

J. F. OTT.
 PHONOGRAPH.
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932,314.

Patented Aug. 24, 1909.

Fig. 1

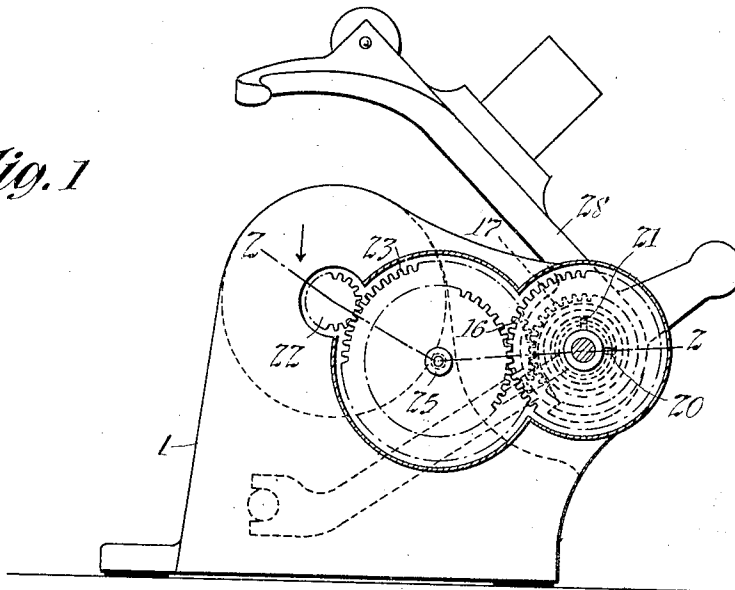


Fig. 2

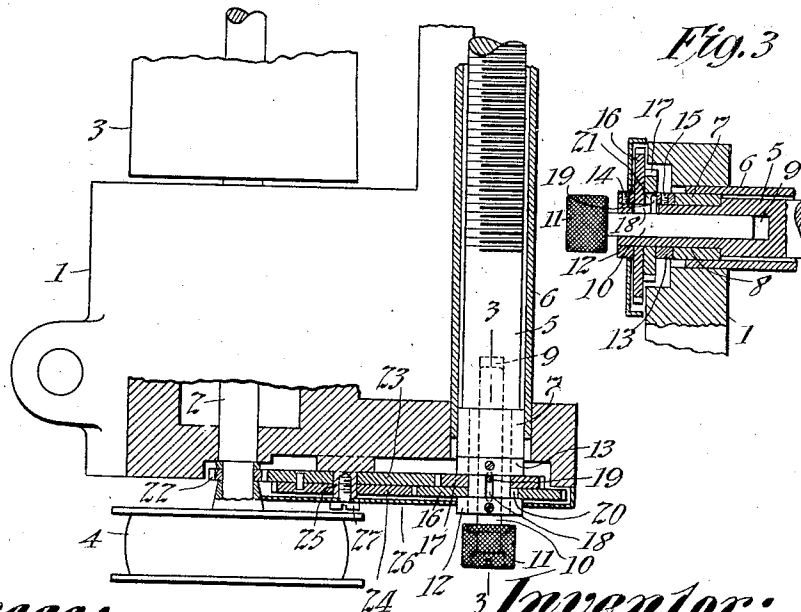


Fig. 3

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UNITED STATES PATENT OFFICE.

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PHONOGRAPH.

932,314.

Specification of Letters Patent.

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To all whom it may concern:

Be it known that I, JOHN F. OTT, 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 feed screw may be driven at one-half the speed at which it has been heretofore driven, such means also permitting the driving of the feed screw 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 feed screw at the desired rate of speed.

Reference is hereby made to the accompanying drawings of which—

Figure 1 is an end elevation of a well-known form of phonograph to which my invention is applied; Fig. 2 is a plan view, partly in section on line 2—2 of Fig. 1, and

Fig. 3 is a detail section on line 3—3 of Fig. 2.

Corresponding parts are designated by the same reference numerals in the several views.

The phonograph shown comprises a base or frame 1 in which is journaled the main shaft 2 which carries the mandrel 3 and drive pulley 4 which receives the driving belt from the phonograph motor. The feed screw shaft 5 is inclosed within a tubular guard 6, the end of which is secured within an opening in the frame 1, and within the end of said tube 6 is secured a sleeve 7 which forms a bearing for the reduced portion 8 of the shaft 5. The end of the said shaft 5 is bored out to form a recess 9 within which is situated a longitudinally movable pin 10, having a milled head 11 for convenience in shifting the same. A pair of collars 12 and 13 are fixed to the portion 8 of the shaft 5 by means of set screws 14 and 15, and between said collars are a pair of loosely mounted spur gears 16 and 17. A slot 18 is formed in the portion 8 of the shaft 5 upon which the gears 16 and 17 are mounted, and a projection 19 is fixed to the pin 10 and extends through the said slot for the purpose of locking or keying either of the said gears to the shaft, said gears being formed with recesses 20 and 21 respectively, adapted to receive said projection. There is a spur gear 22 fixed to the mandrel shaft 2 and the same engages a spur gear 23 which carries another spur gear 24, said gears being rotatably mounted upon a boss 25 which may be integral with the frame 1 as shown. The gear 23 meshes with the gear 17 and the gear 24 meshes with the gear 16. A cover plate 26 may be used to protect the gears and the same is held in position by a screw 27 threaded within the boss 25.

When the parts are in the positions shown in Figs. 2 and 3, the gear 17 is keyed to the shaft 5 by means of the projection 19 carried by the longitudinally movable pin 10, and the said shaft will therefore be driven by the shaft 2 through the gears 22, 23 and 17, and these gears are so proportioned that the speed of the shaft 5 will be suitable for causing the sound box carriage 28 to be fed at the proper speed for operating upon a sound record having one hundred threads to the inch. When the pin 10 is moved outward from the position shown so as to bring the projection 19 out of engagement with

the recess 21 of the gear 17, it may readily be caused to enter the recess 20 of the gear 16 which gear will then be keyed to the shaft 5 and the latter will be driven from the shaft 2 through the gears 22, 23, 24 and 16. These gears are so proportioned that the speed imparted to the shaft 5 will be suitable for feeding the carriage 28 operatively with respect to a sound record having two hundred threads to the inch. All that is necessary in order to convert the phonograph from one which is adapted to play a record of one hundred threads to the inch to one for playing a record of two hundred threads to the inch, is to move the pin 10 outwardly, and vice versa to convert the machine from one which plays records having two hundred threads to the inch to one which will play records having one hundred threads to the inch, the only adjustment necessary is an inward movement of the pin 10.

Having described my invention, what I claim is:

1. In a phonograph, the combination with the mandrel and feed screw shafts, of a plurality of gear trains uniting the two with different gear ratios, said trains including gears loosely mounted with respect to one of said shafts, a bearing for the end of said shaft, said gears being mounted on said shaft outside of said bearing, and a pin movable longitudinally of said shaft having a projection passing through a slot in said shaft and adapted to engage recesses formed in said gears, substantially as described.

2. In a phonograph, the combination with the mandrel and feed screw shafts, of a plurality of gear trains uniting the two with different gear ratios, said trains including gears loosely mounted with respect to one of said shafts, a bearing for said shaft near the end thereof, said shaft having a reduced portion coacting therewith, said gears being mounted on said shaft outside of said bearing, and a pin movable longitudinally of said shaft having a projection passing through a slot in said shaft and adapted to engage recesses formed in said gears, substantially as described.

3. In a phonograph, the combination with the mandrel and feed screw shafts, of a plurality of gear trains uniting the two with different gear ratios, said trains including gears loosely mounted with respect to one of said shafts, a bearing for said shaft near the end thereof, said shaft having a reduced

portion coacting therewith, said gears being mounted on said shaft outside of said bearing, collars on said shaft on either side of said gears, said shaft having a longitudinal recess in the end thereof, and a slot extending from said recess to the exterior of said shaft, and a pin movable longitudinally in said recess having a projection passing through said slot and adapted to engage recesses formed in said gears, substantially as described.

4. In a phonograph, the combination with the mandrel and feed screw shafts, of a plurality of gear trains uniting the two with different gear ratios, said trains comprising a gear fast on one of said shafts, gears mounted concentrically and secured together, and gears loosely mounted on the other of said shafts, a bearing for the end of said last named shaft, said gears being mounted on said shaft outside of said bearing, and a pin movable longitudinally of said shaft having a projection passing through a slot in said shaft and adapted to engage recesses formed in said gears, substantially as described.

5. In a phonograph, the combination with the mandrel and feed screw shafts, of a plurality of gear trains uniting the two with different gear ratios, said trains including gears loosely mounted with respect to one of said shafts and adjacent the end thereof, a bearing for said shaft, and a pin movable longitudinally of said shaft having a projection passing through a slot in said shaft and adapted to engage recesses formed in said gears, substantially as described.

6. In a phonograph, the combination with the mandrel and feed screw shafts, of a plurality of gear trains uniting the two with different gear ratios, said trains comprising a gear fast on one of said shafts, gears mounted concentrically and secured together, and gears loosely mounted on the other of said shafts, a bearing for the end of said last named shaft, and a pin movable longitudinally of said shaft having a projection passing through a slot in said shaft and adapted to engage recesses formed in said gears, substantially as described.

This specification signed and witnessed this 13 day of Jan. 1908.

JOHN F. OTT,

Witnesses:

H. H. DYKE,
FRANK D. LEWIS.