July 2, 1940. E. STEFFENS 2,206,517

ELECTROACOUSTIC APPARATUS

Filed Dec. 29, 1938

Fig. 1

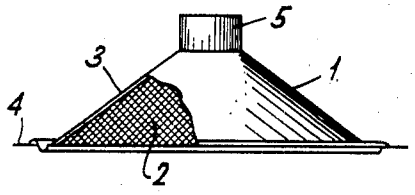


Fig. 2

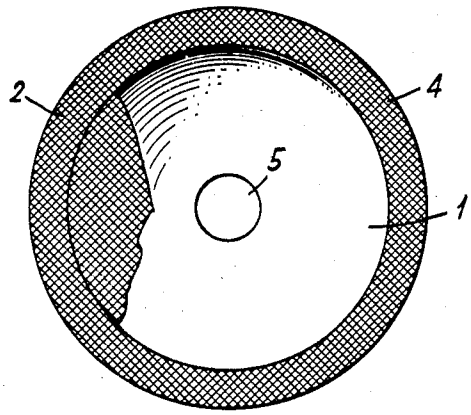
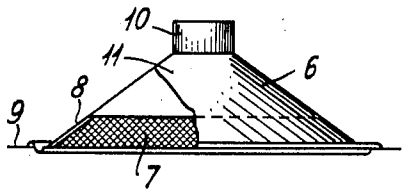


Fig. 3



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ELECTROACOUSTIC APPARATUS

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3 Claims. (Cl. 181—32)

Complicated and expensive molds are required for the production of diaphragms made by a casting, pouring or immersion process from fibrous materials and used in electroacoustic apparatus. The production and manufacture of diaphragms of this kind are further made more complicated by the necessity of providing an elastic rim. This necessitates depositing the fibrous pulp around the outer periphery of the diaphragm just short of the surface or area forming the elastic rim. On the other hand, however, the mounting of such rim can not be dispensed with if undistorted operation of the diaphragm is to be insured.

Now, the present invention discloses another method of building diaphragms for electroacoustic apparatus or transducers, such as loudspeakers and the like, made from fibrous pulp material by immersion or casting. The same consists in using as the base or support for the fibrous material (such as a cellulosic pulp) a fabric base or support. Upon this base or support a marginal portion is left uncovered, the same serving as the elastic supporting rim of the diaphragm, and which, as known in the art, may be corrugated or fluted. The peripheral portion of the fabric support need only be covered during the process of casting or immersion so that no fibrous material will be deposted thereon. The support or base consists of a gauze network or a similarly constructed fine-mesh material and is provided only for the marginal zone of the diaphragm.

In making the diaphragm it is sufficient to stretch out the fabric in the form or mold of the diaphragm, and to apply the fibrous or pulpous material by immersion or by pouring or casting. For example, in making cone-shaped diaphragms a conical porous mold could be used as a support for the stretched fabric, with the fabric being stretched out over the mold. In this case reduced atmospheric pressure could be produced below the mold so that the fibrous pulp contained in a receptacle is given a chance to spread over the surface of the fabric as known in the prior art.

In order to understand the invention more clearly several exemplified embodiments thereof and their underlying idea are illustrated in Figs. 1 to 3 of the accompanying drawing, Fig. 1 disclosing a cone diaphragm of the kind adapted to dynamic loudspeaker systems, shown in elevation and partly in section, while Fig. 2 is a top view thereof, and Fig. 3 is a second modification shown in elevation and partly in section.

Referring now to Fig. 1 diaphragm 1 consists on the inside of a fabric 2 according to the invention, said fabric serving as a support or base for the layer of fibrous material 3 being applied upon the outside. The sectional view shows with particular clearness that the fibrous deposit does not extend to include the corrugated edge 4 of the diaphragm; hence, the diaphragm edge consists only of the fabric so that it provides an extremely elastic tensioning means for the diaphragm. The diaphragm as to the rest comprises a cylindrical extension 5 for mounting the oscillation or signal-current coil customarily used in electrodynamic loudspeakers.

The diaphragm shown in the modified embodiment of Fig. 3 is designated by 6. In this instance the diaphragm has only a fabric support 7 extending along its rim or edge portion 8. While the part of the fabric strip 7 located inside the cone-shaped part 6 of the diaphragm is covered with fibrous material, the corrugated edge 9 is again exposed or uncovered, thereby providing the sole means for the elastic securing of the diaphragm. The portion 11 of the diaphragm which is adjacent the signal-current coil form 10 consists in this case of fibrous material.

What I claim is:

1. As an article of manufacture, a diaphragm for an electroacoustic device comprising a conically-shaped fabric support of reticulated fine-meshed material and a layer of fibrous material cast upon the fabric support and reinforced thereby.

2. As an article of manufacture, a diaphragm for an electroacoustic device composed of fibrous material reinforced with a reticulated fine-meshed fabric material, the peripheral edge portion of said diaphragm being composed solely of the reticulated fine-meshed fabric material.

3. As an article of manufacture, a diaphragm for an electroacoustic device having a cone portion and a peripheral edge portion, the cone portion being composed of fibrous material reinforced with a reticulated fine-meshed fabric material, and the peripheral edge portion being composed solely of the reticulated fine-meshed fabric material.

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