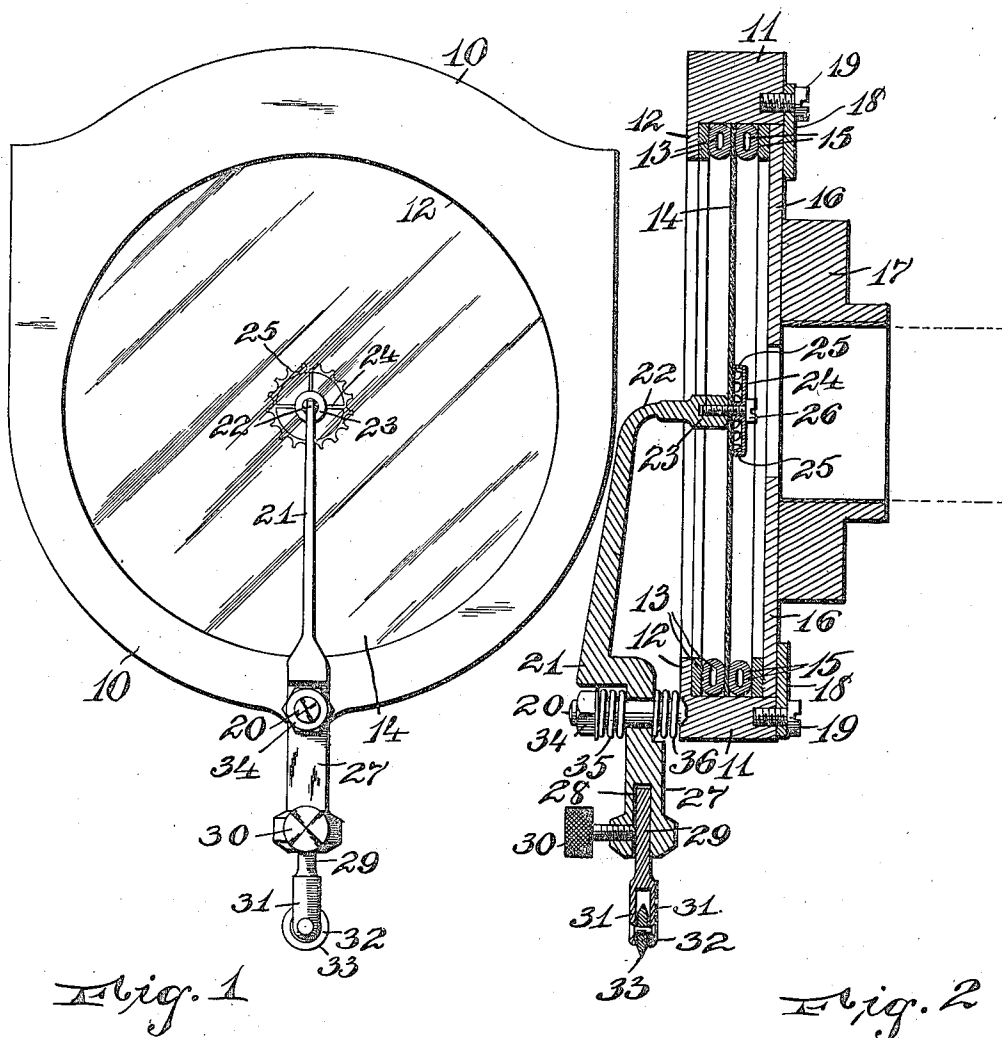


A. LUCIANO.  
 PHONOGRAPH REPRODUCER.  
 APPLICATION FILED SEPT. 18, 1912.

1,080,839.

Patented Dec. 9, 1913.



WITNESSES:  
 M. A. Johnson.  
 Albert B. Dey.

INVENTOR  
 Achille Luciano,  
 BY  
 J. H. Campfield,  
 ATTORNEY

# UNITED STATES PATENT OFFICE.

ACHILLE LUCIANO, OF BLOOMFIELD, NEW JERSEY, ASSIGNOR TO NIGHTINGALE REPRODUCER CO., OF NEWARK, NEW JERSEY.

## PHONOGRAPH-REPRODUCER.

1,080,839.

Specification of Letters Patent.

Patented Dec. 9, 1913.

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*To all whom it may concern:*

Be it known that I, ACHILLE LUCIANO, a subject of the King of Italy, residing at Bloomfield, in the county of Essex and State of New Jersey, have invented certain new and useful Improvements in Phonograph-Reproducers; and I do hereby 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 figures of reference marked thereon, which form a part of this specification.

This invention relates to an improved gramophone reproducer and is of the type that is arranged with the sound box vertical to the record and is adapted for use with its stylus projecting in substantially the same plane as the diaphragm and having its stylus adapted to be moved transversely by the groove so as to transmit its vibrations directly to the diaphragm.

The reproducer comprises a sound box in which the diaphragm is mounted in any usual manner, the stylus rod being pivoted by means of a pivotal connection that permits a limited transverse movement at the pivotal point, the stylus rod thus rocking normally at its pivotal point, but yielding to an extent under undue strain in a transverse direction.

The invention also resides in the stylus which is mounted on the end of the rod, and which submits successive portions of its periphery to the groove whereby the groove is not subjected to undue wear and the friction is minimized, while the sound reproduction is not impaired.

The invention is illustrated in the accompanying drawing, in which,—

Figure 1 is a front view of my improved stylus, and Fig. 2 is a vertical section of the same through the center, the pivotal post being shown in elevation.

The reproducer comprises a sound box 10, which is made of any suitable shape, having the marginal portion 11 provided with a flange 12. Against the flange are arranged rubber rings 13 against which is seated the diaphragm 14, and the rubber rings 15 in the rear of the diaphragm at its edge are held in place by the back plate 16 provided with the usual boss 17 for attaching it to the

tube which leads to the horn. Latches 18, pivoted at 19, are swung to lock the back plate in position, the rings 13 and 15, which are resilient, acting to firmly hold, but with not sufficient enough strength to break the diaphragm, the diaphragm being made of any of the usual materials employed for this purpose, such as mica. At the edge of the sound box is a post 20 on which is arranged the stylus rod 21 which extends up to the center of the diaphragm, getting thinner and narrower toward its upper end, as at 22, so as to give it more flexibility and vibration, and is provided on its end with a boss 23 which rests against the diaphragm. On the rear of the diaphragm is arranged a spider 24 which is preferably made of metal and has, on its edge, separated feet 25 which bear on the diaphragm at some little distance from the boss 23 and on the opposite side. A screw 26 passes through the spider and into the boss 23 to clamp the parts together and to clamp the diaphragm between the boss and the spider.

The stylus rod extends below the post and forms an extension 27 provided with a recess 28 into which fits the shank 29 of the stylus, being held in place by a set-screw 30. The stylus is forked at its lower end 31, and between the arms of the fork is rotatably mounted a stylus wheel 32 which has its edge 33 pointed or sharpened so as to enter the groove of the record. At the outer end of the post 20 is a nut 34. Between the nut 34 and the stylus rod is a spring 35, and between the stylus rod and the sound box is a spring 36, these springs being of about equal tension and holding the stylus rod so that it has a slight pivotal movement, at the same time permitting a yielding movement, to a limited extent, of the stylus on the post so that undue strain is taken up by these springs and while the vibration of the stylus rod is easy, the springs act to prevent undue tilting of the stylus rod from damaging the diaphragm.

The reproducer is a structure that provides a free vibration between the stylus and the diaphragm, the springs permitting the free vibration, and not diverting the vibration to the sound box at its edges, and permitting the vibration of the stylus rod to transmit, to the center of the stylus, its maximum force so that a clear reproduction of the sound is produced.

The stylus wheel 33 travels easily through the groove, giving a positive and clear reproduction, minimizing the wear on the groove and on the stylus and removing the scratching which is present in the case of a non-rotatable stylus.

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

A reproducer having a sound box casing, a diaphragm arranged in the sound box casing, a post extending from the edge of the sound box casing and at right angles to the diaphragm, a stylus rod secured to the center of the diaphragm and extending to embrace the post to slide thereon and having

its projecting end provided with a stylus, a nut on the outer end of the post, a spring encircling the post and abutting on the nut and the stylus rod, and a second spring encircling the post and abutting on the stylus rod and the sound box casing, the springs alternately acting as fulcrums for the stylus rod.

In testimony, that I claim the foregoing, I have hereunto set my hand this 14th day of September, 1912.

ACHILLE LUCIANO.

Witnesses:

WM. H. CAMFIELD,  
M. A. JOHNSON.