T. A. EDISON.

PHONOGRAPH REPRODUCER.

APPLICATION FILED DEC. 29, 1908. RENEWED DEC. 7, 1911.

1,020,485. Patented Mar. 19, 1912.

Fig. 1

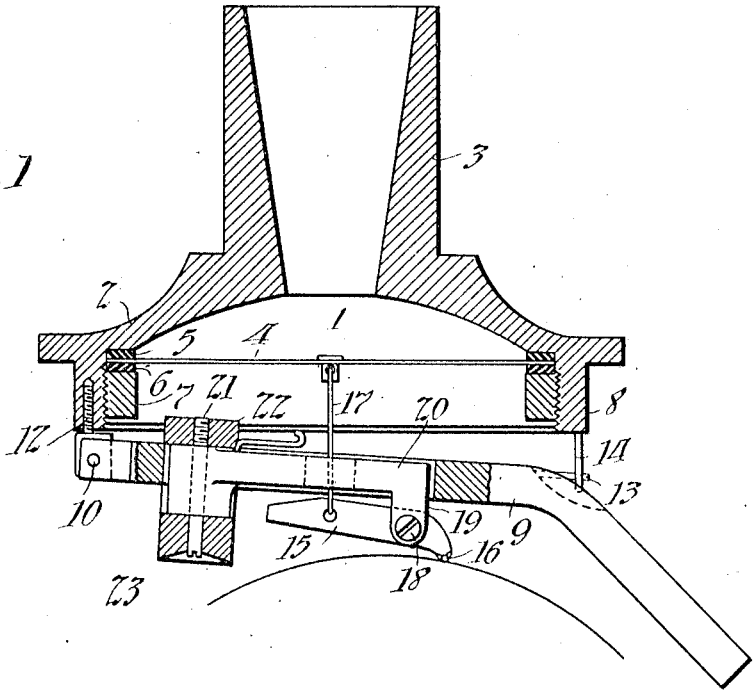
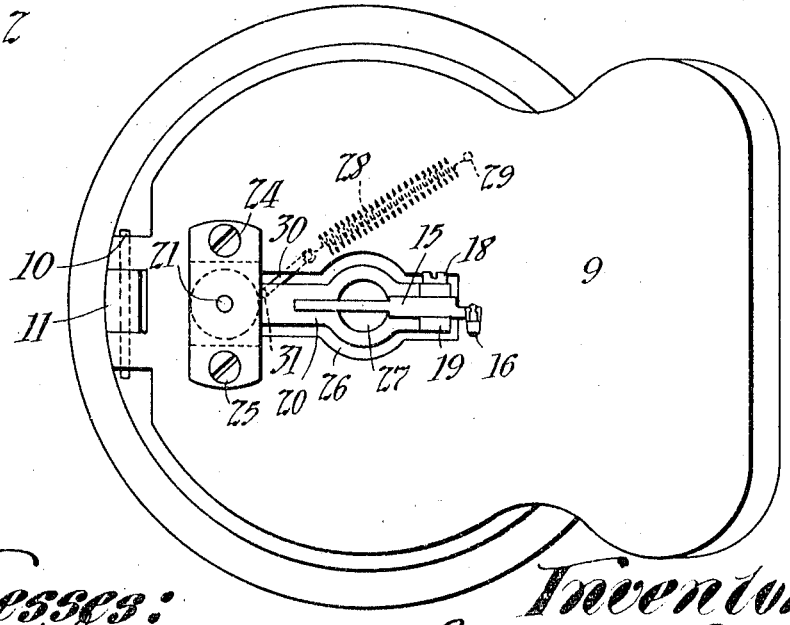


Fig. 2



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UNITED STATES PATENT OFFICE.

THOMAS A. EDISON, OF LLEWELLYN PARK, WEST ORANGE, NEW JERSEY, ASSIGNOR TO THOMAS A. EDISON, INCORPORATED, OF WEST ORANGE, NEW JERSEY, A CORPORATION OF NEW JERSEY.

PHONOGRAPH-REPRODUCER.

1,020,485. Specification of Letters Patent. Patented Mar. 19, 1912.

Application filed December 29, 1908, Serial No. 469,886. Renewed December 7, 1911. Serial No. 664,493.

To all whom it may concern:

Be it known that I, THOMAS A. EDISON, a citizen of the United States, and a resident of Llewellyn Park, West Orange, Essex county, State of New Jersey, have invented a certain new and useful Improvement in Phonograph-Reproducers, of which the following is a clear, full, and concise description.

My invention relates to phonograph reproducers and has for its object the provision of an improved mounting for the stylus lever in order that the same may have great freedom of movement in tracking the grooves of the sound record, and in order that the defects due to inertia of the moving parts may be obviated.

More particularly, the object of my invention is to provide a mounting for the stylus, which shall permit the latter to be used in connection with records having two hundred threads to the inch, and track the same faithfully and without injury to the record or the stylus. While the stylus mounted in the manner of my invention is equally well adapted for use in connection with records having one hundred or some other number of threads per inch, the requirement of great facility of movement of the stylus lever both in a direction parallel to and transverse to the record groove, is particularly important in the case of the two hundred thread record or other record having a great number of threads per inch, owing to the thin walls between the record grooves, which might be broken down or jumped across by a stylus, the parts moving with which have considerable inertia, and owing to the character of the record grooves generally. Accordingly, a stylus mounting of the greatest freedom of lateral movement and the least possible inertia is very desirable. This is provided for in my invention by mounting a comparatively light member pivotally on or in a recess in the floating weight, so that the said member may be free to rock upon its pivot in a plane nearly parallel with that of the diaphragm, the said pivotally mounted member carrying the stylus lever pivoted thereto on a horizontal pivot. The stylus lever is thus free to oscillate in a plane at right angles to the plane of the diaphragm in response to the undulations of the record groove, and also is free to move laterally with the member to which it is pivoted with the very slight inertia belonging to the very light pivot member above referred to. It is to be noted that the floating weight to which this member is pivoted is itself mounted for a limited movement in planes substantially parallel to and crossing at right angles the plane of the diaphragm, as is common in the art. It is preferable to pivotally mount the member which carries the stylus lever at a point not far distant from the pivotal point of the floating weight.

A further object of my invention is to provide yielding means by which the pivot member and the stylus lever carried thereby may be normally held in a central position axial to the record groove tracked by the stylus.

Further objects of my invention are the provision of improved details of construction and combination of parts.

In order that my invention may be better understood reference is hereby made to the accompanying drawings, forming part of this specification, in which—

Figure 1 is a central vertical section through a reproducer equipped with my invention. Fig. 2 is a bottom view thereof.

The sound box 1 is formed by the member 2, which has formed integrally therewith the neck 3, to which the phonograph horn may be connected. The diaphragm 4 is clamped in position between gaskets 5 and 6, which are clamped in position between the body 2 of the reproducer and the ring 7, which bears screw threads on the periphery thereof, which are adapted to engage with screw threads on the interior of cylindrical vertical flange 8 of the phonograph body. The floating weight 9 is pivotally connected by a pin or screw 10 to a member 11 which

is pivotally mounted by means of the screw or short stud 12, which is secured in the flange 8 of member 2 of the reproducer, thus producing a floating weight which is free to oscillate to a certain extent in a direction crossing the plane of the diaphragm, and also in a plane substantially parallel to that of the diaphragm in a manner well known in the art. The pin 13 extending from the periphery of the floating weight at a point diametrically opposed to the pivot of said weight, and engaging within the stirrup 14, which extends from the adjacent point of the flange 8 of the body of the reproducer, limits the movements of the floating weight in the various directions possible to it, in a manner well known in the art.

The stylus lever 15 carries the stylus 16, and is connected by link 17 to the diaphragm, the link 17 being attached to the said diaphragm in a manner well known. Stylus lever 15 is pivotally mounted as on screw or pin 18, which is supported in the ears or lugs 19, depending from member 20, which is pivoted on screw or pin 21, which is mounted in an approximately vertical position in the floating weight. Pivot pin 21 for the member 20 is held securely in place by means of blocks or lugs 22 and 23 on the upper and under sides of weight 9, which are held in position as by screws 24 and 25. Member 20 is preferably mounted within the recess or opening 26 cut in the floating weight, which is preferably shaped to correspond to the exterior of member 20, and to allow the latter sufficient lateral movement therein. Member 20 is provided with a central vertical passageway 27, through which passes the link 17. Member 20 is normally held in its central position in which the stylus is maintained axially in the record groove which it is tracking, by any convenient yielding means as by the spiral spring 28, which is secured to the floating weight at 29 at one end, and at the other end to a short link 30, which is screwed to member 20 at the point 31. This spring is so adjusted and is secured at such an angle that it is only free from stress when member 20 is in its central position. Movement of member 20 to either side of its central position flexes the spring to one side or the other of its neutral position, thereby putting it under stress to return the member 20 to its central position with a gentle force, as soon as whatever force may be acting to move the member 20 from its central position ceases.

It is understood that my invention is not limited to the precise device or construction shown, but may be varied within the scope of the appended claims without departing from the spirit of my invention.

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

1. In a phonograph reproducer, the combination with a diaphragm, of a floating weight, an elongated member mounted at one end on said floating weight and free to turn relatively to the same in a plane nearly parallel with the plane of said diaphragm, a stylus lever connected to said diaphragm and pivotally mounted upon the opposite end of said member to rock in a direction crossing the plane of said diaphragm, said diaphragm connection being intermediate said member and lever pivots, and yielding means connected to said weight and member for normally holding said member in a position parallel with the axis of the record groove and returning it to such position after the cessation of any force tending to move it therefrom, substantially as described.

2. In a phonograph reproducer, the combination with a diaphragm, of a floating weight, an elongated member pivoted at one end on said floating weight and free to turn relatively to the same in a plane nearly parallel with the plane of said diaphragm, a stylus lever connected to said diaphragm and pivotally mounted upon the opposite end of said member to rock in a direction crossing the plane of said diaphragm, said diaphragm connection being intermediate said member and lever pivots, and a spring connected to said member and weight for normally holding said member in a position axial of said weight and being under stress as the said member is moved either to one side or the other of said normal position, substantially as described.

3. In a phonograph reproducer, the combination with a sound box having a diaphragm mounted therein, of a floating weight mounted on said sound box, a member mounted on said floating weight free to turn relatively to the same in a plane nearly parallel with the plane of the diaphragm, a stylus lever connected to said diaphragm and pivotally mounted on said member, and yielding means connected to said weight and member for normally holding said member in a position parallel with the axis of the record groove and returning it to such position after the cessation of any force tending to move it therefrom, substantially as described.

4. In a phonograph reproducer, the combination with a sound box having a diaphragm mounted therein, of a floating weight mounted on said sound box, a member mounted on said floating weight, free to turn relatively to the same in a plane nearly parallel with the plane of the dia-

phragm, a stylus lever connected to said diaphragm and pivotally mounted on said member, a link secured to said member and yielding means connected to said link and weight and normally in alinement with said link, said means normally holding said member in a position parallel with the axis of the record groove and returning it to such position after the cessation of any force tending to move it therefrom, substantially as described.

This specification signed and witnessed this 21st day of December, 1908.

THOS. A. EDISON.

Witnesses:
DYER SMITH,
ANNA R. KLEHM.