Dec. 7, 1926. 1,610,208

L. R. McDONALD

ANTIMICROPHONIC SHIELD FOR ELECTRON TUBES

Filed Oct. 31, 1925

Fig. 2

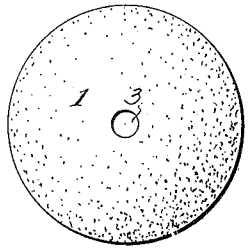


Fig. 1

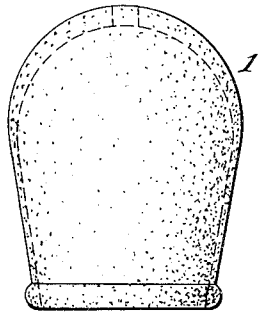
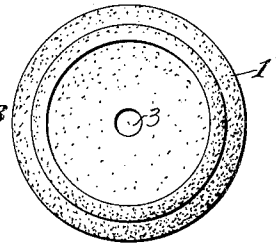


Fig. 3



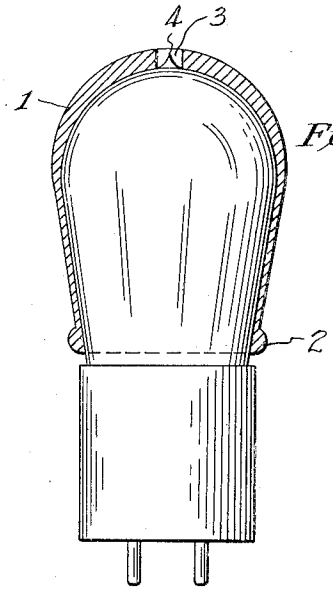


Fig. 4

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UNITED STATES PATENT OFFICE.

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ANTIMICROPHONIC SHIELD FOR ELECTRON TUBES.

Application filed October 31, 1925. Serial No. 65,912.

My invention relates to a novel attachment for electron tubes such as are used in radio lay-outs; and the object of my invention is to restrict the microphonic action of such tubes and the inter-action among several tubes.

As is known by those familiar with the art, when the electric current is passed through such tubes, vibration is produced in the glass of the tubes, which vibration causes retroaction to take place either within the radio set itself or between the loud speaker and the tubes at audio frequencies. I have discovered that this may be largely controlled by dampening or preventing the microphonic action of the vibration of the glass of the tubes. This I accomplish by means which I will now describe.

In the accompanying drawing Fig. 1 is an elevation of one of my improved shields; Fig. 2 is a top view; Fig. 3 is a bottom view of the same; and Fig. 4 is a vertical sectional view showing the shield applied to an electron tube mounted in the socket such as is used in radio lay-outs.

A shield 1 is preferably made of rubber or other elastic or flexible material which will permit it to be slipped over and fitted quite closely to the tube. Rubber containing lead oxide or other similar material adapted to give it weight may be advantageously employed; and, where the shape of the tube permits, the shield may be made of lead or similar soft metal which is capable of being fitted snugly around the tube.

In the form illustrated the shield is thickened toward the top, the sides and lower portions being comparatively thin, and the lower edge being strengthened by a bead 2 which will yield to permit the shield to be slipped over the large portion or dome of the tube, and will then contract so as to draw the shield snugly around the body or barrel of the tube in operative position. The top of the shield is preferably provided with a socket or hole 3, which accommodates the usual terminal point 4 on a tube. I have shown the hole as large enough to leave this terminal point 3 out of contact with the shield. But it should be understood that the recess or opening 3 can be of such a form as to quite snugly fit around the point 4 if desired.

When in use, the shield dampens or subdues the natural vibration of the glass of the tube to a point below that where retroaction or regeneration takes place, either within the set itself or between the tubes and the loud speaker or other elements acting to produce sound waves or direct mechanical disturbances affecting the glass of the tube.

Those familiar with the art will understand that in the best practical application of the shield, account must be taken of the character of the glass and the variation of audio frequencies in the particular set, and the number of tubes, and the like, so long as the principle is adhered to of making a comparatively close contact between the non-resonant shield of more or less weight and the glass shell of the tube, in which vibrations are apt to occur.

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

1. An anti-microphonic shield for electron tubes adapted to exteriorly surround and cling to substantially all of the dome and barrel of the tube to dampen the vibrations thereof.

2. An anti-microphonic shield, flexible as a whole, for electron tubes adapted to surround and snugly contact with substantially all of the dome and barrel of the tube to dampen the vibrations thereof.

3. An elastic, anti-microphonic shield for electron tubes adapted to snugly surround and contact exteriorly with substantially all of the dome and barrel of the tube to dampen the vibrations thereof.

4. An anti-microphonic shield for electron tubes, composed of non-resonant material, adapted to surround and hug substantially all of the dome and barrel of the tube to dampen the vibrations thereof.

5. An anti-microphonic shield for electron tubes formed out of a composition of organic material intimately combined in a homogeneous mass with a relatively heavier material, and adapted to surround the tube and dampen the vibrations thereof.

6. An anti-microphonic shield for electron tubes, composed of rubber and lead oxide, adapted to surround the tube and dampen the vibrations thereof.

7. An anti-microphonic shield for electron tubes composed of rubber and metallic oxide, adapted to surround the tube and dampen the vibrations thereof.

LESLIE R. McDONALD.