June 3, 1924. 1,496,686

M. L. TABAKIN

RACK AND PINION WINDING DEVICE

Filed Feb. 10, 1922 2 Sheets-Sheet 1

Fig. 1.

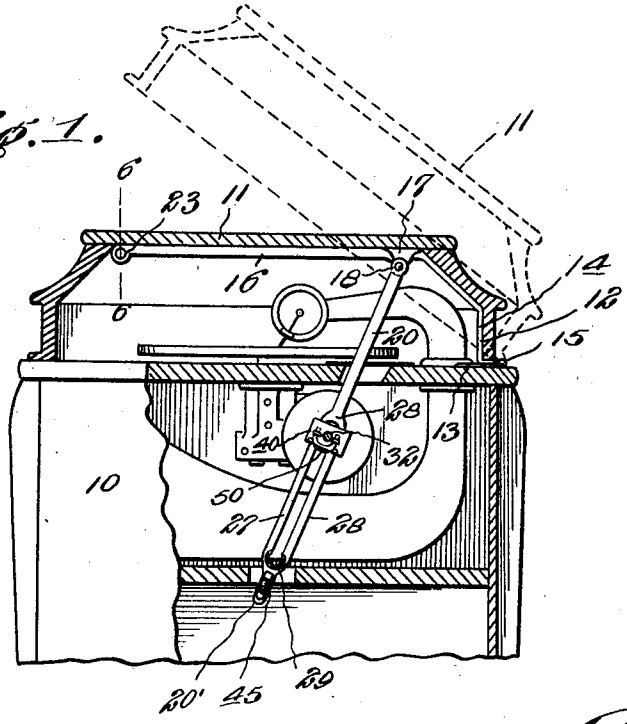


Fig. 4.

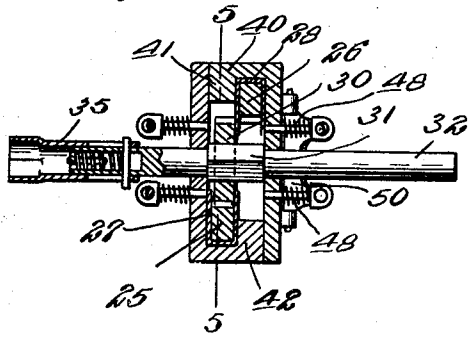
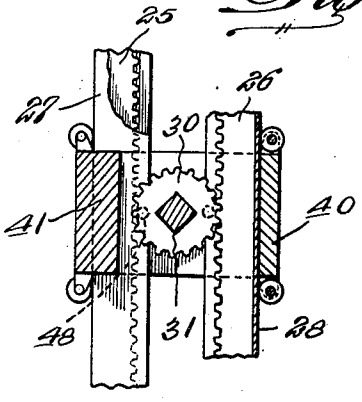


Fig. 5.



Fred L. Hoyt.

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WITNESSES:

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2 Sheets-Sheet 2

Fig. 2.

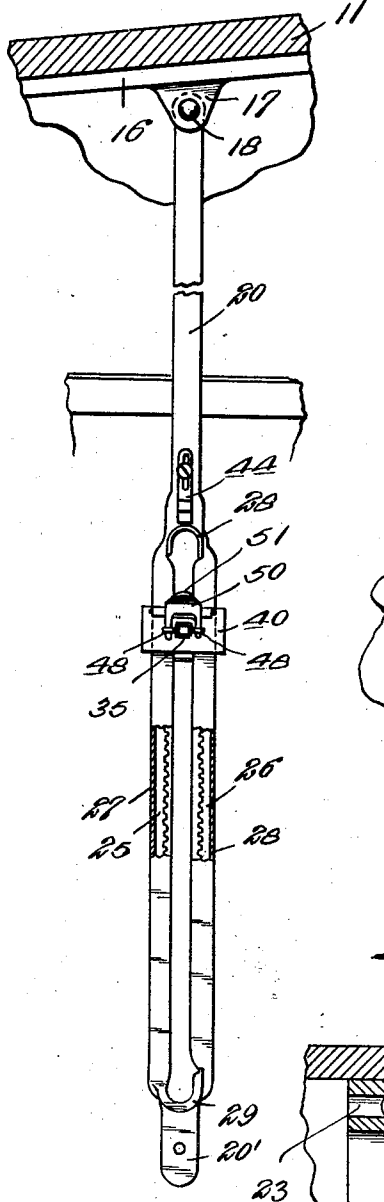

Fig. 3.

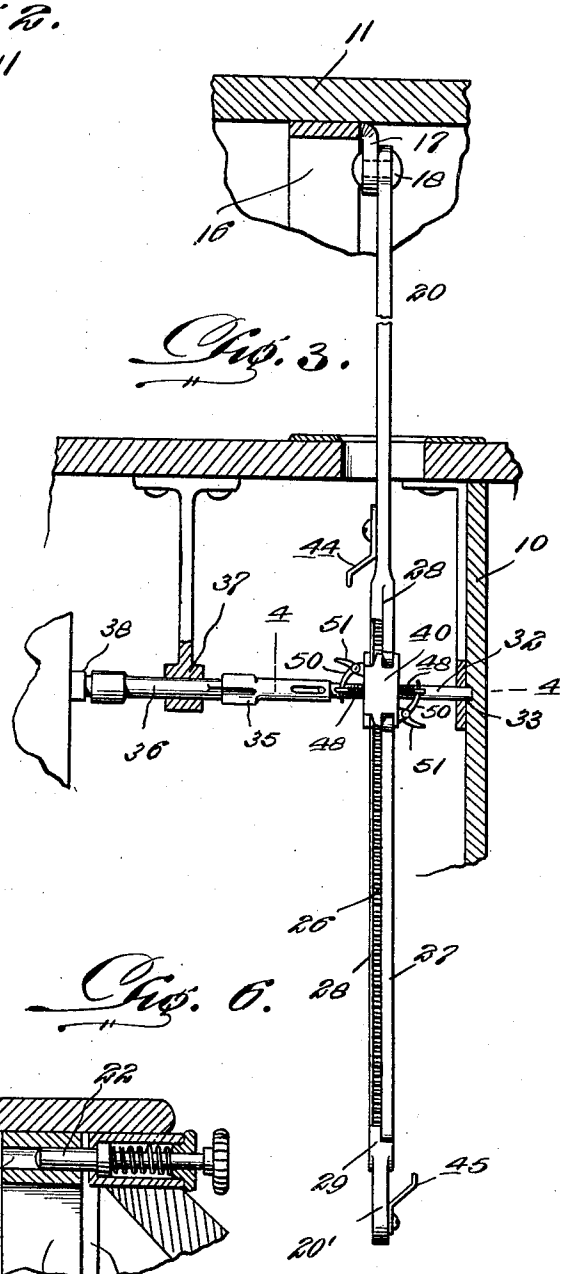

Fig. 6.

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Patented June 3, 1924. 1,496,686

UNITED STATES PATENT OFFICE.

MENDEL L. TABAKIN, OF NORFOLK, VIRGINIA.

RACK-AND-PINION WINDING DEVICE.

Application filed February 10, 1922. Serial No. 535,516.

To all whom it may concern:

Be it known that I, MENDEL L. TABAKIN, a citizen of the United States, residing at Norfolk, in the county of Norfolk and State of Virginia, have invented new and useful Improvements in Rack-and-Pinion Winding Devices, of which the following is a specification.

The object of this invention is to effect the winding of a phonograph motor by means of rack and pinion mechanism employing particular pinion shifting devices described below.

With the foregoing and other objects in view, the invention consists in the novel construction and arrangement of elements described and claimed, it being understood that modifications may be made within the scope of the claims without departing from the spirit of the invention.

In the drawings,

Figure 1 is a view in vertical section, through the upper portion of a phonograph cabinet, showing the operating mechanism in side elevation;

Figures 2 and 3 are further views of the operating or winding mechanism, in elevation, and on a larger scale;

Figure 4 is a section on line 4—4 of Figure 3;

Figure 5 is a section on line 5—5 of Figure 4;

Figure 6 is a section on line 6—6 of Figure 1.

The cabinet 10 is provided with a lid or cover 11, which may be mounted by means of a special form of hinge 12, including a leaf member 13 carried by the table portion of the cabinet, and including a leaf portion 14 pivotally mounted at 15.

Carried by leaf portion 14 is a brace, arm, or extension 16, providing a reinforcement for the cover and serving the purpose indicated below.

A downwardly extending lug 17 is pivotally connected at 18 with the reciprocable member 20, imparting movement to the rack and pinion mechanism. A spring held pin 22 mounted in the side wall of the cover enters aperture 23 in the element reinforcing the cover and connected therewith under normal conditions. When it is desired to permit of the lifting of the cover without operating the winding mechanism, this pin 22 is released from engagement with the element, and the reciprocable element 20 is not operated for imparting movement to the winding mechanism. This arrangement permits of a lifting of the cover when the spring of the motor is fully wound.

Connected with element 20 are parallel spaced rack bars 25 and 26 mounted in guard members 27 and 28 and offset with reference to each other, in the manner shown in Figure 4. Yoke portions 28 and 29 connect the guard member and opposite ends thereof, and permit of the shifting of the pinion 30 transversely of the square portion 31 of the shaft 32. The outer end of this shaft 32 is mounted at 33, and having slidable but non-rotatable connection with the inner end of this spindle is a socket element 35 having a square opening therein for cooperation with the square end of the element 36 mounted for rotation in bracket 37. This element 36 corresponds with the usual socket member of a winding crank used with a spring motor, and detachably engages the winding arbor 38.

A slidable frame 40 surrounds and moves longitudinaly of the rack bars, being provided with inner spacing members 41 and 42 adjacent to the rack bars, and this frame serves to rotatably mount the spindle 32 carrying the pinion. This pinion 30 is automatically shifted from one rack bar to the other, at the end of the stroke produced by raising or closing the cover. The shifting movement takes place in the enlarged portions formed by the yoke members at the ends of the rack bars.

At the end of each stroke engagement is effected with a suitable device such as a bracket 44 or 45, as the case may be, adjustably mounted by means of a screw passing through the slotted portion of the bracket and engaging the element 20 or the end portion 20′.

Spring held pins 48 pass through the sides of the frame 40 and are each provided with an eye member engaged by an arm of pivoted operating device or latch 50, this device being provided with an offset end 51, directly engaged by bracket 44 at one end of the rack bars, or the corresponding bracket at the other end.

The arrangement of two spring held pins and the operating devices therefor is duplicated on the opposite side of the frame 40, so that the pinion is shifted laterally of the rack bars, and therefore from one rack bar to the other, at the end of each stroke

produced by the movement of the cover. It may be added that the socket member 35 slidable longitudinally of the spindle 32 and non-rotatable thereon, is normally forced toward the left as shown in Figure 4, so that direct engagement is effected with element 36, shown in Figure 3.

Having thus described the invention, I claim:

1. In a device of the class described, a reciprocable arm, spaced rack bars connected with the arm, a pinion for cooperation with the rack bars, said bars being mounted to permit one of them to engage the pinion to the exclusion of the other, a frame slidable with reference to the bars, a spindle passing through the frame between the bars, a pinion slidable on the spindle and rotatable with the latter, clearance spaces being provided between the bars near the ends thereof, and means for automatically shifting the pinion through said clearance spaces from one bar to the other, said means including slidable elements engaging the pinion alternately from opposite sides, and pivoted members for operating the slidable elements.

2. In a device of the class described, a plurality of rack bars spaced apart and mounted in offset relation, a pinion for engaging either bar to the exclusion of the other, a spindle for mounting said pinion, an adjustably mounted socket member carried by the spindle, a slidable frame mounting the spindle, spring held pins mounted in opposite sides of the frame and positioned for imparting lateral thrust to the pinion, and means for operating certain of the pins for imparting such thrust when the pinion reaches the end of the rack bar engaged thereby.

3. In a device of the class described, a plurality of rack bars, a pinion cooperating therewith, a plurality of pinion shifting devices, including spring held pins mounted in pairs, a frame for carrying said pins, pivoted elements engaging the pins and including offset elements, and adjustably mounted devices in the path of movement of the offset elements.

In testimony whereof I affix my signature.

MENDEL L. TABAKIN.