May 1, 1928. 1,667,885

J. H. DE MOTT ET AL

FIXED AIR CONDENSER

Filed Feb. 13, 1926

Fig. 1.

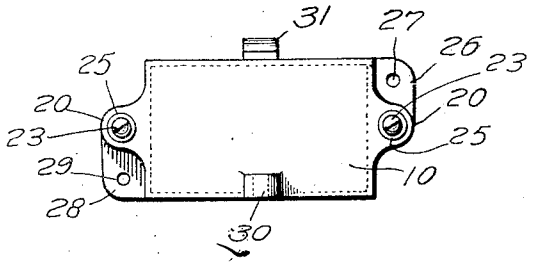


Fig. 3.

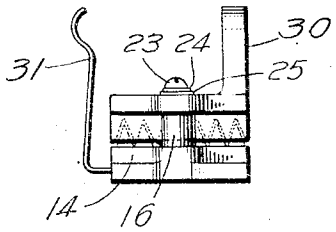


Fig. 2.

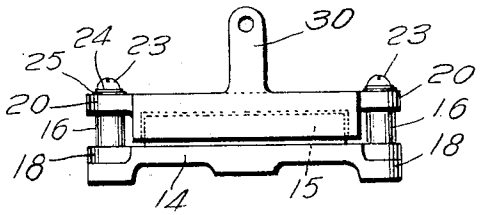


Fig. 5.

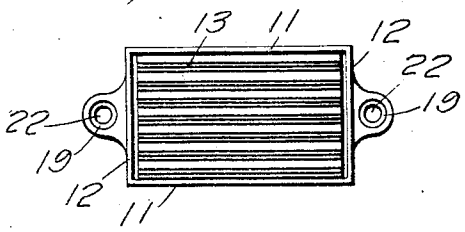


Fig. 4.

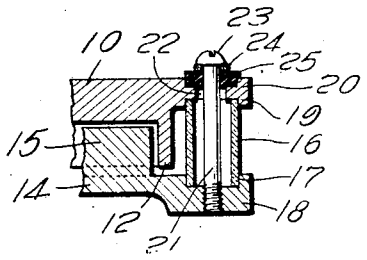


Fig. 7.

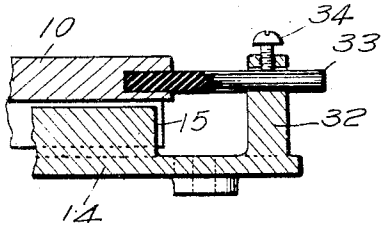
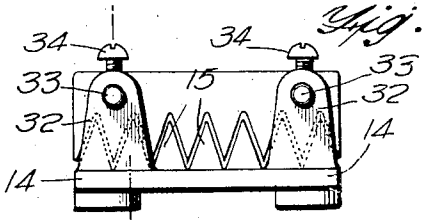


Fig. 6.



Inventors

JOHN H. DE MOTT,
JOHN DEGIOVANNI,

By [illegible]

Attorney

Patented May 1, 1928. 1,667,885

UNITED STATES PATENT OFFICE.

JOHN H. DE MOTT, OF BROOKLYN, AND JOHN DE GIOVANNI, OF NEW YORK, N. Y.

FIXED AIR CONDENSER.

Application filed February 13, 1926. Serial No. 88,129.

Among the objects of the present invention are: to provide a fixed air condenser wherein dielectric absorption losses are reduced to a minimum; to provide a fixed condenser wherein all insulating construction is disposed beyond and outside of the electrostatic field; to provide a condenser of this character wherein the capacity may be varied without disturbing the connection existing between the assembled plates; to provide a fixed air condenser equipped with means for reducing leakage to a minimum; and generally to provide an improved and novel form of efficient fixed air condenser for use in radio circuits.

Drawings.

Figure 1 is a plan view of a condenser constructed in accordance with the principles of the invention.

Figure 2 is a side elevation thereof.

Figure 3 is an end elevation.

Figure 4 is a vertical fragmentary section through one end of the condenser.

Figure 5 is a bottom plan view of the condenser top plate.

Figure 6 is an end elevation of the bottom plate of a slightly modified form of condenser.

Figure 7 is a vertical section on line 7—7 of Figure 6.

Description.

In detail the condenser comprises a top plate 10, substantially rectangular in formation, which is formed of a suitable electroconductive metal, and has a flat top surface and depending side edge flanges 11 and end flanges 12 which flanges are cast integral with the plate and are of uniform dimensions. End flanges 11 and 12 form an enclosure over the bottom plate 14 and the ridges 15 for keeping out dust. The bottom face of the top plate 10 is provided with a series of parallel longitudinal extending ridges 13, which are cast integral with the plate and are triangular in cross section to provide a series of condenser surfaces arranged in saw-tooth formation.

The bottom plate 14 of the condenser is similar in general outline and dimensions to the top plate 10 and is provided on its upper face with a series of integral parallel longitudinal extending ridges, which are similar in configuration to the ridges 13 of the top plate and are formed for nesting engagement therebetween when the plates are assembled in service position, as illustrated in Figure 3.

The ridges 13 of the top plate and those of the bottom plate, form the blades or plates of the condenser, and are separated by an air gap formed therebetween in the assembly of the plates. The ridges 13 formed from the bottom of the top plate terminate at each end slightly inwardly of the depending end flanges 12 whereby the flanges will serve as guides for engagement over the ends of the ridges on the bottom plate 14 to assist in the assembly of the condenser.

The top and bottom plates of the condenser are connected in service position at each end by the disposition of an insulating tube 16 formed of glass or other suitable material having its opposite ends disposed in a recess 17 formed in a longitudinally extending lug 18 formed integral with one end of the bottom plate 14, and the other end of the tube being seated in a recess 19 formed in the under face of a similarly extending lug 20 formed at each end of the top plate 10 whereby the two plates are brought into alinement insuring an identical capacity in part of the production.

A connecting bolt 21 is passed through an aperture 22 formed at the bottom of a recess in the upper face of the top plate lug 20, and is screw-threaded at its bottom into the bottom plate lug 18, being passed centrally through the hollow tube 16 so that an insulating air space is provided around the connecting bolt both through the tube and through the lug 20. The head 23 of the connecting bolt is seated on an annular wire washer 24 resting upon a heavy washer 25 of suitable insulating material disposed in the recess formed in the top face of the lug 20, as clearly illustrated in Fig. 4.

The provision of the wire washer 24 insures longer leakage path and regulates the service connection of the bolts 21 at its lower end in the bottom plate lug 18. It is obvious that the length of the spacer tubes 16 regulates the fixed air gap between the upper and lower plates of the condenser.

The bottom plate 14 is provided with two lugs 26 and 28, each of which has an aperture 27 and 29, respectively, for fastening down on a flat surface, and the apertures 27

and 29 are provided for the acceptance of screws.

Electrical connections are made by connection to the integrally cast arm 30 and the spring finger 31. The condenser is adaptable for use with a conventional grid leak by the provision of an upstanding integrally cast supporting arm 30 formed at one side edge of the top plate 10 and in alinement with an integrally formed spring finger 31 extending upwardly from the opposite side edge of the bottom plate 14, whereby a grid leak resistance element (not shown) may be disposed between the upper ends of the finger and arm.

In the modified form illustrated in Figures 6 and 7 the end flanges 12 of the condenser top plate are eliminated and in place of the spacer tubes 16 of the preferred embodiment, the bottom plate 14 of the modified form is extended at each end longitudinally of the plate and provided with a pair of integral upright posts 32 provided with transverse bars extending through their upper ends for the reception therethrough of rods 33 of insulating material having their ends anchored in an end of the top plate 10. A set screw 34 disposed at the top of each post 32 provides for anchoring the rods 33 in any desired position whereby by moving the rods 33, the top plate 19 may be moved longitudinally of the bottom plate 14 to vary capacitative relation between the inner engaged blades of the condensers.

It will be apparent that in the present construction, air is employed as the dielectric medium, and such insulating spacer material as required to be used is disposed outside of the electrostatic field of the condenser. Accordingly, leakage due to dielectric absorption is reduced to a minimum.

We claim:—

1. A condenser comprising a bottom plate of substantially rectangular formation and provided at opposite ends with longitudinally extending lugs, upstanding condenser blades formed integrally on said bottom plate, a top plate, longitudinally extending lugs formed on the ends of said top plate, the lugs of said top and bottom plates being recessed, tubular spacer members of insulating material seated in the recess of said lugs for supporting said plates in spaced relation, attaching bolts passed through said spacer members and plate lugs for securing said plates in service position and means carried by said plates for supporting a resistance unit in shunt with said condenser.

2. In a fixed air condenser having a top plate and a bottom plate, means for supporting said plates in spaced relation with an air gap therebetween, said means comprising apertured lugs extending from said plates, spacer tubes of insulating material disposed between said lugs and seated therein for retaining said plates in spaced relation and connecting bolts passed through said spacer members and the plate lugs for attaching said plates in service position.

3. In a condenser a bottom plate for a longitudinally disposed series of parallel spaced blades extending upright therefrom, a top plate having a similarly arranged series of blades extending from one face thereof for interleaving between the blades of said bottom plate, an insulating spacer means disposed at opposite ends of said plates for supporting said plates in spaced relation with a fixed air gap between the blades thereof.

JOHN H. DE MOTT.
JOHN DE GIOVANNI.