

E. A. HALBLEIB.
RESISTANCE DEVICE.
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1,174,570.

Patented Mar. 7, 1916.

Fig.1.

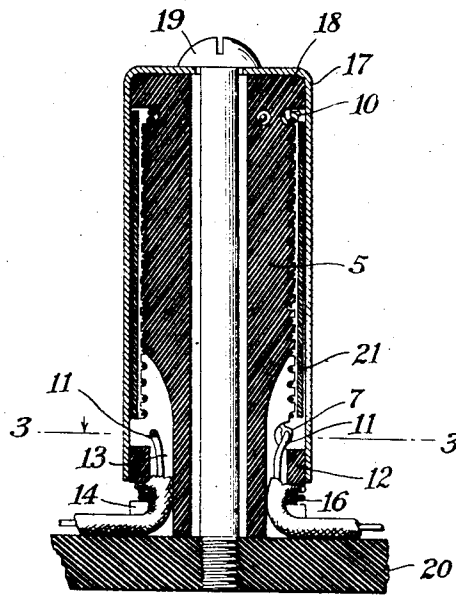


Fig.2.

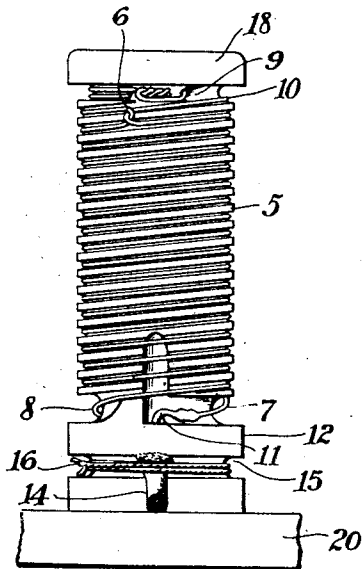
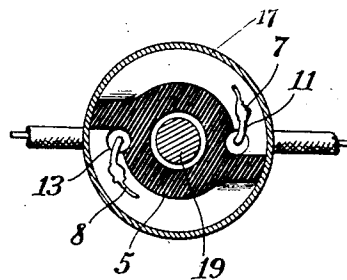


Fig.3.



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RESISTANCE DEVICE.

1,174,570.

Specification of Letters Patent.

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To all whom it may concern:

Be it known that I, EDWARD A. HALBLEIB, a citizen of the United States, and resident of Rochester, in the county of Monroe and State of New York, have invented certain new and useful Improvements in Resistance Devices, of which the following is a specification.

This invention relates to resistance-devices, for use in connection with electrical apparatus, of the type in which a wire of high resistance is wound helically and supported upon a core of insulating material.

One object of the invention is to produce a resistance-device in which the core is so formed that it may be readily constructed of porcelain, or other vitreous material, while being adapted to effectively support and protect the resistance-wire and the lead-wires or conductors connecting it with other electrical apparatus.

Another object of the invention is to provide, in a simple and effective manner, for both mounting the core and securing in place a removable shell or casing which normally covers the resistance-wire.

A third object of the invention is to provide, in the formation of the core, for the use of a resistance-wire coiled in such a manner as to be non-inductive, and for convenience in securing the wire, so coiled, to the core.

The objects above set forth are achieved by the features of construction and arrangement hereinafter described, and defined in the succeeding claims.

In the accompanying drawings: Figure 1 is a vertical axial section of a resistance-device embodying the present invention; Fig. 2 is a side-elevation of the resistance-device with the shell or casing removed, looking from one side of the position in which it is shown in Fig. 1; and Fig. 3 is a horizontal section on the line 3—3 in Fig. 1.

The invention is illustrated as embodied in a resistance-device having a core which is preferably made of porcelain, all of the channels and perforations being formed in the core before the porcelain is fired.

The main portion or body of the core is generally cylindrical in form, but is provided with two helical channels extending from end to end of the body, and in these channels the resistance-wire is wound. This wire is doubled at the middle to form a

bight 6, which is located at the upper end of the core, and the two halves of the wire are wound thence downwardly in the two helical grooves, the two ends 7 and 8 of the wire being connected, at the lower end of the core, with lead-wires as hereafter described. This arrangement of the winding renders it substantially non-inductive, since current flows upwardly in alternate turns of the wire, and downwardly in the intermediate parallel turns. This non-inductive arrangement is of importance in apparatus in which the flow of current through the resistance-device is frequently interrupted.

As a convenient means for securing the bight 6 of the resistance-wire in place, the core is provided, near its upper end, with a transverse perforation 9. Through this perforation a wire 10 is passed, this wire being passed also through the bight 6 of the resistance-wire, and then bent back and twisted together at its ends. The wire 10 provides a secure anchorage for the resistance-wire, and it also permits the wire to expand freely under the influence of heat, since the bight 6 can slide within the bight of the wire 10.

The lead-wires 11 are soldered to the ends 7 and 8, respectively, of the resistance-wire, and to facilitate the formation of these joints the core is deeply recessed at the lower ends of the helical channels. The lower end-portion 12 of the core is of greater diameter than the body, and for the admission of the lead-wires is provided with vertical perforations 13. These perforations communicate, at their lower ends, with lateral openings 14, so that the lead-wires may be brought out laterally, as shown, to avoid interference with the support upon which the core may be mounted.

In order that the lead-wires may be securely fixed in place the end-portion 12 of the core is provided with an annular channel 15, which intersects the perforations 13. After the lead-wires have been secured to the resistance-wire a cord 16 is wound tightly and tied in the channel 15, and this cord binds the lead-wires in place.

The upper end-portion 18 of the core is also of greater diameter than the body, and the greater part of the core is covered by a cylindrical cap-shaped shell 17, which is centered upon the end-portions 12 and 18, and thus spaced away from the resistance-

wire and the body of the core. Between the shell and the core a thin sheet 21 of mica or other insulating material may be interposed. The shell and the core are centrally perforated for the reception of a screw or bolt 19, which may be fixed in a support 20, of any convenient or suitable character, upon which the resistance-device is to be mounted, the screw serving both to secure the resistance-device in place and to fix the shell in position on the core. Whenever inspection or repair of the resistance-device is necessary the shell may be readily removed. The metal shell absorbs, and dissipates into the atmosphere, the heat generated in the resistance-wire, thus preventing overheating of the wire under normal conditions of operation.

I claim:—

1. A resistance-device having, in combination, a core of insulating material comprising a cylindrical body provided with a helical channel in its surface, and an end-portion provided with a perforation extending from said channel and with an annular recess intersecting the perforation; a resistance-wire coiled in the channel in the body; a lead-wire extending from the resistance-wire through the perforation; and a binding lying in said channel and engaging and holding the lead-wire.

2. A resistance-device having, in combination, a core of insulating material compris-

ing a cylindrical body, and end-portions of greater diameter than the body; a resistance-wire coiled on the body; a removable metal shell covering the core and spaced from the body by the end-portions; and insulating material loosely interposed between the body and the shell.

3. A resistance-device having, in combination, a core, of insulating material, provided with a longitudinal perforation and with a helical channel on its surface; a resistance-wire coiled in the channel; a cap-shaped shell inclosing the channeled part of the core and having, in its end, a perforation registering with that in the core; and a screw passing through the shell and the core and adapted both to secure the shell removably in place on the core and to secure the resistance-device as a whole in place on a support.

4. A resistance-device having, in combination, a cylindrical core, of insulating material, provided with two helical channels in its surface and a transverse perforation near one end; a resistance-wire doubled in the middle and coiled, beginning with said doubled portion near the perforated end of the core, toward the other end of the core in two parallel helices lying in the two channels; and a wire passing through said perforation and the bight of the resistance-wire to secure the latter in place.

EDWARD A. HALBLEIB.