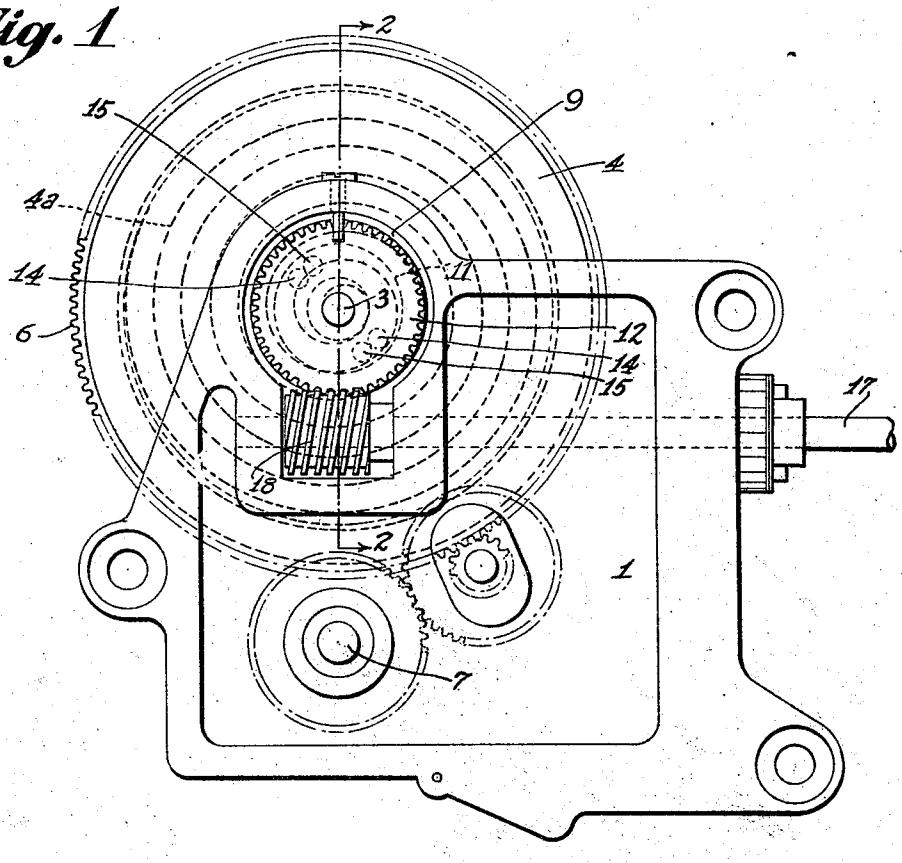
Feb. 8, 1927. 1,616,731

J. WOLFF

SPRING MOTOR

Filed Dec. 24. 1921

Fig. 1



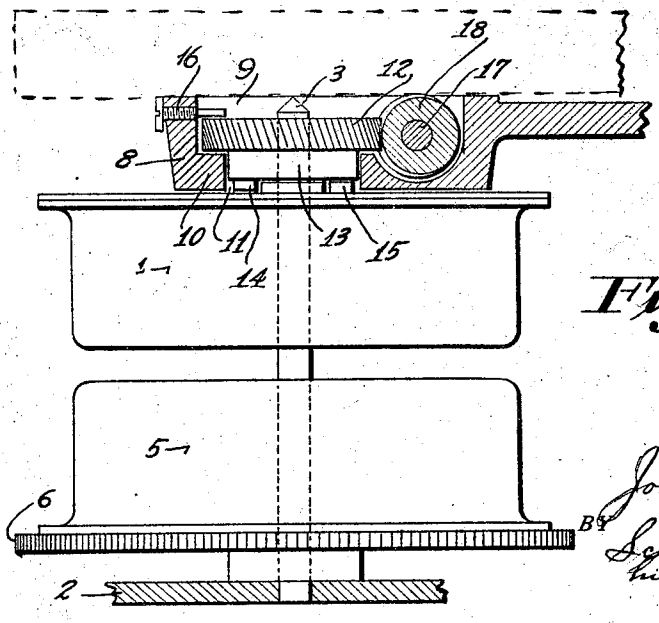


Fig. 2

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Patented Feb. 8, 1927. 1,616,731

UNITED STATES PATENT OFFICE.

JOSEPH WOLFF, OF NEW YORK, N. Y., ASSIGNOR, BY MESNE ASSIGNMENTS, TO SONORA PHONOGRAPH COMPANY, INC., A CORPORATION OF NEW YORK.

SPRING MOTOR.

Application filed December 24, 1921. Serial No. 524,710.

My invention relates to spring motors, adapted for talking machines, or other apparatus, and more particularly to the winding mechanism therefor, and has for its objects, to produce a winding mechanism which will be noiseless in operation, will occupy a minimum amount of space, the major portion of which will be concealed and protected from dirt or dust.

The invention relates to a novel construction of a winding mechanism for a spring motor.

One of the objects of the invention is to provide a novel housing means for the winding mechanism.

With these and other objects in view to be more fully set forth hereinafter, the invention consists in the novel construction, combination of elements, and arrangement of parts which will be exemplified in the operation and construction hereinafter described in the following specification and illustrated in the accompanying drawings, considered together or separately.

The inventive idea involved is capable of receiving a variety of mechanical expressions, one of which for the purposes of illustration is shown in the accompanying drawings.

The invention will first be described in connection with the accompanying drawings, illustrating one embodiment of the invention, wherein similar reference characters are used to designate corresponding parts throughout the several views, and then more specifically defined and indicated in the appended claims.

In the drawings:—

Figure 1 is a top plan view of a talking machine motor provided with my invention, and

Figure 2 is a partial side elevation of the same, partly in section, the section being taken on the line 2—2 of Figure 1.

In carrying out my invention, I provide a motor having a top plate 1 and a bottom plate 2 held in spaced relation by any desired means and between the plates are carried the operative parts of the motor.

A shaft 3 is journaled in the plates 1 and 2 and carries thereon a plurality of spring barrels 4 and 5. A helical spring 4^a shown in dotted lines Fig. 1 is disposed in each barrel, and the inner end of each spring is attached to the shaft 3 and the outer end is secured to its barrel, as is common.

One of the barrels 5 carries a spur gear 6 which, through a usual gear train Fig. 1, rotates an arbor 7 which projects upward through the top plate 1 and through a motor board Fig. 2 (indicated in dotted lines) to the under side of which the plate 1 is secured in any desired manner. The upper end of the arbor 7 is adapted to carry a disc-like turntable (not shown), on which a record disc is supported. The arbor 7 is rotated by the unwinding of the springs in the barrels, it being understood that the shaft 3 is normally stationary during the unwinding of the spring in the barrel 5, and rotated by the unwinding of the spring in the barrel 4. It will also be understood that the usual governing mechanism may be placed between the spring barrels and the arbor 7 which holds the drum stationary during the winding of the motor.

The top plate 1 has a thickened portion 8 in which is a recess 9. The bottom 10 of the recess is provided with a cylindrical opening 11 therein in axial alignment with the spring barrels 4 and 5.

Loosely carried on the shaft 3, and disposed within the recess 9, is a worm wheel 12 provided with a hub 13 which cooperates with the opening 11 to center the shaft 3 in the opening. The hub rests upon a pad on the upper end of the spring barrel 4.

The hub is provided with two diametrically disposed, axially extending pins 14, 14 which are adapted to cooperate with a pair of similarly disposed pins 15, 15 projecting from the end of the spring barrel 4, as shown. A screw 16 carried in the plate 1 projects over the top of the worm wheel and prevents removal from the shaft 3 of the worm wheel.

A winding shaft 17 is journaled to the plate 1 and projects outwardly to one side for the reception of the usual winding crank (not shown). The shaft 17 extends through the recess 9 and carries a worm 18 in mesh with the worm wheel 12. When the plate 1 is secured to the under side of the motor board, as is common, the recess will be closed and dust and dirt will be prevented from entering the recess. The winding shaft

17 is provided with the usual pawl and ratchet mechanism for preventing backward rotation of the spring.

The operation of the device is as follows: In winding the motor the operator turns the shaft 17, thereby communicating motion to the worm-wheel 12 through the worm 18 thereby rotating the worm-wheel 12 and causing the lugs 14 on the hub 13 to engage the lugs 15 on the top of the barrel 4, thereby rotating the barrel 4, the barrel 5 remaining stationary by reason of its interlocking with the table-operating gearing and the usual brake mechanism in machines of this sort. The barrel 4 being thus rotated, and the barrel 5 remaining stationary, the rotation of the barrel 4 by means of the connection of the spring therein with the shaft 3, the shaft 3 will be rotated with the barrel, and thereby effect the winding of the spring in the barrel 5. When the spring in the barrel 5 has been sufficiently rotated to fully compress the spring therein, the shaft 3 will become stationary, and the further rotation of the barrel 4 will wind the spring in said barrel 4. When the spring in barrel 4 is wound to its fullest extent, the operator releases the winding shaft, which is prevented from backward rotation by the usual pawl and ratchet mechanism. When the usual brake mechanism of the machine is released, the unwinding of the springs will cause the lugs 14 and 15, upon the backward movement of the worm-wheel 12, to come into engagement, and thus hold the barrel 4 stationary and permit the spring in the barrel 5 to unwind, and rotate the talking machine table, and as soon as the spring in barrel 5 unwinds to its fullest extent, the spring in the barrel 4 will unwind and rotate the shaft 3 and thereby rotate barrel 5 through its connection with the shaft by the spring therein, and further rotate the turn-table of the machine, through the gearing 6 carried by the barrel 5.

While I have illustrated my invention in connection with a talking machine motor, I wish it distinctly understood that the same is not to be so limited.

It is obvious from the foregoing description that I have constructed a very novel and compact motor in which the winding mechanism is housed in the top plate of the motor, thereby providing a unique and unitary structure in which the winding mechanism is noiseless in operation and decidedly simple in construction, and which is readily accessible for repair, replacement or other purposes.

In accordance with the provisions of the patent statutes, I have described the principle of my invention together with the apparatus which I now consider to represent the best embodiment thereof, but I desire it understood that my invention is not confined to the particular form of apparatus herein shown and described, the same being merely illustrative, and that the invention can be carried out in other ways without departing from the spirit of my invention, and, therefore, I claim broadly the right to employ all equivalent instrumentalities coming within the scope of the appended claims, and by means of which objects of my invention are attained, and the new results accomplished, as herein set forth, as it is obvious that the particular embodiment herein shown and described is only one of many that can be employed to attain these objects and accomplish these results.

Having now described my invention, what I claim and desire to secure by Letters Patent is:—

1. A spring motor, comprising a spring barrel, a shaft mounted in the barrel and extending outside thereof, a spring connected at one end to the barrel and at the other end to the shaft, a worm wheel loosely mounted on the shaft in proximity to the barrel, a pin projecting from the barrel, a pin projecting from the worm wheel, said barrel pin being in the path of the worm wheel pin, a winding shaft, and a worm on the shaft in mesh with the worm wheel.

2. A spring motor, comprising a pair of parallel plates, a shaft extending between the plates, a spring barrel surounding the shaft, a spring in the barrel, one end of said spring being secured to the shaft and the other end to the barrel, there being a recess in one of said plates, said shaft extending into the recess, a gear loosely mounted on the shaft, said gear being wholly within the recess and engaging the bottom thereof, there being a loose connection between the gear and barrel, and a winding shaft carrying a gear in mesh with said first mentioned gear, said winding gear being within said recess.

3. A spring motor, comprising a frame, a spring barrel carried in the frame, a shaft extending through the barrel, one of the frame members being parallel to and in proximity to one end of the barrel, there being a recess in the member, said shaft extending into the recess, there being an opening in the bottom of the recess, said opening being of greater diameter than the shaft, a worm wheel loosely mounted on the shaft, said worm wheel resting on the bottom of the recess, a hub on the worm wheel, said hub engaging within the opening and centering the shaft, loose connections between the hub and the barrel, a winding shaft extending parallel to the said frame member and entering the recess, and a worm on the shaft, said worm being disposed within the recess.

4. A spring motor, comprising a frame, a spring barrel carried in the frame, a shaft

extending through the barrel, one of the frame members being parallel to and in proximity to one end of the barrel, there being a recess in the member, said shaft extending into the recess, there being an opening in the bottom of the recess, said opening being of greater diameter than the shaft, a worm wheel loosely mounted on the shaft, said worm wheel resting on the bottom of the recess, means for preventing the removal of the worm wheel from the shaft, a hub on the worm wheel, said hub engaging within the opening and centering the shaft, loose connections between the hub and the barrel, a winding shaft extending parallel to the said frame member and entering the recess, and a worm on the shaft, said worm being disposed within the recess.

5. A spring motor, comprising a frame, a spring barrel carried in the frame, a shaft extending through the barrel, one of the frame members being parallel to and in proximity to one end of the barrel, there being a recess in the member, said shaft extending into the recess, there being an opening in the bottom of the recess, said opening being of greater diameter than the shaft, a worm wheel loosely mounted on the shaft, said worm wheel resting on the bottom of the recess, a screw projecting above the worm wheel for preventing the removal of the worm wheel from the shaft, a hub on the worm wheel, said hub engaging within the opening and centering the shaft, loose connections between the hub and the barrel, a winding shaft extending parallel to the said frame member and entering the recess, and a worm on the shaft, said worm being disposed within the recess.

6. A device of the character described comprising in combination, a motor board, a spring motor having a top-plate attached thereto, there being a recess formed between said board and top-plate, and a winding mechanism enclosed in said recess.

7. A device of the character described comprising in combination, a motor board, a spring motor having a top-plate attached thereto, there being a recess formed between said board and top-plate, and a train of gearing enclosed in said recess.

8. A spring motor having a top plate provided with a recess in its upper surface, one of the walls of the recess having an opening therethrough, a shaft passing through said opening, and means for centering the shaft with relation to the said opening.

9. A spring motor having a top plate provided with a recess in its upper surface, the recess having an opening through one of its walls, a shaft passing through the opening, gearing carried by the shaft and arranged in said recess, means for centering the shaft with relation to the opening, and means for closing the opening.

This specification signed this 10th day of December, 1921.

JOSEPH WOLFF.