

June 4, 1929.

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1,715,849

HORN AND SOUND CHAMBER AND SOUNDING BOARDS

Filed Sept. 19, 1923

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FIG. 1

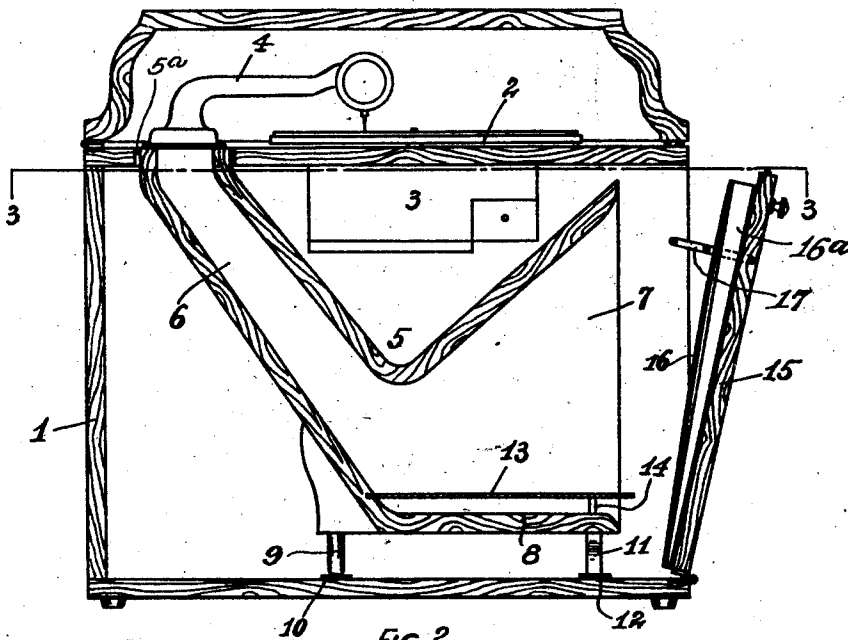
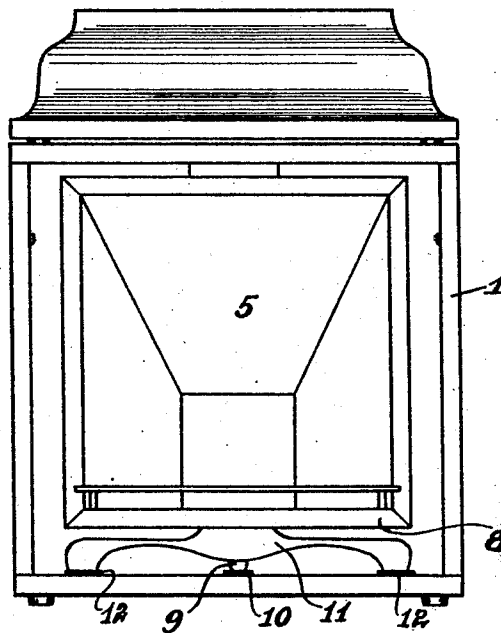


FIG. 2



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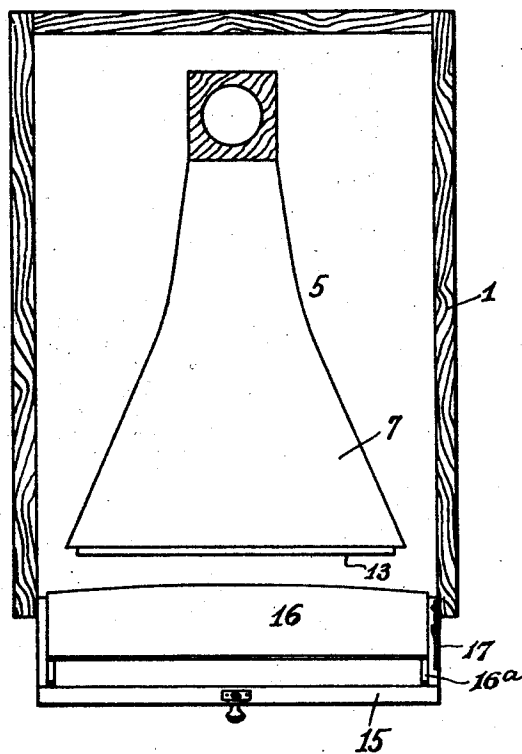
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FIG. 3



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HORN AND SOUND CHAMBER AND SOUNDING BOARDS.

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This invention relates to the art of acoustics, and particularly in connection with megaphone amplifiers used in connection with phonographs.

5 The main object of the invention is to provide a megaphone or horn structure for sound reproducing machines which will increase the purity and clearness of the tones or sounds emitted by the horn; will deliver the same with increased resonance and fullness; will eliminate the objectionable metallic, harsh, scratching or other "surface" or "outside" noises so commonly encountered in most phonographs; and in general
10 to render more distinct and natural the several reproduced notes or sounds, and to amplify the volume thereof without changing the pitch thereof or altering otherwise perfect and natural tones of musical instruments or the human voice.

15 These objects I accomplish by the special material and construction of the amplifier and the manner and form in which it is positioned in the phonograph cabinet, and incidentally the special arrangement of
20 sounding boards as herein set forth and described.

In the drawings similar characters of reference indicate corresponding parts in the
25 several views.

In the annexed drawing in which my invention is illustrated I have shown the preferred form but it may also be embodied in other forms, and in this application I desire
30 to cover my invention in whatever form it may be embodied.

Referring to the drawings:

Figure 1 is a transverse sectional view of a phonograph embodying my invention.

40 Figure 2 is a front elevation of the same with the front door removed.

Figure 3 is a sectional view taken on line 3—3 of Figure 1.

Referring more particularly to the drawings, numeral 1 indicates a phonograph cabinet in which is mounted the usual type of rotating table 2, operated by the usual type of motor 3. 4 is the tone arm of desired type which connects with my improved
45 horn or megaphone 5.

One of the main features of my invention is the fact that at no point is there any direct rigid connection between the horn 5 and the cabinet structure. Thus where the
50 horn connects with the tone arm it projects

through an opening 5^a and in spaced relation from the sides of such opening.

The horn 5 is made of spruce or other fine grained soft wood and with its side walls of a thickness to render it perfectly rigid so
55 that it will have no vibrations within itself. The neck 6 has gradually increasing diameter from its upper to its lower end and it angles downwardly at an obtuse angle to the horizontal floor 8 of an abruptly enlarged
60 mouth 7.

As previously stated the horn has no rigid contact at any point with the frame work of the cabinet and is supported solely on supports 9 and 11 interposed between which
65 and the floor of the cabinet are resilient and insulating pads 10 and 12 to prevent any cabinet vibrations from reaching the horn. The support 9 is merely a pivot peg, while the member 11 is a resilient bridge which
70 supports the horn 5 centrally at its forward end. This bridge is made of wood with thin center webs to give the desired resiliency. Thus since the horn is rigid and vibrationless within itself, made of soft wood, and
75 entirely disassociated from rigid contact with the cabinet framework, it will be apparent that no "surface" or "outside" or metallic noises or vibrations will interrupt or interfere with the pure, clear, natural
80 reproduction of the sounds coming from the reproducing record.

The volume, quality and brilliancy of resonance and sonority are produced by my special arrangement of sounding boards
85 which I will now describe.

The primary sounding board 13 is held at a slightly spaced distance above the floor 8 of the mouth of the horn by legs 14. This
90 board 13 is made of thin, well seasoned wood and receives the sound waves from the neck 6 which waves strike the board 13 at an obtuse angle and are deflected thereby at about the same angle out through the mouth
95 7 where they strike the secondary sounding board 16. This combination of sounding boards set up vibrations which give brilliancy, power, variety and expression to the tones emitted from the horn.

The sounding board 16 is mounted on a
100 hinged door 15 to allow the same to have an angular adjustability vertically with respect to the board 13 whereby the effect of the vibration may be altered to suit the ear of the listener thereto. The door 15, carrying
110

such board 16, is held in a desired adjusted position by means of a friction hinge strap 17 connecting the cabinet 1 and the door 15. The hinged straps have frictional engagement with each other at the hinged point so as to remain substantially rigid in whatever position they may be bent. The board 16 has side boards 16^a by which it is connected to the door 15. These side boards taper outwardly from their lower to their outer ends to bring the board 16 close against the door at its lower end and spaced from the door at its upper end and the board is also slightly convex as shown in Figs. 1 and 3 so as to increase its vibratory action.

While I have described the invention herein as particularly adapted to phonographs it can be used equally as well with any sound reproducing apparatus such as radio receiving sets or the like.

Having described my invention, I claim:

1. A sound amplifying horn having a neck and a mouth, the latter being disposed in a substantially vertical plane, and a single relatively thin vibrating sounding board spaced a slight distance above the lower side of the mouth and set into the back wall and the side

walls of the neck and mouth to form the floor of the mouth with a relatively large uninterrupted open space thereabove, said floor extending at an angle of approximately forty-five degrees to the axis of the neck opening at its juncture with the mouth and below the same so that sound waves passing through the neck will strike the floor and be deflected upward and outward through the large open space of the mouth thereabove.

2. A horn as is claim 1, and a secondary vibrating sounding board positioned at an angle to said floor and extending adjacent the large open space of the mouth above the floor.

3. A sound amplifying horn having a primary sounding board within the horn to emit vibrations therefrom, a member mounted angularly relative to the outer end of the mouth of the horn, a convex secondary sounding board and tapered sides on the secondary sounding board secured to said member to hold the secondary board in close proximity to the member at its lower end and spaced therefrom at its upper end.

In testimony whereof I affix my signature.

GUSTAF F. LINDSTROM.