Jan. 23, 1945. G. COURCY ET AL 2,368,003

MECHANICAL-ELECTRICAL SOUND REPRODUCER

Filed Aug. 14, 1942

Fig. 1

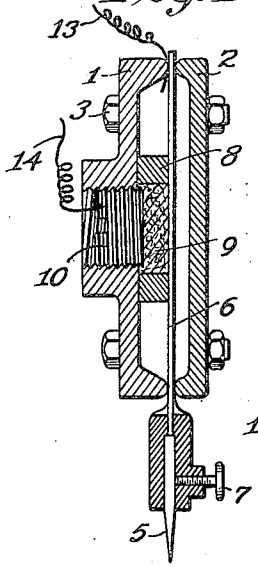


Fig. 2

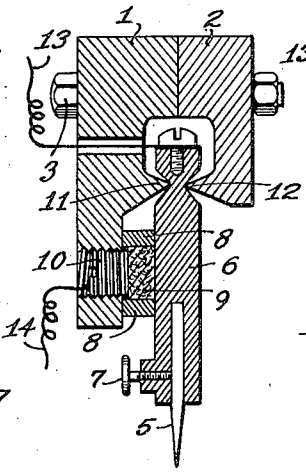


Fig. 3

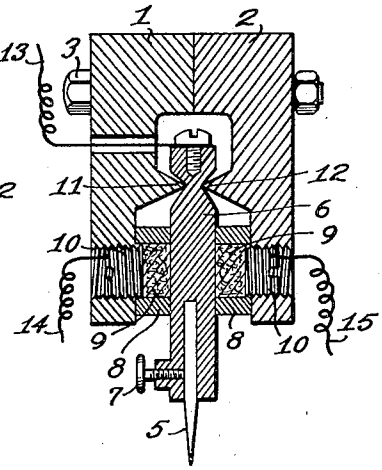


Fig. 4

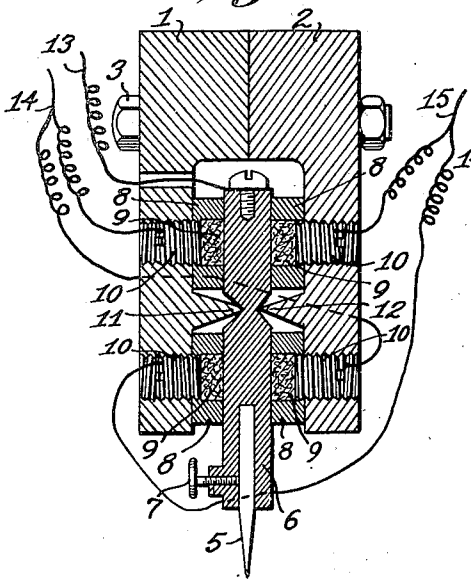
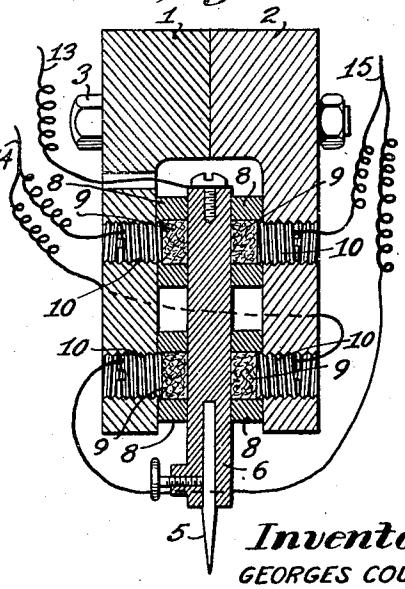


Fig. 5



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MECHANICAL-ELECTRICAL SOUND REPRODUCER

Georges Courcy, Le Pecq, and Marcel Paul Durand, St.-Germain en Laye, France; vested in the Alien Property Custodian

Application August 14, 1942, Serial No. 454,870
In France October 24, 1941

3 Claims. (Cl. 179—100.41)

The invention relates to a mechanical-electrical sound-reproducer for phonographs.

For said machines use is generally made of magnet or crystal sound reproducers (known as "pick-up") the disadvantage of which, as regards weight and fragility, are known, and the sound-giving efficiency of which becomes weaker with use.

Said disadvantages are avoided in the sound reproducer which forms the subject matter of the invention which is essentially characterised by the fact that the vibrations of its needle (or sapphire point) act, through the moving component which supports it, on one or more charges of dust or grains of carbon—or on some other similar conducting substance—each of which is secured within an elastic, supple and insulating housing and subject to a pressure which is separately adjustable for each single one of them, each charge being traversed by an exciting current which is thus modulated by the vibrations of the moving component, which exciting current may be provided by a cell, an accumulator or rectified current while the modulated current may then be transformed so as to be sent to the amplifier.

It is therefore the mechanical vibrations of the needle or of the sapphire point caused by its friction in the grooves registered on the disk or cylinder of the talking machine which are here directly utilized for the purpose of acting on the potential modifier or modifiers which are constituted by the charge or charges of granulated carbon but said charges are immobilized by a pressure which is sufficient to prevent any friction of the grains against one another or against the surfaces with which they are in contact, thus avoiding the parasitic noises which might be set up by such friction.

It will be readily understood that the trepidations of the apparatus as a whole thus have no effect on sound production and that the sound is modulated solely by the vibrations of the moving component.

The attached figure shows non-restrictive examples of forms of embodiment of the invention. Figure 1 is a sectional view of a reproducer the moving component of which is constituted by a diaphragm or blade capable of flexing. Figures 2 to 4 are views of reproducers in which the moving component, which is itself rigid, is articulated about knife-edges: Figure 2 is an embodiment including only one charge of carbon, Figure 3 is an embodiment with two opposed charges, Figure 4 is an embodiment with four opposed and balanced charges. Figure 5 is a variant of Figure 4 in which the moving component is not articulated about knife-edges but merely held by the supple substance in which the carbon charges are embedded.

In said figures the same numerals indicate the same components: 1 and 2 are the two portions of the housing made of an insulating substance assembled by bolts 3; 5 is the needle which is rendered solid with moving component 6 by means of binding screw 7; 8 are sleeves made of flexible substance (such as rubber, gelatin, etc.) interposed between the housing and the moving component and preferably glued to said components to constitute cavities accommodating the charges 9 of granulated carbon or of some other similar conducting substance on each of which the pressure can be adjusted by a cap 10 screwed into the housing.

In the example in Figure 1 the moving component is constituted by a flexible blade or diaphragm squeezed between the two portions of the housing; in Figures 2 to 4 the moving component is solid and articulated about knife-edges 11 and 12 which are integral with the two portions of the housing; in Figure 5 the solid moving component is held by the supple or yielding substance which constitutes sleeves 8, which substance may with advantage be extended to a greater surface in order to increase the holding of the moving component in relation to the housing.

The current to be modulated is led, on the one hand, to the moving component by wire 13 and, on the other hand, by wire 14 to cap 10 which is assumed to be conducting, both said components thus being in contact by means of the carbon charge 9 which forms a resistance. In the case of Figure 3, a third wire 15 connects the second cap 10 to a compensated mounting (push-pull). In the case of Figures 4 and 5, wire 14 leads to two caps 10 diametrically opposed with respect to the centre of oscillation of 6 whereas wire 15 leads to the other two caps 10.

The number of charges subjected to the action of the same moving component is in nowise limited to those of the examples described herein above and it will be readily understood, without it being necessary to represent them, that said arrangements can be multiplied in depth or arranged in a different manner without in any way departing from the characteristics of the invention as set forth in the following claims.

What we claim is:

1. A mechanical electrical sound reproducer for phonographs comprising a casing formed of

two blocks of insulating materials secured together and forming between them two openings with inwardly extending V-shaped projections, between the openings, a stylus holder having opposite recesses into which said projections extend to tiltably support the holder and resistance units variable by changes in pressure carried by said blocks in contact with said stylus holder at points removed from said support.

2. The reproducer as set forth in claim 1 where each block carries two units located at opposite sides of said support in said respective openings.

3. The reproducer as set forth in claim 1 wherein said units each comprises a holding sleeve of yielding material, granular conducting material in said sleeve and a conducting screw in the corresponding block in contact with said material and serving to support said sleeve.

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