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Wilt, Jr. et al.

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(54) **ELECTROMAGNETIC ENGINE**

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(51) **Int. Cl.**
H02K 33/00 (2006.01)
H02K 16/00 (2006.01)

(52) **U.S. Cl.** **310/36**; 310/103; 310/152

(58) **Field of Classification Search** 310/36, 310/103, 114–117, 152
See application file for complete search history.

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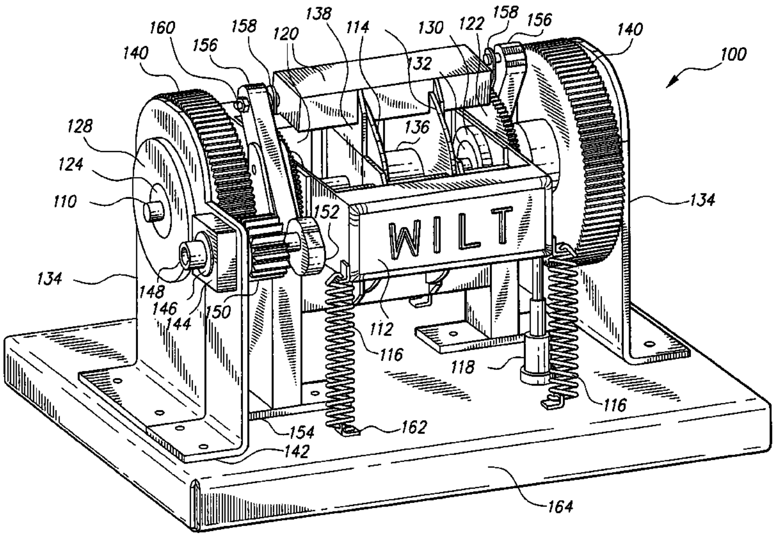
(74) *Attorney, Agent, or Firm*—Richard C. Litman

(57) **ABSTRACT**

An electromagnetic engine has an inner rotor and an outer rotor having magnets of opposite polarity mounted thereon. Output is taken from the inner rotor, which is free to rotate in a single direction. The outer rotor is caused to oscillate, the force of magnetic repulsion between the magnetic fields of the inner and outer rotors driving rotation of the inner rotor. The outer rotor may be held stationary by solenoids and holding gears when the inner and outer magnetic fields are closely adjacent in order to maximize the force of repulsion. The timing of the oscillation and pausing of the outer rotor may be controlled by EPROM circuitry and a timing sensor mounted on the output shaft or gear.

10 Claims, 10 Drawing Sheets



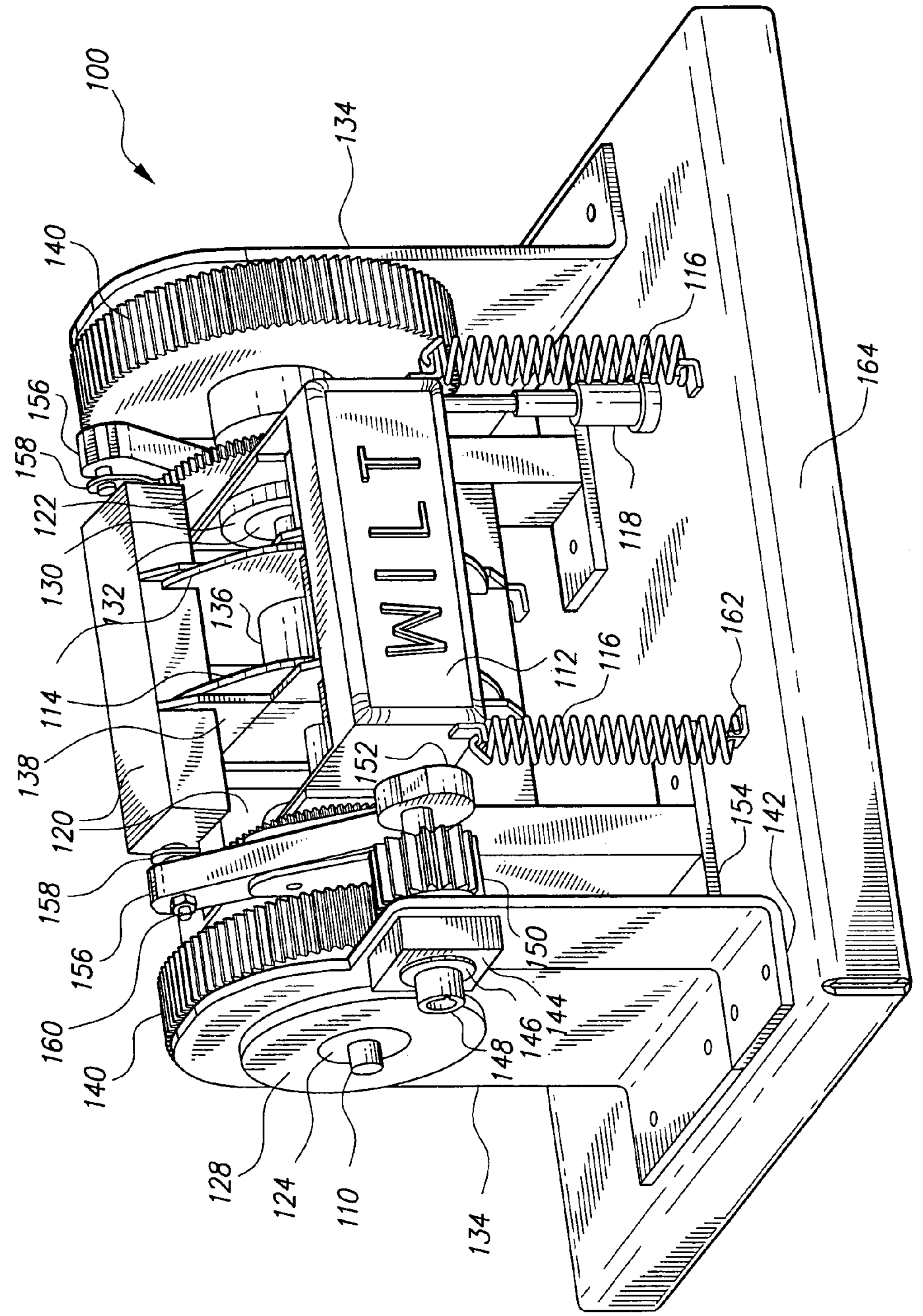

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Fig. 1

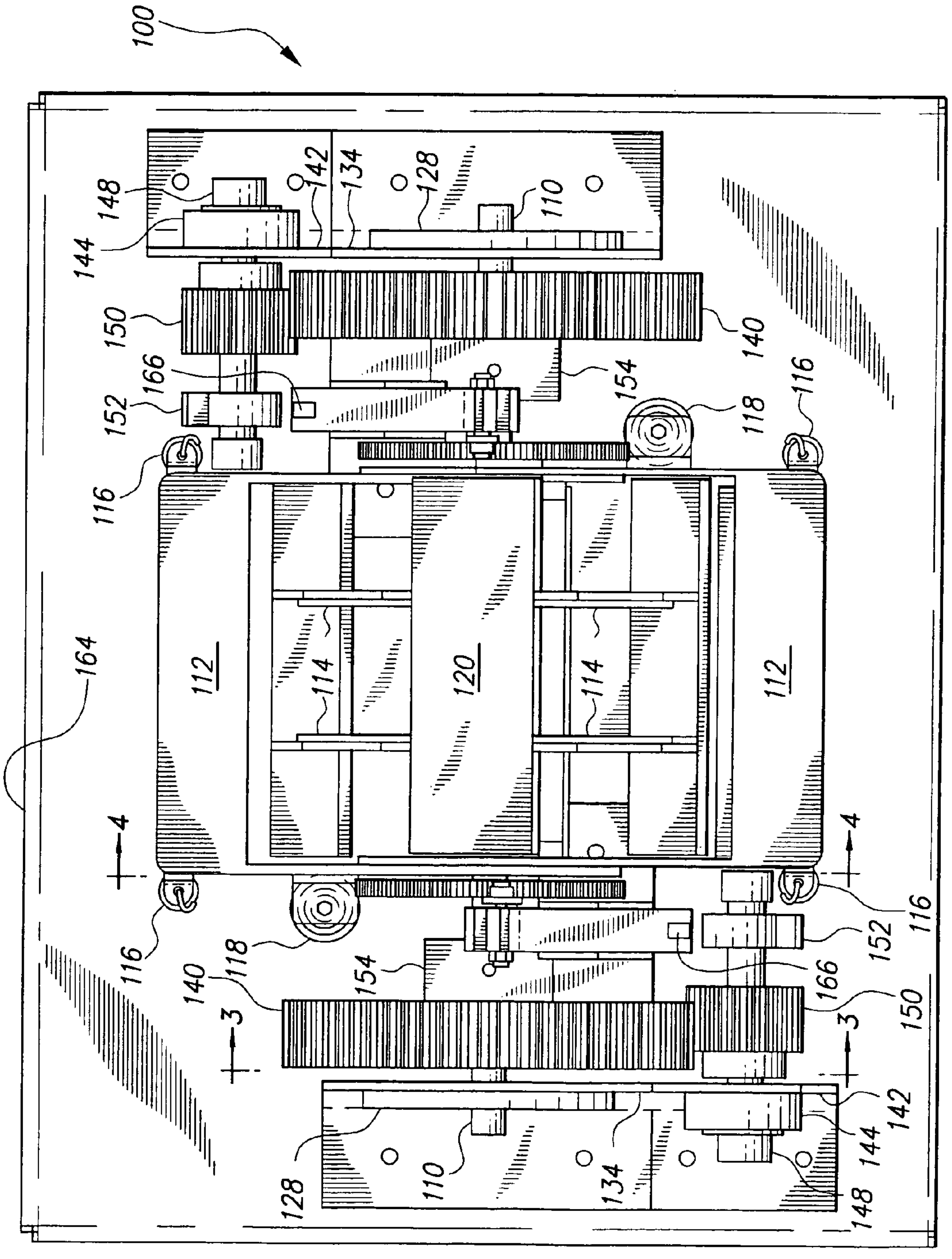
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Fig. 2

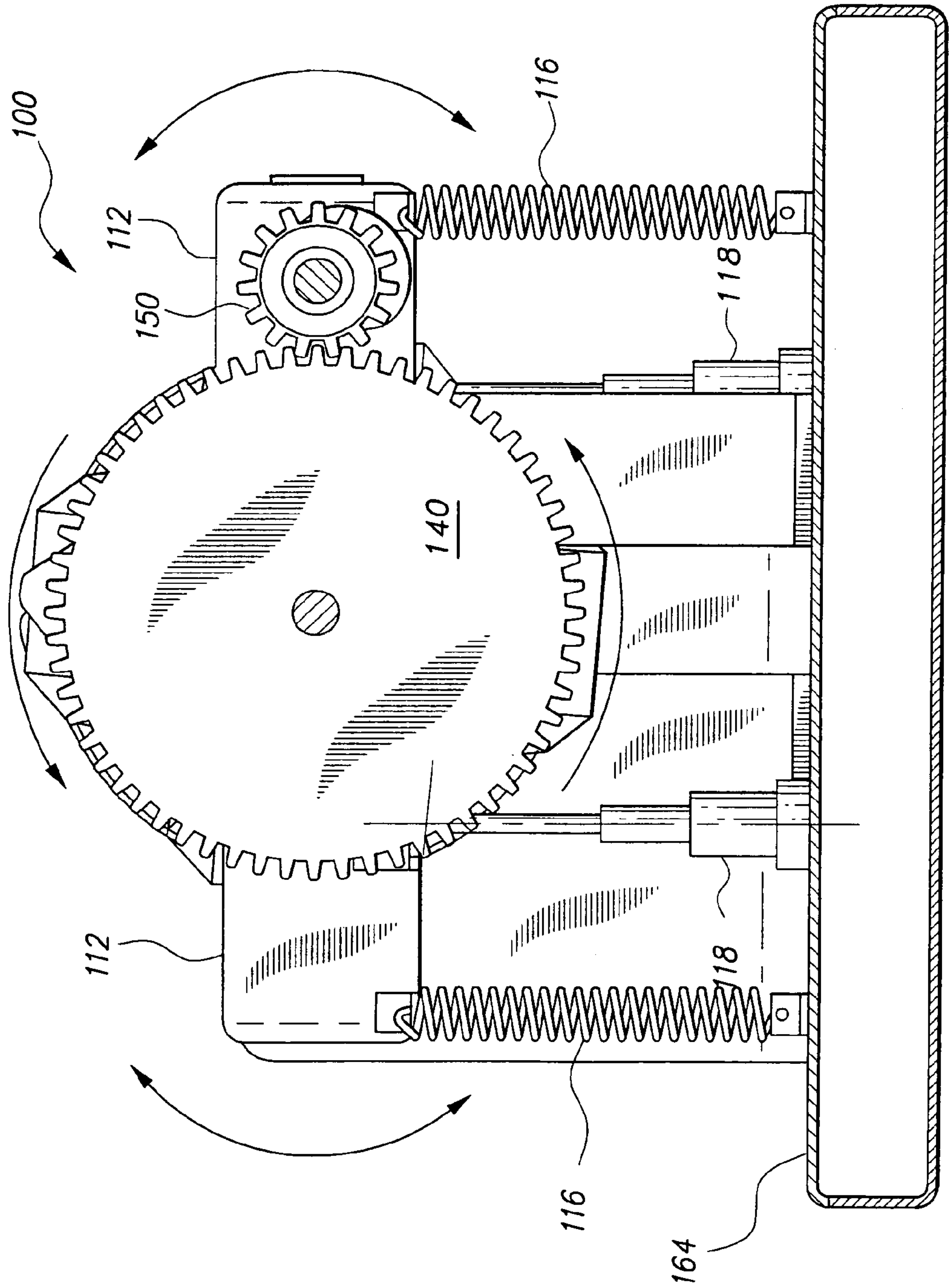


Fig. 3

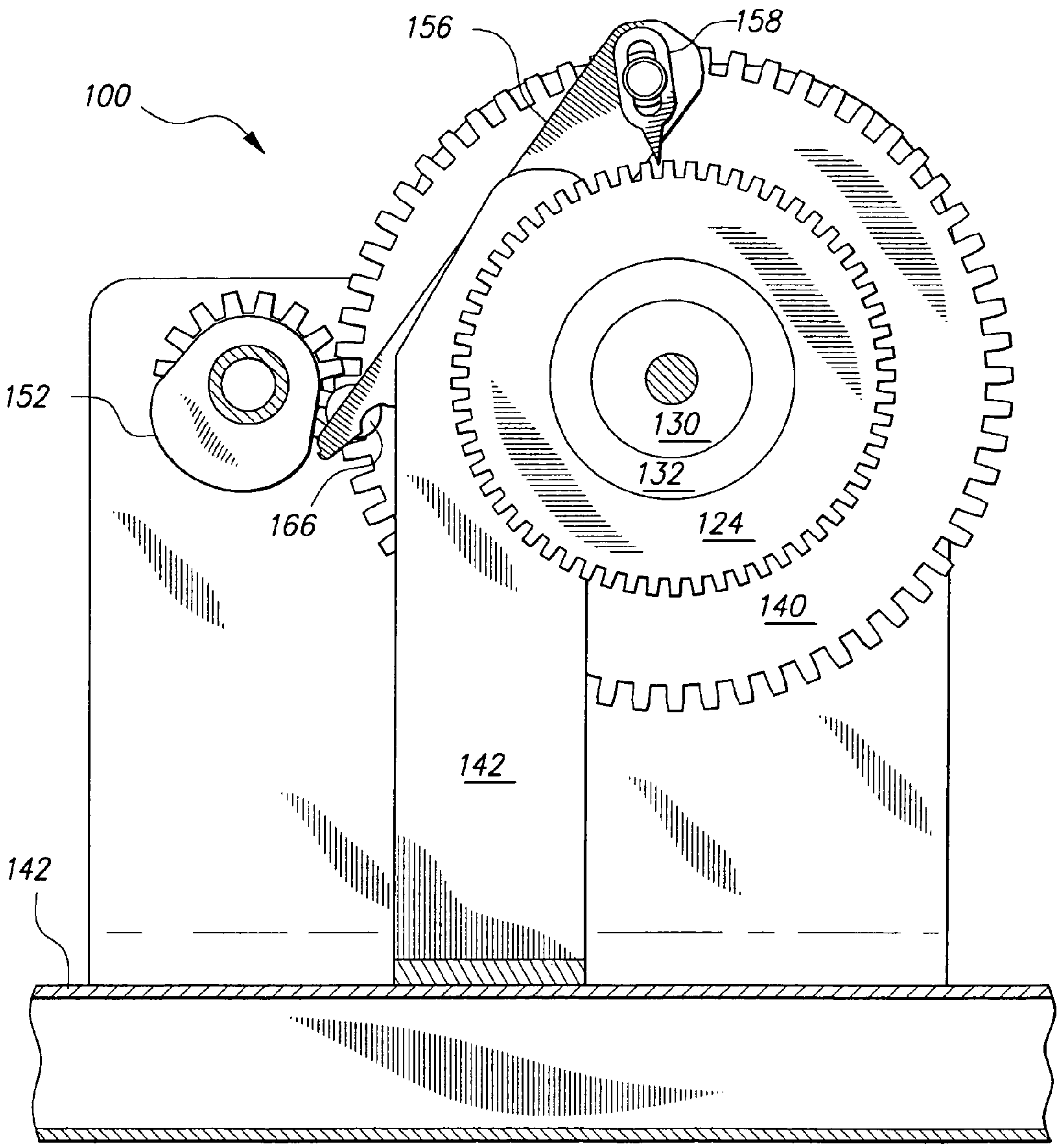


Fig. 4

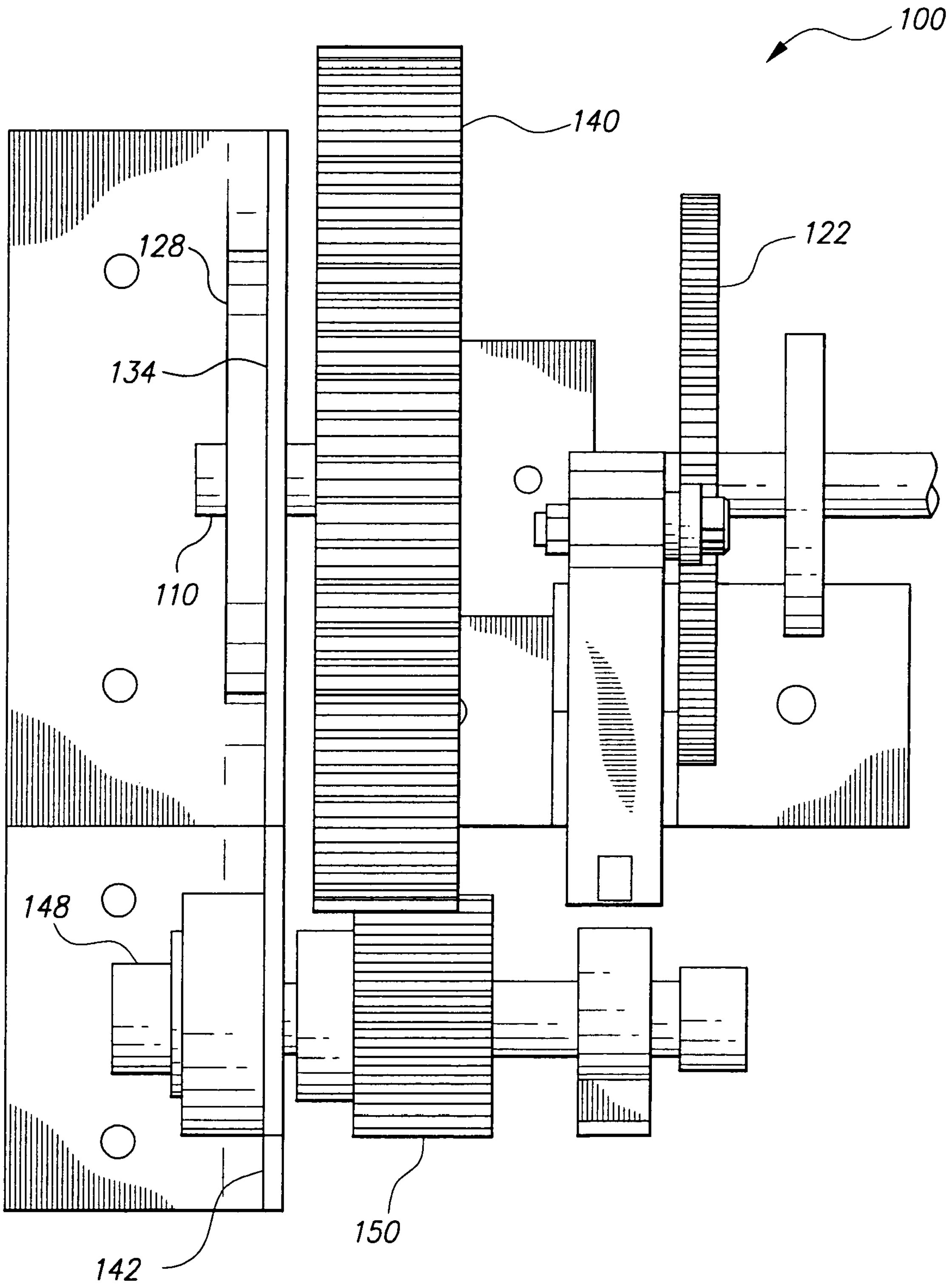
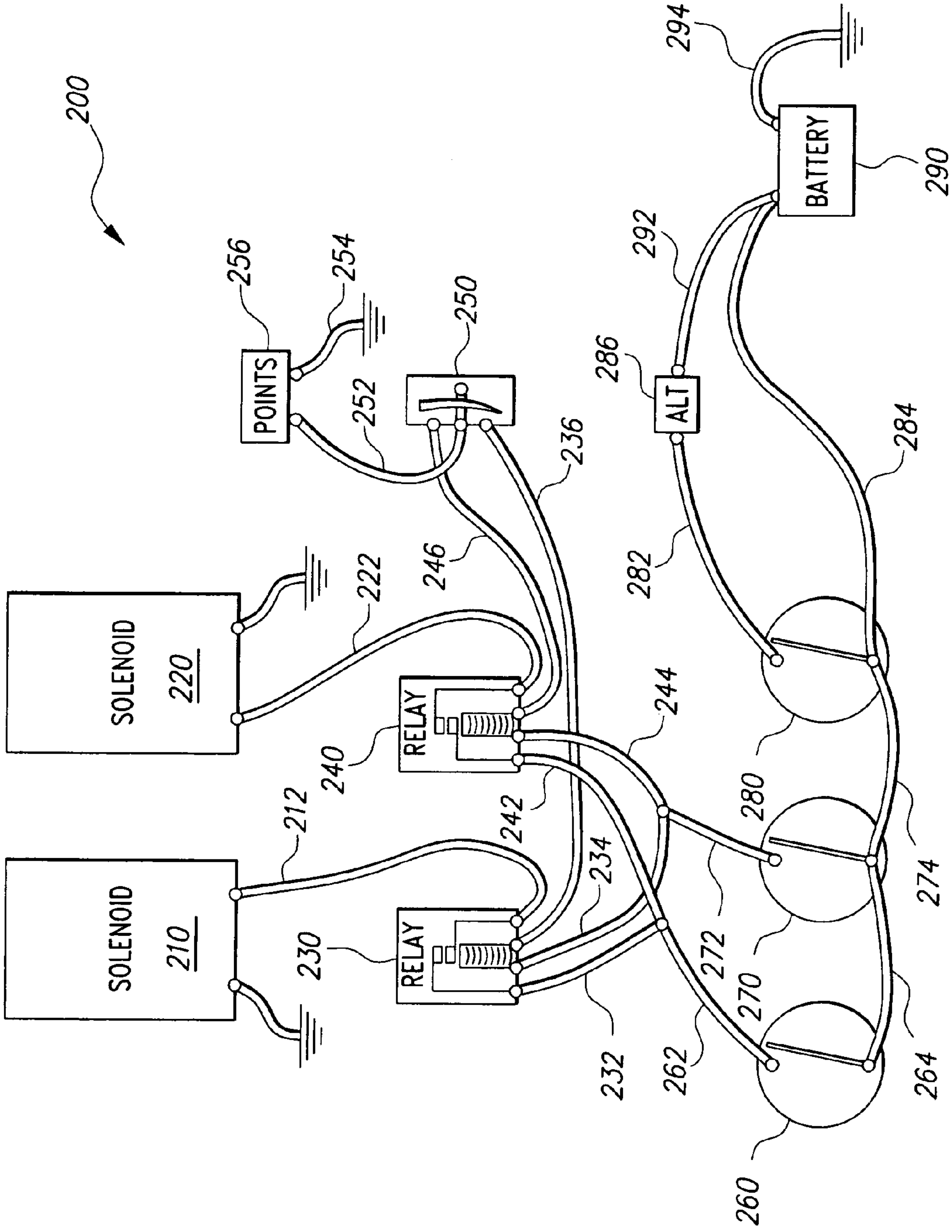


Fig. 5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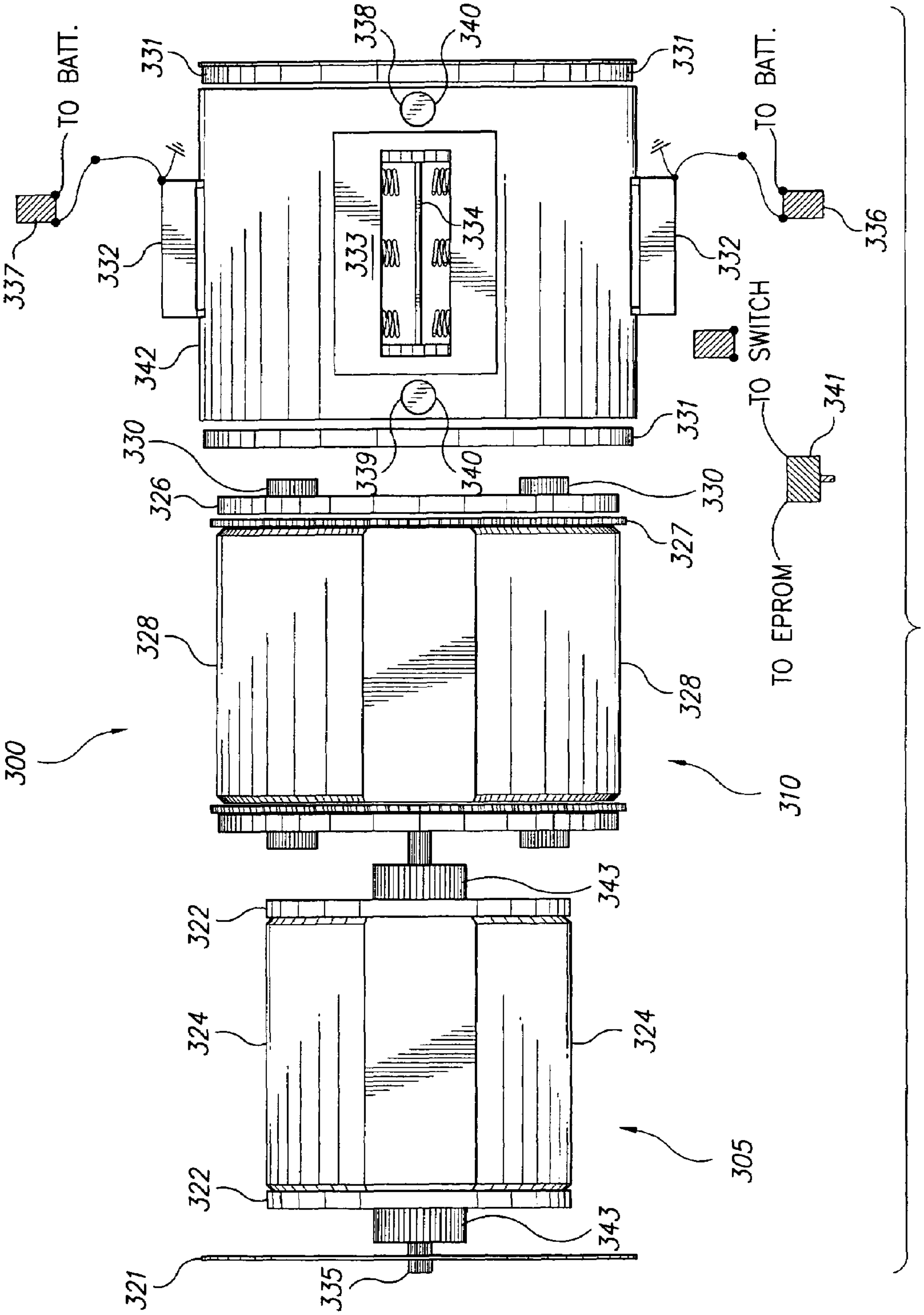
292
294

Fig. 6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331
326
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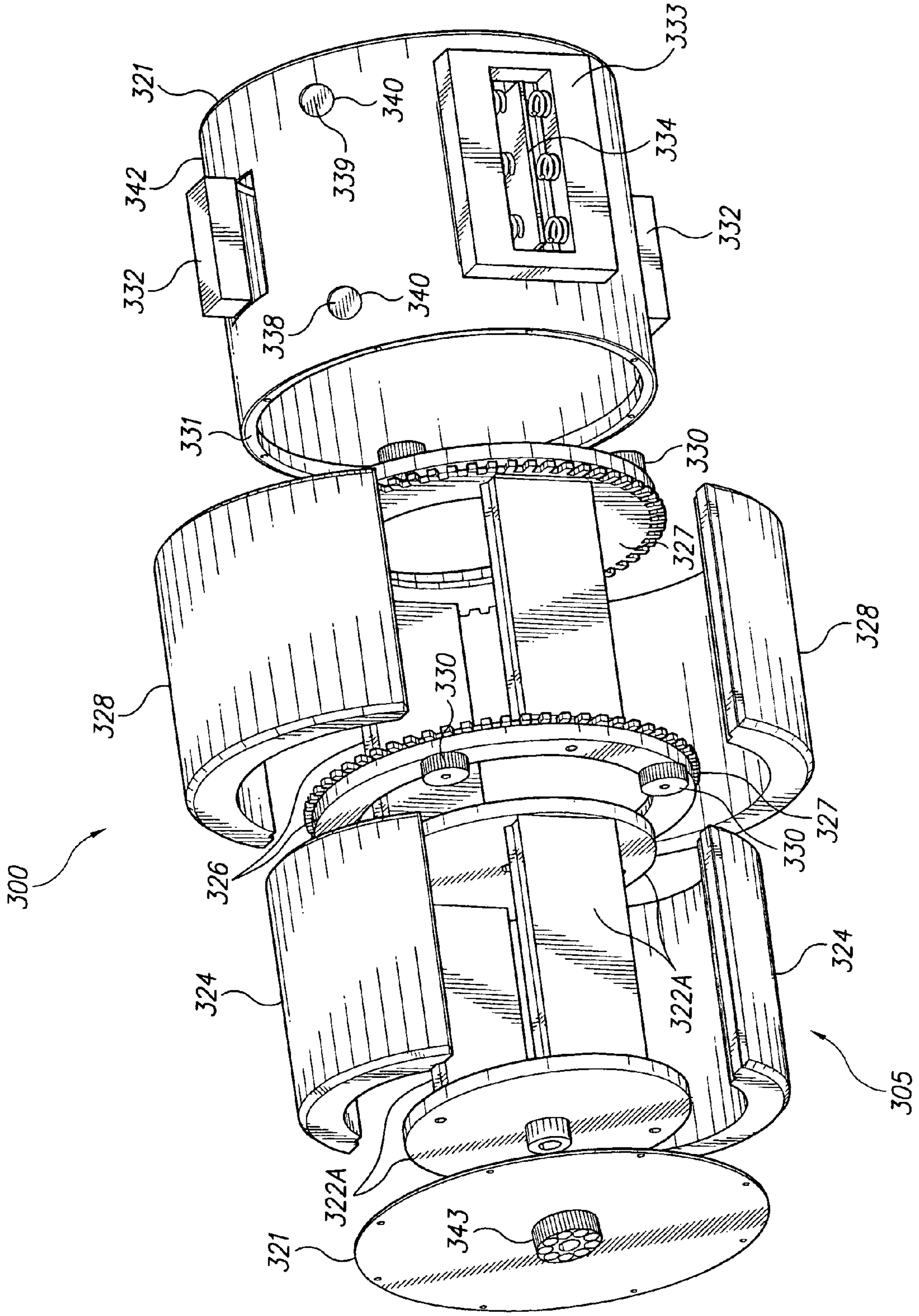
300
310
343
322
324
324
305
322
343
321
335

Fig. 7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305
322A
321
343

Fig. 8

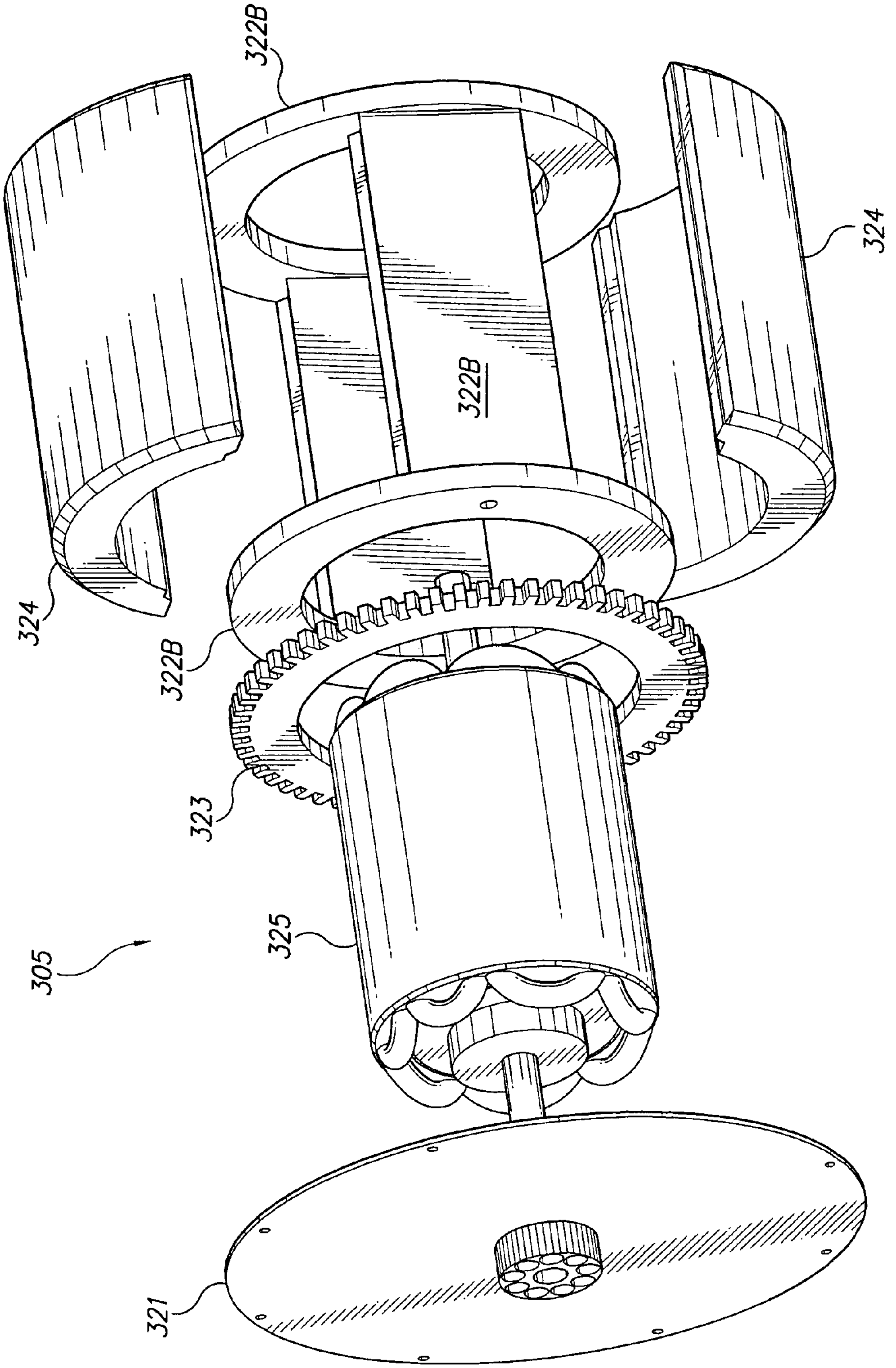

Fig. 9

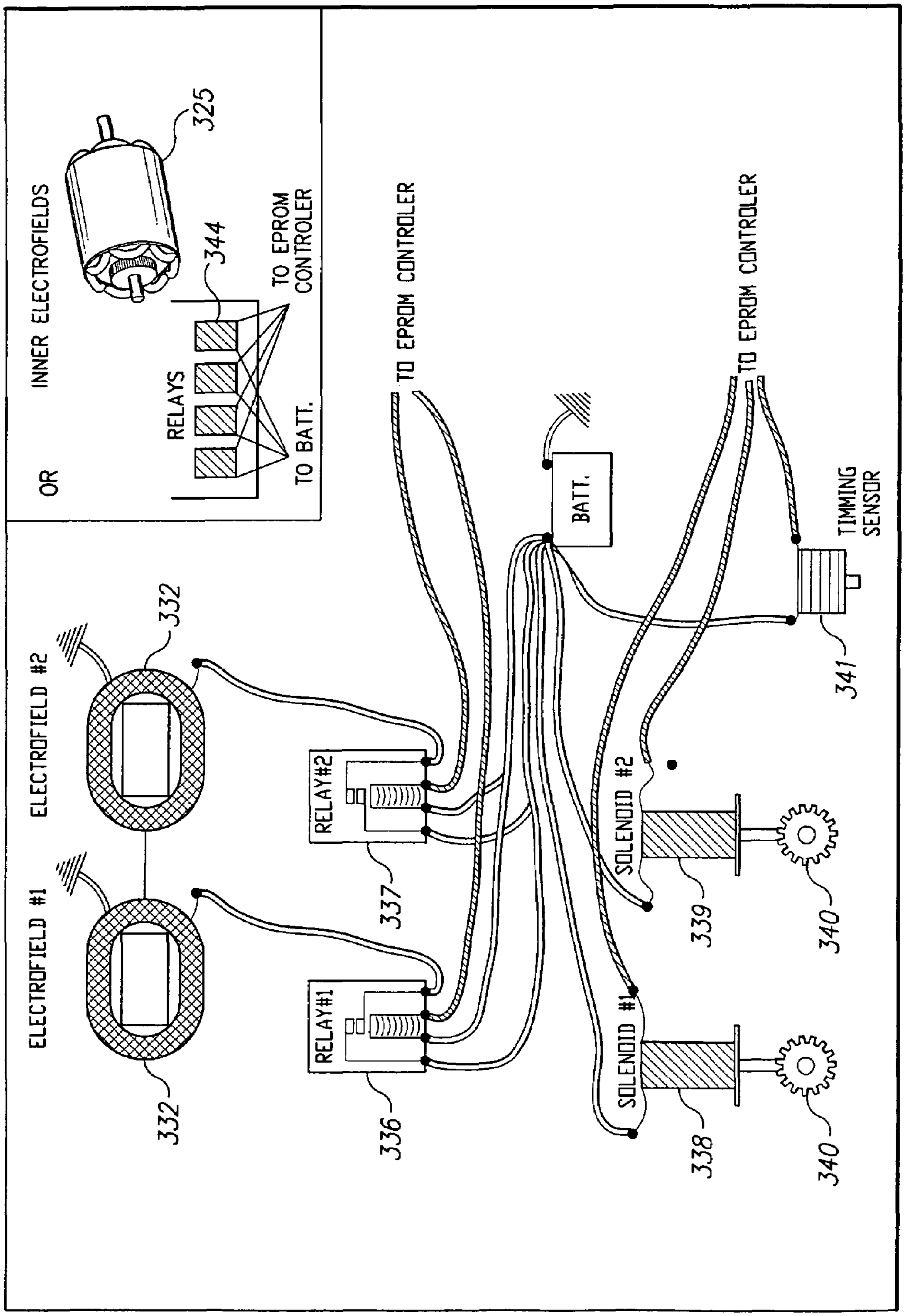
ELECTROFIELD #1
ELECTROFIELD #2
332
332
OR
RELAYS
INNER ELECTROFIELDS
325
344
TO BATT.
TO EPROM CONTROLER
RELAY#1
RELAY#2
336
337
TO EPROM CONTROLER
BATT.
SOLENOID #1
SOLENOID #2
338
339
340
340
TO EPROM CONTROLER
TIMMING SENSOR
341

Fig. 10

ELECTROMAGNETIC ENGINE

CROSS-REFERENCE TO RELATED APPLICATIONS

This application claims the benefit of U.S. Provisional Patent Application Ser. No. 60/643,123, filed Jan. 12, 2005, which is incorporated herein by reference.

BACKGROUND OF THE INVENTION

1. Field of the Invention

The present invention relates generally to engines and, more particularly to an electromagnetic engine.

2. Description of the Related Art

Engines are well known in the art and have been used for many years to power machinery and a variety of vehicles. Many engines use fuel as a source of energy that, when combusted, drives various mechanisms in the process of outputting power. Mechanisms are concerned with kinematics of the movement of elements, including linkages, cams, gears, and gear trains. For example, a common application of a slider-crank mechanism is in the internal combustion engine. A slider-crank mechanism includes a stationary frame, a crank, a connecting rod, and, in the internal combustion engine, a piston. Another type of mechanism used in vehicle engines is a cam and a cam follower. The cam rotates at a constant angular velocity, and the follower moves up and down. On the upward motion the follower is driven by the arm, and on the return motion by the action of gravity or a spring. In vehicle engines, two cams are used per cylinder to operate the intake and exhaust valves. One primary deficiency of typical engines is the efficiency of the engines. A constant and never-ending need exists in the engine art to provide an engine that provides increased efficiency. As such, it would be desirable to provide an electromagnetic engine that excels in operational efficiency.

Thus, an electromagnetic engine solving the aforementioned problems is desired.

SUMMARY OF THE INVENTION

The present invention is an electromagnetic engine. The electromagnetic engine includes an output shaft, an outer magnet housing, an inner magnet housing, springs, input solenoids, magnets, holding gears, lock bearings, bearing cages, lock bearing races, lock bearings, shaft stabilizers, an inner magnet housing spacer, inner magnet brackets, output shaft gears, timing gear brackets, timing gear bearing brackets, timing gear bearings, timing gear shafts, timing gears, timing cams, timing rocker housings, rockers, timing pins, timing pin bolts, spring brackets, a base, and timing rocker roller bearings.

The electromagnetic engine operates by having the solenoids receive input power from an external electrical power source and providing output power to the output shaft. The magnets include four outer magnets and four inner magnets. The inner magnets have magnetic forces that oppose the magnetic forces of the outer magnets. Electrical power provided to the solenoids causes the solenoids to oscillate the outer magnets. Springs provide stability and assist the solenoids.

Once the electromagnetic motor has reached operating speed, it generates sufficient electrical energy to continue driving the electromagnetic motor for a period of time. Input energy can be supplied to the solenoids by an auxiliary electrical generator. However, the efficiency of the electromagnetic motor enables the output shaft to perform useful work. Useful work may be in the form of a mechanical attachment to the output shaft for the purpose of driving an auxiliary mechanical device. Alternatively, an electrical generator may be attached directly to the output shaft to provide electrical output energy to other electrical devices.

These and other features of the present invention will become readily apparent upon further review of the following specification and drawings.

BRIEF DESCRIPTION OF THE DRAWINGS

FIG. **1** is a front perspective view of an embodiment of an electromagnetic engine according to the present invention.

FIG. **2** is a top view of the electromagnetic engine of FIG. **1**.

FIG. **3** is a section view along lines **3-3** of FIG. **2**.

FIG. **4** is a section view along lines **4-4** of FIG. **2**.

FIG. **5** is a partial top view of the left side of the electromagnetic engine shown in FIG. **1**.

FIG. **6** is a schematic diagram of the electrical connections of the electromagnetic engine shown in FIG. **1**.

FIG. **7** is a partially exploded side view of another embodiment of an electromagnetic engine according to the present invention.

FIG. **8** is an exploded perspective view of the electromagnetic engine shown in FIG. **7**.

FIG. **9** is an exploded perspective view of alternative left side components of the electromagnetic engine shown in FIGS. **7** and **8**.

FIG. **10** is a schematic diagram of the electrical connections of the electromagnetic engine shown in FIGS. **7** and **8**.

Similar reference characters denote corresponding features consistently throughout the attached drawings.

DETAILED DESCRIPTION OF THE PREFERRED EMBODIMENTS

The present invention is an electromagnetic engine. The invention disclosed herein is, of course, susceptible of embodiment in many different forms. Shown in the drawings and described herein below in detail are preferred embodiments of the invention. It is to be understood, however, that the present disclosure is an exemplification of the principles of the invention and does not limit the invention to the illustrated embodiments.

Referring now to the drawings, FIGS. **1-5** show a first embodiment of an electromagnetic engine **100**. The electromagnetic engine **100** includes an output shaft **110**, an outer magnet housing **112**, an inner magnet housing **114**, springs **116**, input solenoids **118**, magnets **120**, holding gears **122**, output shaft bearings **124**, bearing cages **128**, lock bearing races **130**, lock bearings **132**, shaft stabilizers **134**, an inner magnet housing spacer **136**, inner magnet brackets **138**, output shaft gears **140**, timing gear brackets **142**, timing gear bearing brackets **144**, timing gear bearings **146**, timing gear shafts **148**, timing gears **150**, timing cams **152**, timing rocker housings **154**, rockers **156**, timing pins **158**, timing pin bolts **160**, spring brackets **162**, a base **164**, and timing rocker roller bearings **166**.

The electromagnetic engine **100** operates by having solenoids **118** receive input power from an external electrical power source and providing output power to an output shaft **110**. The magnets **120** include four outer magnets and four inner magnets. The inner magnets have magnetic forces that oppose the magnetic forces of the outer magnets. Electrical power provided to solenoids **118** causes the solenoids **118** to oscillate the outer magnets. Springs **116** provide stability and assist the solenoids **118**.

The electromagnetic engine **100** has a timing configuration that minimizes the input energy required to drive the output shaft **110**. The timing configuration is associated with the oscillation of the outer magnets. The timing configuration includes timing gear brackets **142**, timing gear bearing brackets **144**, timing gear bearings **146**, timing gear shafts **148**, timing gears **150**, timing cams **152**, and timing rocker housings **154**. As the opposing inner and outer magnets **120** are in proximity to each other, the initial force of repulsion is minimized by the speed at which the outer magnets are oscillated through the force field of the inner magnets.

Once the inner and outer magnets **120** directly oppose each other, the holding gears **122** momentarily hold the outer magnets stationary in order to maximize the repulsion and provide additional driving force to the inner magnets and the output shaft **110**. Once the inner magnets have passed the outer magnets, the holding gears **122** release the outer magnets. The outer magnets, having now reversed direction, follow the inner magnets and provide additional repulsion and motive force to the output shaft **110**. The timing configuration and the holding gears **122** minimize the input energy required to operate the solenoids **118** while maximizing the repelling forces of the opposing inner and outer magnets **120**.

The electromagnetic engine **100** is placed in operation or set in motion by movement or oscillation of the outer magnet housing **112**. This may be accomplished either mechanically by rotation of the outer magnet housing **112** or electrically by supplying an external source of electrical energy to operate the solenoids **118**. Either method initiates rotation of the inner magnet housing **114** attached to the output shaft **110**. Rotation of the inner magnet housing **114** begins as magnets **120** on the outer magnet housing **112** pass through the force field of opposing magnets **120** on the inner magnet housing **114**.

The initial repulsion of opposing magnets **120** as their proximity reduces is minimized by the relative speed at which the outer magnet housing **112** is oscillated (force is equal to time exposed to the force field). When the inner and outer magnets **120** are approximately adjacent, the outer magnet housing **112** is momentarily held stationary when the timing pins **158** mesh with the holding gears **122**.

This ensures that the total repelling force of opposing magnets **120** is exerted in the desired direction of rotation of the output shaft **110**. In addition, by holding the outer magnet housing **112** at this point, the time exposed to the force field is increased, thereby further increasing energy delivered to the output shaft **110** by rotation of the outer magnet housing **112**. The momentary holding of the outer magnet housing **112** is critical to the timing of the electromagnetic engine **100** as torque or load is placed on the output shaft **110**.

The interaction of the opposing magnets **120** described above is more easily understood when considering one inner magnet **120**, one outer magnet **120**, and one holding gear **122**. There are, however, four inner magnets and four outer magnets arranged on the inner magnet housing **112** and the outer magnet housing **114**, respectively, so that each of the four outer magnets **120** is immediately adjacent to and opposing its respective inner magnet **120** when timing pin **158** engages the holding gear **122**.

Energy imparted to the output shaft **110** by the repelling force of opposing magnets **120** is multiplied by four. Similarly, there are two holding gears **122** and two timing pins **158**, one of each arranged on opposite ends of the output shaft **110**. There is also a solenoid **118** associated with each holding gear **122**. These solenoids **118** are attached to opposite sides of the outer magnet housing **112**. One solenoid **118** operates to oscillate the outer magnet housing **112** in a direction opposite to the rotation of the inner magnet housing **114**. This action propels the outer magnets **120** through the initial force fields of opposing inner magnets **120** to the point that the holding gear **122** associated with this solenoid **118** is engaged.

When the timing configuration releases the holding gears **122**, a signal is sent to actuate the solenoid **118** on the opposite side of the outer magnet housing **112**. This solenoid **118** reverses the direction of oscillation of the outer magnet housing **112** and accelerates it in the same direction of rotation as the output shaft **110** and the inner magnet housing **114**. The outer magnet housing **112**, traveling at a faster rate of speed than the inner magnet housing **114**, places opposing inner and outer magnets **120** in close proximity and imparts additional force to rotate the output shaft **110**.

This movement of the outer magnet housing **112** continues to the limit of the oscillating range where the timing pin **158** and the holding gear **122** associated with this side of the outer magnet housing **112** are engaged. The timing configuration then releases the timing pin **158** from the holding gear **122** after a predetermined holding time, sends a signal to the solenoid **118**, and the cycle repeats. The springs **116** provide stability to the electromagnetic engine **100** and assist the solenoids **118**. The four springs **116** are attached to each corner of the outer magnet housing **112** and are anchored to the base **164** by spring brackets **162**.

Synchronization of the inner and outer magnets **120** is achieved by the timing pins **158** and holding gears **122**. Each timing pin **158** is attached to a rocker **156**. Each rocker **156** interfaces with its respective timing cam **152** via timing gears attached to the timing gear shafts **148** on each end of the electromagnetic engine **110**. The timing gears **150** mesh with the output shaft gears **140**, which are attached to the output shaft **110**. This timing arrangement communicates inner magnet position to the outer magnets **120** in order to release the outer magnet housings **112** at precise times and to actuate the solenoids **118** for optimum performance. Optimum performance is realized when minimum effort or input energy is required to operate the solenoids **118**.

As load or torque is placed on the output shaft **110**, its rotational rate tends to decrease. The holding gear **122** arrangement is critical for continued synchronization of inner and outer magnets **120** as their relative speeds change. As the rotational rate of the output shaft **110** decreases, the outer magnet housing **112** needs to be held in order to compensate for the relative speed differential. Under loaded conditions, the firing or actuation rate of the solenoids **118** decreases. Through this mechanical actuality and precise timing, the efficiency and performance of the electromagnetic motor **100** is optimized.

Once the electromagnetic motor **100** has reached operating speed, it generates sufficient electrical energy to continue driving the electromagnetic motor **100** for a period of time. Input energy can be supplied to the solenoids **118** by an auxiliary electrical generator. However, the efficiency of the electromagnetic motor **100** enables the output shaft **110** to perform useful work. Useful work may be in the form a mechanical attachment to the output shaft **110** for the purpose of driving an auxiliary mechanical device. Alternatively, an electrical generator may be attached directly to the output shaft **110** to provide electrical output energy to other electrical devices.

A schematic diagram **200** of the electrical connections of the electromagnetic engine **100** is shown in FIG. **6**. Solenoid **210** is grounded and is interconnected to relay **230** by wiring **212**. Solenoid **220** is grounded and is interconnected to relay **240** by wiring **222**. Relay **230** is interconnected to switch **250** by wiring **236**, interconnected to switch **260** by wiring **232** and **262**, and interconnected to switch **270** by wiring **234** and **272**.

Relay **240** is interconnected to switch **250** by wiring **246**, interconnected to switch **260** by wiring **242** and **262**, and interconnected to switch **270** by wiring **244** and **272**. Switch **250** is interconnected to points **256** and ground by wiring **252** and **254**. Switches **260** and **270** are interconnected to switch **280** by wiring **264** and **274**. Switch **280** is interconnected to alternator **286** and battery **290**, and ground by wiring **282**, **284**, **292** and **294**.

FIGS. **7-10** show another example of an electromagnetic engine **300**. The electromagnetic engine **300** includes an outer rotor assembly **310** and an inner rotor assembly **305** coaxially mounted in an outer case **342** between end plates **321**. The inner rotor assembly **305** is capable of 360° rotation in a single direction, while the outer rotor assembly **310** is constrained to rotate through an arc in an oscillatory movement, first in one direction, then in the opposite direction, with intervals when the outer rotor **310** is held stationary, all according to a prescribed timing pattern.

In the embodiment of FIGS. **7-8**, the inner rotor **305** includes an inner frame **322**A having a pair of disk-shaped end plates connected by parallel spacer bars. A pair of arcuate magnets **324**, being sections of a cylindrical shell, are mounted on the inner frame **322**. An output shaft **335** is fixed to the inner frame **322** and extends through an output shaft bearing **343** mounted on end plate **321**.

In the embodiment of FIG. **9**, the inner rotor **305** includes an inner frame **322**B similar in construction to inner frame **322**A, but with the disk-shaped end plates replaced by rings. In this embodiment, output from the engine **300** is taken from an output gear **323** fixed to inner frame **322**B. Also, in this embodiment, the inner frame rotates around inner electromagnetic field coils **325**, which are held stationary within outer case **342**, for a purpose described below.

The outer rotor **310** includes an outer frame **326** having a pair of end rings joined by parallel spacer bars to defined a hollow annulus within which the inner rotor **305** rotates. A pair of arcuate magnets **328** are mounted on the outer frame **326**, the magnets **328** being sections of a cylindrical shell. A pair of holding gears **327** are mounted on opposite ends of outer rotor **310**. A plurality of bearings **330** extend from opposite ends of the outer rotor **310** and rotate within bearing races **331** defined in opposite ends of the case **342**.

The magnets **328** mounted on outer frame **326** are opposite in polarity to the magnets **324** mounted on inner frame **322**A or **322**B. That is, if the outer faces of the magnets **328** have positive polarity and the inner faces have negative polarity, then the outer faces of inner magnets **324** have negative polarity and the inner faces have positive polarity. When the inner faces of outer magnets **328** are aligned with the outer faces of inner magnets **324** so that there is maximum alignment of the surface areas of the magnets **324** and **328**, the maximum force of repulsion between the magnetic fields of the magnets **324** and **328** is developed. Either the entire shells of magnets **324** and **328** may be magnets, or bar magnets may extend axially in the central portion of the shells, being laminated to the lateral portions of the shells.

Outer case **342** is preferably made from a non-magnetic material. A first solenoid **338** and a second solenoid **339** are mounted in outer case **342** and selectively operate stop pins or pawls that engage the holding gears **327**. A plurality of springs **333** (drawn as spring and cage) and spring arm **334** are provided, the springs **333** having one end attached to each corner of the outer frame **326** and the opposite end anchored at the case **342**. Springs **333** stabilize oscillatory movement of outer rotor **310**. A pair of outer electromagnetic field coils **332** are mounted on outer case **342**, positioned 180° apart.

In the embodiments of FIGS. **7-10**, the engine **300** is placed in operation (set in motion) by oscillating movement of the outer rotor **310**. Oscillation of the outer rotor **310** may be initiated either mechanically in the embodiment of FIGS. **7-8**, or by supplying an external source of electrical energy to operate the two outer electromagnetic field coils **332** in the embodiment of FIG. **9**. This external source of electrical energy is supplied by the inner electromagnetic field coils **325**, which are stationary and exist solely to place the engine **300** in operation. The inner electromagnetic field coils **325** receive their electrical energy from relays **344**. Either method initiates rotation of the outer rotor **310**.

Rotation of the inner rotor **305** commences as magnets **328** on the outer rotor **310** pass through the force field of the opposing magnets **324** on the inner rotor **305**. The initial repulsion (due to the same polarity) of opposing magnets **324** and **328** as their proximity reduces is minimized by the relative speed (a high speed as the two magnets are moving in opposite directions) as the outer rotor **310** is oscillated. When the inner magnets **324** and outer magnets **328** are approximately adjacent, the outer rotor **310** is momentarily held stationary by the solenoid release **338** meshing with the holding gear **327**. The lock bearings **340** work in conjunction with solenoid releases **338**, **339** and holding gears **327**.

This holding of the outer rotor **310** stationary serves multiple purposes. It ensures that the total repelling force of opposing magnets is exerted in the desired direction of rotation of the output shaft **335** or output gear **323**. By "holding" the outer rotor **310** at this point, the time exposed to the force field is increased, thereby further increasing energy delivered to the output shaft **335**, which is fixed to inner frame **322** and is rotatable in output shaft bearing **343** mounted in end plate **321**, via rotation of the inner frame **322**. Alternatively, the output may be taken from output gear **323**, which is fixed to inner frame **322**.

For simplicity, the above discussion of opposing magnets focused on one inner magnet **324**, one outer magnet **328** and one holding gear **327**. The engine **300** actually has a total of four magnets (two inner and two outer) arranged 180° apart on the inner frame **322** and the outer frame **326**, respectively, so that each of the two outer magnets **328** is immediately adjacent to and opposing its respective inner magnets **324** as the solenoid release **338** engages the holding gear **327**. Thus, energy imparted to the output shaft **335** by the repelling force of opposing magnets is multiplied by two. Similarly, there are two holding gears **327** and two solenoid releases **338** and **339**, and two lock bearings **340**, one of each arranged on opposite ends of the output shaft **335**.

Additionally, there is an outer electromagnetic field coil **332** associated with each holding gear **327** and attached to opposite sides of the outer magnet frame **326**. The primary outer electromagnetic field coil **332** operates to oscillate the outer magnet frame **326** in both directions, first in the same direction as the inner magnet frame **322**, immediately followed by a counterrotational movement in a direction opposite to the rotation of the inner frame **322**. When the outer magnet frame **326** is moving opposite the inner magnet frame **322**, this action propels the outer magnets **328** through the force fields of opposing inner magnets **324** to the point that the holding gear **327** associated with the outer electromagnetic field coil **332** is engaged.

When the timing device releases the holding gear **327**, a signal is also sent to actuate a secondary outer electromagnetic field coil **332** on the opposite side of the outer housing **342**. The secondary outer electromagnetic field coil **332** reverses the direction of the oscillation of the outer magnet frame **326** and accelerates it in the same direction of rotation as the output shaft **335** and the inner rotor **305**. The outer rotor **310**, traveling at a faster rate of speed than the inner rotor **322**, places opposing inner magnets **324** and outer magnets **328** in close proximity and imparts additional force to rotate the output shaft **335**. This movement of the outer rotor **310** continues to the limit of the oscillating range where the solenoid release **339** and the holding gear **327** and lock bearing **40** associated with this side of the outer rotor **326** are engaged. Timing devices then release (after the appropriate holding time) the solenoid release **339** from the holding gear **327**, send a signal to the outer electromagnetic field coil **332**, and the cycle repeats. To provide the engine **300** stability and to assist the outer electromagnetic field coil **332**, three springs **333** (drawn as spring and cage) and spring arm **334** are provided, the springs **333** having one end attached to each corner of the outer magnet frame **326** and the opposite end anchored at the case **342**.

Synchronization of the inner magnets **324** and outer magnets **328** is achieved by the aforementioned solenoid release **338** and **339** and the holding gears **327**. Each solenoid release **338**, **339** is attached to the case **342**. The solenoid releases **338** and **339** are controlled by an EPROM controller **345**. Controller **345** is connected to a timing sensor **341** on the output shaft **335**. The EPROM controller **345** controls activation of the relays **336** and **337** and the solenoid releases **338** and **339** at the precise time for optimum performance. Optimum performance is realized when minimum effort or input energy is required to operate the outer electromagnetic field coils **332**. As load or torque is placed on the output shaft **335**, its rotational rate will tend to decrease. The holding gear arrangement **327** is critical for continued synchronization of the inner magnets **324** and the outer magnets **328** as their relative speed changes. That is, as the rotational rate of the output shaft **335** decreases, the outer rotor **310** must be "held" in order to compensate for the relative speed differential. It should be noted that, under loaded conditions, the required firing (actuation) rate of the outer electromagnetic field coil **332** decreases. Through this mechanical actuality and precise timing, device efficiency and performance are thereby optimized, while the output remains the same.

While the invention has been described with reference to its preferred embodiments, it will be understood by those skilled in the art that various changes may be made and equivalents may be substituted for elements thereof without departing from the true spirit and scope of the invention. In addition, many modifications may be made to adapt a particular situation or material to the teaching of the invention without departing from its essential teachings.

It is to be understood that the present invention is not limited to the embodiment described above, but encompasses any and all embodiments within the scope of the following claims.

We claim:

1. An electromagnetic engine comprising:

an outer rotor having an outer frame defining an annulus and a plurality of outer magnets mounted on the outer frame;

an inner rotor having an inner frame and a plurality of inner magnets mounted thereon, the inner frame being disposed for rotation within the annulus defined by the outer frame, the inner magnets having a magnetic field opposite in polarity to the outer magnets;

means for rotating the outer rotor in oscillating arcs;

means for momentarily maintaining the outer rotor in a stationary position; and

an output coupling fixed to the inner rotor for rotation therewith;

wherein oscillation of the outer rotor causes rotation of the inner rotor, thereby providing output power to the output coupling.

2. The electromagnetic engine according to claim **1**, further comprising an outer case, said inner rotor and said outer rotor being coaxially mounted within the outer case.

3. The electromagnetic engine according to claim **2**, wherein the means for rotating said outer rotor comprises a plurality of outer electromagnetic field coils attached to opposite sides of the outer case.

4. The electromagnetic engine according to claim **3**, further comprising at least one electromagnetic field coils mounted to said outer case and disposed within said inner frame.

5. The electromagnetic engine according to claim **2**, further comprising a plurality of springs having a first end anchored to said outer case and a second end attached to said outer frame, the springs stabilizing oscillation of said outer rotor.

6. The electromagnetic engine according to claim **1**, wherein said output coupling comprises an output shaft fixed to the inner frame of said inner rotor.

7. The electromagnetic engine according to claim **1**, wherein said output coupling comprises an output gear fixed to the inner frame of said inner rotor.

8. The electromagnetic engine according to claim **1**, wherein said means for maintaining said outer rotor in a stationary position further comprises:

a holding gear disposed at opposite ends of said outer rotor; and

a solenoid having an extendable stop pin mounted opposite each of the holding gears, the stop pins selectively engaging the holding gears in a defined timing sequence.

9. The electromagnetic engine according to claim **8**, wherein said means for maintaining said outer rotor in a stationary position further comprises an EPROM controller circuit electrically connected to said solenoids.

10. The electromagnetic engine according to claim **8**, wherein said means for maintaining said outer rotor in a stationary position further comprises a timing sensor mounted on said output coupling, the timing sensor being electrically connected to said EPROM controller circuit for adjusting speed of oscillation of said outer rotor according to a load attached to said output coupling.

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