C. W. McGONIGLE.

SOUND TRANSMITTING DEVICE.

APPLICATION FILED OCT. 4, 1913.

1,199,196. Patented Sept. 26, 1916.

Fig. 1.

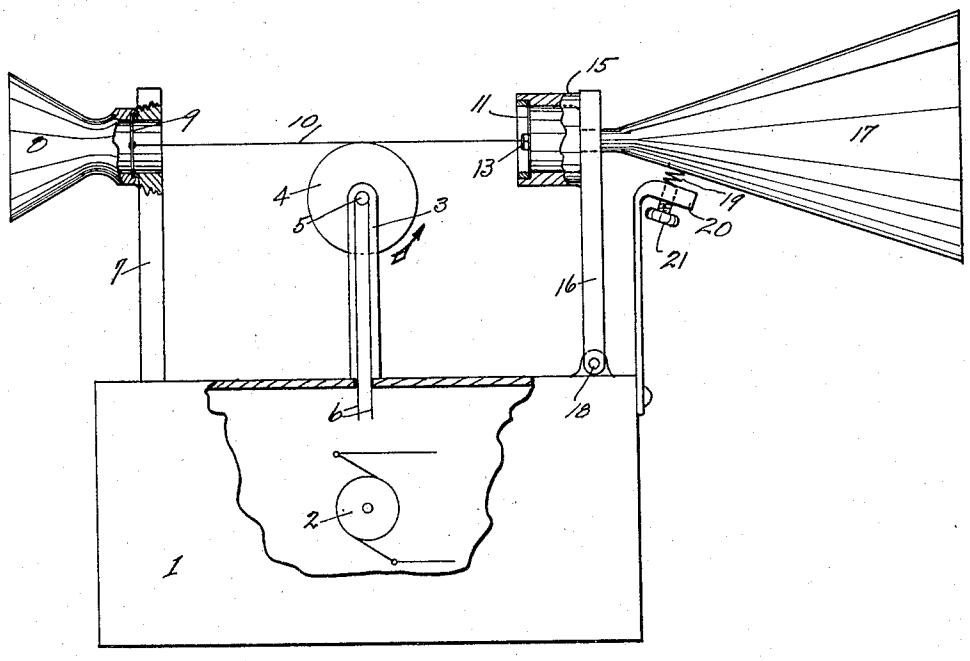
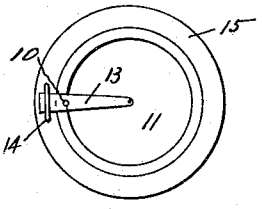


Fig. 2.



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THE NORRIS PETERS CO., PHOTO-LITHO., WASHINGTON, D. C.

UNITED STATES PATENT OFFICE.

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SOUND-TRANSMITTING DEVICE.

1,199,196. Specification of Letters Patent. Patented Sept. 26, 1916.

Application filed October 4, 1913. Serial No. 793,462.

To all whom it may concern:

Be it known that I, CHARLES W. McGONIGLE, a citizen of the United States, and a resident of Seattle, county of King, State of Washington, have invented certain new and useful Improvements in Sound-Transmitting Devices, of which the following is a specification.

This invention relates to sound transmitting devices and has for its principal object to provide novel and peculiar means to render more effective the operation of a diaphragm or its equivalent in the process of reproducing or transmitting sound, than has heretofore been known to the art so far as I am aware.

The invention will be more fully described in the following specification, illustrated in the accompanying drawings and pointed out in the appended claim.

In the drawings Figure 1 is a side elevation of my device, with parts broken away. Fig. 2 is an enlarged detail end elevation of the receiving diaphragm and its associated parts.

Referring now more particularly to the drawings, reference numeral 1 designates a box-like container within which is a motor 2, which in this instance is of the electrical type, but any other suitable form such as a spring motor or the like may be used, as convenience may suggest; it being understood that I do not confine myself to any particular form of motor.

3 indicates a support which is rigid with the container 1, and revolubly mounted upon which is a drum 4, around the spindle 5 of which passes a driving belt 6 which is adapted to be operatively connected to the motor 2.

Rigid with the container 1 is the support 7, to the upper end of which is affixed a mouthpiece 8 to the center of whose diaphragm 9 is secured one end of a flexible member 10, such as a stout fish twine, piano wire or the like, which extends toward the right, as viewed in Fig. 1, and is passed around the drum 4 and continues on and has its opposite end secured to a lever 13 which is pivoted at 14 to the frame 15 of the diaphragm 11. The extreme right hand end of said lever, as viewed in Fig. 2, is secured to the center of the diaphragm 11 and it will be noted that the cord 10 is secured to the said lever considerably nearer to the pivot 14 than to the point where the said lever is secured to the said diaphragm, so that a pull on the cord will cause a multiplied movement of the end of the lever which is attached to the diaphragm. The frame 15 of the diaphragm 11 is secured to the upper end of a support 16, from which extends a horn 17, which may be of the construction of an ordinary megaphone. The interior of the said horn communicates with the space within the frame 15 which is behind the diaphragm 11, so that the vibrations of the latter are communicated to the interior of the horn. The lower end of the support 16 is pivoted, at 18, to the container 1 and the horn 17 is yieldingly held in the position shown by means of the spring 19 one end of which bears against the said horn and its opposite end against the screw 21 which passes through the bracket 20, rigid with the container 1, and by means of which the tension of the said spring may be varied to suit conditions, as will be understood.

The diaphragm 11 is normally under tension, that is to say, it bellies out in the direction of the diaphragm 9, the friction between the drum 4 and the flexible member 10 constantly acting to hold the diaphragm 11 in that position as the said drum is turned in an anti-clockwise direction as viewed in Fig. 1. The diaphragm 9 is normally at rest as the rotation of said drum constantly tends to produce slack in that portion of the cord 10 which is between the diaphragm 9 and the said drum. When sound waves are set up within the mouthpiece 8 the diaphragm 9 swells in the direction of the other diaphragm and causes friction between the drum 14 and that portion of the cord which is passed around the drum, to decrease, which permits the lever 13 to move about its pivot and in the direction of the horn 17 under the influence of the tension of the diaphragm 11 and the inertia of the lever 13 vibration being much greater than that of the diaphragm 9, which results in an amplification of the sound through the horn 17. The vibration of the diaphragm 11 is, of course, so rapid that the inertia of the horn is not overcome and the same remains held in its position as seen in Fig. 1. After the diaphragm 11 has moved to its extreme position toward the

right, as just described, it is immediately drawn in the opposite direction a much greater distance than it would be as the result of the inherent spring of the diaphragm itself, due to the lever 13 and the cord 10 between which and the drum 14 the friction is now sufficient to hold the cord 10 to the drum while the latter rotates, and the diaphragm 9 of course meanwhile is returning to normal and taking up the slack in the cord 10 which is between the said diaphragm and the drum. The action is therefore of a winch-like nature, the diaphragm 9 serving to take up the slack while the winch action of the drum 4 draws upon the cord 10.

I have shown a particular form of embodiment of my invention but I am aware that many structural changes therein will readily suggest themselves to others without departing from the spirit and scope of my invention, and I do not desire to be limited to the exact form described.

What I claim is:

In a sound amplifying device, a box shaped container, a rigid horn support at one end and a pivoted horn support at the opposite end of said container, horns each having a diaphragm suitably secured upon said supports, a rigid drum support intermediate said horn supports, a drum revolubly mounted on said support, means for revolving said drum, a lever pivotedly mounted upon the pivotally mounted horn and connected to the center of the diaphragm of the said horn, and a flexible member having one end connected to the diaphragm of the horn secured on the rigid support and extending around the revoluble drum and having its opposite end connected to said lever, as and for the purpose set forth.

CHARLES W. McGONIGLE.

Witnesses:
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Copies of this patent may be obtained for five cents each, by addressing the "Commissioner of Patents, Washington, D. C."