

Feb. 3, 1925.

1,525,320

W. PIERCE

AMPLIFYING HORN

Filed March 10, 1922

FIG. 1.

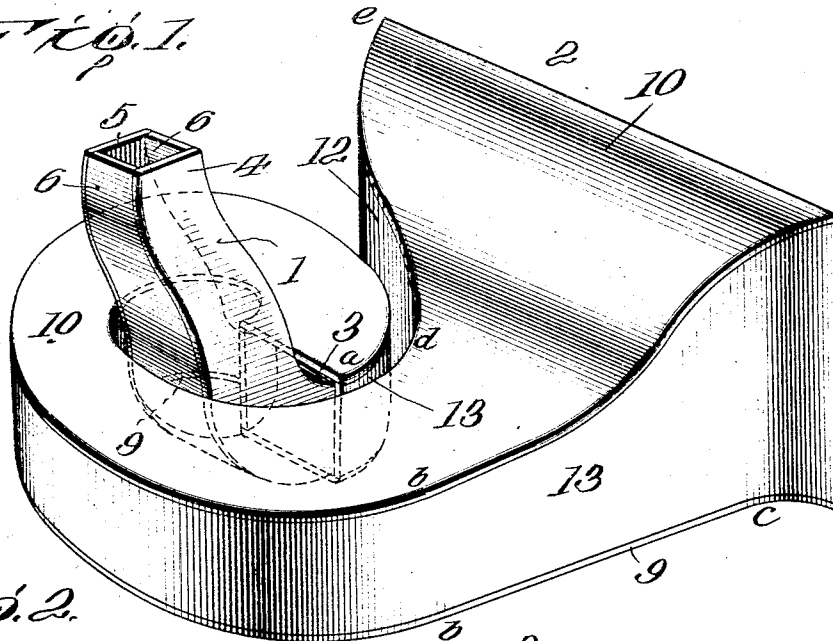


FIG. 2.

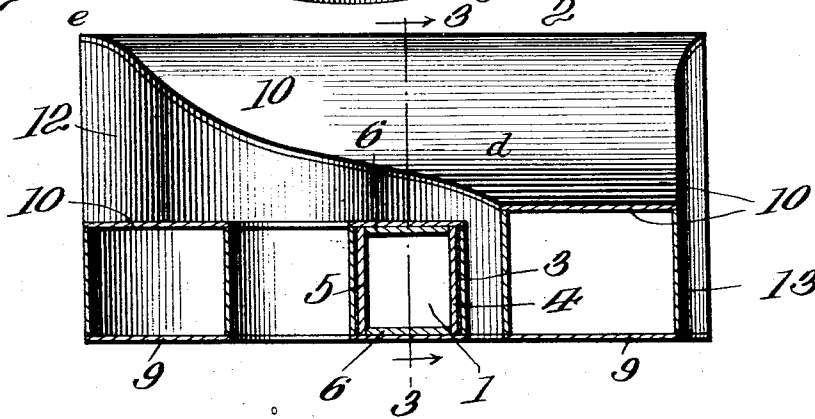
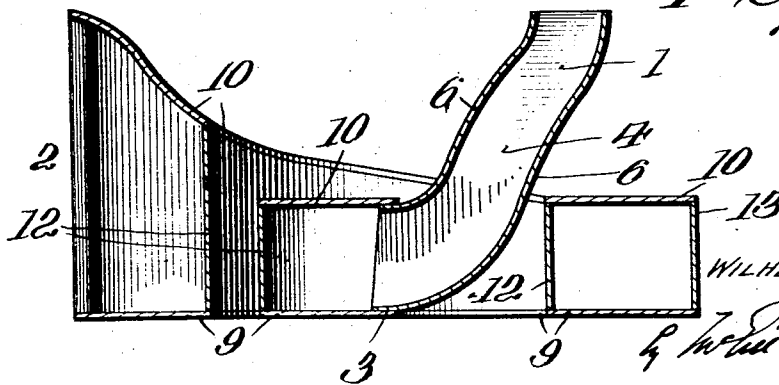


FIG. 3.



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UNITED STATES PATENT OFFICE.

WILHELM PIERCE, OF ALLENTOWN, PENNSYLVANIA.

AMPLIFYING HORN.

Application filed March 10, 1922. Serial No. 542,707.

To all whom it may concern:

Be it known that I, WILHELM PIERCE, of Allentown, in the county of Lehigh and State of Pennsylvania, have invented certain new and useful Improvements in Amplifying Horns; 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. My invention relates to graphophones and particularly to the means employed for amplifying the sound, the object of my invention being to produce a simple and efficient amplifying horn adapted to be located within a cabinet beneath the reproducing mechanism, and embodying an elongated enclosed tortuous passageway for the sound of gradually expanding area, the side walls of which are so arranged as to obviate all echo and to insure a mellowed enlargement of the tones.

In the drawings, Figure 1 is a perspective of the amplifying horn removed from the cabinet and looking from above. Figure 2 is a cross sectional view. Figure 3 is a vertical sectional view taken through the center of the horn from front to rear, on the line 3—3, Figure 2.

My improved amplifier includes, in the main, what I shall term two portions, the throat portion 1 and the mouth portion 2. In the manufacture of my improved amplifying horn I preferably employ wood so as to secure mellowness of tone and this necessitates the forming of the throat portion 1 as a separate element from the mouth portion 2, these portions being united, as at 3, in a manner to insure rigidity and prevent any vibration between the portions which might effect the quality of the tone transmitted. The throat portion 1 at its upper extremity connects with the outlet of the tone arm (not shown) of the graphophone and includes two downwardly extending sides 4 and 5 formed of straight cut strips and front and rear undulating walls 6. The sides 4 and 5 and the walls 6 spread gradually from the point of connection with the tone arm so that at the union with the mouth piece the cross sectional area of the passageway defined by the throat portion is larger than its cross sectional area at its upper end. The mouth portion 2 of the amplifier comprises bottom and top walls 9 and 10, the former, by preference, being perfectly flat,

and spaced diverging sides 12 and 13. Each of the sides 12 and 13 from the point *a* to point *b* describes a volute curve, the curvature of each being such that the passageway between them is of gradually increasing width. From the point *b* to point *c* the side 13 is approximately straight with its extremity outwardly flared. Side 12 between the points *d* and *e* describes a double curve, and the height of each of the sides 12 and 13 is gradually increased adjacent the mouth of the horn, this being effected by a sloping of the upper edge of each side so as to support the flared end of the top wall 10. The undulating passageway from the tone arm coupled with that formed by the curvature of the sides and the gradual enlargement of the passageway at the mouth of the horn is productive of a transmission of sound from the tone arm with amplified and unmarred clearness such as is not obtainable in the use of known devices for magnifying the reproduction of sound.

The central location of the reduced inlet of the mouth portion 2 is especially advantageous since it permits the sound to enter the same at a substantial distance from the walls of the phonograph cabinet thus preventing any sound waves from reaching said walls with sufficient force to be heard there-through. The purpose of the undulatory diverging throat walls 6 is to render the sound waves clear and sonorous during the downward passage of the same into the reduced centrally located inlet of the mouth 2, while the volutely curving portion thereof of gradual increasing cross sectional area sweetens and softens the sound permitting it to gradually expand and rise with the increasing height of the walls 12 and 13 to emanate through the flared portion of the mouth.

Particular attention is directed to the fact that the convolute formation of the mouth portion of the horn defines what might be said to be a substantially centrally arranged opening for the reception of the lower portion of the throat member 1. The lower end of the throat member 1 is extended into and is rigidly secured in the inlet end of the mouth portion and a sound proof joint or connection is maintained between the throat and mouth portions during the use of the phonograph equipped with the horn.

Therefore, if the phonograph is handled somewhat roughly while in the shipping

case or while in use the sound proof joint between the throat and mouth portions is not in any way disturbed and if during the use of the phonograph dancers or persons standing about the phonographs should accidentally bump against the same the sound proof joint between the throat and mouth portions will be undisturbed. This is possible because the convolute formation of the mouth portion imparts a certain degree of elasticity to the horn so that the horn is enabled to absorb shocks.

I claim as my invention:

An amplifying horn comprising a mouth

portion of convolute formation having an inlet end, the convolute formation of the mouth portion defining a substantially centrally located opening, and a throat portion extended into said centrally located opening and having its lower end extended into and rigidly secured in the inlet end of said mouth portion, said mouth portion having diverging side walls increasing in height toward the outlet end of the horn.

In testimony whereof I have signed this specification.

WILHELM PIERCE.