

July 21, 1925.

1,546,920

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METHOD OF INCREASING THE VOLUME OF TONES PRODUCED BY RADIO APPARATUS

Filed March 11, 1924

Fig. 1

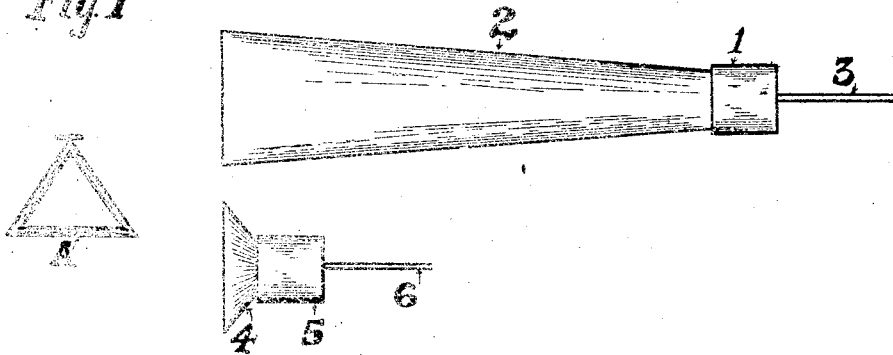
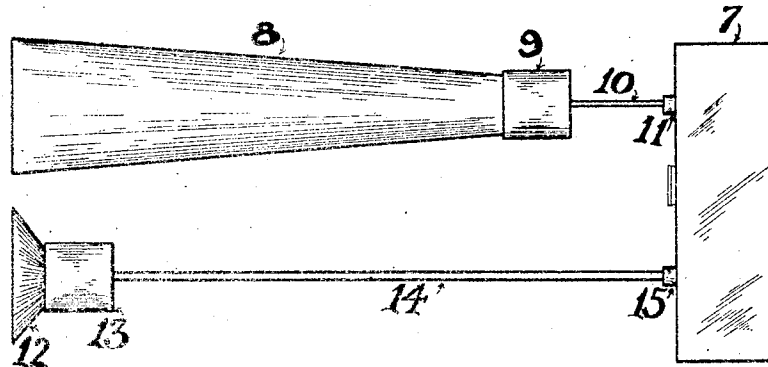


Fig. 2



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METHOD OF INCREASING THE VOLUME OF TONES PRODUCED BY RADIO APPARATUS.

Application filed March 11, 1924. Serial No. 638,506.

To all whom it may concern:

Be it known that I, LEON F. DOUGLASS, a citizen of the United States, residing at Menlo Park, in the county of San Mateo and State of California, have invented new and useful Improvements in the Method of Increasing the Volume of Tones Produced by Radio Apparatus, of which the following is a specification.

It is well known in science, that if sound waves proceeding from a source are delayed slightly so that one vibration follows the other after an interruption of a fraction of a second, the tone produced by the two vibrations will be considerably re-enforced and enriched. As applied to the transmission and receiving of sound waves by means of a wireless or radio apparatus, the principle holds equally true, and if the sound waves are delayed a slight period of time either by an apparatus used to transmit sound waves or by an apparatus used to receive sound vibrations, the tones or sound vibrations may be intensified or strengthened to a considerable degree. The principle of delaying a sound wave in order to increase the volume thereof and consequently enrich the quality of the produced tone, is utilized in this invention and with satisfactory results. To secure cumulative effects, and to accumulate the power of a tone or sound, each impulse from a source of sound vibrations must be produced at least twice, the first production of the vibration preceding the succeeding vibration by a fraction of a second. In utilizing this principle I have provided a method of delaying each sound vibration transmitted or received by a radio or wireless apparatus, so that each vibration is produced twice, one following the other by a slight period of time, the result being that the tones reaching the ear are intensified and increased to a considerable extent.

This invention relates to a method of increasing the volume of tones produced by wireless or radio apparatus, and pertains in its application, to both the transmitting of tones and the receiving of tones by means of the said apparatus.

An object of this invention is to provide a novel method of increasing the power of tones produced by radio or wireless apparatus.

Another object of this invention is to pro-

vide a method for strengthening and enriching the tones received by a wireless or radio apparatus.

Another object of this invention is to provide a method of intensifying the sound vibrations produced and transmitted by a radio broadcasting or wireless broadcasting apparatus.

In the accompanying drawings forming a part of this application:

Fig. 1 is a plan view of the radio apparatus used in broadcasting sound vibrations; and

Fig. 2 is a plan view of the apparatus used in receiving the vibrations produced by means of radio or wireless apparatus.

For the sake of clearness and brevity I have omitted the various parts of the broadcasting apparatus and the various parts of a receiving set, it being sufficient to disclose only the novel features of my invention. My invention may be satisfactorily utilized in connection with any radio broadcasting or receiving apparatus, it only being necessary to provide two connections or leads instead of the one now usually employed.

Referring to the drawings, A represents a source from which sound vibrations proceed, 1 represents a wireless or radio transmitter, of the kind commonly used for broadcasting purposes, and 2 is a horn of approximately fifteen feet in length, and suitable for collecting sounds or tones to be broadcasted. To the transmitter 1 is attached suitable conducting leads or wires 3, which are connected and used in the ordinary manner. Adjacent the horn 2 is placed a smaller horn 4 of approximately one foot in length which is connected to another transmitter 5 in the same manner as the first mentioned horn is connected. Suitable leads or connections 6 are attached to the transmitter 5. The purpose of having the horn 2 fifteen times as long as horn 4 is to cause the sound vibrations entering the horn 2 to reach the transmitter 1 approximately one one hundred and fiftieth of a second after the vibrations entering horn 4 reach transmitter 5. The delayed vibration caused by having one horn longer than the other tends to intensify or re-enforce the sounds broadcasted and although two separate sets of vibrations are produced by the two transmitters, the short interval of time elapsing between the production of the

sound by the transmitters, cause them to appear as one and in much louder tones.

The form shown in Fig. 2, represents the form my invention assumes when applied to a radio or wireless receiving set. A suitable receiving set 7, of the kind ordinarily used and provided with accommodations for the insertion of two or more plugs to be used for the attachment of reproducers, is connected in the usual manner with any suitable aerial. A horn 8 of approximately fifteen feet in length is attached to reproducer 9 which is of the kind commonly used, and suitable wire connections or conductors 10 are used to connect reproducer 9 with the receiving set 7 at plug 11. Horn 12, of approximately one foot in length, is attached to reproducer 13, and conductors 14 connects 13 with the receiving set 7 at plug 15. The length of horn 8 causes the sound vibrations proceeding through the receiving set 7 to reach the ear of the person listening, approximately one one hundred and fiftieth of a second after the sound vibrations coming from horn 12 reach the ear. Owing to the fact that there is such a short interval of time elapsing between the two vibrations, the ear only discerns one vibration, that being louder and richer in tone and quality than if one reproducer and horn were used.

The two sets of apparatus herein shown need not both be used at the same time; the receiving set provided with the two horns herein shown will produce louder tones, whether the broadcasting apparatus be equipped with them or not, and similarly if the broadcasting apparatus be equipped with the two horns, the receiving set need not have the horns attached to it in order to produce a louder or re-enforced tone.

It is evident to those skilled in the art, that any type or shape of horn may be used in carrying out my invention without departing from the spirit of my invention. It is to be understood in this connection that I may use any size, shape or quality of horns in carrying out my invention, and although it might be practical to have the two horns of different lengths than herein shown and described, it is presumed that the same may be done without departing from limits of my invention.

It is evident to those skilled in the art that any means for the collecting or the concentrating of sound waves may be used with success instead of the horns as herein described, and in this connection I desire it to be understood that any sound collecting means may be utilized without departing from the spirit of this invention.

It is also to be expressly understood that more than two horns, two transmitters and two reproducers may be used in carrying out my invention. In respect to the number of

horns, transmitters and reproducers employed, I have found that satisfactory results may be accomplished with more than two horns, transmitters and reproducers. Therefore I do not desire to be limited to the use of the exact number of parts as herein shown.

Having described my invention, what I claim is:

1. The method of increasing the volume of tones produced by wireless transmitters, which consists in directing sound vibrations from a source of sound to a plurality of transmitters, by means of a plurality of horns varying in length.

2. The method of re-enforcing sound vibrations produced by radio apparatus which comprises directing sound vibrations to a plurality of wireless transmitters by means of a plurality of horns of varied dimensions positioned between the source of the sound vibrations and the transmitters.

3. The method of re-enforcing sound vibrations proceeding from a body to a radio broadcasting apparatus, which comprises directing each of said vibrations to a plurality of transmitters so that the said vibrations do not reach the transmitters at the same time, by interposing a plurality of horns of various lengths between the said body and said transmitters.

4. The method of re-enforcing sound vibrations proceeding to a wireless receiving set, which comprises directing sound vibrations from the said receiving set by means of a plurality of horns of different lengths connected to a plurality of reproducers which are attached to said receiving set.

5. The method of strengthening tones entering a radio receiving set, which comprises directing each tone proceeding through a wireless receiving set to the ear by means of a plurality of horns of varied lengths connected to a plurality of reproducers adapted to receive the sound vibrations proceeding from the said receiving set.

6. The method of re-enforcing sound vibrations produced through a wireless receiving apparatus, which comprises directing a plurality of sound vibrations from said apparatus by means of a plurality of horns of different lengths connected to a plurality of reproducing devices attached to said apparatus.

7. The method of re-enforcing and enriching sound vibrations produced through a radio apparatus which comprises delaying a plurality of sound vibrations delivered to a plurality of transmitters by interposing a means between said transmitters and a source of sound whereby each vibration is delivered to each transmitter at varied intervals of time.

8. The method of re-enforcing sound

vibrations produced by radio apparatus which comprises conducting sound vibrations from a body to a plurality of transmitters at unequal intervals by interposing one or more sound collecting means between said transmitters and said body.

9. The method of re-enforcing sound vibrations produced by radio apparatus, which comprises delaying the transmission of the sound vibrations from a plurality of reproducers, by interposing one or more

sound conducting means between the said reproducers and the ear.

10. The method of re-enforcing sound vibrations produced by radio apparatus, which comprises conducting sound vibrations from a plurality of reproducers at unequal intervals by interposing one or more horns between the said reproducers and the ear.

LEON F. DOUGLASS.