May 13, 1941. K. KOSCHMIEDER 2,241,914

TOROIDAL COIL

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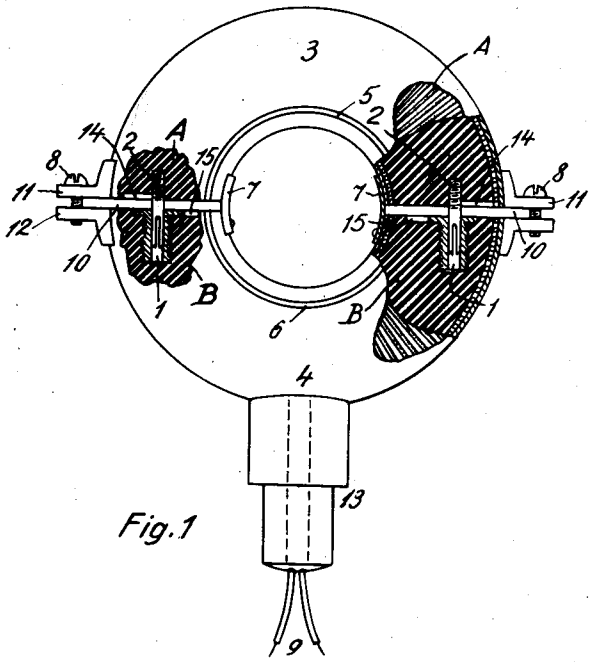


Fig. 1

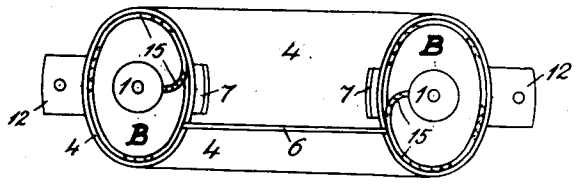


Fig. 2

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TOROIDAL COIL

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In Germany April 15, 1937

1 Claim. (Cl. 175—359)

The invention relates to toroidal coils such, for example, as used for coupling an auxiliary transmitter or a measuring receiver to the energy lines of an antenna system free of fading, such as an Adcock antenna. As is well known, in order to ascertain whether in systems of this kind the energy lines have a radiation or a reception component, a voltage is by local action impressed upon these lines with the aid of an auxiliary transmitter. The voltage thus added is adjusted to bring about an effect counteracting the so-called horizontal effect of the incoming waves while being of the same magnitude as this. To such end a coil is placed around the energy line and fed from a small high frequency generator whose frequency or operating wavelength corresponds to that of the direction finding system. The antenna system is then balanced until high frequency components cease to occur in the direction finding receiver. If a direction finding transmitter is concerned instead of a receiver, a measuring receiver is coupled to the energy lines, and with the aid of this measuring receiver the energy lines are balanced to present the minimum radiation.

The coil used for coupling either the auxiliary transmitter or the measuring receiver to the energy lines must be such that it shall not act as a radiating or receiving means. For this reason this coil is wound in toroidal fashion.

In order that the coil can be quickly and simply applied to the energy line of the antenna system the invention proposes to make it in two parts. It will then not be necessary to disconnect the energy line in order to insert the coil thereover, but the two parts of the coil are simply placed around the line and are then fastened to each other.

In accordance with another feature of the invention the radiation properties of the coil are diminished by a screening provided on all sides thereof.

One embodiment of the invention is described hereafter by way of example, reference being had to the accompanying drawing in which

Fig. 1 is a partially sectioned side view of a toroidal coil as provided by the invention, Fig. 2 is a plan view of one half of such coil.

The device here shown comprises two half-ring bodies A, B made of a suitable insulating material. Body A carries a toroidal winding 14 of radio cable. Equally, body B is fitted with a toroidal radio cable winding 15. The two wire ends of winding 14 are joined to a plug 2 each. The plugs 2 are fastened in body A. The two wire ends of winding 15 are joined to a socket 1 each. The sockets 1 are fixed in body B and are adapted to receive the plugs 2. Winding 14 is contained in a screening jacket 3. Equally, winding 15 is provided with a screening jacket 4. These jackets are made of strong sheet copper and are subdivided by slots 5, 6 in order not to act as short-circuited windings. Fixed to jacket 4 are metal springs 7 which serve to electrically interconnect the jackets 3, 4, thus bridging the air gap 10 which there is between the halves of the coil. Jacket 3 has two lugs 11 while jacket 4 is provided with two lugs 12. In these lugs screws 8 are inserted in order to hold the halves of the coil together. A screened cable 9, attached to the coil through a screw joint 13, serves to connect the coil with the said auxiliary transmitter or measuring receiver, as the case may be. These are likewise completely screened.

What is claimed is:

A toroidal coil comprising two half-ring shaped insulating bodies, an arcuate solenoidal air-core winding on each of these bodies, a subdivided screening jacket for each of these windings, metal springs fastened to one of such jackets and adapted to engage the other jacket, lugs fitted to the said jackets, fastening screws seated in these lugs, and an arrangement of plugs and plug sockets, carried by said insulating bodies and to which the ends of the said windings are joined.

KURT KOSCHMIEDER.