

Description of Invention

Levitation and Propulsion Unit

– In short – **LPU**

(0002) The Levitation and Propulsion Unit (LPU) defies the pull effect of gravity through the transformation of centrifugal force from spinning wheel into internal upward thrust to balance or overcome the pull effect, without interaction with its external environment. Through the systematic regulation of evenly applied force exert on each spinning main wheel, and reinforce by the compression and expansion of magnetic repulsive force. Synchronise with the systematic regulation of spin rate of each main wheel. Transforms the centrifugal force generated by the main wheel into internal upward thrust due to the design of this invention. The systematic rapid succession of thrust from each main wheel counteracts the pull effect of gravity, results in levitation or propulsion of LPU and its application.

(0003) Therefore, with no need to interact with its environment, this invention can replace or complement the propeller, wheel, jet engine, solid fuel, etc, in the area of transportation and use in space travel.

Drawings

(0004) The following attached drawings support the description and claims, and are part of this submission.

FIG-1 Sectional view of a simplified Wheel Module.

FIG-2 Plan layout of sliding angular coupling on top of main wheel.

FIG-3 Side view of a simplified sliding angular coupling.

Basic Operating System

(0005) LPU makes use of spinning wheel to create centrifugal force and transform the force to upward thrust to move the dead and live weight. A minimum of two wheel modules make up a LPU. The second module is primarily to systematically counteract or balance the torque created by the first main wheel.

(0006) In each wheel module, the system operates by exerting a downward force from the strike panel by energising the electromagnets to create magnetic repulsive force on the transfer panel. It in turn transfers the exerted force via magnetic repulsive flux to the flywheel. The sliding angular couplings that connect the underside of the flywheel to the top side of each main wheel then carry the exerted force to the main wheel. Before the main wheel spin, the point of exerted force transfer is at the lower end of the sliding angular coupling, closer to the axis of spin.

(0007) Once the main wheel starts to spin it generates centrifugal force. The strength of the centrifugal force depends on the spin rate and the exerted force on the main wheel transferred via the sliding angular couplings. This centrifugal force pushes the point of exerted force further away from the axis of spin and up the slide, as the spin rate increases. This exerts an upward thrust and pushes the flywheel upward further compressing the magnetic repulsive forces between the flywheel and transfer panel, which in-turn pushes the transfer panel toward the strike panel. This further compresses the magnetic repulsive force between panels. The compressions of repulsive force create build-up of potential energy between flywheel, transfer panel and strike panel.

(0008) Through the change in polarity in the electromagnets, the exerted repulsive force changes to attraction force. This releases the potential energy and converts it into upward thrust. The systematic and cyclical change in polarity that in one phase energizes the electromagnet that pushes down the transfer panel and flywheel. Attract the transfer panel in the next phase of the cycle. Reinforces the upward thrust created by the centrifugal force, which together accelerate the transfer panel to impact the strike panel to move the module. The rapid repetition of cycle and systematic control of spin rate in each wheel module will result in levitation or propulsion of LPU and its load.

(0009) Alternatively, the system can operate with the main wheel spinning, generating centrifugal force before energising the electromagnets to create the exerted force.

Composition of Invention

(0010) The Levitation and Propulsion Unit (LPU) comprises mainly of a minimum of two wheel modules with one variable speed spinning main wheel in a module. Each main wheel spins in opposing direction, with spinning flywheel connected by sliding angular couplings at top of each main wheel. It also includes a series of variable frequency electromagnets to exert the downward force, which result in the up-down movement on each transfer panel and spinning flywheel.

(0011) The main components in each wheel module, herein named as, are: main wheel, sliding angular couplings, flywheel, transfer panel, strike panel and its wheel module housing, see fig-1. Each LPU has an on-board control module.

(0012) Within each wheel module housing, a central fixed shaft spans vertically from the bottom panel of the module housing to the top panel. The main function of this shaft besides providing structural stability, serves to axle the main wheel and flywheel, serves as the centre guide for the transfer panel, and is the centre shaft of each wheel module. The core of this shaft can be hollow to serve as conduit for utilities.

(0013) The main wheel is of material suitable to meet the LPU usage requirement. Similarly, the size, construction and configuration of the main wheel vary to meet the spin rate of the wheel, the torque generator requirement, usage requirement, etc. The torque generation on the wheel can be by electromagnet or by pneumatic means, internal combustion system, or any suitable torque generation method to meet usage requirement. The main function of this main wheel is to generate centrifugal force through spinning.

(0014) On top of each main wheel are the sliding angular couplings arranged in radial pattern with the higher side of the slide support in line with the circumference of the main wheel and the low end directed toward the central axis of the wheel module, see fig-1 & 2. At each coupling, there are sliding devices of any appropriate low friction linear slide or other type of similar devices with ends stopper to prevent overrun, see fig-3. The slide on the top of the main wheel is mainly angled 45 degree away from the axis of the main wheel, see fig-3. The length of each slide and the angulations will depend on the LPU usage requirement. The configuration and number of this sliding angular coupling similarly depend on the main wheel size, its configuration and the LPU usage requirement. The main function of this sliding angular coupling is to transfer the exerted force to the main wheel; transform the centrifugal force to upward force; and transfer it to the flywheel.

(0015) Sliding angular couplings connect the flywheel to the main wheel. The flywheel comprises mainly of a circular construction with top side lined with permanent magnets, ring magnets or electromagnets to repel the magnetic flux from the transfer panel magnets. The size, material and configuration of the flywheel, and the number and arrangement of magnets lined on the top side will depend on the LPU usage requirement. The flywheel spins together with the main wheel and slide accordingly on the centre shaft. The main function of the flywheel is to transfer the exerted force to the sliding angular couplings; and transfer the upward force from the couplings to the transfer panel.

(0016) The transfer panel is a non-spin panel that slide along the central shaft and side shafts. The transfer panel comprises mainly of a rigid panel with cover plate on both sides to hold permanent magnets, ring magnets or electromagnets lined on both sides. On the top side of the transfer panel are impact elements to thrust the strike panel. The transfer panel size, material, configuration and magnets arrangement depend on the flywheel and strike panel. The main function is to transfer the exerted force to the flywheel; receive the upward force; and to impact the strike panel.

(0017) The strike panel connected to module housing structure comprises mainly of a rigid panel, with or without openings to hold the series of electromagnets and impact elements to receive the impact. Its size, material, configuration and arrangement of electromagnets will depend on the LPU usage requirement. The main function is to repel the transfer panel; attract the transfer panel; and to receive the impact to move the module.

(0018) The wheel module housing is an open or close structure depending on usage requirement. It must be adequate to contain the components and withstand the forces generated within. Bracing and mounting plates integrate each wheel module to make up the whole LPU, and secure the LPU to its load.

(0019) The control module mainly synchronises and regulates the electromagnets and the spin rate of the main wheel. It comprises mainly of electronic circuits, weight sensors, and other sensors complete with circuit to integrate additional LPU and external control.

(0020) The usage requirement and size of the LPU mainly determine the material and construction of each component, beside its functional requirement. Similarly, the size, arrangement and the use of permanent magnets, ring magnets or electromagnets in components need to meet the usage requirement and size of the LPU, as well.

Usage of Invention

(0021) Levitation and Propulsion Unit allow variation in application. Its main design function is levitation and propulsion. By mounting it horizontally with the module axis vertical, it functions as levitation or propulsion unit. By varying the angle of module axis and accordingly increases the thrust generation, it functions as a propulsion unit; and mounting it with the module axis horizontal, its function as a steering or braking unit.

(0022) Installation of Levitating and Propulsion Unit (LPU) can be singular or multiple unit, enlarge or reduce in size to meet the load, integration and/or usage requirement. Its usage is mainly in transportation, to allow three-dimensional movement, or use to reduce load weight together with other transportation system; and in the area of space travel.

Levitation and Propulsion Unit (LPU)

Claims

1. A device, herein named as, Levitation and Propulsion Unit (LPU), as reflected in its description and drawings. Which comprises of, mainly, a minimum of two, herein named as, wheel modules, its mounting and bracing plates and control module. Of which each wheel module comprises of main components, herein named as, main wheel, sliding angular couplings, flywheel, transfer panel, strike panel and module housing. The material of which is, mainly or in part of, titanium or its alloys, aluminium or its alloys, magnesium or its alloys, steel or its alloys, ferrous or non ferrous metals or its alloys, plastic or its compound, rubber or its compound, composite, ceramic or combination of materials.

The main features, among others, in the wheel module of the device being:

- a) The layout of main components in the wheel module. The layout from bottom up is: main wheel, sliding angular couplings, flywheel, transfer panel and strike panel.
- b) The main function of each main component being:
 - i) Main wheel – to generate centrifugal force through spinning.
 - ii) Sliding angular coupling – to transfer the exerted force from the flywheel to the main wheel; to convert, divert or transform the centrifugal force generated into upward force parallel or non-parallel to axis of spin; and transfer the upward force to the flywheel.
 - iii) Flywheel – to transfer the exerted force to sliding angular couplings; and transfer the upward force from the couplings to transfer panel.
 - iv) Transfer panel – to transfer the exerted force onto the flywheel; receive the upward force; and to impact the strike panel.
 - v) Strike panel – to repel the transfer panel; attract the transfer panel; and to receive the impact to move the module.
- c) The use of electromagnetic flux/field as the exerted force on the transfer panel.
- d) The use of magnetic repulsive force as medium between flywheel and transfer panel, and between transfer panel and strike panel, as a medium similar to gas, to transfer and/or enhance the exerted force to, and the thrust from, the main wheel.
- e) The transformation of centrifugal force from spinning wheel into upward thrust, without interaction from its external environment, i.e. air, water, surface, or mixture of which, vacuum, space outside the confine of planet Earth, outer space or medium outside or inside the craft fitted with the device to meet the device usage requirement.

2. A device of claim 1 wherein the main wheel in the wheel module is a rotary assembly with or without sliding angular coupling connection/s and/or attachment/s, and the assembly comprises mainly of a single or multiple rotary hub/s and a single or multiple disc; disc with thick/thin edge, rim, profile or section; circular plate; circular plate with thick/thin edge, rim, profile or section; wheel; circular frame, section, profile or ring, with single or more layers of radial spokes, rods, cables, arms, discs, plates, blades, vanes or combination; oval; saucer; rotor blades or arms with or without supporting and/or bracing members; stated or similar configuration with strengthening profile and/or supporting brackets, bracers, struts, ties, webs, stiffeners, framing or combination; or combination of stated, similar configuration or part/s of the configuration. And the assembly come together with or without electromagnet and permanent magnet; magnet; pneumatic; hydraulic; internal/external combustion system; nuclear, plasma, ion or similar powered system; jet turbine or jet powered system; rocket powered system; battery powered system; electro-mechanical system; human powered, electrical or/and mechanical system; electrical induction system; laser system; or combination of stated or similar system; drive connection/s, drive attachment/s or both.
3. A device of claim 1 & 2 wherein there is more than one main wheel in the wheel module rotating in the same or opposing direction, interconnected and positioned one above each other, next to each other or both.
4. A device of claim 1, 2 & 3 wherein there is one or more panels, spinning or non-spinning, with or without one or two side rail connection, complete with magnetic element/s to develop magnetic repulsive force, included in between the flywheel and transfer panel, transfer panel and strike panel, and/or transfer panel and top panel of module housing where no strike panel, or in between all the various panels including flywheel.
5. A device of claim 1, 2 & 3 wherein gas or gases, oil, liquid or compound, spring or mechanism, or combination, used in between the flywheel and transfer panel or additional panel/s in the wheel module instead of magnetic repulsive force. In which, no magnetic element included on the flywheel and the facing side of immediate panel. Instead, additional component/s like interfacing attachment, containment, enclosure, cylindrical chamber, or combination, included on the flywheel and matching interfacing component/s included on facing side of the immediate panel.
6. A device of claim 4 wherein gas or gases, oil, liquid or compound, spring or mechanism, or combination, used in between additional panel/s, and/or additional panel/s between transfer panel, strike panel and/or top panel of module housing in the wheel module, instead of magnetic repulsive force. In which, no magnetic element included on each facing side of both panels. Instead, additional component/s like interfacing attachment, containment, enclosure, or cylindrical chamber included on one or both sides of panel and matching interfacing component/s included on the facing side of immediate panel/s.

7. A device of claim 1, 2 & 3 wherein the flywheel directly impacts the strike panel or top panel of module housing instead of the transfer panel or strike panel, in which there is no transfer panel or no transfer and strike panel.
8. A device of claim 1 to 6 wherein there is no cover plate and/or sliding sleeve on one or both sides of the transfer panel, and/or no side rail or with one side rail connection, and/or the transfer panel is a spinning panel.
9. A device of claim 1 to 6 & 8 wherein the exerted force, “on/off” or intermittent force at the strike panel of the wheel module, act on the transfer panel or on flywheel of claim 7, is generated by: a system of cam, rocker, piston or combination of the mechanism; motorised system of cam, rocker, piston or combination; harmonic system; gas or gases system; direct or indirect internal or external combustion system; pneumatic/hydraulic/electric piston, cam or rocker system; electromagnetic system with or without cryogenic; or combination of stated, part/s of the stated or similar system; with or without linkage/s, connection/s and/or attachment/s connected to main wheel, and/or component/s of the craft.
10. A device of claim 1 to 9 wherein the system or application of the exerted force, “on/off” or intermittent force is above the strike panel, or on the top of the module housing where the strike panel is included or excluded in the wheel module.
11. A device of claim 1 to 10 wherein there is more than one system or application of the exerted force, “on/off” or intermittent force in “V” or parallel arrangement to the module axis, or other arrangement.
12. A device of claim 1 to 11 wherein the stated minimum two wheel modules, the spin direction of the main wheels is not opposing.
13. A device of claim 1 to 11 wherein there is only one wheel module.
14. A device of claim 1 to 13 wherein the whole layout of main components inside the wheel module is in 180 degree rotated arrangement, and function to create internal downward force, or “weight” or “gravity” inducement, instead of internal upward force.
15. A device of claim 1 to 13 wherein it enables orientation or tilting, and/or angular or horizontal mounting, of single or multiple wheel modules for it to function as levitation, propulsion, braking or steering unit, or two or three of the stated functions, or all four functions.
16. A device of claim 14 and 15 wherein it functions include levitation, propulsion, steering, and “weight” or “gravity” inducement.

17. A device of claim 1 to 16 wherein it enables the control of the exerted force or “on/off” force to operate in run, off and hold mode,
i.e. run - the flywheel move up & down in rapid cycle,
off - the flywheel in up position,
hold - the flywheel in down position.
18. A device of claim 17 wherein there are multiple sliding angular couplings in radial and/or non-radial arrangement. Each comprises of single, double or multiple sliding device/s, and the bottom linear slide is not only at 45-degree angle, it includes various angulations, adjustable angulations or both, with or without end stopper.
19. A device of claim 18 wherein each wheel module is positioned on top, above or within each other, and/or on same or different plane or axis to each other, or combination.
20. A device, a craft or the component/s of the craft of claim 19 wherein the main components of the wheel module are sufficiently enlarged to accommodate man, cargo or equipment, combination of which or all as stated, within or around the components layout. The module housing then take the form of a spinning outer shell or enclosure in oval, elliptical, saucer-like or other configuration, connected or not connected to the main wheel in which the shell spin in opposing direction to the main wheel. The device or craft function via the systematic regulation of spin rate between the outer shell and main wheel, and the exerted force or “on/off” force. Other wheel modules serve to complement the device or craft function.
21. The configuration, design or the device of sliding angular coupling that convert, divert or transform centrifugal force to vertical, non-vertical force, force parallel or non-parallel to the axis of spin, Each coupling comprises of a fix angulations of various angles, adjustable angulations or both, angular slide support of singular or continuous profile; one, two or multiple linear slides, bush slides, fabricated linear/bush sliding devices or combination of sliding devices, of straight or curve profile, utilising bearings, non-bearing, magnetic levitation system or likewise with or without end stopper; and slide connector of profile or section to meet the connection and usage.
22. The device of claim 21 wherein it act together with flywheel, which uses magnetic repulsive force, gas or gases, oil, liquid or compound, to interact with the next medium. To convert, divert or transform centrifugal force to vertical, non-vertical force, force parallel or non-parallel to the axis of spin, as in claim 1 to 20.
23. A device of claim 1 to 20, wherein the wheel module housing is of configuration to meet usage requirements, and is open or enclosed; sealed and full or partial vacuum; sealed, full or partial vacuum and gas filled; sealed or enclosed with gas/air/fluid in pipe or tube circulation, or with cryogenic system, within and/or outside the module; or combination.

===== End of Claim =====