T. M. SHANK.

DRIVING MECHANISM FOR PHONOGRAPHS.

APPLICATION FILED NOV. 20, 1918.

1,308,556.

Patented July 1, 1919.

4 SHEETS—SHEET 1.

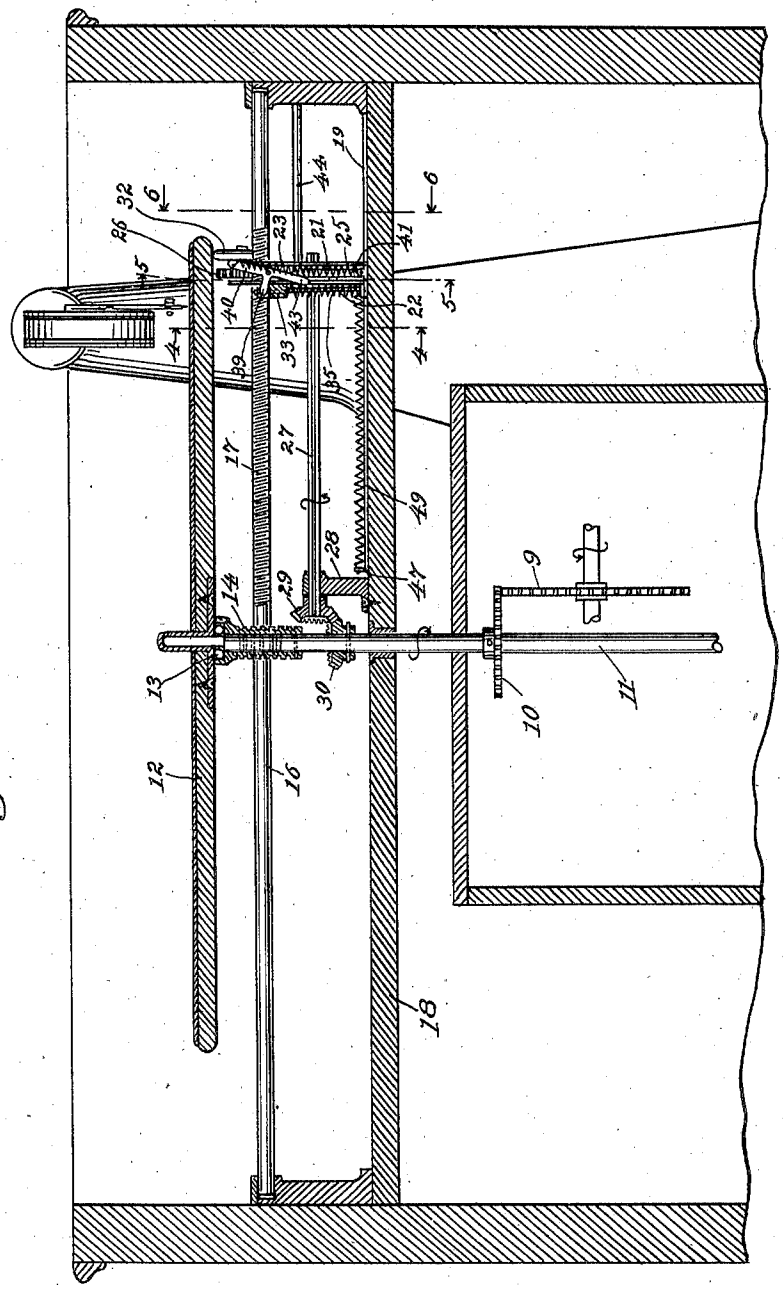


Fig. 1.

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4 SHEETS—SHEET 2.

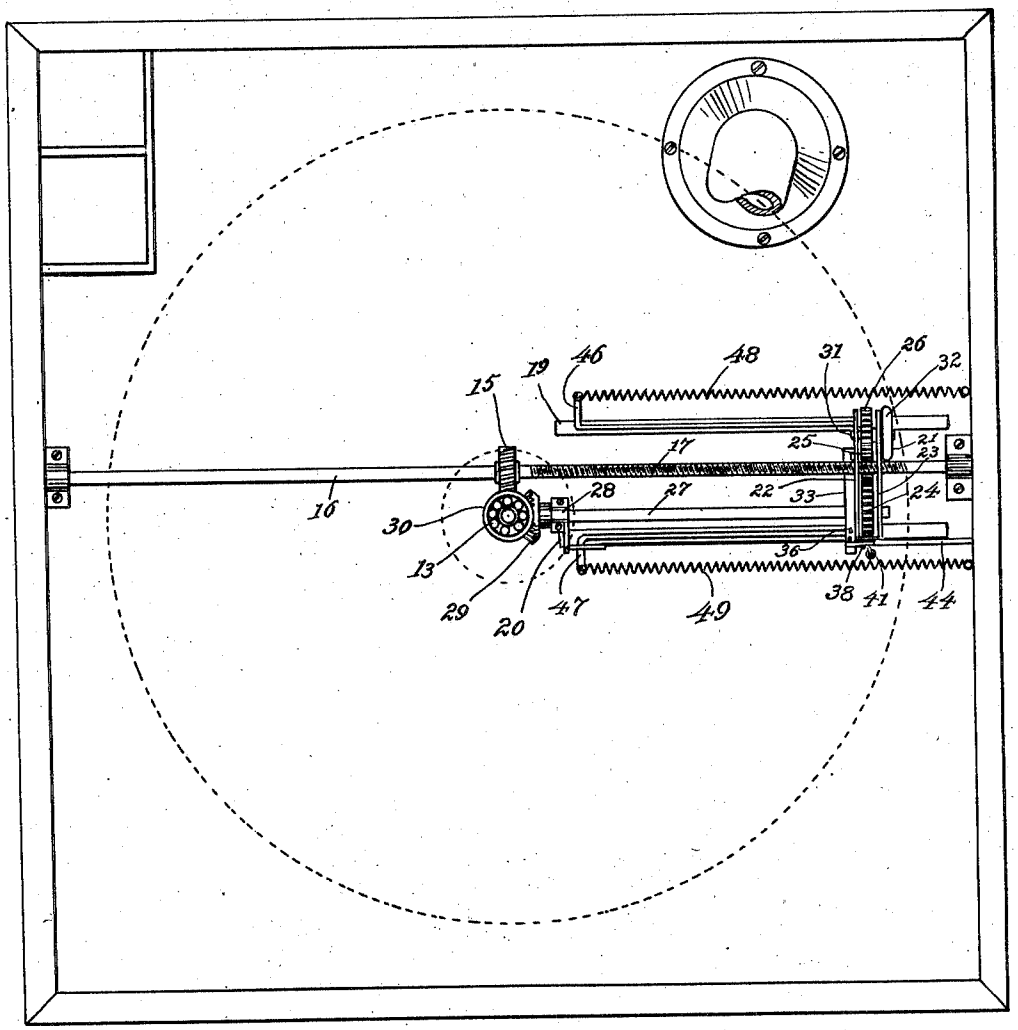


Fig. 2

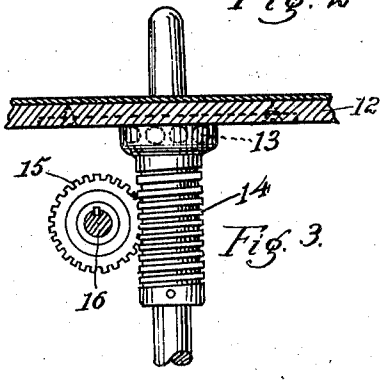


Fig. 3.

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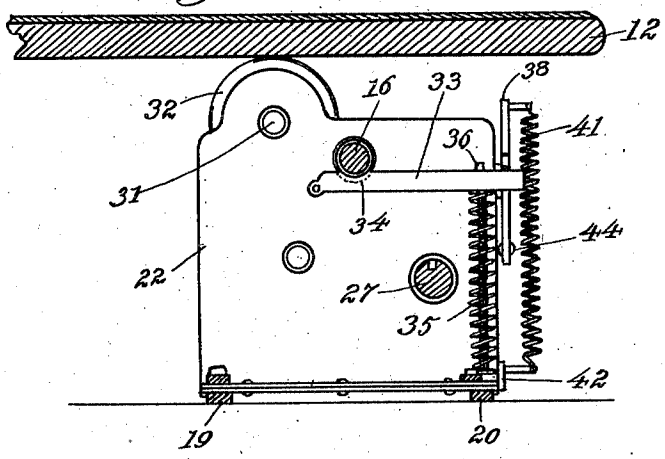
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4 SHEETS—SHEET 3.

Fig. 4



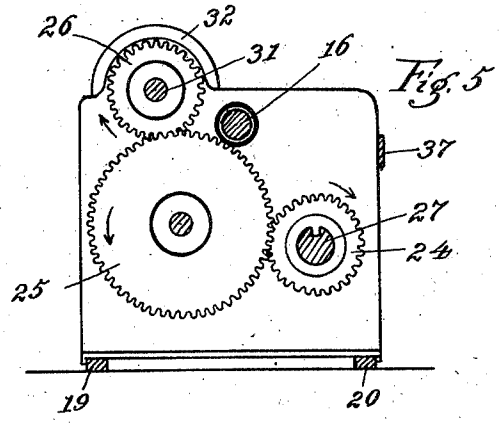
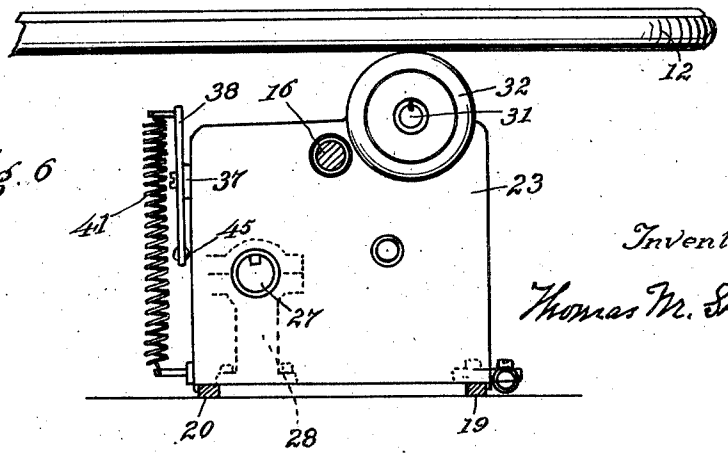


Fig. 5

Fig. 6



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4 SHEETS—SHEET 4.

Fig. 7

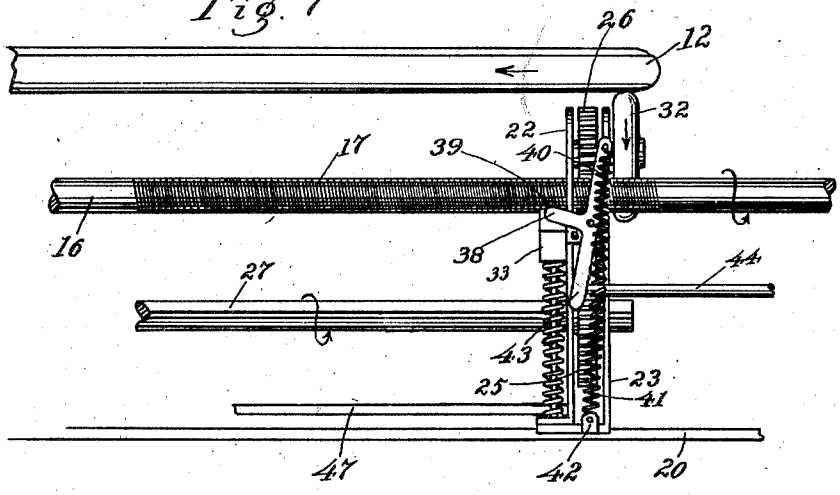
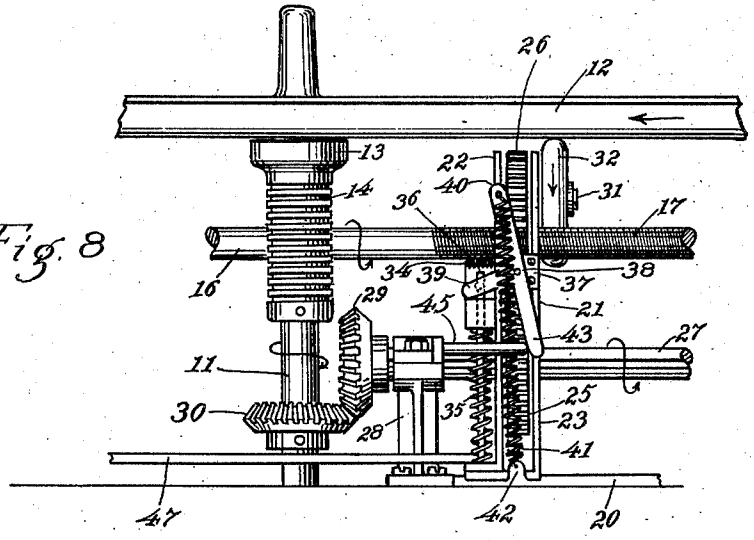


Fig. 8



Inventor:

Thomas M. Shank

UNITED STATES PATENT OFFICE.

THOMAS M. SHANK, OF BIDWELL, OHIO, ASSIGNOR OF ONE-HALF TO THOMAS J. O'MEARA, OF CINCINNATI, OHIO.

DRIVING MECHANISM FOR PHONOGRAPHS.

1,308,556. Specification of Letters Patent. Patented July 1, 1919.

Application filed November 20, 1918. Serial No. 263,406.

To all whom it may concern:

Be it known that I, THOMAS M. SHANK, a citizen of the United States, residing in Bidwell, in the county of Gallia and State of Ohio, have invented new and useful Improvements in a Driving Mechanism for Phonographs, of which the following is a specification.

My invention has for an object to produce an improved phonograph in which the speed of the record disk with relation to the needle is maintained uniform from the point of contact of the needle with the disk at the outermost end of the sound record groove to the point of contact at the innermost end of the sound record groove, for the purpose of permitting a greater number of sound vibration impressions to be placed within the groove than is now permitted by the uniform speed of rotation of the record disk during the recording and reproducing operations.

This and other objects are attained in the phonograph described in the following specification and illustrated in the accompanying drawings in which—

Figure 1 is an elevational sectional view of a phonograph embodying my invention.

Fig. 2 is a plan view of my improved phonograph, showing the turn table removed, but the position thereof in dotted lines, the sound reproducing goose neck being shown broken away for convenience of illustration.

Fig. 3 is a fragmental view upon an enlarged scale of a detail of my invention.

Fig. 4 is a sectional elevation upon an enlarged scale, taken on the line 4—4 of Fig. 1.

Fig. 5 is a sectional elevation upon an enlarged scale, taken on the line 5—5 of Fig. 1.

Fig. 6 is a sectional elevation upon an enlarged scale, taken on the line 6—6 of Fig. 1.

Fig. 7 is an enlarged fragmental elevation of the table rotating mechanism of the phonograph embodying my invention, at the outer edge of the turn table ready to start upon its travel toward the center of the turn table during the reproduction of the record.

Fig. 8 is an enlarged fragmental elevation of the table rotating mechanism of the phonograph embodying my invention, showing the position of the parts thereof upon arrival at the inner limit of its travel upon completion of the reproduction of the record.

My improved phonograph is provided with a motor which is represented by the gears 9 and 10 which drive the vertically positioned shaft 11 upon which the turn table 12 is rotatively mounted upon a ball bearing 13. This ball bearing is located at the upper end of a worm 14 which is secured to shaft 11 and which drives a worm gear 15 secured to a rotatively mounted shaft 16 extending transversely of the phonograph. The right end of shaft 16 is provided with screw threads 17.

Upon the platform 18 of the phonograph cabinet I have located tracks 19 and 20 upon which a carriage 21 is reciprocally mounted. This carriage consists of two plates 22 and 23 between which gears 24, 25 and 26 are located. Gear 24 is splined upon a shaft 27 which has bearing in plates 22 and 23 at one end and at its other end is journaled in a bearing 28 secured to the platform 18. The extending end of shaft 27 is provided with a miter gear 29 which meshes with a miter gear 30 secured to shaft 11. By this means the gear 24 and the intermeshing gears 25 and 26 are driven. Gear 26 is mounted upon a shaft 31 which carries a roller 32 which drives the turntable 12.

Shaft 16 passes through plates 22 and 23 freely. Pivotally mounted at one end on plate 22 is an arm 33 which has a screw threaded notch 34 for engaging the screw thread 17 of shaft 16. A spring 35 which is guided by a pin 36, is provided for normally holding arm 33 elevated with its screw threads in engagement with the screw threads of shaft 16. Pivotally mounted on a plate 37 secured to the fronts of plates 22 and 23 is a T-shaped lever 38, short arm 39 of which is positioned to engage the end of arm 33, the upper long arm 40 being provided for the attachment thereto of a coil spring 41 which is also attached to a lug 42 extending from plates 22 and 23. The lower arm 43 of lever 38 is adapted to engage abutment pins 44 and 45 at the limits of travel of the carriage for a purpose to be presently described.

Extending from the carriage plates are fingers 46 and 47 to which the ends of springs 48 and 49 are attached.

In the operation of my improved phonograph the motor rotates shaft 11 in the

direction indicated by the arrow, and through gears 14, 15, and 29, 30, causes rotation of the respective shafts 16 and 27. The splined connection of shaft 27 with gear 24 causes the rotation of turn table 12 through gears 25 and 26 to drive roller 32, while the rotation of shaft 16 causes movement of the carriage toward the center of the turn table when the screw threads 34 of arm 33 engage the screw threads 17 of shaft 16.

At the beginning of the playing of a piece, the position of the friction roller 32 is at the extreme edge of the turn table as shown in Fig. 7. In this position the engagement of abutment pin 44 with lever arm 43 has caused the lever to swing to the position shown, being retained in this position by spring 41. Arm 39 is thus lifted from arm 33, which under the action of spring 35 is lifted to engage the screw threads of shaft 16. With this shaft in rotation the carriage is moved toward the center of the turn table, the rotation of shaft 27 simultaneously causing turn table driving action of roller 32.

As soon as the carriage reaches the inner end of its travel the arm 43 engages pin 45 and causes lever 38 to jump into the position shown in Fig. 8 under influence of spring 41, thus removing arm 33 from engagement with screw threads 17 of shaft 16. The carriage is thus arrested in its movement and is instantly returned to its starting point by springs 48 and 49 attached to fingers 46 and 47, the inward movement of the carriage having previously tensioned these springs.

It will thus be seen that I have devised a phonograph in which the speed of the turn table at the point the needle contacts the record, is always uniform thus permitting of a greater number of sound waves to be recorded than has heretofore been possible upon standard size record disks.

Having thus described my invention what I claim is:—

1. A phonograph comprising a turntable, a sound reproducer, a roller adapted to be driven to rotate the turntable, a feed screw adapted to move the roller toward the center of the turntable, mechanism adapted to rotate the roller and feed screw, and means adapted automatically to return the roller to starting position upon reaching the center of the turntable.

2. A phonograph comprising a turntable, a sound producer, a roller adapted to be driven to rotate the turntable, a feed screw adapted to move the roller toward the center of the turntable, mechanism adapted to rotate the roller and feed screw at a uniform speed whereby the speed of the turntable at the point of contact of the sound producer with a record located thereon will be uniform from start to finish of the record, and automatic means adapted to return the roller to starting position upon completion of the playing of a record, consisting of a lever adapted to remove the roller from operative connection with the feed screw, means for operating the lever, and a spring for returning the roller to a starting position.

In witness whereof, I affix my signature in the presence of two witnesses.

THOMAS M. SHANK.

Witnesses:
WM. A. HOWARD,
CLYDE KELLER.