Aug. 2, 1938. N. DINION 2,125,431

MAGNETIC COIL STRUCTURE

Filed Feb. 7, 1936

Fig. 1.

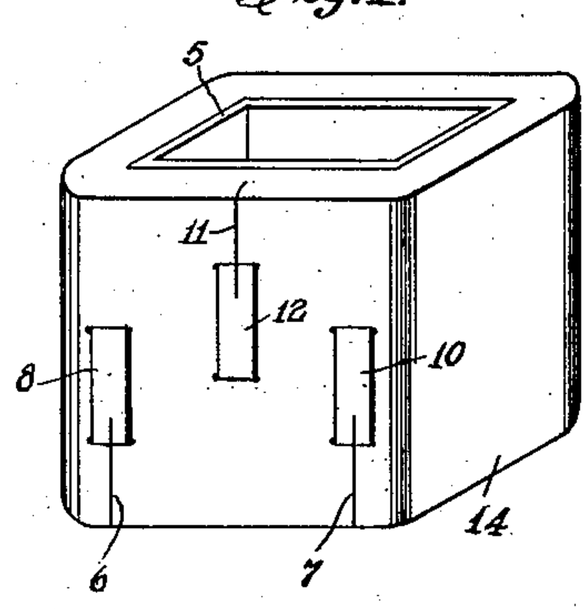


Fig. 3.

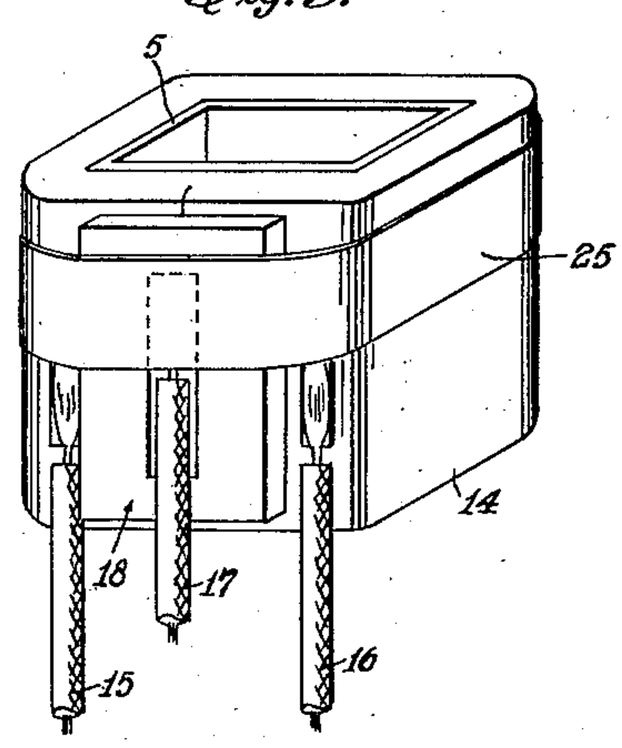


Fig. 4.

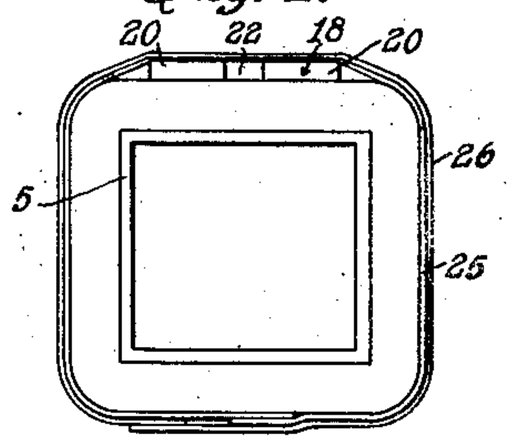


Fig. 2.

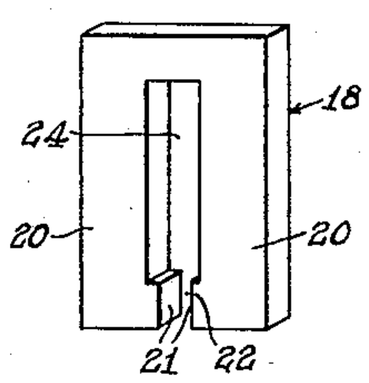


Fig. 5.

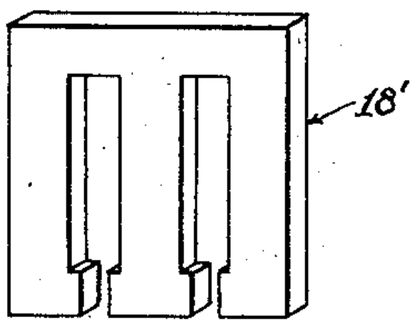
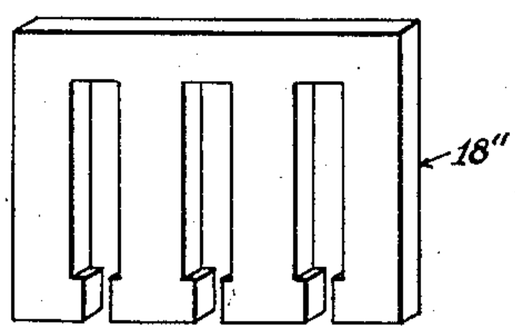


Fig. 6.



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2,125,431

MAGNETIC COIL STRUCTURE

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2 Claims. (Cl. 175—21)

This invention relates to coils such as are adapted for various uses in the electrical art.

An important object of the invention is to provide a new and improved magnet coil structure having embodied therein a simple, effective and inexpensive spacing means, for the terminal leads of coils of the above character, which is such that the leads, or at least such portions of them as are confined or housed within a finished coil unit, are positively held in a definite spaced relation, and which is also such as to enhance the general appearance of the finished unit.

Other objects and advantages of the invention will become apparent from the following description, taken in connection with the accompanying drawing in which—

Fig. 1 is a perspective view of one form of coil to which terminal leads are adapted to be connected and with which spacing means embodying the present invention may be employed. Fig. 2 is a perspective view of a spacing element embodying the present invention and adapted for use with the coil of Fig. 1. Fig. 3 is a view similar to Fig. 1 and showing the coil thereof provided with terminal leads and in association with the spacer element appearing in Fig. 2. Fig. 4 is an end view of the assembly shown in Fig. 3 and illustrating the nicety of appearance of such coil when viewed from an end thereof, particular reference being had to that end of the coil from which the leads extend. Figs. 5 and 6 are views similar to that of Fig. 2 and illustrating, respectively, modified forms of spacing elements.

Although the invention may be employed in connection with various types of coils, it is herein illustrated in association with a coil having a rectangular core member 5, which is of tubular formation and composed of suitable insulating material such as paper, cardboard, or the like. As shown most clearly in Fig. 1, opposite ends 6 and 7 of the wire winding carried by the core 5 are secured to a pair of terminals 8 and 10, respectively, the winding being tapped at an intermediate point, from which is led a tap conductor 11, the outer end of which is attached to a terminal 12, corresponding to those indicated by the numerals 8 and 10. The terminals 8, 10 and 12 are suitably attached to a strip 14 of insulating material, such as paper or the like, wrapped around the coil winding and serving as a protective binding or reinforcing element therefor. To the terminals 8, 10 and 12 are suitably connected, as by soldering, a plurality of terminal leads 15, 16 and 17, all of which are adapted to protrude from the coil unit at one end thereof in parallel relation and in the same plane.

Where a coil is provided with, for example, three terminal leads as illustrated in Fig. 3, the form of spacing element illustrated in Figs. 2 and 3 and there indicated as a whole by the numeral 18 may be employed to advantage. The spacing element 18 is constructed from suitable flat insulating sheet material, such as cardboard, and is characterized by the fact that it is relatively thin but has a thickness substantially equal to the diameter of the terminal leads and is of a substantially U-shape formation, the width of the element being substantially less than the width of the face of the coil structure to which it is to be applied, and its length being equal to or possibly slightly less than the length of such face as measured in the direction of the longitudinal axis of the coil. The fingers 20 of the spacing element 18 are provided at their outer ends with inwardly projecting lugs 21, which form with each other a gap 22, the width of which is slightly less than the width of the space 24 afforded intermediate the fingers themselves. The width of the gap 22 is so proportioned with relation to the overall diameter of a terminal lead, the lead 17 in the present instance, as to snugly accommodate the same, whereas the width of the space 24 is such as to readily accommodate the terminal 12 and any reasonably excessive amount of solder that may be applied thereto in attaching to said terminal the tap conductor 11 and the bared end of the terminal lead 17.

In order to incorporate the spacing element 18 in the coil unit during the manufacture of such unit, it is placed in the position illustrated in Fig. 3, whereupon a binding tape 25 of suitable material, such as paper, is adhesively fixed to the spacing element and to the peripheral surface of the coil unit, the tape thus serving as a means for holding the spacing element in a proper position on the coil structure preparatory to the finishing operation which may include the application of, for example, the customary binding or encasing material 26 in strip form as shown in Fig. 4.

From the foregoing description, it will be observed that the terminal leads 15, 16 and 17 are held in a definite and parallel relation to each other in the finished coil unit, because of the fact that the lead 17 is snugly accommodated within the gap 22 provided intermediate the outer ends of the fingers of the spacing element 18 and because of the fact that the other terminal leads 15 and 16 are snugly housed within the space

afforded at opposite sides of the spacing element and intermediate the coil structure and the binding or encasing material 26 carried thereby.

As to the forms of the spacing element 18' and 18'', Figs. 5 and 6, their formations are such, as will be understood in view of the foregoing description of the spacing element 18 shown in Figs. 2, 3 and 4, that they are especially adapted for use in association with coil structures which are characterized, at least in part, by the fact that they are, respectively, equipped with four and five terminal leads, two of which in each instance are adapted to assume positions at opposite sides of the spacing element corresponding to the positions in which the terminal leads 15 and 16 are illustrated with relation to the spacing element 18. It is to be observed, however, that the spacing elements 18' and 18'' may be employed in connection with coil units having, respectively, two and three terminal leads, each of the two leads in the former instance and each of the three leads in the latter instance being adapted to occupy positions corresponding to the position in which the terminal lead 17 is illustrated with relation to the spacing element 18.

Although the spacing elements herein shown and described may, as a group, be employed in connection with coils having terminal leads ranging in numbers from two to five, as explained, it will be understood that the invention is not limited to the particular embodiments herein disclosed but may be varied or further modified to meet various requirements without departing from the spirit of the invention or the scope of the following claims.

What is claimed is:

1. A magnet coil structure comprising a coil having a plurality of terminal leads extending from the periphery of said coil in parallel relation to one another and in the same plane, a spacing element of flat insulating sheet material arranged in contact with the periphery of said coil, said sheet material having a thickness substantially equal to the diameter of the terminal leads and being in the form of a body portion from which extend parallel fingers which enter the spaces between the terminal leads, and means for holding said spacing element in position on the periphery of said coil.

2. A magnet coil structure comprising a coil having a plurality of terminal leads extending from the periphery of said coil in parallel relation to one another and in the same plane, a spacing element of flat insulating sheet material arranged in contact with the periphery of said coil, said sheet material having a thickness substantially equal to the diameter of the terminal leads and being in the form of a body portion from which extend parallel fingers which enter the spaces between the terminal leads, said fingers having lugs projecting laterally therefrom and engaging the terminal leads, and means for holding said spacing element in position on the periphery of said coil.

NATHAN DINION.