

P. WEBER.
PHONOGRAPH.

APPLICATION FILED FEB. 6, 1908.

936,266.

Patented Oct. 5, 1909.

2 SHEETS—SHEET 1.

Fig. 4

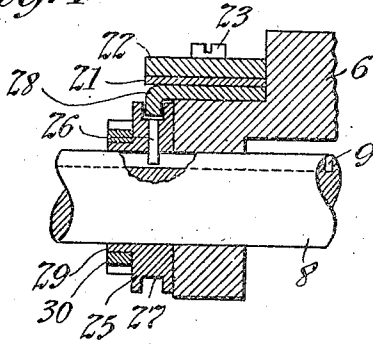


Fig. 5

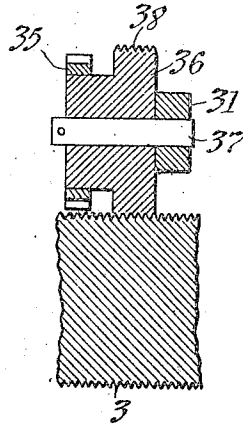
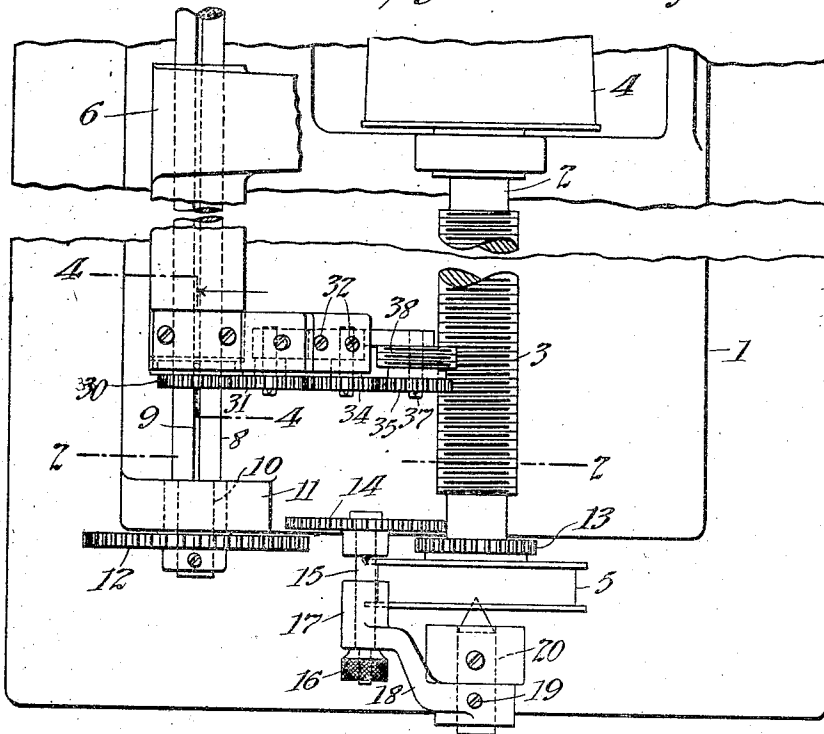


Fig. 1

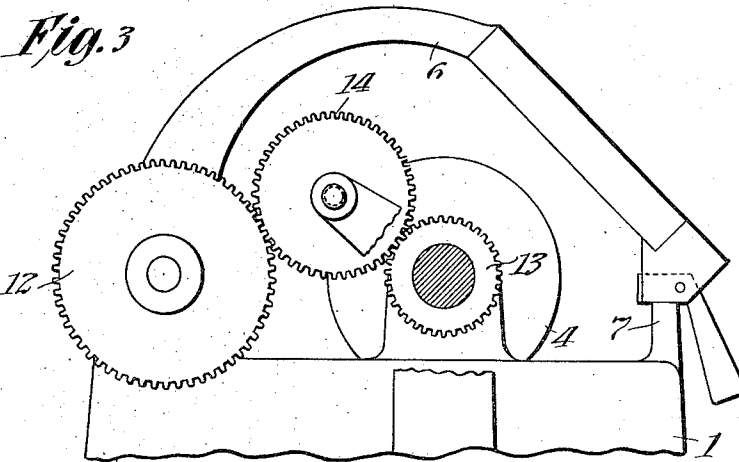


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2 SHEETS—SHEET 2.



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UNITED STATES PATENT OFFICE.

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PHONOGRAPH.

936,266.

Specification of Letters Patent.

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To all whom it may concern:

Be it known that I, PETER WEBER, 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 wherein the sound box is carried on a traveling carriage to which a progressive movement is imparted by means of a rotating feed screw, so that the reproducer or recorder stylus traces a spiral path with respect to the record surface.

It has been the usual practice for many years to provide a feed screw of fine pitch which will advance the traveling carriage a distance of one one-hundredth of an inch for each revolution of the mandrel. More recently, however, it has been found possible to manufacture a sound record in which the record groove has two hundred turns or threads to the inch, so that it is desirable to provide a phonograph in which the feed of the carriage will be suitable for operating upon a record of this description. In view of the fact, however, that there are already thousands of phonographs in use in which the feed screw advances the carriage one one-hundredth of an inch per mandrel revolution, and a vast number of records are also in use having a pitch of one one-hundredth of an inch, it is desirable to provide means which may readily be applied to such phonographs whereby the carriage may be driven at one-half the speed at which it has been heretofore driven, such means also permitting the feeding of the carriage at its usual speed, so that the phonograph can be used interchangeably with sound records having either one hundred or two hundred threads per inch, and my invention has for its object the provision of interchangeable means of this character which may be readily applied to a phonograph and in which, when so applied, the parts may be readily shifted with respect to each other, so as to drive the carriage at the desired rate of speed.

Reference is hereby made to the accompanying drawings, in which corresponding parts are designated by the same reference numerals in the several views, of which—

Figure 1 is a plan of a portion of a phonograph to which my invention is ap-

plied; Fig. 2 is a section on line 2—2, Fig. 1; Fig. 3 is a side elevation of the phonograph, some of the parts being broken away; Fig. 4 is a section on line 4—4 of Fig. 1 and Fig. 5 is a section on line 5—5 of Fig. 2.

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 carries the mandrel 4, and drive pulley 5 over which passes the belt from the phonograph motor. The traveling sound box carriage 6 rests at its forward end upon the usual straight edge or track 7, and is sleeved at its rear upon a rod 8 which takes the place of the usual fixed guide rod. The rod 8 is provided with a longitudinal groove 9 and is journaled in bearings 10 secured within the uprights 11 which are integral with the base 1. Upon the end of the shaft or guide rod 8 is a spur gear 12 and another spur gear 13 is fixed to the shaft 2. These gears may be brought into driving relation to each other by a slidable gear 14 fixed upon the end of a pin 15 which has a removable head 16 and is movable longitudinally within a bore formed within the boss 17 of the arm 18, the latter being secured by a set screw 19 to the pin or center 20 upon which the shaft 2 rotates. A flat spring 21 and a bent plate 22 are secured at their rear ends to the carriage 6 by screws 23, and a screw 24 is threaded in the plate 22 in such position that its lower end bears against the upper surface of the spring 21, in order to regulate or adjust the tension thereof.

There is a sleeve 25 slidably mounted upon the shaft 8 and held against rotation by a pin 26 which extends into the groove 9. The sleeve 25 is provided with a circumferential groove 27 into which extends the vertical portion of a bent plate 28 which is clamped between the spring 21 and carriage 6 by the screws 23, said plate serving to secure the sleeve 25 to the carriage 6 while permitting rotation thereof with the shaft 8. The sleeve 25 is provided with a flange or hub 29 upon which is fixed a spur gear 30. A frame 31 is secured to the spring 21 by screws 32, and supports a gear train composed of spur gears 33, 34 and 35, the gear 35 being fixed upon the hub of a wheel 36 rotatable upon the pin 37, and the periphery of said wheel is formed with a screw thread 38, having the same pitch as the thread of

the screw 3, but of reverse direction, so that the wheel 36 is adapted to mesh with the screw 3, being held in yielding engagement therewith by the resilience of the spring 21, the degree of pressure being regulated by the screw 24, as previously described.

The operation of the device is as follows: When the parts are in the positions shown in Fig. 1, the rotation of the feed screw 3 will impart a progressive movement to the carriage 6, and will advance the same for each revolution of the feed screw a distance equal to the pitch thereof, the threaded wheel 36 acting merely as a feed nut, since the frictional engagement of the said wheel with respect to the feed screw is not sufficient to overcome the friction of the gears 33, 34 and 35 upon their pintles, and the friction of the shaft 8 in its bearings, said friction therefore acting as a means for holding the wheel 36 against rotation. The rate of feed of the carriage is therefore suitable for operating upon a record having one hundred threads per inch. When the pin 15 is moved outward the gear 14 is brought into engagement with the gears 13 and 12 and the latter is therefore positively driven from the shaft 2 and drives the shaft 8. The shaft 8 drives the gears 30, 33, 34 and 35 and thereby causes the wheel 36 to rotate in a direction opposite to that in which the shaft 2 is rotating and at one-half the speed thereof. On account of this rotation of the wheel 36 the movement imparted to the carriage by the feed screw 3 is at a rate which is exactly one-half what it was in the former case, and the carriage is therefore 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 of the rotating mandrel, feed screw and traveling carriage, of a rotary wheel carried by the carriage in engagement with the feed screw, means for holding said wheel against rotation, and interchangeable means for imparting rotation to said wheel independently of its frictional engagement with the feed screw, substantially as set forth.

2. In a phonograph, the combination with the rotating mandrel, feed screw and traveling carriage, of a rotary wheel carried by the carriage in frictional engagement with the feed screw, means for holding the same against rotation, and interchangeable means for positively driving the same while in frictional engagement, at a speed different from that of the feed screw, substantially as set forth.

3. In a phonograph, the combination of the rotating mandrel, feed screw and traveling carriage, of a rotary wheel carried by the carriage and having its periphery formed with a thread adapted to engage the thread

of the feed screw and of opposite direction, means for holding said wheel against rotation, and interchangeable means for positively driving said wheel in a direction opposite to the direction of rotation of said feed screw, substantially as set forth.

4. In a phonograph, the combination of the rotating mandrel, feed screw and traveling carriage, of a rotary wheel carried by the carriage and having its periphery formed with a thread of opposite direction from that of the feed screw and in engagement therewith, the diameter of said wheel being substantially the same as that of the feed screw, and interchangeable means for positively driving said threaded wheel in a direction opposite to that in which the feed screw rotates, substantially as set forth.

5. An attachment for phonographs consisting of a spring 21 carrying a gear train and a rotary threaded wheel adapted to frictionally engage the feed screw, substantially as set forth.

6. An attachment for phonographs consisting of the spring 21 carrying a gear train and a threaded wheel adapted to frictionally engage the feed screw and means for varying the tension of said spring, substantially as set forth.

7. In a phonograph, the combination of the rotating mandrel, feed screw and traveling carriage, of a rotary shaft 8 upon which the carriage is sleeved, means for driving said shaft, a rotary wheel carried by the carriage in frictional engagement with the feed screw and a driving connection between said shaft 8 and said wheel, substantially as set forth.

8. In a phonograph, the combination of the rotating shaft 8, traveling carriage slidable thereon, a gear 35 traveling with said carriage, and a driving connection between said shaft and gear, substantially as set forth.

9. In a phonograph, the combination of the rotating shaft 8, traveling carriage slidable thereon, said shaft having a groove formed therein, and a gear 35 traveling with said carriage and having a spline engaging said groove, substantially as set forth.

10. In a phonograph, the combination of the rotating shaft 8, traveling carriage slidable thereon, and a sleeve 25 in driving connection with said shaft, said sleeve being formed with a circumferential groove 27 and said carriage being provided with a member 28 in engagement with said groove, substantially as set forth.

11. In a phonograph, the combination of the traveling carriage, the threaded wheel 36 carried thereby, the gear 35 rigid with said wheel, and means for driving said gear, substantially as set forth.

12. In a phonograph, the combination with the rotating mandrel, feed screw shaft

and traveling carriage, of a rotary shaft 8 upon which the carriage is sleeved, a gear 12 mounted on said shaft, a gear 13 mounted on the feed screw shaft, and a sliding gear 14 adapted to be brought into driving relation with said gears 12 and 13, substantially as set forth.

13. In a phonograph, the combination of a rotatable feed screw, a carriage mounted to travel parallel to the feed screw, a rotary wheel carried by the carriage in meshing engagement with the feed screw, means for holding said wheel against rotation, and means for imparting rotation to said wheel independently of its frictional engagement with the feed screw, substantially as set forth.

14. In a phonograph, the combination of a rotatable feed screw, a shaft parallel thereto, a carriage mounted to travel on said shaft, a rotary wheel carried by the carriage

in meshing engagement with the feed screw, gear connections movable with said carriage between said wheel and said shaft, and means for rotating said wheel or not, as desired, substantially as set forth.

15. In a phonograph, the combination of a pair of shafts, centers on which one of said shafts is mounted, gears on said shafts, a bracket carried by one of said centers, a stud carried in slidable relation by said bracket and a gear carried by said stud, movable into and out of mesh with said other gears by the sliding movement of said stud, substantially as set forth.

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

PETER WEBER.

Witnesses:

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