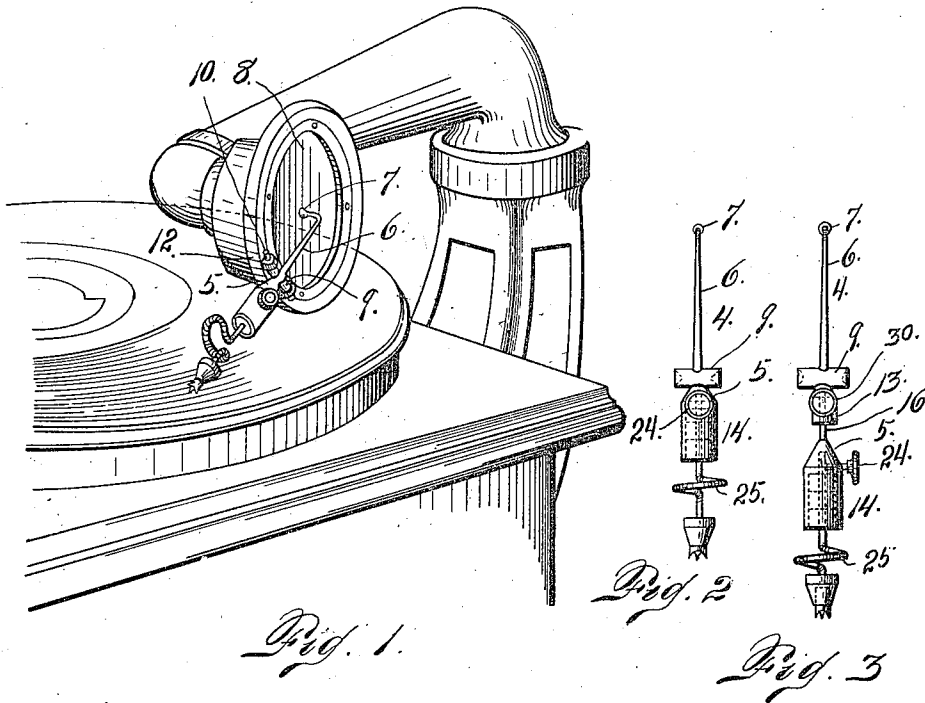
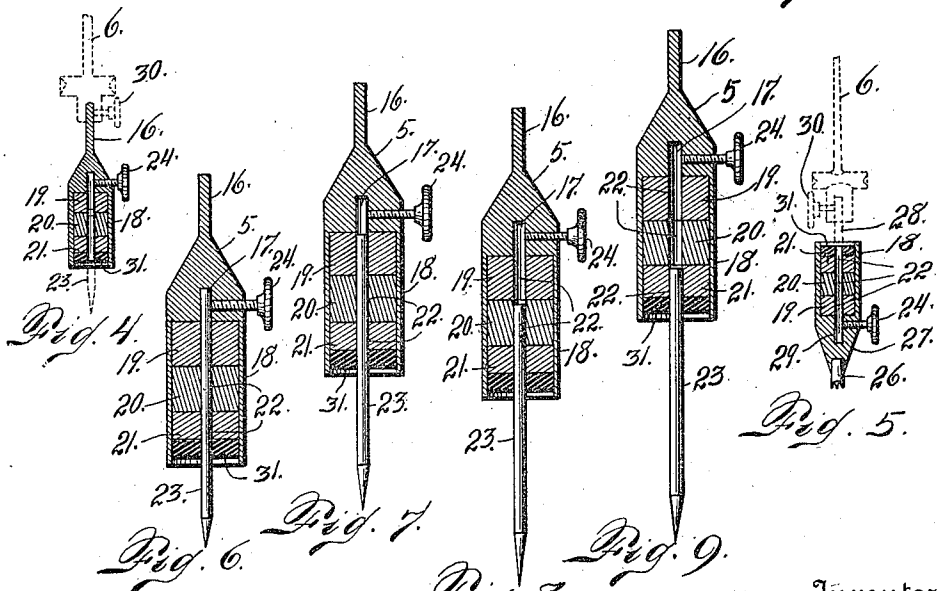


R. H. VESEY.
TONE VARYING ATTACHMENT FOR REPRODUCING NEEDLES.
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Patented May 30, 1916.



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Specification of Letters Patent.

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To all whom it may concern:

Be it known that I, RICHARD H. VESEY, a citizen of the United States, residing in the city and county of Denver and State of Colorado, have invented certain new and useful Improvements in Tone-Varying Attachments for Reproducing-Needles: and I do declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same, reference being had to the accompanying drawings, and to the characters of reference marked thereon, which form a part of this specification.

My invention relates to improvements in means applied to the reproducing needles of instruments such as phonographs, graphophones and other similar sound reproducing structures.

My improvement consists in equipping the needle holder with a number of pieces or blocks composed of substances varying in hardness or density, all of them preferably being of less density than metal of which the usual needle holder is composed.

In my improvement the needle holder is simply extended, the extension consisting of a hollow part which may be integral with the ordinary needle holding member, within which hollow part is located a number of members of varying density or hardness as heretofore stated. These members are perforated to register with the recess or socket of the ordinary needle holding part. The needle, if relatively loud results are required, should extend into the metal socket or recess of the ordinary metal part. When it is desired to vary the tone by making it lower or softer, the needle is withdrawn from the metal socket so that its inner extremity shall engage one of the members of my improvement. As these members themselves are of varying density or hardness, as many different primary or basic variations in tone may be obtained, as there are different members or substances employed. In the construction illustrated in the drawing I have shown three blocks or pieces, composed of different material from the metal holder, the said blocks or pieces also varying in density as compared with one another. Consequently four different primary tone variations may be obtained, one when the needle is in the socket of the metal holder, and others as the inner extremity of

the needle is left within the other blocks or pieces of my improvement. Furthermore a great variety of sub tone-variations may be obtained by varying the distances which the needle penetrates any one of the said members. In order to vary the tone it is only necessary to adjust the needle by moving it outwardly or inwardly as may be required.

Having briefly outlined my improved construction, I will proceed to describe the same in detail, reference being made to the accompanying drawing, in which is illustrated an embodiment thereof.

In this drawing, Figure 1 is a perspective view of a sound reproducing machine of the disk type, the needle holder being equipped with my improvement. Fig. 2 is a detail view of a needle and needle holder likewise equipped. Fig. 3 is a similar view showing a slightly modified form of construction. Fig. 4 is a sectional view in detail showing my improvement applied to a needle holder of ordinary construction, the latter being indicated by dotted lines. Fig. 5 is a similar view showing a slightly modified form of construction. Figs. 6 to 9 inclusive are detail sectional views showing my improved needle holder construction with the needle in different positions of adjustment, the parts being shown on a larger scale than in the other views.

The same reference characters indicate the same parts in all the views.

Let the numeral 4 designate a needle holder having a stem or shank 6 whose extremity 7 engages the diaphragm 8 of a sound reproducing instrument. This holder is provided with a bearing 9 which is trunnioned at 10 on the rim or frame 12 of the instrument to permit the necessary oscillation for sound reproducing purposes. These features are of ordinary construction.

My improvement may be applied directly to the bearing 9 (see Fig. 2), or it may be secured to the member 13 with which the needle is directly connected in the needle holder constructions heretofore known. In manufacturing the device for new machines or when it is preferred to manufacture the article in its entirety, I prefer to employ the construction shown in Fig. 2. When, however, it is desired to employ my improvement in connection with needle holders already constructed, the form shown in Fig. 3 may be used.

My improvement consists of a feature

designated 14 in the drawing. This element is composed of a body part 5 preferably consisting of metal and having a stem 16 which may be inserted in the member 13 of the ordinary needle holder. In this event the stem 16 takes the place of the inner extremity of the needle and is held in place by a set screw 30 (see Figs. 3 and 4). The part 5 is extended beyond the metal socket 17 therein, to form a shell or casing 18 in which are located a number of members designated 19, 20 and 21 respectively. These members are held in place within the shell or casing in any suitable manner. Each is provided with a perforation 22 which registers with the socket or recess 17 of the part 5, whereby the shank 23 of the needle passes through the perforations of all of these members, when its inner extremity is in the recess or socket 17. When it is desired to lower or soften the tone, a set screw 24 is loosened, whereby the needle is allowed to be drawn outwardly whereby it is disengaged from the metal part 5, and whereby its inner extremity may be located within any one of the members 19, 20 or 21, with the result that a great variety of variations in tone may be obtained, since the members 19, 20 and 21 vary in hardness or density from one another and also from the part 5. Furthermore by varying the length of the needle shank which penetrates any of these members, the tone may be further varied. Hence the range of adjustment is such as to permit an exceedingly wide range of tone variation, even where but three of these members are employed. But it is evident that the number of these tone varying members may change as may be required.

In the form of construction shown in Fig. 2 the part 5 of the structure 14 is formed directly on the bearing part 9, the stem 16 being dispensed with. In this case the entire needle holder is manufactured with reference to my improved, while in the other forms of construction, my improved feature is illustrated as an attachment for the ordinary needle holder as best illustrated in Fig. 3.

In the form of construction shown in Figs. 2 and 3, the shank of the needle beyond the tone varying structure of my improvement, is provided with a spring member 25 consisting approximately of a single spiral spring convolution. This feature gives additional tone varying results.

In the form of construction shown in Figs. 5, the needle proper is designated 26 and is mounted in the metal end 27 of the casing 18 of my improvement. In this form of construction a shank or pin 28 is inserted in a socket 29 of the part 27 and passes through the three members 19, 20 and 21 of my improvement. This shank or pin 28 protrudes beyond the casing 18 and is connected with

the ordinary needle holder by a set screw 30. By adjusting the pin or shank 28 in the manner heretofore explained with reference to the adjustment of the needle in the other forms of construction, tone varying results may be obtained similar to those secured from the other form of the device.

In Figs. 4 and 6 to 9 inclusive, the needle shown is simply a conventional or plain form of device, and intended to represent any suitable construction of needle, since it is evident that my improvement is not limited to any special form or style of needle.

The outer extremity of the device 14 is equipped with a piece or layer 31 of some elastic material whose function is, by virtue of its elasticity to retain the needle in place after its inner extremity has been disengaged from the set screw 24. Furthermore this elastic element allows the needle a limited degree of lateral yielding movement while in use, thus obviating the wear upon the record incident to the use of needle holders of the usual or ordinary construction.

So far as a material of which the pieces 19, 20 and 21, are constructed I wish to state that a great many substances of varying hardness or density are adapted for use, as the different kinds of wood, fiber, pigskin, and various compositions which it is not deemed necessary to disclose in this application since if they can be protected, such protection could only be obtained by separate applications.

Having thus described my invention, what I claim is,—

1. A needle holder of the class described, equipped with a number of substances perforated to receive the needle, said substances being of varying density or hardness, and the needle being adjustable for tone varying purposes.

2. A holder for sound reproducing needles, said holder comprising a body member and another substance differing in density or hardness from the material of the body member, the body member having a recess to receive the inner extremity of the needle, and the other substance being perforated to register with said recess and so arranged that the needle when in the recess of the body member passes through the perforation of said substance, the needle being adjustable to cause its inner extremity to engage the body member or the other substance as may be required.

3. A holder for a sound reproducing needle, comprising a body member recessed to receive the inner extremity of the needle, and a number of other substances arranged in operative relation with the body member and perforated to register with the recess in the body member, the arrangement being such that when the inner extremity of the

needle engages the recess of the body member, the shank of the needle passes through the perforations of the other substances, the said substances varying in hardness from the body member and from each other, the needle being adjustable to cause its inner extremity to occupy the body member or any one of the other substances for purposes of tone variation.

10 4. A holder for sound reproducing devices comprising a casing having a recessed body portion and a shell extending beyond the body portion and in which is located a number of substances varying in hardness. 15 the said substances being perforated to register with the recess of the body portion of the holder, and a shank adapted to pass through the perforations of the said substances and enter the recess of the body portion of the holder, said shank being longitudinally adjustable for tone varying purposes substantially as described.

20 5. A needle holder for sound reproducing machines, equipped with a number of substances which the needle is adapted to engage, the outer portion of the said holder being provided with a layer of elastic material arranged to grip the needle.

6. A needle holder of the class described

including a hollow member containing a number of substances varying in hardness or density and perforated to receive the needle, the outer portion of the holder being equipped with a layer of elastic material adapted to grip the needle when in place. 35

7. A needle holder for sound reproducing machines equipped with a substance which the needle is adapted to engage, the outer portion of the said holder being provided with a layer of elastic material for the purpose set forth. 40

8. A holder for sound reproducing needles, said holder comprising a body member and another substance differing in density or hardness from the material of the body member, the body member having a recess to receive the inner extremity of the needle and the other substance being perforated to register with said recess and so arranged that the needle when in the recess of the body member passes through the perforation of said substance. 50

In testimony whereof I affix my signature in presence of two witnesses.

RICHARD H. VESSEY.

Witnesses:

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A. EBERT O'BRIEN.