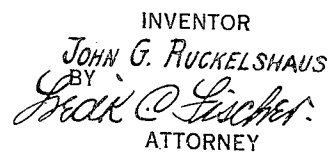


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J. G. RUCKELSHAUS

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MAGNETIC MOTOR

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Fig. 2.

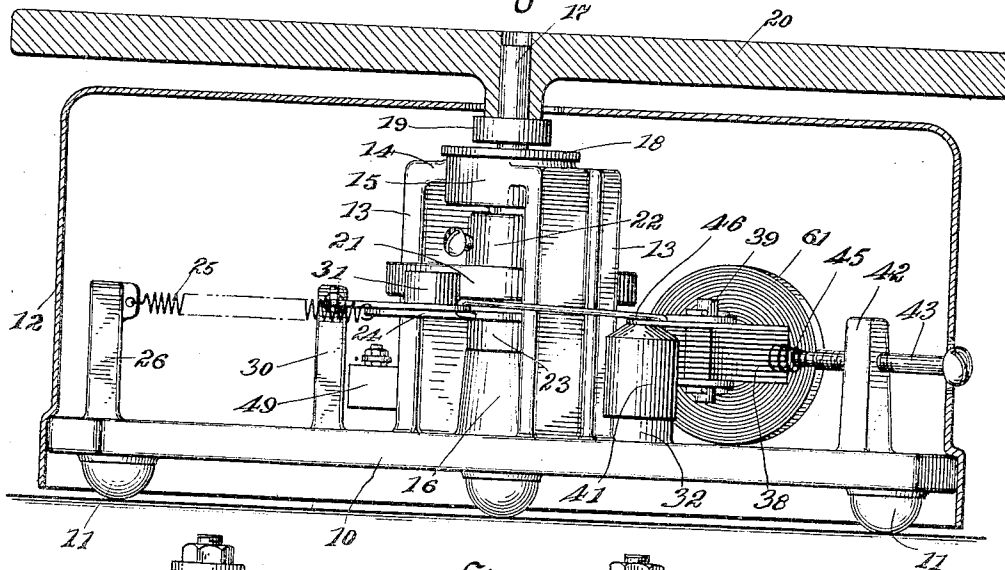


Fig. 3.

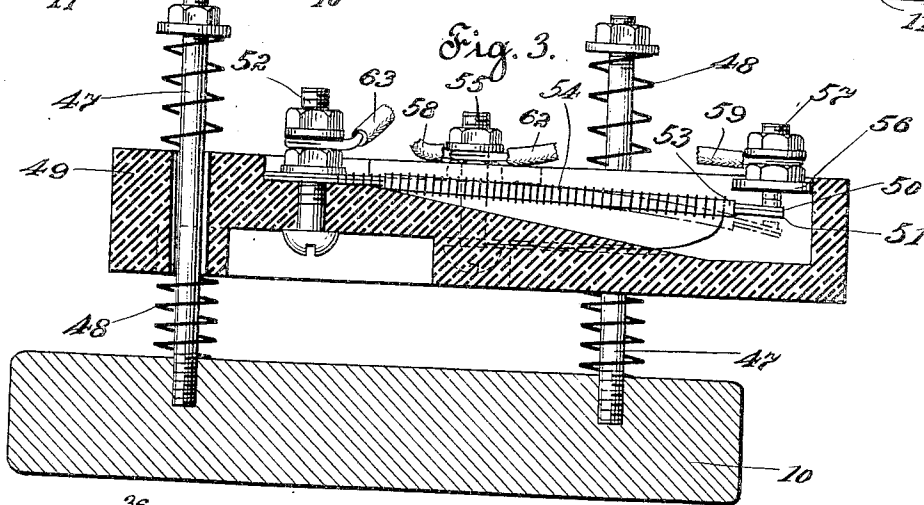
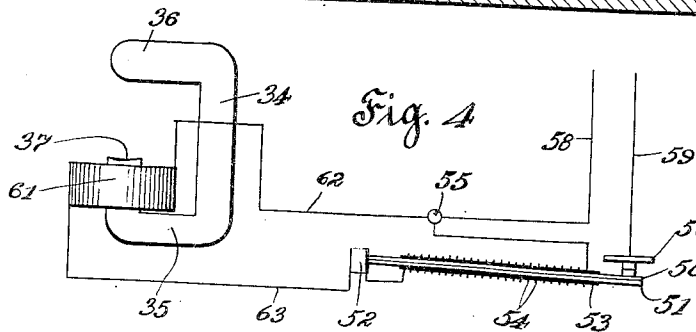


Fig. 4



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MAGNETIC MOTOR.

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REISSUED

This invention relates to prime movers and more particularly to devices for producing continuous rotary movement in a rotative part by an electrical current.

5 One of the main features of the invention is to provide means for imparting a slow regular rotary movement to a turntable of considerable weight by the oscillation of an armature, actuated intermittently by an electro-magnet to which current is conducted
10 through an automatic circuit breaker by which the magnet is controlled.

A further object is in the provision of a noiseless device for transmitting the movement of the armature to a vertical spindle on
15 which the turntable is mounted.

Another aim is to produce a simple, compact apparatus capable of operating continuously for an indefinite period without
20 supervision or care, at a negligible expense, and which is in itself inexpensive to construct and install.

Other valuable and practical features are accomplished by the novel construction and
25 arrangement of parts hereinafter described and illustrated in the accompanying drawings, forming a material part of this disclosure, and in which:—

30 Figure 1 is a top plan view of a complete embodiment of the invention, the casing and turntable being omitted.

Figure 2 is a front elevational view of the same, the casing and turntable being shown in section.

35 Figure 3 is a sectional view taken on line 3—3 of Figure 1 through the circuit interruptor and drawn to an enlarged scale.

Figure 4 is a diagrammatic view illustrating the circuit wiring.

40 Figure 5 is a fragmentary plan view of the friction drive means.

Figure 6 is a similar view showing the several positions of the friction drive roll.

The base, designated in the drawings by the numeral 10, is shown as generally triangular, having three semi-spherical insulating supports 11 to rest on any level surface, and enclosed, together with the superstructure, by a thin walled casing 12.

50 Substantially midway on the base are the supports 13 for a bridge 14 having an enlarged central boss 15 extending slightly above and below and containing a combined annular and thrust bearing, (not shown), the same constituting a standard.

A boss 16, raised from the base in register

with the bridge boss 15, is drilled to form a guide bearing for a vertical spindle 17 rotatable in the bearings and provided with a dust cap 18 flanged to extend over the top
60 of the boss 15 covering the bearing therein, and fixed on the spindle, above the cap, is a collar 19.

A turntable 20, composed of a heavy disc having a downwardly extending hub is bored
65 to receive the upper end of the spindle, its hub resting on the collar 19 by which it is removably engaged to permit ready removal at will and transmit rotary motion when in place.

A disc 21 having a hub 22 is secured to the spindle 17 below the bridge and rotatably mounted on the spindle below the disc is a hub 23 having an extending arm 24.

A coiled tension spring 25 engages the end
75 of the arm and an eye carried by a post 26, tending to draw the arm in a clock-wise direction.

Fixed in the arm 24 to extend upwardly is a pivot pin 27 on which is freely mounted a
80 cam plate element 28, disposed normally transverse to the arm, the left hand end of the cam plate being engaged by a tension spring 29 arranged tangentially to the disc and secured to a post 30 rising from the base
85 rearward of the bridge.

Fixed on the plate 28 is a roll 31 eccentrically revoluble on the pivot 27, the roll making contact with the periphery of the disc 21 when the cam plate is drawn by the spring
90 29 and moved out of contact when the plate is oscillated in the opposite direction for a purpose further on apparent.

On the right hand side of the base are a pair of spaced projections 32 to which is
95 secured by screws 33 a laminated magnet 34 provided with arms 35 and 36 extending at right angles, the arm 35 having an extension 37 disposed parallel to the main portion 34.

A laminated armature 38 is removably
100 pivoted on a pin 39 passing through extensions of the arm 36 and reaching from the armature, opposite the pivot is an arm 40 carrying a counter-weight 41.

A post 42 rising from the base 10 carries
105 an adjustable screw 43 provided with a clamping screw 44 and having at its inner end a spring bumper 45 against which the armature 38 makes contact at the end of its outward oscillative movement.

A link 46 connects the armature arm 40
110 with the cam plate 28 and it is to be noted

that the point of link connection with the plate is such as to give the same an initial oscillatory movement on the pivot 27, stressing the spring 29, preliminary to transmitting movement to the arm 24 and stressing the arm return spring 25, this action releasing the roll 31 from the disc 21 when the arm is swung anti-clock-wise by the armature, the roll, moving with the plate, instantly gripping the disc upon return movement of the arm as indicated in the detail views in Figures 5 and 6, the foregoing elements completing the purely mechanical details of the apparatus.

At the rear of the base are secured two upright rods 47 provided with nuts and washers at their upper ends, each rod having two separate helically coiled springs 48, between the adjacent ends of each pair of which is disposed a non-conducting body 49.

This body is formed with clearance openings through which the rods freely pass and is thus floatingly supported so that no shocks or jars may be transmitted to it.

Mounted in the dielectric body 49 are two conducting strips 50 and 51 rigidly held at one end by a clamp bolt 52 and depressible into a recess in the upper portion of the body, these strips being of unlike material, one of which is subject to greater elongation in the presence of heat than the other, whereby movement of the strips at their free ends is attained.

These strips are encased in a heat insulating covering 53 enclosed by a wire coil 54 one end of which is in electrical contact with the bolt 52 and the other end similarly engaged with a bolt 55, see Figure 3.

A contact plate 56 is normally engaged by the bared free end of the strip 50, the plate being held to the body by a bolt 57.

An electrical current is supplied from any convenient source through insulated wires 58 and 59 held in a conductor cable 60 passing through the base as shown in Figure 1.

An electro-magnetic coil 61 is wound on the arm 37 of the magnet core, to which current is supplied through wires 62 and 63, connected respectively to the bolts 55 and 52, enclosed in a cable 64.

In operation current enters through conductor 59, bolt 57 and contact plate 56 passes through the thermal elements 50, 51 to the bolt 52 and thence through conductor 63 to coil 61, energizing the electro-magnet and attracting the armature 38.

This action tilts the cam plate 28, releasing the roll 31 from disc 21 and draws the arm 24 against the tension of the spring 25.

At the same time current through the conductor 58, and bolt 55 enters the coil 54 and passes to the bolt 52, heating the coil and causing curvature of the thermal strips and breaking contact with the plate 56 thereby de-energizing the electro-magnet and per-

mitting the pull of the spring 25 to move the armature into the position shown in Figure 1, the armature being cushioned by contact with the adjustable buffer spring 45.

As the armature is oscillated by the spring in a clock-wise direction, the cam plate 28 is drawn by the spring 29 to cause the roll to impinge on the periphery of the disc to effect a driving grip, thus giving it an impulse, and, as the turntable is of considerable weight, it acts as a fly-wheel, maintaining an essentially uniform rotary movement during the momentary cessation of advance impulses.

The thermal strips upon breaking contact with the plate 56 quickly cool and automatically renew their contact with the plate, whereupon a continuous succession of impulses is obtained.

Although I have described my improvements with considerable detail and with respect to certain particular forms of my invention, I do not desire to be limited to such details since many changes and modifications may well be made without departing from the spirit and scope of my invention in its broadest aspect.

Having thus described my invention, what I claim as new and desire to secure by Letters Patent, is:—

1. A magnetic motor comprising a base having a standard, a vertical spindle rotatable therein, a turntable carried by the spindle, a disc fixed to the spindle, an arm journaled on the spindle, a cam plate pivoted on said arm, an eccentric roll on said plate, resilient means to swing said arm in one direction, means to oscillate said cam plate to cause said roll to engage the periphery of said disc when said arm is moved by said resilient means, an electro-magnet, a pivoted armature drawn by said magnet in a direction opposite to that in which said resilient means acts, said armature being connected to said plate, and means for periodically interrupting current to said magnet.

2. In a device of the class described, the combination with a turntable, a spindle on which the turntable is removably mounted, and means for supporting the spindle, of a friction disc fixed on said spindle, an arm journaled on the spindle, a cam plate pivoted on said arm, a spring urging said arm in one direction, an eccentric roll on said plate, a spring urging said roll against the periphery of said disc, a pivoted lever element connected to said plate to cause oscillation thereof whereby said roll is released from said disc when the element is moved outwardly and coincidentally retract said spring actuated arm, and means for oscillating said lever element intermittently.

3. In a device of the class described, the combination with a turntable, a spindle on which the turntable is removably mounted,

and means for supporting the spindle, of a friction disc fixed on said spindle, a spring impelled arm journaled on said spindle, an eccentric friction roll pivoted on said arm, 5 resilient means for causing said roll to engage said disc when said arm is moved by its spring, a lever having a part operatively engaging said arm to retract the same and release the roll, and means for intermittently 10 actuating said lever, whereby rotary impulses are transmitted to said spindle.

4. A magnetic motor comprising a base having a standard, a spindle mounted vertically therein, a turntable carried by the spindle, a disc fixed on the spindle, an electro-

magnet, a pivoted armature drawn in one direction by said magnet, a spring for retracting the armature when released by the magnet, means for making and breaking the circuit to said magnet, an arm rotatable on 20 said spindle, a plate pivoted on said arm, an eccentric roll carried by said plate, and means for causing said roll to impinge on the periphery of said disc when the armature moves in one direction to convey motion thereto and release the disc when moved 25 in the opposite direction.

This specification signed and witnessed this 20th day of May, 1926.

JOHN G. RUCKELSHAUS.