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1,635,541

F. CONRAD

INDUCTANCE DEVICE

Filed July 24, 1925

Fig. 1.

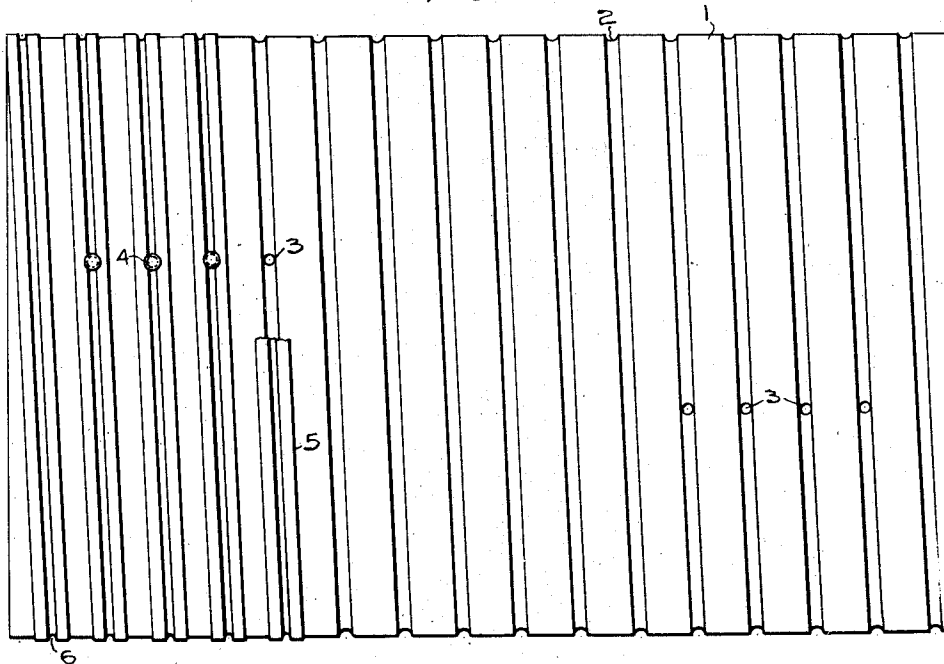


Fig. 2.

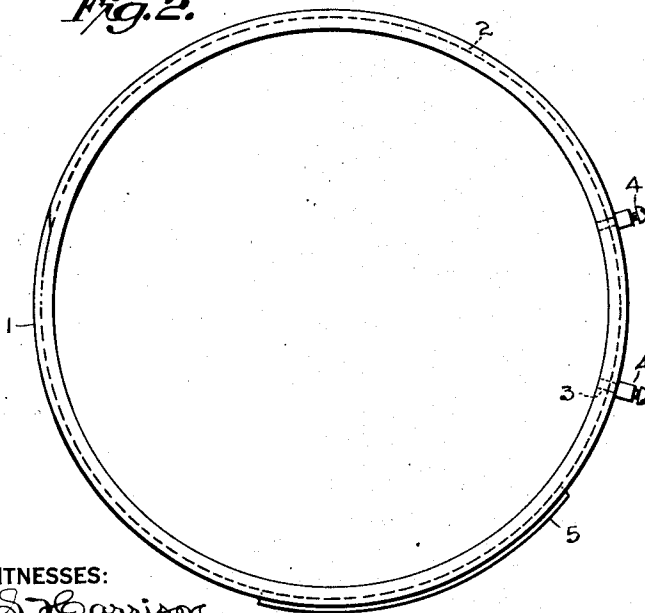
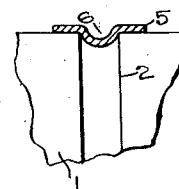


Fig. 3.



WITNESSES:

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INDUCTANCE DEVICE.

Application filed July 24, 1925. Serial No. 45,779.

My invention relates to inductance devices, particularly to inductors for use with high-frequency apparatus.

It is an object of my invention to produce an inductor in which the losses shall be reduced to a minimum, even at very high frequencies.

It is a further object of my invention to provide an inductor suitable for use with heavy currents at high-frequency.

It is a further object of my invention to provide means for securing in place a copper strap wound into a coil upon a non-metallic support.

It is a further object of my invention to provide means by which the winding may be secured upon an insulating core without resort to varnish or other adhesive.

It is a further object of my invention to provide means by which a winding in the form of a metallic strap and a core in the form of a vitreous or other frangible substance, may be securely united.

Other objects of the invention and details of the construction will be apparent from the following description and the accompanying drawing, in which

Figure 1 is a side view, a portion of the strap being broken away.

Fig. 2 is an end view, and

Fig. 3 is a detail showing the strap in section.

The core or support upon which the coil is wound is preferably in the form of a cylinder, although the invention is applicable to any columnar form. In the form illustrated, the support is a hollow cylinder 1 of any suitable substance, such as fused quartz.

The outer surface of the cylinder is provided with a groove 2. If the cylinder is made by casting or molding, the groove may be formed at the same time. If the substance of which the cylinder is made is such that the groove cannot be thus formed with sufficient accuracy, it may be made or finished by grinding.

The cylinder must be of a material which causes little dielectric loss, even when subjected to intense fields at high frequency. Because no cementation material is present, no dielectric losses are introduced by the means fastening the winding to its support. A cylinder of vitreous or mineral substance, such as marble, porcelain or fused quartz, is best adapted for large sizes. For smaller

sizes, hard rubber is suitable. When the dielectric losses are not of as great importance, micarta may be used.

Near each end of the cylinder a series of holes 3 is provided. The holes are preferably located in the groove and afford fastening places for binding posts 4.

Upon the cylinder is wound a conductor in the form of a strap or ribbon 5, preferably of copper. The strap is provided with an offset rib or groove 6 which extends lengthwise of the strap. As the strap is wound upon the cylinder, the offset 6 fits into the groove 2 and properly positions the winding upon the core.

At one end the strap is secured to the cylinder by a binding post 4 and at the other end by another binding post. Other binding posts may be provided beside the end ones and, when so provided, the strap should be perforated to receive them. The several binding posts afford convenient means for attaching the conductor by which current is brought to the inductor. By changing such conductors from one binding post to another, the number of turns in the inductor may be altered.

It will be apparent to those skilled in the art that many modifications may be made without departing from the principles of this invention. The specific illustration and description of a single form is, therefore, not to be considered a limitation.

I claim as my invention:

1. In a coil, a support, a flat conductive strip having a longitudinally depressed portion wound along said support, and means extending along said support in juxtaposition to a portion of said strip between the edges thereof for positioning said strip upon said support.

2. In a coil, a conductive ribbon, said ribbon having a longitudinally extending offset portion, a support, and means on said support co-operating with said offset portion for positioning said ribbon on said support.

3. A coil support comprising a hollow cylinder of insulating material having small dielectric losses, said cylinder having a helical groove of arcuate cross section and openings at intervals near each end of said groove, certain of said openings being adapted to receive and firmly retain therein a circuit connecting device.

4. In combination, a coil support comprising a hollow cylinder of insulating material having small dielectric losses, said cylinder having a helical groove of arcuate cross section, a conductive strip having an arcuate offset extending longitudinally thereof wound on said cylinder with the offset seated in said groove, and a binding post for securing said strip in place at each end.

5. An article of manufacture, a conductive ribbon having a longitudinally extending depression adapted to cooperate with a supporting structure and to strengthen said ribbon against bending.

In testimony whereof, I have hereunto subscribed my name this 8th day of July, 1925.

FRANK CONRAD.