March 1, 1927.

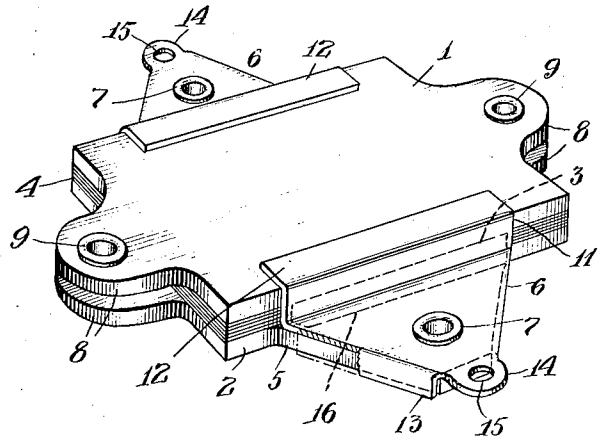
H. R. VAN DEVENTER

1,619,223

CONDENSER

Filed May 17, 1924

FIG. 1



Harry R Van Deventer INVENTOR

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UNITED STATES PATENT OFFICE.

HARRY R. VAN DEVENTER, OF NEW YORK, N. Y., ASSIGNOR TO DUBILIER CONDENSER CORPORATION, OF NEW YORK, N. Y., A CORPORATION OF DELAWARE.

CONDENSER.

Application filed May 17, 1924. Serial No. 714,140.

This invention relates to improvements in electrical condensers for radio and other apparatus. The invention set forth herein is of the type comprising a desired number of conducting plates or metal foils, separated by sheets or leaves of mica or some other dielectric, the conducting plates and dielectric sheets being assembled to form a stack which is placed between a pair of face plates or bearing members of some strong and stiff insulating material secured together, and keeping the conducting plates or layers, and the mica sheets, in tight engagement over their entire surface area; and is an improvement upon the condenser shown and described in the application of William Dubilier, Serial No. 692,869, filed the 14th day of February, 1924, which is now matured into Patent 1,575,045 dated March 2nd, 1926.

An object of the invention herein described is to provide simple and efficient means for holding the two face plates in the required relation, making them grip the stack tightly between them.

A further object of the invention is to provide a condenser comprising a stack between two face plates, the face plates being held together by securing means which pass through the plates without making contact with any of the contact plates or elements in the stack, and the stack being provided with means at its opposite extremities, enabling the poles of the condenser to be connected into an electric circuit.

Other objects and advantages of this invention will appear from the following specification, and the characteristics of the invention are precisely defined in the appended claims, but I, of course, may vary the shape, size and arrangement of the parts, within the scope and spirit of the invention, to the full extent indicated by the broad and general meanings of the terms in which the appended claims are expressed.

On the drawings,

Figure 1 shows in perspective, the outside appearance of a condenser in accordance with my invention.

Such a condenser comprises a top face plate or bearing member 1, and a bottom face plate 2, between which is the stack or body of the condenser consisting of conducting plates or sheets of metal foil 3, separated by sheets of mica 4. The face plate 2 has extensions 5 at its opposite ends, and upon these extensions are clips 6, sceured to the extensions by rivets 7, and having portions which overlap and engage the ends of the top plate 1. These clips 6 press down along the ends of the top plate 1, and are bent to engage this top plate with sufficient force to cause the stack to be compressed tightly between the two plates 1 and 2, so as to hold the sheets of mica and foil in firm engagement over their entire surfaces.

Both of the plates 1 and 2 have extensions 8 at the opposite sides, these extensions projecting beyond the peripheral edges of the stack of foil and mica, and being perforated so that rivets 9 may be passed through them. The rivets 9, and the rivets 7 as well, may be eyelet rivets or may be solid, and are secured by expanding their opposite ends. When the eyelet rivets 9 are tightened, they draw the sides of the plates 1 and 2 towards each other, and co-operate with the rivets 7 and clips 6 to maintain the various parts of the condenser in assembled relation.

Each clip 6 comprises a flat, triangular-shaped body 10, one end of which is bent up, as shown at 11, with the edge 12 bent over upon the top face of the plate 1, along the adjacent end thereof. At the sides of the body 10 of each clip, are portions or flanges 13, which are bent down against the sides of the extensions 5. In the drawing, one portion 13 is shown as partly broken away, to permit the side of the extension 5 to be seen, and the narrow or outer ends of the clips may have conductor fastening lugs 14 with holes 15, to permit a conductor to be attached to each end of the condenser. One-half of the sheets of foil 3, of one polarity, may project out and be clamped against the extension 5 at one end of the condenser, while the other half of the sheets of foil, of opposite polarity, may be extended out under the other clip, and be engaged thereby on the opposite end of the condenser, so that when conductors are joined to the two lugs 14, the condenser will be in circuit. The projecting extremities or edges of part of the foils lying beneath one of the clips, and in electrical connection therewith, are indicated at 16. The clips or terminal plates 6 are, of course, made of metal, and the plates 1 and 2 may be, for instance, of bakelite of the necessary thickness.

The effect of the rivets 9 on the opposite

sides of the plates 1 and 2 is, of course, to draw the sides of the two plates or bearing members together, and compress the stack of the condenser between them; while the flanges or edges 12 of the clips 6, co-operate with the rivets 9 by keeping the plates 1 and 2 perfectly straight or flat, and obviate any tendency of these plates to bow or bend up in the middle. Hence, the two plates are secured together with sufficient tightness, and in such a manner to exert uniform compression upon the stack between them; the pressure upon the layers of tin-foil and sheets of mica thus being evenly distributed over their entire area.

With a condenser as described, very efficient operation, strength and durability and general superiority in construction are obtained, because by the securing means or clips which extend along the ends of the condenser, and the securing means or rivets 9 which engage the sides of the face plates and pass through from one to the other, the parts of the condenser are kept tightly together, and the stack under compression and at the same time none of the sheets of foil need make contact with the rivets 9.

When half the conducting material or metal foils have their protruding edges clamped under one of the clips 6 and the remaining half have their projecting edges under the other clip, the rivets 9 will engage the upper and lower bearing members without piercing the sheets of foil, and the foil will therefore not need to be punched. Sometimes, however, the metal eyelet rivets 9 can be utilized as the poles of the condenser, and circuit conductors attached to them. In such a case half of the sheets of foil will project between the extensions 8 at one side of the condenser and the remaining foils will be made to project out between the other two extensions.

Use can then be made of a perforated metal plate or block of the right thickness between each pair of extensions 8, the rivets 9 to pass through the extensions and the blocks and fasten and make electrical connection with the projecting ends of the sheets of foil by clamping them between either plate and the face of the block when the rivets are tightened. The block must be of such thickness as to allow for the drawing of the extensions 8 together to some extent to compress the stack between the plates 1 and 2 when the rivets 9 are secured. Or the foils may have their projecting ends pierced to allow the rivets 9 to pass through them or the ends of the foils can be soldered to the rivets 9. If desired the two groups or sets of metal foils of opposite polarity can be so arranged that one set will be in electrical connection with an eyelet 9 and the other with one of the clips 6.

It will be understood of course that the mica sheets 4 are larger than the sheets of metal foil 3 in the condenser. The corners of the mica sheets will coincide with the corners of the face plates 1 and 2; while the corners of the sheets of metal foil will be within the periphery of the condenser, and the only parts of the metal foils which will project out beyond the edges of the plates 1 and 2, and the sheets 4 will be the parts that are brought together to lie under the clips 6.

Having described my invention, what I believe to be new and desire to secure and protect by Letters Patent of the United States is:—

1. A condenser comprising a pair of face plates, insulating and conductive material disposed between said face plates, means adjacent the opposite ends of the condenser and extending along the edges thereat for securing the plates together, and additional securing means passing through the two face plates adjacent the opposite sides to co-operate with the securing means adjacent the ends of the condenser and cause the face plates to compress the conductive and insulating material between them.

2. A condenser comprising a pair of face plates, conducting and insulating material between said plates, a pair of clips engaging the opposite ends of said plates, and a pair of rivets passing through the face plates adjacent the opposite sides thereof, and spaced from the clips, to secure the face plates together and compress the conductive and dielectric material between them.

3. A condenser comprising a pair of face plates, conductive and dielectric material between said plates, one of said plates having extensions at its opposite ends, clips secured to said extensions and engaging the ends of the other plate, and securing means passing through said plates adjacent the opposite sides thereof to co-operate with said clips and secure the face plates together and compress the dielectric and conductive material between them.

4. A condenser comprising a pair of face plates, conductive and dielectric material between the face plates, securing means adjacent the opposite ends of said plates, said plates having extensions at their opposite sides, and securing means passing through said extensions to co-operate with the securing means at the ends of the condenser, to secure the face plates together and compress the conductive and dielectric material between them.

5. A condenser comprising a pair of face plates, one of said plates having extensions at its opposite ends, conductive and dielectric material between said plates, clips secured to the extensions and having portions overlapping the adjacent edges of the other plate, said plates each having other exten-

sions at the opposite sides and rivets passing through said other extensions, and co-operating with said clips to secure the plates together and cause the plates to compress the conductive and dielectric material.

6. A condenser comprising a pair of face plates, conducting and insulating material between said plates, clips engaging the opposite ends of said plates, and rivets passing through the face plates adjacent the opposite sides thereof, and spaced from the clips, to secure the face plates together and compress the conductive and insulating material between them.

7. A condenser comprising a pair of face plates, conducting and insulating material between said plates, clips engaging the opposite ends of said plates, and rivets passing through the face plates adjacent the opposite sides thereof, and beyond the outer periphery of the conducting and insulating material, to secure the face plates together, and compress the conductive and dielectric material between them.

8. A condenser comprising a pair of face plates, conducting and insulating material between said face plates, clips engaging the opposite ends of said plates, and rivets passing through the plates adjacent the opposite sides thereof to secure the plates together and compress the conductive and insulating material between them, said rivets being disposed beyond the periphery of said material.

9. A condenser comprising a pair of face plates, conducting and insulating material between said plates, rivets passing through the face plates adjacent the edges thereof to secure the face plates together and compress the conductive and insulating materials between them, and terminals for said conductive material projecting therefrom, spaced from said rivets.

10. A condenser comprising a pair of cover plates, conducting and insulating material between said plates, the conducting material having ends to extend over the edges of the insulating material, securing means passing through the cover plates and out of contact with the conducting material to hold the cover plates together, and relatively stiff terminal plates for the condenser, one of said terminal plates being in contact with the ends of part of said conducting material and the other terminal plate being in contact with the ends of the remainder of said conducting material, each of said plates having a relatively stiff perforated conductor fastening lug thereon.

11. A condenser comprising a pair of cover plates, conducting and insulating material between said plates, the conducting material having ends to extend over the edges of the insulating material, securing means passing through the cover plates and out of contact with the conducting material to hold the cover plates together, and relatively stiff terminal plates for the condenser, one of said terminal plates being in contact with the ends of part of said conducting material and the other terminal plate being in contact with the ends of the remainder of said conducting material, each of said plates having a relatively stiff perforated conductor fastening lug thereon at opposite ends of the condenser.

In testimony whereof I affix my signature.

HARRY R. VAN DEVENTER.