

A. ROEMER.  
PHONOGRAPH MOTOR.  
APPLICATION FILED MAY 19, 1919.

1,343,584.

Patented June 15, 1920.

2 SHEETS—SHEET 1.

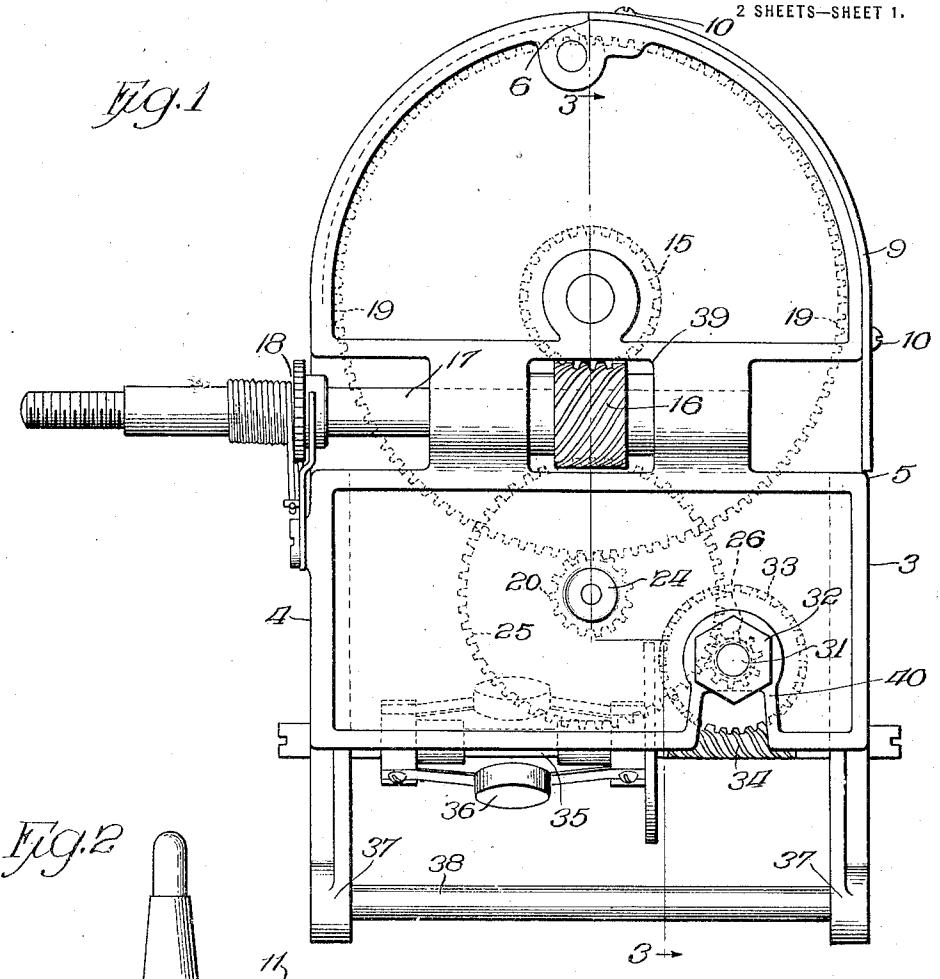
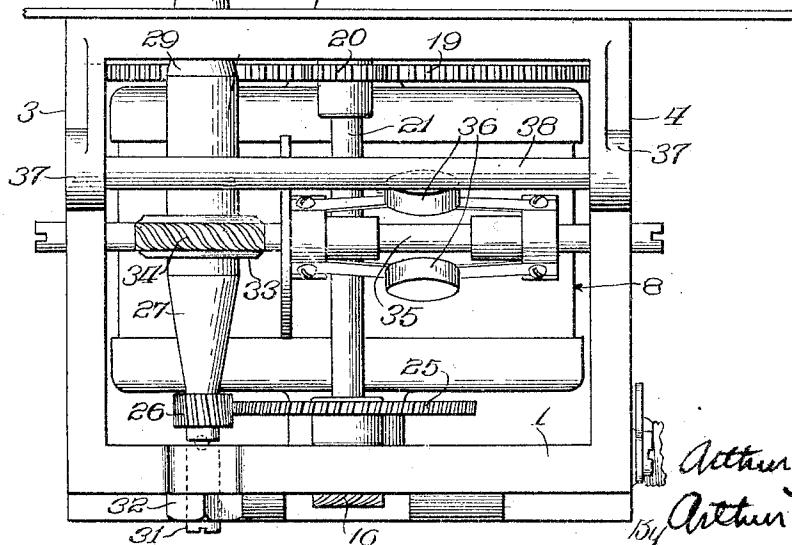


Fig. 2



Inventor,  
Arthur Roemer  
By Arthur F. Drury  
Atty.

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Fig. 3

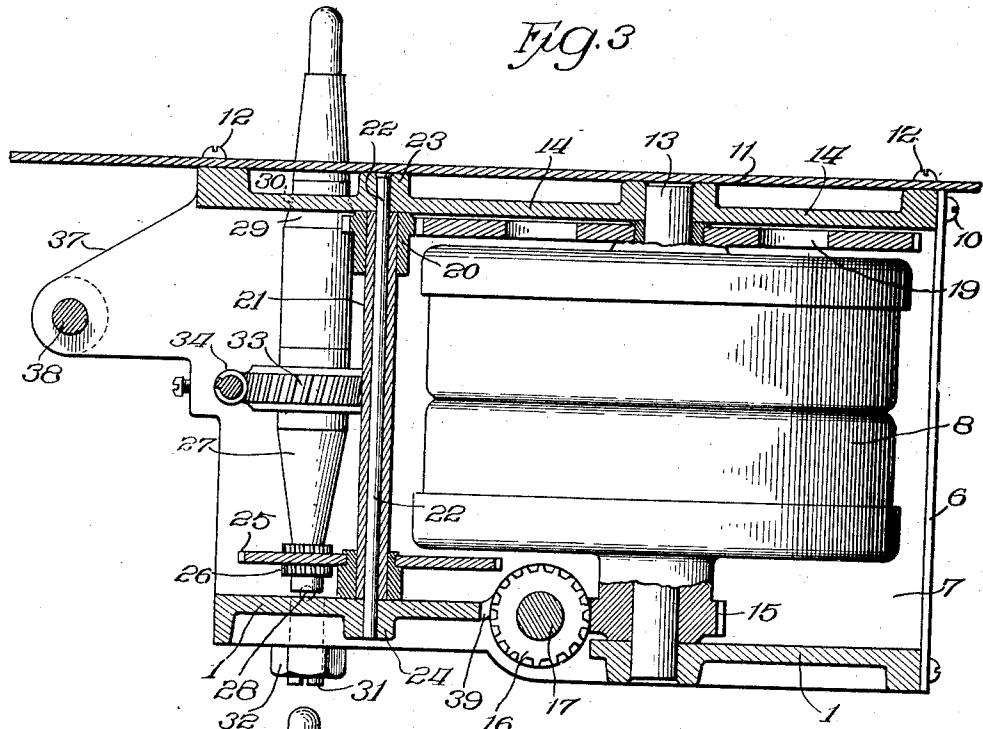
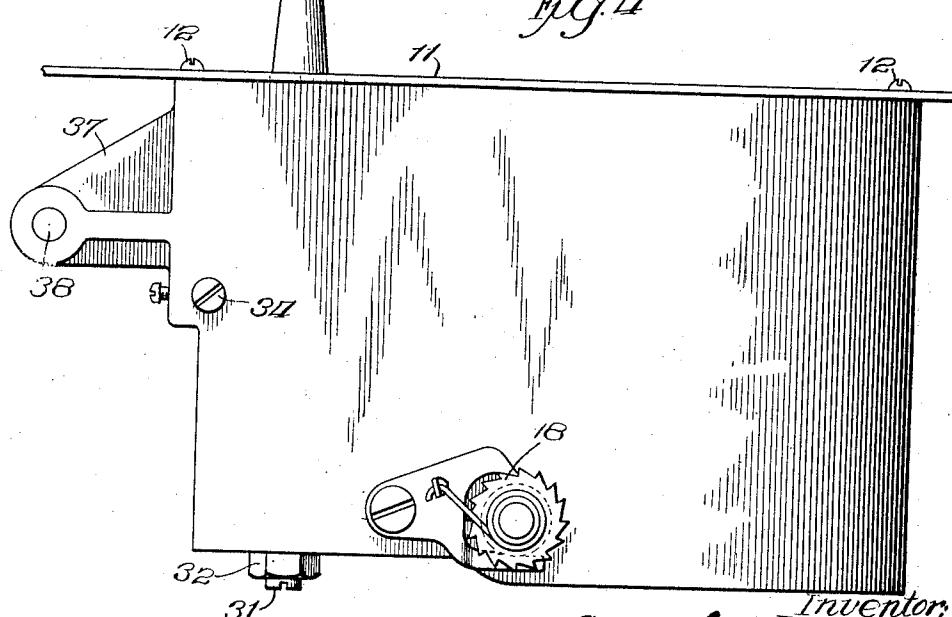


Fig. 4



Inventor:  
Arthur Roemer  
By Arthur H. Drury, Atty.

# UNITED STATES PATENT OFFICE.

ARTHUR ROEMER, OF CHICAGO, ILLINOIS, ASSIGNOR TO ROEMER MANUFACTURING COMPANY, A CORPORATION OF ILLINOIS.

## PHONOGRAPH-MOTOR.

1,343,584.

Specification of Letters Patent. Patented June 15, 1920.

Application filed May 19, 1919. Serial No. 298,075.

To all whom it may concern:

Be it known that I, ARTHUR ROEMER, a citizen of the United States of America, and a resident of Chicago, Illinois, have invented a certain new and useful Improvement in Phonograph-Motors, of which the following is a specification.

This invention relates to motors, and more particularly to spring motors, and more especially to those employed in phonographs or talking machines.

Objects of the invention are to provide a novel and improved construction for the casing or body frame of the motor, which will facilitate the insertion of the mechanical parts therein, as well as their removal therefrom, and which will also insure proper and sufficient protection for the mechanism of the motor, without making the motor unnecessarily heavy; to provide an improved construction whereby the gearing or transmission between the spring barrel and the turn-table post is more satisfactorily mounted and arranged than heretofore; to provide an improved construction whereby the turn-table post is easily adjustable to take up wear, thereby to prevent the post from wobbling or shifting laterally while rotating; and to provide an improved construction whereby the governor of the motor is protected against breakage, but is at the same time accessible for purposes of repair or adjustment.

To these and other useful ends the invention consists in matters hereinafter set forth and claimed, and shown in the accompanying drawings in which—

Figure 1 is a bottom plan of a talking machine motor embodying the principles of the invention.

Fig. 2 is an end elevation of said motor, showing the same right side up.

Fig. 3 is a vertical section on line 3—3 in Fig. 1, showing the motor right side up.

Fig. 4 is a side elevation of said motor in the position in which it operates in the talking machine or phonograph.

As thus illustrated, the casing or body frame of the motor comprises a bottom wall 1 cast integral with the side walls 3 and 4, it being observed that the wall 3 stops short at 5, while the wall 4 extends around to the point 6, being curved around the chamber 7 provided for the spring barrel 8, which lat-

ter is of the usual or any suitable character, 55 and contains the springs for driving the motor in the usual or well known manner. This construction leaves one side of the spring barrel chamber open from 5 to 6, and this opening is closed by a curved plate 60 9 secured to the body frame by screws 10, or in any other suitable manner. The circular plate or disk 11 is secured by screws 12 to the top of the body frame, and a vertical post or axle 13 is disposed centrally of 65 the spring barrel chamber 7, and forms the axis for said spring barrel, the upper and lower ends of this post or axis member 13 being preferably mounted in the top and bottom walls 1 and 14 of the body frame, and 70 slightly riveted over at its upper and lower ends to prevent displacement thereof. The lower side of the spring barrel has a worm gear 15 which engages the worm 16 on the winding shaft 17, the latter having a ratchet 75 device 18, of the usual character, to prevent the shaft from rotating backward after the spring is wound up by the application of a crank handle to the outer end of the shaft, in the usual and well known manner. The 80 springs in the barrel drive a large gear wheel 19 at the top of the spring barrel, and this in turn drives a pinion 20 which is rigid with the sleeve 21, and the latter being mounted vertically to rotate on the rod 22 85 which is inserted downwardly through the bearing portions 23 and 24 formed in the top and bottom walls of the body frame. The sleeve 21 has a large gear wheel 25 at its lower end which engages a pinion 26 on the 90 lower end portion of the vertically disposed turn-table shaft 27, the lower end of the latter being supported by a step bearing formed by a ball 28, or in any suitable manner. The upper portion of the turn-table 95 post is tapered at 29 to fit a tapered opening 30 correspondingly formed in the top wall 14 of the body frame, and the ball 28 is supported on the upper end of a screw 31 inserted upwardly through the lower wall 1 100 of the body frame, whereby this step bearing for the lower end of the turn-table post can be raised and lowered at will. A lock-nut 32 is screwed upon the lower end of the screw 31, thereby to lock the latter in adjusted position. A worm wheel 33 is carried by the turn-table post, and engages a worm 34 on the governor shaft 35 which carries

the governor mechanism 36, the latter being of any suitable or well known character, and employed to prevent the motor from operating at too high a speed, in the usual and well known manner. For the purpose of protecting the governor the body frame is provided with projecting arms 37, which are extensions of the walls 3 and 4, near the top of the motor, and these arms are connected by 10 a bar or short rod 38 which is disposed in such position that the governor, which is usually of more or less delicate construction, is not liable to be struck by other objects, particularly during the handling of the 15 motor and its shipment before its incorporation or installation in the box or body of the phonograph or talking machine.

Some of the advantages of the foregoing are as follows: The spring barrel is 20 closed and thoroughly protected, and in assembling the parts of the motor the spring barrel is first shifted into place, before the cover 9 is secured in position, and the post or axis member 13 is then inserted and riveted over at its ends, and the cover is then secured to the body by the screws 10 as previously described. The other parts are easily inserted in place, and when entirely assembled, the motor is strong and 30 compact, and at the same time of minimum weight. The intermediate transmission or gearing interposed between the driving gear 19 and the pinion 26 of the rotary turn-table post, is effectively held in position by 35 the pin or rod 22, this rod being preferably rotatable in the bearings 23 and 24, and the sleeve 21 being rotatable on said rod. In this way, the rod and sleeve can turn together, but if the rod binds within its bearings, then the sleeve can turn on the rod, and the result is that the power-transmitting connection runs smoothly and with 40 comparatively little friction. As the turn-table post 27 is tapered above the portion 45 29, it can be inserted upwardly through the bearing opening 30 in the frame, until its lower end is high enough to swing in over the lower wall 1, and afterward the governor shaft and governor are placed in position. When the bearing opening 30 becomes worn, so that the post 27 is a little 50 loose, the screw 31 can be tightened up to raise the post, thus tightening the beveled or tapered portion 29 of the post in said bearing opening, at least sufficiently to enable the post to rotate without wobbling or shifting sidewise in said opening. By 55 removing the plate 11 the pin or rod 22 can be pulled upwardly, and in this way the intermediate transmission gearing can be removed, when such is necessary or desirable. Also, by simply trimming off the slight edge 60 formed by upsetting the ends of the post 13, the latter can be removed when necessary, thus permitting the spring barrel to

be removed, after removing the cover 9 which forms the closure for the spring barrel chamber. The rod 38 forms a guard for the governor, as previously explained, but at the same time affords sufficient space between it and the body frame to permit access to the governor and to the gearing, in a manner that will be readily understood. If desired, the body frame can be provided with an opening 39 in the bottom wall thereof, to accommodate the worm 16 through which the power is supplied to wind up the springs. Also, the bottom wall 1 can be provided with a notch 40 in its end edge, adjacent the step bearing for the lower end 80 of the turn-table post 27, thereby to facilitate the insertion of the latter in the frame and into position.

As shown, the bearing opening 30 for the turn table post engages only the upper portion of the taper 29, and the lower end of the post is supported above the upper surface of the bottom wall of the cast body frame. Also, the middle portion of the post 27 is cylindric and larger in diameter than the upper and lower ends of the post, and larger in diameter than any other portion of the post, whereby the gear 33 can be removed from either end of the post. Inasmuch as the post is tapered, above the bevel 95 or taper 29, the lowering of the post by adjustment of the screw 31 will permit the removal of the post, by swinging its lower end outwardly, in a manner that will be readily understood. It will also be seen that the rod 22 does not support the weight of the sleeve 21, inasmuch as the body frame provides the means for preventing endwise displacement of this sleeve, and the sleeve is not removable except by first removing 105 said rod, for the latter is held at its opposite ends.

As shown and described, the spring barrel, and also the turn-table post, and also the counter-shaft, are each readily insertible 110 into and removable from the body frame, notwithstanding the one-piece character of the latter—that is to say, notwithstanding the fact that said body frame is cast integral in one piece.

What I claim as my invention is:—

1. In a motor, a body frame composed of upper and lower and side walls cast integrally, forming a partially inclosed chamber having an opening at one side thereof, a curved plate forming a closure for said opening, a spring barrel which is insertible through said opening before said cover plate is applied, a turn-table post supported in position by said body frame, gearing for 120 connecting said spring barrel with said turn-table post, and means for winding the motor.

2. A structure as specified in claim 1, one side wall terminating at 5, and the other 130

side wall having a portion which is curved about the axis of said spring barrel, and which terminates at 6, said cover plate being also curved about said axis and extending between said edges 5 and 6 of the side walls.

3. In a motor, a body frame, a spring barrel, a rotary turn-table post, and gearing between said spring barrel and said turn-table post, said gearing comprising a sleeve disposed a distance from said post and arranged parallel therewith and having one end thereof geared to the spring barrel, and having its other end geared to the turn-table post, a rod extending through said sleeve and having its opposite ends removably supported in said body frame, and means on the frame to hold the sleeve against endwise displacement, thereby to prevent the weight of the sleeve from being imposed on said rod.

4. A structure as specified in claim 3, said body frame having top and bottom walls between which said sleeve is disposed in upright position, providing said means to hold the sleeve against displacement, and said rod being removable endwise to permit removal of said sleeve from the motor.

5. A structure as specified in claim 3, said rod being mounted to rotate in bearings thereof on said body frame.

6. In a motor, a body frame, a turn-table post provided with a tapered upper portion, said body frame having a tapered opening in which said tapered portion of the post is rotatable, the edges of said opening engaging only the upper portion of the taper on the post, and an adjustable step bearing for the lower end of the post, adjustment of the step bearing serving to raise the tapered portion of the post in said tapered opening, thereby to take up wear between the post and the edges of said opening, the middle portion of the post being cylindric and larger in diameter than any other portion of the post, and a driving gear on this middle portion, so that the torque of the post is on the greatest diameter thereof.

50 7. A structure as specified in claim 6, said step bearing comprising a ball which engages the lower end of the post, and a vertically adjustable screw which supports said ball, so that the lower end of said post is above the upper surface of the lower wall of said frame, and whereby the lower end of the post can be freed to swing outward by lowering the step bearing.

8. A structure as specified in claim 6, said post being tapered also above said bearing, thereby to facilitate insertion and removal of the post, by tilting it around one way or another, substantially as described.

9. In a motor, a rotary turn-table post, a body frame having means for supporting

the post in vertical position, a governor for said post, said governor being disposed at the outer side of said post in position to rotate about a horizontally disposed axis, and a guard projecting from and overhanging the side of the body frame at the outer side of said governor, with a space between the guard and the body frame to afford access to the governor.

10. A structure as specified in claim 9, said body frame having integrally cast side walls provided at one end with parallel and outwardly projecting arms disposed in vertical planes and forming extensions of said walls, and said guard comprising a horizontal member fixed at its ends in the end portions of said arms.

11. In a phonograph spring motor, the combination of a vertically disposed turn-table post, a body frame having an upper wall provided with an opening to form a bearing for the said post, the upper portion of said post being shaped to permit insertion thereof through said opening, by inserting the post upwardly in tilted position, said body frame having a lower wall integrally connected with said upper wall, with means on said lower wall to support the lower end of the post, and said frame being shaped to permit the insertion and removal of the post by tilting movement thereof in said opening.

12. In a phonograph spring motor, the combination of a turn-table post, a spring barrel, and gearing between the driving spring and the turn-table post, said gearing comprising a rotary sleeve having gear wheels at opposite ends thereof, a member extending through said sleeve to form the axis of rotation thereof, and means whereby said member is free to rotate with the sleeve, the sleeve being also rotatable on said member, and means to support the sleeve and prevent the weight thereof from being imposed on said member.

13. In a phonograph spring motor, the combination of a one-piece cast body frame having a chamber therein, a spring barrel disposed in said chamber, removable means forming a vertical axis for said barrel, a turn-table post supported by said body frame, gearing to connect the driving spring with said post, the body frame having an opening through which the spring barrel is insertible or removable, before insertion or after removal of the means forming said axis, and means to close said opening.

14. In a phonograph motor, the combination of a one-piece cast body frame, a spring barrel, and means including a vertical axis member for holding said barrel in place and whereby the barrel is insertible into and removable from the said one-piece body frame.

15. In a phonograph motor, the combination of one-piece cast body frame, a solid

one-piece turn-table post, and means whereby the post is insertible into and removable from the said one-piece body frame.

16. In a phonograph motor, the combination of a one-piece cast body frame, a spring barrel, a vertical axis member for said barrel, a turn-table post, a counter-shaft intermediate the spring barrel and turn-table post, and means whereby the shaft is insertible into and removable from the said one-piece body frame.

17. In a phonograph motor, the combination of a one-piece cast body frame having

top and bottom walls and side walls, a spring barrel and means whereby the barrel is insertible into and removable from said body frame, a solid one-piece turn-table post and means whereby the post is insertible into and removable from said body frame, and a counter-shaft intermediate the spring barrel and turn-table post and means including a vertical axis member whereby the shaft is held in place and is insertible into and removable from said body frame.

ARTHUR ROEMER.