Sept. 29, 1953 R. M. HILL 2,653,992

TERMINAL CONSTRUCTION FOR ELECTRIC COIL FORMS

Filed Oct. 19, 1950

Fig. 1.

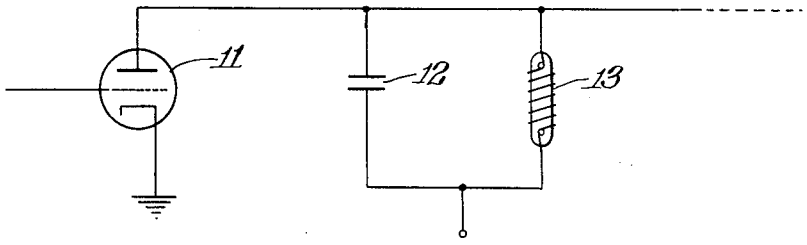


Fig. 2.

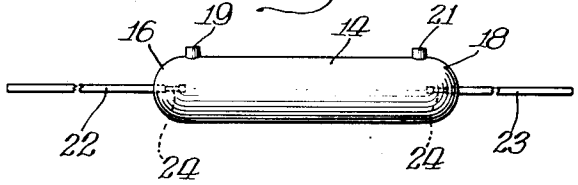


Fig. 3.

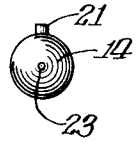


Fig. 4.

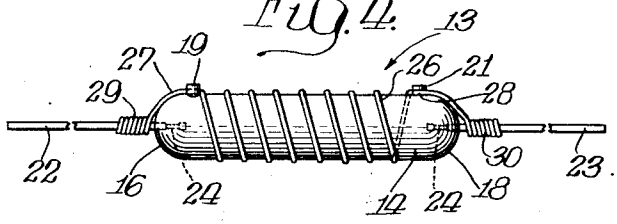


Fig. 5.

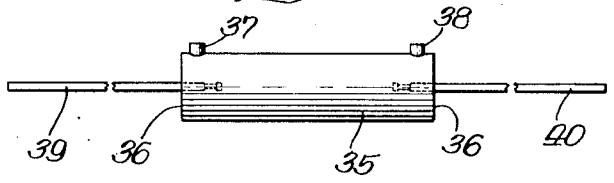
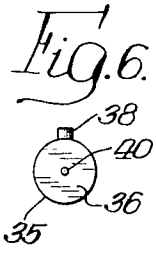


Fig. 6.



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TERMINAL CONSTRUCTION FOR ELECTRIC COIL FORMS

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1 Claim. (Cl. 174—138)

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This invention relates generally to coils and more particularly to coil forms including provisions for holding a winding in position thereon.

Coils of wire which serve as impedance elements in electrical circuits are generally supported on insulating forms. Such forms must be of very inexpensive construction and forms molded of plastic insulating material have been found to be desirable. The impedance elements formed by coils wound on such forms will in most cases be subjected to some handling in the assembling of the same in various electrical equipment and may also be subject to some vibration in use. This will tend to cause the winding to come loose on the form and will permit movement of the winding along the form. This is objectionable because the characteristics of the impedance elements in most cases depend on the position of the wire on the form and the winding must remain in fixed position in order to retain the desired electrical characteristics.

It is therefore an object of the present invention to provide an improved impedance element including a winding and an insulating coil form.

Another object of this invention is to provide a coil form having stops thereon for preventing movement of the winding with respect to the form.

A feature of this invention is the provision of an impedance element including a cylindrical insulating coil form having projections on either end thereof which limit movement of the winding along the form.

A further feature of this invention is the provision of a solid cylindrical body of insulating material having integral radial projections at the ends thereof.

Still another feature of this invention is the provision of an impedance element including a winding and an insulating form having a body of cylindrical shape with rounded, or bullet shaped ends and integral projections at the junction of the cylindrical and rounded portions which prevent movement of the winding beyond the cylindrical portions.

Further objects and features, and the attending advantages of the invention will be apparent from a consideration of the following description when taken in connection with the accompanying drawings in which:

Fig. 1 is a circuit illustrating the use of an impedance element in accordance with the invention;

Fig. 2 is a side view of a coil form in accordance with the invention;

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Fig. 3 is an end view of the coil form of Fig. 2;

Fig. 4 illustrates an impedance element including a coil form and the winding thereon;

Fig. 5 is a side view of a coil form of modified construction; and

Fig. 6 is an end view of the coil form of Fig. 5.

In practicing the invention there is provided an impedance element including a winding supported on a coil form, which element may be an inductance, resistance, or the like. The coil form is in the form of a solid cylindrical body made of insulating material having conducting terminals embedded in the ends thereof. At each end of the coil form, integral projections extend radially therefrom forming stops for limiting the movement of the winding along the cylindrical surface of the form. The wire which forms the impedance element is wound around the form between the stops with the ends of the wire being curved about the stops and anchored to the terminals embedded in the ends of the coil form. The coil form may have rounded ends so that the wire on the form does not engage sharp corners which will tend to cause the wire to break.

Considering now the drawings, in Fig. 1 there is illustrated an electric circuit including a vacuum tube 11 with a condenser 12 and an impedance element 13 connected in parallel with the tube. The impedance element 13 may be either a resistance or an inductance as is required in a particular application. The invention is directed particularly to very small impedance elements as the coil form can be molded as a solid piece of plastic insulating material. This form has been found highly satisfactory for coils having a length of the order of one-half inch.

In Fig. 2 there is shown a coil form including an elongated cylindrical body portion 14 having ends 16 and 18 which are rounded or bullet shaped. At the ends of the cylindrical portion of the coil form, integral projections 19 and 21 are provided which extend radially from the cylindrical portion and which may be integral therewith. The projections 19 and 21 are longitudinally aligned and may be cylindrical in shape or of any other desired configuration. Embedded in the ends of the coil form are terminals 22 and 23, the function of which will be described hereinafter. In order that the terminals are securely held in the insulating form, reduced portions 24 may be provided in the ends thereof providing an interlocking connection with the insulating coil form. It is apparent that this

unit can be easily molded of insulating plastic material.

In Fig. 4 there is shown an impedance element using the form of Figs. 2 and 3 with a winding 26 provided thereon. It is noted that the winding is provided between the projections 19 and 21 with the ends 27 and 28 being curved about the projections so that the winding cannot slide along the form. The extreme ends 29, 30 of the winding are coiled around the terminals 22 and 23 respectively and may be soldered thereto to provide low impedance connections therebetween. The terminals 22 and 23 may then be connected in a circuit in any desired manner to connect the impedance element in the said circuit.

In Figs. 5 and 6 there is shown a modification of the coil form with the cylindrical body portion 35 having squared off ends 36. Projections 37 and 38 extend radially from the cylindrical form as in Figs. 2, 3 and 4. Also, terminals 39 and 40 are embedded in the ends of the form in the manner previously described. The coil form having a configuration as shown in Figs. 2, 3 and 4 may be preferable when working with fine wire as the wire does not have to make a sharp bend at the end of the form and breakage of the wire is thereby substantially eliminated. The coil form as shown in Fig. 5 may be easier to construct and in certain applications may be entirely satisfactory.

The impedance element in accordance with the invention includes an insulating mounting with projections which form positive stops so that the winding cannot slide off the ends of the form. In the prior art the friction of the wire on the form was relied upon in many cases to hold the coil in position on the form. In some cases grooves have been provided in the ends of the form which tend to hold the wire in position but do not form positive stops to prevent movement of the ends of the wire.

Although the coil form has been described as being a cylindrical solid member with integral projections, it is obvious that other configurations and arrangements can be used within the teachings of this invention, and the invention is to be limited only as defined in the appended claim.

I claim:

A coil form for use in supporting the winding of an electrical impedance unit and for making electrical connections to the ends thereof, with said form providing a smooth surface for the winding between the connections, said form including, an elongated cylindrical body of molded insulating material, conductive wires embedded in and projecting from each of the ends of said elongated body, said conductive wires having reduced portions in the parts thereof embedded in said body for providing a locking connection therewith, and a small substantially cylindrical projection extending radially from the outer periphery of said cylindrical body adjacent each of said ends thereof, said projections being molded integrally with said body and being longitudinally aligned along the surface thereof, said ends of said cylindrical body being of rounded configuration to provide a smooth surface from said projections to said conductive wires.

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