

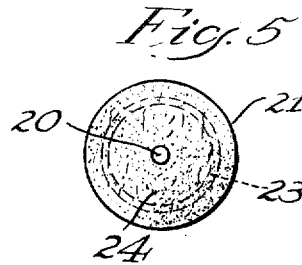
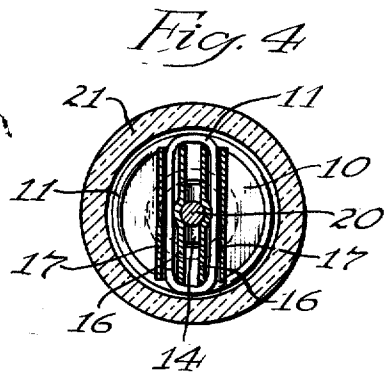
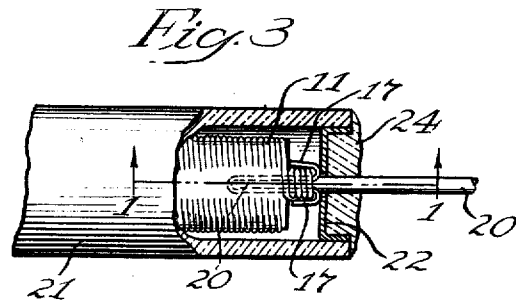
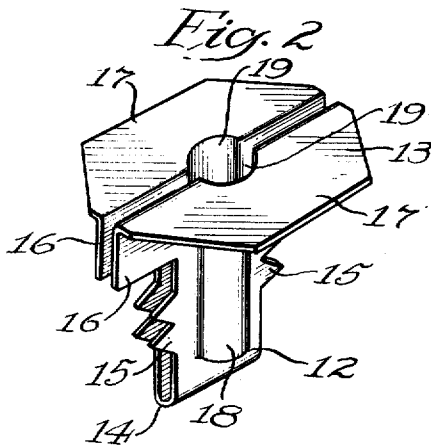
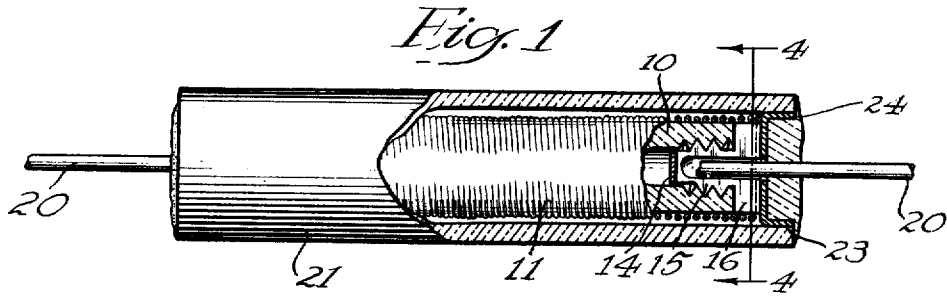
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ELECTRICAL RESISTOR

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ELECTRICAL RESISTOR

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6 Claims. (Cl. 201-63)

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My novel invention relates to improvements in resistors and more particularly to conductive terminal end members which are used and mounted at opposite ends of a non-conductive core body of an electrical resistor or the like.

It is an object of my invention to provide, in an electrical resistor or the like, a terminal end member which is highly resistant to pulling forces and which by virtue of its structure is adapted to resist great direct pulling forces. It is further an object of my invention to provide a resistor which is adapted for mass production and which lends itself to being produced at a rate of in excess of 400 per hour.

It is additionally an object of my invention to provide a resistor having end terminal members having a plurality of thicknesses, and having a pair of end wings which are adapted to be folded over the end terminal member so that convolutions of wire wound around said end terminal member will be temporarily secured on the end member and protected from heat so that the resistance wire wound on the end terminal members will not break when welded.

In the prior and usual method of construction of electrical resistors, the resistance wire is usually soldered to the terminal end member to provide electrical continuity between the resistance wire and the terminal wires which are connected to the terminal end members. Such usual method of production is exceedingly slow and costly, and I have found that by welding I can substantially increase the amount of resistors produced per man hour. However, the prior resistors were not adapted to the improved method of production and certain obstacles had to be overcome such as protection of the resistance wire from the high heat produced during the welding process, and the provision of means for temporarily securing the terminal end wire to the terminal end member before the actual fixed connection is made. I have overcome the problems involved by providing an end terminal member which will be described in greater detail hereinafter and in which the terminal wires and the end members and resistance wire are adapted to be electrically connected in a single rapid operation.

It is additionally an object of my invention to provide, in an electrical resistor or the like, a terminal end member having a width which is substantially the same as the diameter of the core body so that the resistor is well adapted for continuous winding in mass production and in a chain of resistors and the piling up of wire

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at the terminal end members is precluded and uniform length of resistance wire is assured.

Other and further objects of my invention will become apparent from the following description and appended claims, reference being had to the accompanying drawings and numerals of reference thereon.

On the drawings:

Fig. 1 designates a side elevation of a completely assembled resistor, portions thereof being broken away for the purpose of illustration, the view of the end portion of the resistor being taken substantially on the plane of line 4-4 of Fig. 3 and looking in the direction of the arrows.

Fig. 2 is a perspective view of the end terminal which I employ and before assembly.

Fig. 3 is a side elevational view taken substantially at right angles to Fig. 1, parts of the outer non-conductive insulating coating being broken away for the purpose of illustration.

Fig. 4 is a view taken substantially on the line 4-4 of Fig. 1 and looking in the direction of the arrows.

Fig. 5 is an end view of a resistor embodying my novel invention and before the cement coating has been applied.

With reference to the drawings, numeral 10 represents a preferably elongated or cylindrical type non-conductive core body which has a plurality of adjacent convolutions of resistance wire 11 wound on said core body, one of such convolutions being illustrated in Fig. 4.

It will be noted that the core 10 is internally threaded to more appropriately receive and retain a doubled shank or stem 12 of the terminal end member designated generally as 13 in each end of said core body 10.

By referring to Fig. 2, it will be observed that end member 13 comprises two substantially identical preferably integral opposite portions which are spaced and connected together at one end as illustrated at 14 of Fig. 2. The stem 12 of end member 13 has a plurality of teeth or serrations 15 which are integral with respective stems or shanks 12 and which are adapted to facilitate mounting the terminal end member 13 in each end of the internally threaded core body 10. Also, it will be appreciated that by having the threaded end member great resistance to direct end pull can be accomplished.

Integral with the end member 13 and continuous with the end portions of the respective stems or shanks 12 are a pair of oppositely facing substantially rectangular extensions or lugs 16. The width of the lug 16, from one side edge to

the other, is substantially equivalent to the diameter of the end face of the core body 10 so that as the convolutions of resistance wire are being laid down continuously from one resistor to the next, during the manufacture thereof, by a spindle or the like, the convolutions of resistance wire 11 will remain of a standard diameter and piling of the resistance wire 11 will thereby be avoided, because of variations in the diameter of the convolutions due to the width of the terminal end member being different from the diameter of the core body. In other words, substantially the same diameter for the convolutions of the wire 11 will be maintained as the core bodies 10 with end terminals 13 move in end to end relation relative to the application of the resistance wire 11, thereby assuring a standard number of convolutions of resistance wire 11 on each resistor core 10.

Outwardly extending from an end and preferably at right angles from each of the lugs 16 is a wing or flange 17 which is adapted to be folded back on its respective extensions 16 to cover and partially secure the resistance wire which is wound around said extension 16, as illustrated in Fig. 3, it being understood that the shanks 12 are preferably entirely within the open-ended core body 10. The wings 17 present a substantially flat face so that as the resistance wire is being wound, the adjacent core bodies 10 will be kept properly spaced.

Each portion of the stem or shank 12 is provided with a longitudinally extending rib 18 which provides a pair of inwardly opening cooperating grooves 19 in which the terminal end wire 20 is adapted to seat and be temporarily retained before welding or before permanent securance is achieved.

After welding or securance of the resistance wire 11 and the terminal end wires 20 to the terminal end members 13, in the usual course, it is preferable to provide the resistor with a non-conductive insulative coating or tube 21 of ceramic or the like. In order to center the assembled resistor, I prefer to employ metal end caps 22 which have a central aperture and which I mount in each end of the coat or tube 21 after the wound resistor core body has been positioned within said tube 21 and for the purpose of centering the core body 10 with wire 11 wound on. The cap which I employ has an outwardly extending annular yieldable flange 23 which before assembly is preferably flared outwardly so that in assembled position the end cap will be rigidly retained. At this point I seal the ends of the tube or coating 21 with a suitable cement or non-conductive material 24 which is illustrated in Figs. 1 and 3. If desired, the end cap may be optionally omitted, but I have found they permit greater rapidity of the final operation.

As many changes could be made in the above construction, and as many apparently widely different embodiments of my invention within the scope of the claims could be constructed without departing from the spirit and scope thereof, it is intended that all matter contained in the accompanying specification shall be interpreted as illustrative and not in a limiting sense.

I claim:

1. In a resistor for electrical circuits and the like, a core body; a pair of end terminal members each including a shank connectable on said core body, an outwardly extending lug carried on one end of said shank and being of a width substantially equal to the diameter of said core body,

said lug extending across an end face of said core and including a pair of wings carried on the outer ends of said lug; and, a resistance wire wound around said core and said lugs, said wings being bent back over portions of said resistance wire.

2. In a terminal end member for insertion into the end of electrical resistors or the like and having a core body, a shank connectable on said core body of a resistor; a lug connected on the normally outer end of said shank and extending outwardly from an end face of said core body, said lug being of a width substantially equal to the diameter of a core body with which said terminal end member is to be used; a pair of wings extending outwardly from the outer end of said lug and adapted to be bent back on said terminal end member, said end member providing a hole into which a terminal end wire is adapted to be mounted.

3. In a terminal end member for insertion into the end of electrical resistors or the like, a shank insertable in a core body of a resistor and having a plurality of serrations; a lug carried on the normally outer end of said shank and being of a width substantially equal to the diameter of a core body with which said terminal end member is to be used, said lug being of substantially rectangular shape; a pair of wings extending outwardly and in opposite directions from the outer end of said lug and presenting a substantially flat outer face, said wings being bendable, said end member having a hole extending from said wings into said shank and being adapted to seat a terminal end wire.

4. In a terminal end member for resistors and the like comprising a pair of substantially identical oppositely disposed elements connected together at their normally lower ends and each including an elongated shank having a plurality of outwardly extending teeth; a lug integral with said shank and carried at the normally outer end thereof, said lug being of rectangular shape and of a width substantially equal to the diameter of a core body with which said terminal is to be used; a wing integral with and carried on the outer end of said lug, said wing extending at right angles from said lug and being bendable inwardly over said lug, and a longitudinally disposed rib integral with said lug and said shank and providing an inwardly opening elongated groove, the grooves of each terminal end member providing an elongated hole into which a terminal wire will extend.

5. In a resistor or the like for electrical circuits or the like, a non-conductive open-ended core body; an end member mounted in each end of said core body; a resistance wire wound in convolutions over said core body and said end members, said end members each comprising two substantially identical oppositely facing portions having an integral shank being connected to the other shank at its lowermost end, an outwardly extending lug substantially of rectangular shape and extending substantially the diameter of said core body and being in substantial engagement therewith substantially entirely across a respective core end face, and having an end wing bent back to cover the resistance wires wound around said lug; an end terminal wire mounted between said similar portions and extending outwardly therefrom.

6. In a resistor for electrical circuits or the like, a non-conductive core body; end members extending outwardly from each end of said body body;

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a resistance wire wound around said core body and said end members, said end members each including a pair of connected together shank elements, a substantially rectangular lug integral with each of said shanks and of the same diameter as said core body, said lugs being disposed along the diameter of said core body, a wing integral with each of said lugs and extending backward to protect the wire wound on a respective lug; a non-conductive coat around said core body and said resistance wires; a metal end cap having an outwardly extending edge flange mounted in opposite ends of said coat; and a terminal wire extending through each cap and secured to said end members.

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