PUBLISHED
MAY 25, 1943.
BY A. P. C.

F. BERGTOLD
LOOP ANTENNA WITH IRON CORE
Filed March 8, 1940

Serial No.
322,891

Fig. 1

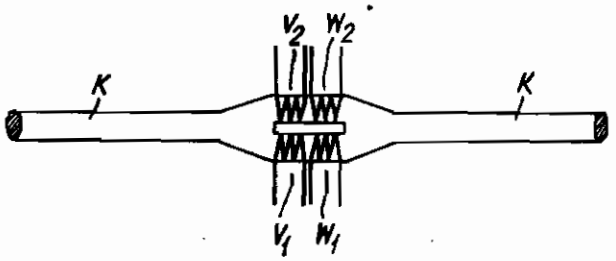
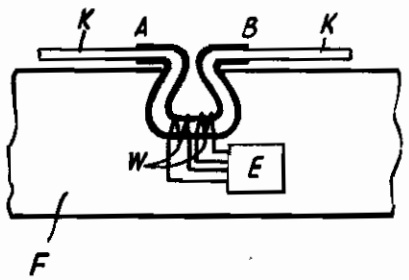


Fig. 2



INVENTOR
FRITZ BERGTOLD
BY H. G. Brown
ATTORNEY

Published May 25, 1943

Serial No. 322,891

ALIEN PROPERTY CUSTODIAN

LOOP ANTENNA WITH IRON CORE

Fritz Bergtold, Kiel, Germany; vested in the Alien Property Custodian

Application filed March 8, 1940

Loop antennae without iron core accidentally consist of two or more windings (coils), which serve to the reception in several wave bands. These coils are switched together, corresponding to the wave band it is to receive.

In many purposes it is prevented to work with several coils. In the case the receiver is tuned to the higher frequented wave, the coil for another wave band may produce a reaction. Another disadvantage of a loop antenna without iron core in the case it is arranged on a vehicle or an airplane is the large room for several coils. At least the self-capacity of such loop antennae with several coils is increased in a nonwished manner.

If an iron core is employed it is to attain an intensive coupling between the single windings and also between several windings. By this appearance it is to suppose, that these disadvantages increase, if an iron core is used for the coils. Only the larger room for a frame with several coils is in this case not worthy of notice. Indeed a loop antenna with an iron core and several coils has not been proposed with prior art.

According to the present invention on a loop antenna with an iron core are arranged several coils, thereby profitting the following effect: The intensive coupling between the coils is innoxious, if the self-wave of the coil for the lower frequence is in sufficient distance from the wave band, in which the other coil is active. This is to accomplish in a better manner, if an iron core is provided. In such a loop antenna it is possible to reduce the internal- or inter-winding capacity.

The loop antenna according to the invention—an iron core, provided with several coils—has also another important advantage. A further object of the invention is to make the iron core into two parts, each part having a coil. Thereby the opposite coupling is also reduced. In such an arrangement the part, of which is not made use is barred by a short-circuited coil.

The foregoing and other objects of the invention will be more clearly understood from the following description when read in connection with the accompanying drawing, in which examples are shown.

In Fig. 1 is shown the parting of the iron core. On both parts are arranged the coils W_1 and W_2. On the iron cores are also arranged two coils V_1 and V_2, which may be short-circuited if it is wished. In such an arrangement it is recommentable to provide an electric leading shield between the cores and the coils. This shield may be slitted or insulated overlapped.

If an iron core is used, which consists of several wires of iron, roped corresponding to a litzendraht, or an iron core, which consists of several bands, the core K may be arranged submersed in the vehicle or airplane F (Fig. 2); thereby the coils W, which are to switch, are arranged near the receiver E. Now it is possible to arrange the contacts for the switching of the frame coils in the receiver. The proposition to provide a shield between the coils and the iron core is also recommentable for the example according to Fig. 2. In this arrangement, a shield is provided between the points A and B.

FRITZ BERGTOLD.