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ACOUSTIC DEVICE

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Fig. 1.

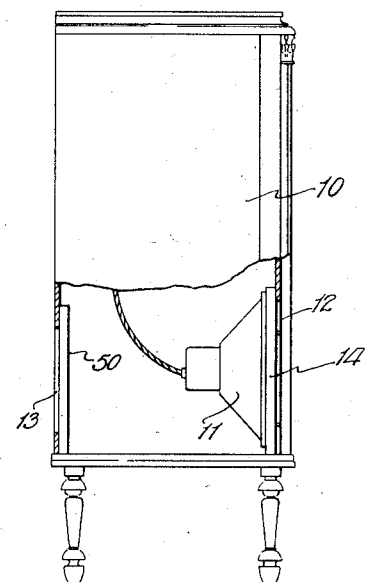


Fig. 2.

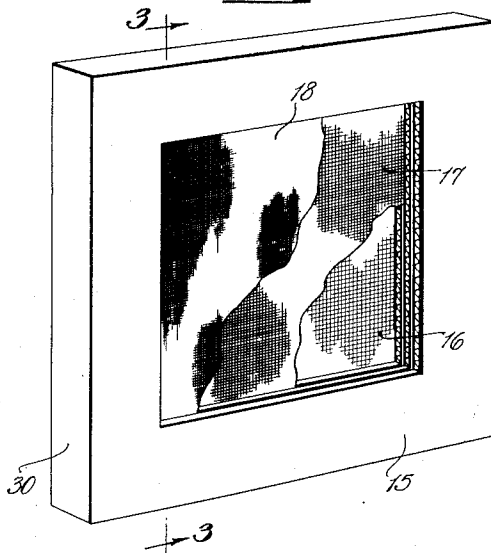


Fig. 3.

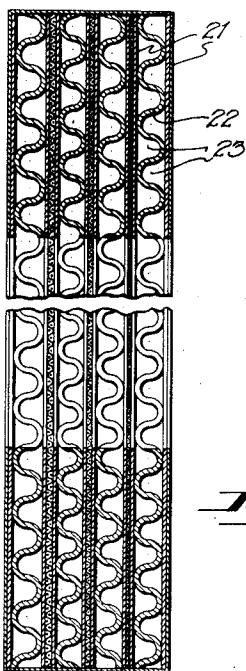


Fig. 4.

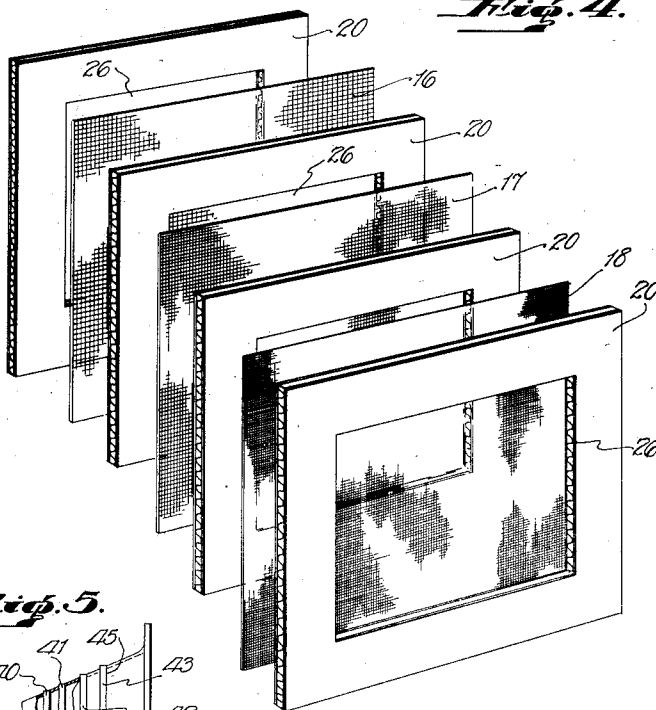
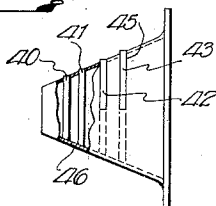


Fig. 5.



WITNESS:

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UNITED STATES PATENT OFFICE

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ACOUSTIC DEVICE

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10 Claims. (Cl. 181—31)

This invention relates to sound and tone modifying devices and while the salient principles thereof are capable of general adaption, they particularly lend themselves to use in connection with radio loud speakers and similar devices.

It is one object of the present invention to provide a novel device of the character described to increase the range of true tone for both high and low notes.

It is another object of the invention to provide a device in which the sound distortion is reduced thereby permitting use of greater volume than is possible under ordinary conditions.

It is another object of the invention to provide a novel construction which will greatly improve the operation of loud speakers generally.

Other objects of the invention will appear as the nature of the invention is better understood, for which purpose, reference will be had to the following specification and to the drawing, in which;

Figure 1 is a view in elevation partly broken away showing a radio cabinet equipped with a device constructed in accordance with the present invention,

Figure 2 is a perspective view of a device constructed in accordance with the present invention,

Figure 3 is a transverse sectional view on an enlarged scale on the line 3—3 of Figure 2,

Figure 4 is a distended perspective view, and;

Figure 5 is a view in elevation partly broken away illustrating a slightly modified form of the invention.

Referring to the drawing and particularly to Figures 1 to 4 inclusive, thereof, the reference numeral 10 designates a radio cabinet having the ordinary loud speaking apparatus 11. In the present illustration the cabinet has an opening 12 through which the sounds of the speaking unit are emitted, this opening being on the front of the cabinet and there being an opening 13 at the rear thereof. While the opening 12 at the front of the cabinet is of more or less conventional construction, the opening 13 may not be and it is merely shown in the present embodiment of the invention to illustrate the manner in which the invention is used.

Interposed between the speaking unit 11 and the opening 12 of the cabinet there is a member 14 which, in accordance with the present invention, is so constructed and arranged as to modify the sound waves or tones emitted from the loud speaker. This device consists of a frame 15 within which is mounted a plurality of screens

of which, in the present illustration of the invention, there are three, designated 16, 17 and 18. As indicated in Figures 2 and 3 of the drawing these screens are of different mesh, the screen 16 having the larger mesh, the screen 18 having the smaller mesh with the screen 17 being of mesh intermediate the mesh of the screens 16 and 18.

In accordance with the present invention the screen of largest mesh is positioned so that it will be the first to receive the tones or sound waves to be modified with the screen of smallest mesh arranged so that it will be the screen through which the modified tones or sound waves are finally emitted. While in the present instance but three screens are employed it is obvious that two screens may be employed or that more than three may be employed, but in each instance the screens will be so arranged that the mesh thereof will decrease in size in the direction of travel of the sound waves or tones being acted upon by the device.

Means is provided to yieldingly or resiliently support said screens and this means preferably consists of a plurality of frame-like members which are adapted to be secured together with the screens interposed therebetween, the screens being spaced from one another by the frame-like members.

Each of these frame-like members consists of wall members 21 which are maintained in spaced relation by means of corrugated paper or cardboard 22. This construction provides a plurality of air chambers 23 within the frame members 20 and these air chambers act in the manner of cushions for supporting the screens 16, 17 and 18, the construction described providing a resilient structure. The frame members are so constructed that they each have a central opening 26 which area will be covered only by the screen members and while the frame members have been herein illustrated as of rectangular form with rectangular openings it is to be understood that they may be formed in any desired shape and that the openings thereof may likewise be of any desired contour.

The several elements, screens and frame members, are placed together in the arrangement shown in Figure 4, after which they are all secured together in any desired manner. The outer edges of the frame members which present open channels by reason of the corrugated paper are covered with suitable material such as paper the inner edges being preferably not sealed in order that the channels of the corrugated paper or

cardboard may be open to provide dead air spaces. In the drawing this sealing element is designated 30.

The device operates as follows.

5 The device is placed in the sound emitting opening or in the path of travel of the sound waves to be modulated. The sound waves pass through the several screen elements and in doing so pass through the screen element of largest mesh first and then through the screen elements, 10 the mesh of which is gradually reduced in size and are finally emitted through the screen element of smallest mesh. In this way the tone will be appreciably modified and clarified and objectionable noises reduced to the point where they 15 will no longer be objectionable.

In using the device in connection with radios one of these elements will be positioned adjacent each opening through which sound will be emitted from the cabinet as illustrated at 50 in Figure 1 wherein one of the elements is placed over the opening 13 at the rear of the cabinet. 20

In Figure 5 I have illustrated a slightly modified form of the invention and in said figure 25 shown the manner in which the device is used in connection with a loud speaker horn or trumpet. In this application of the invention a plurality of screen elements 40, 41, 42 and 43 are employed. Each of these screen elements comprises two frame members similar to those described above with a screen of the proper mesh 30 interposed therebetween, the open side edges of the frame members being sealed. These several screen members may be inserted in slots 45 formed in the walls of the horn or trumpet which is designated 46 in the manner heretofore described, that is, the screen of largest mesh being positioned at the smallest end of the horn or trumpet, the mesh of the screens towards the bell end of the trumpet decreasing in size. 40

From the foregoing it will be apparent that the invention provides a new and novel device for modifying, modulating or clearing up the tones emitted from loud speakers and similar talking devices, and while the invention has been herein 45 illustrated as applied to a radio apparatus, it is to be understood that it is not limited to this use and may be employed in combination with any type of sound producing apparatus such as phonographs, telephones or the like. It is to be further understood that the invention is not restricted in its use to any particular shape or size and that it may be constructed to meet various requirements of use. 50

Having thus described the invention, what is claimed as new and what it is desired to secure by Letters Patent of the United States, is; 55

1. A sound and tone modifier including a plurality of screens arranged in the path of the sound or tones to be modified, the size of the mesh of said screens decreasing in the direction of travel of the sound or tones. 60

2. A sound and tone modifier including a plurality of screens arranged in spaced relation in the path of travel of the sound or tones to be 65

modified, the mesh of said screens decreasing in size in the direction of travel of said sound or tones.

3. A sound and tone modifier including a plurality of screens arranged in spaced relation in the path of travel of the sound or tones to be modified, the mesh of said screens decreasing in size in the direction of travel of said sound or tones, and cushion elements for maintaining said screens in spaced relation. 80

4. A sound and tone modifier including a plurality of screens arranged in spaced relation in the path of travel of the sound or tones to be modified, the mesh of said screens decreasing in size in the direction of travel of said sound or tones, and cushion means for mounting and maintaining said screens in spaced relation, said spacing and supporting means consisting of frame-like members composed of corrugated paper. 85

5. A device of the character described comprising a plurality of screen elements of different sizes of mesh, said screens being so arranged in the path of travel of the sound waves or tones to be modified that the size of mesh decreases in the direction of travel of the sound waves or tones through the several screens. 90

6. A device of the character described comprising a frame member, said frame member comprising a plurality of complimentary frame-like members each having spaced walls with air chambers between the walls, and screen elements mounted between said frame members. 95

7. A device of the character described comprising a frame, said frame comprising a plurality of complimentary frame members each having spaced walls, corrugated paper maintaining said walls in spaced relation and screen elements mounted in the frame between said frame members. 100

8. A device of the character described comprising a frame, said frame including a plurality of frame members and a plurality of screen elements mounted between the frame members. 105

9. A device of the character described comprising a frame, said frame including a plurality of separate frame members each having spaced walls, corrugated paper interposed between the spaced walls of the frame members, screens interposed between the several frame members, and means for securing said frame members and said screens together to provide a unitary structure. 110

10. A device of the character described comprising a frame, said frame including a plurality of separate frame members each having spaced walls, corrugated paper interposed between the spaced walls of the frame members, screens interposed between the several frame members, and means for securing said frame members and said screens together to provide a unitary structure, said last mentioned means serving to close the ends of the corrugations of said corrugated paper to form dead air chambers in the frame members. 115

REGINALD B. HAMMER. 140