E. RUBES.

ALARM OR ACOUSTIC APPARATUS.

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1,035,745.

Patented Aug. 13, 1912.

Fig. 1.

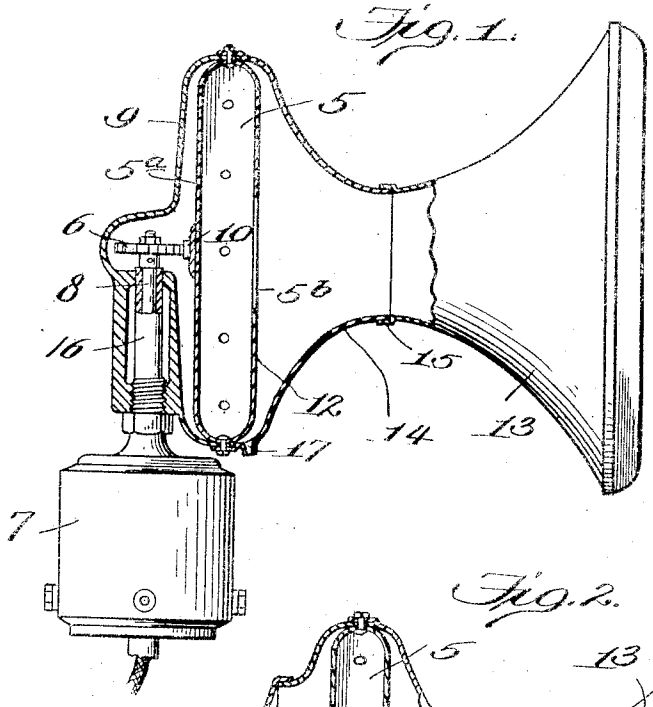


Fig. 2.

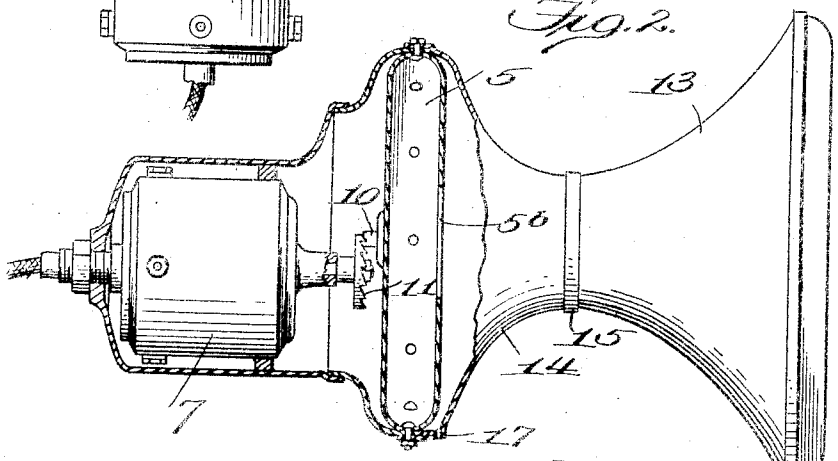
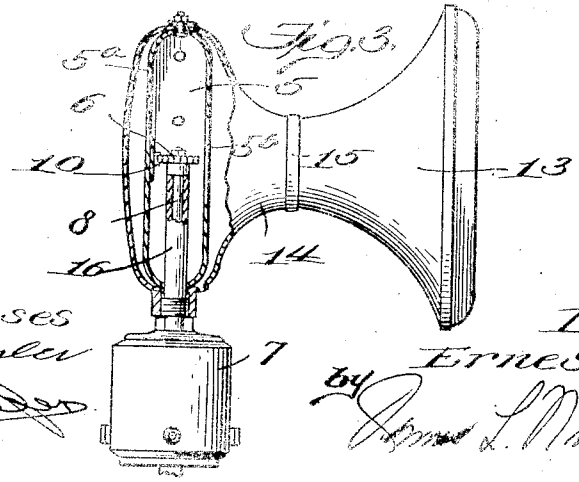


Fig. 3.



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ALARM OR ACOUSTIC APPARATUS.

1,035,745. Specification of Letters Patent. Patented Aug. 13, 1912.

Application filed January 11, 1911. Serial No. 602,001.

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 having materially increased sound volume and characteristics as compared to similar devices now ordinarily employed and within minimized dimensions.

A further object of the invention is to dispense with the use of a plate diaphragm or the form of diaphragm ordinarily adopted as the sound or tone producing medium and to substitute therefor what may be termed an acoustic chamber of such construction as to give an increased volume of sound when actuated by coöperating means.

The invention primarily consists of an acoustic chamber or sound box in combination with a movable member engaging a portion of the chamber, and a rotary motor, preferably electric, for actuating said member.

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 view showing parts in elevation of the improved acoustic apparatus or warning signal device. Fig. 2 is a similar view of a modified form of construction. Fig. 3 is a similar view of a further modified form.

The improved apparatus or signal device essentially comprises three main elements in its organization, namely, an acoustic chamber 5, a sound producing member 6 cooperating with a portion of said chamber, and a rotary motor 7. The acoustic chamber 5 as shown embodies a closed side 5^a and a sound emitting opening 5^b in the center of the side opposite the said closed side, the chamber or box 5 being peripherally secured by suitable means within a casing 9 and having a projection 10 on the closed side exteriorly of the said chamber or box, as shown by Figs. 1 and 2, and located interiorly of the chamber or box as illustrated by Fig. 3. The rotary motor 7 is preferably of the electric type and has the armature shaft 8 projected therefrom and provided with the member 6 which in the present instance consists of a toothed disk or wheel having its toothed periphery held continually in engagement with the projection 10. As shown by Fig. 1, the armature shaft 8 of the motor is disposed vertically, whereas in Fig. 2 the said armature shaft is arranged horizontally or in a plane at right angles to the acoustic chamber or sound box 5, the motor and armature shaft being inclosed within the casing 9 in rear of the chamber or sound box. As shown by Fig. 3, the armature shaft 8 of the motor 7 is projected through the casing 9 into the acoustic chamber or box 5 and the member 6 thereon operates in advance of the closed side 5^a.

The actuating member 6, as shown by Fig. 2, has one face thereof provided with radial teeth or projections 11 which coöperate with the projection 10 on the sound box in the same manner as the similar members shown by Figs. 1 and 3 provided with peripheral teeth.

It will be understood that the acoustic chamber or sound box is secured only at its periphery at intervals, the latter being shaped in curved lines or is of semicircular form so as to avoid interference with or obstruction to the movement of the sound waves produced by the closed side and projected forwardly toward the free wall 12 surrounding the opening 5^b, the said wall being rendered responsive and also vibrated through the fluid or air contained within the acoustic chamber between the side 5^a and the wall 12. It may be said that practically all of the parts of the acoustic chamber or box 5 are caused to vibrate by the contact of the member 6 with the projection 10 except at the points where the chamber is peripherally secured to the casing 9. In other words, the acoustic chamber or sound box is free to vibrate throughout its whole area except at the points where it is peripherally secured, in a manner similar to the sound box or body of a musical instrument, and the aggregate vibrations produce a harmonious sound or tone having considerable volume and pleasing to the ear in contradistinction to the limited vibrations and inharmonious sound produced by similar actuation of a peripherally confined diaphragm or acoustic plate. As a means for convey-

ing the sound from the casing as produced by the acoustic chamber, it is preferred that a resonator 13 be applied to the front portion of the casing in advance of the said chamber, and it will be understood that this resonator may be of any desired contour and construction. A simplified mode of applying the resonator 13 is shown, and consists in removably engaging the rear extremity thereof with the terminal of a forwardly projecting part 14 of the casing, as at 15. It will also be understood that in the form of the device shown by Fig. 3 the motor 7 will be attached directly to the lower portion of the casing and the armature shaft 8 in this instance will also preferably extend through a sleeve 16 to effect an efficient operation of said shaft.

One of the main advantages of the improved alarm or warning signal is that it may be effectively operated with considerably less energy than is required in similar devices now in use embodying a diaphram or acoustic plate confined at the periphery and consisting only of a single vibrating medium or plate, for the reason that the vibrating members or elements of the said chamber are free from securing devices and out of contact with relation to supporting means and their vibration is, therefore, untrammeled. A further advantage is that the acoustic chamber or sound box in accordance with the present invention has no openings formed in and fastening means engaging any of its vibrating members and therefore the maximum vibrating properties of the chamber or sound box are conserved and materially increase the sound volume of the alarm or signal device as a whole.

To prevent the retention of moisture within the casing and consequent oxidizing injury to the acoustic chamber or sound box and coöperating parts, a suitable drain opening or outlet means 17 is formed in the bottom of the casing or at the lowest point of the latter so as to effectively carry off water that may collect within the casing.

What is claimed is:

1. In an acoustic apparatus or signaling device, a casing having a resonator secured thereto, in combination with an acoustic chamber inclosed within and structurally independent of the casing and composed as an entirety of sound producing material, the periphery of the chamber being of semicircular form in cross-section and secured only at intervals, and a rotary electric motor carrying a rotary toothed member which is held in engagement with a portion of said chamber to set up a constant vibration thereof.

2. In an acoustic apparatus or signaling device, a casing having a resonator, in combination with an acoustic chamber inclosed within and structurally independent of the casing and composed as an entirety of sound producing material the periphery of the chamber being of semicircular form in cross-section and secured only at intervals, the chamber being peripherally held within the casing between the front and rear faces thereof to permit freedom of vibration of the entire chamber, a rotary member engaging one face of the chamber to set up a constant vibration thereof, an electric rotary motor for operating said member.

3. In an acoustic apparatus or signaling device, a casing having a resonator, in combination with an acoustic chamber inclosed within and structurally independent of the casing and composed as an entirety of sound producing material, the periphery of the chamber being of semicircular form in cross-section and secured only at intervals, the acoustic chamber being provided with a completely closed side and a side opposite thereto having an opening therein, both sides being vertically disposed and concentric with the resonator, a rotary member engaging the closed side of the chamber to set up a constant vibration thereof, and a rotary electric motor for operating said member.

4. In an acoustic apparatus or signaling device, an exterior casing having a resonator secured thereto, in combination with an acoustic chamber fully inclosed by said casing, the chamber being secured to the casing at the periphery between the front and rear sides of the chamber at intervals, and a rotary electric motor having a projecting armature shaft, and a rotary toothed member mounted upon the armature shaft and engaging one side of the chamber.

5. In an acoustic apparatus or signaling device, a casing having a resonator, in combination with an acoustic chamber fully inclosed by and peripherally secured at intervals within the casing and provided with a completely closed side and an opposing side having an opening therein, the periphery of the chamber being semicircular in cross-section, a movable member engaging the center of the closed side of the chamber, and a rotary electric motor for operating said movable member.

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

ERNEST RUBES.

Witnesses:
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