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KARL-HEINRICH KRAMBEER

2,190,430

ELECTRIC FILTER

Filed July 26, 1938

Fig. 1

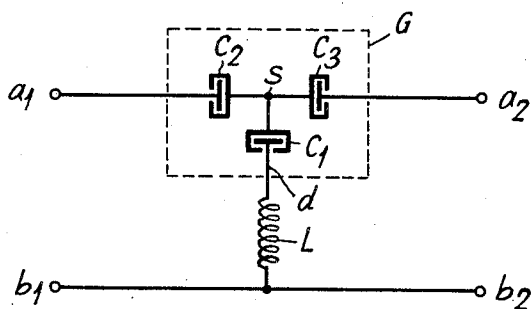


Fig. 2

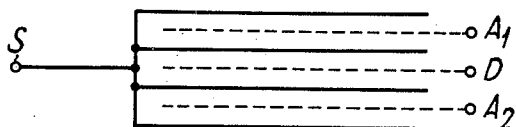
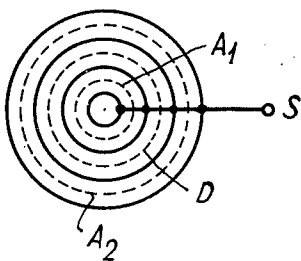


Fig. 3



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ELECTRIC FILTER

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3 Claims. (Cl. 178-44)

In electric filters, more especially in wave filters used in case of high-frequencies, it is necessary, in view of the required transmission properties, to maintain the injurious capacities as low as possible. The present invention provides a means of reducing the effective injurious surface which determines the injurious capacities so that the lowest injurious capacities can be obtained.

In accordance with the invention, in electric filters or the like, the shields of the individual condensers formed by a layer are connected to each other and the condensers are mounted within a common casing close to each other. In accordance with a further novel feature the individual condensers have a common shield formed by a common layer.

The invention will be described in greater detail by reference to the drawing wherein Figure 1 shows a filter circuit embodying the invention and Figures 2 and 3 show the constructional arrangement of the filter condensers employed, the electrodes of which are plate shaped and tubular, respectively. In Figure 1 the filter is of the high pass type with the input terminals a_1 , b_1 and output terminals a_2 , b_2 . The series circuit of the filter contains the condensers C_2 , C_3 , while the parallel branch contains a series connection of condenser C_1 and self-inductance L both connected to each other at d . The b -wire is preferably grounded. As shown in the drawing the one layer of each condenser is shielded by the other layer whereby the shielding layers are connected to a common point so that only one layer of each condenser can have a capacity with respect to the preferably grounded wire b . The condensers C_1 , C_2 , C_3 are mounted in a metal casing G , such as for instance a condenser cup or can as indicated by the dash lines. In this way the effective injurious surface of the common point s is substantially reduced relative to the can.

In accordance with the invention, it will be especially favorable to use for all condensers a common shield, for instance having the shape of a plate or tube, whereby the capacity between these points is to be maintained low through suitable shielding of the plates or layers A_1 , D , A_2 by means of a common layer S . In the Figures 2 and 3 such condensers are shown with a common layer. Figure 2 shows plate shaped layers A_1 , D , A_2 and a common plate shaped shield S . Figure 3 shows such a condenser having a tubular shape. The condensers having a common zero layer as shown in Figures 2 and 3 are mounted in a common casing such as shown at G in dash lines in Figure 1.

With the novel filter arrangement, in many cases the injurious surface and thus also the injurious capacity can be reduced to approximately one-third of the low capacity values existing in the high-frequency field and at the same volume of the cup.

What is claimed is:

1. Electric filter comprising a series path containing a pair of condensers, a shunt path containing a condenser and an inductance, said condensers having a terminal in common, an individual shield for each condenser, and a common shield enclosing all said condensers.

2. Electric filter according to claim 1 wherein the electrodes of the several condensers are in the form of plates, and the shield comprises plates interposed between the condenser plates.

3. Electric filter according to claim 1 wherein the electrodes of the several condensers are tubular and concentrically arranged, and the shield comprises tubular members interposed between adjacent condenser electrodes.

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