April 8, 1924. 1,489,257

G. R. LEGGETT ET AL

SUPPORT FOR MOUNTING PHONOGRAPH MOTORS AND THE LIKE

Filed Oct. 18, 1920

Fig. 1.

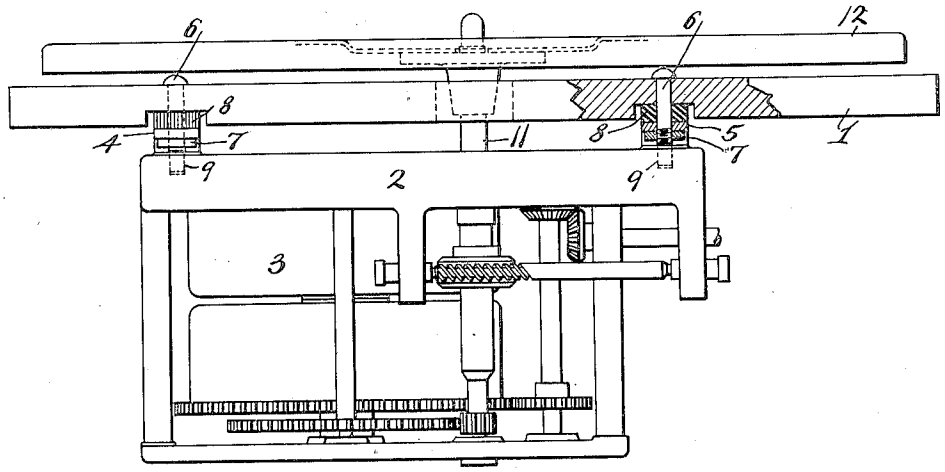
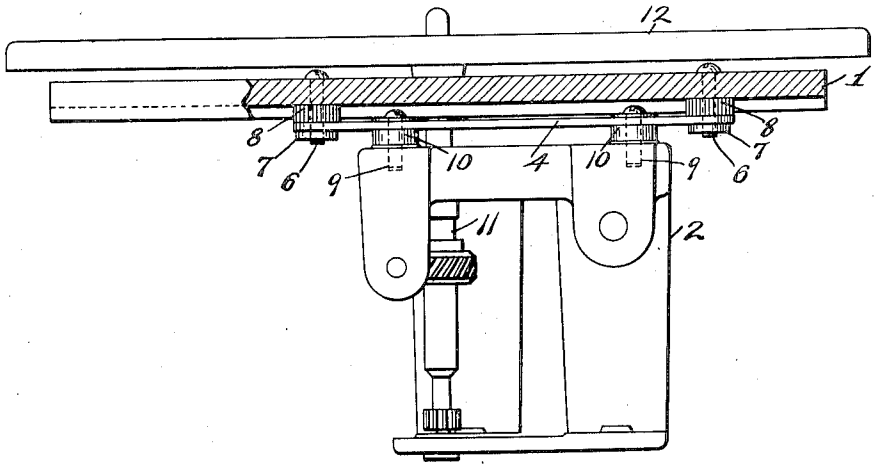


Fig. 2.



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Patented Apr. 8, 1924. 1,489,257

UNITED STATES PATENT OFFICE.

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SUPPORT FOR MOUNTING PHONOGRAPH MOTORS AND THE LIKE.

Application filed October 18, 1920. Serial No. 417,835.

To all whom it may concern:

Be it known that we, GEORGE R. LEGGETT and JAMES LEE, citizens of the United States, residing at Waterbury, county of New Haven, and State of Connecticut, have invented certain new and useful Improvements in Supports for Mounting Phonograph Motors and the like, fully described and represented in the following specification and the accompanying drawings, forming a part of the same.

This invention relates to certain improvements in supporting devices for the motors of phonographs and similar motor driven instruments.

It is the especial object of the invention to produce a motor suspension by the employment of which the noise caused by the vibration of the motor is counteracted or deadened so that this noise is not transmitted to the instrument frame and is rendered practically unaudible, this suspension being of such character and material as to provide a substantially rigid support for the motor to permit of the winding up of the motor.

It has been found in practice that this result may be obtained by providing a motor support of a resonant material in which vibrations may be set up, this support having a period of vibrations different than that set up by the motor and secured to the frame or casing forming a part of the cabinet of the phonograph or like instrument, this support being secured to the frame so as to leave a portion free to vibrate, as between the points of attachment, and by securing or attaching the motor to this support at the free portion. To effect the best results the support should be of a material and dimensions having a vibratory period slower than the vibration period of the motor, and the support should be of sufficient length between the points where the motor is attached to it and the points where it is attached to the frame to permit the sound waves set up therein by the motor vibration to travel over a distance greater than one of the slowest wave lengths, so that the sound waves set up in the support will meet and counteract and deaden the higher wave lengths set up by the motor, and preferably to effect the greatest sound deadening results, the distance the support extends beyond the points of attachment of the motor should be as great as practical within the limits of the frame to which the support is attached and at the same time to permit of the required rigidity for permitting the winding of the motor.

One such construction for effecting the results aimed at is shown in the accompanying drawing, in which—

Figure 1 is a side view partially in section showing parts of a phonograph cabinet frame with the motor supported in accordance with the invention.

Figure 2 is a side view of the construction shown in Fig. 1.

Referring now to these drawings, the invention has been illustrated as embodied in a phonograph of the rotary flat disc type, but it will be understood that it is intended to and may be used in supporting the motor driving mechanism of other types of phonographs or other types of motor driven musical instruments. As shown the motor mechanism is secured to a frame 1, which may be the top or table of a phonograph cabinet. The motor mechanism for operating the phonograph comprises a motor frame 2 and a spring motor 3 of the usual type, shown in Fig. 1.

Attached to the lower side of the frame or base 1 is a support of resonant material having a period of vibration slower than that of the motor which is supported by it. While the dimensions of this support and the material of which it is made, may be widely varied, the support will be of a sufficiently rigid material to support the motor so that it may be properly wound and will be dimensioned so that it will extend beyond the points at which the motor is attached to it a sufficient distance so that the wave lengths set up therein may travel a sufficient distance to counteract the higher period wave lengths transmitted to it by the motor. In practice it has been found that a support in the form of a pair of strips 4, 5 of leaded brass will provide a material of sufficiently slow vibration period and rigidity to effect the purposes desired and in the best constructions the support will be in the form of these strips. These strips 4, 5 are secured to the support in any suitable manner, as for instance, by screws 6 and nuts 7, and preferably insulating discs or washers 8 of rubber or other suitable sound insulating material are provided between the

strips and the base, these insulating discs also acting to raise the strips away from the discs so as to allow a free portion between the supporting screws, so that vibrations of the desired character may be set up in the strips. The motor frame 2 is attached to these supporting strips 4, 5, being in the particular construction illustrated, suspended from the strips so as to be out of the way when the base or table 1 is mounted in the phonograph cabinet, and the motor frame is secured to these strips at the free portion, that is, the portion between the points of attachment of the strips to the base or table 1. Preferably insulating washers or discs 10 of rubber or other suitable sound insulating material are located between the motor frame and the strips, and these discs 10 with the disc 8 aid in deadening the sound.

The strips 4, 5 as shown, extend beyond the points of attachment of the motor a sufficient distance so that the vibrations set up in the strips may cross and counteract the higher wave lengths transmitted to the strips from the motor. The distance that the strips extend beyond the motor may, of course, be widely varied depending on the dimensions of the strips and the space which is permitted by the dimensions of the base or table 1.

The motor mechanism drives a shaft 11 through gear connections, not necessary to describe, which operates the turn table 12 which supports the record disc.

With this construction the vibratory hum of the motor is practically eliminated and a support provided of sufficient rigidity to properly support the motor mechanism and permit of its being wound, any wobbling of the motor being eliminated which would interfere with the winding operation.

While one construction, which has been found in practice to effect the object and results of the invention has been shown and described, it will be understood that various changes may be made in the form of the supports and the material of which the supports are made without departing from the invention.

What we claim is:

1. In a motor support for phonographs and similar motor driven instruments, the combination of a base, a rigid support of resonant material attached to the base and having a portion free therefrom between the points of support in which vibrations may be set up, a motor mechanism secured to the support at its free portion, said motor support having a fundamental vibration period sufficiently slower than the vibration period of the motor mechanism which is transmitted to the support at normal running speed so as to cause the resultant vibration to be substantially inaudible.

2. In a motor support for phonographs and similar motor driven instruments, the combination of a base, a rigid support of resonant material attached to the base and having a portion free therefrom in which vibrations may be set up, and a motor mechanism secured to the support at its free portion said support having a fundamental vibration period sufficiently slower than the vibration period of the motor mechanism which is transmitted to the support at normal running speed, said support extending beyond the points of attachment of the motor at each side a distance sufficient to permit the slower vibrations of the support to counteract the higher vibrations produced by the motor and cause the resultant vibrations to be substantially inaudible.

3. In a motor support for phonographs and similar motor driven instruments, the combination of a base, a pair of rigid strips of leaded brass secured to the base at each of their ends and free therefrom between the points of attachment, and a motor mechanism secured to the strips between their points of attachment to the base.

4. In a motor support for phonographs and similar motor driven instruments, the combination of a base, a pair or rigid strips of leaded brass secured to the base at each of their ends and free therefrom between the points of attachment, and a motor frame secured to the free portion of the strips, the free portions of the strips extending beyond the motor frame at each side.

5. In a motor support for phonographs and similar motor driven instruments, the combination of a base, a pair of rigid resonant metal strips secured to the base at each of their ends and free therefrom between the points of attachment, and a motor mechanism secured to the strips between their points of attachment to the base.

In testimony whereof we have hereunto set our hands.

GEO. R. LEGGETT.
JAMES LEE.