Oct. 19, 1926. 1,603,640

W. C. REED

RADIO FIXED CONDENSER

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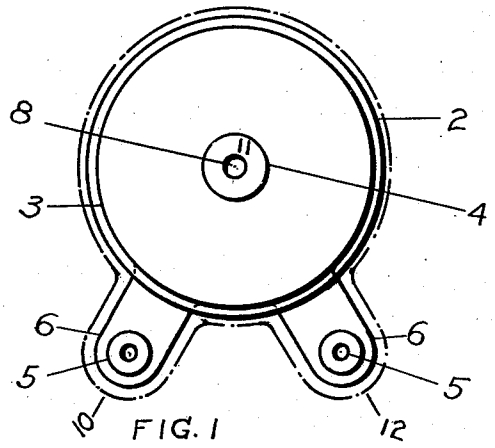


FIG. 1

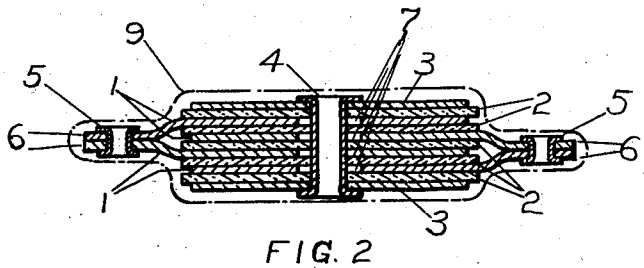


FIG. 2



FIG 3

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UNITED STATES PATENT OFFICE.

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RADIO FIXED CONDENSER.

Application filed May 20, 1925. Serial No. 31,716.

My invention relates to a type of fixed radio condenser in which the dielectric sheets of a non-hygroscopic nature, extend between and beyond similarly shaped plates of electrically conductive material, and the said electrically conductive plates are maintained at a constant distance apart during the various processes of manufacture as well as throughout the life of the condenser, whereby the capacity of the condenser is kept constant and approximately equal to a predetermined value.

A further object of my invention consists in an arrangement whereby the ratio of perimeter to area of plates is kept at a minimum, thereby reducing to a minimum electrical leakage over the dielectric sheets at their edges.

One embodiment of my invention is disclosed in the accompanying drawings and specifications, in which like numerals indicate the same parts throughout the various views and description.

Figure 1 is a plan view of the completed condenser.

Figure 2 is a section thro' the same as at 10—11—12.

Figure 3 is a section thro' one of the end plates 3, as it appears previous to assembly.

The disc shaped electrically conductive plates 1 are separated, insulated and held a predetermined distance apart by means of similar disc shaped dielectric plates 2, of larger diameter than the said conductive plates 1, and of material having a high compressive strength, e. g. mica. Plates 1 are provided with extension lobes 6, which lobes are in turn provided with circular openings for the insertion of hollow rivets 5. Plates 1, 2 and 3 are also provided with circular openings for the insertion of hollow rivet 4, the said openings 7 in plates 1 being larger than those in plates 2 and 3 to prevent possibility of any considerable electrical leakage to rivet 4.

And plates 3 are crowned as shown in Figure 3, and are assembled with their concave faces toward the plates of the condenser after which they are pressed flat and hollow rivet 4 is spun over to hold them firmly in place, a uniform pressure between the various plates throughout their area. Hole 8, in rivet 4, affords a convenient opening for the insertion of a screw or bolt whereby the condenser may be secured in place.

The alternate plates 1 are joined together at their extension lobes 6 and thus joined form convenient terminals whereby the condenser may be connected in the electric circuits of the radio set, as may be desired. Upon completion of the condenser assembly as above described it is preferably dried in an oven or vacuum tank and subsequently treated by dipping in a liquid adapted to impart to it an insulation coating 9, of non-hygroscopic material. I prefer to use for this purpose a solution of celluloid in acetone.

It will readily appear from this that owing to the disc shape of the plates, the perimeter of the plates bears the smallest possible ratio to the surface area thereof, and it follows from this that the electrical resistance to leakage from the edge of one conductive plate to that of the next is as high as possible for any given length of such leakage path.

It will be further seen that due to the use of comparatively thin sheets of a hard, relatively incompressible material, like mica, as a dielectric, the distance between the conducting plates will be maintained practically constant throughout the life of the device and the concave shape of the clamping plates, whereby a nearly constant pressure is maintained throughout the area of the plates also tends to keep this distance uniform and constant, thereby insuring permanent accuracy throughout the life of the device, and the same degree of accuracy cannot be attained nor maintained by the use of more compressible material of less constant thickness commonly used in such devices.

While the above description discloses the preferred embodiment of my invention, it is to be understood that I do not wish to be restricted to the exact construction described, but may make such departures from it as may be desirable while keeping within the scope of the appended claims.

Having thus described my invention what I claim as new and desire to secure by Letters Patent of the United States is:—

1. In a device of the class described, a radio fixed condenser, comprising a plu-

rality of disc shaped plates of electrically conductive material, provided with opening in their centers, a plurality of discs of dielectric material inserted therebetween and superimposed thereon, said dielectric discs beings of a larger diameter than said plates, and being provided with openings in their centers, of smaller size than the openings in said disc shaped plates, clamping plates formed as circular concave plates provided with openings in their centers and placed one over each other of the outer dielectric discs with its concave face adjacent thereto, means to secure said clamping plates together and hold them in position bearing against the outer dielectric discs, means to electrically connect the alternating plates together in groups, and means to connect each group to an electric circuit.

2. In a device of the class described, a radio fixed condenser comprising a plurality of disc shaped plates of electrically conductive material, provided with opening in their centers, a plurality of discs of substantially non-hygroscopic dielectric material of substantially equal thickness, said discs provided with openings in their centers, said openings being of smaller size than the opnings in said plates, clamping plates formed as circular concave plates provided with openings in their centers and placed one over each other of the outer non-hygroscopic dielectric discs with its concave face adjacent thereto, means passing through the said central openings to secure the clamping plates together and hold them in position bearing against the outer non-hygroscopic dielectric discs, means to electrically connect the alternating plates together in groups, means to connect the said groups to an electric circuit.

3. In a device of the class described, a radio fixed condenser comprising a plurality of disc shaped plates of electrically conductive material, provided with openings in their centers, a plurality of discs of substantially non-hygroscopic dielectric material of substantially constant thickness thorughout, and all said discs of substantially equal thickness, said discs provided with openings in their centers, said openings being of smaller size than the openings in said plates, clamping plates formed as circular concave plates, provided with openings in their centers and placed one over each of the outer dielectric discs with its concave face adjacent thereto, a hollow rivet inserted through the said openings in the said plates, dielectric discs and clamping plates, holding said clamping plates flatly against said outer dielectric discs, means to electrically connect alternate plates together into groups, means to connect the said groups to an electric circuit, and a coating of substantially non-hygroscopic, insulating material adapted to seal all openings in said condenser substantially in an air tight manner.

4. In a device of the class described, a radio fixed condenser, comprising a plurality of substantially disc shaped plates of electrically conductive material, provided with openings in their centers, projecting lobes formed on said plates at their outer edges, said lobes provided with holes in their outer ends, a plurality of discs of substantially non-hygroscopic, dielectric material, inserted between said plates and superimposed upon the outer of said plates, said discs being of larger diameter than said plates and being provided with openings of smaller size than the corresponding openings in said plates, and being located in the center of said discs, clamping plates formed as circular concave plates, provided with openings in their centers and placed one over each of the outer dielectric discs with its concave face adjacent thereto, a rivet inserted through the said openings in the said plates, to secure said clamping plates together and hold them in position bearing against the outer dielectric discs, rivets inserted through the opening near the ends of the lobes of the alternate plates, connecting said plates together into two separate groups, means to connect each of the said groups to an electric circuit, and a coating of substantially non-hygroscopic insulating material adapted to seal all openings in said condenser in an air tight manner.

5. In a device of the class described, a radio fixed condenser, comprising a plurality of substantially disc shaped plates of electrically conductive material, provided with openings in their centers, projecting lobes formed on said plates at their outer edges, said lobes provided with holes in their ends, a plurality of mica discs inserted between said plates, therewith, and superimposed upon the outer of said plates, said discs being of larger diameter than said plates, and being provided with openings in their centers of smaller size than the corresponding openings in said plates, clamping plates formed as circular concave plates provided with openings in their centers, and placed one over each of the outer mica discs with its concave face adjacent thereto, a rivet inserted through the said openings in the said plates, mica discs and clamping plates, holding said clamping plates flatly against said outer mica discs, rivets inserted through the said openings near the ends of the lobes of the alternate plates connecting said plates together into two separate groups, means to connect each of the said groups to an electric circuit, and a coating of substantially non-hygroscopic

insulating material adapted to seal all openings in said condenser in an air tight manner.

6. In a device of the class described, a radio fixed condenser, comprising a plurality of plates of electrically conductive material provided with openings in their centers, projecting lobes formed on said plates at their outer edges, a plurality of sheets of substantially non-hygroscopic dielectric material inserted between, and superimposed upon the outer of said plates, their edges extending beyond the edges thereof, said sheets provided with openings in their centers smaller than the openings in said plates, clamping plates formed as concave plates, provided with openings in their centers and placed one over each of the outer dielectric sheets with its concave face adjacent thereto, a rivet inserted through the said openings in the said plates, sheets, and clamping plates, holding said clamping plates flatly against said outer dielectric sheets, means to connect the alternate plates together into two separate groups, means to connect each of the said groups to an electric circuit, and a substantially insulating, non-hygroscopic air excluding coating deposited upon and completely surrounding said condenser.

In testimony whereof I set my hand and signature.

WALTER C. REED.