

April 17, 1928.

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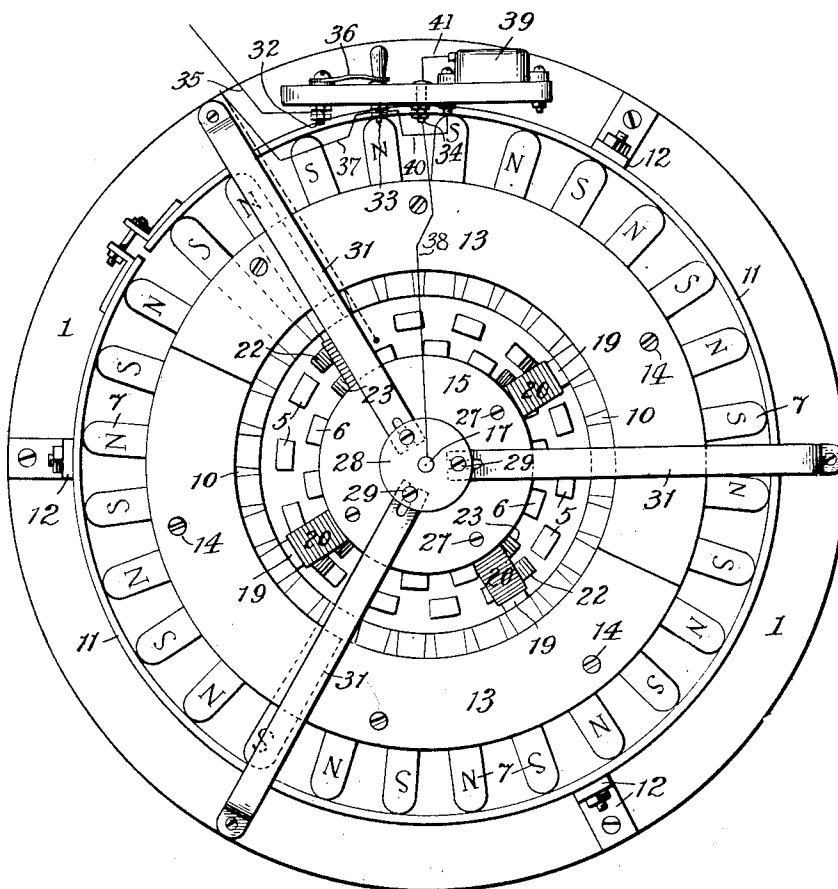
O. R. ANDERSON

MAGNETIC MOTOR

Filed April 1, 1924

3 Sheets-Sheet 1

Fig. 1.



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Witness:

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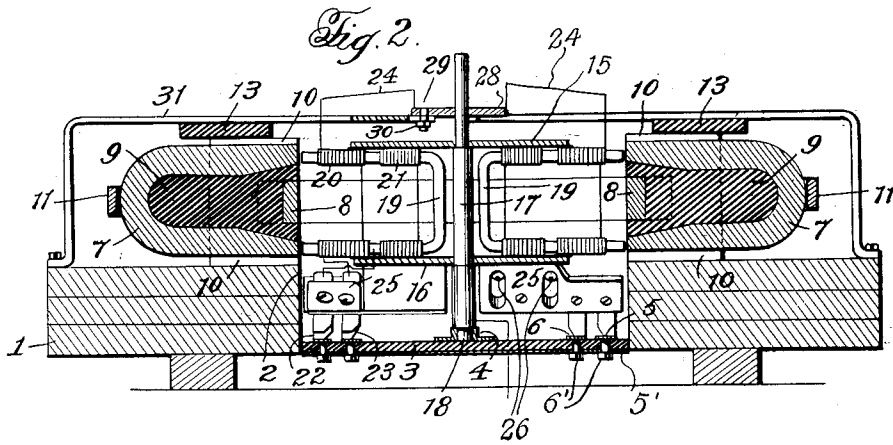
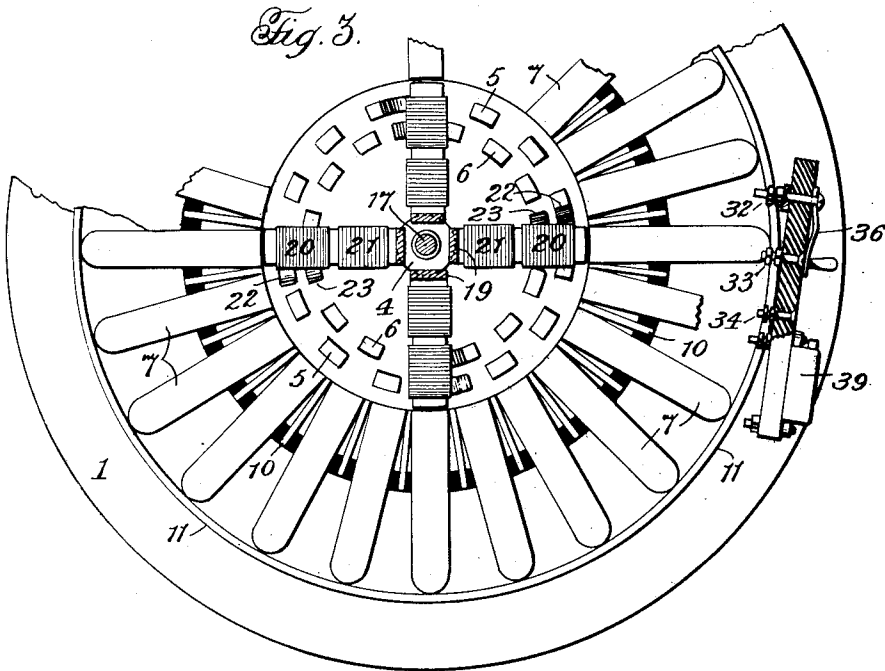
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3 Sheets-Sheet 2



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Fig. 5.

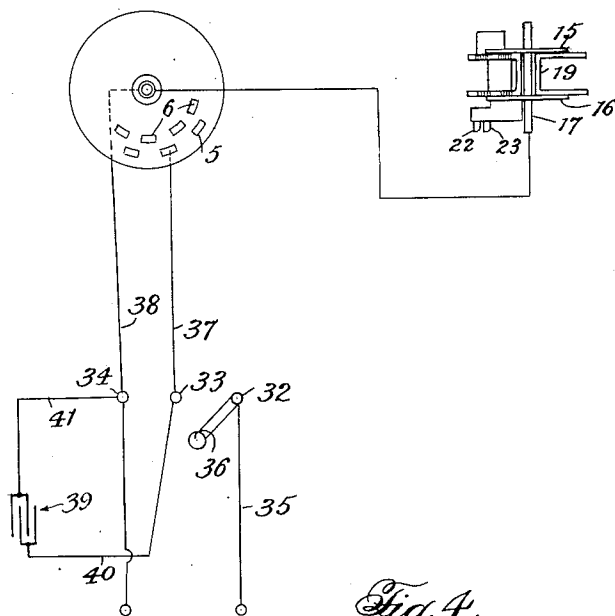
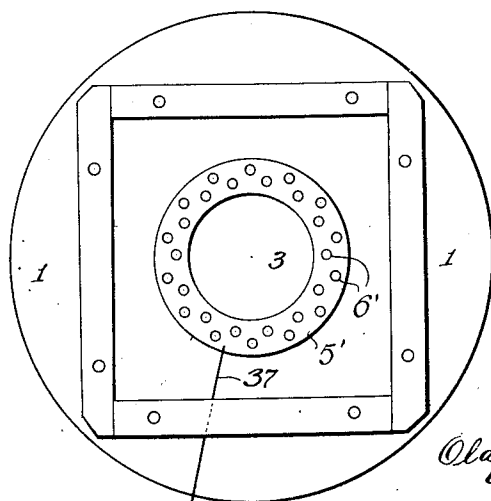


Fig. 4.



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UNITED STATES PATENT OFFICE.

OLAF R. ANDERSON, OF PASADENA, CALIFORNIA.

MAGNETIC MOTOR.

Application filed April 1, 1924. Serial No. 703,570.

My invention relates to new and useful improvements in magnetic motors and more particularly to such a motor employing permanent and electromagnets, the electromagnets preferably being carried by the rotor of the motor and the said rotor operating within a battery of permanent magnets.

The principal object of the invention resides in assembling the permanent magnets so that those of N. pole alternate with those of S. pole and providing means whereby the polarity of the electromagnets may be changed upon operation of the rotor, the polarity of the electromagnets being alternately changed from N. to S. pole and from S. to N. pole, so that as they pass the permanent magnets their polarity will be changed so that they will be attracted by the permanent magnets.

A further object of the invention resides in the provision of stationary contacts which are carried by the stationary part of the motor and contacts carried by the rotor and adapted to successively engage the stationary contacts, the engagement of the contacts carried by the rotor with the stationary contacts alternately changing the polarity of the electromagnets.

With the above and other objects in view, which will appear as my description proceeds, my invention consists in the novel details of construction, and arrangement of parts, illustrated in the accompanying drawings and described in the following specification, and while I have illustrated and described the preferred embodiments of the invention, as they now appear to me, it will be understood that such changes may be made as will fall within the scope of the appended claims.

In the drawings:

Fig. 1 is a top plan.

Fig. 2 is a transverse vertical section.

Fig. 3 is a fragmental top plan with parts removed and parts in section.

Fig. 4 is a bottom plan, and

Fig. 5 is a diagrammatic view of the electric circuit.

In the drawings 1 indicates the base or stationary portion of my motor having the circular cut-out portion 2 which forms a well for the reception of a rotor to be later described, said well having the bottom 3 to which is secured a bearing 4 for a purpose to be later described. Secured to the bottom

3 are two circular rows of stationary contacts, one row being indicated at 5 and the other row at 6 and as quite clearly shown in the drawings the row 6 of contacts is of less diameter than the row of contacts 5 and the contacts 6 are spaced between the contacts 5 for a purpose which will later appear. Secured to the underside of the base 1, beneath the recess 2, is a metallic ring 5' and the contacts 5 and 6 are secured to the base by means of the bolts and nuts 6' which pass through the base and through the ring. Supported upon the base 1 around the cut-out portion 2 are the permanent magnets 7 the magnets being arranged in circular form and those of N. pole alternating with those of S. pole. The permanent magnets are of substantially C-shape to provide the vertically spaced arms the inner ends of which extend flush, or in vertical alignment, with the side walls of the well 2. A metallic ring or band 8 of circular formation is received between the arms of the permanent magnets and is insulated therefrom by the wooden blocks 9, spacing plates 10 being received between the arms of the magnets, and engaging the upper and lower surfaces of the ring or band 8 as is quite clearly shown in the drawings. Connecting the outer ends of the permanent magnets is the metal band 11 which is supported from the base 1 by means of the brackets 12 or in any other suitable manner. A plate of wood or other similar material 13 extends over the upper surfaces of the magnets and is secured to the base 1 by means of the bolts 14 or other suitable fastening means.

The rotor which operates in the well 2 comprises the upper plate 15, the lower plate 16 and the central shaft 17 the lower end of which is reduced as shown at 18 to be received in the bearing 4 secured to the bottom 3 of the well. Secured between the plates 15 and 16 and extending beyond the outer marginal edge thereof are the electromagnets 19. The electromagnets are of substantially C-shape to provide the vertically spaced arms the outer ends of which extend into close proximity to the inner ends of the permanent magnets so as to be attracted thereby in a manner which will be later described. Each of the electromagnets has a left hand coil 20 and a right hand coil 21 one end of the left hand coil being connected to the contact 22 and one end of the right

hand coil being connected to the contact 23. The opposite ends of the coils are grounded at 24 to the upper plate 15 of the rotor. The contacts 22 and 23 are secured to the lower plate 16 of the rotor by means of the strips of insulation 25 said strips of insulation being secured to the plate 16 by the screws or bolts 26, said screws or bolts 26 also entering threaded openings in the lower arms of the electromagnets whereby the lower plate 16 is secured to said magnets. The upper plate 15 is secured to the upper arms of the electromagnets by means of the screws or bolts 27.

When the rotor is within the well of the base 1 the contacts 22, carried by the electromagnets, will engage the outer row of contacts 5 secured to the base whereas the contacts 23 will engage the inner row of contacts 6 secured to the base. The reduced end 18 of the shaft 17 will be received in the bearing 4.

Received upon the shaft 17, above the top plate 15 is a plate 28 which has the screws or bolts 29 passing therethrough to receive the nuts 30. These bolts and nuts act as securing means for the inner ends of the braces 31, the opposite ends of the braces being secured to the base 1 as shown. The inner ends of the braces are slotted to receive the bolts 29. It will thus be seen that the lower end of the shaft 17 is supported in the bearing 4 and that the upper end of the shaft is supported through means of the braces 31. Binding posts are shown at 32, 33 and 34. Connected to the binding post 32 is a connection 35 from any suitable source of electric energy and a switch 36 is pivotally connected to the binding post and is adapted when closed to engage with the binding post 33 for closing a circuit, a connection 37 leading from the binding post 33 to the stationary contacts 5 and 6. As has been previously stated one end of each of the coils of the electromagnets are grounded on the plate 15 of the rotor and this ground passes through the shaft 17, the bearing 4 and connection 38. A condenser is shown at 39 and is connected to the binding posts 33 and 34 by the connections 40 and 41 respectively. The condenser is shunted across the main circuit and thus eliminates sparking at all of the contacts.

From the above detail description it will be seen that I have provided a magnetic motor in which both permanent and electromagnets are employed the polarity of the electromagnets being changed from N. to S. pole or from S. pole to N. pole, upon operation of the rotor, so that they will be of a polarity opposite to that of the attracting permanent magnet so that the rotor will be continually operated. In other words as has been described the permanent magnets are so arranged that those of N. pole alternate

with those of S. pole and with the switch 36 closed the current flows from the wire 35 through the wire connection 37 to the contacts 5 and 6 carried by the base and this carries the current to whichever one of the contacts carried by the electromagnets is in engagement with the stationary contact. If the contacts 22 are in engagement with the contacts 5 the left hand coils of the electromagnet will be energized and said magnets will be of S. pole. Upon further movement of the rotor the contacts 22 will be disengaged from the contacts 5 and the contacts 23 will engage the contacts 6 thereby changing the polarity of the electromagnets and making them N. pole. As an electromagnet of N. pole reaches the center of or is in alignment with a permanent magnet of S. pole then the polarity of the electromagnet will be changed to S. pole and thereby attracted by the next or adjacent permanent magnet which is of opposite polarity or N. pole. It will thus be seen that the rotor will continue to rotate as there will be a permanent magnet always attracting an electromagnet of opposite polarity the polarity of the electromagnets being automatically changed upon rotation of the rotor. I have also provided novel means of supporting the rotor relative to the stationary field or battery of permanent magnets and for securing the electromagnets to the plates forming a part of the rotor. The ring 5' secured to the underside of the base 1 is more particularly illustrated in Figs. 2 and 4 of the drawings. Fig. 4 showing quite clearly how the wire 37 leads to the ring. The ring is at all times charged so long as the switch member 36 is closed. All of the contacts 5 and 6 are connected to the ring and therefore each of the contacts is constantly charged so long as the switch 36 is closed.

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

1. A motor of the character described comprising a base having a recess formed therein, contacts secured to the base within said recess, a plurality of permanent magnets of alternate polarity arranged on the base around the recess, a rotor operable in the recess, a plurality of electromagnets carried by the rotor, insulating strips secured to the rotor, and contacts secured to the insulating strips, said last mentioned contacts adapted to engage the contacts within the recess of the base for changing the polarity of the electromagnets.

2. A motor of the character described comprising a base having a recess formed therein, two rows of circumferentially spaced contacts secured within the recess, a plurality of permanent magnets of alternate polarity arranged on the base around the recess, a rotor operable in the recess, a

plurality of electromagnets carried by the rotor, and a pair of contacts carried by each of the electromagnets for engaging the rows of contacts within the recess, said contacts
5 of the electromagnets successively engaging the contacts within the recess for changing the polarity of the electromagnets.

3. A motor of the character described comprising a base having a recess formed
10 therein, a metallic ring secured to the underside of the base, means for energizing the ring, contacts secured within the recess and connected to the ring, a plurality of permanent magnets of alternate polarity arranged
15 on the base around the recess, a rotor operable in the recess, a plurality of electromagnets carried by the rotor, and contacts carried by the rotor, said last mentioned contacts adapted to engage the contacts within

the recess for changing the polarity of the 20 electromagnets.

4. A motor of the character described comprising a base having a recess formed therein, separated rows of contacts secured
25 in the recess, the contacts of one row being staggered relative to the contacts of the adjacent row, a plurality of permanent magnets of alternate polarity arranged on the
base around the recess, a rotor operable in the recess, a plurality of electromagnets carried by the motor, and contacts carried by
30 the rotor, said last mentioned contacts being positioned to engage the contacts secured within the recess.

In testimony whereof I hereunto affix my 35 signature.

OLAF R. ANDERSON.