

[54] BACKPLATE FOR ELECTRET LOUDSPEAKER

[72] Inventors: Masahiko Tamura; Kiyonori Iwama, both of Tokorozawa; Mitsuo Asahina; Kensuke Okuda, both of Tokyo, all of Japan

[73] Assignee: Pioneer Electronic Corporation, Ohtaku, Tokyo, Japan

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Primary Examiner—Kathleen H. Claffy
Assistant Examiner—Thomas L. Kundret
Attorney—Sughrue, Rothwell, Mion, Zinn and Macpeak

[57] ABSTRACT

An electrostatic electroacoustic transducer comprising a vibrating film, an electret having many small holes and a fixed electrode adhered closely thereto. The fixed electrode is made of an electroconductive fiber.

6 Claims, 2 Drawing Figures

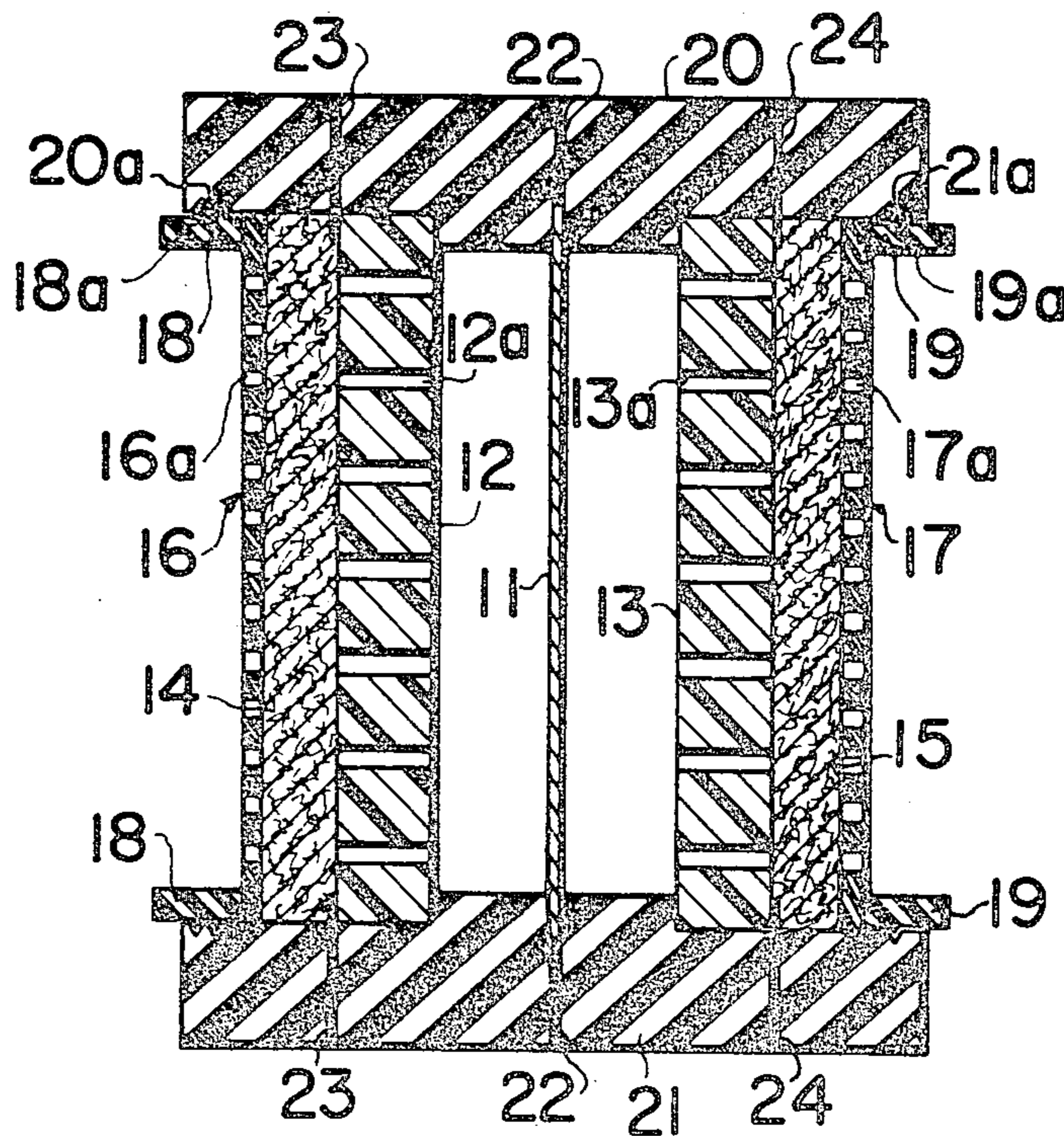


FIG. 1 PRIOR ART

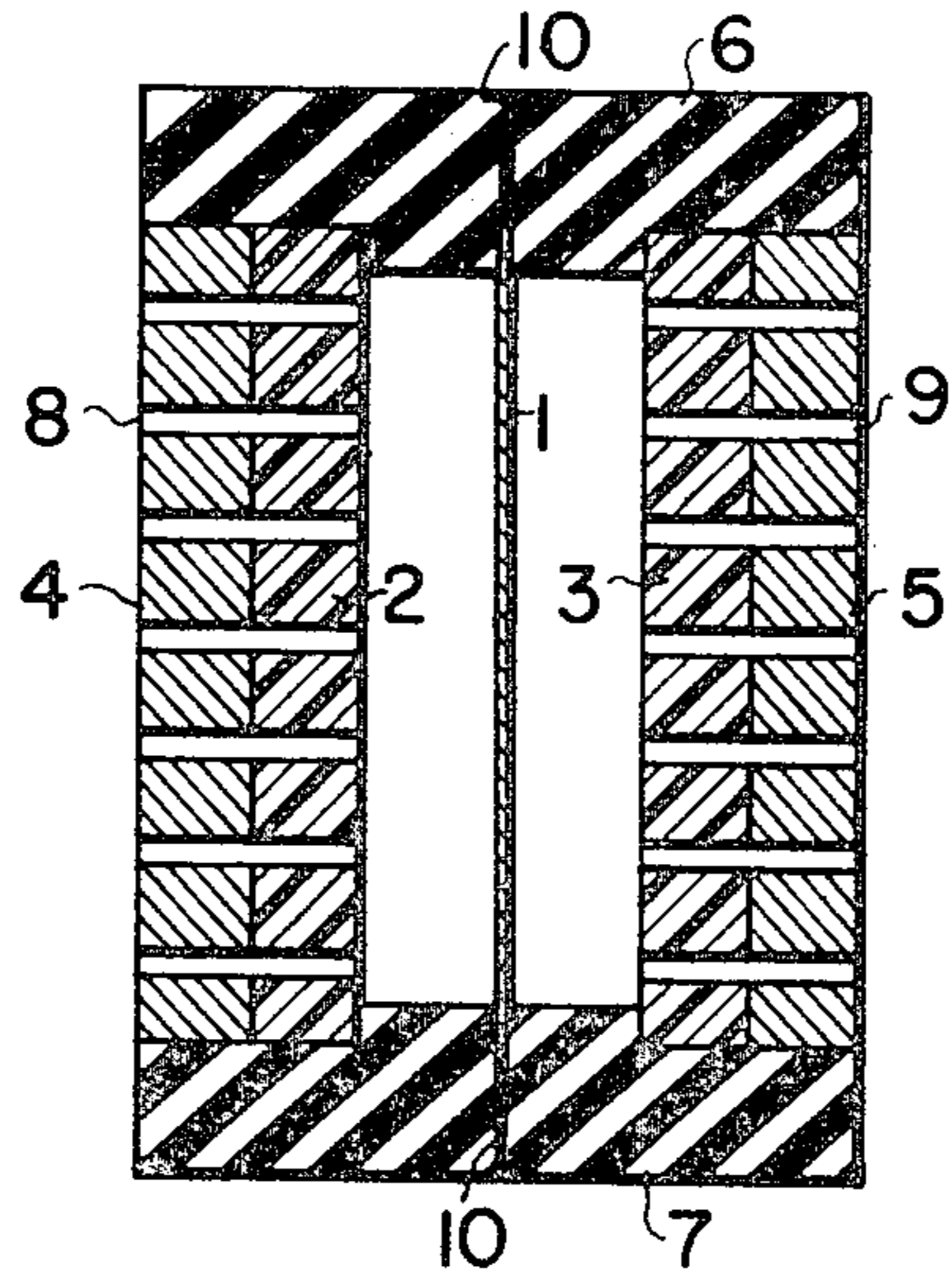
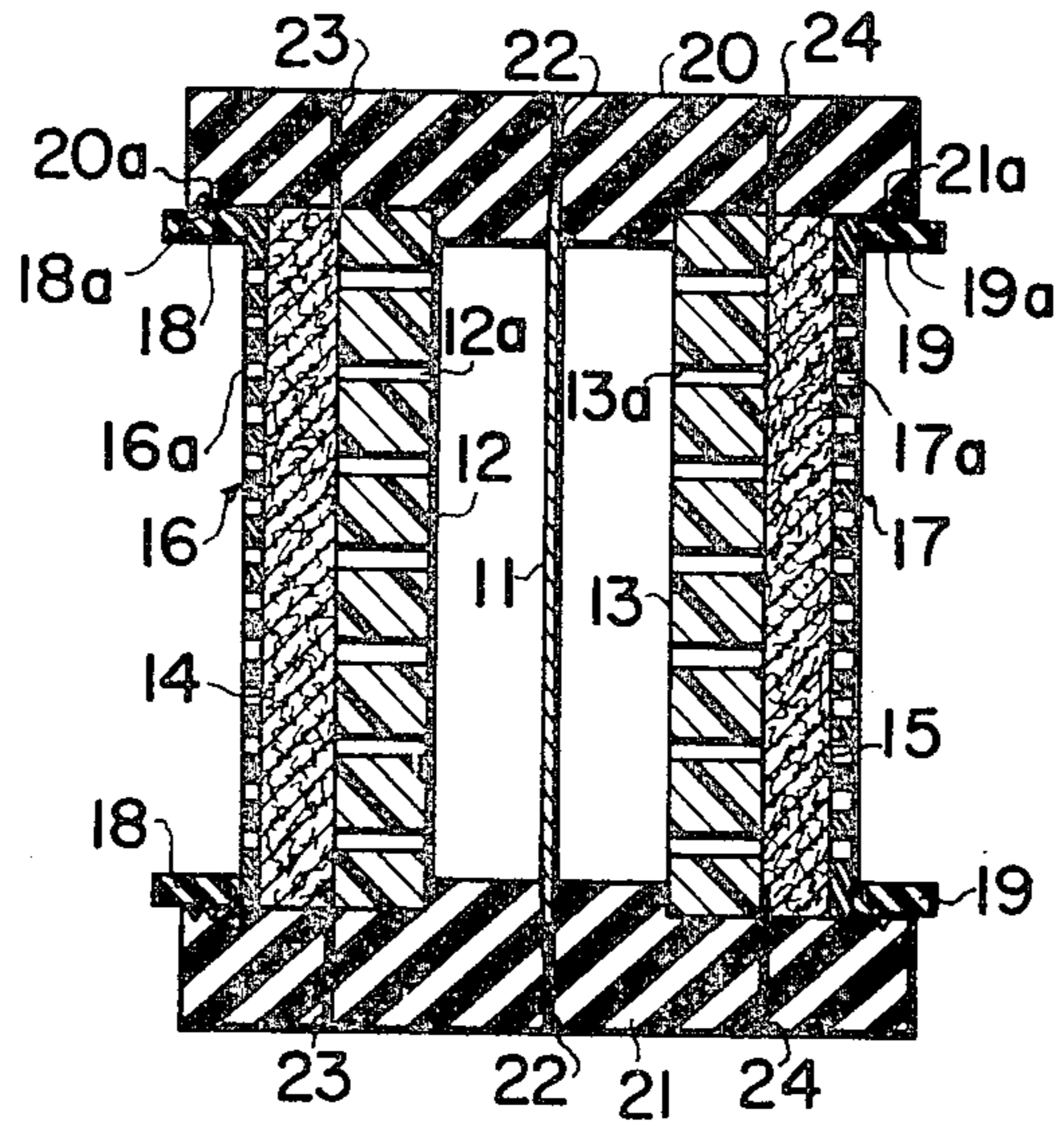


FIG. 2



BACKPLATE FOR ELECTRET LOUDSPEAKER

BACKGROUND OF THE INVENTION

1. Field of the Invention

This invention relates to an electrostatic electroacoustic transducer, and more particularly to an improvement of an electrostatic electroacoustic transducer using an electret and electroconductive fiber.

2. Description of the Prior Art

In prior art electrostatic electroacoustic transducers using electrets, such as a push-pull speaker, a vibrating film is located between two charged electrets. The electrets are affixed to fixed electrodes and the device is held together by holding members. When an alternating signal is applied to the fixed electrodes, the film is vibrated and a sound is generated.

There are many disadvantages in prior art devices of this type. First, it is difficult to uniformly adhere the electrets to the fixed electrodes. Second, the position of the holes of the electrets and that of the fixed electrode must coincide with each other. It therefore requires great skill to adhere the electrets to the fixed electrodes. Third, because of the difficulty of construction in adding an acoustical adjusting function, it is almost impossible to select an acoustical characteristic. Fourth, if the device is not dustproof, the charging characteristics of the electrets will deteriorate.

SUMMARY OF THE INVENTION

It is therefore the main object of this invention to provide a novel and improved electrostatic electroacoustic transducer in which the above-mentioned defects are solved.

BRIEF DESCRIPTION OF THE DRAWINGS

FIG. 1 is a sectional plane view of a prior art electrostatic electroacoustic transducer using an electret.

FIG. 2 is a sectional plane view of the structure of an electrostatic electroacoustic transducer of the preferred embodiment of the present invention.

In prior art electrostatic electroacoustic transducers using an electret, for example a push-pull speaker, are constructed as shown in FIG. 1. A vibrating film 1 is located between charged electrets 2 and 3. Fixed electrodes 4 and 5 which are made of electroconductive materials are adhered closely to electrets 2 and 3 respectively. They are firmly held in place by holding members 6 and 7. When an alternating signal is applied between the fixed electrode 4 or 5 and an electrode 10, the vibrating film 1 is vibrated whereby the sound generated is radiated through holes 8 and 9.

DESCRIPTION OF THE PREFERRED EMBODIMENT

The present invention will be explained in detail referring to FIG. 2 wherein the preferred embodiment of the present invention is shown. Numeral 11 designates a vibrating film, the surface of which is electroconductive. 12 and 13 show electrets having many holes 12a and 13a for the acoustic radiation. 14 and 15 show electroconductive fibers. The electroconductive fiber may be, for example, a carbon fiber, a graphite fiber, a metal fiber, or a nonelectroconductive fiber such as a glass fiber which is coated with metal or carbon so as to make it electroconductive. Further, these fibers can be used singly or can be mixed with other nonelectroconductive fibers. Usually, these fibers are used as cloth being composed of single or mixed fibers in a sheet, net or felt, which is hereinafter

referred to as "a fiber." 16 and 17 are insulated pressing boards having many holes 16a and 17a for the acoustic radiation. 18 and 19 are rings having screw portions 18a and 19a, whereby the fibers 14 and 15 are pressed toward the electrets 12 and 13 through the pressing boards 16 and 17. Holding members 20 and 21 are made of insulated materials and hold above-mentioned components in place and have screw portions 20a and 21a whereby rings 18 and 19 are secured. An electrode 22 applies a signal into the vibrating film 11, electrode 23 applies a signal into the fiber 14, and electrode 24 applies a signal into the fiber 15.

The present invention has many improvements over prior art devices. First, the electrets 12 and 13 can be manufactured with many holes, having no relation to the fibers 14 and 15 which are the fixed electrodes. Second, since the fibers 14 and 15 are between the electrets 12 and 13 and the pressing boards 16 and 17, it is not necessary to make the hole 12a precisely coincide with hole 16a and the hole 13a with hole 17a. Therefore problems in making both holes precisely coincide are solved and the level of efficiency of mass production is raised. Third, as the fixed electrode (the fibers 14 and 15) is fibroid, the electrode can be pressed with the electret 12 or 13 equally on its whole surface. Fourth, the acoustic characteristics can be selected by changing the elasticity or thickness or length of the fibers 14 and 15, or by adjusting the pressure of the pressing board 16 or 17 with the ring 18 or 19. If it is unnecessary to adjust the pressure of the pressing board 16 and 17, rings 18 or 19 may be omitted and the pressing board 16 or 17 may be fixed to the holding member 20 or 21. In such case, the level of efficiency of mass production is further increased. Fifth, it is not necessary to provide a dustproof layer since the electrets 12 and 13 are kept free of dust by fibers 14 and 15. Therefore, the charge on the electrets lasts for many years.

What is claimed is:

1. An electrostatic electroacoustic transducer comprising a vibrating film, an electret having one side juxtapositioned to said vibrating film said electret having a plurality of holes therein for passing acoustic radiation, a fixed electrode made of an electroconductive fiber which is adhered to the other side of said electret, and a pressing board pushing said fixed electrode against said electret, said pressing board having a plurality of holes therein for passing acoustic radiation.
2. An electrostatic electroacoustic transducer comprising a vibrating film, two electrets each having one side juxtapositioned to said vibrating film each electret having a plurality of holes therein for passing acoustic radiation, fixed electrodes made of an electroconductive fiber said electrodes adhered to the other side of each of said electrets, and pressing boards pushing said fixed electrodes against said electrets, said pressing boards having a plurality of holes therein for passing acoustic radiation.
3. An electrostatic electroacoustic transducer as set forth in claim 1, wherein said electroconductive fiber is a carbon fiber.
4. An electrostatic electroacoustic transducer as set forth in claim 2, wherein said electroconductive fiber is a carbon fiber.
5. An electrostatic electroacoustic transducer as set forth in claim 1, further comprising a holding member for securing said vibrating film, said electret and said pressing board together.
6. An electrostatic electroacoustic transducer as set forth in claim 2, further comprising a holding member for securing said vibrating film, said two electrets and said two pressing boards together.

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