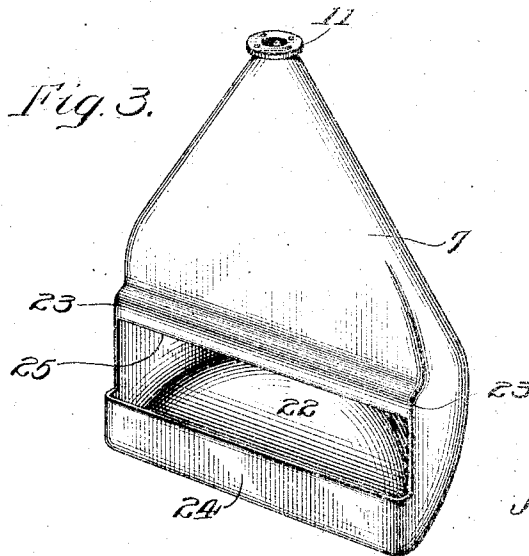
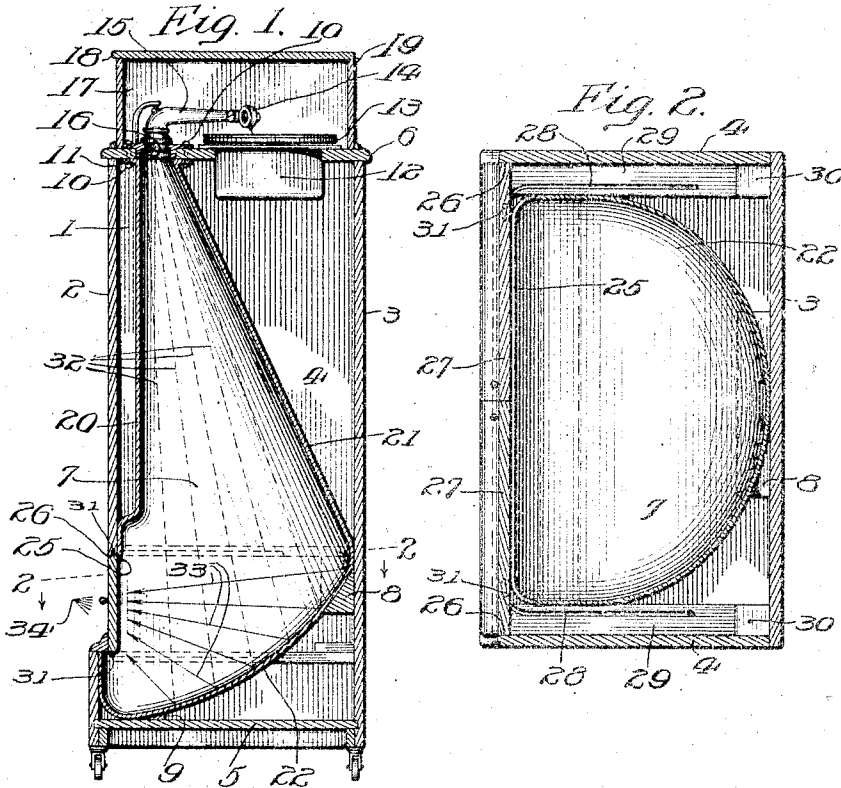


A. HEWITT.
SOUND AMPLIFIER.
APPLICATION FILED APR. 14, 1908.

1,004,256.

Patented Sept. 26, 1911.



WITNESSES
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UNITED STATES PATENT OFFICE.

ALBERTUS HEWITT, OF CAMDEN, NEW JERSEY, ASSIGNOR TO VICTOR TALKING
MACHINE COMPANY, A CORPORATION OF NEW JERSEY.

SOUND-AMPLIFIER.

1,004,256.

Specification of Letters Patent.

Patented Sept. 26, 1911.

Application filed April 14, 1903. Serial No. 426,954.

To all whom it may concern:

Be it known that I, ALBERTUS HEWITT, a citizen of the United States, and a resident of the city of Camden, State of New Jersey, have invented certain new and useful Improvements in Sound-Amplifiers, of which the following is a full, clear, and exact description, reference being had to the accompanying drawings, forming a part of this specification.

My invention relates to sound amplifiers in general and more specifically to those used in talking machines.

The principal object of my invention is to provide a sound amplifier by which the audibility of sound is increased and at the same time preserving its purity of tone and keeping it free from extraneous noises.

A further object of my invention is to provide a sound amplifier in which sound waves passing therethrough are first amplified and then concentrated at a predetermined position or line of concentration.

A further object of my invention is to provide a sound amplifier which also has concentrating means and which may be readily inclosed in a talking machine cabinet or casing.

A further object of my invention is to provide a sound amplifier constructed of a rigid and substantially non-vibratory material, thus permitting the sound waves to pass therethrough without being mingled with sound waves heretofore caused by vibrations of the casing of sound amplifiers previously used.

In my improved sound amplifier I have also provided means whereby the sounds emitted are best audible at the line of concentration and elsewhere equally audible at points of equal radial distance from the mouth of the sound amplifier within the area extending in front of the plane of the mouth of the horn.

With these objects in view, together with other objects which will appear in the following specification, my invention consists in the construction, combination and arrangement of parts, such as will be hereinafter pointed out in the claims made hereafter.

Heretofore sound amplifiers used in connection with the reproduction of sounds by talking machines have been horns, conical or pyramidal in shape, the smaller end be-

ing connected to a sound conveying tube which is attached to the sound box of the talking machine, and the sound waves reproduced by the sound box, passing through the said tube into the horn, issue therefrom at its larger and flaring end in their amplified form. It will, therefore, be apparent that when the sound waves issue from the flaring mouth of the horn they are divergent, and are thus diffused into the surrounding atmosphere.

In my improved amplifier I have provided means whereby sound waves passing therethrough are first amplified and then concentrated at a predetermined position or line of concentration and when such predetermined position is without the sound amplifier, instead of the sound waves issuing from the mouth of the horn in divergent directions they converge as amplified, at the certain position or line of concentration. In this manner I have provided means for greatly increasing the audibility of the sounds passing through a sound amplifier and have also provided means whereby the position or line of concentration may be fixed as desired.

Referring to the accompanying drawings in which similar reference characters indicate like parts in the several figures, Figure 1 is a vertical sectional view of my sound amplifier and a suitable inclosing cabinet; Fig. 2 a horizontal section of my improved sound amplifier and the inclosing cabinet taken on the line 2-2 of Fig. 1; and Fig. 3 is a perspective view of my invention.

1 is a rectangular casing or cabinet having a front 2, back 3, sides 4-4, bottom 5 and top 6. Mounted within the cabinet is my improved sound amplifier 7 which is held rigid therein by the supporting blocks 8 and 9 and by the bolts 10 which are adapted to engage and firmly hold the top 11 of the sound amplifier 7 against the top 6. Supported by the top 6 is a motor casing 12 inclosing a suitable motor upon the spindle of which is mounted a turntable 13. Sound reproducing means are provided by the sound box 14 in which is suitably mounted a stylus, the vibrations of which correspond to the sound waves recorded on the surface of the sound record carried by the turntable 13; connected to the sound box 14 is the sound conveying tube 15 which conveys the sound waves reproduced by the sound box.

The downwardly extending elbow portion of the sound conveying tube 15 is suitably pivoted to the top 6 and is connected with the sound amplifier 7 through a hole 16 suitably provided in the top 6. Mounted upon the top 6 of the cabinet is a casing 17 inclosing the turntable 13 and the reproducing parts of the talking machine. The top 18 of the casing 17 is hinged at 19 thereby permitting easy access to the reproducing parts heretofore mentioned.

Means are provided for concentrating the amplified sound, such means being of course capable of various embodiments. In certain constructions, it is desirable to deflect the amplified sound before or during concentration. Means are provided, therefore, for this purpose, and in the particular embodiment which I have selected to illustrate my invention and which is shown in the accompanying drawings, the amplifier 7 has a front wall 20, side and rear walls 21 and a deflecting surface 22 which is joined or made integral with the rear wall 21 at any desired angle, although it is to be understood that the deflecting surface is not necessarily joined or made integral with the amplifier, but may in certain constructions be separated therefrom. The front wall 20 has an offset 23 in close contact with the inner surface of the front 2 and the deflecting surface 22 terminates in an upwardly extending portion or lip 24, which is also in close contact with the inner surface of the front 2. As shown in Fig. 1 the mouth 25 of the sound amplifier substantially coincides with the opening 26 of the cabinet 1 and doors 27 are provided by which the opening 26 and at the same time the mouth 25 may be closed. I have shown a convenient and useful manner of mounting the doors 27 whereby they may be completely opened or closed or occupy any intermediate position. I accomplish this by providing tracks 28 placed within the recesses 29 one on either side of the opening 26, each adapted to receive the adjacent door, the inward movement of which is determined by stop blocks 30. Upon the doors 27 are mounted pins 31 adapted to ride within and be guided by the tracks 28. When the mouth 25 is opened by sliding the doors 27 the sounds issuing from the mouth may be deflected by arranging the doors in any desired position.

Indicated by dotted lines 32 are sound waves passing through the sound amplifier from the sound conveying tube. As these sound waves strike the deflecting surface 22 they are deflected at angles which may be predetermined. The deflecting surface 22 may be constructed so that the deflected sound waves 33 will all pass through the mouth of the sound amplifier and the opening 26 of its cabinet in certain lines of direction which ultimately meet in a point 34 or

a series of points forming a line. I term this line the line of concentration. It is obvious that by altering the deflecting surface 22 and the angle at which it is mounted the line of concentration may be determined as desired, either within or without the sound amplifier.

To prevent the mingling with the amplified sounds of secondary sounds caused by vibrations of the casing of the sound amplifier, I construct the casing of the sound amplifier of plaster-of-Paris, cement or some other suitable like material which is rigid and substantially inelastic and non-vibratory and I have also found it desirable to make the interior of the casing smooth.

In the accompanying drawings and in the foregoing description I have shown the application of my improved sound amplifier in an inclosing talking machine, cabinet or casing and connected to the reproducing parts of a talking machine, but do not limit myself to its use in that connection alone for it is obvious that it can be used in the ordinary talking machine with the sound amplifier mounted upon a suitable bracket or otherwise and extending upwardly and that it also can be used in any connection, the purpose of which is to amplify sounds.

Various changes could be made in the details of the construction, combination and arrangement of my improved sound amplifier illustrated, without departing from the spirit and scope of my invention.

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

1. A sound amplifying horn having its outer end closed and provided with a lateral outlet, and having a focusing surface, arranged to directly reflect all waves convergingly through said outlet toward a line.

2. A sound amplifying horn provided with means for concentrating the sound waves substantially along a line.

3. A sound amplifying horn comprising a conical portion and provided with a restricted outlet in one side thereof, and means closing the end of said conical portion for directly reflecting all of the sound waves through said outlet in planes converging toward a common line.

4. A sound amplifying horn comprising a conical portion and provided with an outlet on one side thereof, and means closing the end of said conical portion for reflecting the sound waves through said outlet and concentrating the same in planes meeting in a line.

5. A sound amplifying horn comprising a conical portion and provided with an outlet in one side thereof, and means closing the end of said conical portion for reflecting the sound waves through said outlet and concentrating the same along a transverse line.

6. A sound amplifying horn comprising a flat conical portion having a closed outer end and provided with an outlet on its flat side adjacent to said end, said end being so constructed as to reflect the sound waves through said opening and concentrate the same in a line.

7. A sound amplifier comprising a horn provided with a lateral opening in one side thereof and formed of a substantially non-vibratory material, arranged to direct all sound waves through said opening and convergently toward a line.

8. A sound amplifier comprising a horn provided with a lateral opening in one side thereof and formed of a substantially inelastic material, arranged to direct all sound waves through said opening and convergently toward a line.

9. A sound amplifier having a lateral outlet, and provided with a cylindrically curved end closure arranged to reflect sound waves

through said outlet and concentrate said waves to meet in a transverse line.

10. A sound amplifier having a substantially D-shaped cross section increasing toward its outlet end, and having a lateral outlet adjacent to said end and provided with a curved closure extending across said end arranged to reflect sound waves through said outlet and concentrate them along a transverse focal line.

11. A sound amplifier, having a lateral outlet registerable with a cabinet aperture and provided with a rigid end closure arranged to reflect sound waves through said outlet and concentrate said waves to meet in a line.

In witness whereof I have hereunto set my hand this 13th day of April, A. D. 1908.

ALBERTIS HEWITT.

Witnesses:

FREDK. C. EBERHARDT,
FREDERICK A. BLOUNT.