

[54] **VIBRATING MEMBER FOR ACOUSTIC TRANSDUCER**

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[30] **Foreign Application Priority Data**

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[51] **Int. Cl.**..... **H04r 7/02**

[58] **Field of Search**..... 179/181 R, 181 F, 115.5 R, 179/115; 181/31 R, 32 R; 29/594

[56] **References Cited**

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[57] **ABSTRACT**

A vibrating member for an acoustic transducer made of a transparent or translucent thin film and bearing a marking thereon, by which possible overlap of two or more vibrating members can be readily determined visually, and a method for producing the vibrating member comprising a marking step, a heating step and a punching step.

8 Claims, 4 Drawing Figures

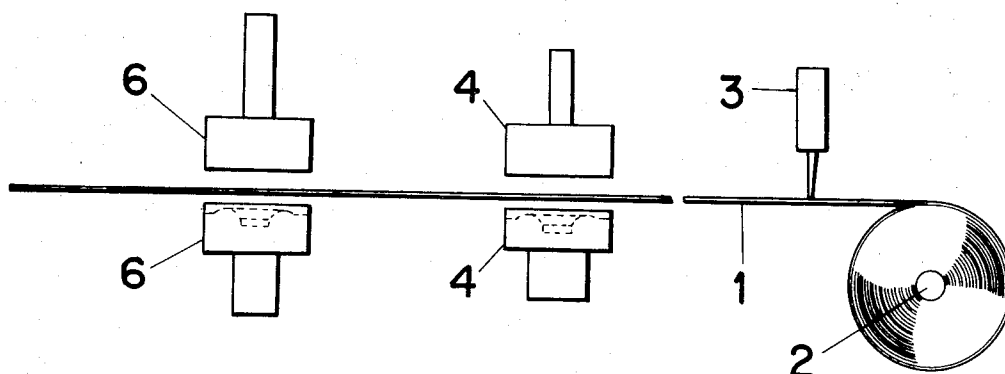


FIG. 1

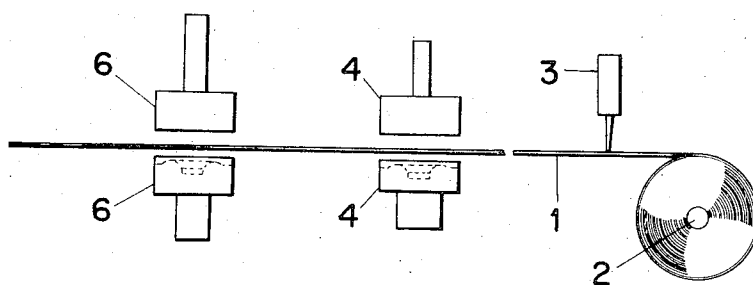


FIG. 2

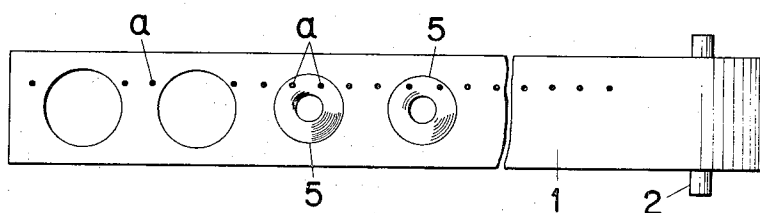


FIG. 3

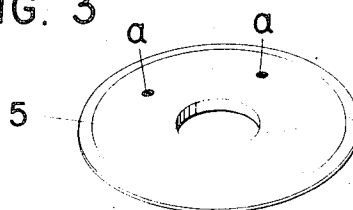
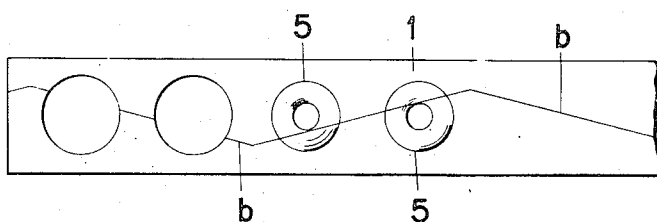


FIG. 4



VIBRATING MEMBER FOR ACOUSTIC TRANSDUCER

The present invention generally relates to a vibrating member and, more particularly, to a transparent or translucent vibrating member for use in such an electroacoustic transducer as a small-sized speaker or a microphone and a method for producing a vibrating member of this character.

It has heretofore been proposed and put into practice to form a vibrating member to be incorporated in a small-sized speaker of a head-phone or another electroacoustic transducer from a plastic film having as thin a thickness as 15 to 70 microns. A drawback is, however, encountered in this prior art practice in that, due to the thinness of the vibrating member, it is difficult to discover the existence of an overlap or overlying of two or more vibrating members either tactually or visually during the forming and assembling of the vibrating members. Another drawback is observed in that, since the vibrating members are formed of plastic, they are quite likely to bear a static electric charge thereon and accordingly they tend to stick to each other. Thus, extra time and labor are expended in finding out the existence of an overlap of vibrating members with a resultant reduction in the overall operational efficiency.

It is, accordingly, an object of the present invention to provide an improved vibrating member for facilitating and ensuring visual confirmation of an overlap of two or more vibrating members to be incorporated in electro-acoustic transducers.

It is another object of the present invention to provide an improved vibrating member for preventing production of an electroacoustic transducer incorporating more than a required number of vibrating members.

It is a further object of the present invention to provide a method for producing a vibrating member which is capable of being readily and visually distinguished when overlapped with other vibrating members.

In order to achieve these objects, the present invention provides a vibrating member for use in an electroacoustic transducer, consisting essentially of a transparent or translucent thin film and a marking borne thereon to facilitate a visual confirmation of an overlap with other vibrating members.

These and other objects and advantages of the present invention will become more readily apparent from the following detailed description and accompanying drawings in which:

FIG. 1 is a schematic view illustrating a preferred example of the manner of producing the vibrating member according to the present invention;

FIG. 2 is a fragmentary plan view of the thin film undergoing processing in the manner shown in FIG. 1;

FIG. 3 is a perspective view illustrating a preferred example of the vibrating member of the invention; and

FIG. 4 is a fragmentary plan view of the thin film undergoing processing in a manner similar to that shown in FIG. 1.

Referring now to the accompanying drawings showing preferred embodiments of the present invention, there is designated by reference numeral 1 a transparent or translucent film of plastic having a considerable thinness and which is shown to be rolled on a shaft 2. Means for providing markings on the plastic film 1 or a printer 3 is disposed to provide a suitable marking

which may be in the form of dots (a) as shown in FIG. 2 or a continuous wave-like line (b) as indicated in FIG. 4. The printer 3 is followed by heating means 4 which is adapted to heat the film 1 for thereby consecutively configuring vibrating members 5 one of which is indicated in FIG. 3 by way of example. There is further designated at 6 punching means or a press which is operable to punch the film.

In operation of the above-described arrangement, the plastic thin film 1 is first fed from the shaft 2 to the printer 3 which then provides the film 1 with the marking of dots (a) or continuous wave-like line (b). The film 1 thus bearing markings thereon is then subjected to a heating process by means of the heating means 4 and, thus, formed with shapings of vibrating members 5 of a desired configuration. The press 6 disposed to follow the heating means then punches the film for thereby separating the shapings of the vibrating members away from the film.

While, in the illustrated embodiments, the dots (a) are shown and described as being in similar positional relationships to one another, they may be provided in irregular fashion with respect to one another. In this instance, the dots (a) on a given vibrating member do not coincide in their positions with those on other vibrating members, so that the markings will not align with one another.

It should be noted that the continuous line (b) shown in FIG. 4 is provided in the form of a wave-like line because the marking will be borne on the vibrating members in a more effective manner due to the different lengths and positions of lines on the respective vibrating members.

It will now be clearly appreciated from the foregoing description that the vibrating member and the method for producing the vibrating member according to the present invention are advantageous in that the vibrating member has its markings thereon positioned so as to not align or coincide with those on other vibrating members and, thus, an overlap of two or more vibrating members can be readily found out visually with an efficiency superior to that of the tactual confirmation conventionally practiced. As a result, not only the operational efficiency in the manufacture of speakers, microphones or other electroacoustic transducers can be enhanced to a maximum extent but a production of electroacoustic transducers of inferior quality can be satisfactorily prevented.

While, in the illustrated embodiments, the marking is provided on the film prior to the forming of the vibrating member, the vibrating member may have the marking provided thereon after the forming step. In either case, the vibrating member is capable of improving the efficiency of assembling of, for example, the microphone although it is required to discriminate an overlap of the vibrating members where the marking step is preceded by the forming step of the vibrating member.

While particular embodiments of the present invention have been shown and described, it will be obvious to those skilled in the art that changes and modifications may be made without departing from the present invention in its broader aspects.

What is claimed is:

1. A vibrating member for use in an electroacoustic transducer, comprising a transparent or translucent thin film and a marking borne thereon to facilitate a vi-

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sual confirmation of an overlap with other vibrating members.

2. A vibrating member as set forth in claim 1, in which the marking is provided on the film in the form of dots.

3. A vibrating member as set forth in claim 1, in which the marking is provided on the film in the form of a continued wave-like line.

4. A vibrating member as set forth in claim 1, in which the marking is provided on the film in the form of a line.

5. A vibratable member for use in an electroacoustic transducer, consisting of a one-piece, annular, trans-

parent or translucent, thin plastic film of uniform thickness and having a visible marking printed on the surface of the film to facilitate a visual confirmation of an overlap of the film with other similar films.

6. A vibratable member as set forth in claim 5, in which said film has a thickness of 15 to 70 microns.

7. A vibratable member as set forth in claim 6, in which said marking is a series of spaced-apart dots on one surface of the film.

8. A vibratable member as set forth in claim 6, in which said marking is a continuous line extending across the film on one surface thereof.

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