SPACE DRONE

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ABSTRACT

The space drone is a small platform with jet propulsion or pulse jet combustion engines attached. The pulse jet combustion engines can have a small nozzle to provide propulsion. Each engine can be spherical so that the nozzle can be rotated to any direction needed by moving the nozzle.

There can be at least one pulse jet engines attached to the body. Number of engines required depends on the machine's body and/or the payload size/weight. Engines can be placed anywhere on the main body, but preferably on the extremities of each side.

This machine can be able to handle maneuvering in the vacuum of space. Since there is no air resistance or gravity in outer space, this machine can use very little fuel. The spherical pulse jet combustion engines allow the machine to fly in almost any direction. The machine can be able to fly and hover in place effortlessly. It can have at least one gyroscope installed to provide the optimal stabilization. The principle is similar to a conventional drone but uses jet propulsion instead of propellers.

The body can be aerodynamically shaped. It can be aerodynamic vertically, horizontally, or both. Payload can be attached to the main body or can be inside the main body; it depends on the exact payload shape and size as well as the main body shape and size. If

necessary, there can be multiple layers of the main body to house multiple payloads.

This machine can be attached to a high-altitude balloon that can lift the machine through the atmosphere. Once the balloon reaches the height of its trajectory, the balloon can release the machine. Once released, the balloon can be deflated and fall to the ground for reuse. The machine can then initiate the pulse jet combustion engines and continue the journey through the outer reaches of the atmosphere. Once outside of the atmosphere, the machine can use very little fuel. The machine can be able to maneuver in any direction, even in the vacuum of space. Payload can then be placed into orbit or delivered to a space station.

This flying machine can have an additional optional jet engine to aid in the launching stage. This jet engine can be vertical and placed on the bottom center of the main body, this would provide additional launching thrust and high-speed capabilities. This additional jet engine can be horizontal and placed on the back edge of the main body, providing horizontal thrust for lift-off.

This can eliminate the need to send astronauts to transport items between space stations. This flying machine can be controlled by automation or by an operator.

This machine is not only designed to operate in outer space, but also in inner space. This machine can be used to transport items, take photo/videos, or even … The main body shape can be designed according to Bernoulli's principle so that fuel consumption can be more efficient. If the body is designed according to Bernoulli's principle, then the flying machine can be able to travel horizontally at a high rate of speed while consuming a minimal amount of fuel. This would also allow the flying machine to use an optimal angle of attack to launch from the balloon to outer space, decreasing launching fuel consumption.

1 Drawing Sheet, 4 Claims

FIG. 1

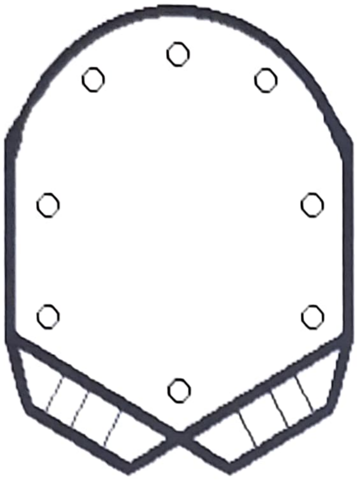


FIG. 2

FIG. 3

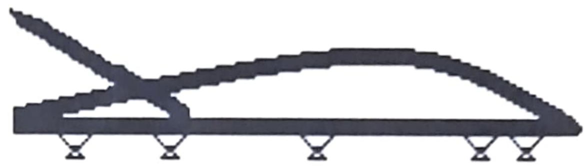


FIG. 4

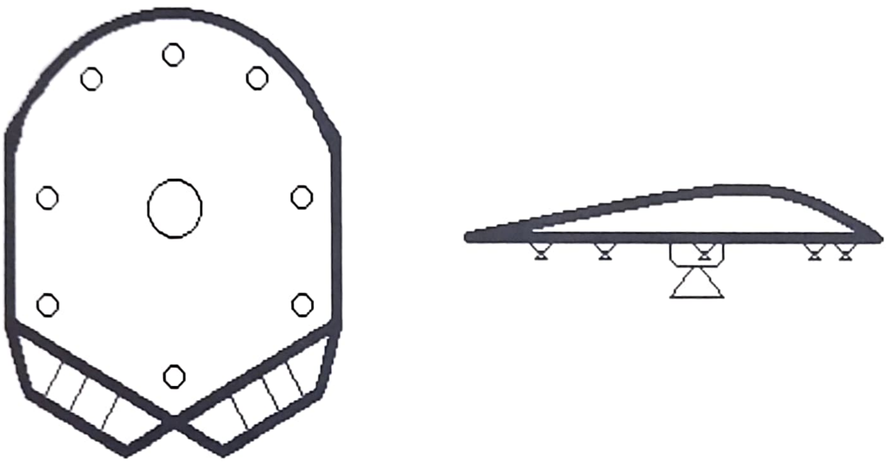


FIG. 6

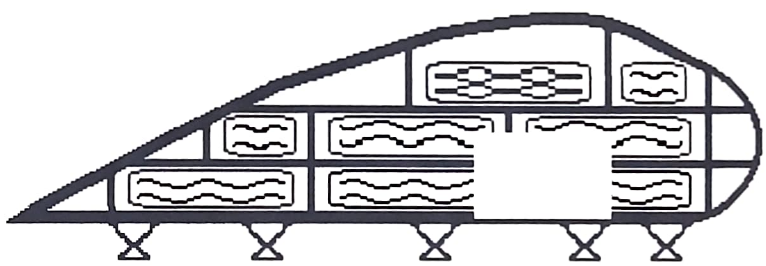


FIG. 5

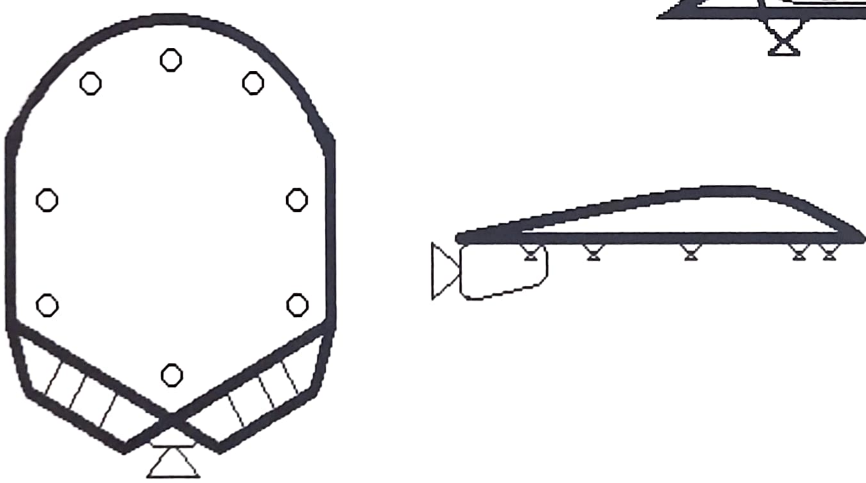
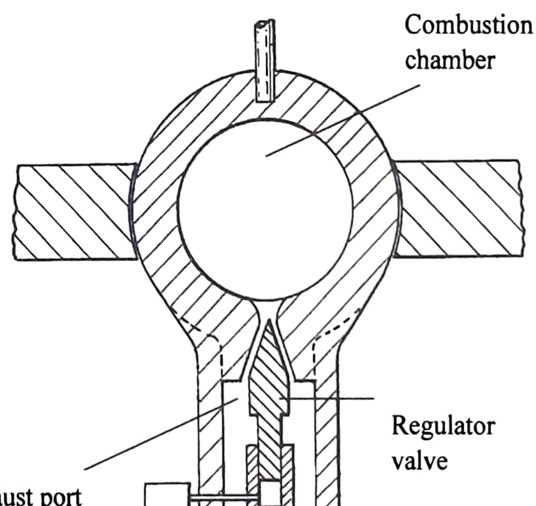


FIG. 7



SPACE DRONE

BACKGROUND OF INVENTION

This flying machine is designed to efficiently transport items, like satellites, into outer space and in inner space. The machine can be a platform, exact shape can vary, attached to at least three pulse jet engines and an additional optional jet engine.

Main body shape can be designed according to Bernoulli's principle so that the body can provide lift when traveling through the air. The main body can have flaps, similar to an aircraft wing, that can be anywhere around the perimeter of the body to generate additional lift while traveling horizontally. The flaps can also be used to slow the machine for landing or docking. The main body can house the electronic control modules, fuel tank, and can house the payload; depending on what the exact payload is. The payload can be secured to the exterior of the main body, ideally on the top but it can be secured to the bottom depending on jet engine placement. If multiple payloads, they can be secured inside of the main body in sections. This can be achieved by layering payloads between sections of the main body, but with the main body material around the exterior. The body can be circular, similar to a UFO shape.

At least one spherical pulse jet engine can be attached to the main body. The number of jet engines required varies depending on payload and body design. The spherical pulse jet engines, similar to the Internal Combustion Propulsion Engine US patent #4,754,602, can use solid, liquid, or even gaseous fuels. An oxidizer may be required for space travel, depending on the choice of fuel. Each spherical pulse jet engine has one exhaust nozzle that channels the direction of thrust. The spherical pulse jet engines have the ability to rotate in almost any direction, allowing the thrust to be directed in almost any direction. Stabilization can be provided by an electronic gyroscope or laser gyroscope. Stabilization can also be provided by intermittent firing of each pulse jet engine individually.

This flying machine can be launched from the ground or can be launched at high altitude from a flying vehicle. It is designed to operate in inner space and outer space. To launch into outer space, the flying machine can be placed on a platform supported by a high-altitude balloon. The high-altitude balloon can lift the flying machine through the atmosphere. Once the balloon reaches its peak trajectory, the flying machine can start its engines and separate from the balloon. The flying machine can then continue its journey through the atmosphere into outer space. By launching from the upper stratosphere, the flying machine will require much less fuel to reach the destination. This can mean more payload can be transported due to lack of fuel weight.

The flying machine can launch from the balloon vertically or horizontally using a sharp angle of attack. If using the body designed according to Bernoulli's principle, then the horizontally angled launch can be much more efficient due to the lift generated from the body shape.

Using the balloon conserves the flying machine's stored energy, which means that it does not need to carry as much fuel, decreasing the overall weight. This can provide more efficient energy consumption. Additional high-altitude balloons can be used to store additional fuel and/or provisions to be retrieved by this flying machine. A stratosphere balloon carry up to 3,000 lbs, for example, the stratosphere balloon carried a manned capsule when Felix Baumgartner parachuted from 130,000 ft.

Alternatively, the launching vehicle can be any flying vehicle that can carry this flying machine. A high-altitude airplane could be used to launch multiple flying machines at one time.

The multi-directional jet drone can have arms that extend from either or any side to carry extra payload. The arms and payload should be evenly distributed to allow the drone to remain level during flight.

Alternatively, there can be a series of high-altitude balloons released into the upper stratosphere. There can be separate balloons for either the drone(s), fuel cell(s), or payload(s). The fuel cell and payload can be assembled with the drone while in the upper stratosphere. This can be achieved by cables between the balloons and/or conveyor belts. This will allow more fuel to be available to the drone and more payload can be carried by the drone to outer space. This could also be used to carry multiple payloads to the destination by only one drone that only has to travel in outer space. Using this method, the drone does not need to go back to the ground unless maintenance is required. The drone can refuel and pick up payloads from the balloons to be delivered to desired locations in outer space while using little energy. Any thing that needs to be transported into outer space can use this drone to supply any space stations or to launch satellites.

SUMMARY OF INVENTION

The multi-directional jet drone is designed to efficiently transport items in/into outer space and inner space. This jet propulsion powered drone can be comprise of a main body, shape can vary, and at least three pulse jet engines. An optional turbo or alternative jet can be installed vertically or horizontally, in relation to the main body.

The main body can be altered to accommodate specific payloads. The body can be designed according to Bernoulli's principle so the body can generate lift as the machine is traveling, increasing fuel efficiency. The main body can have flaps, similar to wing flaps on airplanes, to generate additional lift as well as a method to slow the machine's air speed. The main control modules can be housed inside of the main body. Payload(s) can be secured to the top of the machine or inside the main body housing. Payload(s) can be layered in between sections of body housing.

At least three spherical pulse jet engines, similar to the Internal Combustion Propulsion Engine US patent #4,754,602, can be attached incrementally around the perimeter of the main body. There can be additional pulse jet engines if necessary. The number of engines required can depend on the main body design as well as the payload(s). An additional jet engine can be installed vertically or horizontally to the main body. This additional engine can be used to generate additional thrust when necessary, such as launching, or traveling at higher speeds.

The jet engines can use solid, liquid, or even gaseous fuel. Fuel storage can be inside the main body housing. An oxidizer may be required for space travel, depending on the choice of fuel. Each jet engine has one exhaust nozzle to direct the trajectory of thrust, which can change direction of this machine. The spherical shape of the pulse jet engines allows for a wide range of motion, directing the flying machine in almost any direction. The jet engines can allow this flying machine to handle maneuvering in outer space.

Stabilization of the flying machine can be provided by at least one electronic or laser gyroscope. Stabilization can also be provided by intermittent firing of each pulse jet individually. If necessary, the pulse jet engines can function continuously by fully opening the regulator valve; however, this will not be as fuel efficient as the pulse jet.

The flying machine can be launched from the earth's surface or from high-altitude. High-altitude launching is preferred if planning to enter outer space. High-altitude launch can be facilitated by any flying vehicle. A flying vehicle can bring the flying machine to high-altitude. The flying machine can then launch the rest of the way through the atmosphere.

Ideally the flying machine can be brought to high-altitude by a high-altitude balloon. The balloon can lift the flying machine to the peak of its trajectory. The flying machine can then launch from the balloon. The balloon can then deflate and return to earth while the flying machine continues its journey. In doing so, the flying machine will not require as much fuel to reach outer space. This can reduce the overall weight of the flying machine.

The flying machine can launch from the balloon vertically, horizontally, or at an angle. If the body is designed according to Bernoulli's principle, then the preferred launch would be at an angle. In this case, an aggressive angle of attack can generate additional lift, increasing fuel efficiency.

SHORT FIGURE DESCRIPTIONS OF DRAWINGS

FIG. 1 is a top view of the flying machine, showing a possible spherical pulse jet placement and flap option.

FIG. 2 is a side view of the flying machine, showing a possible placement of the spherical pulse jets.

FIG. 3 is a side view of the flying machine, demonstrating the flap movement.

FIG. 4 is both a top and side view of the flying machine equipped with the additional vertically oriented jet engine.

FIG. 5 is both a top and side view of the flying machine equipped with the additional horizontally oriented jet engine.

FIG. 6 is a side view of the flying machine with a payload secured inside of the main body housing.

FIG. 7 is a cross-section of the spherical pulse jet engine, from the Internal Combustion Propulsion Engine US Patent #4,754,602.

DESCRIPTION OF PREFERRED EMBODIMENTS

The flying machine comprises of a main body that uses at least three pulse jet engines for thrust FIG. 1. Main body shape can differ, depending on the specific need. The body can be designed according to Bernoulli's principle to generate lift while traveling through the air FIG. 2. The body can be equipped with flaps to generate additional lift as well as decreasing airspeed FIG. 3. At least one additional jet engine can be installed to generate additional thrust. This additional jet engine can be installed in a vertical FIG. 4 or horizontal FIG. 5 orientation. This flying machine can be used to transport items and can operate through inner space and/or outer space. Payload can be secured on top of the flying machine, inside of the main body housing, or layered in between layers of the body housing FIG. 6. Pulse jet engines can be spherical, similar to the Internal Combustion Propulsion Engine US Patent #4,754,602. The spherical shape allows for a very wide angle of motion FIG. 7. This can allow the flying machine to direct propulsion in almost any direction.

What is claimed is:

1. The flying machine comprises of a main body, which can be any shape, and optional flaps as well as at least 3 pulse jet engines installed incrementally around the main body for thrust and trajectory control. There can be an additional jet engine, vertically or horizontally oriented, to provide additional thrust

or to travel at high speeds. The electronic control modules and energy storage can be housed in the main body. Body shape can be designed according to Bernoulli's principle to generate lift while traveling through the air. The flying machine can launch from earth's surface or from high altitude. The flying machine can be transported to high-altitude by any flying vehicle, most efficient would be a high-altitude balloon. Once the high-altitude balloon, with the flying machine attached, reaches the peak of its trajectory the flying machine can disconnect and launch from the balloon. The flying machine can launch vertically, horizontally, or at an angle.

2. In accordance with claim 1, There can be multiple high-altitude balloons carrying separate components such as payload, fuel cells, and the flying machine itself. This means one can launch much more payload and additional fuel at one time. The fuel cell(s) and/or payload(s) can be assembled to the drone when the high-altitude balloon reaches the height of its trajectory. One drone can make multiple deliveries using this method, using the high-altitude balloon to refuel and collect additional payload(s).
3. In accordance with claim 1, The flying machine can use at least one electronic or laser gyroscope for stabilization. Stabilization can also be achieved by intermittently firing each pulse jet individually.
4. In accordance with claim 1, The pulse jet engines can be a spherical shape, similar to the Internal Combustion Propulsion Engine US Patent #4,754,602. Spherical shape allows for a wide range of motion, meaning the propulsion can be directed in almost any direction. The jet engines can use solid, liquid, or gaseous fuel. An oxidizer may be necessary if traveling in outer space.