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(54) **Loudspeaker with specific plastic element for sound emission**

(57) The device according to the invention is constructed as a loudspeaker (1) for reproducing sound spectra in a very professional way, for which in an inventive way a plate-shaped element (2) of EPP (= Ex-

panded Poly Propylene) with a certain density is applied rigidly on a base plate (4) together with a post (5) with the electric coil systems (6, 7), in which in a very economical way a loudspeaker of a high quality level can be made.

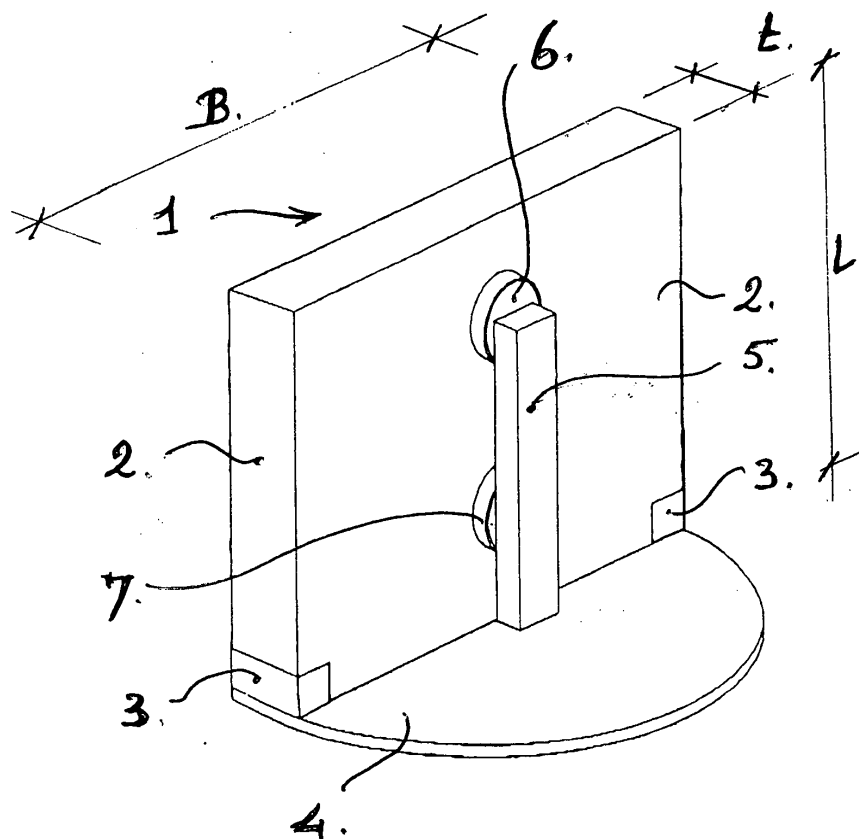


FIG. 1.

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Description

[0001] The present invention relates to a device constructed as a loudspeaker for reproducing a sound spectrum, constructed of one or more octave bands of a sound source.

[0002] The known loudspeakers mostly consist of conical or spherical elements for sound emission, which elements are called diaphragms and which can be adjusted specifically as regards shape and dimensions to certain sound bands. Reproducing a broad sound spectrum therefore requires several loudspeakers with different dimensions and the arrangement thereof is relatively expensive and demands an extensive construction and/or arrangement, which highly affects the looks in the environment, which is not always appreciated.

[0003] It is the aim of the present invention to provide such a device for sound reproduction, which is very simple and can almost invisibly be built-in, for example, in a home environment, in which also the cost can be kept low and in which very surprising embodiments can be given for an interior, such as a portrait or a painting, a ceiling tile, a wall section, which is constructed of a specific plastic and can also be decorated on the viewers side, for example, with adhesive foils with designs, colours, marks and such.

[0004] To achieve the above described aim, a device according to the invention, constructed as a loudspeaker with specific plastic element for sound emission is further developed in a very inventive way, characterized in that with the mentioned sound source a plate-shaped element with a space structure with thickness t is electrically driven, in which the mentioned plate-shaped element is made of a specific material with such a density in units of weight per litre and a suitable elasticity, so that an optimal sound emission takes place from the mentioned plate element.

[0005] The advantage is that in a surprisingly simple way a loudspeaker is created with a high sound quality at very low cost.

[0006] Further the device according to the invention is developed in such a way, that the mentioned specific material is EPP (= Expanded Poly Propylene), which can be made in every spacial plate-shaped element with a thickness t by means of granules.

[0007] The advantages are that the actual loudspeaker can simply be made in each shape and the material can easily be recycled.

[0008] Furthermore the device according to the invention is developed in such a way, that the mentioned density varies from 20 to 120 grams per litre material, in which the real chosen density depends on the reproduction of the sound spectrum.

[0009] The advantage is, that a large amount of elements can be constructed as loudspeaker, which gives a lot of interesting possibilities for the environment.

[0010] The preferred construction of the invention will be described by way of example, and with reference to

the accompanying drawing.

[0011] In which:

Fig. 1 shows a view in oblique projection of a preferred embodiment of the loudspeaker with specific plastic element for sound emission.

[0012] Figure 1 shows the loudspeaker 1 from the back side in oblique projection according to the invention. The loudspeaker 1 consists of a plate-shaped element 2, which can be attached to a base plate 4 by means of raised [-shaped foot rests 3 and putty (not indicated). On the base plate 4 also a vertical post 5 is fixed. On the mentioned post 5 two electric coil systems 6 and 7 are fixed, in which the magnet system is attached to the post 5 and the actual coil is glued in the plate-shaped element 2 by means of a groove construction, so that the plate-shaped element 2 of EPP can oscillate optimally to guarantee a good sound reproduction. The plate-shaped element 2, for example, is constructed of EPP (= Expanded Poly Propylene), which can be made in the required plate-shape with a thickness t by means of granules. It is also possible, that other plastics than EPP can be used and also for the different sound bands the density of the EPP can be varied from 20 to 120 grams per litre.

[0013] Finally it has to be emphasized, that the above description constitutes preferred embodiments of the invention and that also other plastics are possible and also the form and dimensions of the plate-shaped or spacial element can vary, without departing the scope of this patent document.

Claims

1. Device constructed as a loudspeaker for reproducing a sound spectrum, constructed of one or more octave bands of a sound source, **characterized in that**, with the mentioned sound source a plate-shaped element (2) with a space structure with thickness t is electrically driven, in which the mentioned plate-shaped element (2) is made of a specific material with such a density in units of weight per litre and a suitable elasticity, so that an optimal sound emission takes place from the mentioned plate element (2).
2. Device as claimed in claim 1, **characterized in that**, the mentioned specific material is EPP (= Expanded Poly Propylene), which can be made in every spacial plate-shaped element with a thickness t by means of granules.
3. Device as claimed in claims 1-2, **characterized in that**, the mentioned plate-shaped element (2) can be driven by one or more electric coil systems (6, 7) or brought into oscillation, in which the magnetic

system is attached to a post (5) and the electric coil system is glued to the mentioned plate-shaped element (2).

4. Device as claimed in claims 1-2, **characterized in that**, the mentioned plate-shaped element (2) is of EPP with a thickness t varying from 10 to 50 mm and can have a surface in which the dimensions L and B can vary from 50 to 1500 mm. 5
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5. Device as claimed in claims 1-2, **characterized in that**, the surface of the plate-shaped element (2) can be a circle with a radius R laying between 25 and 750 mm at the usual thickness t . 15
6. Device as claimed in claims 1-2, **characterized in that**, the surface of the plate-shaped element (2) can be an ellipse with axis $L1$ and $L2$ laying between 50 and 1500 mm at the usual thickness t . 20
7. Device as claimed in claims 1-2, **characterized in that**, the mentioned plate-shaped element (2) can have a spacial structure, in which it is rigidly attached to a base plate (4), for example with an adhesive, in which the material of the base plate (4) and post (5) can be aluminium. 25
8. Device as claimed in claim 7, **characterized in that**, the mentioned plate-shaped element (2) has a different shape than a flat plate of EPP, such as, for example, a sphere, a statue, a conical shape, a painting, shape of a ceiling tile, sections of a wall, furniture or cars, and such. 30
9. Device as claimed in claim 1, **characterized in that**, the mentioned density varies from 20 to 120 grams per litre material, in which the real chosen density depends on the reproduction of the sound spectrum. 35
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10. Device as claimed in aforementioned claims, **characterized in that**, the mentioned plate-shaped element (2), base plate (4), post (5) can be made of the same specific material, such as EPP, in which, if necessary, the density can be varied. 45

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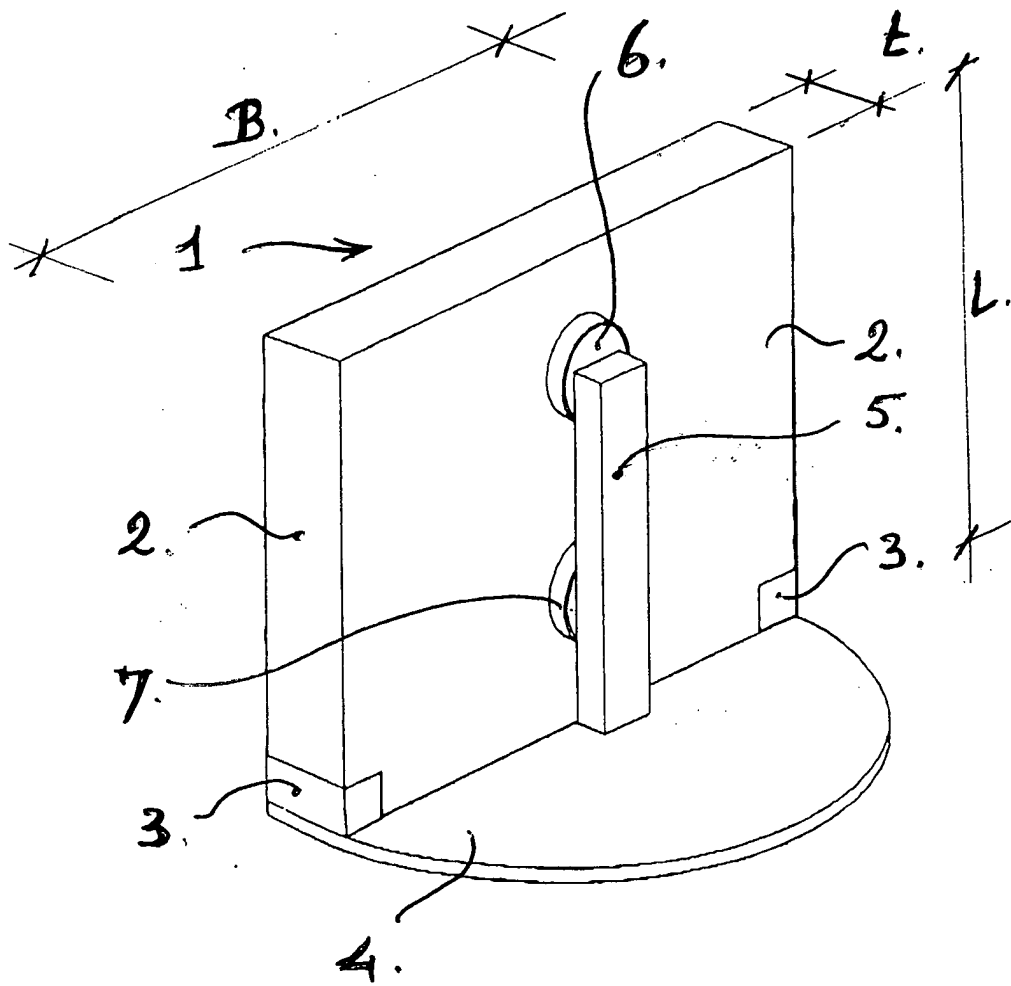


FIG. 1.



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Application Number
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Place of search Munich		Date of completion of the search 16 July 2004	Examiner Peirs, K
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