

Feb. 20, 1923.

1,445,919.

D. STONE.  
ELECTRICAL COIL UNIT.  
FILED MAR. 25, 1922.

Fig. 1.

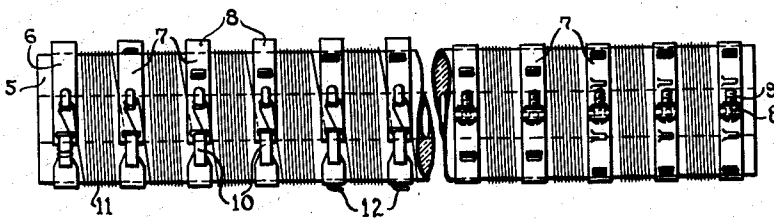


Fig. 2.

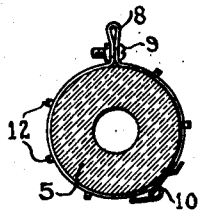
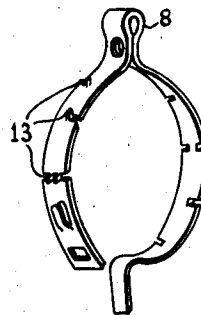


Fig. 3.



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# UNITED STATES PATENT OFFICE.

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## ELECTRICAL COIL UNIT.

Application filed March 25, 1922. Serial No. 546,923.

*To all whom it may concern:*

Be it known that I, DAVID STONE, a citizen of the United States, residing at New Rochelle, in the county of Westchester and State of New York, have invented new and useful Improvements in Electrical Coil Units, of which the following is a full, clear, concise, and exact description, reference being had to the accompanying drawing, forming a part of this specification.

This invention relates to electrical coil units and more particularly to units comprising a resistance or other conductive element associated with a suitable support.

It has heretofore been customary in many instances to construct such units by coiling a resistance wire or other conductive element about an insulating support which may be of circular or other cross section, terminal portions of the element being electrically connected with a pair of terminal bands or equivalent devices also carried by the support and the resistance or other electrical value of the conductor being determined by the number of turns, loops or the like of the conductor located between the adjacent terminal bands.

However, where the size and shape of the base are such that the length of the individual turns or loops constitutes relatively a high percentage of the entire length of the conductor required, great difficulty has been experienced in securing exactly the desired resistance or other value of the conductor where the permissible deviation is less than the value of a single loop or turn, and the present invention has among its objects that of obviating such difficulty.

Another object is that of providing for fixing the electrical length of a coiled or looped conductor with practically any desired degree of accuracy.

Another object is that of providing for utilization of a single conductor sectionally and fixing the electrical length of the individual sections with practically any desired degree of accuracy.

Another object is that of cheapening, expediting and generally facilitating the construction of electrical units having the foregoing characteristics.

Other objects and advantages will herein after appear.

In the accompanying drawing wherein are illustrated certain of the embodiments which the invention may assume in practice, Figure 1 is a side elevational view illustrating a proposed construction;

Fig. 2 is a vertical sectional view of the same; while,

Fig. 3 is a detail view illustrating a slightly modified construction.

Referring to Fig. 1 of the drawing, the same illustrates a support 5 comprising a base of porcelain or other insulating material and having conductive bands 6 and 7 encircling the same, said bands being provided with outwardly bent flattened portions 8 drilled to receive terminal screws 9 or the like and also having a conventional form of means indicated generally at 10 for clamping the same about the support 5.

A resistor or other conductor 11 is coiled about the support and connected with all or certain of the bands 6 and 7 whereby the latter provide both for securement of the conductor about the base and also for terminal connection of said conductor.

The lengths of conductor located between adjacent bands being assumed to comprise but a small number of turns about the base as illustrated, it is obvious that the length of each turn constitutes a relatively high percentage of such total length. That is to say, assuming an individual section of the conductor to comprise ten turns, a single turn thereof would then represent 10 per cent of its total ohmic or other electrical value, whereby such total electrical value of the section might ordinarily, by changing the number of turns, be varied only in increments of approximately 10 per cent.

However, one or optionally both of the adjacent conductive bands are provided at different circumferential portions thereof with intermediate securing means such as the outstruck lugs 12 whereby either end of the resistor may be secured to and about

any one of said intermediate lugs as desired or necessary in order to afford the proper ohmic or other electrical value of the conductor section. By this expedient obviously the electrical value of the section of the resistor may be fixed with an accuracy much greater than that provided by merely increasing or decreasing the number of complete turns, the limit of accuracy obtainable being only determined by the number of intermediate securing devices carried by the individual bands.

Further it is to be observed that by employing a plurality of individual connections upon each of the bands and staggering such connections of the two bands with reference to one another or further by unequal spacing of successive securing lugs of adjacent bands, then by connecting the individual terminal portions of the conductor to properly selected lugs of the two bands, a differential selection of the electrical value of the conductor section may be effected.

Assuming employment of an integral conductor for all the sections, such conductor will be terminally connected to a suitable or desired portion of the terminally located band 6 thence wound for the necessary number of turns about the support and secured to the adjacent band 7 by looping about that lug or other fastening means of such bands determined by the desired electrical value of that section of the conductor, thence the conductor is again wound for the desired number of turns about the base and is again looped to and about the particular lug of the next band determined by the necessary or desired electrical value of the section, such relation being repeated for the number of sections, and the conductor being finally terminally secured to the terminally located band as illustrated.

While the means for securing the resistor to the circumferentially intermediate portions of the several bands may comprise any one of the numerous forms, including that illustrated in Figs. 1 and 2 just described, it may in certain instances be found desirable to provide securing means such as that illustrated more particularly in Fig. 3 wherein the lugs 13 are struck outwardly and upwardly from the outside edges of the individual bands rather than from central portions of the bands as illustrated in the two earlier figures, and arranged either in opposed pairs or staggered.

This latter described construction enables a more accurate determination of the point of contact between the conductor and the band than is possible with the earlier con-

struction and is therefore to be recommended where a special degree of accuracy is required.

What I claim as new and desire to secure by Letters Patent is:

1. An electrical apparatus unit comprising a support and a conductor carried thereby, said support having associated means providing for fixing accurately the electrical length of said conductor.

2. An electrical apparatus unit comprising a base and a conductor coiled thereabout, said base having associated means providing for varying the electrical length of said conductor by increments less than the value of a single turn of the conductor.

3. An electrical apparatus unit comprising an insulating support and a conductor arranged in looped relation thereto, said support having associated conductive means providing for fixing the effective electrical length of the conductor with an accuracy greater than that attainable by varying the number of loops of said conductor.

4. A resistance unit comprising an insulating base, a conductor coiled thereabout and conductive means associated with said base to provide for securement of the conductor at any of a plurality of regions located within the extent of a single coil of the conductor.

5. A resistance unit comprising an insulating base, a resistor coiled thereabout and a plurality of conductive bands clamped about portions of said base and provided with terminals for securement of the resistor thereto, certain of said terminals being located in such circumferential relation to one another as to provide for fixing the effective ohmic value of the conductor located between adjacent bands within limits whose difference is less than the value of the individual turns of the resistor.

6. A resistance unit comprising an insulating base, a resistor coiled thereabout and a plurality of conductive bands clamped about portions of said base and provided with terminals for securement of the resistor thereto, certain of said terminals being located in such circumferential relation to one another as to provide for fixing the effective ohmic value of the conductor located between adjacent bands within limits whose difference is less than the value of the individual turns of the resistor, certain of said terminals comprising pairs of lugs struck up from the material of the band.

In witness whereof, I have hereunto subscribed my name.

DAVID STONE.