

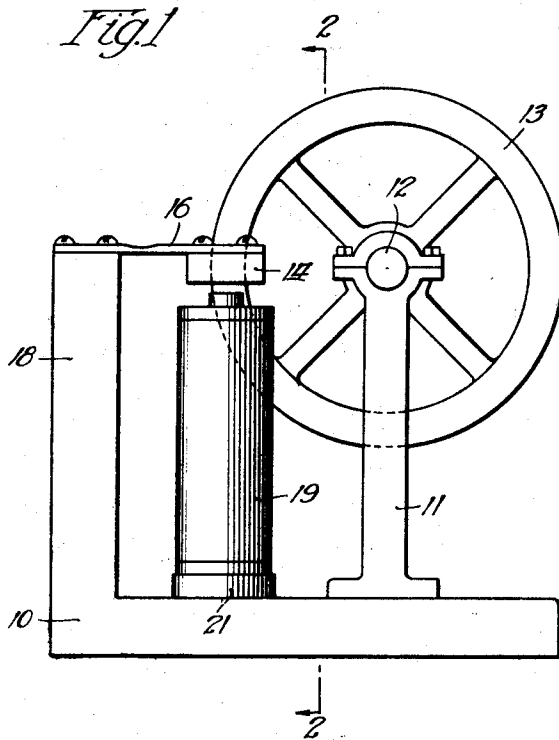
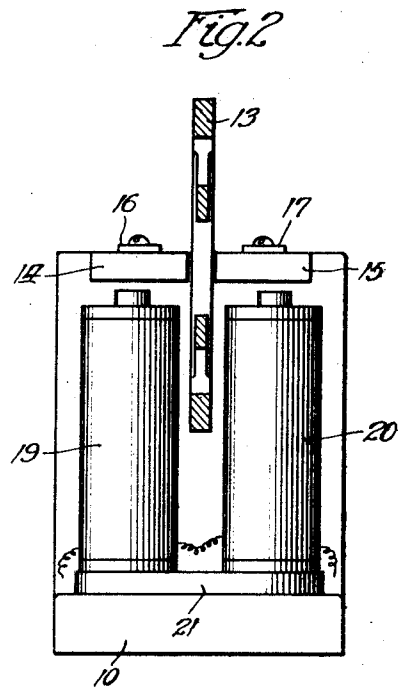
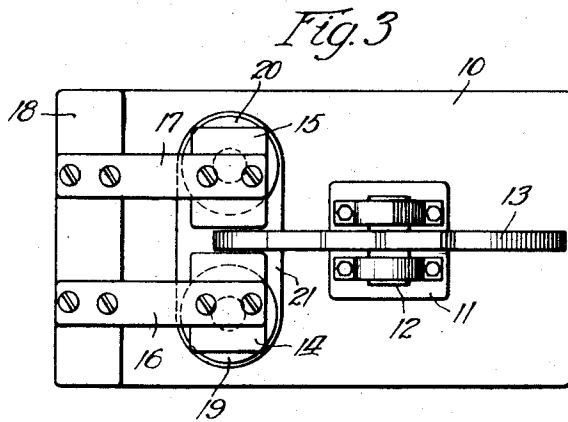
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L. J. WAHL

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MOTOR

Filed June 28, 1926



Inventor
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By *Jacob S. Samp* Attys.

UNITED STATES PATENT OFFICE.

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MOTOR.

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My invention relates to motors and more particularly to motors or prime movers which are driven through the aid of electrical energy.

More particularly my invention is designed to provide a prime mover mechanism which may be suitably actuated by an alternating current passing through an electro-magnet to control a vibratory armature. My invention, when so used, is capable of operating through the agency of a single phase alternating current, is self-starting and has a large starting torque. I utilize the vibratory armature of an electro-magnet to periodically grip a movable element as the armature is being attracted, then to momentarily release its gripping action on this element as it retracts and then to again grip this element and move it as the armature is again attracted. In the preferred form of the invention I utilize two armature elements to bring about the gripping action.

It will be seen from this general description that the invention is applicable to bring about continuous motion of any desired movable element, which element may move in a straight line or which element may be given a circular motion by being mounted on a shaft. In fact, any progressive motion may be given to such an element and it may be utilized as stated for the purpose of bringing about rotation and for instance it might be used for bringing about straight line movement so as to bring about a continuous elevation or lowering of any given device. In fact, any progressive motion may thus be brought about.

In the specific description of the invention which is about to follow, I show my invention as applied to a mechanism in which a rotary motion is brought about, it being understood, of course, that the invention is not so limited, but that it comprehends within its scope many modifications of the described device.

In the drawings:—

Fig. 1 represents a side view of a motor constructed in accordance with my invention; and

Fig. 2 is a sectional view on line 2—2 of Fig. 1.

Fig. 3 is a plan view of the motor.

My improved device as herein arranged consists of a base plate 10 which has two bearing standards 11 which support a rotat-

able shaft 12. This rotatable shaft is fixedly secured to a wheel 13 having flat sides as shown, the rim of which wheel is adapted to pass between the opposing jaws of two armatures 14 and 15, respectively. The armatures 14 and 15 are mounted in any suitable manner as by the springs 16, 17, these springs having their extremities mounted upon the standard 18 of the base plate 10 and having their free extremities secured respectively to the armatures 14 and 15 as shown. These springs normally hold the armatures in the positions shown. The armatures cooperate with the two coils 19 and 20 of an electro-magnet having the keeper 21. The magnetic circuit is thus completed through the cores of the electro-magnet, the keeper plate and the armatures. This magnetic circuit also includes the rim of the wheel 13. The base plate 10 may desirably be made of non-magnetic material should that be found necessary to avoid diversion of the effective lines of force.

In the illustration of Fig. 2, I have shown the opposing inner faces of the two armatures as being removed a slight distance from the rim of the wheel 13 but in practice these armatures would normally lie against the rim without, however, exerting any gripping action thereon. I have merely shown these removed a slight distance to show that the parts are separate and that there is no gripping fit between these parts except due to the magnetic action, as will be presently explained.

Now should a current traverse the coils 19 and 20 of the electro-magnet, then the armatures 14 and 15 in addition to being attracted to the pole piece of these coils will be attracted to one another and will tightly grip the rim of the wheel 13. By reason of this gripping action and the downward movement of the armatures, the wheel 13 will be given a counterclockwise rotation (referring to Fig. 1). My invention contemplates that an intermittent current of relatively high frequency or an alternating current, such for instance, as a commercial sixty (60) cycle alternating current thread the coils of the electro-magnet 19 and 20. Under these conditions, the armatures 14 and 15 will be attracted to the pole pieces one hundred and twenty (120) times per second. Naturally the size of the moving parts must be so chosen that the parts can

follow synchronously the desired frequency. Thus the wheel 13 will get one hundred and twenty (120) impulses per second which move it in a counterclockwise direction. I find that considerable power may be developed by a motor of this type and that it has many uses where the ordinary motor machines may not be particularly available.

As I have stated in the introductory portion it is, of course, not necessary to have the armatures 14 and 15 actuating a wheel as they may actuate any element to which it is desired to impart some sort of progressive motion. The rim of the wheel 13 as stated is alternately gripped and released one hundred and twenty (120) times per second and with each gripping action a counterclockwise impulse is given to this wheel. The device thus operates practically synchronously. Should it be desired to utilize the power developed by the device in case the wheel is used as illustrated, then the rotating shaft 12 may be suitably interconnected with the device which is to be moved.

From what has been thus described, the nature of my invention will be readily clear to those skilled in the art and it will also be seen that modifications may be made without departing from the spirit thereof. Having, however, thus described one form which my invention may take, what I claim as new and desire to secure by Letters Patent is:

1. A device of the character described comprising a movable element and means for imparting progressive motion to said element, said means comprising an electro-magnet and a vibratory armature adapted by magnetic action to grip said element and move it progressively with each succeeding energization of said electro-magnet.

2. A device of the character described comprising a movable element and means for imparting progressive motion to said element, said means comprising an electro-magnet and a pair of vibratory armatures arranged upon opposite sides of said element and adapted by magnetic action to grip said element and move it progressively with each succeeding energization of said electro-magnet.

3. A device of the character described comprising a movable element and means for imparting progressive motion to said element, said means comprising an electro-magnet, a vibratory armature adapted by magnetic action to grip said element and move it progressively with each succeeding energization of said electro-magnet and means for automatically retracting said armature.

4. A device of the character described comprising a movable element and means for imparting progressive motion to said element, said means comprising an electro-

magnet, a pair of vibratory armatures arranged upon opposite sides of said element and adapted by magnetic action to grip said element and move it progressively with each succeeding energization of said electro-magnet, and means for automatically retracting said armatures.

5. A device of the character described comprising a movable element and means for imparting progressive motion to said element, said means comprising an electro-magnet and a vibratory armature adapted by magnetic action to grip said element and move it progressively with each succeeding energization of said electro-magnet, said element forming part of the magnetic circuit of said electro-magnet.

6. A device of the character described comprising a movable element and means for imparting progressive motion to said element, said means comprising an electro-magnet and a pair of vibratory armatures arranged upon opposite sides of said element and adapted by magnetic action to grip said element and move it progressively with each succeeding energization of said electro-magnet, said element forming part of the magnetic circuit of said electro-magnet.

7. A device of the character described comprising a movable element and means for imparting progressive motion to said element, said means comprising an electro-magnet, a vibratory armature adapted by magnetic action to grip said element and move it progressively with each succeeding energization of said electro-magnet and means for automatically retracting said armature, said element forming part of the magnetic circuit of said electro-magnet.

8. A device of the character described comprising a movable element and means for imparting progressive motion to said element, said means comprising an electro-magnet, a pair of vibratory armatures arranged upon opposite sides of said element and adapted by magnetic action to grip said element and move it progressively with each succeeding energization of said electro-magnet, and means for automatically retracting said armatures, said element forming part of the magnetic circuit of said electro-magnet.

9. A device of the character described comprising a movable element and means for imparting progressive motion to said element, said means comprising an electro-magnet and a vibratory armature adapted by magnetic action to hold said element and move it progressively with each succeeding energization of said electro-magnet.

In witness whereof, I hereunto subscribe my name this 18th day of June A. D., 1926.

LEO J. WAHL.