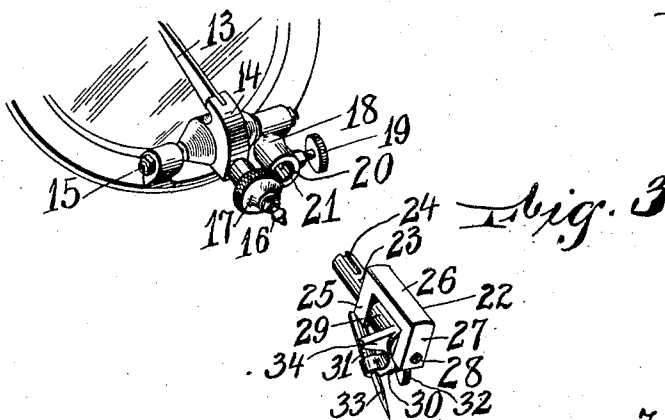
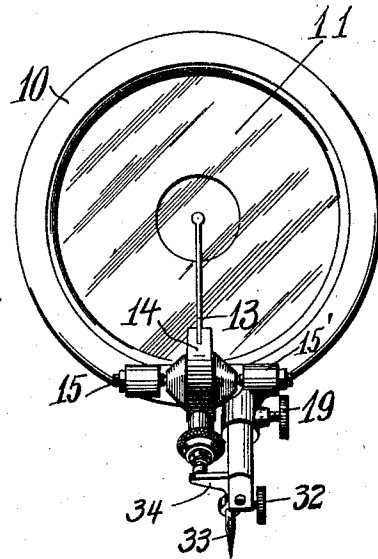
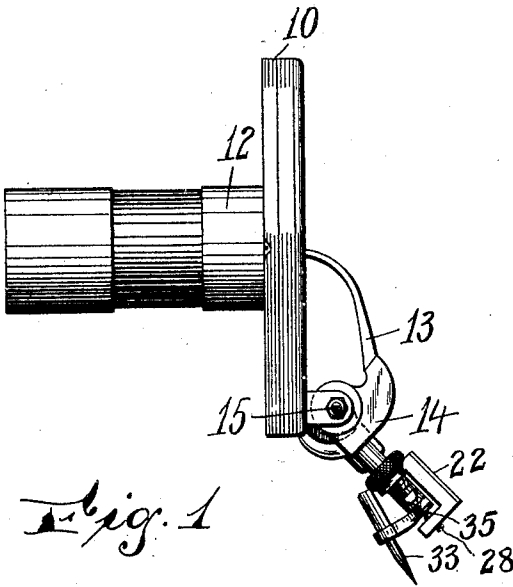


F. L. CAPPS.
 PHONOGRAPH REPRODUCER.
 APPLICATION FILED JAN. 5, 1917.

1,358,135.

Patented Nov. 9, 1920.



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PHONOGRAPH-REPRODUCER.

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Specification of Letters Patent.

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To all whom it may concern:

Be it known that I, FRANK L. CAPPS, a citizen of the United States, and a resident of Brooklyn, county of Kings, and State of New York, have invented certain new and useful Improvements in Phonograph-Reproducers, of which the following is a specification.

My invention relates to phonograph reproducers preferably of the type adapted for playing disk records. Such records are now generally manufactured with either lateral or vertical undulating record grooves, and a reproducer in accordance with my invention is adapted to reproduce records of either type.

Among the objects of the invention is the provision of a reproducer which will play records of either of these types without changing the position of the diaphragm with respect to the record and its grooves.

Another object of the invention is the provision of a reproducer which plays laterally undulating records while its diaphragm is placed substantially at right angles to the record groove.

Another object of the invention is the provision of a reproducer in which vibrations of the stylus or needle tracking the groove are imparted to the diaphragm through the intermediate action of another stylus or needle.

Another object of the invention is the provision of a separate attachment which is itself provided with a pivoted needle holder and which may be secured to the reproducer and may be removed therefrom at will, adapting the reproducer for the different types of records.

Other objects of the invention will appear in connection with the following description, and with the foregoing and related objects in view, my invention consists in the parts, improvements and combinations hereinafter set forth and claimed.

For the purpose of affording a clear understanding of my invention I have illustrated an embodiment thereof in the accompanying drawing, but I am not to be limited to the illustrative form, and changes and modifications may be resorted to within the scope of my claims, by which my invention is defined. In said drawing, forming a part of this specification and wherein in the same reference characters are ap-

plied uniformly to designate the same parts throughout, Figures 1 and 2 are side and face views of the reproducer equipped with an auxiliary stylus holder in accordance with the present invention, and Fig. 3 is a view in perspective of the device shown in Figs. 1 and 2 with the attachment for holding the auxiliary needle or stylus shown in position to be inserted in a socket.

As already stated, the invention in the present case relates more particularly to the mode of attaching and mounting the reproducer points. The reproducer and its various other parts may be of any form. I have illustrated a reproducer head 10 having a diaphragm 11 and a neck 12 for attachment to a sound education tube or horn, and an arm 13 secured to a needle holding member 14 which may be mounted on the reproducer head in any preferred way, and in the form shown is pivoted between pivot screws 15 passing through lugs 15' in the head 10. The reproducer is preferably regularly equipped with a reproducer point adapted for playing vertically cut records, and such reproducer point is illustrated at 16 and may be fastened in place in any way, as by means of a screw chuck 17. The parts thus far described may be of any preferred form, and with the reproducer so equipped it is designed to play records having vertically undulating grooves with the reproducer diaphragm substantially at right angles to the record grooves being tracked. The reproducer is provided with means for securing thereto an attachment adapted for holding an additional needle or stylus. In the form shown a sleeve 18 is secured to the head 10 by being made a part of one of the lugs 15', and in the side of the sleeve 18 is threaded a thumb-screw 19. The sleeve 18 is here shown as having a cylindrical bore 20, and with such cylindrical bore a guide-pin 21 is provided, though when the bore is of other forms, as, for example, if it were made of square cross-section, the guide-pin 21 might be dispensed with. The attachment for carrying the auxiliary needle or stylus is shown at 22, and while it may be of various forms, as shown it comprises a shank 23 adapted to be received within the bore 21 of the sleeve 20 and having a slot 24 in which the guide-pin 21 may be received, and a substantially U-shaped yoke, preferably formed integral

with the shank 23, and comprising a leg 25 formed directly on or secured to the shank 23, a cross-bar 26 and a second leg 27 opposite the leg 25. Between the legs 25 and 27 of such yoke a needle or stylus holding member 29 is arranged to be supported therein by any convenient supporting means, in the form shown it being supported between pivots, one pivot screw therefor being indicated at 28. The member 29 is provided with means for holding a needle or stylus, and for this purpose may have an arm 30 provided with a socket 31 and a thumb-screw 32, and a needle or stylus as 33, may be received within said socket and be clamped in place by said thumb-screw. The member 29 also has means for connecting it with the needle or stylus with which the reproducer is regularly equipped, and in the form shown it is provided with a projecting arm 34 having a recess or groove 35 therein which is adapted to receive the needle or stylus 16 with which the reproducer is regularly supplied.

The reproducer is ordinarily used with its stylus 16 without the extra attachment for reproducing records having vertically undulating grooves. For reproducing records having laterally undulating grooves the attachment is put in place upon the reproducer, the stud 23 being inserted within the socket 20 and with the guide-pin 21 in the groove 24, thus assuring the proper relation of the parts, and the attachment is pushed into the socket until the stylus 16 becomes seated in the recess 35 in the arm 31 provided for that purpose, whereupon the thumb-screw 19 is screwed up tightly, and with a proper reproducer point or needle being inserted in the socket 31 in the attachment, the reproducer is immediately ready for reproducing records having laterally undulating record grooves. It will be observed that no change of the position of the reproducer head and diaphragm with respect to the record is required, all that is necessary to convert the reproducer from being adapted to play one type of record to adaptation for playing records of the other type being to secure the attachment in place, with, of course, the provision of a proper reproducing point, or to loosen it and remove it from the reproducer. It will be observed that the reproducer point 33 of the attachment tracking the groove has its vibrations imparted to the reproducer arm 13 and thence to the diaphragm through the intermediate action of the stylus 16 which is ordinarily used for reproducing records of the vertically undulating groove type. The usual arrangement of affording a pivotal mounting for the entire reproducer and turning it about through substantially a right angle when it is desired to change from reproducing records of one type to re-

producing records of another type is avoided, with a consequent considerable simplification of the reproducer connections, and the required change may be very simply made without disturbing the reproducer and its mounting in any way.

Having thus described my invention, I claim:

1. In a phonograph reproducer a diaphragm, an arm for imparting vibration thereto, a member adapted to be detachably connected to the reproducer, a unitary elbow lever pivoted in said member, one of the branches thereof being provided with reproducer point holding means, and the other branch thereof being adapted to impart vibration to said arm and diaphragm.

2. In a phonograph reproducer, the combination with a diaphragm, of an arm for imparting vibration to the diaphragm, a reproducer point secured to said arm and adapted for tracking a vertically undulating record groove, an attachment for carrying a second reproducer point adapted for tracking a record groove having lateral undulations, and means for detachably securing said attachment to said reproducer in such manner that the vibrations of its reproducer point are imparted to the diaphragm through the first-named reproducer point.

3. In a phonograph reproducer, the combination with a diaphragm, of an arm for imparting vibration thereto, a reproducer point secured to said arm, and a socket on the reproducer adjacent to the arm and having its axis substantially parallel to the plane of the arm, said socket being adapted to receive and detachably hold an attachment for supporting an auxiliary reproducer point in operative relation to said arm.

4. In a phonograph reproducer, a diaphragm, a pivoted arm secured thereto, a reproducer point on said arm, a detachable and removable member comprising a unitary pivoted support for an auxiliary needle, and means for attaching the same to the reproducer with the pivoted needle holding means thereof in direct contact with the reproducer point of said reproducer.

5. In a phonograph reproducer, a diaphragm, a pivoted arm secured thereto, needle holding means on said arm, a socket adjacent to said arm, a U-shaped yoke member having a stud adapted to enter and be held in said socket, a pivoted member in said yoke, and means for holding an auxiliary needle in said pivoted member, said pivoted member having a recessed arm adapted to be held in contact with the first-named reproducer point.

6. As a new article of manufacture, an attachment for phonograph reproducers comprising a substantially U-shaped member, a reproducer point holding device pivoted within the arms of such member, and means

for attaching the same to a phonograph reproducer equipped with a reproducer point with said device in contact with the reproducer point thereof.

5 7. In a phonograph reproducer, a diaphragm, a stylus arm for imparting vibration thereto, a removable attachment for said reproducer, a reproducer point holding member pivoted in said attachment on

an axis parallel to the plane of the stylus 10 arm and making an oblique angle with the reproducer diaphragm, said member being adapted to impart vibration to said arm and diaphragm.

In testimony that I claim the foregoing, 15 I have hereto set my hand, this 29th day of December, 1916.

FRANK L. CAPPS.