 which is fastened to the cover 15 by means of a drive screw 22.

An electric, e. g., gaseous discharge lamp 23 has one of its lead-in wires 24 connected with the screw 22 and the other with the head 18 of the rivet 16. The lamp 23 is enclosed within a cap 26 fastened to the cover 15 by any suitable means (not shown), e. g., by flanges projecting from cover 15 and resiilently engaging cap 26, and provided with an opening 27 through which the lighting of the lamp may be observed.

When the fuse is inserted into a socket the circuit will be closed from the central terminal of the socket, over the head 17 and body 16 of the rivet, wiper 13, the fusible link 6, screw shell 8, and the shell of the fuse socket.

When there is a sudden surge of current in the circuit mains the fusible link will burn out at its weakened portion on top of the rim of wall 3, breaking the circuit above traced. The lamp will light indicating that one of the fuse links has blown. Thereupon, the top 15 is rotated to rotate the wiper 13 which projects through and is, therefore, engaged by the sides of a slot 30 formed in the lower end of the sleeve 31. The wiper 13 will be moved into contact with the next strip of fusible material 6 whereupon the low resistance path is re-established and the lamp 23 will be extinguished.

It will be noted that since the yoke 7 remains stationary the fusing of a link 6 will attack always a different spot on the yoke minimizing thus the danger of a breakdown. There is sufficient clearance between the yoke 7 and the rim of the base 1 to insure the leaking-off of gases generated during the fusing of a link.

Obviously, many other modifications will suggest themselves to one skilled in the art without departing from the spirit of the invention defined in the claims.

What is claimed is:

1. In a multiple fuse plug, a base and a rotatable cover enclosing a chamber; a plurality of fusible links within said chamber; a shell outside said base contacting with the fusible links; a rivet projecting through the base into the chamber; an annular yoke on the rim of the base; a metal ring on said yoke; a connection between the ring and shell; a wiper mounted on said rivet in said chamber and arranged to engage in succession the fusible links; a resistor contacting with said ring and rotatable with the cover; and an electric lamp connected between said resistor and rivet.

2. In a multiple fuse plug, a base partly enclosing a chamber; a plurality of vertical grooves in the inside wall of the chamber and extending from the bottom around the rim part-way down the outside surface of the side wall; a fusible link within each groove extending throughout the length thereof; a metal shell around said base and contacting with the fusible links within the vertical grooves in the outside face of the side wall; a rivet projecting through the base; an annular yoke placed over the rim of the base and having an annular groove formed in its upper face; a metal ring seated in said annular groove; a connection extending from the ring to said shell; a cover lying over the upper face of said yoke and having a central sleeve surrounding said rivet and projecting to the bottom of the chamber; a wiper mounted on said rivet at the bottom of the chamber and projecting through a slot formed in said sleeve into engagement with the side wall of the chamber and arranged to engage in succession the fusible links, said rivet projecting through said sleeve to the upper side of said top and formed into a head to hold the assembly together; a resistor within an opening in said cover and lying on said ring; a spring pressing said resistor into contact with the ring; and an electric lamp connected between said resistor and rivet.

3. In a multiple fuse plug, a base partly enclosing a chamber and having a central perforation through the bottom and a shoulder projecting from the outside wall near the bottom, a helical ridge formed in the outside wall of said base above the shoulder and forming a screw thread; a plurality of equally spaced vertical grooves in the inside wall of the chamber and extending from the bottom around the rim part-way down the outside surface of the side wall; a fusible link within each groove extending throughout the length thereof and having a weakened portion on top of the rim; a screw-threaded metal shell engaging the helical ridge and contacting with the fusible links within the vertical grooves in the outside face of the side wall and having a turned-in flange engaging the shoulder formed in the base; a rivet projecting through the central perforation in the base and having a head engaging the bottom thereof; an annular yoke placed over the rim of the base and having an annular groove formed in its upper face and a perforation affording communication between said annular groove and the lower face of the yoke; a flat metal ring seated in said annular groove; a connection extending from the ring through said perforation to said screw-threaded shell; a cover lying over the upper face of said yoke and having a central sleeve surrounding said rivet and projecting to the bottom of the chamber; a wiper mounted on said rivet at the bottom of the chamber and projecting through a slot formed in said sleeve into engagement with the side wall of the chamber and the fusible links, said rivet projecting through said sleeve to the upper side of said top and formed into a head to hold the assembly together; a resistor within an opening in said cover and lying on said ring, a leaf spring fastened to the cover and pressing said resistor into contact with the ring; and a gaseous discharge lamp having one lead-in wire connected with said spring, another lead-in wire connected with said rivet.

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