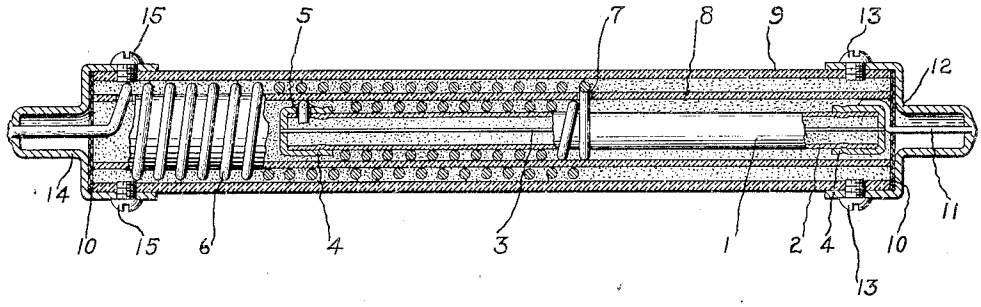
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RESISTOR FUSE

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UNITED STATES PATENT OFFICE

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RESISTOR FUSE

Application filed April 12, 1930. Serial No. 443,857.

The present invention relates to improvements in protective devices for electrical apparatus and especially wherein a resistor element and a fusible element are used to protect against the destructive action of high-potential high-frequency currents or surges of electricity.

It has been the common practice heretofore to make the resistor and fuse in two distinct units, and mount them upon separate supporting means.

The object of my invention is the production of a combined fuse and resistor element which shall be highly efficient in operation, which shall constitute a single compact structure capable of being handled and installed like any ordinary enclosed fuse, and which may be manufactured at low cost.

For a better understanding of my invention, attention is directed to the following description and drawing disclosing one embodiment thereof.

The accompanying drawing shows a sectional view of a resistor fuse embodying my invention.

The fuse member 1 is a standard cartridge or enclosed fuse consisting of an enclosing case 2, on the ends of which are secured two ferrules or caps 4, thereby forming an enclosing chamber for a length of proper sized fuse wire 3, which is centrally disposed and securely attached to the ferrules.

Through a hole 5 in the left-hand fuse ferrule 4, the end of a desired length of resistance wire 6 is passed and soldered into place, thereby connecting the resistance wire in series with the fuse wire 3 forming a resistor fuse. The resistance wire is then helically wound toward the right for a portion of its length upon the fuse casing 2, each turn being in spaced relation with the adjacent turns thereof. The unwound portion of the resistance wire 6 is then passed through a hole 7 in a second fibre cylinder or casing 8 of greater length than the enclosed fuse member 1 and which has an inner diameter just sufficient to permit it to be slid over the cartridge fuse and the wound wire thereon. The remaining unwound resistance wire is then wound on the outside of the cylinder 8 and axially in the opposite direction or towards the left end of the cylinder 8, which acts as an insulation barrier between the two concentric layers of the resistance wire, and the free end threaded through the wall of cylinder 8 and led axially out the end thereof.

A fibre cylinder or casing 9, having an inner diameter just sufficient to pass over the outer coil, is then slid over the whole. Fibre discs 10 are placed at the ends of this outer cylinder, thereby enclosing the resistor fuse. A terminal wire 11 soldered to the outermost or right-hand ferrule of the cartridge fuse is brought out through the disc 10 and passed through a hole in the terminal end of a cap 12. The cap is then pushed over the end of cylinder 9 and fastened into place by screws 13. The lead wire hole is then filled with solder which also securely connects the lead wire 11 to the cap. The free end of the resistance wire is similarly brought through the opposite disc 10 and the terminal of a cap 14. Cap 14 is then slid over the uncapped end of cylinder 9 and fastened into place by screws 15. The lead wire hole in cap 14 is filled with solder securely connecting the terminal lead wire to the cap.

All spaces within the resistor fuse are filled, prior to the assembly of the insulating disk and cap 14 on the cylinder 9 with one of the usual fuse fillers so that any gas formed therein, upon blowing of the fuse, will be absorbed, thus preventing any arcing from taking place, furthermore it serves to hold the convolutions of the resistance wire in spaced relation and also to promote dissipation of heat.

The device of my improved construction is comparatively simple, can be easily and cheaply manufactured, eliminates a special supporting base formerly necessary for the resistor element, thus cutting down on the housing space, and it also forms an efficient protection for capacitors, potential transformers, and like devices against abnormal and destructive currents coming in over transmission or distribution lines and pre-

vents abnormal currents from being set up in the protected devices when the fuse blows.

In accordance with the provisions of the patent statutes, I have described the principle of operation of my invention, together with the apparatus which I now consider to represent the best embodiment thereof, but I desire to have it understood that the apparatus shown is only illustrative, and that the invention may be carried out by other means.

What I claim as new and desire to secure by Letters Patent of the United States, is,—

1. In combination, an enclosed fuse, a fibre cylinder radially spaced about said enclosed fuse, a resistance wire connected in series with said fuse and wound partly thereon and partly on said cylinder, an insulating casing tube surrounding said resistance wire, and terminal caps to which said fuse and resistance ends are serially connected and attached to the ends of said casing tube, and a fuse filling substance packed about all parts therein, whereby any arcing is prevented from taking place within the resistor fuse.

2. In combination, an enclosed fuse, an outer casing tube of insulating material, an intermediate cylinder of insulating material, a resistance wire connected in series with said enclosed fuse and wound partly thereon passed through the wall of and partly wound on said intermediate cylinder, terminal caps provided with insulating discs closing the ends of said outer casing, said enclosed fuse and resistance wire being serially connected to said terminal caps, and a fuse filler packed about said fuse and resistance wire thereby preventing any arcing from taking place within the resistor fuse.

3. A resistor fuse comprising a tubular enclosed fuse, a cylinder of insulating material of substantially greater length than and surrounding said fuse in spaced relation, an insulating casing surrounding said cylinder in spaced relation, terminal caps enclosing and attached to the ends of said casing and to one of which the outer end of the fuse is attached, and a resistance wire connected to the inner end of said fuse wound about its enclosure for a part of its length, passed through the wall of the intermediate cylinder and wound back therein to the terminal cap opposite that to which the fuse is attached, and gas absorbent material filling the spaces between the enclosed fuse and said casing.

In witness whereof, I have hereunto set my hand this eighth day of April, 1930.

JOHN K. STAFFORD.