

1,035,746.

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UNITED STATES PATENT OFFICE.

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ALARM OR ACOUSTIC APPARATUS.

1,035,746.

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To all whom it may concern:

Be it known that I, ERNEST RUBES, a citizen of the United States, residing at Brooklyn, in the county of Kings and State of New York, have invented new and useful Improvements in Alarms or Acoustic Apparatus, of which the following is a specification.

This invention relates to an acoustic apparatus and more particularly to an alarm or warning signal device for automobiles, motor boats and other analogous machines.

One object of the invention is to provide an apparatus or device of the class specified which is operative to produce an intensified sound of great volume and of a deep or sonorous character.

A further object of the invention is to dispense with the use of a single plate diaphragm or an acoustic plate of the form ordinarily adopted in alarms or signal devices of automobiles for producing attractive sounds and to substitute therefor what may be termed a closed acoustic chamber or box of such construction as to give an increased volume of sound when actuated by vibrating means.

A still further object of the invention is to provide a warning signal in which a sound may be generated of a harmonious character and not irritating to the human ear, in contradistinction to the sharp, cracking and irritating sound produced by the use of the common diaphragm or acoustic plate having a rigid mounting or of such limited vibrating area as to produce undesirable sound effects.

The invention consists essentially of a casing having a resonator with a closed acoustic chamber in normally fixed position within the casing and operated by a rotary electric motor actuating a rotary member operatively engaging a portion of the chamber.

The invention further consists in the details of construction and arrangement of the several parts which will be more fully hereinafter described and claimed.

In the drawing: Figure 1 is a sectional elevation of an acoustic apparatus or alarm embodying the features of the invention. Fig. 2 is an enlarged detail section of a portion of the apparatus or alarm and particularly illustrating the means for adjusting the acoustic chamber relatively to the vibrating means therefor. Fig. 3 is a sec-

tional elevation of a portion of the apparatus or alarm showing the rotary vibrating member located within the closed acoustic chamber or box.

The improved acoustic apparatus or alarm comprises essentially a casing 5 having a resonator 6, a closed acoustic chamber or box 7 secured within the casing and having a projection 8 on one of the sides thereof, and a motor 9 having its armature shaft 10 projected and provided with a rotary member 11 preferably having a toothed periphery held in engagement with the projection 8 of the chamber 7.

As shown by Fig. 1, the projection 8 is located on the side of the chamber or box 7 near the resonator 6 and the armature shaft 10 projects upwardly through a suitable sleeve 12 in the lower portion of the casing between the chamber 7 and the resonator 6 so that the rotary toothed member 11 will be disposed in advance of the said chamber 7 and preferably in central alinement with relation to the resonator, which is fitted over a front open extremity 13 of the casing 5.

In the construction shown by Fig. 3 the projected armature shaft 10 extends into the chamber or box 7 and the projection is located on the inner surface of the forward side of the said chamber or box, and as an obvious change in this arrangement the projection 8 might be applied to the opposite or rear side of the chamber 7. In the construction shown by Fig. 3, the armature shaft 10 is also provided with a rotary toothed member 11 similar to that heretofore described and which is inclosed within the said chamber and may engage either the front or the rear side of the chamber in accordance with the application of the projection 8.

In all the forms of the structure shown, the periphery of the chamber is so shaped as to avoid the formation of abrupt angles, or the corners are curved, and, furthermore, the periphery of each chamber does not have direct contact with the casing but is held spaced from the latter by the fastening devices which will be presently specified in order to avoid the obstruction of the passage of sound waves from one member to the other of the chamber so that the entire chamber may be vibrated with material advantage in the production of the signal tone or sound.

It is obvious that in time the continuous operation of the rotary member 11 in contact with the projection 8 will result in wear of either one of the latter parts to such an extent as to impair the sound producing qualities of the apparatus, and to provide for this contingency the chamber or box 7, as will be seen, is peripherally secured within the casing 5 by means of fastenings 14 engaging the same at regular intervals and consisting, in the present instance, of headed screw bolts with inner reduced extremities 15 projecting through the periphery of the chamber and having clamping nuts 16 thereon and yielding dished washers 17 interposed between the inner shouldered ends thereof and the adjacent portions of the chamber or box. The function of the dished washers 17 is to maintain a frictionally tight association between the bolts and the said chamber, and the clamping nuts 16 operate to hold the bolts in fixed adjusted position relatively to the casing 5. The casing 5 is formed with slots 18 for the passage of the bolts 14 therethrough, the bolts being shiftable in the slots without changing their assembled relation to the chamber or box, and it is obvious that by shifting the several bolts the chamber or box may be moved toward the rotary member 11 and thereby set up and maintain a proper contiguous relation and contact of the said rotary member relatively to the projection 8.

The closed acoustic chamber or sound box may be constructed in any preferred manner and of suitable material and likewise the resonator as well as the casing will be constructed of material best adapted for the purpose and modified in form and general proportions as may be desired.

The resonator, as shown by Fig. 1, is formed with a lower depression or sink 19 having an outlet nipple 20 at its lowest point, the purpose of this construction being to catch and drain what moisture may enter the resonator and prevent moisture from running back into the casing and thus materially reduce liability of the closed acoustic chamber and cooperating parts to oxidation.

It will be observed that the use of the closed acoustic chamber or sound box has its flat surfaces or sides free to vibrate, said sides being unrestrained or unconfined, as for instance by devices at the outer portions thereof, and as a result the said chamber will produce a deep or sonorous sound without irritating effect on the ear. The peripheral attachment of the chamber or sound box leaves the greater portion of the latter free for vibrating operation and no part of the said chamber is in direct contact with the inclosing casing 5 and by this means the vibrations of the chamber will be less retarded.

What is claimed is:

1. In an acoustic apparatus or signaling device, a casing having a resonator secured thereto, in combination with a completely closed acoustic chamber mounted in and inclosed by the casing and structurally independent of the latter, the periphery of the chamber being held out of contact with relation to the casing, a rotary member engaging and vibrating one side of the chamber and by the transmission of sound waves vibrating also the remaining side of said chamber, and means for operating said member.

2. In an acoustic apparatus or signaling device, a casing having a resonator secured thereto, in combination with a completely closed acoustic chamber mounted in and inclosed by said casing and having opposed vertical sides, the periphery of the chamber being held out of contact with relation to the casing, a rotary member engaging and vibrating one side of the chamber and by the transmission of sound waves vibrating also the remaining side of said chamber, and a rotary electric motor for operating said member.

3. In an acoustic apparatus or signaling device, a casing having a resonator secured thereto, in combination with a completely closed acoustic chamber mounted in and inclosed by said casing and provided with opposite flat sides, the periphery of the chamber being held out of contact with relation to the casing, a rotary toothed member held in engagement with a portion of one of said sides and operating to vibrate said side and by the transmission of sound waves vibrating also the remaining side of said chamber, and an electric motor for actuating said toothed member.

4. In an acoustic apparatus or signaling device, a casing having a resonator secured thereto, a completely closed acoustic chamber mounted in and inclosed by said casing and having opposite flat sides, one of said sides being provided with a projection, the periphery of the chamber being held out of contact with relation to the casing, a rotary toothed member engaging said projection and operable to vibrate said side carrying the projection and by the transmission of sound waves vibrating also the remaining side of said chamber, and means for actuating said rotary toothed member.

5. In an acoustic apparatus or signaling device, a casing having a resonator secured thereto, in combination with an acoustic chamber which is completely closed and provided with a plurality of vibrating members having overlapping associated edge portions to cause the vibrations to continue from one of said members to the other, the said associated edge portions of the chamber being held out of contact with relation to the

casing, a rotary member engaging and vibrating one of the members and by the transmission of said waves vibrating the other member, and means for operating said rotary member.

6. In an acoustic apparatus or signaling device, a casing having a resonator, a vibrating chamber held out of contact with relation to and adjustably mounted in and enclosed by the said casing, a rotary toothed member for vibrating said chamber engag-

ing the latter and having a fixed operative position in the casing, and means for operating said toothed member.

In testimony whereof I have hereunto set my hand in presence of two subscribing witnesses.

ERNEST RUBES.

Witnesses:

ROSE M. SEFTON,
CHAS. A. ROWE.