No. 655,480. Patented Aug. 7, 1900.

T. A. EDISON.

PHONOGRAPHIC REPRODUCING DEVICE.

(Application filed May 3, 1900.)

(No Model.)

Fig. 1

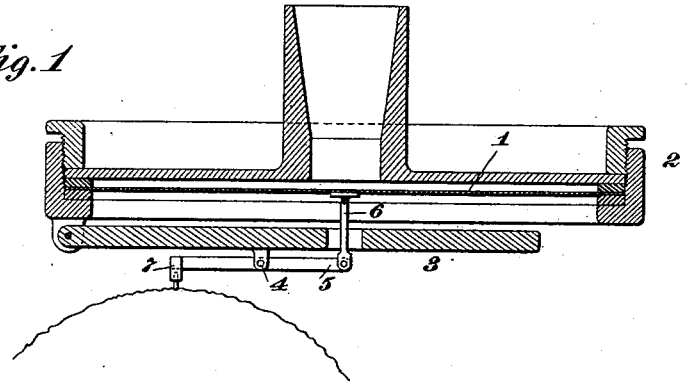


Fig. 2

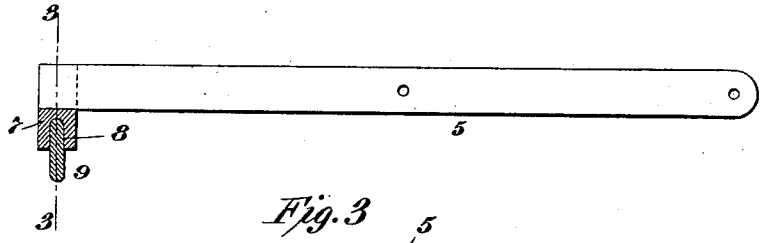


Fig. 3

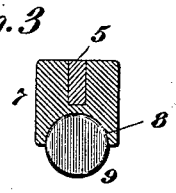
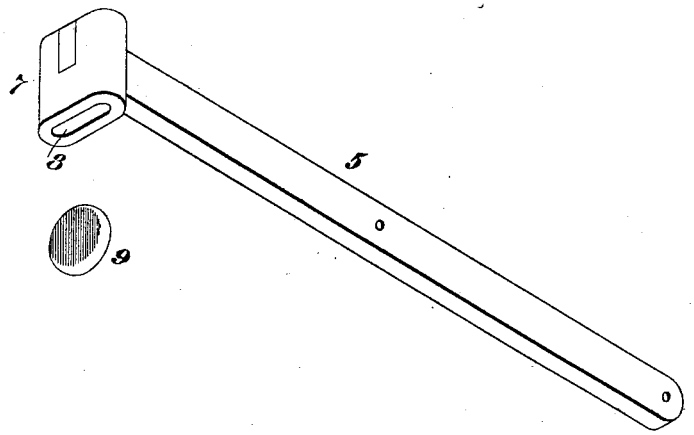


Fig. 4



Witnesses:
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UNITED STATES PATENT OFFICE.

THOMAS A. EDISON, OF LLEWELLYN PARK, NEW JERSEY.

PHONOGRAPHIC REPRODUCING DEVICE.

SPECIFICATION forming part of Letters Patent No. 655,480, dated August 7, 1900.

Application filed May 3, 1900. Serial No. 15,351. (No model.)

To all whom it may concern:

Be it known that I, THOMAS A. EDISON, a citizen of the United States, residing at Llewellyn Park, in the county of Essex and State of New Jersey, have invented a certain new and useful Improvement in Phonographic Reproducing Devices, (Case No. 1,034,) of which the following is a specification.

My present invention relates to improvements in reproducing devices for phonographs and allied talking-machines of the type heretofore invented by me and described and claimed in my application for patent filed September 21, 1899, Serial No. 731,138. The phonographic reproducers of the type in question are adapted for the more accurate tracking of the record than the usual spherical reproducers, and particularly for the tracking of records which are characterized, in part at least, by the formation of waves representing the fundamental tones and principal overtones and which may be of greater width than length, the particular form of such waves obviously preventing the accurate engagement therewith of the spherical reproducer.

My present invention consists in a reproducing device which is especially adapted for the reproduction from records made by a recording-tool having a curved cutting edge, and the present reproducer is therefore made of a form to properly engage the curve of the side walls of the record, while in its longitudinal dimension it presents a curve of less radius.

The object of my present invention is to provide a phonographic reproducer of this type which can be constructed very cheaply, which shall be effective in operation, and wherein in the preferred form fresh engaging surfaces can be presented for operation in case of wear. To this end my present reproducer comprises generally a disk or part of a disk having a rounded engaging edge which bears upon the record, with its transverse curve adapted for the accurate engagement with the side walls of the record and with its longitudinal curve sufficiently reduced as to allow for its proper engagement with substantially all the waves of the record representing at least the fundamental tones and the principal overtones.

Assuming my present reproducer to be used for reproducing from a record made with a recorder having a curved cutting edge, the invention in its preferred form comprises a disk of a radius slightly less than the curve of the recorder, the disk being rounded on its circumference, so that a portion thereof may engage the record, the radius of the longitudinal curve of the periphery of the disk being made small enough to properly engage all portions of the record representing at least the fundamental tones and the principal overtones without undue wear of the recording-surface, said disk being carried in any suitable way within a curved slot cut in a small head, which latter is secured to or connected with the reproducer-diaphragm, whereby the position of the disk within said slot may be shifted to present a fresh surface to the record when desired.

In order that my invention may be better understood, attention is directed to the accompanying drawings, forming a part of this specification, and in which—

Figure 1 is an enlarged sectional view showing the preferred form of my invention applied to a reproducer-diaphragm through a floating weight in the usual way; Fig. 2, a sectional view, on an enlarged scale, of the lever, the head, and the reproducing-disk; Fig. 3, a section on the line 3 3 of Fig. 2, and Fig. 4 a perspective view representing the parts of Fig. 2 separated from each other.

In all of the above views corresponding parts are represented by the same numerals of reference.

1 represents a reproducer-diaphragm carried in the usual frame 2, and 3 a pivoted floating weight carrying a fulcrum 4 for the reproducer-lever 5, the free end of which is connected to the diaphragm 1 by a link 6, all as is common in the art. Secured to the end of the lever 5 in any suitable way is a head 7, which may be slotted at its top for the reception of the end of said lever, as shown. The under surface of the head 7 is formed with a curved slot 8 therein, which may be made in a milling-machine, and mounted in said slot is a disk 9, which is the reproducing device proper. Instead of employing a complete disk the reproducing device may comprise any desired part of a disk. Preferably

a complete disk is employed, which is secured in place within the slot 8 in any suitable way, as by means of shellac, the advantage of this construction being that the disk may be turned around to present a fresh engaging surface when worn. The employment of a complete disk also enables the device to be easily constructed by cutting sections from a cylinder. The material of which the disk 9 is formed may be any suitable refractory substance, preferably sapphire. The curve of the disk 9 transversely to the record is preferably somewhat less than the curve of the recording device, so that the disk will properly engage the side walls of the record-groove—that is to say, if the recording device is .035 of an inch in diameter the diameter of the disk may conveniently vary between .025 and .030 of an inch. In other words, assuming the width of the record-groove to be of the standard—namely, .01 of an inch—the diameter of the reproducer-disk may vary from two and one-half to three times that dimension. The bottom edge of the disk is rounded, as shown, with a curve which presents longitudinally to the record a smaller radius than the transverse curve, whereby the reproducing device will engage and accurately track a wave which may be of less length than width. This longitudinal curve may be made obviously less when very hard records are used than when the records are relatively soft; but in no case should it be made small enough as to result in undue wear of the record-surface.

Having now described my invention, what I claim as new, and desire to secure by Letters Patent, is as follows:

1. In phonographs and allied talking-machines, the combination with the diaphragm, of a reproducer connected therewith and comprising a disk-like body which presents transversely to the record a curve substantially coincident with that of the record-groove and longitudinally of the record a curve of less radius, substantially as set forth.

2. In a phonographic reproducer, the combination with the reproducer-diaphragm, of a reproducing device connected therewith, of substantially the same thickness throughout, and presenting transversely to the record a curve substantially coincident with that of the record-groove and longitudinally of the record a curve of smaller radius, substantially as set forth.

3. In a phonographic reproducer, the combination with a reproducer-diaphragm, of a disk connected to the diaphragm and having a rounded engaging surface, substantially as set forth.

4. In a phonographic reproducer, the combination with a reproducer-diaphragm, of a disk connected to the diaphragm and having a rounded engaging surface, and means for shifting the position of said disk with respect to its center, substantially as set forth.

5. In a phonographic reproducer, the combination with a reproducer-diaphragm and a head connected to said diaphragm, of a disk-like reproducing device carried by said head and presenting a rounded engaging surface, substantially as set forth.

6. In a phonographic reproducer, the combination with a reproducer-diaphragm and a head connected to said diaphragm, of a disk-like reproducing device carried by said head and presenting a rounded engaging surface, and means for shifting the position of said reproducing device within said head, substantially as set forth.

7. As a new article of manufacture, a reproducing device made in the form of a disk having a rounded engaging surface and of a diameter approximately three times the width of the record-groove, substantially as set forth.

8. As a new article of manufacture, a reproducing device made of sapphire in the form of a disk having a rounded engaging surface, and of a diameter approximately three times the width of the record-groove, substantially as set forth.

This specification signed and witnessed this 30th day of April, 1900.

THOMAS A. EDISON.

Witnesses:
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