

H. D. PENNEY.
 PHONOGRAPH DIAPHRAGM.
 APPLICATION FILED JUNE 28, 1916.

1,236,476.

Patented Aug. 14, 1917.

FIG. 2.

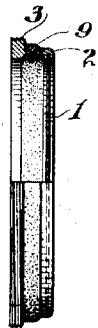


FIG. 1.

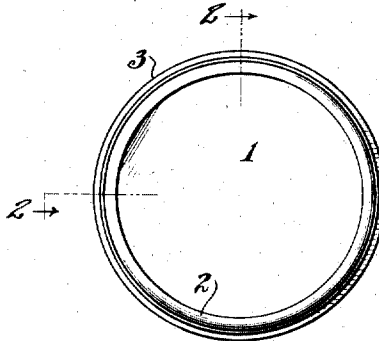


FIG. 4.

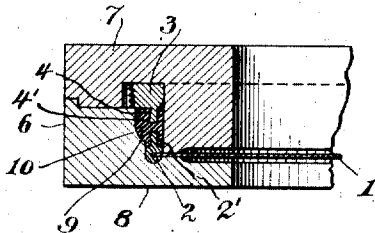
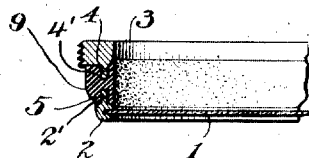


FIG. 3.



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PHONOGRAPH-DIAPHRAGM.

1,236,476.

Specification of Letters Patent.

Patented Aug. 14, 1917.

Application filed June 28, 1916. Serial No. 106,303.

To all whom it may concern:

Be it known that I, HAROLD D. PENNEY, a citizen of the United States, residing in Pelham, in the county of Westchester and State of New York, have invented certain new and useful Improvements in Phonograph-Diaphragms, of which the following is a specification.

My present invention relates to an improvement in mountings for diaphragms for talking machines and other diaphragm uses, and contemplates the use of a non-tensioning mounting for a diaphragm plate wherein the same is held in floating cooperation with its relative cooperating parts.

The main object of my invention contemplates the use of a diaphragm disk, or plate, having mounted thereon a beaded or annular connecting means, preferably, of a non-vibrating, non-yielding material and a housing mounting therefor, and the introduction therebetween of a resilient or yielding material whereby the diaphragm may be firmly anchored to its housing without metallic contact therewith, and at the same time be permitted maximum vibration.

In the drawings accompanying herewith, Figure 1 is a front elevation of my device.

Fig. 2 is a quarter sectional view taken on the lines 2-2, of Fig. 2.

Fig. 3 is an enlarged fragmental sectional view.

Fig. 4 is a sectional view of one means of mounting said diaphragm for use.

My present device has for its accomplishment the same purpose as is set forth in my copending application, Serial No. 106,304, filed June 28, 1916, wherein there is also shown the use of a resilient or yielding means between the diaphragm disk and its mounting frame or anchorage, whereby the said diaphragm is held in such floating connection as will permit of greater amplitude or movement of said diaphragm, as a whole, when in use, and as applied to phonographs, affecting a greater volume of air through such movement, and thereby increasing the tone volume, and at the same time softening the metallic tones that would occur by the use of a diaphragm supported at its peripheral edge by a rigid metallic support.

In the present modification, as indicated in the figures, I provide a diaphragm-plate, or disk 1, with a rigidly mounted beaded edge or peripheral bead-ring 2, of substan-

tially "key hole" form in cross section, having the annular securing flange 5 formed integral therewith, and extending at a right-angle, or substantially a right angle, to the inner annular peripheral diaphragm receiving-slit of the bead-ring 2; although bead-rings of other form of section may be used. In forming this bead-ring, I prefer to form the same of some material, which, while comparatively solid, is of an extrudable or plastic nature, such as lead or any of its alloys, or of other known non-resilient-like, substantially solid substance. Such bead-ring is constructed in such a manner as to have a slit in the inner peripheral wall, to receive and firmly encompass the peripheral edge, and may be firmly swaged into position thereon by the use of suitable dies; but I have not thought it essential to show or describe such operation herein.

The anchorage-ring or frame 3, by which the disk is held in position in the sound-box, may be of the customary annular form shown, or may be an integral member of the sound-box or reproducer. The frame 3 is usually provided with an annular securing-ring or flange 4, usually and preferably of the same thickness and length, and of the same diameter as is the securing-flange of the bead-ring 5, so that when the ring or frame 3 is opposite to 5, the flanges 2' and 4' will be opposed and in registry.

As in my copending application, a mold, denoted by 6, is provided, formed of two halves 7 and 8; the said mold members or halves being provided with a mold cavity 10, for holding the frame-ring 3, and the diaphragm 1, carrying the annular bead-ring 2, in operative relation; and a yielding-annular mid-ring is formed in the mold cavity of space 10, between the mold pieces 7 and 8; as shown in Figs. 3 and 4, either by vulcanization or other suitable method; so as to bind the diaphragm 1 carrying the bead-ring 2, the yielding elastic mid-ring, and the peripheral male-threaded anchorage or frame 3, into one homogeneous structure, and such mid-ring, is usually formed of pure elastic Para rubber; and in the vulcanization of the same in the mold, as shown in Fig. 4, the rubber is firmly cemented to the flanges of metal 2' and 4' respectively, so that it requires considerable force to tear them apart.

When so formed, while not lessening to

any great extent, the vibration of the central portion of the diaphragm disk, the resilient Pará rubber of the mid-ring 10, permits of the vibration of such diaphragm as a whole.

5 That is, it is fixed in place upon a peripheral floating support, and by so mounting the same this leads to the displacement of a larger volume of air in the sound-box chamber, and the consequent creation of a larger
10 volume of tone.

It is obvious that many modifications may be made in the shape in cross section, or otherwise of the frame 3, of the bead-ring 2, or of the yielding securing mid-ring 10,
15 that unifies them in a homogeneous single structure, without departing from the scope of my invention.

I claim:

1. A diaphragm mounting of the class described comprising a rigid frame having a yielding annular body affixed thereto, and a diaphragm having a peripheral member embedded in said yielding body.

2. A diaphragm mounting of the class described, comprising a rigid frame having a yielding annular body affixed thereto, and a diaphragm having a beaded peripheral member embedded in said yielding-body.

3. A diaphragm having a peripheral non-yielding bead attached thereto, which bead is provided with an annular securing-flange extending therefrom at a right angle to the plane of the diaphragm.

4. A diaphragm mounting for phonograph diaphragms, comprising a diaphragm having a non-yielding annular bead, an annular frame therefor of non-yielding material; and a yielding annular body connecting said diaphragm and said frame together.

5. A diaphragm mounting of the class described comprising a rigid frame having a yielding body affixed thereto, and a diaphragm having a member embedded in said yielding body.

6. A diaphragm mounting for phonograph diaphragms, comprising a diaphragm having a peripheral non-yielding bead thereon, and a rigid annular frame or member therefor, having a resilient material molded

therebetween; thereby forming a yielding body for connecting said diaphragm-bead and said frame together; whereby said diaphragm will be held in floating relation therewith.

7. The combination with an annular metallic securing member or ring, having an annular securing flange projecting from one face adjacent to the center of the periphery of the ring; a diaphragm having a peripheral bead secured thereto having a peripheral flange projecting toward the like peripheral-flange of the securing-ring; and a mid-ring formed of soft resilient material securing the flanged securing-ring and the diaphragm bead together so as to form a floating annular resilient support for the diaphragm.

8. A diaphragm having a member arranged to hold the edge of the diaphragm and a securing member extending from the diaphragm holding member.

9. A diaphragm having a member arranged to hold the edge of the diaphragm and a securing member extending from the diaphragm holding member at an angle to the plane of the diaphragm.

10. A diaphragm mounting of the class described comprising a rigid frame, having a securing member extending therefrom, a diaphragm having a member arranged to hold the diaphragm, and a securing member extending therefrom, and a yielding connecting member joining the securing members of the frame and diaphragm respectively.

11. A diaphragm mounting of the class described comprising a rigid frame having a securing member extending therefrom at right angles, a diaphragm having a member arranged to hold the diaphragm and a securing member extending therefrom at right angles, and a yielding connecting member joining the securing members of the frame and diaphragm respectively.

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