

F. C. LYON.
 PHONOGRAPH SOUND CHAMBER OR HORN.
 APPLICATION FILED JUNE 11, 1918.

1,295,911.

Patented Mar. 4, 1919.

FIG. 1.

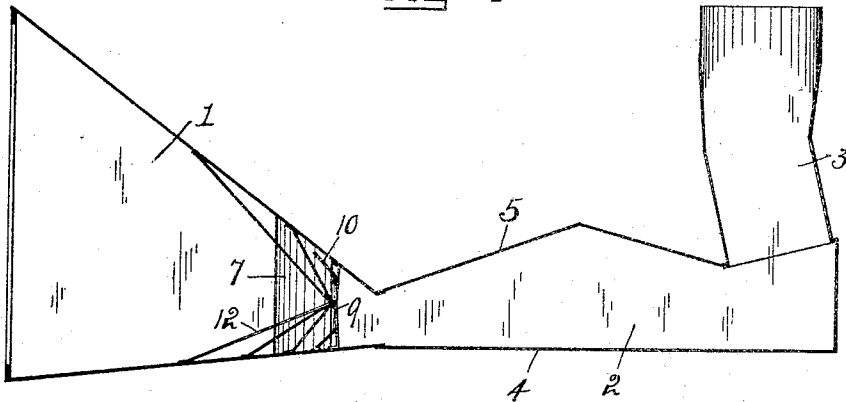


FIG. 2.

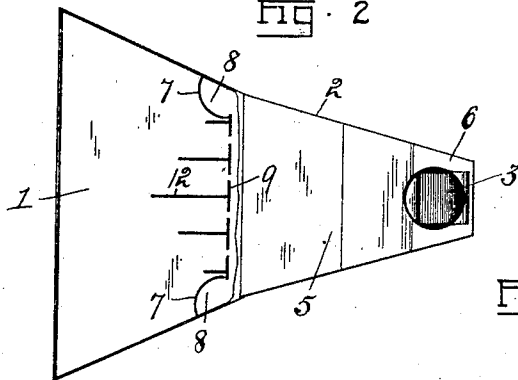
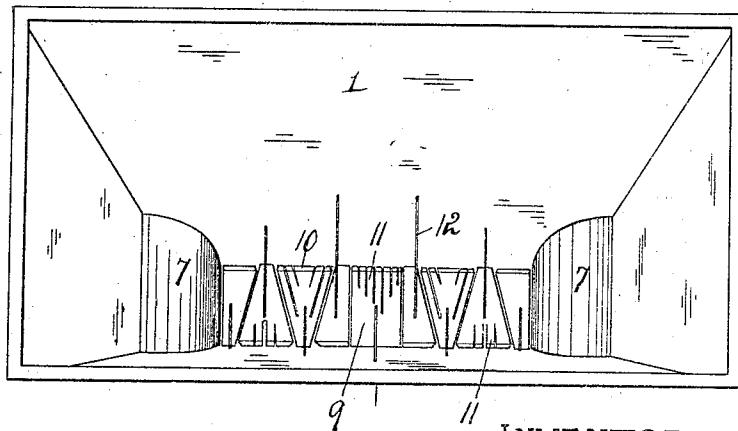


FIG. 3.



INVENTOR.

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 His attys.

UNITED STATES PATENT OFFICE.

FRED C. LYON, OF FAYETTE, OHIO.

PHONOGRAPH SOUND-CHAMBER OR HORN.

1,295,911.

Specification of Letters Patent.

Patented Mar. 4, 1919.

Application filed June 11, 1918. Serial No. 239,350.

To all whom it may concern:

Be it known that I, FRED C. LYON, a citizen of the United States, and resident of Fayette, in the county of Fulton and State of Ohio, have invented a certain new and useful Phonograph Sound-Chamber or Horn; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same, reference being had to the accompanying drawings, and to the characters of reference marked thereon, which form a part of this specification.

This invention relates particularly to sounding boxes or horns for phonographs, and has for its object the provision of certain improvements on features of the device described and claimed in my co-pending application Serial Number 220,747, filed March 6, 1918, whereby to enhance the tone producing qualities thereof. Other objects and advantages of the invention will be apparent from the following detailed description.

While the invention, in its broader aspect, is capable of embodiment in numerous forms, a preferred embodiment thereof is illustrated in the accompanying drawings, in which—

Figure 1 is a central longitudinal vertical section of a device embodying the invention. Fig. 2 is a reduced plan view thereof, with portions broken away, and Fig. 3 is an enlarged front end elevation of the device.

Referring to the drawings, 1 designates a horn, which, in its present form, is rectangular in cross-section and has its opposed walls flaring outward from its inner ends. The opening at the inner end of the horn is long and narrow in cross-sectional contour, the size thereof being preferably approximately 1"x8", although this may be varied without departing from the spirit of the invention.

A neck 2 extends rearward from the inner small end of the horn, and a tube or conduit 3 extends upward from the rear end of the neck and connects with and forms an extension of the customary tone-arm conduit of the phonograph, as is well understood in the art. The neck 2 gradually broadens in horizontal width from its rear to its forward end, as shown in Fig. 2, and, in the present instance, the bottom wall 4

of the neck is flat and substantially horizontal while the top wall or roof portion 5 thereof is made of gable-roof form in advance of the conduit 3 with the ridge of the gable extending transversely of the neck. The neck 2, at its forward end, corresponds in cross-sectional shape to the rear end opening of the horn, while the rear end portion of the neck, at or adjacent to the front edge of the conduit 3 and the rear edge of the gable portion 5 of the roof, is of greater depth than the depth of the inner end opening of the horn but of less width than such opening, it being found in practice and from experiments that the best tone results are obtained by making the dimensions of the neck at such point approximately 1½" in depth by 4½" in width. It is also found in practice and from experiments that the extent of rise of the roof portion 5 depends on the length of the neck or the distance between the reduced rear end of the horn and the forward edge of the conduit 3 at its point of connection with the neck. In the present embodiment the distance referred to is approximately 7" while the vertical height of the roof ridge from the floor or bottom 4 of the neck is substantially 2½". It is found, however, that upon a lengthening of the neck the rise of the roof should be reduced accordingly and that upon a shortening of the neck the rise should be increased accordingly, the best tone results being obtained by a combined interior volume of the neck, substantially as designated. It will be understood, however, that the dimensions herein referred to are given merely as the preferred dimensions and not with an intention of restricting the scope of applicant's invention, as the dimensions might be changed quite materially from those designated and good results obtained.

The top portion or roof of the neck 2 through which the conduit 3 communicates with the interior of the neck is preferably slightly rearwardly inclined from adjacent to the rear edge of the gable roof portion 5, and the tube or conduit 3 is shown as extending for a short distance substantially in a perpendicular plane from the roof portion 6 and then extending upward in a vertical plane to connect with the customary tone-arm conduit.

It is found in practice that the provision

of a neck of the form shown and described lends volume and color to the tones and tends to more distinctly bring out the base notes than is the case with the horns now employed with which I am familiar.

Within the horn 1 at each side portion thereof and slightly in advance of its neck connecting opening is what may be termed a "banking" element 7, which comprises a strip of metal or other suitable material, which extends inward and rearward from the respective side wall of the horn and terminates at its rear edge adjacent to the inner reduced end of the horn. This element also extends from top to bottom of the horn so that it coöperates with the top and bottom and respective side wall of the horn to form a space or chamber 8 which is preferably open only at its rear to the interior of the horn. While it is preferable to place these banking elements at substantially the positions noted it will be understood that such positions may be varied without avoiding the invention. It is found that the provision of these banking elements causes a material improvement in certain tones and tends materially to render some if not all of the tones produced more natural and clear. For instance, in the playing of a piano record it is found that the provision of the banking elements causes a more natural ringing of the notes than can otherwise be obtained and the dead metallic sound of the notes which has always been so objectionable in phonographs and like instruments is very largely eliminated.

In my co-pending application Serial Number 220,747 is disclosed the idea of providing a plurality of vibrator reeds or tongues arranged side by side across the inner end portion of the horn throat and braced adjacent to their outer or free ends with respect to the upper or lower horn wall by rods or wires. In said application the reeds are disclosed as being of substantially the same form and size and the bracing rods or wires project forward from adjacent to the free ends of the reeds. From experiments I have found that the best results are obtained by making the reeds of various shapes and sizes and providing them with fingers of different forms and rigidity. In this manner a greater variety of notes of different character may be picked up and amplified or the correct reproduction thereof facilitated as the variegated shapes and forms of the different vibrator reeds cause them to respond in sympathy to the various notes produced, one note being in tune or sympathy with one reed or one or more fingers thereof and another note of a different character in tune or sympathy with other reeds or fingers thereof. For instance, the rapid vibration of a soprano voice sets one reed in motion

and the slower vibration of the basso affects another reed. These supplementary vibrations tend to emphasize the particular tone with which the reed is in sympathy, and the effect is very noticeable.

It has also been found by experiments that it is preferable to project the bracing rods or wires from adjacent to the centers of the reeds rather than from adjacent to the free ends thereof as disclosed in said former application. It is also found of advantage to incline the free end portions of the reeds, preferably outward, as shown.

In the present embodiment of these features of the invention 9 designates the vibrator reeds, which are fixed to and alternately project from the top and bottom walls of the horn to adjacent the opposite wall and have their free ends forwardly angled, as at 10. These reeds are slit to form a multiplicity of fingers 11 of variegated forms and the bracing rods or wires 12 project forward, in the present instance, from the reeds adjacent to their centers and are fixed at their outer ends to one of the walls of the horn, preferably to the wall thereof from which the associated reed projects.

I wish it understood that my invention is not limited to any specific material, construction, arrangement or form of the parts, or to any particular dimensions referred to, as numerous modifications may be made without departing from the spirit of the claims.

Having thus described my invention, what I claim as new, and desire to secure by Letters Patent, is—

1. A phonograph horn having a conduit which extends rearwardly and downwardly from its upper end, a neck secured to the conduit and having a horizontal bottom wall and a gabled top wall, and a horn proper secured to the front of the neck.

2. A phonograph horn having a pair of spaced banking elements arranged at its opposite sides to form inwardly facing chambers.

3. A phonograph horn having a pair of spaced banking elements arranged at its opposite sides to form inwardly facing chambers, and a series of tongues arranged across the space between the elements.

4. In combination with a phonograph horn, a tongue therein affixed at one end to the horn and having its opposite end free and slitted.

5. In combination with a phonograph horn, a tongue therein affixed at one end to the horn and having its opposite end free and slitted and turned at an angle to the major portion of the tongue.

6. In combination with a phonograph horn, a tongue therein affixed at one end to the horn and having its opposite end free,

and a brace rod affixed at one end to substantially the center of the tongue and at its opposite end being affixed to the horn.

7. In combination with a phonograph horn, a tongue therein affixed at one end to the horn and having its opposite end free, and a brace rod affixed at one end to substantially the center of the tongue and at its opposite end being affixed to the horn, said tongue having its free end turned at an angle and overlying the first named end of the brace rod.

8. In combination with a phonograph horn, a series of spaced tongues arranged across the throat of the horn and alternately affixed at one end to the horn and having their opposite ends free, all of the tongues having their free ends turned toward the mouth of the horn.

9. In combination with a phonograph horn, a tongue affixed at one end to the horn and having its opposite end free and turned at an angle.

10. In combination with a phonograph horn, a tongue affixed at one end to the horn and having its opposite end free and slitted and turned at an angle.

11. In combination with a phonograph

horn, a pair of spaced curved banking elements forming inwardly facing and independent chambers at the respective sides of the horn, and a series of vibrator tongues arranged in and covering substantially all of the space between said elements.

12. A phonograph horn having chambers confronting the throat thereof and arranged in spaced relation to provide a sound passage therebetween.

13. A phonograph horn having a sound receiving chamber confronting the throat and disposed in spaced relation to a wall of the horn so as to provide a sound passage in conjunction with said wall.

14. A phonograph horn having spaced sound receiving chambers and tongues in the space between the chambers.

15. A phonograph horn having a series of vibratory tongues therein, said tongues varying as to their areas and being formed of substantial widths so as to constitute a continuation of the horn considered as a diaphragm.

In testimony whereof, I have hereunto signed my name to this specification.

FRED C. LYON.