

F. P. MANSBENDEL.  
MOTOR DEVICE.

APPLICATION FILED NOV. 3, 1916. RENEWED MAR. 25, 1922.

1,433,562.

Patented Oct. 31, 1922.

Fig. 1

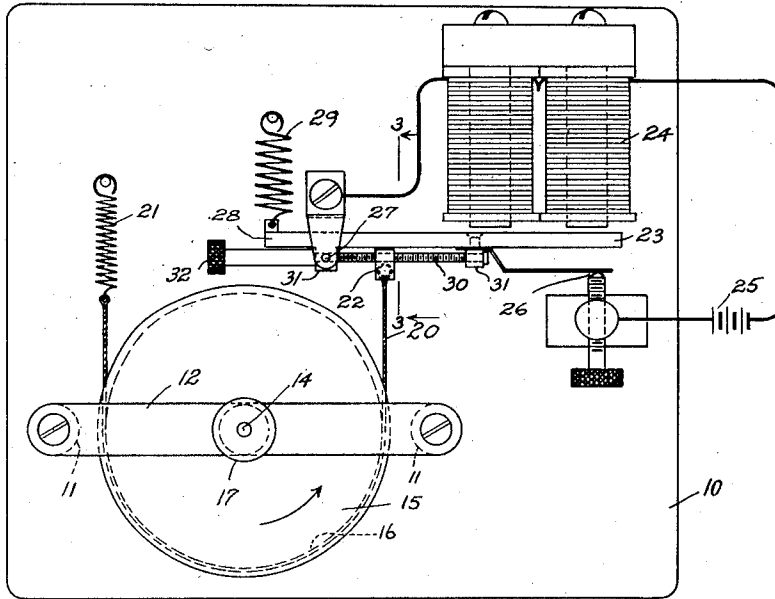


Fig. 2.

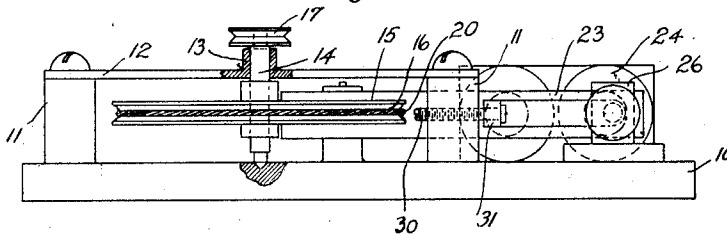
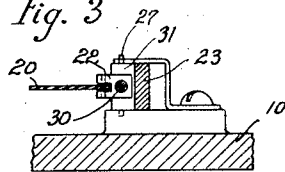


Fig. 3



Fritz P. Mansbendel.

INVENTOR

BY *Fritz P. Mansbendel*

ATTORNEY

## UNITED STATES PATENT OFFICE.

FRITZ P. MANSBENDEL, OF BROOKLYN, NEW YORK, ASSIGNOR, BY MESNE ASSIGNMENTS, TO MARGUERITE V. O'LEARY, OF MONTREAL, CANADA.

## MOTOR DEVICE.

Application filed November 3, 1916, Serial No. 129,406. Renewed March 25, 1922. Serial No. 546,888.

*To all whom it may concern:*

Be it known that I, FRITZ P. MANSBENDEL, a former citizen of the German Empire, and who have declared my intention of becoming a citizen of the United States, and a resident of Brooklyn, in the county of Kings and State of New York, have invented certain new and useful Improvements in Motor Devices, of which the following is a specification.

The invention relates to a novel form of mechanical movement whereby an oscillatory motion may be converted into a continuous rotary motion, and more particularly to its embodiment in a motor device. It has for its object means whereby comparatively slow rotation may be directly effected without the use of intermediate gearing, if desired, such mechanism being demanded largely, for example, in connection with advertising devices. A further object of the invention is a device of this character which shall be suitable for use with either direct or alternating current, and be simple and dependable in its operation.

The nature of the invention will be best understood when described in connection with the accompanying drawings, in which—

Fig. 1 is a plan of mechanism embodying the invention.

Fig. 2 is a front elevation thereof.

Fig. 3 is a section taken on the line 3—3, Fig. 1.

Similar characters of reference designate corresponding parts throughout the several views.

Referring to the drawings, 10 designates a suitable base plate upon which the various members may be mounted and having standards 11 extending upwardly therefrom to support the cross-bar 12 which affords a bearing 13 for a shaft 14 disposed perpendicularly to the said base 10 and in which its one end is journaled. Upon the shaft 14 is mounted a wheel 15 of comparatively large diameter provided with a circumferential groove 16; and the said shaft is further provided, if desired, with a driving pulley 17. It is to be understood that the shaft 14, which is the driving shaft of the apparatus, may be variously geared or connected with other apparatus which it is desired to rotate; or, in fact, the wheel 15 itself may di-

rectly support mechanism to be rotated, suitable changes within the skill of the ordinary mechanic merely being necessary. This feature, however, forms no part of the present invention whose object is to effect a comparatively slow and continuous rotation of the shaft 14 and attached wheel 15.

To this end, there is placed in said circumferential groove 16, to extend over a predetermined portion of the same, a flexible wire band or cord 20, one end of which is secured to a spring 21 attached to the base 10, and the other secured to a nut 22. The said nut 22 is carried by the armature 23 of an electromagnet 24 which is designed to be energized in any suitable manner, for example, from a battery 25; and the armature is caused to have a predetermined oscillation or vibration, controlled by a suitable make and break device 26, as is well understood. Armature 23 is pivoted or fulcrumed to a suitable support 27, and an arm 28 extending beyond said point of support has attached thereto a retractile spring 29 secured, also, to the base 10 for the purpose of restoring the armature 23 to normal position when the magnets are deenergized. The nut 22, to which the one end of cord 20 is attached, is arranged to be longitudinally adjustable along said armature as by means of a threaded shaft 30 upon which it is mounted, said shaft being mounted to be rotatable in bearings 31 of said armature, and having a head or knob 32 for actuation. In this manner, the effective amplitude of vibration of the said cord may be varied to accordingly alter the speed of rotation of wheel 15, which rotation is effected as follows:

Due to the attraction by the magnets of armature 23, the cord 20 is caused to exert a substantial pull tangentially upon the circumference of disk or wheel 15, the tension of spring 21 being so adjusted that the armature pull is considerably in excess. The friction between the cord and its groove will transmit the pull to the wheel, causing the same to rotate (counter-clockwise) in the direction of the arrow, Fig. 1; and when the said armature is released and restored to its normal position under action of spring 29, the slack in cord 20 produced thereby will be taken up by the spring 21 without appreciable action on the wheel. Whereupon, further rotary impulses will be im-

parted to said disk or wheel upon the circuit being again completed and the magnets energized. Successive impulses will continue so long as sufficient current is supplied to the magnets and the wheel 15 continues to rotate, its momentum serving to overcome any tendency of the spring 21 to retard its motion by a reversal of the rotational impulse.

10 I claim:

1. A motor device, comprising: a rotatable shaft; a circular disk mounted thereon provided with a circumferential groove; a cord occupying a portion of said groove; a spring attached to one end of said cord; a pivoted member attached to the other end of said cord; means to oscillate said member, the latter being adapted to exert a pull on said cord in excess of that exerted by said spring and thereby effect continuous rotation of said shaft; and means to adjust the point of attachment of said cord end to the oscillatory member.

2. A motor device, comprising: a rotatable shaft; a circular disk mounted thereon provided with a circumferential groove; a cord occupying a portion of said groove; a spring attached to one end of said cord; a pivoted member connected with the other end of said cord; means to oscillate said member, the latter being adapted to exert a pull on said cord in excess of that exerted by said spring and thereby effect continuous rotation of said shaft; a threaded shaft mounted for rotation on said oscillatory member; and a nut longitudinally adjustable thereon upon rotation of said shaft to which the other end of said cord is attached.

3. A motor comprising a rotatable shaft, a disk mounted thereon, a transmission member in frictional engagement with said disk, a spring attached to one end of said transmission member, a pivoted vibratory device mounted eccentric to said disk and attached to the other end of said transmission member with a free portion of said member between the device and the disk, power means to cause said device to draw the transmission member tightly and quickly into engagement with said disk and in a rotative direction toward said device, and a spring operating on said pivoted device to cause said pivoted device to quickly release the pull on said transmission member when the power means acting on said vibratory device is inactive, whereby said disk is continuously rotated in one direction.

4. In a motor of the character specified the combination of a pivoted vibratory member, a rotatable disk mounted eccentric to the pivot of the vibrating member, a transmission band connected at substantially right angles to said vibratory member and partly encircling said disk, power means to vibrate the member at high speed to pull the band tightly around the disk on the forward stroke, a spring on the free end of said band, and a spring connected with said vibratory member whereby said vibratory member may snap back quickly to substantially free the said band from the said disk during the return stroke, whereby said disk is continuously rotated in one direction.

5. A motor of the character specified comprising a rotary disk, a transmission band encircling a portion of said disk, a vibratory member, an attachment device carried by said vibratory member and to which said transmission band is connected at one end, a pivot for said vibratory member, and a thumb screw means for operating said device to move same toward or from said pivot thereby increasing or decreasing the effective pull on the band.

6. A motor of the character described comprising a rotating disk, a flexible transmission member in engagement with said disk, a spring on one end of said member, a vibrating actuator mounted upon a pivot eccentrically to said disk, said flexible member being connected to the actuator and having a free stretched portion between the actuator and the disk, a spring connected with the actuator to cause said actuator to quickly react to release tension on the said flexible member on the return stroke of the actuator, and means for rapidly vibrating the vibratory member to intermittently increase and decrease the tension on the flexible member, whereby said disk is continuously rotated in one direction.

7. A motor of the character specified comprising in combination a rotatable shaft, a driving disk fixedly mounted thereon, a flexible transmission member encircling a portion of said disk, a pivoted vibratory device mounted eccentric to the axis of said disk, and means to vibrate said device with quick short strokes effective to cause continuous rotary movement of the shaft.

Signed at New York in the county of New York and State of New York this 1st day of November, A. D. 1916.

FRITZ P. MANSBENDEL.