

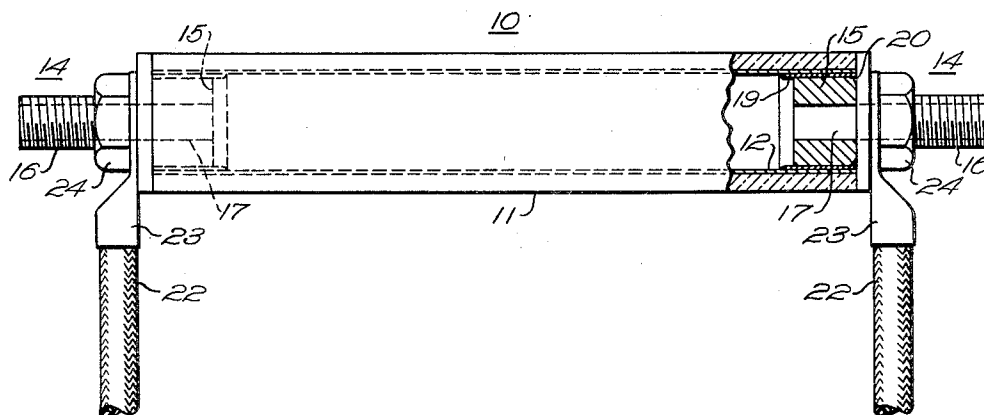
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RESISTOR

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WITNESSES:

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RESISTOR

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Our invention relates generally to resistors, and has reference in particular to resistors adapted for forced cooling.

Generally stated, it is an object of our invention to provide an improved design of resistor which is simple and inexpensive to manufacture and which is durable in use.

More specifically, it is an object of our invention to provide a non-inductive resistance element wherein the resistor forms a conduit for a cooling fluid.

Another object of our invention is to provide a coated resistance element which is not easily damaged in handling.

Yet another object of our invention is to provide a non-inductive resistance element having a hollow support of insulating material with a coating of resistance material on the inner surface thereof.

It is also an object of our invention to provide for utilizing the end members of a hollow fluid cooled resistor as the resistor terminals.

Still another object of our invention is to provide a non-inductive fluid cooled resistor of simple construction which has a substantially permanent calibration.

Other objects will in part be obvious and will in part be explained hereinafter.

In practicing our invention, a non-inductive resistor may be provided by depositing a conductive resistance coating on the inner surface of a hollow insulating support. End members substantially enclosing the ends of the support may be provided with openings therethrough to serve as inlet and outlet passages for circulating a cooling fluid such as air, water, or the like through the support in contact with the coating. The end members may also be utilized as resistor terminals by connecting them to a highly conductive metallic coating applied to the resistance coating adjacent the ends of the support.

For a more complete understanding of the nature and scope of our invention, reference may be had to the following detailed description which may be read in connection with the accompanying drawing, in which the single figure represents a side elevational view, partly in section, of a resistor embodying the principal features of the invention.

Referring to the drawing, the reference numeral 10 may denote, generally, a non-inductive resistor comprising, an insulating support 11 having a resistance coating 12 applied thereto and provided with end members denoted generally by the numeral 14.

In order to provide a relatively simple and inexpensive resistor which may be easily manufactured and have a substantially permanent calibration, the support may be provided with an elongated opening 13 therethrough, and the resistance coating 12 applied to the interior surface of the opening. The support 11 may be made of any suitable insulating material comprising, for example, a tube of any one of the many synthetic resins, or of glass, porcelain or another of the refractory materials. The resistance coating 12 may comprise any material such as finely divided particles of aluminum or other metal which may be applied by spraying to the interior of the support 11, or finely divided particles of a carbonaceous material, such as carbon black or graphite with a suitable binder such as a synthetic resin which may be either applied to the interior surface of the support 11 by spraying, painting, dipping or the like.

In order to provide for cooling the resistor 10, the end members 14 may comprise enlarged head portions 15 which substantially enclose the ends of the support 11, and stem portions 16 having openings 17 therethrough communicating with the interior of the support 11. Inlet and outlet ports may thus be provided for a cooling fluid such as water, oil, air, or a neutral gas.

The end members 14 may be secured to the support member 11 in any suitable manner. In order to utilize the end members as resistor terminals, provision may be made for electrically connecting the end members to the resistance coating 12. For example, a relatively highly conductive coating 19 of copper, or aluminum, or the like, may be applied to the resistance coating 12 adjacent the ends of the support 11, and the head portion 15 of the end members may be connected thereto by providing a driving fit, or means such as the solder seal 20. Electrical connection to the resistance coating 12 may then be made by means of conductors 22 connected to the end members by terminal members 23 and nuts 24.

From the above description and the accompanying drawing, it will be apparent that we have provided a non-inductive resistor of relatively simple construction which is inexpensive to manufacture. By utilizing the hollow support as a conduit for a cooling fluid, which may flow directly in contact with the resistance coating, a highly efficient resistor of relatively simple construction is provided. Damage to the resistance coating is prevented, since the coating is applied to the inside of the support whereby it is effectively protected. The calibration of the resistor

is thereby made much more permanent, since the resistance coating is not only protected against mechanical injury, but is also protected against contact with injurious gases which might cause oxidation or corrosion of the resistance coating to change its resistance value.

Since certain changes may be made in the above description, and different embodiments of the invention may be made without departing from the spirit thereof, it is intended that all the matter contained in the above description and shown in the accompanying drawing shall be considered as illustrative and not in a limiting sense.

We claim as our invention:

1. A resistor comprising an elongated support of insulating material having a longitudinal opening therethrough to provide an inner surface, a conductive coating applied to the inner surface of the support, and end members enclosing the ends of the support provided with openings for circulating a cooling fluid over the coating.

2. A fluid cooled resistor comprising, a tubular

insulating support having a coating of resistance material on its inner surface, a metallic coating of relatively high conductivity superimposed on the said conductive coating adjacent the ends of the support, and terminal members enclosing the ends of the support having head portions positioned within and engaging the metallic coating, said terminal members being provided with axially projecting terminal studs having opening for circulating a cooling fluid through the support.

3. A resistor comprising, a refractory tubular support, a carbonaceous resistance coating extending along the inner surface of the support, a metallic coating superimposed on the carbonaceous coating adjacent the ends of the support, and metallic end plugs substantially enclosing the ends of the support provided with inlet and outlet ports to pass a cooling fluid through the support, said end plugs engaging the metallic coating to provide terminals for the coating.

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