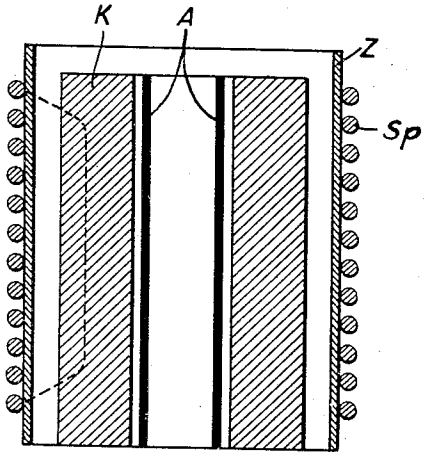
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HIGH FREQUENCY COIL WITH MASS CORE

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HIGH FREQUENCY COIL WITH MASS CORE

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1 Claim. (Cl. 175—356)

When employing mass cores for high frequency coils of receivers and transmitters the core is not only permeated by magnetic field lines but also by electric field lines. Such an electric field line is shown in dotted line in the figure in which the coil is designated by Sp and the core by K. Since the insulating material of the mass core entails dielectric losses, it is known to arrange between the coil and the core a shield which has a longitudinal slit for the avoidance of eddy currents, or which consists of several sheet metal strips extending in the axial direction.

These shields have the disadvantage that when high voltages of high frequency are present of the type appearing for instance in transmitters, a flash-over may occur between the ends of the coil which carry a voltage, and the shield. This danger is less acute where no shield is employed since owing to the low conductivity of the mass core a part of the voltage appears at the mass core so that only the remaining part appears in the air gap between the coil and the mass core.

In order to avoid this drawback and still to obtain at least a partial reduction of the losses, it is proposed in accordance with the present invention to have in the core an axial bore of large diameter whose wall is lined with a metallic screen slit in the axial direction.

The accompanying figure shows an example of construction according to the present invention. The core has a bore whose diameter is about equal to 0.4 to 0.6 of the exterior diameter. This bore is lined with a shield A. The electric field lines penetrate through the core only to a very slight extent in a radial direction when employing the present invention, but they extend at one end from the coil to the shield A and at the other end from the shield back again to the coil. In order that the dielectric losses in the coil carrier Z be low, the said carrier consists suitably of a low-loss ceramic material. The internal shield A could be provided with a plurality of air gaps or slots running in an axial direction, however this is ordinarily not necessary, since the magnetic field is less dense in the center of the core than in the outer part of the core.

The induction of the coil is but slightly reduced on account of the bore in the mass core, since the greater part of the magnetic field lines extends in the outer part of the core as there the paths of the field lines are shortest.

What I claim is:

In combination, a coil form of low-loss ceramic material, a high frequency coil mounted on said form, a mass core of low conductivity contained within and positioned next adjacent the coil form, said mass core being provided with an axial bore the diameter of which is between 0.4 to 0.6 of the outside core diameter, and a metallic shield slotted in the axial direction contained within and positioned next adjacent the inner surface of the mass core.

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