

K. EDISON.
VIBRATING MOTOR.
APPLICATION FILED DEC. 20, 1919.

1,373,316.

Patented Mar. 29, 1921.

Fig. 1.

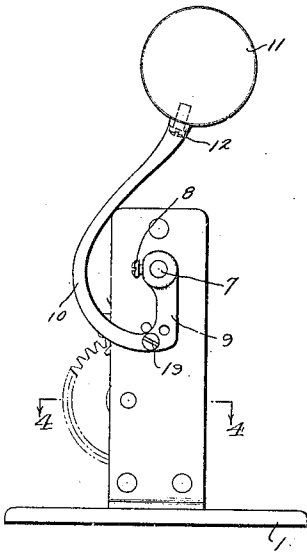


Fig. 2.

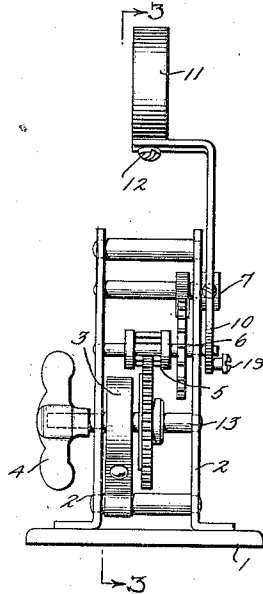


Fig. 3.

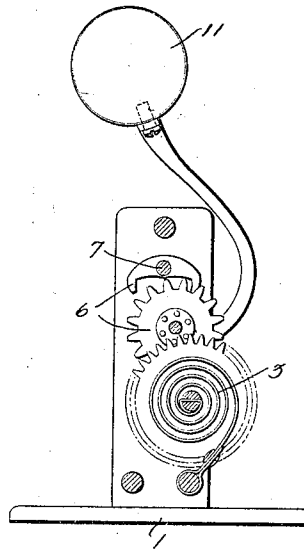


Fig. 4.

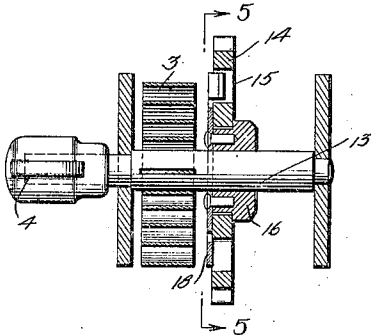
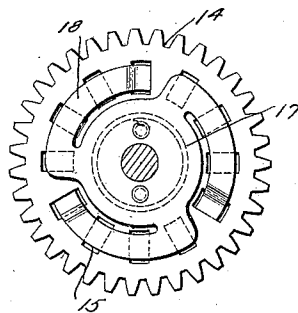


Fig. 5.



WITNESSES

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VIBRATING MOTOR.

1,373,316.

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To all whom it may concern:

Be it known that I, KARL EDISON, a citizen of the United States, and a resident of Spring Valley, in the county of Rockland and State of New York, have invented a new and Improved Vibrating Motor, of which the following is a full, clear, and exact description.

It has been common practice to provide in connection with figure toys a motor which will be capable of causing a vibration within the body of the figure so that the figure may be caused to rock upon its supporting elements, which may be made to represent human feet so as to cause a motion on the part of the figure to produce the illusion of walking.

These prior vibrating motors have usually consisted of a pendulum having a short swing, and in numerous instances associating stops for such pendulum against which the arm of the same swings with more or less violence, so as to provide a sharp vibration.

Obviously this action will tend to wear the parts of the motor, and at best the life of one of these motors is extremely short. Further, the vibrating motion and consequent movement on the part of the figure has left much to be desired.

Further, the uses of this type of motor have been limited purely to the purpose of imparting vibration, and it has proven incapable of operating any extraneous elements upon a conventional motor base.

The ratchet mechanism in all types of spring motors has also left much to be desired in that particularly small commercial, or, in other words, cheap motors have been provided with ratchets which after a certain amount of use and consequential wear, have failed to hold the spring, resulting in the same back-lashing upon the winding key being released and the spring accordingly being snapped, rendering the entire motor useless.

With the above defects in mind I have constructed a new type of vibrating motor which will set up a vibrating motion of a far more useful purpose, in that when the motor is associated with toys adapted to move in such a manner as to give the illusion of walking a far more improved motion will be imparted to the same.

This motor may also readily be adapted

for use as a source of power for operating entirely extraneous elements when mounted upon a conventional motor base.

A further object of my invention is the construction of a motor which will operate efficiently while extending in either an upright or downward position in contradistinction to the conventional pendulum motors employed for vibrating purposes which will operate merely in a downward extending position.

A still further object of the invention is the construction of a pawl mechanism which may be relied upon implicitly in that no danger of non-operation on the part of the pawl exists, so that a breakage of the spring, due to back-lashing, is entirely precluded.

Reference is had to the attached sheet of drawings which illustrates a practical embodiment of my invention, and in which:

Figure 1 is a front view of a motor constructed in accordance with my invention;

Fig. 2 is a side view of the same;

Fig. 3 is a sectional view through the motor taken along the lines 3—3 of Fig. 2;

Fig. 4 is an enlarged sectional view taken along the lines 4—4 of Fig. 1, and showing in detail certain portions of the pawl and ratchet mechanism, and,

Fig. 5 is a front view partly in section of this structure taken along the lines 5—5 of Fig. 4.

In all of these views like reference numerals designate similar parts, and the reference numeral 1 indicates a base with which the motor may be conveniently associated, the motor including front and rear plates 2, a driving element, such as a spring 3, a key for winding the same 4, and a conventional train of gears 5 terminating in the usual escapement 6 from which extends outwardly a shaft 7.

Associated with the outer end of the shaft 7 in any suitable manner, such as by means of an encircling portion clamped in position through the means of a set screw 8 is a lever including a downwardly extending part 9, from the lower end of which there is a portion extending outwardly and upwardly in a bowed form, as at 10, and encircling half of the shaft 7, the upper end of such lever terminating in a weight 11, conveniently associated with the same, as for instance, by means of a screw 12.

It will now be appreciated that upon op-

eration of the escapement and a consequential rocking of the shaft 7, the downwardly extending portion 9 and bent portion 10 of the lever will be rocked, resulting in an oscillation of the weight 11.

It will now be noted that by means of the downwardly extended portion 9 that the part 10 may be made of a proportionately great length, and due to the over-balancing effect of the weight 11, which over-balancing is facilitated by the rocking of the shaft 7 in the direction in which the weight 11 tends to oscillate, a greatly improved vibrating effect will be produced, which vibrating effect will also be procured upon the motor, contrary to the position illustrated in the drawings, being extended in a downward plane.

Thus it will be understood that the weight and lever might be set to normally occupy "dead center" position and from which position they will be caused to move by means of the shaft 7, this action being produced due to the overbalancing effect of the driving mechanism associated with the shaft 7 subsequent to returning the parts to their normal position or plane.

Referring now more particularly to Figs. 4 and 5, it will be seen that the spring 3 has rotatably associated with its shaft 13 a gear 14 formed of radially extending openings 15, through its body portion, rotation on the part of such gear with respect to the shaft 13 being afforded by means of a mounting hub 16. A ratchet conveniently including a plate of spring steel 17 is fixedly secured to the hub 16, its outer edges terminating at a point adjacent the lower edges of the radial openings 15, such plate being, however, provided with tongues 18 adapted to serve as pawls by virtue of their engagement with openings 15 serving as a ratchet, it being noted that the tongues 18 extend beyond the plates 17, and approximately parallel to the outer edges of the same.

It will now be appreciated that upon a winding effort being exerted upon the key 4 that the spring 3 will have tension imparted to it, the hub 16 rotating with the shaft 13 upon a motion of the key 4 and consequential tension of the spring 3. This rotation will be imparted to the hub 16, and will cause a movement on the part of the plates 17 and associated tongues 18 with respect to the gear 14, the rear ends of the tongues 18 engaging the radial openings 15 of such gear and providing a pawl and ratchet operating mechanism which may be relied upon implicitly, and which, at the same time, will be extremely economical to manufacture.

Now with respect to utilizing the motor for other than causing the illusion of walking of a figure, it will be seen that an operating rod might readily be applied to the screw 19, or to the point 12 of engagement of the weight with respect to the upper end of the lever. It will now be appreciated that a rod attached to either point, but preferably the latter, will be reciprocated and impart reciprocating motion to any mechanism with which it might be associated.

Obviously numerous modifications of structure might well be resorted to within the scope of my invention, which I claim as:

1. A motor including a shaft, a driving medium connected with such shaft, a hub immovably secured thereto, a gear wheel rotatably mounted upon such hub, a pawl including a plate portion and tongues extending from such plate portion and parallel to the outer edge thereof, the rear ends of such tongues being adapted to engage radially extended openings formed through the body of such gear.

2. A vibrating motor, including a lever, a shaft, the lower end of said lever being secured to said shaft, a weight attached to the upper end of said lever, said weight normally occupying a plane at which the lever and weight will be in "dead center", and means for oscillating said shaft to rock said lever and weight to a point to one side of said plane and to return the same to said plane.

3. A vibrating motor, including a lever, a weight attached to one end of said lever, the opposite end of said lever being provided with an upwardly extending portion, a rotatable shaft, the end of the upwardly extending portion of said lever being secured to said shaft, and means for rocking said shaft, oscillating said lever and weight.

4. A vibrating motor, including a lever, a weight, attached to one end of said lever, the opposite end of said lever being bowed and being formed with an upwardly extending portion beyond said bowed part, a shaft, the upwardly extending end portion of said lever being secured to said shaft, whereby to rock said lever and weight, to rock the entire motor.

5. A vibrating motor, including a lever, a weight attached to the upper end of said lever, a shaft, means for oscillating said shaft, the lower end of said lever being attached to said shaft, whereby when said shaft is oscillated the lever and its associated weight will be rocked, causing a rocking of the entire motor.

KARL EDISON.