J. T. SIBLEY.

MECHANICAL STARTER FOR PHONOGRAPH MOTORS.

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1,337,280. Patented Apr. 20, 1920.

Fig. 2.

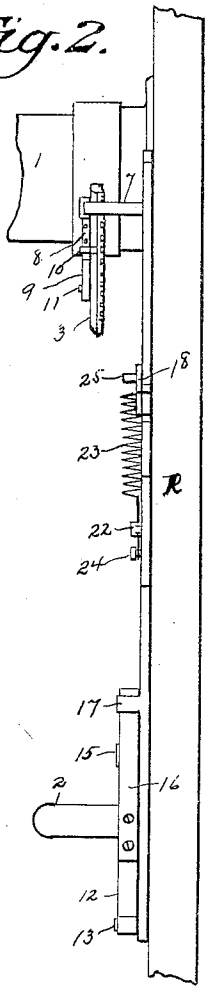
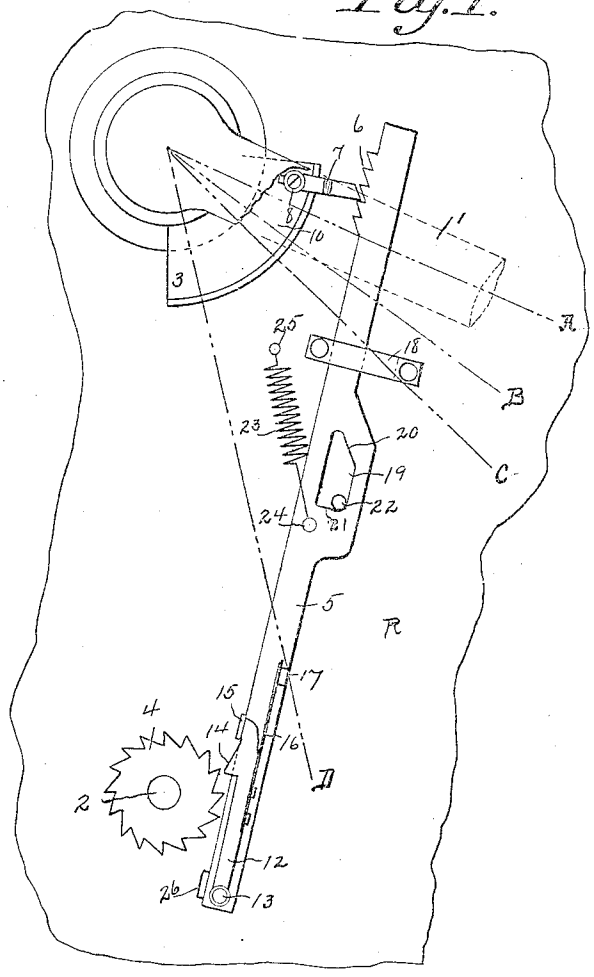


Fig. 1.



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MECHANICAL STARTER FOR PHONOGRAPH-MOTORS.

1,337,280. Specification of Letters Patent. Patented Apr. 20, 1920.

Application filed April 24, 1919. Serial No. 292,373.

To all whom it may concern:

Be it known that I, JAMES T. SIBLEY, a citizen of the United States, residing in the city of Paterson, county of Passaic, and State of New Jersey, have invented certain new and useful Improvements in Mechanical Starters for Phonograph-Motors, of which the following is a specification.

In my prior application, Serial No. 175,565, filed June 19th, 1917, I have described an improved form of motor in which a rotor is driven by a plurality of sets of field magnets, each set being energized from a separate source of electric current, as batteries of dry cells. In said application I have disclosed a form of circuit interrupter the stationary element of which is made up of two sets of segments separated from each other by insulation, with a rotating brush bearing upon the cylindrical surface of the stationary element and passing from one segment to the adjacent segment over the intervening insulation. It happens sometimes that the motor, when stopped, will leave the moving, or brush element of the interrupter, bearing upon a strip of insulation between the segments of the stationary element of the interrupter. In this condition, when the circuit switch is closed there will still be a break in the circuit so that it is necessary to give the rotor a slight advance impulse; this is usually done by moving the phonograph turntable slightly and sufficient to carry the brush element across the insulation and bring it into contact with one of the metallic segments of the stationary element of the interrupter. At this time the operator's hands are occupied in adjusting the sound box to playing position and he finds it inconvenient to give the turntable the requisite advancing impulse. In order to overcome this defect I have designed a mechanical starter of a character to communicate this advancing impulse to the rotor spindle through the movement of the phonograph tone arm.

In the accompanying drawings illustrating my invention I have only shown so much of the usual elements of the phonograph as may be necessary to gain a full understanding of the operation of my improvement.

In the drawings:

Figure 1 is a plan view of the upper surface of a phonograph cabinet showing the relative location of the tone arm and rotor, or turntable spindle with my improved starter in position.

Fig. 2 is a side elevation of the same.

Similar reference numerals refer to like parts throughout the specification and drawings.

The tone arm 1, is mounted in the usual manner upon the top of the cabinet or motor table, so as to swing in a horizontal plane in the usual manner so as to permit the usual sound box to sweep over the surface of a record supported upon the turntable which is carried by the motor spindle 2. Rigidly connected to the base of the tone arm 1, to swing therewith, is a mutilated gear 3, for a purpose defined in my aforesaid application. The upper face of this mutilated gear 3, serves as a support for a rigid pawl 7, mounted thereon and having the point thereof bent downwardly with the pawl 7 fixed in position to engage the teeth 6 of the sliding bar 5, which is guided in a keeper 18, and against the projection 26. It will thus be seen that when the tone arm 1 is swing in a clock-wise direction, the pawl 7 will engage the teeth 6, and thus thrust the sliding bar 5 forward until the point of the pawl swings clear of the path of the points of the teeth 6. When the tone arm 1 is swung in the opposite direction the pawl 7 will engage the backs of the teeth 6 and push the bar away from its path.

Upon the spindle 2, I mount a ratchet wheel 4, and upon the extreme end of the bar 5, is the hook pawl 12, pivoted at 13 and having the teeth 14 in position to engage the teeth of the ratchet 4. Upon the back of the pawl 12 is a spring 16, bearing upon the stop projection 17 and holding the point of the pawl against the stop projection 15, the construction being such that when the bar 5 is moved forwardly the hook 14 will engage a tooth of the ratchet 4 and thus give the spindle 2 the necessary forward impulse, while when the bar 5 recedes in the opposite direction the hook 14 of the pawl 12 will slip by and over the teeth of the ratchet 4, until it is in a position to clear said teeth. The bar 5 is provided with a diagonal slot 19, which has the inclined wall 20 and rectangular wall 21 therein. Projecting from the upper face of the cabinet top R is a stationary pin 22, extending into the slot 19, and in position to engage either one or the other of the two walls 20—21. The spring 23 is connected to the stationary pin 25 in

the cabinet top, and to the pin 24 in the upper side of the bar 5. The general direction of the spring 23 is inclined to the direction of movement of the bar 5, as clearly illustrated in Fig. 1, so that the pull exerted by said spring has a tendency not only to draw the bar 5 into the position indicated in Fig. 1, with the pin 22 at the extreme end of the slot 19 adjacent to the wall 21, and at the same time cause the bar 5 to bear against the guide 26 and the strap guide 18.

When the tone arm 1 is swung clock-wise from the position A to the position B, the pawl 7 will engage one of the teeth 6 of the bar 5, and move said bar forward and cause the teeth 14 to engage and impel the ratchet 4 forward until such time as the bar 5 has advanced for the wall 20 to engage the pin 22, when, of course, a further forward movement of the bar 5 will cause the wall 20 to ride against the pin 22 and carry the teeth 6 clear of the pawl 7, when, of course, the spring 23 will snap the bar 5 back into the position indicated in Fig. 1. The tone arm 1 will continue to advance to the playing position C, but the forward movement of the tone arm from position A to position B will have been sufficient to give the spindle 2 the necessary forward impulse so as to carry the motor past what may be termed the "dead" point.

When the selection is completed by the tone arm having swung to the position D, the sound box may be lifted from the record and the tone arm swung back to the position A, when, of course, the pawl 7 will have again engaged one of the teeth 6 and be ready for a repetition.

While I have described my improvement as being useful in connection with the electric motor of my aforesaid prior application, yet I do not wish to be considered as limiting its utility to that connection alone, for it is equally useful in connection with many of the spring motors in present use. It frequently happens in connection with such spring motors that they present what is termed an initial sluggishness of movement and require just a slight impulse to bring them up to speed; the device above described is found to be capable of giving just this necessary impulse.

I claim:

1. In a starter for phonograph motors, the combination of a tone arm and a turntable spindle, with means for communicating the initial swinging movement of the tone arm to said spindle to give it a slight rotating impulse.

2. In a starter for phonograph motors, the combination of a tone arm and a turntable spindle, with means for transferring the initial swinging movement of said tone arm to said spindle to give it a slight rotating impulse, and for thereafter permitting independent movement of said tone arm and spindle respectively.

3. In a starter for phonograph motors, the combination of a swinging tone arm and a turntable spindle, a sliding bar located adjacent to the base of said tone arm and said spindle, said bar having means for engaging both said tone arm and spindle whereby the initial swing of said tone arm is communicated to said spindle to give it a slight rotating impulse.

4. In a starter for phonograph motors, the combination of a swinging tone arm and a motor spindle, means for connecting said tone arm to said spindle during the initial part of the swing of said tone arm whereby the initial movement of said tone arm is communicated to said spindle to give it a slight rotative impulse.

5. In a starter for phonograph motors, the combination of a swinging tone arm and a motor spindle, a sliding bar located adjacent to said tone arm and spindle, pawl and ratchet connections between said bar and said tone arm and spindle respectively whereby the initial movement of said tone arm is communicated to said spindle to give it a slight rotative impulse.

6. In a starter for phonograph motors, the combination of a swinging tone arm and a motor spindle, with a sliding bar located adjacent to said spindle and tone arm, a pawl and ratchet connection between said spindle and said bar, and a pawl and ratchet connection between the base of said tone arm and said bar, whereby the initial swinging movement of said tone arm is communicated to said spindle to give it an initial rotative impulse, and means upon said bar for disconnecting it from said tone arm at a predetermined point in the swinging movement thereof.

JAMES T. SIBLEY.