

Nov. 2, 1926.

1,605,302

E. S. TRUE

COIL MOUNTING

Filed August 9, 1923

Fig. 1.

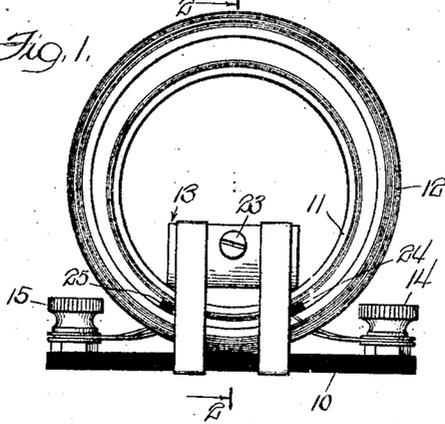


Fig. 2.

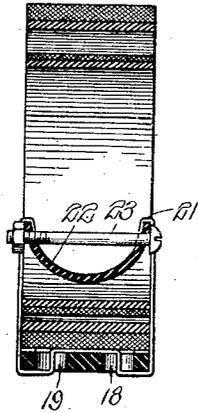


Fig. 3.

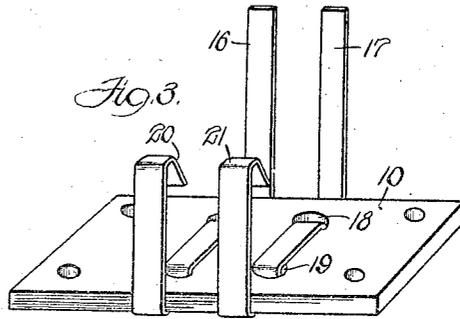


Fig. 4.

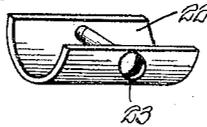
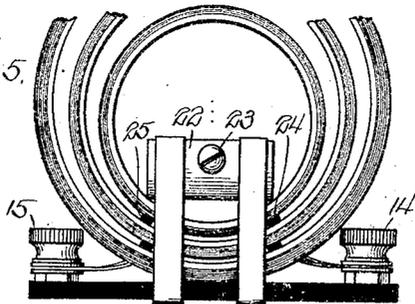


Fig. 5.



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UNITED STATES PATENT OFFICE.

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COIL MOUNTING.

Application filed August 9, 1923. Serial No. 656,495.

This invention relates to electrical coil structures, such as used for inductances or transformers, and more particularly to such structures with which a desired amount of inductance may be built up by the use of a plurality of coils of a standardized width but with graduated diameters enabling several of the coils to be nested one within another.

One object of this invention is to provide a method of mounting a plurality of electrical coils of the above indicated type, of a standardized maximum width, in a manner such that any desired inductance, within reasonable limits, may be conveniently built up to comprise a unitary structure.

A further aim of this invention is to provide an adjustable electrical coil structure, comprising a plurality of ring shaped coils of graduated diameters nested one within another.

Still another object of this invention is to provide a simple, inexpensive and efficient clamping means for retaining one or more ring shaped coils of the type indicated, upon a base member. The clamping or retaining means provided in accordance with this invention is such that a variable number of the coils may be used therewith, or if desired the coils may be conveniently interchanged with other coils possessing different inductance values or current carrying capacities.

Other objects of my invention comprise the provision of an electrical coil structure of the character indicated above, which will be simple and economical to construct and which will be devoid of complicated parts and which will accordingly be simple and dependable in operation.

Other objects of my invention will appear from the following detailed description forming a part of this specification and from the drawings to which reference may now be had for a better understanding of the scope and characteristic features of my invention.

In the accompanying drawings I have illustrated an apparatus embodying my invention and by which my improved method may be practiced.

Figure 1 is a front elevational view of a structure embodying my invention showing two coil units clamped upon a base;

Fig. 2 is a vertical sectional view upon the line 2-2 of Fig. 1;

Fig. 3 is a perspective view illustrating the base member, together with clamping straps for retaining the coil units thereon;

Fig. 4 is a perspective view of a yoke member forming a part of the clamping mechanism illustrated in Fig. 1; and,

Fig. 5 is a view similar to Fig. 1, but illustrating the use of my invention for mounting three coil units.

As shown in Fig. 1, the structure may comprise a base member 10 upon which may be mounted a plurality of ring shaped and nested coil units as at 11 and 12. A clamping mechanism 13 as illustrated in Figs. 3 and 4 may serve to retain the coil units in position upon the base member 10.

The base member 10 is preferably formed of a suitable insulating material and is shown provided with binding posts as at 14 and 15, to which the lead wires of the various coils as 11 and 12 may be attached and connected to the desired external circuit.

The base member as shown is provided with a plurality of upstanding flexible metallic strap members, as at 16 and 17 between which the nested coil units may be positioned substantially in a vertical plane.

The strap members 16 and 17 may be fixed to the base member in any suitable manner. According to the structure here shown, the base member is provided with a plurality of perforations as at 18 and 19, through which the strap members may be threaded and by means of which the straps after being bent into position, are securely held to the base member. This particular structure, it will be noted, requires the use of no additional fastening members and accordingly is very simple and inexpensive. Furthermore, when the coil units are clamped in place, all possibility of removal or displacement of the straps is eliminated.

The upstanding portions of the strap members may be originally formed of a suitable standardized length to accommodate a large number of coil units. However, when the desired number of coil units has been chosen for any specific assembly, the flexible strap members may be easily cut off at a suitable distance from the base and then bent inwardly and downwardly forming hook members as at 20 and 21. Between the opposite portions of the hook members as formed, a yoke piece 22 may be engaged.

As shown in Fig. 4, the yoke member 22 may comprise a piece of flexible material,

preferably insulation formed in the shape of a channel. The edges of the channel are adapted to be engaged by the hook portions as at 20 and 21. The relation of these parts

5 when assembled is best shown in Fig. 2. A clamping means which may comprise a screw 23 is shown extending transversely of the channel shaped yoke member 22 and is for the purpose of causing the channel member to buckle downwardly against the interior surface of the inner nested coil. The screw 23 upon being tightened draws together the edges of the channel member, thus causing the center portion to bulge downwardly as will readily be understood.

The various nested coil units may be slightly spaced and insulated from one another, as by strips of insulation, as indicated at 24 and 25.

20 From the above it will be seen that a very simple form of mounting and clamping structure is provided, which upon the tightening of the clamping screw 23 will securely retain the desired number of standardized coil units upon the base member. Furthermore, if it is desired to interchange any of the various coil units with units possessing different electrical characteristics, this may be quickly done by loosening the clamping screw 23 whereupon the various parts may be disassembled.

While I have shown and described but one embodiment of my invention, it will be understood that many modifications may be made therein without departing from the spirit and scope of the appended claims and I desire that only such limitations shall be imposed upon my invention as are specifically pointed out in the claims and such as are required by the prior art.

40 Having thus described my invention, what I claim as new and desire to secure by Letters Patent in the United States, is:

1. An electrical device comprising a base member, a plurality of ring-shaped coils of graduated diameters adapted to be nested one within another and positioned in a perpendicular plane upon said base member, a plurality of flexible metallic straps at either side of said coils and fixed to said base member, and a yoke member extending between said straps, and through said coils, said straps being inwardly and downwardly bent to form hooks engaging said yoke member, said yoke member retaining said coils in position upon said base.

2. An electrical device comprising a base member, a plurality of ring-shaped coils of graduated diameters adapted to be nested one within another and positioned in a perpendicular plane upon said base member, a plurality of flexible metallic straps at either side of said coils and fixed to said base member, and a yoke member extending between said straps through said coils, said

straps being cut to a length determined by the number of nested coils used and then bent inwardly and downwardly to form hooks engaging said yoke member, said yoke member retaining said coils in position upon said base.

3. An electrical device comprising a base member, a plurality of ring-shaped coils of graduated diameters adapted to be nested one within another and positioned in a perpendicular plane upon said base member, a plurality of flexible metallic straps at either side of said coils and fixed to said base member, a yoke member extending between said straps and engaged thereby and extending through said coils, and means for causing said yoke to buckle downwardly to clamp said coils to said base.

4. An electrical device comprising a base member, a plurality of ring-shaped coils of graduated diameters adapted to be nested one within another and positioned in a perpendicular plane upon said base member, a plurality of flexible metallic straps at either side of said coils and fixed to said base member, a yoke member extending between said straps, said yoke member comprising a sheet of flexible insulation material of a downwardly extending arcuate form, and means for causing said yoke to buckle downwardly to clamp said coils to said base.

5. An electrical device comprising a base member, a plurality of ring-shaped coils of graduated diameters adapted to be nested one within another and positioned in a perpendicular plane upon said base member, a plurality of flexible metallic straps at either side of said coils and fixed to said base member, a yoke member extending between said straps and engaged thereby and extending through said coils, said yoke member comprising a sheet of flexible insulation material of a downwardly extending arcuate form, and means for causing said yoke to buckle downwardly to clamp said coils to said base, said straps adapted to be cut to a length determined by the number of nested coils used and with the ends bent inwardly and downwardly to form hooks engaging said yoke member.

6. In a device for retaining ring-shaped electrical coils, a yoke member for extending through the coils, means retaining said yoke member and in engagement with either side thereof, and said yoke member being provided with means to cause it to buckle downwardly into firm contact with the interior surface of the coils.

7. In a device for retaining ring-shaped electrical coils, a yoke member for extending through the coils, means retaining said yoke member and in engagement with either side thereof, said yoke member comprising a sheet of flexible material of a downwardly extending arcuate form, and

means for causing said yoke to buckle downwardly against the interior surface of the coils.

8. In a device for retaining electrical coils, a yoke member for extending through the coils, said yoke member being composed of a sheet of flexible material of channel-like form, means in engagement with the side edges of the channel for retaining said member, and clamping means extending transversely of said yoke member for causing said member to buckle against the interior surface of the coils.

9. In a device for retaining electrical coils, a yoke member for extending through the coils, said yoke member being composed of a sheet of flexible insulation material of channel-like form, means in engagement with the side edges of the channel for retaining said member, and clamping means comprising a screw extending transversely of said yoke member for causing said member to buckle against the interior surface of the coils.

10. In a device for retaining electrical coils, a yoke member for extending through the coils, said yoke member being composed of a sheet of flexible material of channel-like form, means in engagement with the side edges of the channel for retaining said member, said means comprising flexible straps extending along either side of the coils and each having one end bent inwardly and downwardly in the channel, and clamping means extending transversely of said member for causing said member to buckle against the interior surface of the coils.

11. In a device for retaining electrical coils, a base member provided with perforations, a strap of flexible ductile material threaded through said perforations and each end thereof extending upwardly for positioning the coils therebetween, and clamping means engaging the upper ends of said strap.

12. In a device for retaining a plurality of nested ring-shaped electrical coils, a base member provided with perforations, a strap of flexible ductile material threaded through said perforations and each end thereof extending upwardly for positioning the coils therebetween, and yoke means for extension through the coils and engaged at each side by the upper ends of said strap, said ends being cut to a length determined

by the number of nested coils, and a flexible channel-shaped yoke means for extension through the inner nested coil, said strap ends being bent inwardly and downwardly to form hooks engaging the edges of the channel.

13. An adjustable electrical coil structure comprising a plurality of ring-shaped coils of graduated diameters nested one within another and removable clamping means therefor which is adjustable to accommodate any number of coils that may be received within the larger coil.

14. An adjustable electrical coil structure comprising a plurality of ring-shaped coils of graduated diameters and uniform width nested one within another, one side of each coil resting upon an adjacent inner side of the next succeeding larger coil; and removable clamping means for clamping a coil against a base retaining the nested relation thereof.

15. An adjustable electrical coil structure comprising a plurality of electrical coils of ring shape with graduate diameters, said coils being nested one within another and mounted upon a base, and means for clamping a side of each coil upon the inner side of the succeeding larger coil and to the base.

16. An adjustable electrical coil structure comprising a plurality of electrical coils of ring shape with graduated diameters, said coils being nested one within the other and mounted upon a base, and means for clamping said coils together in said nested and spaced arrangement.

17. An electrical coil structure comprising a base, a coil, one or more coils with graduated diameters nested within said first coil, and means for clamping said coils together in spaced relation and to said base.

18. An electrical coil structure comprising a base, a coil, and adjustable clamping means for securing to said base one or more nested coils of graduated diameters and within spaced relation of said first coil.

19. An electrical coil structure comprising a base, a coil, one or more coils of graduated diameters nested within the first coil, and clamping means for gripping the edges of said coils and securing them in spaced relation and to the base.

In witness whereof, I have hereunto subscribed my name.

EDWIN S. TRUE.