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(11) **CA 298695** (13) **A**

(40) **25.03.1930**

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(12)

(21) Application number: **298695D**

(51) Int. Cl:

(22) Date of filing: ..

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(54) **LOUDSPEAKER**

(57) **Abstract:**

(54) **HAUT PARLEUR**

*This First Page has been artificially created and is not part of the CIPO Official Publication*

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This invention relates to apparatus of the kind used in wireless telephony, for converting electrical into mechanical vibrations. With the commonest construction of such apparatus which hereinafter will be referred to as "loudspeakers", there are provided a magnet and a diaphragm the latter of which, due to the vibrating motion imparted thereto by the magnet, causes a column of air to vibrate. This diaphragm may consist of a magnetic substance so that it can be set in vibration directly by the magnet. Also, the diaphragm may consist of a non-magnetic material, an armature being secured in that case on the said diaphragm. In both cases it is of very great importance to mount the diaphragm in such a manner that it is exactly centered relatively to the magnet and that it can freely vibrate towards both sides. According to the invention, very good results are ensured by stretching the diaphragm in a rigid frame by means of a yielding substance which is secured to the edge of the diaphragm.

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When the diaphragm vibrates, sound waves are produced both before and behind the diaphragm. When the free path between the fore- and the rear-side of the diaphragm is too small, compressions and rarefactions of the air will weaken each other when their periods surpass a determined value, due to which, in general, low tones are lost. This drawback has been eliminated already by arranging a kind of screen between the fore- and the rear-side of the diaphragm. This screen may be differently shaped. According to the invention a very good tone production is ensured by giving it the shape of a bowl or dish. When using the screen, it is necessary that the yielding substance should entirely shut the annular aperture between the diaphragm and the screen; when such is not the case, there is a direct free path between the fore- and rear-side of the diaphragm and the screen loses its special action.

In a construction according to the invention, the diaphragm is given the shape of a cone the apex of which extends into the concave portion of the dish-shaped screen. According to the invention, in order to ensure a good tone production during the vibration of the diaphragm, there are arranged in the concave portion of the screen one or more dish-shaped bodies which together with the screen form acoustic chambers. The term "acoustic chambers" must be understood to mean spaces so shaped that the sound waves produced therein have the opportunity to propagate as favourably as possible in a determined direction so that in that direction they are most distinctly heard. Known examples of such chambers are the shapes of a funnel and a horn.

An embodiment of the invention is illustrated in the accompanying drawings, in which

Figure 1 is an elevation of a loudspeaker according to the invention, and

Figure 2 is a section taken on the line II-II in Figure 1.

In the drawing, a cone-shaped diaphragm 1 is secured to a dish-shaped body 3 by means of a yielding substance 2 for example leather, rubber, or a similar material, the diaphragm being built up of a non-magnetic material, for example, of paper or cardboard. The diaphragm is set in vibration by a style 4 which is moved by a magnet not shown in the drawing. Owing to the conical shape of the diaphragm 1 the sound waves propagate sideways. In order to ensure a satisfactory tone production, dish-shaped bodies 5, 6, and 7 are arranged in the concave portion of the body 3 so as to form with each other acoustic chambers. These bodies are secured by means of intermediate members 8, 9, and 10 to the body 3 which is supported by a foot 11 and which is preferably given a sloping position.

## WHAT I CLAIM IS:

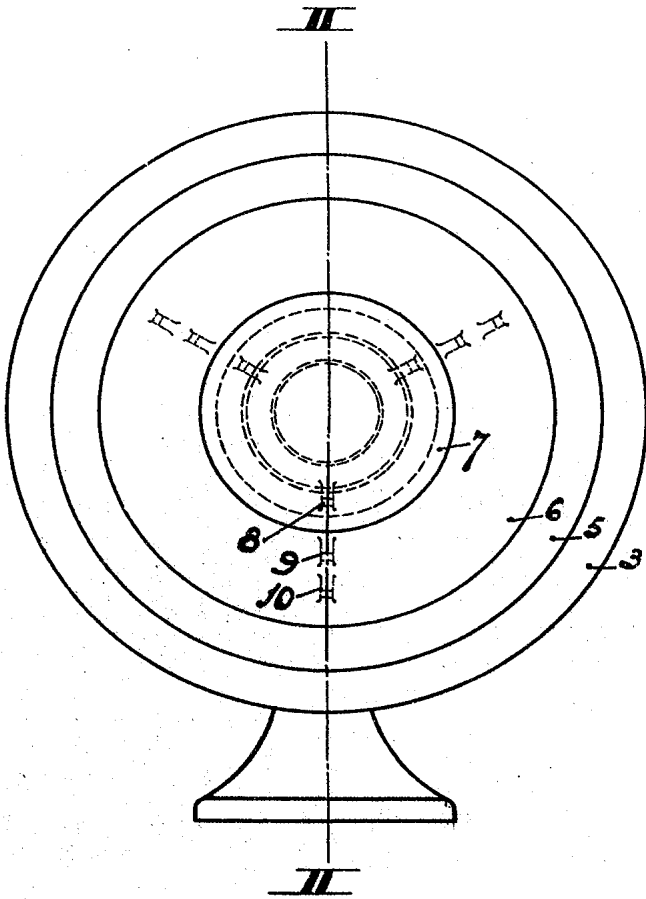
1. A loudspeaker comprising a conical diaphragm and a plurality of acoustic chambers, said diaphragm being positioned to extend into said chambers.

2. A loudspeaker comprising a conical diaphragm, a plurality of spaced dish-shaped members arranged about the axis of the cone of the diaphragm and to one side thereof, the spaces between the said dish-shaped members serving as acoustic chambers, and a reflector placed within the concave portion of the outermost dish-shaped member.

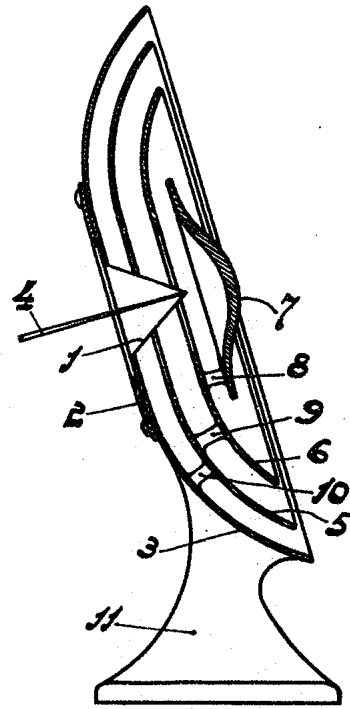
3. A loudspeaker comprising a conical non-magnetic diaphragm, a plurality of concave members arranged about the axis of the cone of the diaphragm, said members being apertured and said cone extending through the apertures, said members being spaced from said other to provide air pockets which serve as acoustic chambers, and a reflector placed within the outermost concave member and over the aperture of said outermost concave member.

4. A loudspeaker comprising a diaphragm, and a plurality of dish-shaped members spaced from one another and fastened to one another, said members being positioned at one side of said diaphragm.

5. A loudspeaker comprising a diaphragm, and a plurality of acoustic chambers, said diaphragm extending into each chamber.



**Fig. 1.**



**Fig. 2.**

Certified to be the drawing referred to in the specification hereunto annexed.

*New York, N.Y.*  
*Oct. 21, 1926*

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