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Propellantless electromagnetic propulsion

FIELD OF THE INVENTION

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The present invention relates generally to a method and system for propulsion. More specifically, the present invention is a method and system to provide a means of propellantless propulsion by electromagnetic while using a solid state device.

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BACKGROUND OF THE INVENTION

The need for propellant in propulsion is prohibitive because of the extra mass needed. It is therefore an object of the present invention to introduce a method and system to provide a means of propellantless propulsion by electromagnetic while using a solid state device. This invention solves a problem of needing to carry propellant. This invention also reduces wear and tear by the lack of moving parts. Anyone that desires propulsion by electrical means may find this invention useful.

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BRIEF DESCRIPTION OF THE DRAWINGS

FIG. 1 is an illustration of parallel current carrying wires of the present invention.

FIG. 2 is an illustration of one possible wire configuration of the present invention.

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DETAIL DESCRIPTIONS OF THE INVENTION

All illustrations of the drawings are for the purpose of describing selected versions of the present invention and are not intended to limit the scope of the present invention.

The present invention is a method and system to provide a means of propellantless propulsion by electromagnetic while using a solid state device. The present invention uses a few basic concepts of known physics. Most simply put there is a light speed delay of information over a distance. The other fact is that opposing currents in a wire repel, while congruent currents attract. Two current carrying wires separated by a known distance, while using a known frequency of current out of phase by ninety degrees results in an effect which provides a net force on both current carrying wires in the same direction.

The benefits are a way to provide propulsion without propellant by electromagnetic means and reduced wear of the engine by no moving parts.

FIG. 1 is a drawing of parallel current carrying wires with a return path not shown here. Each illustration is such that each arrow that propagates from the wire shows the appearance of current flow delayed by the speed of light that is $1/4$ the wavelength of the radiation emitted. Four frames show a complete current cycle and the fifth and sixth frames repeat the cycle of the first and second frame. The colored arrows next to a wire pointing up or down show attraction or repulsion to the respective current.

FIG. 2 shows one possible wire configuration (not limiting the invention to just this configuration) as a high frequency solenoid. This is made for a specific frequency and represents multiples of the illustrated wires in FIG. 1. Layers of the high frequency solenoids can be stacked and kept a distance apart while controlling current phase allowing multiplication of force. This configuration builds off the basic concept of the basic invention.

Reference Numeral - Diagram illustrations as shown in FIGS. 1-2:

- 25 1 - Electromagnetic force
- 2 - Current in upper wire
- 3 - Current in middle wire
- 4 - Current in lower wire
- 5 - Apparent current of the upper wire
- 30 6 - Apparent current of the middle wire
- 7 - Apparent current of the lower wire

- 8 - Frame one of six
- 9 - Frame two of six
- 10 - frame three of six
- 11 - frame four of six
- 5 12 - frame five of six
- 13 - frame six of six
- 14 - High frequency solenoid configuration (upper wire)
- 15 - High frequency solenoid configuration (middle wire)
- 16 - High frequency solenoid configuration (lower wire)

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The following shows a description of the Parts of the present invention:

(1) The direction of force on the wire is due the current in the wire crossing the magnetic field of the wire next to it.

(2) The current direction in the upper wire

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(3) The current direction in the middle wire

(4) The current direction in the lower wire

(5) The apparent current direction of the upper wire.

(6) The apparent current direction of the middle wire.

(7) The apparent current direction of the lower wire.

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(8-13) Each illustration is such that each arrow that propagates from the wire shows the appearance of current flow and covers a time intervals of space defined by the speed of light that is $1/4$ the wavelength of the radiation emitted from the wire. Four frames show a complete current cycle and the fifth and sixth frames repeat the cycle of the first and second frame.

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(14-15) The high frequency solenoid configuration that builds off the basic idea of the invention. The solenoids are spaced $1/4$ wavelength (λ) through which ever medium the radiation propagates. The wires are wound back and forth tightly but such that each wire fold is $1/2$ the wavelength of the current passing through it. There are more high frequency solenoid configurations possible than

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The main part of the invention is the spacing of the wire configuration and current phase control as illustrated in the first figure. The method of spacing, phase control and current supply can be accomplished in various ways by manufacturing and common electronics and therefore it is not important to specify exactly how this is done but that they are done. These wires are parallel as illustrated and separated by a distance of about 1/4 wavelength. This basic pattern for the wires in FIG. 1 can be repeated for high frequency current by bending the wires back and forth (or even printing them on a circuit board/3D printer) forming a plane of wire that generates an intense magnetic field at a specific frequency. This then scales the force generated by the number of turns. Force is also increased with each successive high frequency solenoid layer. The current in a wire with specified distance from the wire below must be 90 degrees out of phase with the layer immediately below it or -90 degrees with the layer above it. Reversal of the force can be accomplished by swapping the phase of the upper and lower wires, holding the middle wire phase constant or by shifting the middle wire phase 180 degrees, while holding the upper and lower wires phase constant.

The main parts of the invention is the basic wire configuration with 1/4 wavelength separation and current phase control. This basic concept can be extended to a high frequency solenoid and then to form a rigid meta-material cube. These layered solenoids could be molded together into a solid dielectric block with exposed electrical contacts for controlling the current in each solenoid. Once constructed the invention has almost no moving parts except for current and works off the electromagnetic field and light-speed delay of information.

The basic concept of the wires in figure one provide propulsion by the electromagnetic field. The invention can be extended to a solid meta-material block of high frequency solenoid in which current can be controlled by the input from a signal generator/amplifier and the high frequency solenoids may even resonate at a specific frequency by means of an LC circuit. Phase control and current amplitude is used for each specific solenoid layer to control propulsion direction and force. The solid meta-material block is only one possible configuration of the basic idea of the invention.

The invention is based on the concept of the time delayed magnetic field radiated from the wire in a radial manner. The force comes directly from the current in the wire

passing through the time delayed magnetic field. Manipulation of the time delay and phase control allows a unidirectional force on the wires and allows propellant less propulsion. The device also does not require moving parts to provide this propulsion.

5 Optimally, this invention might be printed by a 3D printer or the High frequency solenoid could be printed on circuit boards and then layered into a meta-material cube. If this route is chosen the solenoid is made to operate at a specific frequency with the spacing of the solenoids defined by the frequency of current which in FIG. 1 is $1/4$ the wavelength. The phase of each solenoid would need to be controlled by electronics so that successive layers below are out of phase by 90 degrees and layers above by -90
10 degrees. Reversing this relationship of phase for the upper and lower wires while holding the phase of the middle wire constant or holding the upper and lower wires phase constant and reversing the middle wire phase 180 degrees reverses the unidirectional force of propulsion.

15 Other configurations are possible which build off the basic idea of this invention given in FIG. 1. A simple solenoid with multiple loops may also work however with less efficiency. The basic idea stems from the concept of FIG. 1, which is a diagram of the light speed delay of the magnetic/ electric field and the concept of the attraction or repulsion of two current carrying wires. Wires can be side by side.

20 Although the invention has been explained in relation to its preferred embodiment, it is to be understood that many other possible modifications and variations can be made without departing from the spirit and scope of the invention as hereinafter claimed.

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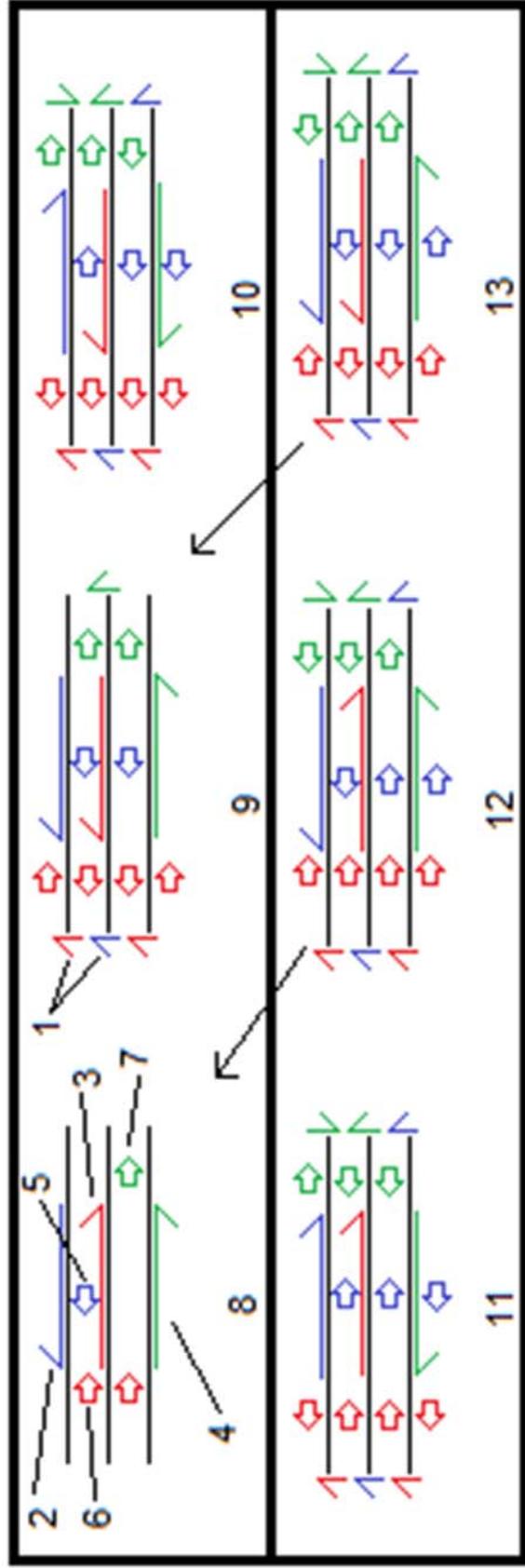


FIG. 1

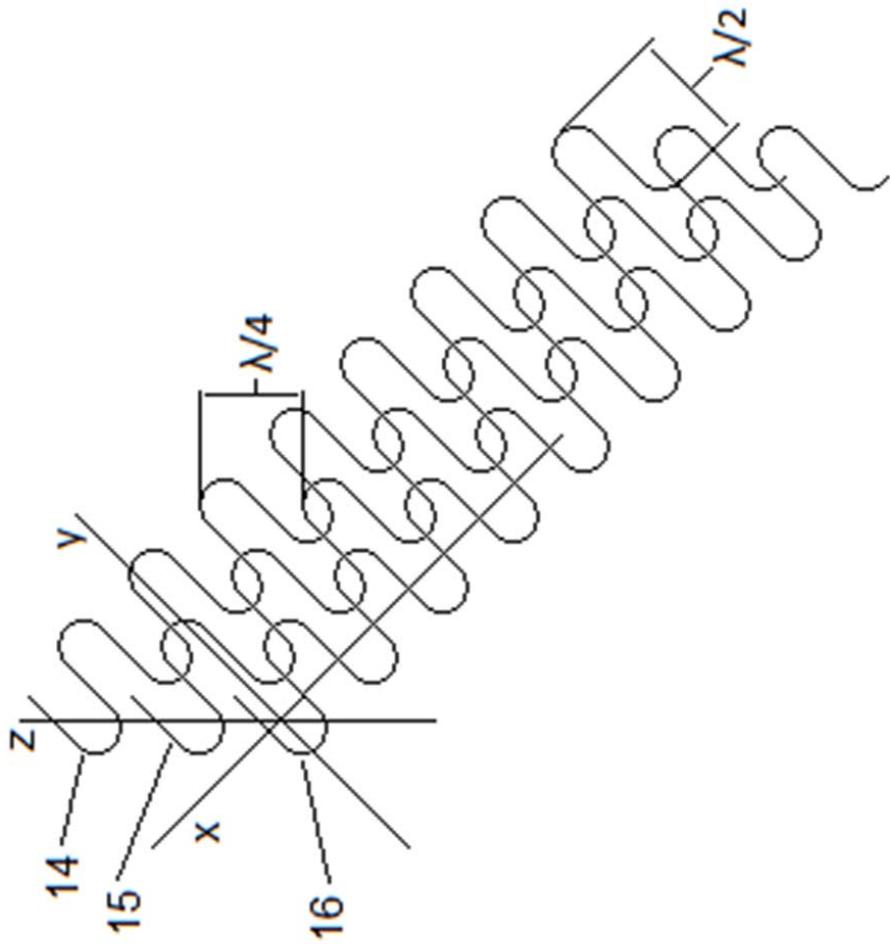


FIG. 2