

[A Practical Guide to 'Free Energy' Devices](#)

Part D4: Last updated 20th July 2007

Author: Patrick J. Kelly

4. Energy can be taken from "permanent" magnets

Howard Johnson, Nelson Camus, John Newman, Hans Coler

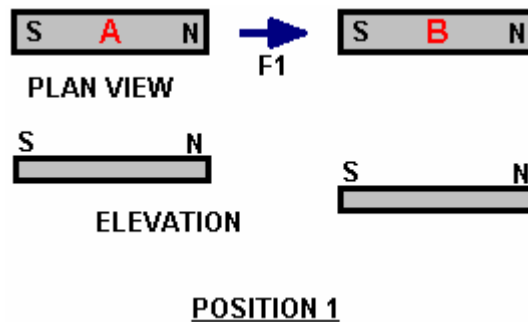
Several motor designs have been published where the motor uses permanent magnets as the motive power. These stir up an incredible amount of indignation on the part of those who believe that such motors are not possible. Several more motor designs have been published where the permanent magnets have their operation or position modified by electromagnets or small electric motors. It is generally conceded that these will work but most people do not believe that the resulting device will operate as an Over-Unity device. I have never seen a working motor powered by permanent magnets alone, so I merely present the information to you for your assessment and/or investigation.

One major objection to permanent magnet motors comes from the belief that permanent magnets can't do work. This is clearly not true. Take the case of a steel ball bearing placed near a strong permanent magnet:



What will happen? As soon as it is released, the ball bearing accelerates towards the magnet and rolls all the way over to it. Work is being performed, and if you don't believe that, then try pushing a car for a couple of miles. The level of exhaustion which results from doing that should convince you that work *is* being done. In addition to the movement, air is being pushed out of the way as the ball bearing moves. It takes power to push air around. If the magnet is on a board, then sound will be produced by the ball bearing moving and it takes power to make sounds. If the magnet is powerful, the ball bearing can be made to roll up a slope to the magnet. In that instance it is especially easy to see that work is being done since the whole weight of the ball bearing is being raised from its starting position to its finishing position. The difficult part is to devise a system where this power to do work can be used to drive a useful mechanism.

The single biggest objection to a permanent magnet motor is that the rotor magnets will find a point of magnetic balance with the stator magnets and lock in a stationary position at that point. This appears to be a perfectly reasonable opinion to hold. Let's apply some layman common sense to the problem and see if we can come up with at least a reasoned opinion on the subject. Suppose we have two identical bar magnets, 'A' and 'B' as shown here in 'Position 1':



Magnet 'A' is held in a plane slightly higher than magnet 'B' so that they do not touch if they pass each other. There are four forces acting in this position:

The North pole of magnet 'A' is attracted to the South pole of magnet 'B'; this is the largest force in this position.

The North pole of 'A' is repelled by the North pole of 'B' but as they are so far apart, the force is relatively weak.

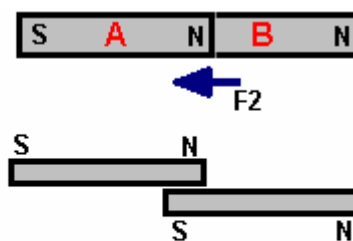
The South pole of 'A' is repelled by the South pole of 'B' but as they are so far apart, the force is relatively weak.

The South pole of 'A' is Attracted to the North pole of 'B' but as they are so far apart, the force is very weak.

Let us say that these four forces combine to give a composite force shown as 'F1' in the above diagram. Assuming that magnet 'B' is a stator magnet which is fixed in position and that magnet 'A' is a rotor magnet which is free to move in a plane just above magnet 'B', then, if friction forces are small enough, magnet 'A' will start to move towards magnet 'B'.

As it moves, the forces change. The nett change is an increase in the composite force moving the two magnets towards each other. However, when the North pole of 'A' reaches a position directly above the South pole of 'B', the balance of

the forces has changed so much that there is a radically different situation. The momentum of the rotor will carry the North pole of 'A' just past the South pole of 'B' as shown here:



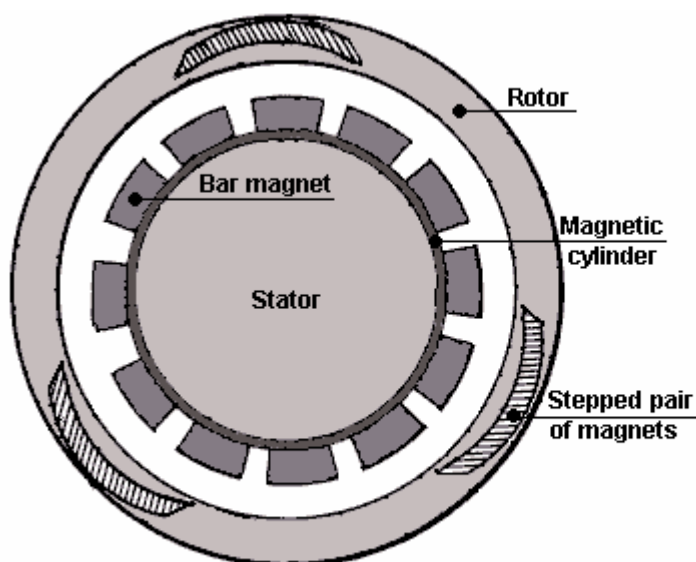
POSITION 2

The resultant force 'F2' is in the opposite direction and is very large. The North pole of 'A' is strongly attracted backwards to the South pole of 'B'. The North pole of 'A' is experiencing a serious level of repulsion from the North pole of 'B'. The South pole of 'A' is also experiencing a serious level of repulsion from the South pole of 'B'. The only force which tends to keep magnet 'A' moving onwards is the very much weaker attraction force between the South pole of 'A' and the North pole of 'B'.

In this situation, it is clear that the rotor will rapidly come to rest with the North pole of 'A' directly above the South pole of 'B'. Even if the rotor is heavy and given a good spin to start the system, with this arrangement, it will still come to rest in its equilibrium position and not continue to rotate.

It does not necessarily follow that every other arrangement will also do that although an intuitive guess would be that it is likely to be so. If the stator magnets are much shorter than the rotor magnets and there are two or more rotor magnets held together in a stepped position there may well be a situation where there is a continuous nett forward force. Many people have come up with ingenious arrangements for using permanent magnets. These include introducing a magnetic screen at the moment when a reverse force would be encountered and removing it when the nett forward thrust situation starts. Other systems move the "stator" magnets, some on rotating discs, some on rocker arms. Some examples are given here:

Howard Johnson. Howard Johnson built, demonstrated and gained US patent 4,151,431 on 24th April 1979, from a highly sceptical patent office for, his design of a permanent magnet motor. He used powerful but very expensive Cobalt/Samarium magnets to increase the power output and demonstrated the motor principles for the Spring 1980 edition of *Science and Mechanics* magazine. His patent is included in this set of documents. His motor configuration is shown here:



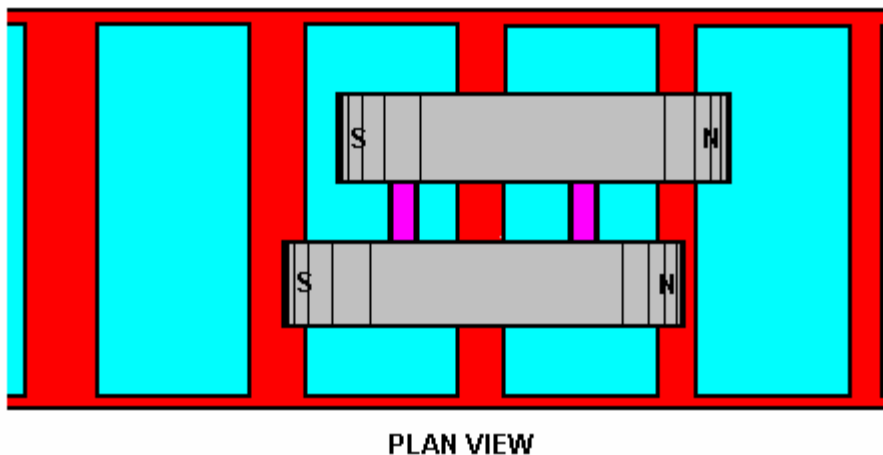
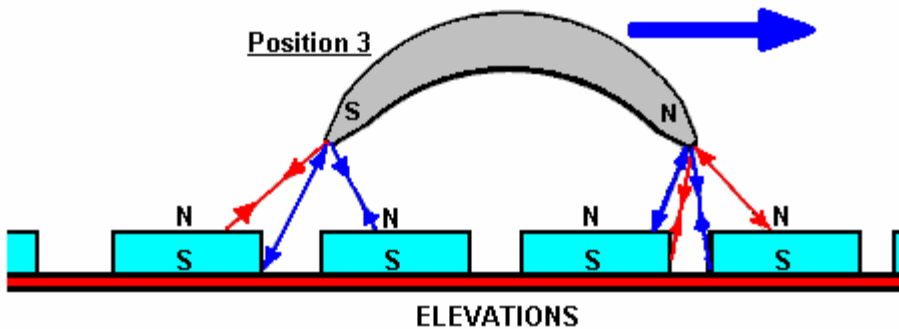
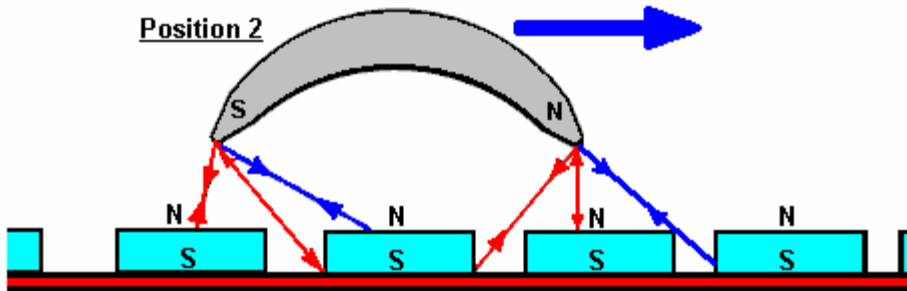
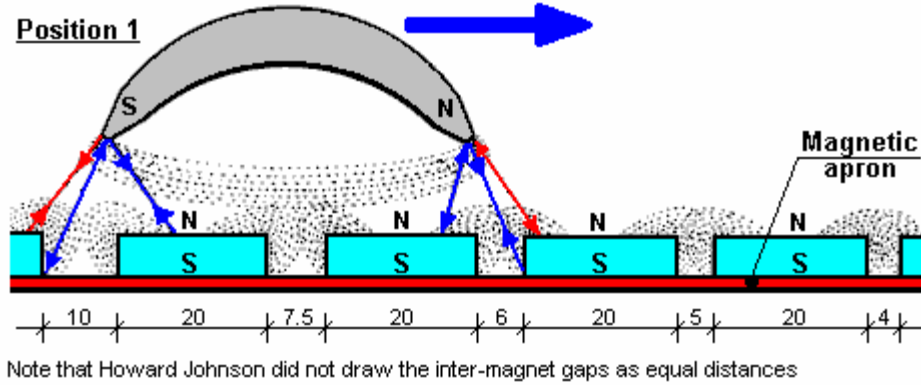
Note that the gaps between the magnets are not a constant width.

The point that he makes is that the magnetic flux of his motor is always unbalanced, thus producing a continuous rotational drive. The rotor magnets are joined in stepped pairs, connected by a non-magnetic yoke. The stator magnets are placed on a mu-metal apron cylinder. Mu-metal is very highly conductive to magnetic flux (and is expensive). The patent states that the armature magnet is 3.125" (79.4 mm) long and the stator magnets are 1" (25.4 mm) wide, 0.25" (6 mm) deep and 4" (100 mm) long. It also states that the rotor magnet pairs are **not** set at 120 degrees apart but are staggered slightly to smooth out the magnetic forces on the rotor. It also states that the air gap between the magnets of

the rotor and the stator are a compromise in that the greater the gap, the smoother the running but the lower the power. So, a gap is chosen to give the greatest power at an acceptable level of vibration.

Howard considers permanent magnets to be room-temperature superconductors. Presumably, he sees magnetic material as having electron spin directions in random directions so that their net magnetic field is near zero until the electron spins are aligned by the magnetising process which then creates an overall net permanent magnetic field, maintained by the superconductive electrical flow.

The magnet arrangement is shown here:



Note that Howard Johnson drew the rotor magnets with a 3% difference in length

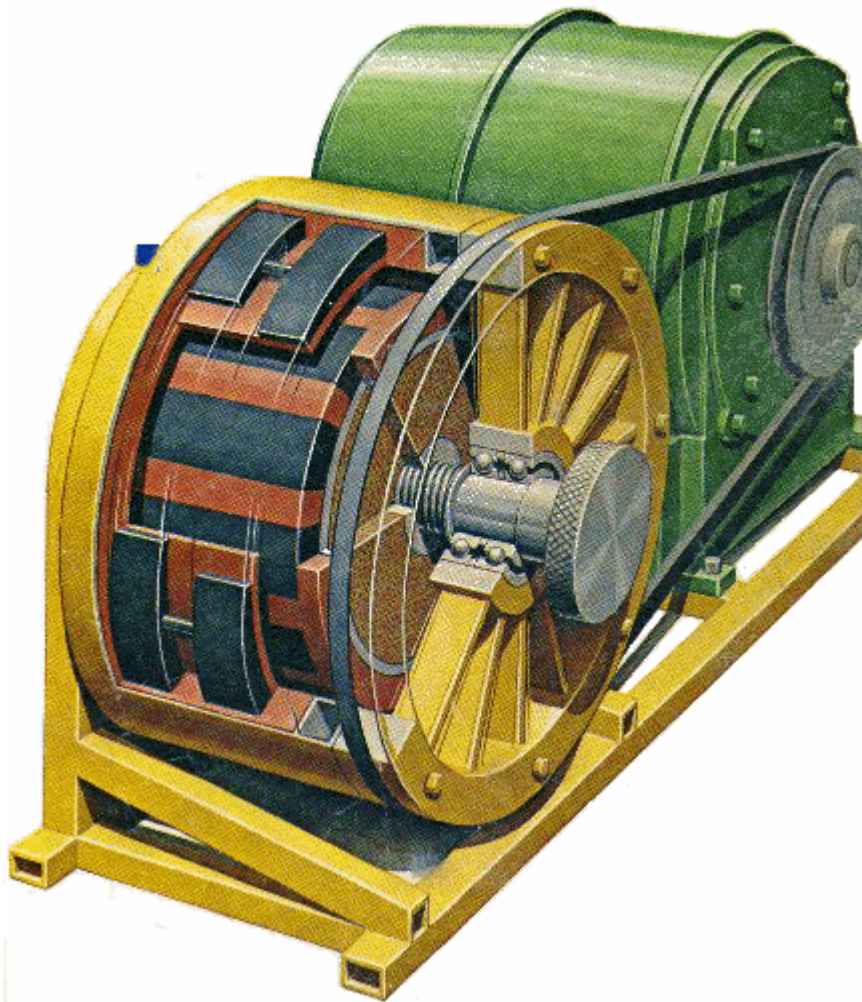
Howard made measurements of the magnetic field strengths and these are shown in the following table:

Measurements taken at the North and South poles of the armature magnet shows that there is a constant off-balance situation.

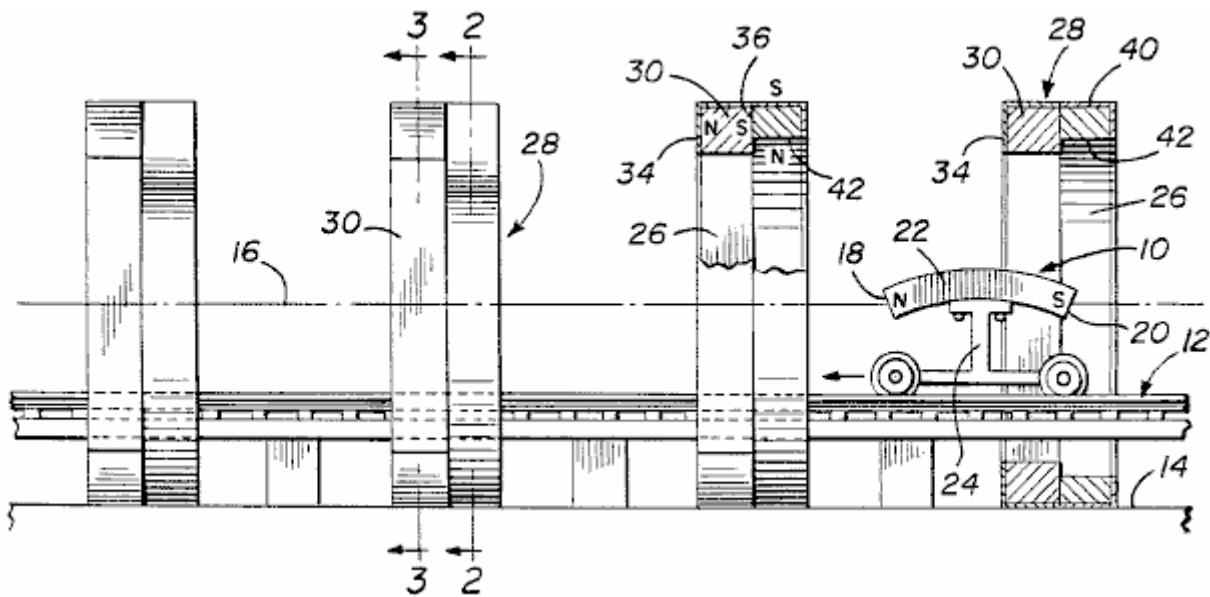
"Zero" Air Gap SOUTH POLE of Armature over:		1/8" Air Gap SOUTH POLE of Armature over:	
Spaces (Repulsion)	Stator Magnets (Attraction)	Spaces (Repulsion)	Stator Magnets (Attraction)
925	1650	950	1250
675	2220	550	1175
600	2200	650	1150
500	2175	650	1150
375	2325	800	1150
300	2275	600	1175
525	2150	750	1150
600	2275	700	1200
450	1800	800	1100
550	1700	850	1150
575	1825	650	975
400	2050	850	1250
475	2150	675	1350
6,950 Gauss		9,475 Gauss	
26,775 Gauss		15,225 Gauss	
33,725 Gauss (Total)		24,700 Gauss (Total)	
9,025 Gauss (Difference)			

"Zero" Air Gap SOUTH POLE of Armature over:		3/8" Air Gap SOUTH POLE of Armature over:	
Spaces (Repulsion)	Stator Magnets (Attraction)	Spaces (Repulsion)	Stator Magnets (Attraction)
750	1600	875	1100
700	1450	950	1450
850	1500	950	1400
1175	1600	925	1375
950	1400	925	1350
900	1400	950	1450
950	1575	925	1350
800	1350	925	1350
1050	1550	1000	1350
1000	950	925	1100
850	1700	875	1250
800	1900	775	1275
550	1400	600	1300
11,325 Gauss		11,800 Gauss	
19,375 Gauss		17,100 Gauss	
30,700 Gauss (Total)		28,700 Gauss (Total)	
2,000 Gauss (Difference)			

the magazine article can be seen at <http://newebmasters.com/freeenergy/sm-pg48.html>.

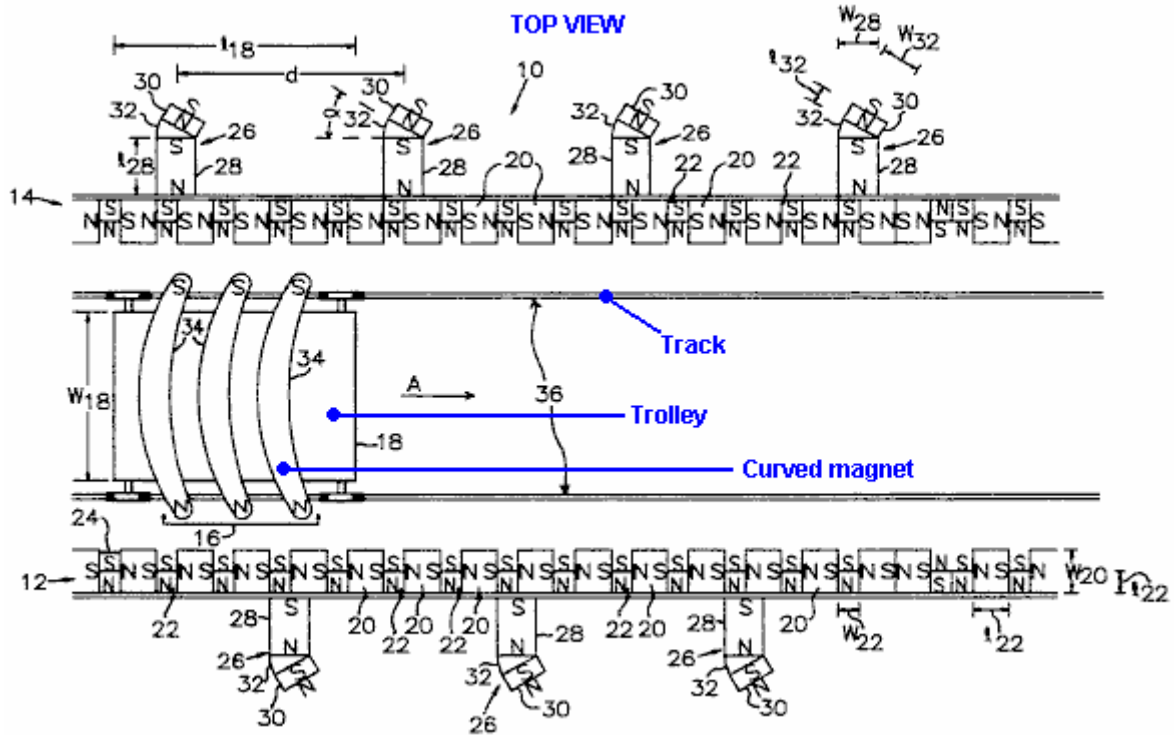


Howard Johnson also has other patents. US Patent Number 4,877,983 granted on 31st October 1989 entitled "Magnetic Force-Generating Method and Apparatus" shows a method of arranging magnets in a group so that a uni-directional driving force is produced:



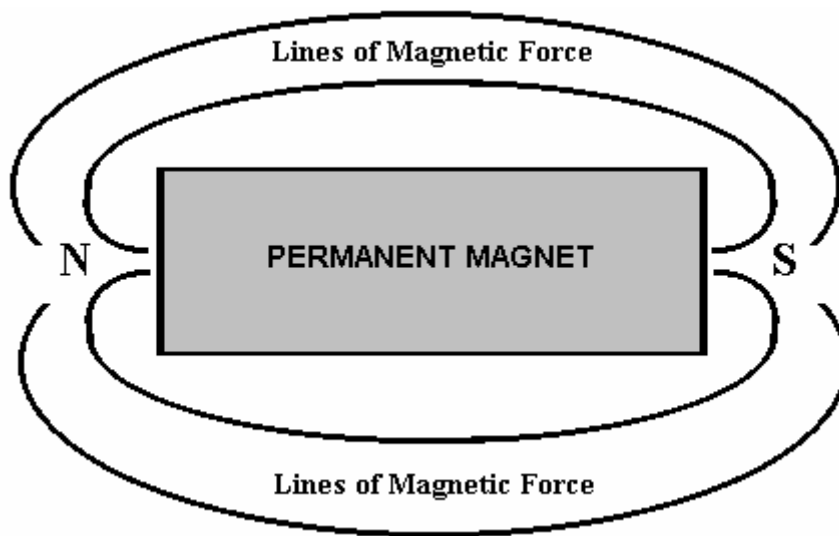
Howard demonstrates the force by placing miniature railway tracks inside the magnet rings and showing that a wheeled carriage is pushed along the tracks.

His US Patent Number 5,402,021 granted on 28th March 1995 is entitled "Magnetic Propulsion System" is also for an arrangement of permanent magnets which generates a continuous linear force:



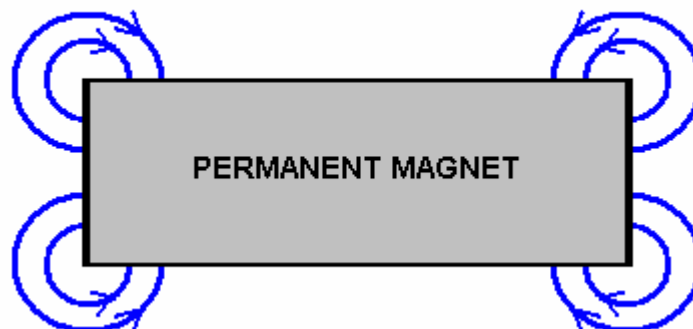
This shows clearly that while there is a null-point in most permanent magnet arrangements, it is definitely not the case for every arrangement.

Schools currently teach that the field surrounding a bar magnet is like this:



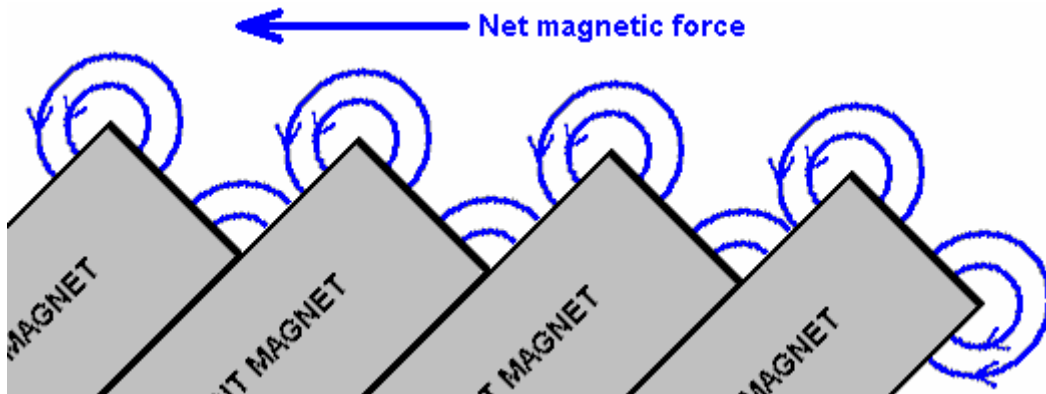
This is deduced by scattering iron filings on a sheet of paper held near the magnet. Unfortunately, that is not a correct deduction as the iron filings distort the magnetic field by their presence. More careful measurement shows that the field actually produced by a bar magnet is like this:

Lines of Magnetic Force



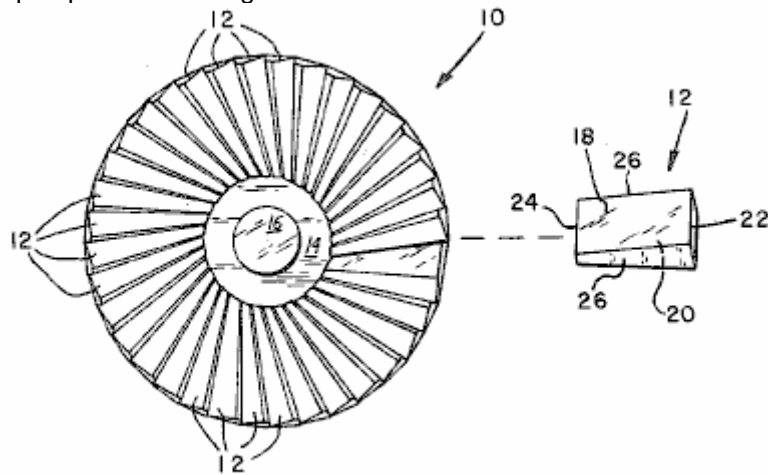
There are many lines of force, although the sketches shown above only show two. The important factor is that there is a circling field at each corner of the magnet.

It follows then that if a row of magnets is placed at an angle, then there will be a resulting net field in a single direction. For example, if the magnets are rotated forty five degrees counter clockwise, then the result could be like this:

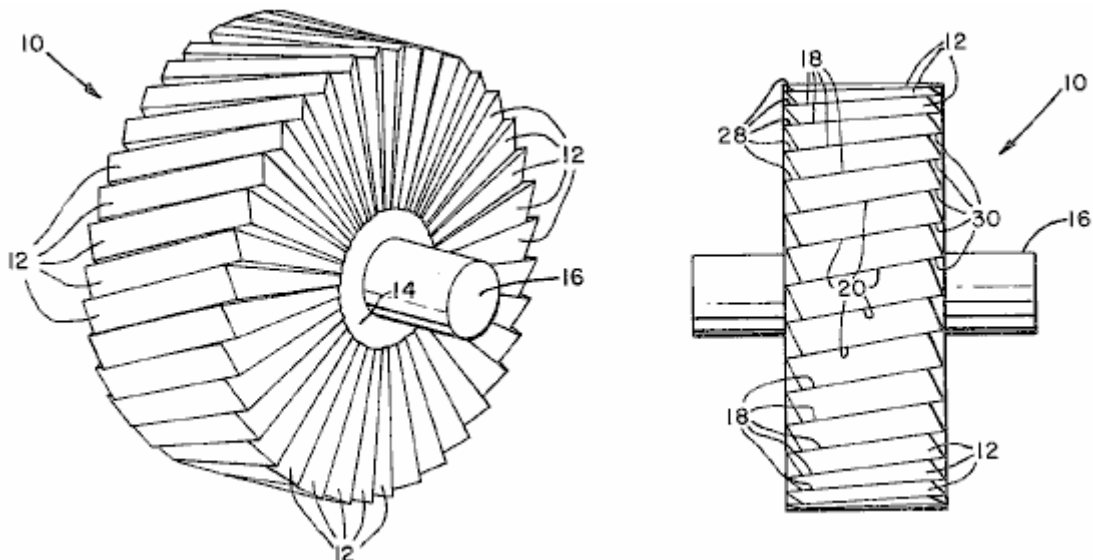


Here, the opposing corners of the magnets are lower down and so there should be a net magnetic force thrust path. I have not tested this myself, but the supposition seems reasonable. If it tests out to be correct, then placing the angled magnets in a ring rather than a straight line, should create a motor stator which has a continuous one-way net field in a circular path. Placing a similar ring of angled magnets around the circumference of a rotor disc, should therefore give a strong rotary movement of the rotor shaft - in other words, a very simple permanent magnet motor.

Something rather like that is shown in David Cunningham's US Patent Number 4,443,776 dated 17th April 1984, where he uses a bank of wedge-shaped permanent magnets:



to create a series of rotor rings formed in a rather similar way:



The Carousel Permanent Magnet Motor/Generator

US Patent 5,625,241 (document PatD26.pdf) presents the specific details of a simple electrical generator powered by permanent magnets alone. This generator can also be used as a motor. The construction is not particularly complicated:

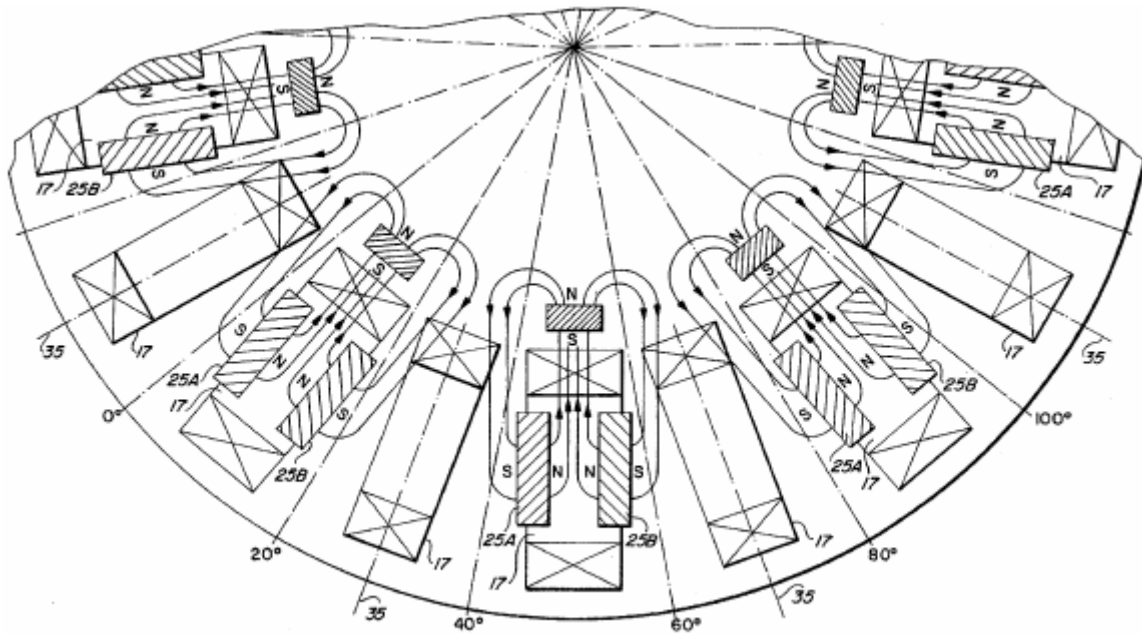


FIG. 6

It uses an arrangement where permanent magnets are associated with every second coil set around the rotor. Operation is self-powered and the magnet arrangement is clearly defined:

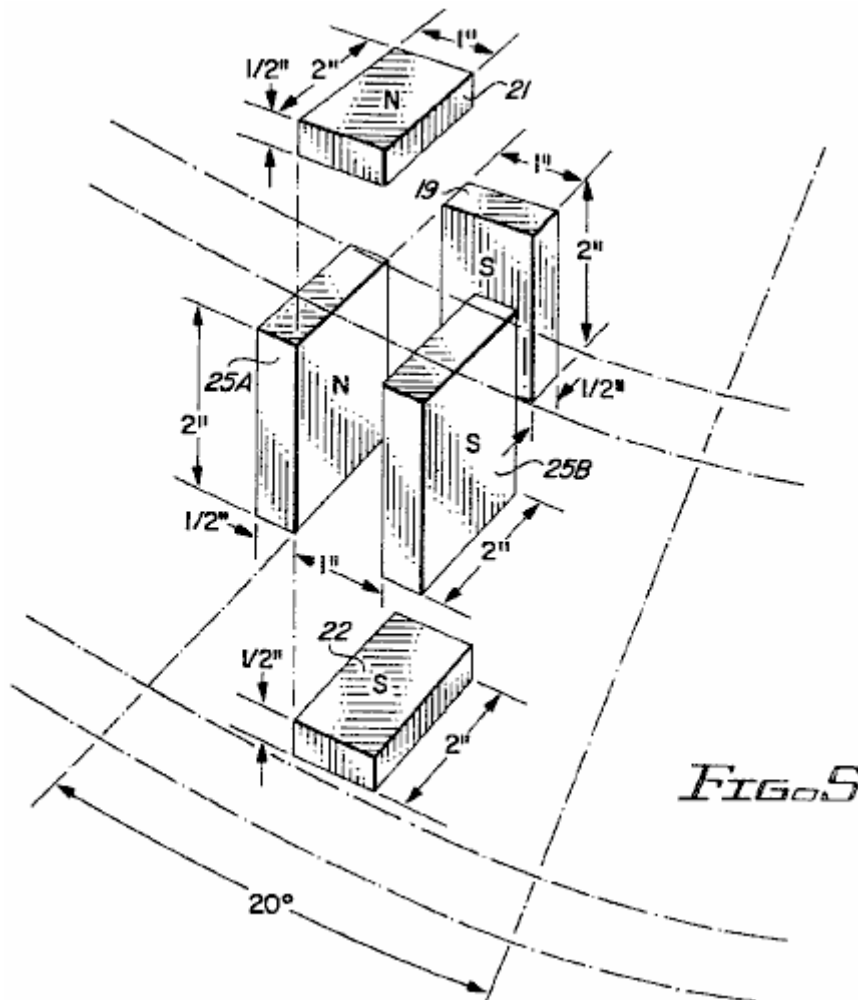


FIG. 5

As are the possible arrangements of the pick-up coils, both high-power, low voltage wiring:

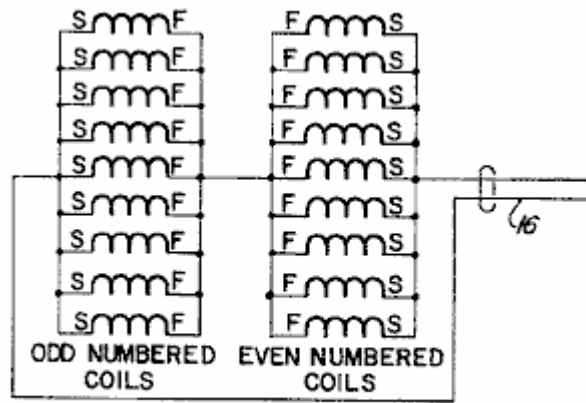


FIG. 8

And high voltage low power connections:

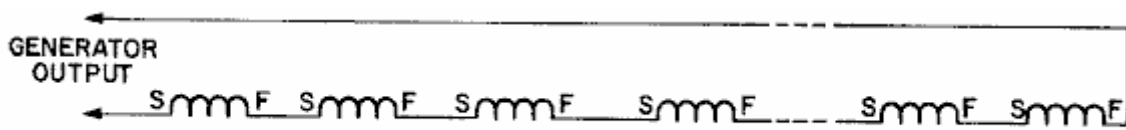


FIG. 9

And the physical arrangement of the device is not particularly complicated:

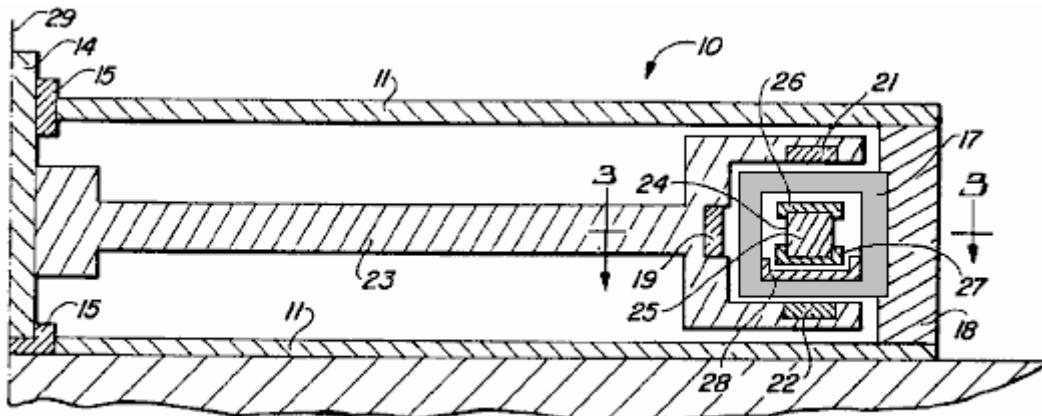
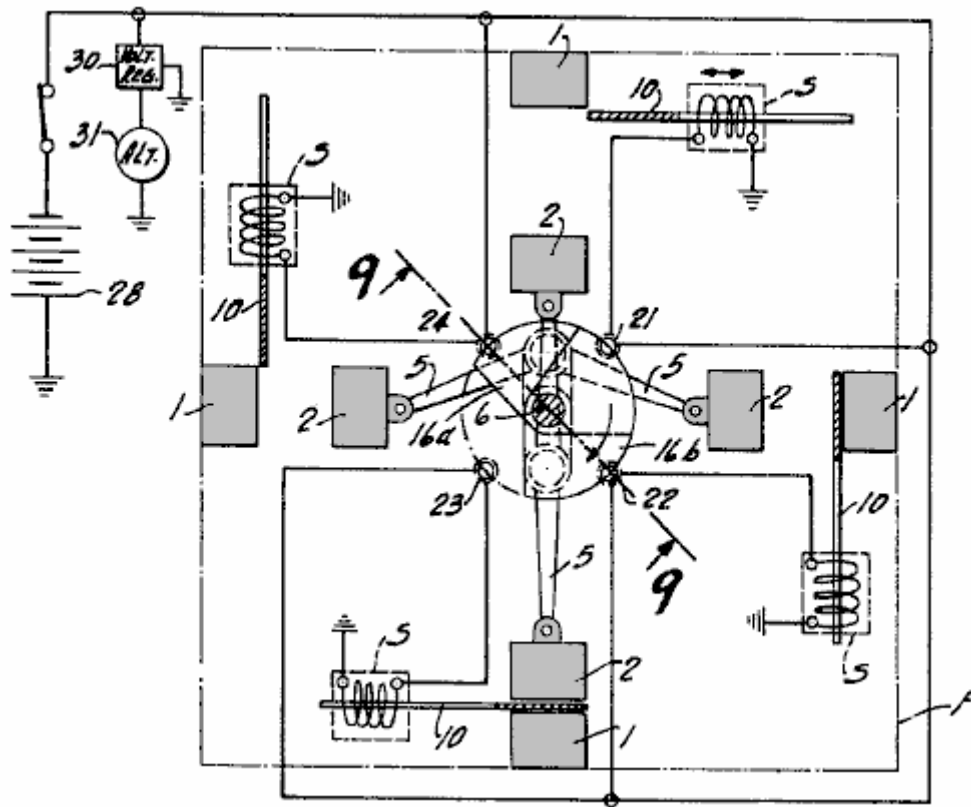


FIG. 2

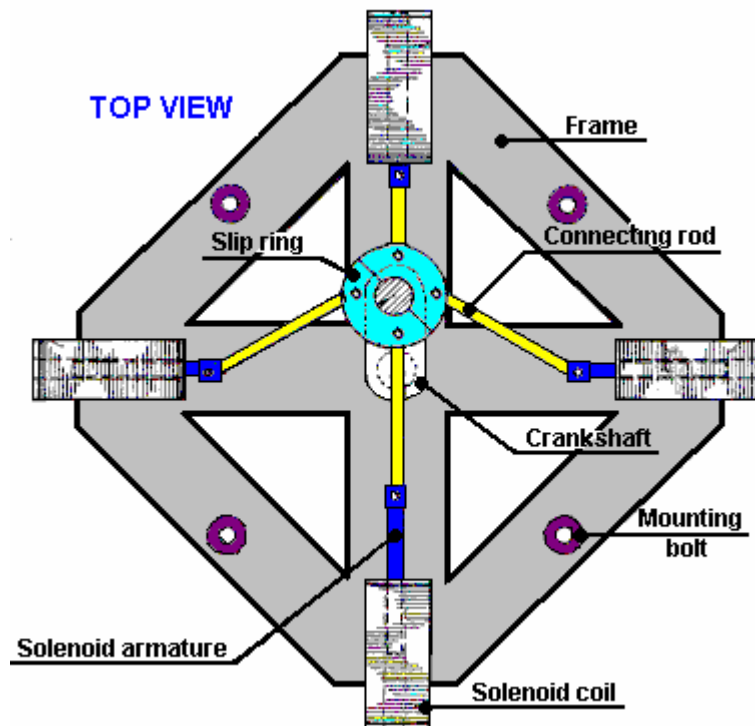
This is a patent which is definitely worth reading and considering, especially since it is not a complicated presentation on the part of the authors, Harold Ewing, Russell Chapman and David Porter. This seemingly very effective generator appears to be overlooked at the present time.

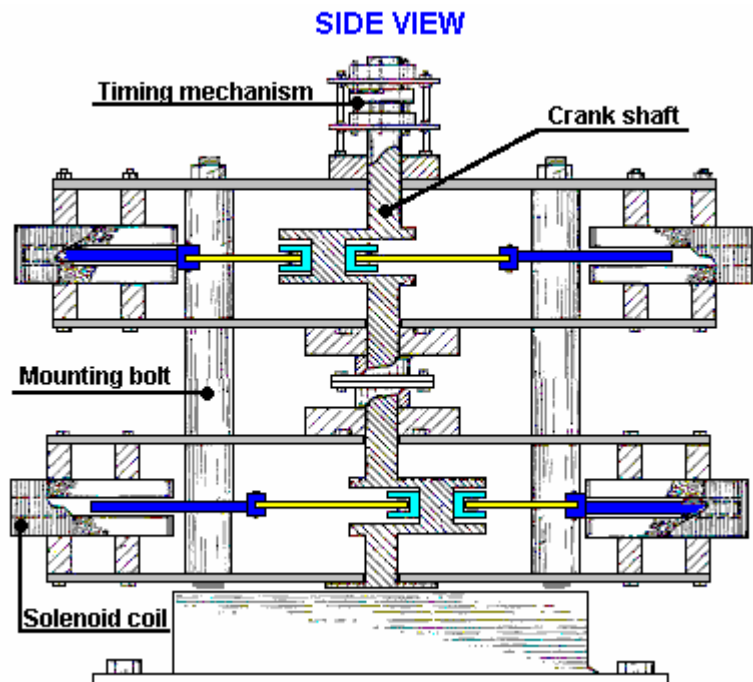
It seems quite clear that permanent magnet motors are a wholly viable option for the home constructor and they are capable of substantial power outputs over long periods.

Some people have opted for permanent magnet motors where the field is shielded at the appropriate moment by a moving component of the motor. For example, **Robert Tracy** was awarded US Patent Number 3,703,653 on 21st November 1972 for a "Reciprocating Motor with Motion Conversion Means". His device uses magnetic shields placed between pairs of permanent magnets at the appropriate point in the rotation of the motor shaft:



Motors of this kind are capable of considerable power output. For example, take the very simple motor, originally built with wood as the main construction material, by **Ben Teal** who was awarded US Patent Number 4,093,880 in June 1978. He found that, using his hands, he could not stop the motor shaft turning in spite of it being a very simple motor design:





The motor operation is as simple as possible with just four switches made from springy metal, pushed by a cam on the rotor shaft. Each switch just powers its electromagnet when it needs to pull and disconnects it when the pull is completed. The resulting motor is very powerful and very simple. Additional power can be had by just stacking one or more additional layers on top of each other. The above diagram shows two layers stacked on top of one another. Only one set of four switches and one cam is needed no matter how many layers are used, as the solenoids vertically above each other are wired together in parallel as they pull at the same time.

The power delivered by the Teal motor is an indication of the potential power of a permanent magnet motor which operates in a rather similar way by moving magnetic shields to get a reciprocating movement.

James E. Jines and James W. Jines were awarded US Patent 3,469,130 on 23rd September 1969 "Means for Shielding and Unshielding Permanent Magnets and Magnetic Motors Utilising the Same":

ABSTRACT

A permanent magnet, the magnetic field of which may be selectively made effective or ineffective, and a magnetic motor utilising such magnets arranged in two staggered rings with a method for selectively rendering the magnets operative and inoperative in successive order to draw a rotor from the field of one magnet to the next successive magnet, thereby causing the rotor to rotate and drive a power shaft, coupled with means for regulating the speed of rotation of the motor and the power shaft.

BACKGROUND OF THE INVENTION

The only prior art of which the applicant is aware are U.S. Letters Patent No. 265,485, 936,503 and 2,779,900.

SUMMARY OF THE INVENTION

The invention involves permanent magnets of the bar type completely encased in a material capable of shielding and containing a magnetic flux field, such as relatively soft metallic material of the group consisting of soft iron, soft steel or other similar magnetic responsive material with one pole face thereof exposed and a shield of similar shielding material which may be moved on to the exposed pole to short-circuit the magnetic flux field of the magnet and render the magnet inoperative as a magnet, or may be moved off of the exposed pole to cause the magnetic flux field to become effective, together with at least two stators spaced apart in parallel relationship and carrying rings of such magnets facing one another, the magnets of one ring being staggered with respect to the magnets of the other ring and a rotor rotatably mounted between the stators, having a soft iron block at one margin for attraction by successive ones of the magnets to rotate the rotor and its power shaft, and a rotor cam for the successive shielding and unshielding of the magnets in a circular pattern, together with means for controlling the area of the magnetic poles exposed by the shields.

A construction designed to carry out the invention will now be described, together with other features of the invention.

BRIEF DESCRIPTION OF THE DRAWINGS

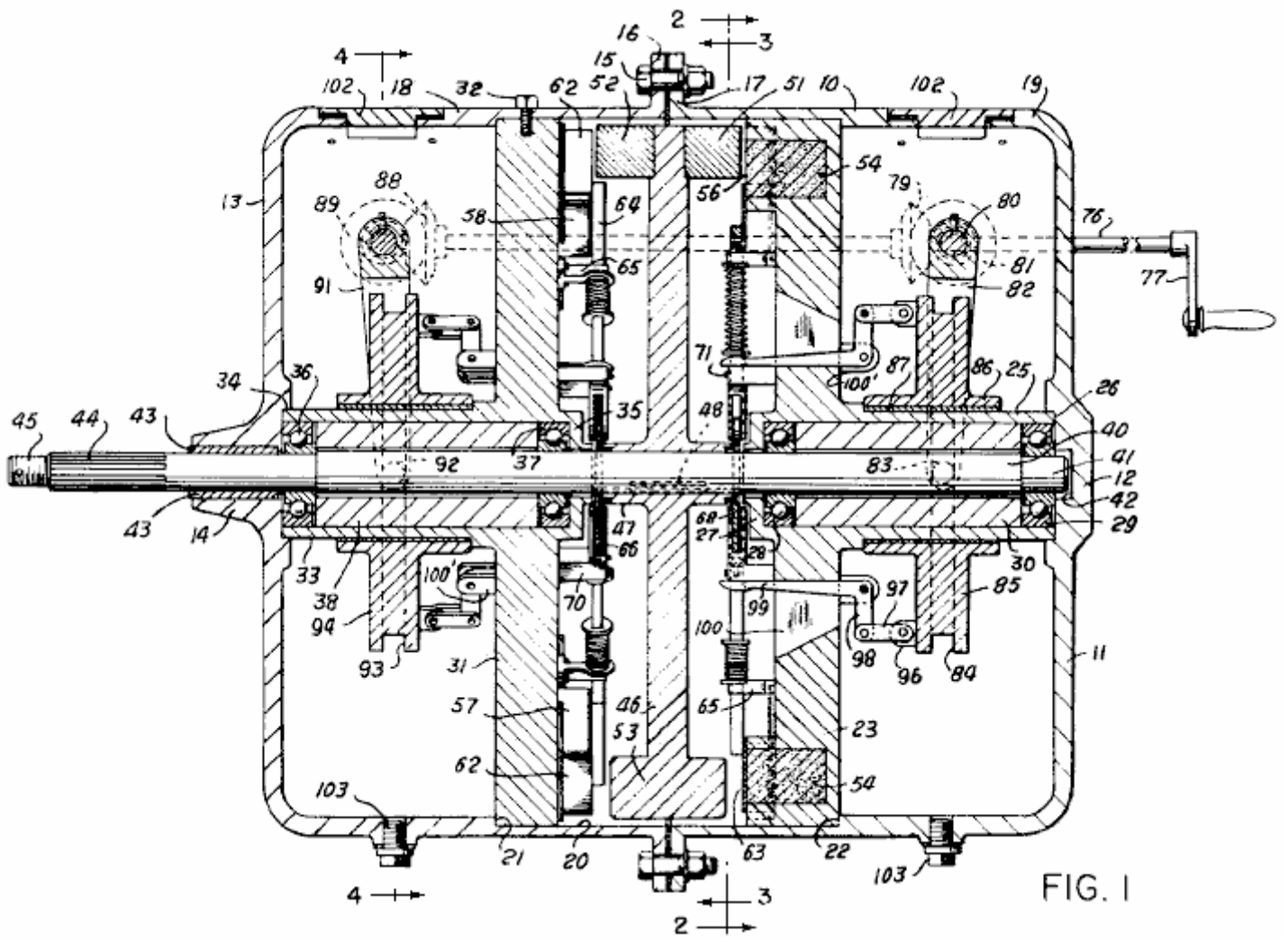


FIG. 1

Fig.1 is a vertical longitudinal, sectional view of a magnetic rotor constructed in accordance with this invention and taken on the line 1--1 of **Fig.2**.

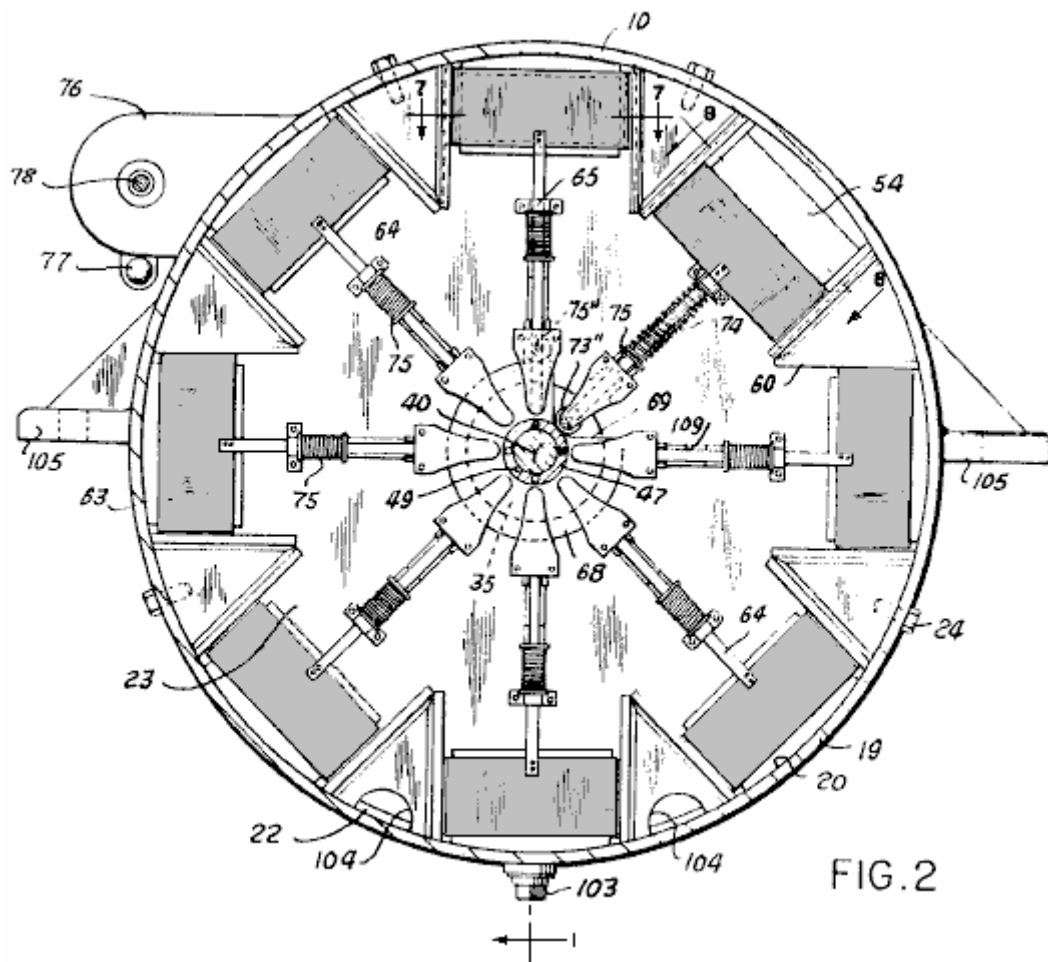


FIG. 2

Fig.2 is a vertical, cross-sectional view taken on the line 2--2 of Fig.1.

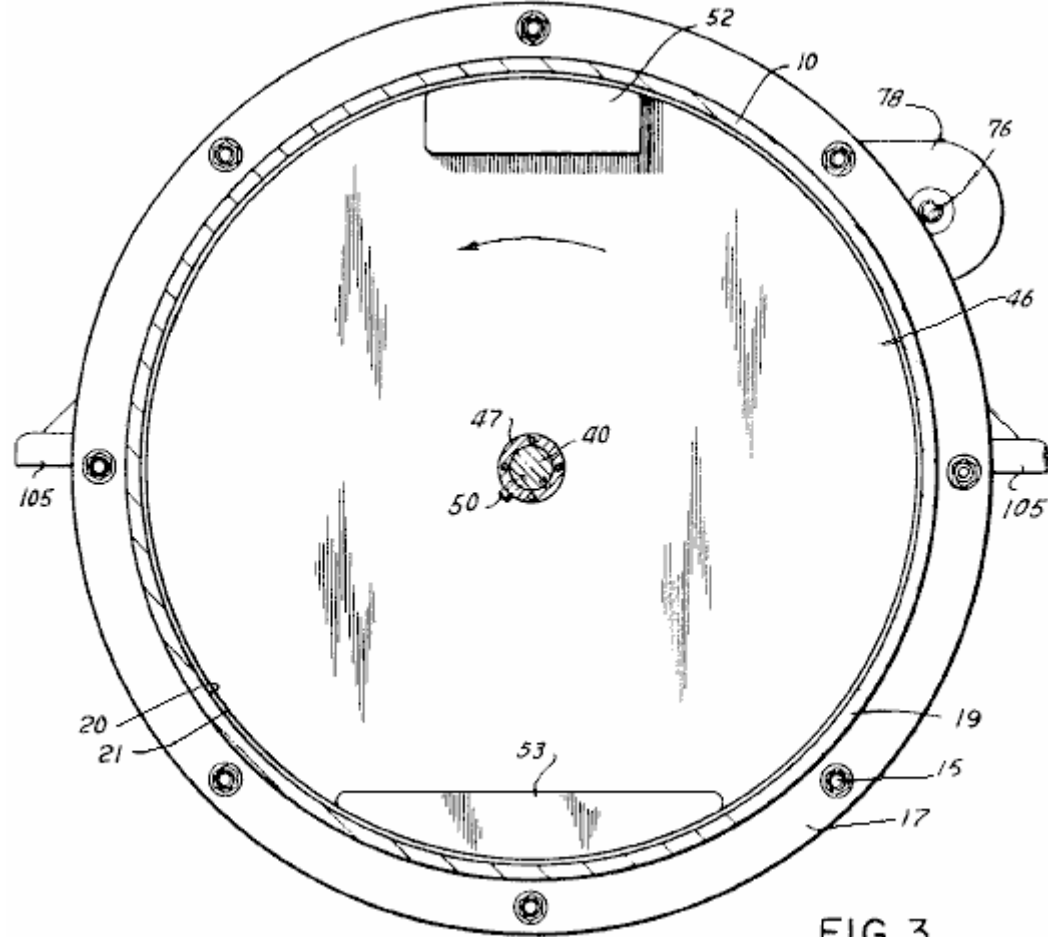


FIG. 3

Fig.3 is a vertical, cross-sectional view taken on line 3--3 of Fig.1.

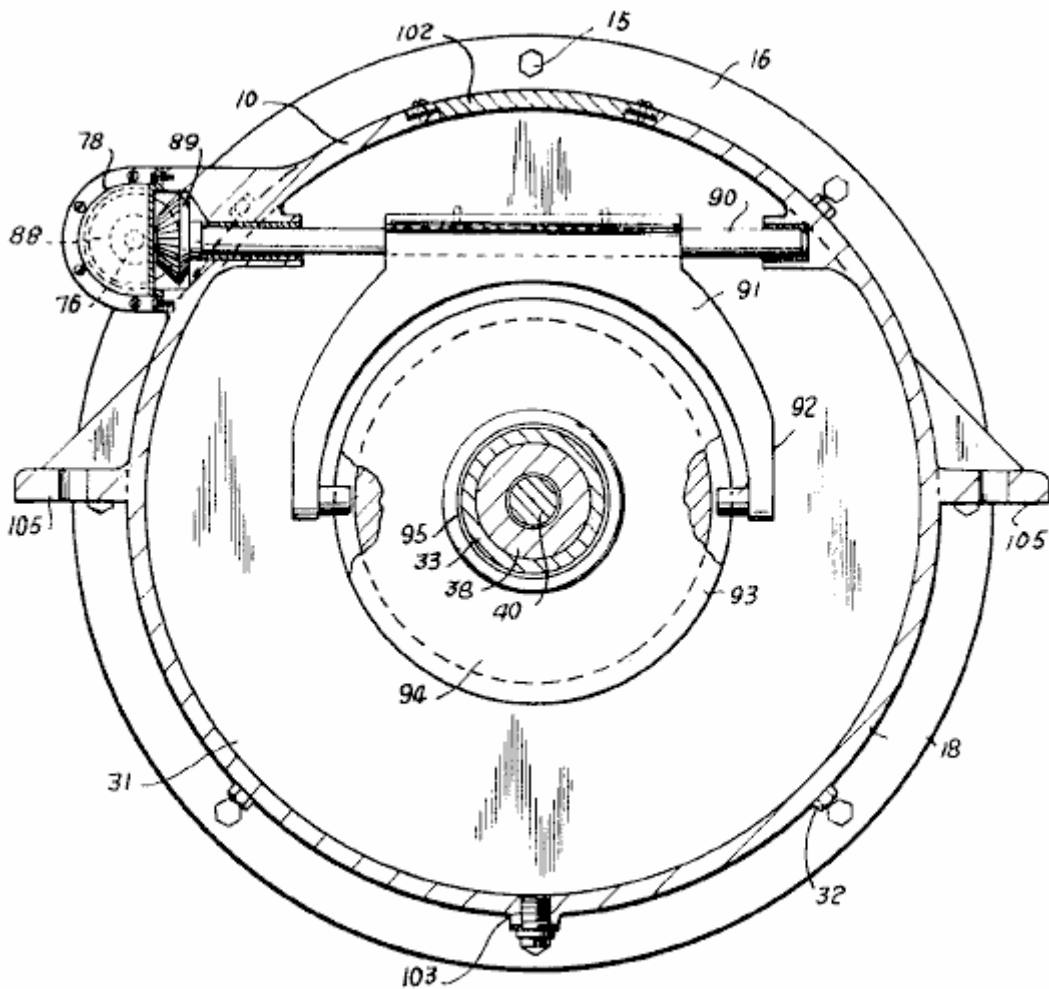


FIG. 4

Fig. 4 is a vertical, cross-sectional view, partly broken away, taken on line 4--4 of Fig. 1.

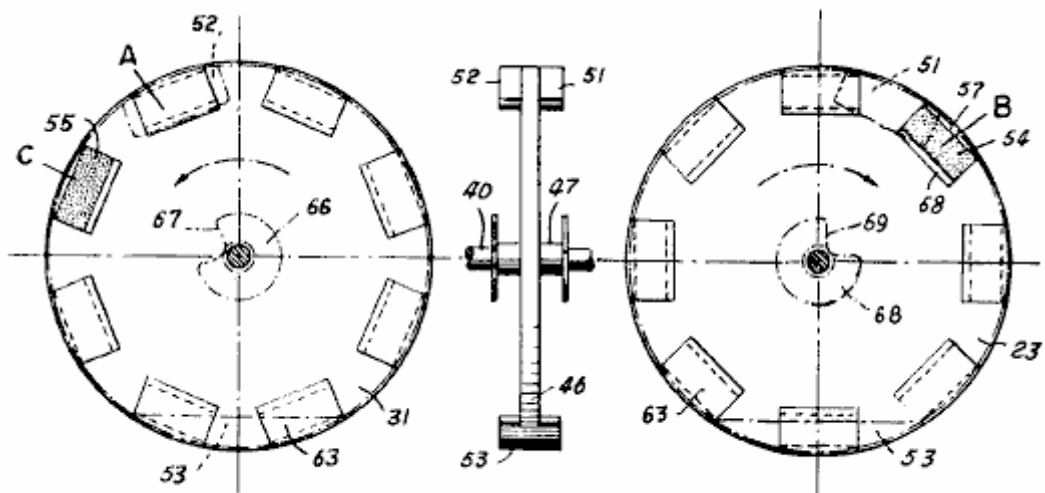


FIG. 5

Fig. 5 is a composite, diagrammatic view, illustrating the relationship of the rotor, the stators and the placement of the magnets.

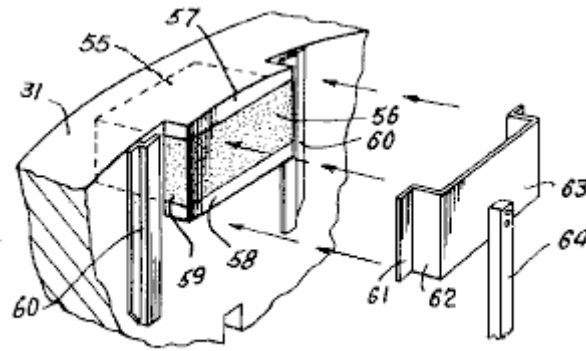


FIG. 6

Fig.6 is an exploded perspective view showing the mounting of the magnets and their shields.

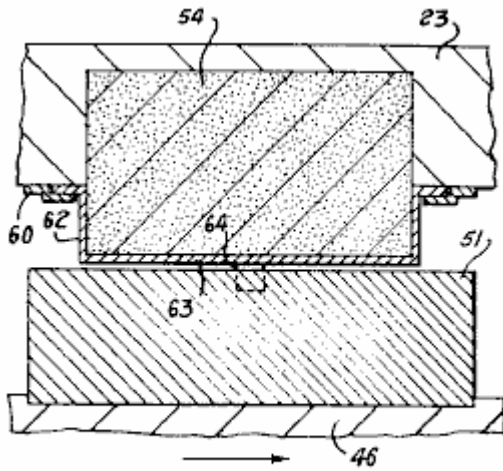


FIG. 7

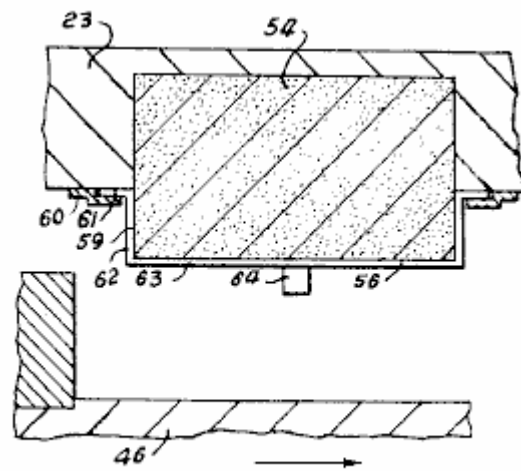


FIG. 8

Fig.7 is an enlarged, fragmentary, composite view taken along line 7--7 of Fig.2.

Fig.8 is a view similar to Fig.7, taken on the line 8--8 of Fig.2.

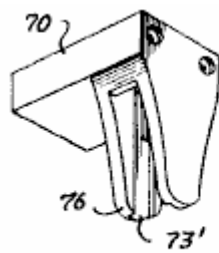


FIG.9

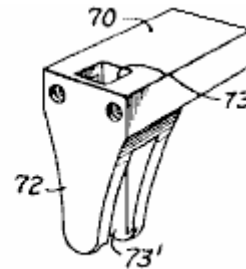


FIG.10

Fig.9 is an enlarged perspective view, taken from the underside of one of the cam roller guides.

Fig.10 is a view similar to Fig.9, taken from the upper side of the guide.

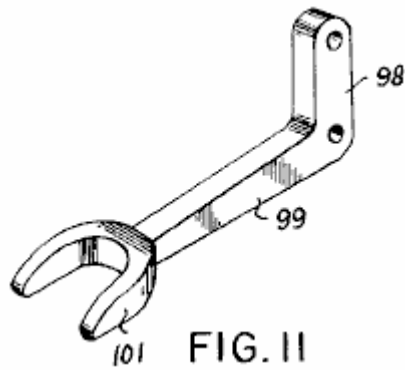
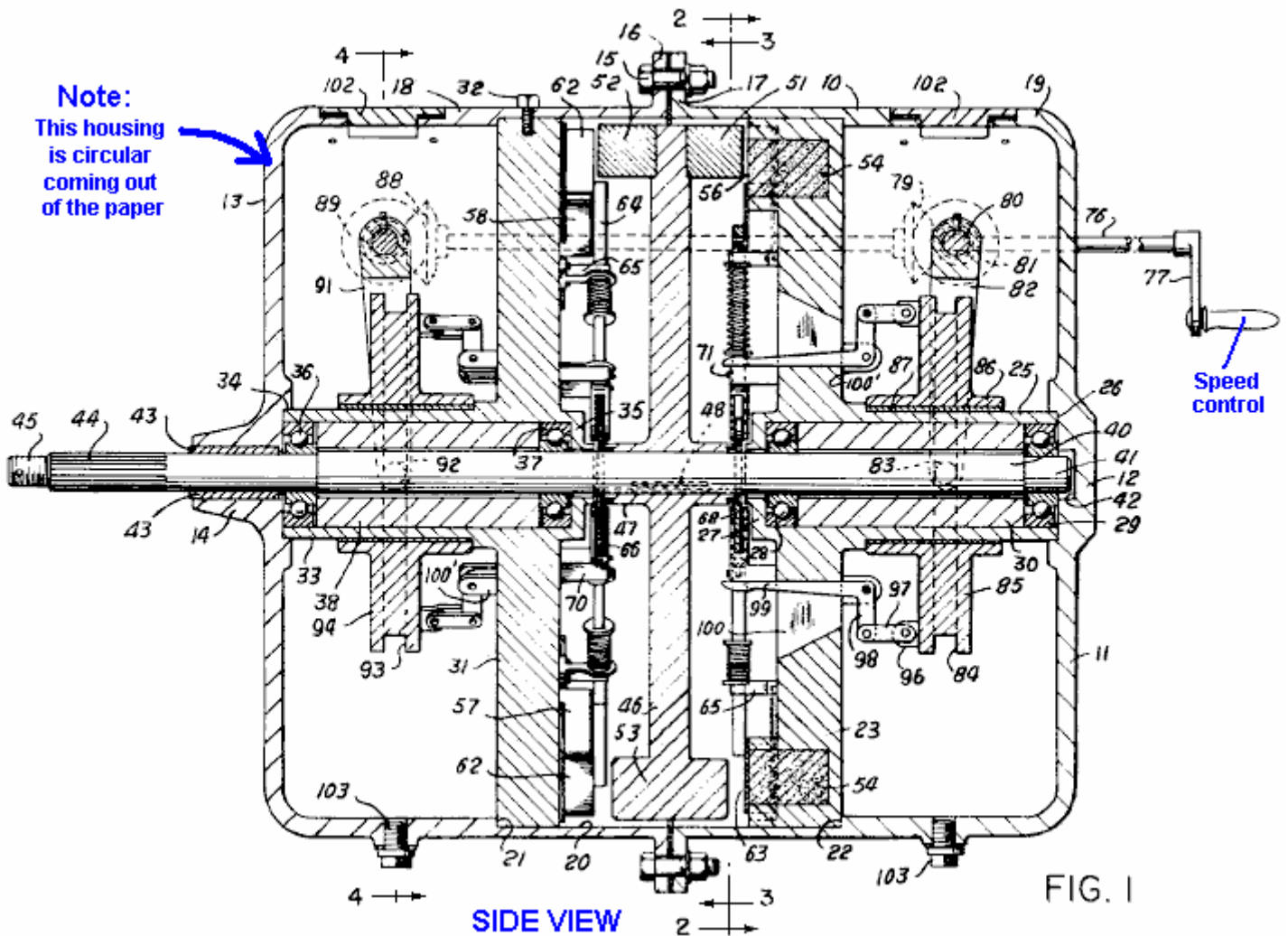


Fig.11 is an enlarged perspective view of one of the bell-crank fork levers for controlling the areas of the magnet pole faces exposed.

DESCRIPTION OF THE PREFERRED EMBODIMENTS



In the drawings, the numeral **10** designates an elongated, hollow, cylindrical housing, having a right-hand end wall **11** with a centrally located boss **12**. The housing also has a left end wall **13**, having a central bearing neck **14**, the housing being divided into two halves **18** and **19**, and joined around its centre portion by bolts **15** joining flange **16** formed on the half of the housing **18** and flange **17** formed the half of the housing **19**.

The interiors of the adjoining ends of the two housing halves are cut away circumferentially to form an elongated circular recess **20** and left and right-hand opposing shoulders **21** and **22**. A right-hand circular stator **23** extends transversely of the right-hand half of the housing **19**, abutting the shoulder **22**, and being held in position by bolts **24** extending through the wall of the housing half **19** into the right-hand stator **23**. The right-hand stator **23** has an axial, integral collar **25** extending toward the end wall **11** and engaging in a circular recess **26**, formed in the boss **12**. An offset axial neck **27** is formed on the opposite face of the right-hand stator **23**, and a pair of spaced ball bearings **28** and **29**, are positioned at the left and right-hand ends of the collar **25**, the left-hand bearing **28** being received in the offset neck **27**, and the right-hand bearing **29** being received in the recess. They are spaced apart and held in position by a spacer sleeve **30**.

A left-hand stator 31, is similarly mounted in the left-hand portion 18 of the housing 10, being circular and snugly received in the recess 20 and held against the shoulder 21 by a plurality of radial bolts 32 extending through the wall of the housing into the margin of the stator 31. The left-hand stator 31 also has a collar 33, substantially identical to the collar 25 and extending axially towards the end wall 13 with its end received in a circular recess 34 formed in the inner face of the end wall 13 aligned axially with the neck 14. The left-hand stator 31 also has an offset neck portion 35 on its inner face, facing the left-hand stator 23, and left and right-hand ball bearings 36 and 37 are received in the left and right-hand ends of the collar 33, the left-hand bearing 36 being received in the recess 34 and the right-hand bearing 37 being received in the offset neck 35. Again, a spacer sleeve 38, spaces the two bearings apart and holds them in position.

A rotating power shaft 40 is located in the bearings 28, 29, 36 and 37, extending through the sleeves 30 and 38, and having its right-hand end 41, reduced in diameter and received in the bearing 29, projecting into a second small, cylindrical recess 42 formed in the centre of recess 26, and its left-hand end extending through a bearing sleeve 43 in the neck 14 and projecting out of the housing 10. This shaft is provided with splines 44 for receiving a suitable drive pulley, gear or other means, its left-hand extremity 45 being screw-threaded to take a retaining nut (not shown). This power shaft 40 therefore has a bearing mount in the housing and in the two stators 23 and 31 and has a power take-off end projecting external to the housing.

A circular rotor 46, made from a non-magnetic material, has an axial hub 47 mounted upon the power shaft 40 and suitably keyed into it as indicated by the dotted lines at 48 in Fig.1 and in solid lines at 49 in Fig.2, a set-screw 50, shown in Fig.3, further anchoring the key in position so that the rotor 46 revolves with, and causes the power shaft 40 to revolve. The rotor 46 has a pair of magnetically responsive blocks 51 and 52, formed for instance, from soft iron or steel, projecting from its right and left-hand faces, at one margin, in close proximity to the stators 23 and 31, and a suitable non-magnetic counterweight 53 at the diametrically opposite margin.

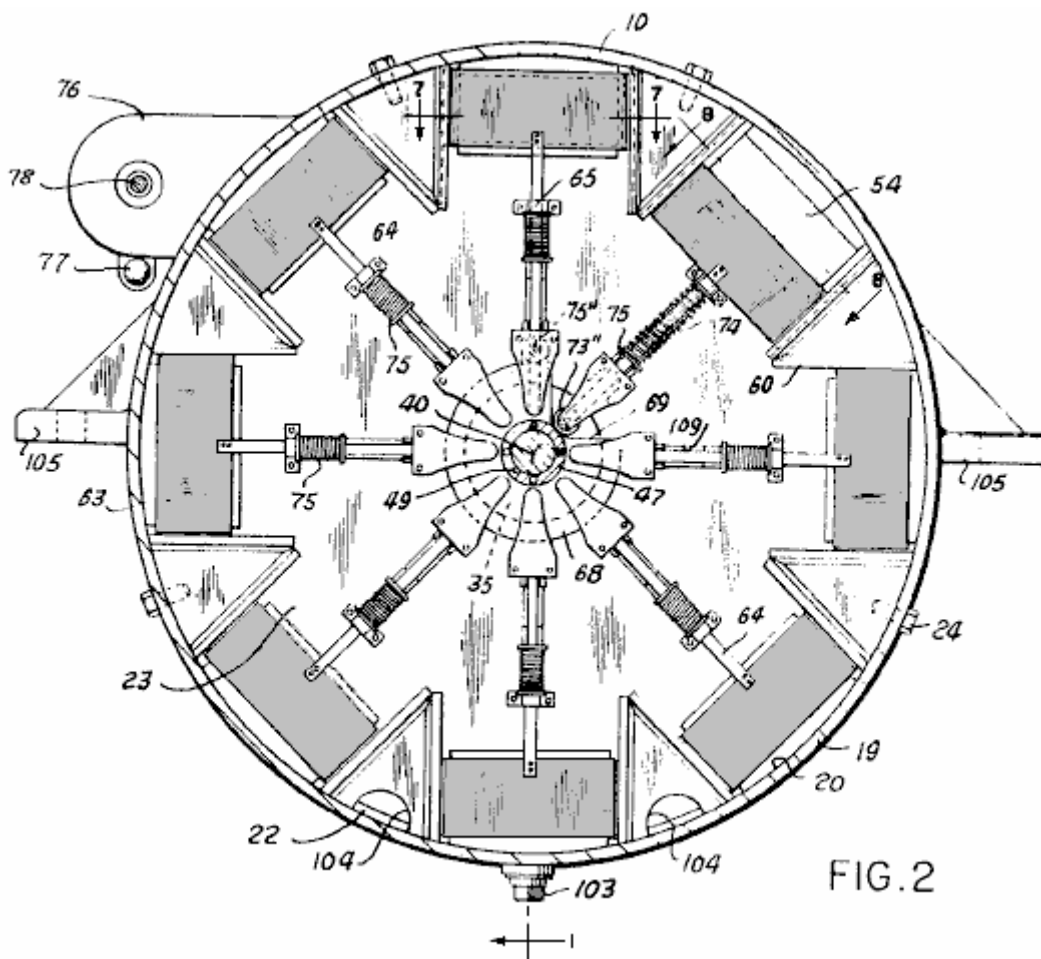


FIG. 2

The stators have rings of heavy, permanent, bar-type magnets embedded in suitable sockets formed in the stators. The magnets 54 of the right-hand stator 23 being symmetrically positioned at 45 degree spacings around the margin of the stator as shown in Fig.2, the magnets 55 of the left-hand stator 31 being also symmetrically positioned around the margin of the stator, but being offset or staggered by 22.5 degrees with respect to the magnets 54. Of course, greater or lesser numbers of magnets may be used at different spacings depending on the size of the magnets and the diameter of the stators.

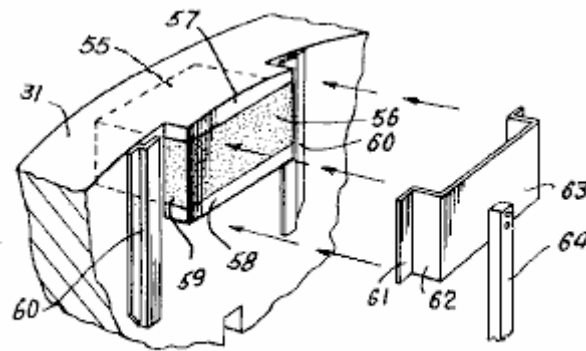


FIG. 6

Only one pole face **56** of each of the magnets is exposed, and as shown in **Fig.6**, the stators have upper and lower flanges **57** and **58**, adjoining the pole faces **56** so that only the pole faces and a small area **59** of the side walls of the magnets can be exposed. The stators **23** and **31** are formed of a suitable material such as soft iron, soft steel or other similar magnetic responsive material so as to short-circuit or shield the magnetic field of the magnets, and as will be explained, similar shields are adapted to be moved into place covering the pole faces **56** and the sidewall areas **59** of the magnets to completely short-circuit the magnet, this shielding it and closing off its magnetic field or field of magnetic flux. The stators **23** and **31** thus form casings surrounding each magnet **54** and **55** except for the exposed poles **56**.

The shielding includes an offset angle **60** mounted at each side of the magnets. The angle members **60** thus provide grooves facing the sidewalls **59** of the magnets. These grooves receive the flanges **61** carried on the forward ends of wings **62** provided at the margins of shields **63** suitably mounted on elongated actuating rods **64**. The shields **63** are sufficiently thick to hold and close, or contain entirely, the magnetic flux fields, and the bars or rods **64** are of such length and are connected to the shields **63** in any suitable manner so as to permit the soft iron blocks **51** and **52** to pass as closely as possible to the magnets **54** and **55**. Thus, as the shields **63** with their wings **62** are moved by the rods **64** on and off the pole faces **56** and side faces **59** of the magnets **54** and **55**, the exposed pole faces of the magnet are alternately exposed and covered. This causes the magnetic field of each magnet to function when the magnetic shield is removed and to become ineffective when the shield is positioned completely over the magnet. The rods **64** can slide backwards and forwards in their brackets **65** mounted on the stators **23** and **31**, one of the brackets **65** being provided for each of the actuating rods **64**.

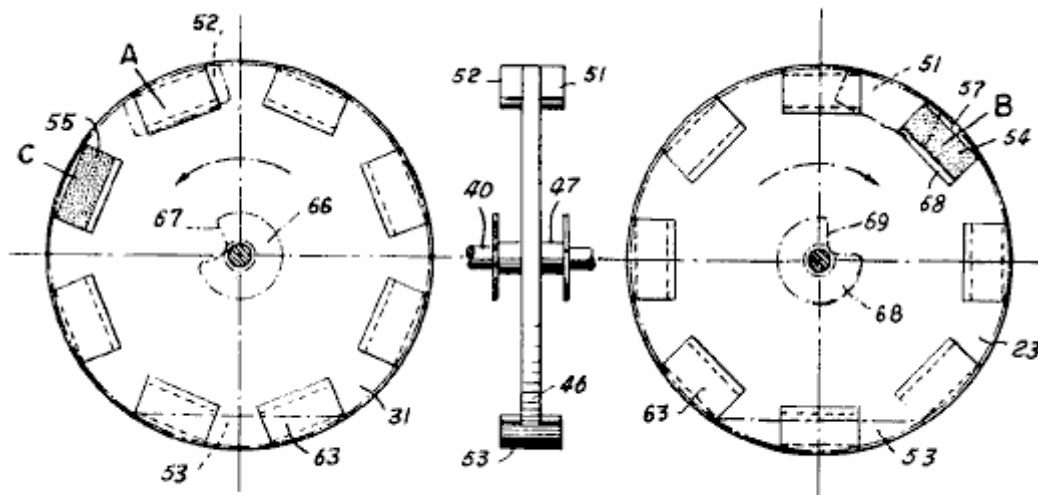
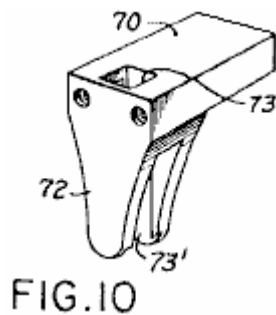


FIG. 5

The hub **47** of the rotor **46** carries on its left and right end faces, circular cam elements **66** and **68**, shown in **Fig.2**, and indicated schematically as dotted lines in **Fig.5**. These are essentially circular in contour, the cam **66** having a radial notch **67** of some 45 degrees extent, and similar cam disk **68** mounted upon the opposite end of the hub **47** having a similar radial notch **69** of about 45 degrees in extent, but offset or staggered approximately 22.5 degrees from the notch **67** in a direction opposite to the direction of rotation of the rotor **46**, as shown in **Fig.5**. Again, the extent of the notches and their relative staggering are subject to much variation.



Additional guides for the bars 64 are provided in the form of yoke brackets 70, adapted to be secured to the stators 23 and 31 by suitable bolts 71 and having a pair of dependent legs 72 which straddle the cams 66 and 68 and between which the cams revolve. The bracket members 70 have square guide openings 73 (Fig. 10) in their upper ends for reception of the rods or bars 64 in interval grooves 73' for further guiding of the bars. Each bar 64 has a roller 73'' on its inner end engaging the peripheries of the cams 66 and 68 and constantly urged against the peripheries of the cams by coiled springs 74 confined on the bars 64 between the brackets 65 and the circular flanges 75 securely mounted upon the bars 64. Thus, the shields 63 overlies or cover all of the magnets at all times except when the cam roller 73'' of one particular shield is engaged in the notch 67 or notch 69.

In the operation of the machine, the rotor 46 is given an initial degree of rotation as though the exposed end of the power shaft 40, and as the cams 66 and 68 revolve with the rotor, the magnets will be successfully covered and uncovered so that their magnetic force continues to drive the rotor by successfully attracting the magnetic masses 51 and 52 to successive magnets. Thus, as shown in Fig. 5, the magnetic mass 52 will just have been drawn over the magnet A of stator 31 which will then be covered by upper movement of its shield by the cam 66, and at the same time, magnet B of the stator 23 will have been uncovered by the cam 68 bringing into effect the magnetic field of magnet B which will draw the mass 51 to it over a distance of, in this instance, 22.5 degrees of rotation, after which, as rotation of the rotor continues, magnet B is covered and magnet C of the stator 31 is uncovered, drawing the rotor a further 22.5 degrees. Thus, successive coverings and uncoverings of these anchored magnets arranged in two circular rings is employed to drive the rotor in a circular path and to deliver power to the power shaft 40. Permanent magnets of Aluminium-Nickel-Cobalt alloy ("Al-Ni-Co") which can lift as much as eighty times their own weight, are now available. Since permanent magnets may now be made quite strong and with extensive useful lives, it is apparent that considerable power may be developed with a purely magnetic motor.

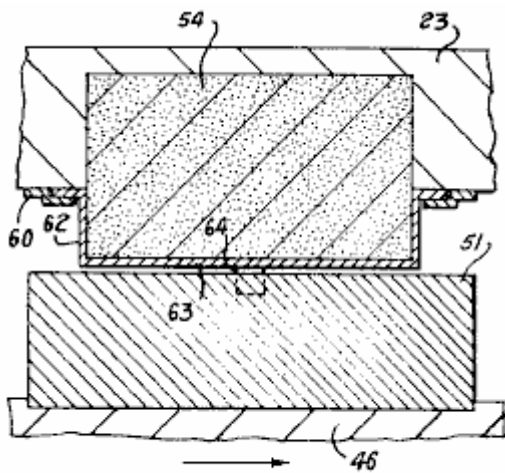


FIG. 7

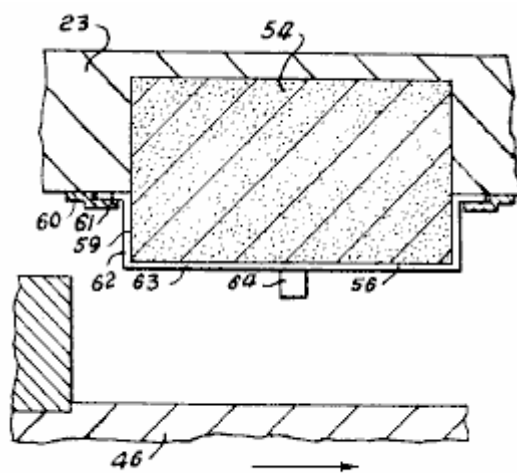


FIG. 8

It is particularly noted that any number of sets of the opposed stators with a rotor between, may be connected to a single shaft in a single housing and the delivered power thus multiplied to any desired extent. This successive magnetic attraction of the masses 51 and 52 is schematically illustrated in Fig. 7 and Fig. 8, Fig. 7 showing the mass 51 having been attracted to one of the magnets 54 whose shield 63 has been lifted into position to cut off or shield the magnet as shown in Fig. 2 and Fig. 7, an intervening magnet of the stator 31 having next been covered and uncovered for drawing the mass 52 and the rotor further in a circular path. Then, the next magnet 54 of the stator 23 is uncovered (Fig. 8) while the mass 51 is approaching the same so that the magnetic field of the sidewall portion 59 together with the magnet pole face 56 which has been uncovered or unshielded, will draw the mass 51 and the rotor further on their course.

It is quite obvious that the rotor will rotate in either direction, depending on the direction in which the power shaft 40 is given its initial rotation, since the shielding and unshielding of the magnets merely takes place in reverse order.

In order to provide a speed control for the motor, means are included for controlling the extent or areas of the magnets which are shielded or unshielded, thus increasing or decreasing the magnetic fields and speeding up or slowing down the motor accordingly. This means includes a longitudinal shaft 76 having an operating handle 77 at its exposed end and

extending the length of the housing 10, and enclosed externally in a small auxiliary housing 78 and parallel to the power shaft 40. In alignment with the collar 25 of the stator 23, the shaft 76 carries a mitre gear 79, and a transverse shaft 80 is trunnioned in the sidewalls of the housing half 19 overlying the collar 25. The shaft 80, has a mitre gear 81 meshing with the gear 79, and the shaft 80 carries a depending fork 82 having fingers 83 engaging in the circular groove 84 of a circular disc 85 slidably mounted on the collar 25 on a bearing sleeve 86.

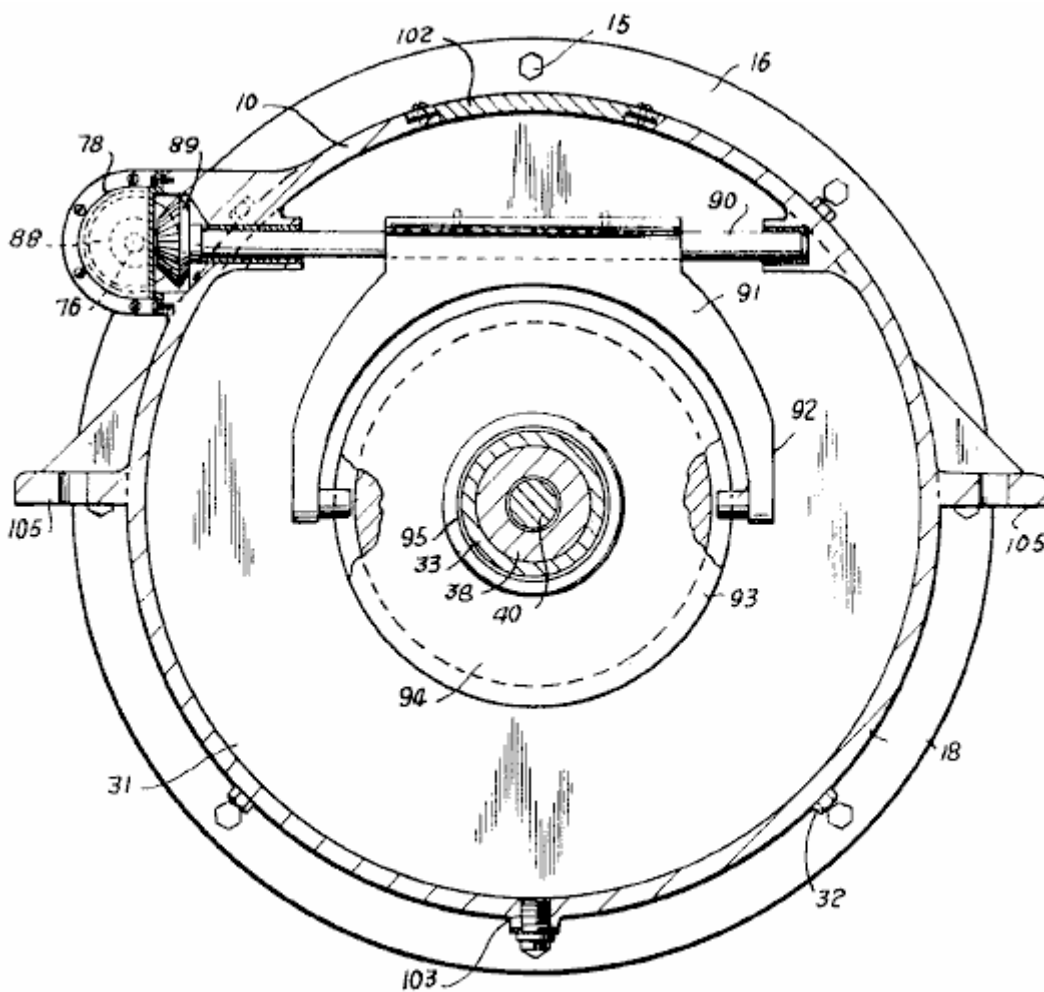


FIG. 4

A similar structure is provided in the half 18 of the housing 10 and is shown in full lines in Fig. 4, the shaft 76 carrying a mitre gear above the collar 33 or the stator 31. Again, a shaft 90 is trunnioned in the housing half 18 and has secured to it a depending yoke 91 having pins 92 engaging in a circular groove 93 of a circular disc 94 slidably mounted on the collar 33 on a bearing sleeve 95. It is obvious that rotation of the shaft 76 by the handle 77 will cause the yokes 82 and 91 to swing in opposite directions toward or away from their respective stators and move the discs 85 and 94 accordingly.

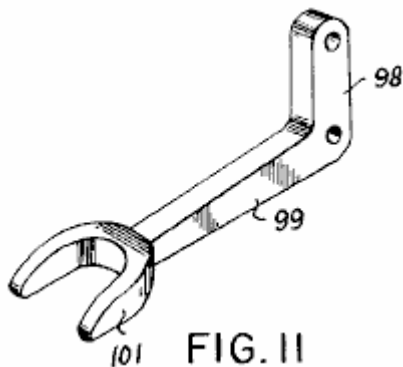


FIG. 11

For each of the permanent magnets of both stators, the discs 85 and 94 have ears 96 projecting from them toward the stators and being pivotally connected by links 97 to the short arms 98 of bell-crank levers 99 which extend through openings 100 in the stators in alignment with the bars 64. The bell-crank levers are pivotally mounted in ears 100' on the stators. As shown in Fig. 11, the bell-crank levers 99 have forked inner ends 101 which straddle the bars 64 and function to engage the rings 75 to limit longitudinal movement of the bars and the extent to which the permanent magnets are uncovered. This if the inner ends of forks 101 of the bell-crank levers are moved longitudinally on the bars 64 towards the shield plates 63, and though they do not normally engage the flanges 75, they will limit the extent to which the shield plates can move downwards as the roller of one of the bars enters one of the cam notches, and hence limit the extent to

which the bar may move downwards and the extent to which the magnet shield is moved downwards. By means of this control, greater or lesser areas of the magnetic flux fields are controlled and thus the speed of the motor is adjusted. Of course, by adjusting the bell-crank levers **99** all the way towards the shields, the motor will be stopped entirely.

In order to introduce lubricant into the interior of the motor as well as to facilitate the assembly of certain portions of the motor, and access plate **102** is provided in the upper side of each housing halves **18** and **19**, and oil drain plugs **103** are provided in the bottom of each housing half. Further, the stator **23** has openings **104** in its lower margin, through which lubricating oil may flow to and from the space between the stators. Any desired oil level may be carried within the interior of the cam housing.

The motor will operate in any position, but normally it operates in the horizontal position shown, being supported on the radial brackets **105** shown in **Fig.2** and **Fig.4**.

The shields **63**, the blocks **51** and **52** and the magnets **54** and **55** may be of any suitable shape and size.

This is a very interesting design of magnetic motor, especially since it does not call for any materials which are not readily available from many suppliers. It also has the advantage of not needing any form of exact adjustment or balancing of magnetic forces to make it operate.