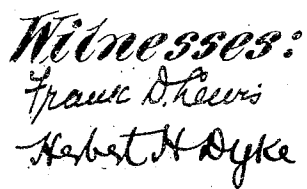


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2 SHEETS—SHEET 1.



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 PHONOGRAPH.
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2 SHEETS—SHEET 2.

Fig. 2

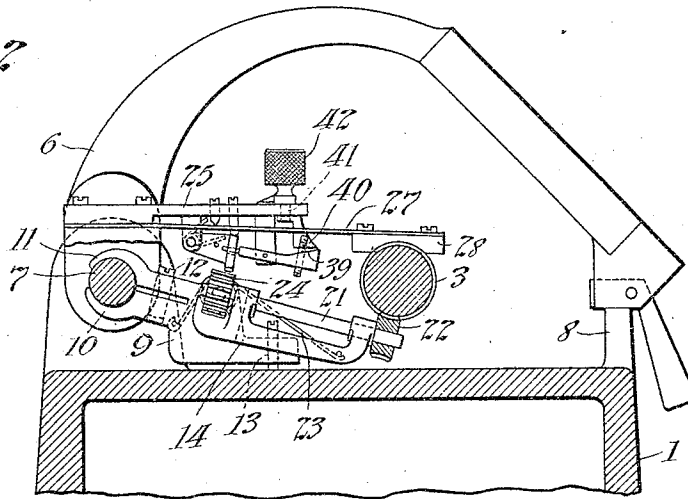
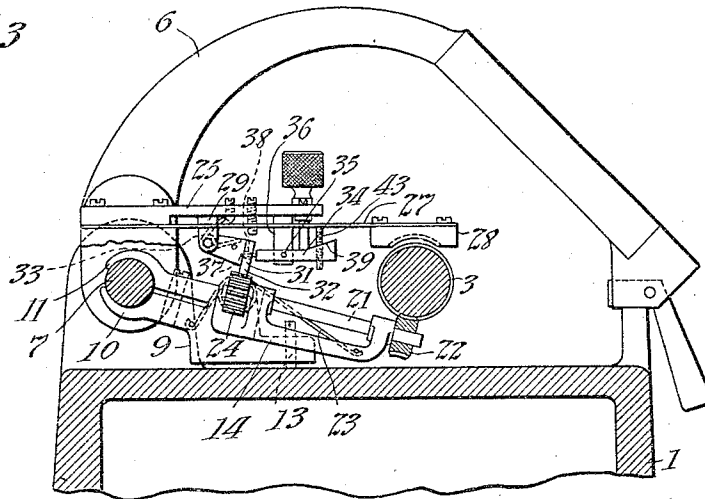


Fig. 3



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UNITED STATES PATENT OFFICE.

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To all whom it may concern:

Be it known that I, HERMAN WOLKE, a citizen of the United States, and a resident of Orange, in the county of Essex and State of New Jersey, have invented certain new and useful Improvements in Phonographs, of which the following is a description.

My invention relates to phonographs of the type in which a progressive movement is imparted to the sound box carriage by means of a rotating feed screw, the carriage moving transversely to the direction of movement of the record surface so that the stylus of the recorder or reproducer will trace a spiral path on the record.

The object of my invention is the production of improved means whereby the carriage may be advanced by the feed screw at each revolution a distance equal to the pitch of the feed screw, as has hitherto been the usual practice, or, whereby, at the will of the user, the carriage may be advanced at each revolution of the feed screw a distance bearing any desired ratio to the pitch of the feed screw. By these means a single instrument may be used for the recording or reproduction of records, the record grooves whereof have different pitches, as for example, the same instrument may be used for records having either one hundred or two hundred threads per inch.

The improvement herein disclosed is capable of being applied to phonographs of well-known construction and has been devised with this particular object in view, and also with the object of simplifying the construction as much as possible and producing a device which will be cheap to manufacture and durable in use.

Reference is hereby made to the accompanying drawing of which—

Figure 1 is a plan view of a portion of a phonograph to which my invention is applied; Fig. 2 is a side view of the same, partly in section, showing the parts in position for feeding the carriage directly from the feed screw at a rate equal to the pitch thereof, and Fig. 3 is a similar view showing the parts arranged for feeding the carriage at a different rate, as when operating upon records having two hundred threads per inch.

In all of the views the same reference numerals are used to designate corresponding parts.

The phonograph shown is of well known form and comprises a base or body 1, which supports the main shaft 2, upon which the feed screw 3 is formed, and which is ordinarily of fine pitch, such as one hundred threads to the inch. The mandrel 4 is secured upon one end of the shaft 2 and a drive pulley 5 adapted to receive the driving belt from the phonograph motor is secured to the opposite end of said shaft. The traveling sound box carriage 6 is sleeved on the usual guide rod 7, its forward edge resting upon the usual straight edge or track 8. There is a frame 9 which is formed with arms 10 and 11, which embrace the guide rod 7 and are clamped thereto by means of a screw 12. The forward portion of the frame 9 is provided with a screw 13 which is threaded therein and rests upon the top of the base 1. A bracket 14 is pivotally secured to the frame 9 by means of a pin 15 rigid with the bracket and passing through a bearing 16 formed in the frame 9, and in the boss 18 extending outwardly therefrom. A securing screw 17 is threaded in the end of said pin 15. The bracket 14 is provided with bearings 19 and 20, within which is journaled a shaft 21, to the forward end of which is secured a worm wheel 22. The teeth formed upon said wheel are of proper size and pitch for engaging the thread of the feed screw 3 and the same is held in engagement therewith by a spring 23 which is coiled around the boss 18 and secured at its ends to the frame 9 and bracket 14 as shown. Upon the rear end of the shaft 21 is fixed a spur gear 24, the diameter of which is preferably the same as that of the worm wheel 22.

A frame or support 25 is secured to the carriage 6 by screws 26, which screws also pass through and secure the feed nut spring 27 which carries at its forward end the feed nut 28 adapted to engage the feed screw 3. The support 25 is provided with a pair of downwardly extending ears or lugs 29 which receive a horizontal pin 30, upon which is hinged a frame 31 to which is secured a rack 32. A coil spring 33 is applied to the pin 30 and frame 31 in such a way as to normally press the rack 32 downward into engagement with the gear 24, as shown in Fig. 3. In this position the feed nut 28 is elevated so as to be out of engagement with the feed screw 3, and the rack 32 will be

fed along by the gear 24 driven by the shaft 21 and worm wheel 22, thereby imparting to the sound box carriage a progressive movement at a rate equal to one-half the pitch of the feed screw 3, which will enable the recorder or reproducer to operatively traverse a sound record having two hundred threads to the inch.

In order to release the rack 32 from engagement with the gear 24, there is a lever 34 which is pivoted at 35 to a lug 36 depending from the support 25. One end of this lever is provided with a pin 37, which engages a hole 38 of somewhat greater diameter formed in the frame 31. The opposite end of said lever 34 is formed with an inclined surface 39 which is engaged by an angular projection 40 depending from the pin 41 which is rotatably mounted in the support 25 and is provided with a milled head 42. When the pin 41 is rotated from the position of Fig. 3 through an angle of 90 degrees, it is brought into the position shown in Fig. 2 and by reason of the engagement of the projection 40 with the inclined surface 39, one end of the lever 34 is depressed, thus elevating the pin 37 and frame 31 and thereby moving the rack 32 out of engagement with the gear 24. The said movement of the lever 34 also depresses the screw 43 which is threaded therein and allows the feed nut 28 to descend into engagement with the feed screw 3, as shown in Fig. 2. The tension of the feed nut spring 27 is such as to hold the feed nut in yielding engagement with the feed screw in the usual manner when in the position of Fig. 2, and in the position of Fig. 3, the screw 43 presses against the lower surface of the feed nut spring and elevates the free end of the same so as to move the feed nut 28 out of engagement with the feed screw 3.

The pin 41 or its head 42 is preferably provided with a pointer 45, and indicating numerals 46 are applied to the upper surface of the supporting plate 25 for cooperating with the pointer 45 to designate the speed at which the carriage 6 will be moved; that is, when the pointer is opposite the figures 100 the parts will be in the position shown in Fig. 2, and the carriage will be fed at a rate suitable for operating upon records having one hundred threads per inch, and when the pointer is opposite the figures 200 the parts will be in the position shown in Fig. 3, and the carriage will be fed at a rate suitable for operating upon records having two hundred threads per inch.

Having now described my invention, what I claim is:

1. In a phonograph, the combination with the rotating mandrel, feed screw and traveling carriage, of a rotatable worm wheel in engagement with said feed screw, a spur gear driven by said worm wheel and a rack

carried by said carriage and adapted to be driven by said spur gear, substantially as set forth.

2. In a phonograph, the combination with the rotating mandrel, feed screw and traveling carriage, of a worm wheel driven by said feed screw, a spur gear driven by said worm wheel and a rack carried by said carriage and movable into and out of engagement with said spur gear, substantially as set forth.

3. In a phonograph, the combination of the rotating mandrel, traveling carriage, and means for imparting a progressive movement to the latter comprising a rack carried by the carriage, a rotating gear and means for moving said rack into and out of engagement with said gear, substantially as set forth.

4. In a phonograph, the combination of the rotating mandrel, traveling carriage, means for imparting a progressive movement to the latter consisting of a feed nut adapted to engage said feed screw, a rotating gear and a rack adapted to engage said gear, said rack and feed nut being movable respectively into and out of engagement with said gear and feed screw, substantially as set forth.

5. In a phonograph, the combination of the rotating mandrel, traveling carriage, and means for imparting a progressive movement to the latter consisting of a rack hinged to said carriage, and a rotating gear, a spring adapted to press said rack into engagement with said gear, and means for moving said rack against the pressure of said spring, substantially as set forth.

6. In a phonograph, the combination of the traveling carriage having the rack movably secured thereto, a feed nut secured to said carriage, and means carried by the carriage and adapted to simultaneously move the rack and feed nut, substantially as set forth.

7. In a phonograph, the combination of the traveling carriage, means for imparting a progressive movement thereto, comprising a movable rack and feed nut, and an indicator for designating the positions of said rack and feed nut, substantially as set forth.

8. An attachment for phonographs comprising a support 25 adapted to be secured to the traveling carriage, a frame 31 hinged to said support and a rack 32 secured to said frame, substantially as set forth.

9. An attachment for phonographs comprising a support 25 adapted to be secured to the traveling carriage, a frame 31 hinged to said support, a rack 32 secured to said frame, and means for moving said frame upon its hinge, substantially as set forth.

10. An attachment for phonographs comprising a support adapted to be secured to the traveling carriage, a rack hinged thereto, and means for moving said rack upon its

hinge and for simultaneously elevating the phonograph feed nut, substantially as set forth.

11. An attachment for phonographs, comprising a frame 9, a bracket 14 pivoted thereto, and a shaft 21 journaled in said bracket and provided with a worm wheel and gear 24, substantially as set forth.

12. An attachment for phonographs, comprising a frame 9 adapted to be applied to the guide rod, a bracket pivoted to said frame, a shaft journaled in said bracket and provided with a worm wheel, and a spring for holding the worm wheel in engagement with the phonograph feed screw, substantially as set forth.

13. In a phonograph, the combination of the rotatable longitudinally immovable feed

screw and traveling carriage, with means for imparting progressive movement to the latter at either of two rates of speed, consisting of a feed nut and a rack carried by the carriage, gear means rotative from said feed screw, and means for moving said rack out of mesh with said gear means, and said nut into mesh with said screw, or for moving said rack into mesh with said gear means and said nut out of mesh with said screw at will, substantially as set forth.

This specification signed and witnessed this 4th day of Feby. 1908.

HERMAN WOLKE.

Witnesses:

FRANK D. LEWIS,
H. H. DYKE.