E. RUBES.

ACOUSTIC APPARATUS.

APPLICATION FILED SEPT. 26, 1911.

1,049,272. Patented Dec. 31, 1912.

Fig. 1.

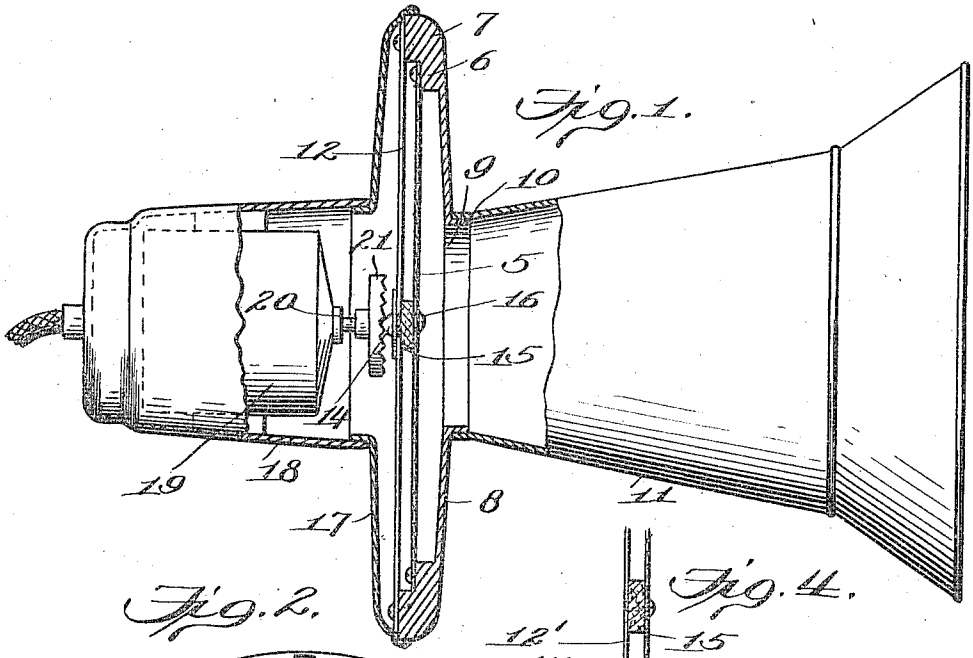


Fig. 2.

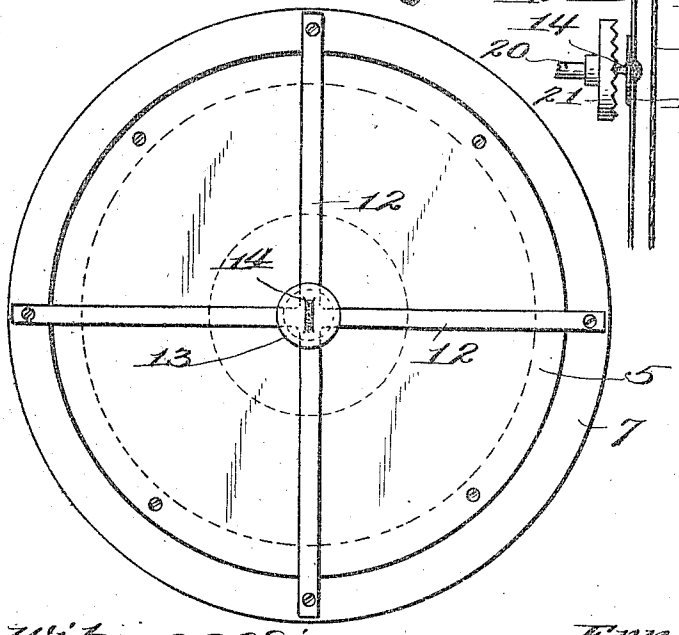
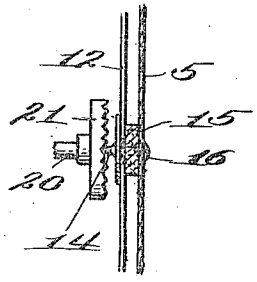


Fig. 4.

Fig. 3



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UNITED STATES PATENT OFFICE

ERNEST RUBES, OF BROOKLYN, NEW YORK.

ACOUSTIC APPARATUS.

1,049,272.

Specification of Letters Patent. Patented Dec. 31, 1912.

Application filed September 26, 1911. Serial No. 651,389.

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 Acoustic Apparatus, of which the following is a specification.

This invention relates to acoustic apparatus and particularly to warning signals such as are used on automobiles, motor boats and the like.

The primary object of the invention is to produce a signal or alarm of the type specified that will emit sounds of carrying power and to eliminate the rattling or metallic sound usually present in warning signals embodying a diaphragm or a sound producing medium and a vibrating device coöperating therewith to displace the diaphragm when agitated by high speed power by interposing between the diaphragm and the means directly engaged by the vibrating device a sound proof means which prevents the transmission of the harsh metallic stridulation caused by the friction of the vibrating device when in action.

With these and other objects and advantages in view the invention consists in the 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 warning signal embodying the features of the invention. Fig. 2 is a rear elevation of the improved apparatus or signal looking toward the rear of the diaphragm and illustrating a part of the casing removed. Fig. 3 is a detail sectional view particularly illustrating the mode of applying the sound absorbing means or washer interposed between the diaphragm and the vibrating projection therefor. Fig. 4 is a detail view illustrating a slight modification.

This invention constitutes an improvement on that disclosed in my application Serial No. 630,598, filed June 1, 1911.

Referring to the drawing, the numeral 5 designates a diaphragm or vibrating plate of the type usually employed in devices of this class and preferably secured to an offset portion 6 of a rim 7 of a front section 8 constituting a portion of the casing or inclosure for the apparatus and having a central enlarged opening 9 surrounded by a flange or fixed collar 10 to which the end of a suitable resonator 11 is applied. At a suitable distance in rear of the diaphragm 5 a plurality of resilient arms 12 is secured, and as shown are four in number and diametrically arranged, the said arms intersecting at the center and connected to a suitable disk 13. These arms 12, however, may be of any number, it only being necessary to have the arms free for movement or yielding action to relieve the diaphragm 5 of direct pulling strain in a manner which will be more fully hereinafter specified. A projection 14 of suitable form extends rearwardly from the disk or center 13 of the arms 12 and between this projection and disk and the diaphragm 5 a washer 15 is interposed and secured by a suitable screw or analogous fastening 16 passing through the diaphragm and the said washer and extending into the center or disk 13 so that the diaphragm, washer and disk are united. The washer 15 will be constructed of any suitable sound absorbing material, such as cork, and the object of the same is to prevent the transmission of harsh rattling sounds or stridulations through the resonator by the action of the vibrating device on the projection 14. The rear section 17 of the casing, as shown, is provided with a rear cylindrical extension 18 in which a suitable electric motor 19 is mounted and secured in any preferred manner, the said motor having its armature shaft 20 projected forwardly and provided with a rotary toothed disk or vibrating device 21 which is held in continual contact with the projection 14. While this is a preferred means of disposing the motor and the toothed disk 21, it will be understood that the same result may be attained by positioning the motor at an angle and correspondingly changing the disk, which is an obvious arrangement in this art.

In the operation of the improved device it will be understood that the motor is supplied with electric current from a suitable source of generation and the armature shaft 20 rapidly rotated to set up a corresponding rotary action of the disk 21 and the teeth of the latter being in contact with the projection 14 will result in a rapid displacement of the diaphragm to generate alarm notes or sounds and owing to the supporting function of the resilient arms 12 relatively to said projection, lateral pulling strain will not be imposed directly on the diaphragm. The arms or bars 12 coact or harmonize with the vibrations of the diaphragm, with material advantage in the sound emitted by

the resonator, and wear and tear of the sound producing parts of the apparatus are reduced to a minimum and economy in the use and operation of acoustic apparatus of this class results. By the interposition of the sound absorbing means or washer 15 between the diaphragm and the projection 14 the harsh metallic rattling sounds or stridulations will be eliminated and the tone of the signal given forth by the apparatus will be soft and pleasing to the ear, but at the same time sufficiently distinct to be effective as an alarm.

While it is preferred to dispose the washer 15 in axial alinement with the projection 14 and to connect the parts by the screw 16, as shown, it is to be understood that the improvement is by no means restricted to such an arrangement, and that the washer 15 may be located as desired, between the diaphragm 4 and an arm 12. It will also be understood that while the cruciform arrangement of the arms 12 is preferred, it is not obligatory, and the spring element which carries the projection 14 may be of any suitable construction. Thus, in Fig. 4, I have illustrated a spring element 12′ which is in the nature of a resilient straight bar arranged coincidentally with a diameter of the diaphragm and having the projection 14 at its center, in the manner described. In this case, however, the washer 15 is not located coaxially with said projection, but is located at one side of the center of the bar, and as so arranged is well adapted to serve the purpose contemplated.

The several parts of the apparatus are simple in their construction and may be readily associated, and changes in the proportions, dimensions and minor details may be adopted without departing from the spirit of the invention.

What is claimed is:

1. In an acoustic apparatus of the class specified, an inclosing casing, a resonator secured thereto, a diaphragm mounted in the casing, resilient means extending diametrically over the diaphragm and having a projection, a sound absorbing means interposed between the diaphragm and resilient means, and means engaging the projection to set up a vibration of the diaphragm.

2. In an acoustic apparatus of the class specified, a diaphragm having a supporting means, resilient means extending diametrically over and close to the diaphragm and having a projection, a sound absorbing means interposed between and secured to the diaphragm and the resilient means, and means engaging the projection to set up a vibration of the diaphragm.

3. In an acoustic apparatus of the class specified, a sound producing diaphragm, means for supporting the diaphragm, resilient means extending diametrically over the diaphragm and having a projection, a sound absorbing means interposed between the resilient means and diaphragm, and means engaging the projection to set up a vibration of the diaphragm.

4. In an acoustic apparatus of the class specified, an inclosing casing having a resonator, a diaphragm mounted in the casing, resilient means extending diametrically over and supported adjacent to the diaphragm and having a projection near the center of the diaphragm, a sound absorbing means interposed between the resilient means and the diaphragm, and electric means for operating the projection and resilient means and the diaphragm.

5. In an acoustic apparatus of the class specified, an inclosing means having a resonator secured thereto, a diaphragm mounted in the inclosing means, a plurality of yielding bars mounted adjacent to the diaphragm, and having intersecting portions, a projection carried by the intersecting portions of the bars, a sound absorbing means interposed between the diaphragm and the said projection, and means for operating the projection to set up a vibration of the diaphragm.

6. In an acoustic apparatus of the class specified, an inclosing casing having a resonator secured thereto, a diaphragm mounted in the casing, a plurality of yielding bars having intersecting association and carrying a projection adjacent to the center of the diaphragm, a sound absorbing washer interposed between and secured to the diaphragm and the intersecting portions of the bars and projection, an electric motor having a projecting armature shaft, and a rotary toothed member secured directly on the armature shaft and engaging the projection to rapidly displace a portion of the diaphragm to produce a sound.

7. In an acoustic apparatus of the class specified, a diaphragm, a spring element extending diametrically across the diaphragm and provided with a projection adjacent to the center of the diaphragm, means arranged to engage the projection and thereby produce a vibratory action of the spring element and the diaphragm, and sound absorbing means interposed between the spring element and the diaphragm.

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

ERNEST RUBES.

Witnesses:
JOHN F. CLEVELAND,
ISAAC BROWN.