Sept. 9, 1924. 1,508,093

O. P. ERHARDT

GRAPHOPHONE MOTOR

Filed March 15, 1918

Fig. 1.

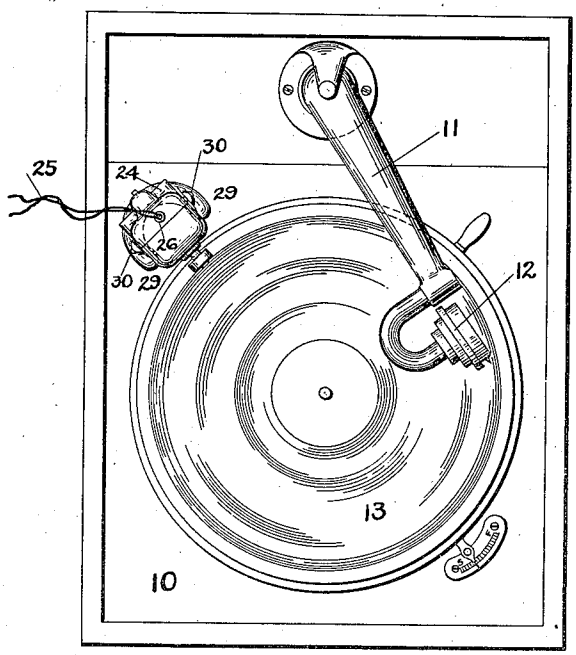


FIG. 3.

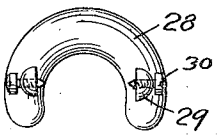


FIG. 4.

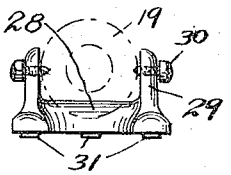
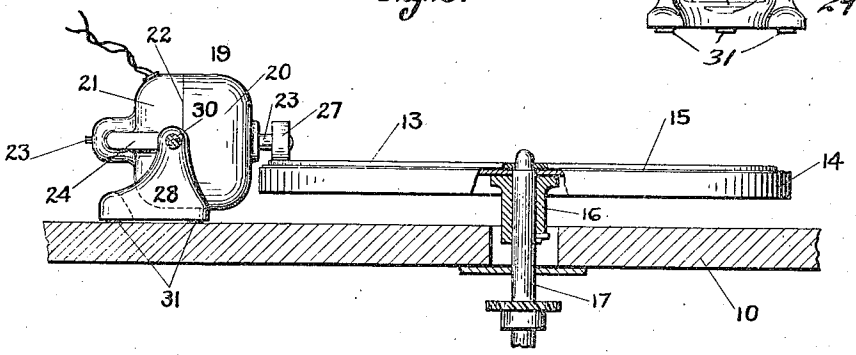


Fig. 2.



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UNITED STATES PATENT OFFICE.

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GRAPHOPHONE MOTOR.

Application filed March 15, 1918. Serial No. 222,643.

To all whom it may concern:

Be it known that I, OSCAR P. ERHARDT, a citizen of the United States, residing in West Haven, county of New Haven, and State of Connecticut, have invented certain new and useful Improvements in Graphophone Motors, of which the following is a full, clear, and exact description.

This invention relates to a portable electric motor for driving the record of a graphophone independently of the motor of such machine.

One object of this invention is to provide a light, portable electric motor for driving the record of a graphophone, which may be very easily and quickly applied to any of the graphophones now in common use by simply placing the motor base upon the casing of the graphophone sufficiently close to the turntable of the same to permit the motor to swing its driving pulley into driving engagement with either the turntable or the record.

Another object of the invention is to provide a separate motor for driving a graphophone which is so constructed that the weight of the motor swings its driving pulley into driving engagement with the element to be driven and in which the pulley is yieldingly retained in driving engagement with either the turntable or graphophone disk by the weight of the motor.

To these and other ends, my invention consists in the novel features and combinations of parts to be hereinafter described and claimed.

In the accompanying drawing:

Fig. 1 is a plan view of a graphophone, showing my driving motor in its operative position; and

Fig. 2 is an enlarged side view of the turntable and driving motor shown in Fig. 1, the graphophone casing being shown in section.

Fig. 3 is a plan view of the motor supporting base with the motor body removed therefrom;

Fig. 4 is a front elevational view of the same, the motor being shown in dotted lines.

In the drawing, I have designated the supporting table of the graphophone casing by the numeral 10. Upon this table is mounted the usual type of oscillating arm 11, upon the outer end of which is mounted the usual type of sound box 12, having a needle which travels in the spirals or grooves upon the record disk 13. The record disk is shown mounted upon a turntable 14, the upper face of which is preferably covered by felt such as 15, upon which the disk 13 rests firmly without being scratched. The turntable is provided with a hub 16 secured to its underneath surface at the center thereof. This hub is mounted upon a vertical supporting shaft or spindle 17, which is only partially shown in the drawing. The elements so far described are well-known, and need not be herein described in further detail.

In order that the graphophone may be operated without the necessity of winding every few minutes the spring with which these devices are usually provided, I have devised a small electric motor 19 for driving the record disk 13. This motor is preferably provided with an enclosing casing consisting of the cup-like portions 20 and 21, which portions are placed over the motor from the opposite ends of the same and meet along the line 22. These cup-shaped portions have bearings formed in the ends thereof in which the armature spindle 23 rotates. The cup-shaped portion 21 preferably has extensions 24 formed thereupon, in which the brushes (not shown) may be housed. The current is supplied to the motor by means of wires 25, which enter the motor casing through the opening 26 formed therein. One end of the armature spindle 23 extends a short distance beyond the motor casing and has mounted thereupon a driving pulley 27, which pulley is preferably formed of rubber or some other soft material which will drive the disk 13 noiselessly and without injuring the same. The motor 19 is provided with a supporting base 28, which has formed thereupon the spaced, upwardly projecting arms 29. It is noted that the base 28 is U-shaped or in the shape of a horse shoe, the arms 29 projecting upwardly from a point adjacent the free ends of the legs, as shown in Figs. 2 and 3. It will be apparent that when the base is formed in this shape, the body of the motor may extend to a point very close to the supporting surface, as the web or base portion of the U does not lie below the motor. This is clearly shown in dotted lines in Figs. 2 and 4, wherein the motor body is shown as disposed forwardly of the web portion of

the U-shaped base and as extending considerably below the upper surface of this portion of the base. In this manner, I am enabled to adjust the pulley 27 at the proper height relatively to the table 10 to contact with the upper surface of the turntable or disk when the motor shaft is in an approximately horizontal position. These arms are spaced apart a sufficient distance to allow the motor to be pivotally mounted therebetween. The pivotal mounting for the motor 19 consists of the screws 30, which extend through the upper end of the arms 29 and into the cup-shaped portion of the casing 21. The motor is, in this manner, suspended between the two arms 29 so that it may rock freely upon the pivot pins 30. It should be noted that the pivotal mounting for the motor is not positioned midway between the ends of the same, but is considerably closer to the end of the motor upon which the extensions 24 are formed than it is to the opposite end. This arrangement is important, since, by supporting the motor to one side of its center of gravity, the weight of the motor causes the end of the same upon which the pulley 27 is mounted to tend to dip downwardly, that is, the motor 19 is so supported upon its pivotal mountings that a portion of the weight of the motor tends to force the pulley 27 into yielding contact with the member to be driven thereby. The under face of the base member 28 is preferably provided with rubber feet 31 which will prevent the base 28 from slipping upon the casing 10, when placed upon the same.

From the above description, when read in connection with the drawing, it will be apparent that my driving motor may be very easily and quickly placed in position on a graphophone to drive the record, and that when it is desired to use my motor for this purpose all that is necessary is to place the same upon the casing 10 sufficiently close to the turntable to permit the pulley 27 to contact either with the disk 13 or turntable 14. Since the motor is suspended between the arms of the bracket 28 so that the end of the motor adjacent the pulley 27 tends to swing downward, the pulley 27 is yieldingly held in driving engagement with the disk or table. This last mentioned feature is important, since, in many of the graphophones now in use, the turntable 14, due to one cause or another, rocks or wabbles slightly as it revolves in a horizontal plane. It is therefore necessary, if the turntable is to be satisfactorily driven by a pulley such as 27, to construct the pulley driving means so that the pulley may rise and fall slightly to conform with the wabbling of the turntable. The pivotal mounting for the motor herein described by which the pulley 17 is permitted to rise and fall, and, at the same time, is held in yielding engagement by the weight of the motor with the element driven thereby, forms an extremely desirable drive for a graphophone.

By the means herein disclosed, the desired amount of friction between the pulley and the disk or turntable may be obtained instantly without necessitating careful adjustment, since all that is necessary is to place the motor base 28 upon the supporting table 10 so that the pulley 27 contacts with the element to be driven thereby.

Although but one practical embodiment of the invention is illustrated, it will be apparent that various changes may be made within the scope of the claims without departing from the spirit of the invention.

I claim—

1. In combination, a phonograph turntable and a motor for driving the same and means for supporting the motor with the pulley thereof in contact with the upper surface of the turntable, including a substantially U-shaped supporting base having standards rising from the legs thereof, and a motor mounted on said standards.

2. In combination, a phonograph turntable and a motor for driving the same and means for supporting the motor with the pulley thereof in contact with the upper surface of the turntable, including a substantially U-shaped supporting base having standards rising from the free ends of the legs of the U, and a motor casing mounted on said standards, the motor casing extending downwardly between the legs of the base adjacent the supporting table, whereby the motor pulley may contact with the turntable when the motor shaft is in a substantially horizontal position.

3. A portable electric motor for driving the turntable of a disk type phonograph, comprising an electric motor having a pulley, a supporting base for said motor provided with laterally extending spaced projecting portions, said projections being provided with upwardly extending arms between which the motor body is pivotally carried whereby the motor is supported between the projecting portions of the base.

4. A portable electric motor unit for driving the record table of a disk type phonograph, comprising an electric motor having a pulley, and means for supporting the motor body in close proximity to the supporting table, comprising a base having spaced laterally projecting portions, said portions being in opposed relation to each other, and each being provided with an upwardly extending arm, and means for pivoting the motor body to said arms adjacent the upper ends thereof.

5. In combination with an electric motor having a pulley, a horizontally disposed rotatable disc driven by said motor, a support

above which the disc rotates, a U-shaped base for said motor having vertical supporting members extending upward from the arms of the U, pivots extending through the vertical extending arms of said base and into the motor casing, so located that motor is thereby mounted eccentrically whereby the pulley of said motor is urged downwardly into yielding driving engagement with the upper face of the disc, said base extending around said motor from said supporting members whereby the motor is free to swing between said arms in close proximity to said support.

6. A motor support adapted to be placed upon a supporting surface, comprising a pair of upstanding arms adapted to pivotally support a motor therebetween, and a base portion securing said arms together, said base portion forming a substantially U-shaped support whereby the motor may be suspended in close proximity with the supporting surface.

7. In a device of the class described, an electric motor having a casing and a driving pulley, means to support said motor including a base extending around one end of said casing, and having means to pivotally engage said motor whereby said motor is free to swing between said pivoting means downwardly below the upper surface of said base.

8. In a device of the class described, the combination of an electric motor having a casing and a driving pulley, means to support said motor including a base extending around one end of said casing and having pivoting means for said motor, said motor being eccentrically pivoted to said base whereby the other end of said casing is urged by gravity to swing between said pivoting means downwardly toward a point below the upper surface of said base to cause said driving pulley to contact with a rotatable disk and frictionally drive the same.

9. In a device of the class described, an electric motor support comprising a body portion of substantially U shape in a horizontal plane, and means for pivotally supporting a motor body thereon with the motor body disposed forwardly of the base of the U.

In witness whereof, I have hereunto set my hand on the day of March 12, 1918.

OSCAR P. ERHARDT.