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SOUND CONTROL CONSTRUCTION

Filed July 2, 1926

Fig. 1.

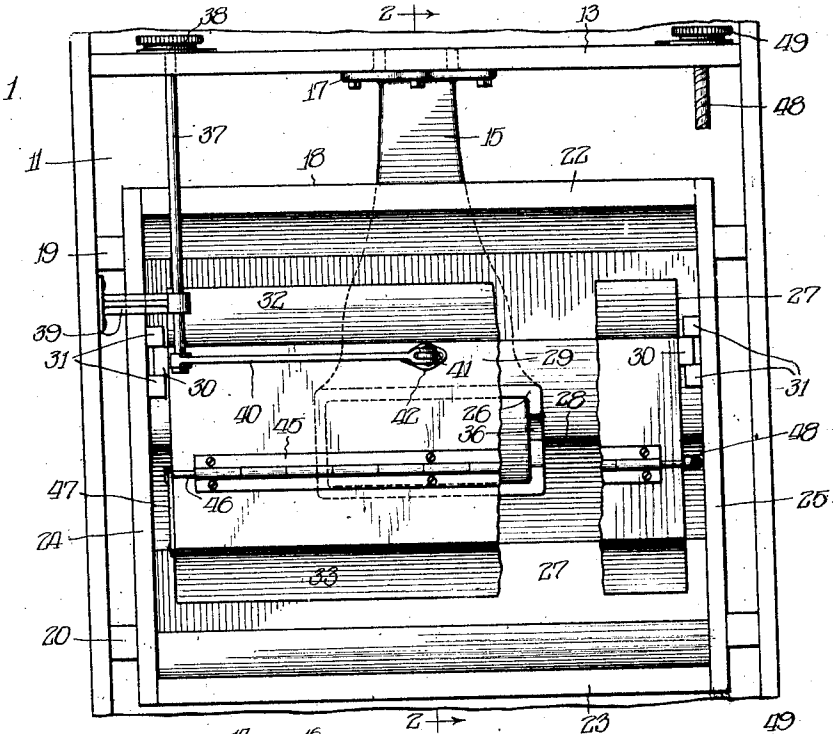
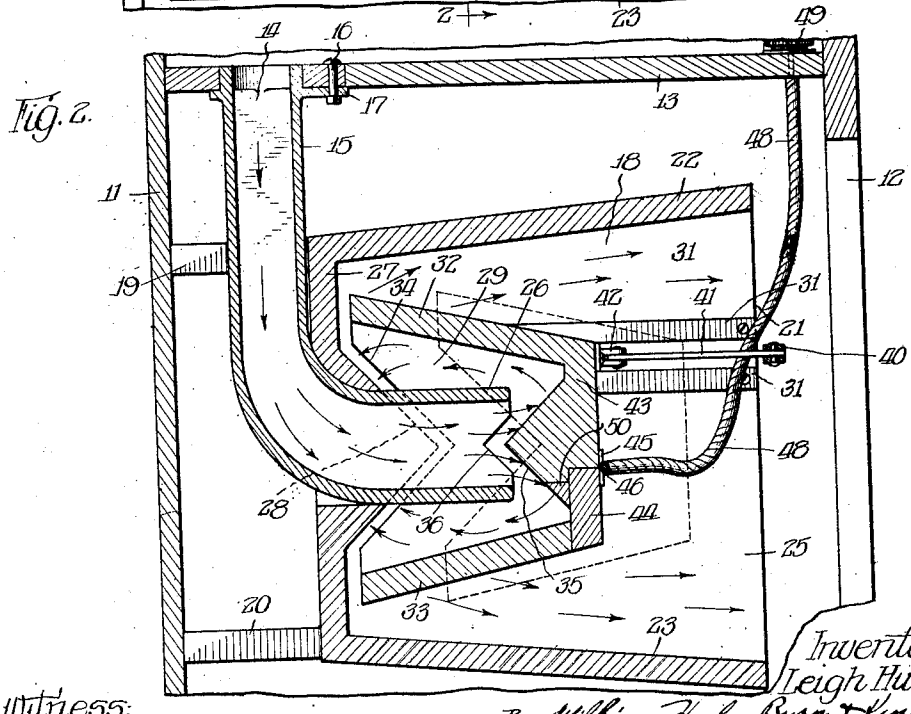


Fig. 2.



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SOUND-CONTROL CONSTRUCTION.

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This invention relates to a new and improved sound control construction and more particularly to a construction of this character adapted to improve the quality and control the volume of sound.

Constructions of this character are particularly adapted for use in connection with phonographic reproducing mechanisms but are also capable of use with other forms of sound reproducers, such, for example, as radio loud speaking units.

It has been found that to improve the quality of sound and to provide the proper amplification, it is essential that a relatively long path be provided for the sound waves. The expansion of the cross sectional area of the sound passages should be gradual and it has been also found that division and reflection of the sound waves are important factors in improving the fidelity of reproduction. The length and size of the sound chambers must be held within practical limits due to the sizes it is commercially practical to construct amplifiers of this character.

It is an object of the present invention to provide means for controlling the amplification of sound and for providing a variable control of the passage areas and relation of reflecting surfaces.

It is an additional object to provide a construction of this character which is simple in design and adapted to be located in a relatively small space.

It is a further object to provide a construction of this character in which a relatively long path of sound travel is provided, and in which the sound waves are divided and separately reflected.

Other and further objects will appear as the description proceeds.

I have illustrated one preferred embodiment of my invention in the accompanying drawings, in which

Figure 1 is a front view of the construction with parts broken away; and

Figure 2 is a vertical section taken on line 2—2 of Figure 1.

The construction as shown is supported in a phonograph cabinet or similar housing 11, having a sound discharge opening 12, and with its upper end closed by the motor board or similar member 13. The phonograph operating mechanism has not been shown, as this forms no part of the present invention. It will be understood that the phonograph tone arm will be so located as to discharge sound into the throat passage 14 in the throat member 15. Sound may be discharged into the throat passage also from a radio loud speaking unit or other source of sound, and any desired connecting means may be provided. The throat member 15 is supported from the motor board 13 by the bolt 16 engaging the lug 17.

The sound chamber 18 is supported in the cabinet by the members 19 and 20, and is formed with the open side 21, the flaring top and bottom walls 22 and 23, and the parallel sides 24 and 25. The lower end 26 of the throat member 15 extends through the rear wall 27 of the sound chamber 18. This rear wall 27 is provided with the transversely extending ridge 28. The point of the ridge extends on the plane of the middle of the lower open end of the throat member 26. As shown in Figure 1, the lower end of this throat is substantially rectangular in cross section and is elongated horizontally.

The reflecting member 29 is supported upon the slides 30 which run between the guide members 31 carried by the inner faces of the walls 24 and 25 of the amplifying chamber. The reflecting member 29 has the flaring top and bottom walls 32 and 33, and has parallel side walls. The side walls are provided with the notches 34 which are similar in form to the ridge 28 formed on the inner wall of the sound amplifying chamber. The inner wall 43 of the reflecting member is provided with the transversely extending ridge 35 which extends in the same plane as the ridge 28 and is directed opposite to that ridge. The side edges of the lower end 26 of the throat member are provided with the notches 36 corresponding to the ridge 35.

The reflecting member is moved by means of the control rod 37, provided with an operating and indicating knob 38. This rod 37 is carried in the bracket 39 and its lower end has the operating arm 40 rigidly secured

thereto. The link 41 is pivotally secured to the free end of the arm 40 and to the member 42 which is secured to the reflecting member 29.

The lower portion 44 of the inner wall 43 of the reflecting member is hingedly connected to the fixed upper portion by the hinge 45. The rod 46 passing through the hinge has one end keyed to the arm 47, the lower end of which is connected to the lower part of the member 44. The other end of this rod has connected thereto a flexible shaft 48, the upper end of which is controlled by knob 49. By rotating this knob the member 44 may be rotated about the hinge to permit direct passage of a portion of the sound if desired. A portion 50 of the ridge 35 is carried by the member 44.

Sound waves passing down the throat 14 will be directed against the ridge 35 and will be divided by this ridge and reflected by its lateral surfaces against the flaring walls 32 and 33 of the reflecting member. The sound waves will thus be directed against the ridge 28 and also the inner wall 27 of the sound amplifying chamber. From this ridge and wall the waves are reflected downwardly past the edges of the reflecting member and out through the open side of the amplifying chamber. The reflecting member may be moved toward and away from the throat and inner wall of the amplifying chamber by rotating the control knob 38. With the member in the full line position of Figure 2, the sound passage area is greatly reduced and the tone of the sound is rendered low and full. With the member moved outwardly the pitch of the tone is raised and it is made more brilliant. The volume may be controlled as well as the pitch and quality by moving the member out and in as desired. It will be understood also that variation of the location of the reflecting member will vary both the length and formation of the sound passages as well as the area of such passages, and the relation of the reflecting surfaces, and will accordingly control not only the sound volume but also the tone and quality of the sound.

The swinging member 44 constitutes another volume and tone control, and when open this permits the direct discharge of some of the sound thus retaining the brilliancy of the higher tones while the reflection of the remainder of the sound retains the full rich tones of the lower notes.

It is to be understood that the specific showing of the parts herein is for the purpose of illustration only and their proportions and relations and the mechanical means for operating them may be varied within the spirit and scope of the appended claims without departing from my invention.

I claim:

1. Sound control construction comprising an amplifying chamber having an open side, a throat passage entering the side opposite the open side, and a reflecting member positioned in the chamber opposite the throat, said reflecting member having a ridge extending across the face opposite the throat, said ridge serving to divide the sound.

2. Sound control construction comprising an amplifying chamber having an open side, a throat passage entering the side opposite the open side, a reflecting member positioned in the chamber opposite the throat, said reflecting member having a ridge extending across the face opposite the throat, said ridge serving to divide the sound, and a ridge formed in the face of the sound chamber through which the throat enters, said ridge serving to divide the sound reflected against said face by the reflecting member.

3. Sound control construction comprising an amplifying chamber having an open side, a throat passage entering the side opposite the open side, a reflecting member positioned in the chamber opposite the throat, said reflecting member having a ridge extending across the face opposite the throat, said ridge serving to divide the sound, and a ridge formed in the face of the sound chamber through which the throat enters, said ridge serving to divide the sound reflected against said face by the reflecting member, the reflecting member being movable toward and away from the throat to control the volume and quality of sound.

4. Sound control construction comprising a throat member, a reflecting member positioned opposite the throat, a portion of the reflecting member being movable independently of the remainder of the reflecting member whereby it may be moved out of the path of sound issuing from the throat.

5. Sound control construction comprising an amplifying chamber having an open side, a throat passage entering the side opposite the open side, and a reflecting member positioned in the chamber opposite the throat, the reflecting member being movable toward and away from the throat to control the volume and quality of sound, a portion of the reflecting member being movable whereby it may be moved out of the path of sound issuing from the throat.

6. Sound control construction comprising an amplifying chamber having an open side, a throat passage entering the side opposite the open side, and a reflecting member positioned in the chamber opposite the throat, said reflecting member having a ridge extending across the face opposite the throat, said ridge serving to divide the sound, the throat member having notches in its edge whereby the ridge on the reflecting member may extend into the throat.

7. Sound control construction comprising an amplifying chamber having an open side,

a throat passage entering the side opposite the open side, a reflecting member positioned in the chamber opposite the throat, said reflecting member having a ridge extending across the face opposite the throat, said ridge serving to divide the sound, and a ridge formed in the face of the sound chamber through which the throat enters, said ridge serving to divide the sound reflected against said face by the reflecting member, the two ridges extending in the same plane.

Signed at Chicago, Illinois, this 26th day of June, 1926.

LEIGH HUNT.