April 28, 1931. G. H. DE JONGH 1,802,910

VIBRATING MEMBER FOR LOUD SPEAKERS

Filed May 2, 1927

Fig. 1

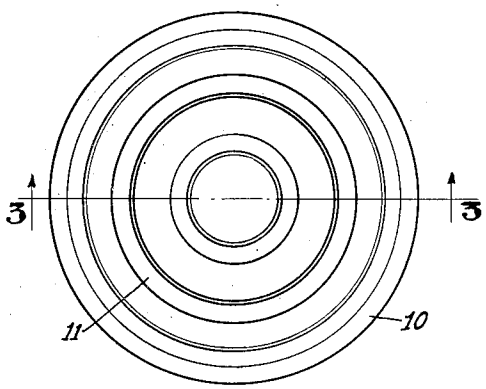


Fig. 2

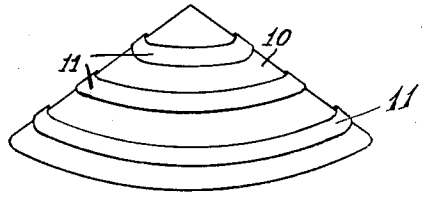
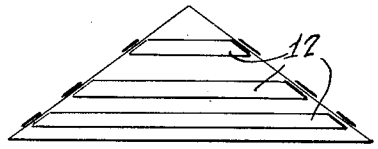


Fig. 3.



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UNITED STATES PATENT OFFICE

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VIBRATING MEMBER FOR LOUD-SPEAKERS

Application filed May 2, 1927, Serial No. 188,077, and in the Netherlands May 14, 1926.

This invention has reference to conical diaphragms or vibrating members for loud speakers, said vibrating members serving to convert mechanical into acoustic vibrations. The invention is especially applicable to conical vibrating members (hereinafter briefly referred to as cones) which vibrate as a stiff body such as, for example, with constructions in which the cone is stretched in the frame by means of a yielding substance secured to its border.

In the majority of cases when the mechanical vibration is transferred the vertex of the cone is used as the point of application of the motive power. It has been found in such cases that by reason of the impulses exerted on the vertex the cone shows a tendency to kink, which will have a harmful effect on the sound oscillations. The invention has for its object to so strengthen the cone as to suppress this kinking.

According to the invention, for this purpose the surface of the cone is provided with strengthenings which are applied in a direction normal to the generating lines of the cone. The strengthenings may be ribbon-shaped strengthenings which are mounted on the surface and which surround the cone annularly. The annular strengthening may be applied in a plane normal to the axis of the cone.

These strengthenings are advantageous for cones made of paper. Inasmuch as these cones should be as light as possible the paper should therefore be as thin as possible in order to keep the mass reduced.

The disadvantage in using too thin paper is a loss in the stiffness of the cone. It has been found that with a very light cone kinking is regularly produced and causes some undesired noise. According to the invention a paper ribbon is stuck on the surface of the cone, said ribbon surrounding the cone annularly and decreasing thereby the risk of kinking.

According to the invention the said ribbon may be applied to the spread surface of the cone, that is upon the cone blank before it is shaped into a cone. If the cone is then bent so that the ribbon is on the outer surface it will surround the cone at a certain stress.

The invention will be more clearly understood by reference to the accompanying drawing which shows one embodiment of the invention. In the said drawing:

Figure 1 is a plan view of a cone according to the invention and

Figure 2 is a perspective side view of the cone shown in Figure 1.

Figure 3 is a section on line 3—3 of Figure 1.

Referring to the drawing a paper ribbon 11 is stuck to a paper cone 10 exactly midway between the vertex and the border. When an unstrengthened cone is put on the table and the finger is pressed on the vertex the cone will show a tendency to kink. If, however, the ribbon 11 has been applied this ribbon will resist the outward kinking as well as the inward kinking. The paper ribbon may be applied either to the inner surface such as the bands 12 or to the outer surface or both inner and outer surfaces.

It is possible not only to apply paper ribbons to the middle but also to apply similar surrounding paper ribbons to intermediate points. It is not necessary that these ribbons should surround the entire cone but they may be applied at determined intervals along the cone surface.

What I claim is:

1. An acoustic device comprising a conical diaphragm, and strengthening bands fastened to said diaphragm.

2. An acoustic device comprising a conical diaphragm, and a strengthening ribbon fastened to said diaphragm around an annular path on said diaphragm.

3. An acoustic device comprising a conical diaphragm, and a plurality of strengthening ribbons secured to said diaphragm, said strengthening ribbons being arranged in planes normal to the axis of said conical diaphragm.

4. An acoustic device comprising a diaphragm member, and a paper ribbon secured to said diaphragm, the line of contact between said diaphragm and said ribbon being other than along the edge of said diaphragm.

5. An acoustic device comprising a conical diaphragm, and means attached to said diaphragm between the apex and the base thereof for applying a stressing force to said diaphragm.

6. An acoustic device comprising a conical diaphragm, and means attached only to said diaphragm for setting up a stress in said diaphragm.

7. The process of manufacturing conical diaphragms for acoustic devices which comprises forming a cone blank, strengthening the surface of the cone blank, and bending said strengthened blank into a cone.

8. The process of manufacturing conical diaphragms for acoustic devices which comprises forming a cone blank, securing strengthening ribbons to said cone blank, and bending said blank to form a cone having the strengthening ribbons on its outer surface.

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