Sept. 19, 1967 R. G. EBERHARDT 3,342,498

PORTABLE PHONOGRAPH

Filed May 13, 1965

FIG. 1.

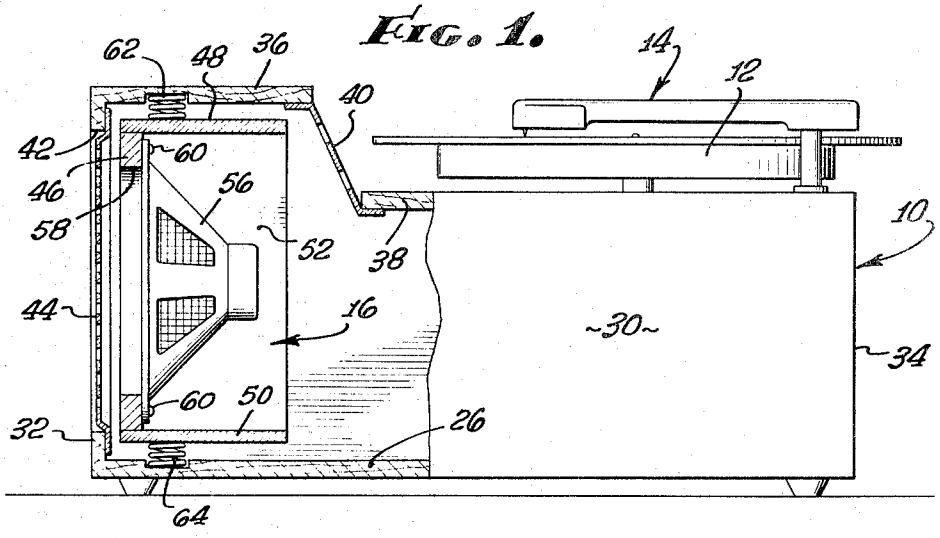
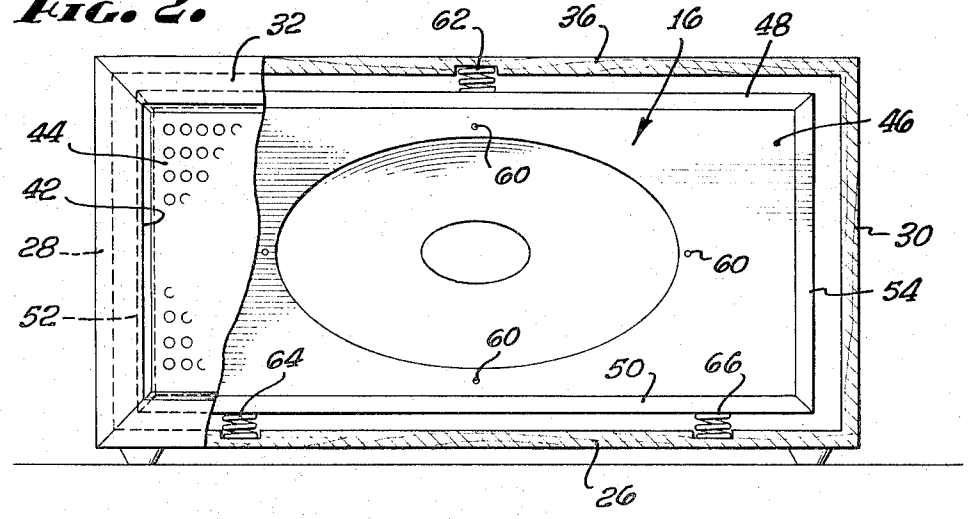


FIG. 2.



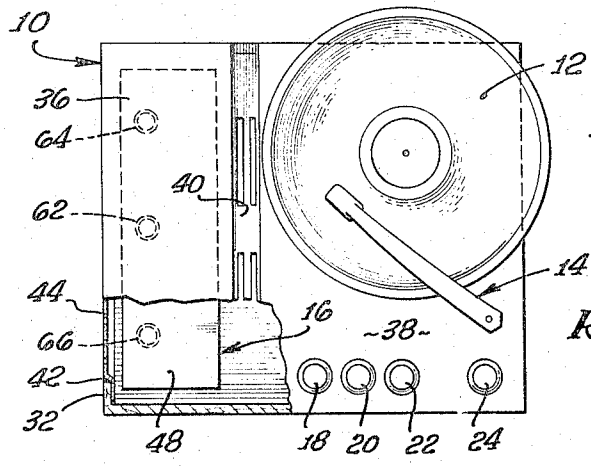


FIG. 3.

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PORTABLE PHONOGRAPH

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ABSTRACT OF THE DISCLOSURE

The speaker assembly **16** is mounted in the case of a phonograph **10** by suspension springs **62, 64, 66** and in such manner that the walls **48, 50, 52, 54** form, with the case of the phonograph **10**, a restricted air path between the front and back of the speaker **56**, thereby achieving acoustic isolation with respect to the turntable **12** and tone arm **14** while maintaining a high level of bass response.

Brief summary of invention

This invention relates to a portable phonograph, and particularly to a mounting for a speaker forming a part of the phonograph.

In order to avoid acoustic feedback from the speaker to the tone arm and turntable through the phonograph case, it has been suggested that acoustic damping means be interposed between the speaker and the turntable. The most convenient embodiment takes the form of a resilient suspension of the front panel upon which the speaker is mounted.

While this arrangement accomplishes the result of acoustic isolation, the low frequency response of the panel-mounted speaker is quite adversely affected. Yet this has been tolerated for a substantial period of time.

Accordingly, the primary object of this invention is to provide a phonograph of this character that achieves acoustic isolation while yet achieving exceptional bass response. This is made possible by providing side walls on the speaker panel that extend rearwardly in exterior encompassing relationship to the speaker cone. The open box thus formed is resiliently suspended in the phonograph case. The side walls extend with clearance along the walls of the phonograph case, thus maintaining the acoustic isolation of the speaker while providing a baffle between the opposite sides of the speaker cone. This baffle materially enhances the bass response.

This invention possesses many other advantages, and has other objects which may be made more clearly apparent from a consideration of one embodiment of the invention. For this purpose, there is shown a form in the drawings accompanying and forming a part of the present specification, and which drawings are true scale. This form will now be described in detail, illustrating the general principles of the invention; but it is to be understood that this detailed description is not to be taken in a limiting sense, since the scope of this invention is best defined by the appended claims.

Brief description of the drawing

FIGURE 1 is a side elevational view of a phonograph incorporating the present invention, a portion of the apparatus being broken away and shown in section;

FIG. 2 is a front elevational view of the phonograph, a portion of the apparatus being broken away and shown in section; and

FIG. 3 is a top plan view of the phonograph, taken on a reduced scale, a portion of the apparatus being broken away and shown in section.

The phonograph **10** shown in the drawings includes a turntable **12**, a pickup assembly **14**, a speaker assembly **16**, and an amplifier (not shown). Control knobs **18, 20, 22**, and **24** (FIG. 3) control the amplifier and the turntable in a conventional manner.

These phonograph components are mounted on a common case. The case comprises a bottom wall **26**, side walls **28** and **30**, a front wall **32**, a rear wall **34**, and parts **36** and **38** of an offset top wall. A perforated bracket **40** joins the top wall parts **36** and **38** in a conventional manner.

The pickup assembly **14** and the turntable, together with its motor (not shown), are mounted in a conventional manner on the rear top wall part **38**.

The speaker assembly **16** is mounted adjacent a port **42** in the front wall **32**, in this instance covered by a grill **44**. The assembly comprises a front rectangular panel **46**; top and bottom walls **48** and **50**; side walls **52** and **54**; and a speaker **56**. The speaker **56** has its flange secured, in a conventional manner, about the opening **58** in the front panel **46**, as by the aid of machine screws **60**. The speaker assembly walls **48, 50, 52** and **54** are joined, respectively, to the four edges of the panel. They are joined to each other, thus forming a box-like structure or skirt opening rearwardly of the speaker **56**.

The dimensions of the speaker assembly are such that the speaker assembly **16** fits with slight clearance in the front of the phonograph case with the front panel **46** immediately behind the phonograph wall **32**.

The speaker assembly is suspended by three coiled springs **62, 64** and **66** (FIG. 2). Two of the springs **64** and **66** are seated in shallow recesses **68** and **70** formed on the inside of the phonograph bottom wall **26**. These recesses are located symmetrically on opposite sides of the axis of the speaker **56**, and engage spaced portions of the lower wall **50** of the speaker assembly at places located generally beneath the center of gravity of the assembly **16**.

The third coil spring **62** is seated in a recess **72** formed on the inside of the phonograph top wall located about the recesses **68** and **70**. This spring **62** engages the top wall **48** of the speaker assembly **48**.

The springs **62, 64** and **66** suspend the speaker assembly **16** with clearance within the phonograph case. By virtue of the spring suspension, the vibrations of the assembly **16** are not transmitted to the phonograph case or, thereby, to the pickup assembly **14** or the turntable **12**. The walls **48, 50, 52** and **54** provide a labyrinthal or extended path between the front and rear of the speaker cone. Hence, the bass response of the speaker is exceptionally good while the acoustic coupling through the phonograph case between the speaker and other phonograph parts is minimized.

For purposes of ease of assembly, the springs **62, 64** and **66** may be affixed to the speaker assembly **16**, as by screws (not shown). The recesses for the springs could of course, instead be formed on the top and bottom walls **48** and **50**, in which case the springs would be secured to the phonograph walls for purposes of assembly.

The inventor claims:

1. In a phonograph having a case, a turntable and a pickup assembly mounted in the case, said case having a speaker opening, and top, bottom and side walls surrounding the speaker opening, the combination therewith of: a speaker assembly including a front panel having a port; a speaker mounted on said panel in registry with said port; wall means forming an open box-like structure surrounding the speaker; said wall means having an opening opposite said panel exposed to the interior of said case; and acoustic damping means suspending the speaker

assembly in the case with the front panel aligned with said speaker opening and said wall means substantially paralleling the top, bottom and side walls of said phonograph case and having small clearance with respect to said case walls to define a restricted air path between the front of said panel and the rear of said panel, the interior cross-sectional area of said case in a plane through said wall means being only slightly greater than the corresponding exterior cross-sectional area of said wall means.

2. The combination as set forth in claim 1 in which said acoustic damping means comprises a plurality of coil springs attached exteriorly of said wall means, said walls of said case having interior recesses fitting and receiving

said springs whereby said speaker assembly is supported within said case entirely by said springs.

References Cited

UNITED STATES PATENTS

1,868,958	7/1932	Wenderoth	274—2
1,908,513	5/1933	Holst	181—31.1
2,022,543	11/1935	Hill	274—2
2,852,087	9/1958	Ruschaupt	181—31.1
3,142,353	7/1964	Todisco	181—31.1

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