

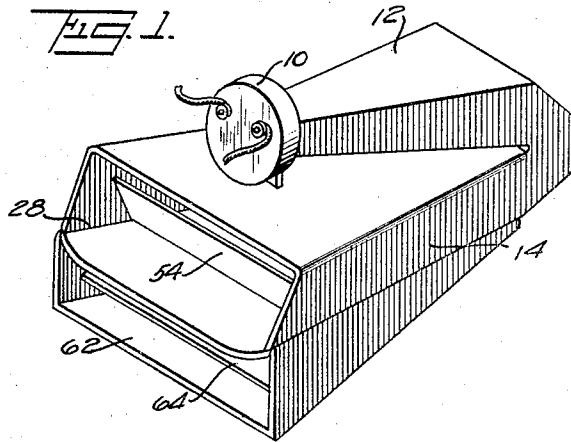
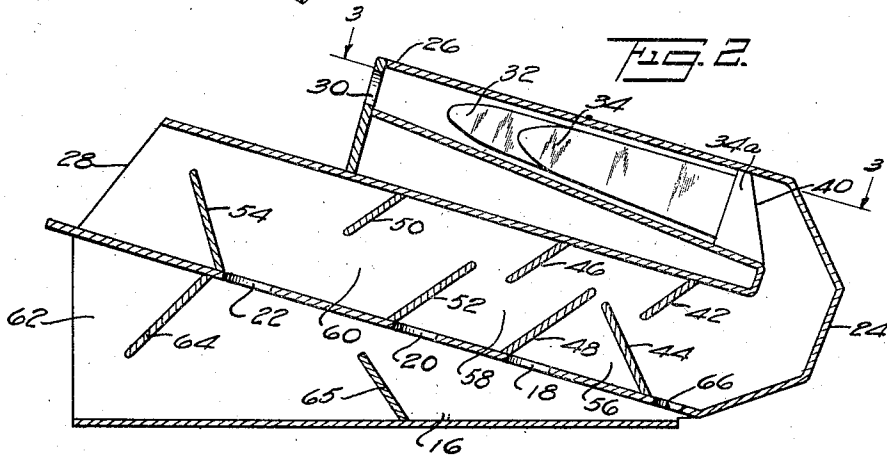
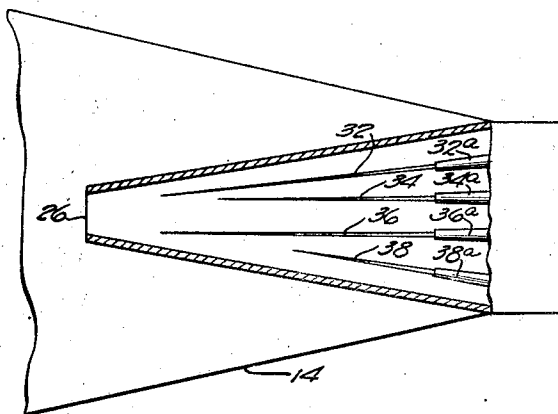
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TONE DEVELOPING LOUD SPEAKER

Filed March 5, 1925



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TONE-DEVELOPING LOUD SPEAKER.

Application filed March 5, 1925. Serial No. 13,124.

The object of my invention is the provision of means for giving improved tone development and for developing the tones of the instrument or voice in chambers provided for that purpose with their original timbre and quality.

While the tone developing amplifier may be made in various forms, I preferably construct it in substantially U-form, which is highly effective acoustically and is a convenience in assembly, as for making up a part of a compact cabinet with the horn built into the cabinet. Substantially any material may be used, such as wood, metal, cardboard, papier-mâché, etc. The use of metal for its construction is not productive of what are commonly designated as harsh metallic sounds, and substantially as good results are obtained with horns in accordance with my invention constructed of metal as of wood, for example, and with substantially the same timbre tone quality.

In accordance with my invention a plurality of successively connected tone chambers are provided of form and volume adapted to develop selectively the various tones, and as tones are developed to practically a maximum brilliancy and timbre they are released and caused to issue through a horn portion or portions provided for that purpose. The higher tones are developed in the shorter or smaller chambers closest to the source of vibration and are released when properly developed. Deeper or lower tones are carried on and developed in larger and more remote chambers before being released. With such arrangement the various tones are released when properly developed and development of some thereof does not interfere with the development of other tones and each being released as suitably developed. The ensemble effect is that the various tones issued as selectively developed blend together to give substantially the impressed sounds and without being deformed or choked. Thus radio broadcast band selections, for example, are reproduced in such a way that the timbre and tone of the various instruments are realistically reproduced and, while the totality of sounds are pleasingly blended together, it becomes possible for the listener to distinguish the sounds of the different instruments in substantially their original purity and timbre of tone.

In the accompanying drawings, I have shown an embodiment of the invention. In

said drawings, Fig. 1 is a perspective view of a tone developer and amplifier with a transmitter attached. Fig. 2 is a longitudinal section of the tone developer and amplifier, and Fig. 3 is a section on the line 3—3, Fig. 2.

The source of vibration in the case of radio sets is the usual diaphragm of the transmitter 10. The tone developer shown is of substantially U-form and comprises the tapering tubular portion 12 and the subdivided return and chamber portion 14, which also serves as an amplifier or megaphone for the deeper tones. An amplifying horn portion 16 into which the less deeper or higher tones are properly developed is provided and same is preferably formed on a side of or above or under the chamber portion 13 and is in communication therewith, as through sound exit openings 18, 20 and 22.

Portions 12 and 14 are in communication through the elbow 24, which, as shown, has a turn of substantially 180°, but the degree of turn may be less than this as may be required. The taper is preferably substantially a gradual increase from the ingress end 26 to the principal exit end 28. The transmitter 10 is attached at the ingress end, as by inserting the neck thereof in the hole 30 provided for that purpose.

The preliminary amplifying tapering tubular portion 12 is preferably subdivided by longitudinal or substantially longitudinal tongues producing between them the effect of a series of pipes. In the form shown there are four tongues 32, 34, 36 and 38, making a subdivision into five pipes or the equivalent of pipes between the tongues and between the tongues and the side walls of member 12.

The tongues and consequently the intermediate pipes are of different lengths and pitches and serve to develop the various tones. As shown, tongue 38 is the shortest, tongue 34 somewhat longer, and tongues 32 and 36 of approximately equal length.

These tongues are preferably supported so as to be out of contact with the amplifier walls for the greater portion of their length and they are preferably secured at their base ends to the amplifier walls by the substantially rigid affixed base portions 32^a—38^a extending from wall to wall and affixed thereto as by gluing, for example. They may be chamfered off on one side as shown at 40, to prevent any choking effect taking place. I

have found that best effects are produced by dividing the space in tapered tube 12 into two or more pipes in the manner described, and a certain resiliency of tone is secured without the tongues disturbing the tones by vibrating to a natural frequency foreign to the tones being reproduced. These longitudinally extending tongues or partitions may be dispensed with, if desired.

The sound developing chambers are provided in the larger or return portion 14 by the provision of transverse chamber baffles as 42, 44, 46, 48, 50, 52 and 54. These baffles extend preferably from end to end across the member 14, but extend only part way thereacross. The baffles 42, 46 and 50 project downwardly from the upper wall and baffles 44, 48, 52 and 54 project upwardly from the lower wall of amplifier member 14, as shown in Fig. 2.

The baffles 42, 44, 46, 50 and 54 are shown inclined in the direction of sound propagation and baffles 52 and 48 are shown as being reversely inclined. Relatively narrow passages are provided between the baffles on the opposite walls of the amplifier and the space within the main chamber in member 14 is divided up into a plurality of connected chambers, as 56, 58 60, each of which serves to develop its own tone or tones and without choking or disturbing the natural sounds. Certain of these baffles as 44 may be dispensed with, if desired, and in this case the opening 66 in rear of baffle 44 can be omitted.

Outlet passages as 18, 20 and 22 are provided communicating with tone development chambers 56, 58 and 60 respectively and provide for the release of the developed tonal sounds into an amplifying horn portion or portions. In the form shown, a single amplifying tone release portion or horn portion 16 is provided, having one wall in common with member 14. In the form shown, the openings 18, 20 and 22 lead successively into horn portion 10, in which the selectively developed tones are amplified before issuance at the horn mouth 62.

The blending together of the issued tones is assisted by the baffle or deflector 64 placed near the mouth of horn portion 16, and a similar result is obtained for the deeper sounds issuing from the main chamber portion 14 by the baffle or deflector 54 located near the mouth 28 of member 14. The horn portion 16 may also be made with supplementary sound developing chambers by provision of suitable baffles therein, as the baffles 65 extending from the lower wall thereof.

Modifications may be resorted to within

the scope of my claims without departing from my invention or sacrificing the advantages thereof.

I claim:

1. A tone developer and amplifier comprising one portion divided by longitudinal members into substantially a plurality of pipes, and a succeeding portion subdivided by transverse baffles into a series of successively larger sound development chambers, each having its own outlet.

2. A tone developer and amplifier comprising one portion divided by longitudinal members into substantially a plurality of pipes, and a succeeding portion subdivided by transverse baffles into a series of successively larger sound development chambers, each having its own outlet, and a horn section, said outlets leading into said horn section.

3. In a tone developer and amplifier, a tapering tubular portion having a plurality of longitudinal tongues therein dividing same into substantially a plurality of pipes, a return portion having a plurality of baffles extending transversely part way thereacross and providing a series of connected sound development chambers, and a horn portion laterally connected to the return portion and having outlets leading therinto from the sound development chamber.

4. A tone developer and amplifier of substantially U-shape comprising a tapered tubular member with longitudinal subdivisions, an elbow and an amplifier section with transverse partial subdivisions into a series of successively larger tone developing chambers, outlets for the chambers and a horn section, the outlets from the chambers leading into the horn section.

5. A tone developer and amplifier of substantially U-shape comprising a tapered tubular ingress member, a plurality of tongues therein fastened rigidly in place at one end; an elbow, a return section, baffles in said return section projecting toward one another from opposite sides thereof and being inclined in the direction of sound travel, said baffles providing successively larger sound development chambers therebetween, a horn section having a wall in common with the return section and outlets provided in said wall and leading from the sound development chambers into said horn section.

In testimony whereof, I have signed my name hereto.

CHARLES F. STEHLIN.