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(54) **Title:** AN AIR INHALE TUNNEL CONDUIT JET PROPULSION APPARATUS AND METHOD FOR FLYING CRAFT

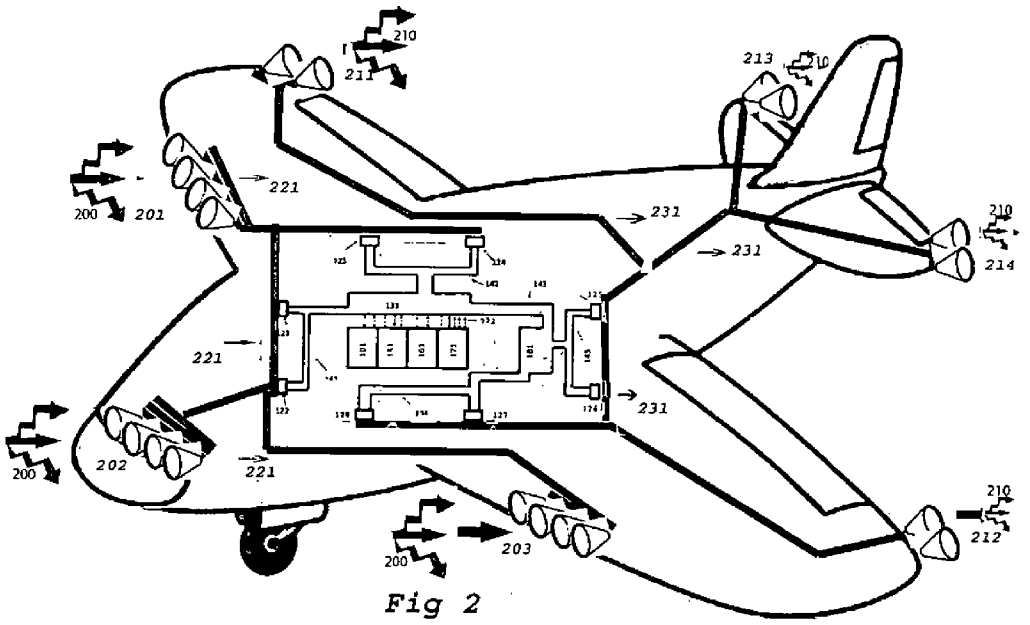


Fig 2

(57) **Abstract:** The present invention, air inhale tunnel conduit jet propulsion apparatus and method for flying craft improved apparatus and method for propulsion of aircraft. The invention apparatus and method provides lifting and thrusting mechanism for jet plane, VTOL crafts, Drones and UAVs. The apparatus includes the following components at least one each: 1) Power source to drive air impeller and compressor to operate jet and to operate control apparatus of the aircraft 2) air suction fixed/swivel port at fore or/and top of the fuselage 3) air impeller and compressor 4) motor to drive impeller and compressor 6) swivel/fixed nozzle at aft or/and bottom of the fuselage to release pressurised air to give thrust 7) Gear mechanism for power transfer. This apparatus is configured to Lift and control of speed, yaw, pitch, rolling and reactive torque of the aircrafts. The method of this invention provides propulsion for aircraft by following the steps comprises 1) air inhaling through fore and/or top of the fuselage/wings/arms, 2) air compression through and/or

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along the fuselage/wings/arms and 3) delivering thrust by means of releasing the pressurised air through jet nozzle. Inhaled air passes through tunnel conduit which has accommodated impeller and/or compressor inside, air input port configured at one end and air-jet nozzle configured at another end of the tunnel conduit.

AN AIR INHALE TUNNEL CONDUIT JET PROPULSION APPARATUS AND METHOD FOR FLYING CRAFT

Field of invention

This invention relates to an air inhale tunnel conduit jet propulsion apparatus and method for flying craft. Particularly the present invention relates to a method of air-jet-propulsion for flying craft by following the steps of 1) inhalation of air through fore and/or upper part of the flying craft in to a tunnel conduit path, 2) compression of said air inside the tunnel conduit and /or along the flying craft and 3) delivering the pressurised and/or fast moving said air through air-jet nozzle thereby said flying-craft is propelled. Particularly the invention relates to a novel application of thrusting and propulsion means and method for aeronautic vehicles, comprising fuel engine, electrical and/or solar power source with rechargeable batteries, mechanical power transmission system, electrical power supply, air compressor, AC and/or DC motor, air-jet nozzle and control mechanism. The invention provides improved thrusting and propulsion apparatus and method for flying crafts includes shapes of fuselages of Drone, helicopter, UAV (unmanned aerial vehicle) aircraft and VTOL and jet plane. The present invention generally relates to aeronautical engineering and applications of aerodynamic.

Background and prior art if any

Propulsion apparatus and method of present day aircrafts are taken as prior art as they are approximately related to this invention. Prior art aircraft vehicles achieves lift and thrust by pushing air down words and/or back words respectively using propulsion device.

Basic categories of prior art aeronautical vehicles are drones, helicopters, turbo jet, ramjet, scramjet, turbo fan, turbo propellers and UAVs (unmanned aerial vehicles). Further propulsion systems of these vehicles are divided into two types, i.e. fan propellers and jet propellers.

Types of devices for propulsion is divided into two methods. Online engine devices where engine is a part of the propulsion apparatus. Example, turbo Jet, ram jet and scram jet. In other type, engine is an independent component and its mechanical power is delivered to propulsion apparatus on same shaft and/or with additional power transmission mechanism. Examples, helicopter, drone, turbofan propelled aircrafts.

Problems of prior art.

Main constraint of the prior art aircrafts is Drag.

Drag equation for aviation is

$$\text{Drag} = \text{Drag coefficient} \times \frac{\text{density of air} \times \text{velocity}^2}{2} \times \text{reference area of fuselage}$$

Drag is increased exponential to the speed of the vehicles is one of the problem. Air hitting at reference area of fuselage is another problem to be attended.

Various methods have been used to reduce drag coefficient by improving aerodynamic designs of the fuselage of the vehicle. This invention provides improved solution to reduce the drag coefficient as described in brief description. In prior art vehicles there is a need to reduce the fuel consumption and energy further. Number of aero dynamic designs have been evolved to reduce the high aerodynamic drag and high air resistance at high speeds, still need is that to reduce aerodynamic drag further.

Further problems is that jet type prior art vehicles can't fly at low speeds and needs huge space is required for runways to acquire high speed to take off. Further reduction of fuel consumption to be achieved, and reduction of operating temperature of engine to generate the required thrust force, is another expensive issue in Jet engines.

The helicopter and drone propellers pushes air from top to down and front to back angularly to enable lift and thrust. These prior art devices consumes huge fuel, needs to improve fuel efficiency. Fan type prior art vehicle difficult to reach high altitudes and very high speeds and difficult to face bad weather conditions. This invention over rides the problems of fan propellers and jet propellers.

One 8000kg aircraft to float in ideal conditions is equal to $MV^2/2$ = 8000x9.8x9.8/2 =384.16kWatt. Where M is Mass and V is velocity. But a typical helicopter weighing 8000kg and has 2 turbo shaft engines rated at up to 1490kW each. Thrust to weight ratio improvement is achieved in this invention compared to any existing flight.

With respect to Helicopters and drones maximum speed is restricted due its architecture of propulsion device and these devices are easily susceptible to become victim for bad weather conditions due to its shape and drive structure.

Drones have speed limitation, they fly by utilising power from charged batteries, limitation of travel distance are the issues to be attended and these are prone to risk if battery fails due to sudden drop of voltage. Topmost limitation is the flying time and possibility of sudden fall of battery charge. It is problematic to fly drones in rain, snow, or even in drizzle to prevent against physical effects on the fuselage and propeller apparatus. Improvement of flying time without increasing the capacity of battery is achieved in this invention and enables more speed. Issue is to develop a drone operable with fuel engine at economic cost.

In reality prior art helicopter consume more fuel than theoretical values and vehicle response time to drive controls is noticeably more because of this helicopters are more prone to accidents. This invention achieves improved fuel consumption more close to the theoretical value. This invention solves the problems listed above prior art aeronautical vehicles.

Objects of the invention :

The principal object of the invention is to provide air inhale tunnel conduit jet propulsion apparatus and method having a tunnel conduit inside and/or along the flying craft that minimises drag force to achieve maximum fuel efficiency.

Another object of this invention is to provide air inhale tunnel conduit jet propulsion apparatus and method wherein power source applies torque via torque transfer mechanism to the driving shaft of the air-impellers and air-compressors, thereby air at fore of the fuselage and/or wings is inhaled through tunnel conduit to realise substantial reduction of drag of the flying craft.

A further object of this invention is to provide air inhale tunnel conduit jet propulsion apparatus and method for flying crafts that eliminates exponential increase as mentioned in the mathematical equation of the drag with respect to speed of the vehicle.

A further object of this invention is to provide air inhale tunnel conduit jet propulsion apparatus and method that minimises drag force against the fuselage by air inhale, by creating low pressure in front and top of the fuselage compared to prior art helicopters and drones as briefed in the description, resulting more fuel efficient for vertical take-off and landing.

A further object of this invention is to provide air inhale tunnel conduit jet propulsion apparatus and method that utilises internal combustion engine, provides improved safety without loss of velocity to the flying craft compared to prior art jet-craft wherein jet-craft engine operates at 2000 degree Celsius, said jet-engine parts will melt at 1300 degree Celsius. Safety is realised as the said IC engine of this invention is operable at 600 degree Celsius.

A further object of this invention is to provide air inhale tunnel conduit jet propulsion apparatus and method for flying crafts includes shapes of fuselages of Drone, helicopter, UAV (unmanned aerial vehicle) aircraft and VTOL and jet plane.

Another object of the this invention is to provide improved jet propulsion apparatus for aviation having improvement in simplified drive engine making shorter runway suitable for landing/take off flying craft to house airports in small towns.

A further object of this invention is to provide air inhale tunnel conduit jet propulsion apparatus and method to build different payload capacity flying crafts.

It is further object of the present invention to configure additional device for safe landing at any needy emergency conditions without use of engine power source.

Solution to the problems by the invention:

Invention articulates inhalation of air through fore of the fuselage, enables low pressure at fore and angularly at top of the fuselage. The inhaled air is accelerated and/or compression by additional air compressors inside the fuselage through tunnel conduit before release through the air-jet-outlet. The invention apparatus and method minimises drag due to the air

attack on fuselage, and creates low pressure at fore of the fuselage generates pulling force results the solution to the problems of prior art, reduction of drag provides solution to achieve all the problems listed in the prior art i.e. fuel efficiency, higher speeds, simplified machinery, vertical take-off and landing, improved safety, attaining higher speed and thereby increase of fuel efficiency, easy handling, acceleration, and improved performance characteristics.

Statement of invention :

An inhale tunnel conduit jet-apparatus and method is provided for propulsion of flying crafts in natural atmospheric conditions where said flying crafts means all types of air-born vehicles.

Fundamental novel feature of this invention is nullification of drag due to head on collision of air at fore and top of the fuselage by inhaling the air through the fore and top of the fuselage.

An Inhale tunnel conduit jet apparatus and method are provided for propulsion of flying craft includes the following elements at least one each: 1) Engine means to deliver energy to drive shaft of air impeller and/or air-compressor to operate aircraft and to operate control mechanism of the aircraft. Said Engine means also delivers energy to drive shaft of electrical generator to generate power to drive electrical motor to operate said air impeller and/or said air-compressor and to operate control mechanism of the aircraft. Further Engine means also delivers energy to charge the rechargeable battery power source to drive said electrical motor to operate said air impeller and/or said air-compressor to operate aircraft and to operate said control mechanism of the aircraft 2) air-input-port for air-suction into inhale- tunnel-conduit and said air-input-port is fixed and/or swivel-able at fore or/and top of the fuselage 3) inhale tunnel conduit comprises air-input-port at the beginning, air-impeller and/or air-compressor along and terminated at input of the air-jet-outlet. Said inhale tunnel conduit is configured inside and/or along fuselage and/or to wings/arms. It also stated in different sequence that air-jet-outlet is configured to air-input-port via said inhale tunnel conduit and to said air-impeller and/or said air-compressor to energize the air, to pass fast moving air from said air-input-port to said air-jet-outlet. 4) Said air-jet-outlet is configured swivel-able and/or fixed and/or pivot-ably at aft and/or bottom of the fuselage to release pressurised and/or fast moving air to give thrust to the flying craft. 5) Control mechanism is configured with means to regulate quantity and direction of air inhale, control over the direction and rate of speed of air released through said air-jet-outlet to manoeuvre of aircraft and for control the speed, yaw, pitch, rolling. Said inhale tunnel conduit propulsion apparatus and method provides lifting and thrusting mechanism for aircrafts including fuselage shapes of jet plane, VTOL crafts, Drones and UAVs.

The method of this invention provides propulsion for aircraft by following method steps comprises 1) air inhaling through swivel/fixed air-input-port from fore and/or top of the fuselage/wings/arms thereby air enters inhale tunnel conduit 2) air compression through said air impeller and/or air-compressor which are placed in series of said inhale tunnel conduit,

compressed/accelerated air reaches air-jet-outlet in said tunnel conduit along the fuselage/wings/arms 3) delivering thrust to the flying craft by means of releasing the said pressurised/accelerated air through said air-jet outlet which is configured at the aft/bottom of the flying craft. 4) Angle of air input port, air jet outlet and quantity of fast moving air is controlled by control-mechanism to manoeuvre the speed, yaw, pitch, rolling of the aircraft.

Novel physical features of the invention

Very first feature of this invention is minimising the drag/drag coefficient than the drag of the present day vehicles. Feature of this invention is that apparatus enables air craft with presently used internal combustion engines to drive at the speed of jet-crafts by reducing overall power requirements.This jet-apparatus invention and method is configured for varied pay load capacities of aircraft in varied possible shapes by suitably modifying size and shape of the said elements of the invention. The invention enables the manoeuvring of flying craft by controlling the rate of air inhalation, angle of air inhalation, air release rate, air release direction and angle by which accelerated air released though air-jet out let. Additional feature is that in case of emergency air craft can be grounded by bringing to zero speed to make safe emergency landing by utilising pressurised air stocked in cylinders provided in series with tunnel air conduit by releasing air through said air-jet out let. This inhale tunnel conduit propulsion jet-apparatus and method is configurable to all kinds of present day air born vehicles. Important feature is that embodiments of this invention operates with improved safety for drones and helicopter shaped fuselages. Another feature is that possible explosion of prior art jet engine due to its high operating temperature is eliminated because the engine used in the invention operates at temperatures of internal combustion engine.

Novel functional features and applications of the invention

Function feature of this invention is simplified driving controls and making pilot friendly to avoid risk as in case of helicopters where response time is noticeably more. Invention fits to suite wide range of vehicle to suite the customer needs. Another function of the invention is reduced costs of aeronautical vehicle without loss of quality, for large scale production and to reduce maintenance cost of the vehicle. Another function of the invention is to develop aircrafts suitable to use on shorter runways, compact air ports for accessibility to general public. It is functional to simplify the vehicles to house airports in small towns and for landings on roof tops. Another function is to provide a provision for safe and emergency landing in case of engine failure. Object of this invention is to create improvement in response time for flight control and give better provision to move against wind flow and at very high altitudes and low pressures and in most environmental conditions.

All components of the invention acts over the inhaled air till it leaves through nozzle to energise the said air. A part of the said inhaled air is used to burn the fuel of the internal combustion engine.

Another application of the invention is to configure the air input ports at the fore of the fuselage in a suitable manner to the prior art propeller or jet flying craft model there by using the said inhaled air to generate thrust through air-jet-nozzle.

Summary of invention

Purpose of the invention is to obtain advantages of fuel efficiency, improved safety, high speed travel and economical propulsion apparatus.for propulsion of flying crafts.

This air inhale tunnel conduit propulsion apparatus and method of this invention centres on the innovative concept of air inhaling through fore and/or angularly from top of the fuselage/wings/arms, compressing and/or accelerating the said air through and/or along the fuselage/wings/arms and diffusing the said pressurised and/or accelerated air through jet-nozzle there by obtains thrust.

Theory states that 8000kg aircraft to float in ideal conditions requires $MV^2/2 = 8000x9.8x9.8/2 = 384.16kWatt$. Where M is mass of aircraft and V is falling velocity of the aircraft due to gravity. But a typical helicopter weighing 8000kg and has 2 turbo shaft engines rated at up to 1490kW each.

This invention cruises the aircraft with much less power than the above mentioned power by minimizing drag of the fuselage and utilizing air cushions under fuselage and low pressure above fuselage while cruising.

Several embodiments of this apparatus and method for safe and economical propulsion of airborne vehicles are disclosed. The propulsion apparatus and method of the invention provides improved lifting and thrusting mechanism for jet plane, VTOL crafts, Drones, UAVs and airborne vehicles of varied sizes in open air atmosphere in most open environmental conditions. The apparatus includes the following components at least one each: 1) air suction fixed/swivel input port at fore and/or at top of the fuselage through which air is inhaled. 2) air-impeller and/or air-compressor configured in series with air suction input port is driven by power source and said power source operates control system of said aircraft and/or to power the electrical-generator to charge rechargeable power source 3) A motor is operated by said power source and/or by rechargeable power source to drive said air-impeller and/or said air-compressor 4) swivel/fixed nozzle at aft and/or bottom of the fuselage of said jet-aircraft is configured in series with air-impeller and/or air-compressor to release pressurised air to give thrust 5) In another way, said air impeller and/or compressor are operated by power transfer gear mechanism by power from power source. 6) air-jet-outlet is configured to said-air-input-port via said air tunnel conduit and to air-impeller and/or air-compressor are configured to

energize air to pass fast from said air-input-port to said air-jet-outlet. 7) Said control system is configured to lift and control the speed, yaw, pitch, rolling.

The method of this invention provides propulsion for flying craft by the steps comprising 1) air inhaling through fore and/or top of the fuselage/wings/arms by means of impeller 2) said inhaled air is compression and/or accelerated in a closed tunnel conduit through and/or along the fuselage/wings/arms and 3) delivering said accelerated air through nozzles at aft of the fuselage and/or ends and/or bottom of the wings delivers thrust. Said control system is configured to lift and control of the speed, pitch, yaw, and rolling of the aircraft in desired manner by controlling the quantum of inhaled air, releasing angle and position of said accelerated air in addition to the conventional control methods of prior art vehicles.

According to the present invention, the air inhaling propulsion apparatus defining an air inhale tunnel conduit propulsion apparatus and method for propulsion of aircraft comprises: fixed/swivel able air inhale input-port at fore of the fuselage, angle of the said ports are configured for influence by the control circuit for moving the vehicle in the desired direction. Said air impeller, said air compressor, and a tunnel conduit is configured to energises said inhaled air and holds and/or passes the said air through diffusion output-nozzle at aft of the fuselage, said nozzle is swivel able angularly at the bottom and/or at aft of the fuselage by the control of said control mechanism for cruise of the vehicle in desired direction..

The present invention, providing air inhale tunnel conduit propulsion apparatus and method for propulsion of aircraft, the apparatus configured with at least one impeller and /or compressor module operated by torque power of internal combustion engine or electrical motor. The input of the impeller/compressor module is connected to the output of said fixed/swivel air inhale port at fore/top of the fuselage through impeller element and the output of the impeller/compressor module is connected to a fixed/swivel diffusion nozzle element at aft/bottom of the fuselage through tunnel conduit and with/without a pressurised air container attached in series of said tunnel conduct.

The present invention, providing air inhale tunnel conduit propulsion apparatus and method for propulsion of aircraft, the apparatus configured with one or multiples of fuel engine elements, electrical generator elements, and a chargeable battery power apparatus elements to drive the compressor elements and/or impeller elements and to power the control module of the fixed/swivel input-port and fixed/swivel nozzle/output-port elements.

The present invention, providing air inhale tunnel conduit apparatus and method for driving aeronautical vehicle, the method is to inhale/suck the air through swivel suction input-port at fore/top of the fuselage by impeller and/or compress the said air and release the said air through swivel/fixed diffusion nozzle element at aft/bottom of the fuselage. During this method and process, the developed low pressure in front of the fuselage by inhaled air actuates lifting, traction, and drag reduction to the aircraft. The method of releasing high

pressure/fast moving air through swivel diffusion nozzle module at aft/bottom of the fuselage gives thrusting force and jet propulsion. Pressurised air containers are provided in the path of the said air to operate diffusion nozzles for emergency landing without application of power. These Pressurised air containers are connected to tunnel conduit and nozzles and these are operated by valves which are controlled by control mechanism to cruise.

Fuel efficiency and safety is improved in this method of invention in steps of doing air inhaling and compressing and jetting pressurised/fast moving air through a separate tunnel conduit without passing through combustion chamber of the engine. A part of the inhaled air from the tunnel conduit air is configured for burning the fuel in the internal combustion engine or jet engine to provide torque force to drive alternator, compressors, impellers, control system and power for battery charging. Temperature of the fuel engine is normal as engine used is any of the specialised automobile engine because power requirement and fuel burnt is not very high.

Preferred Embodiments of the invention (application of the solution)

Block schematic diagram of air inhale tunnel conduit jet propulsion apparatus and method for thrusting of flying craft is embedded in all the three embodiments, said embedded block diagram represents the apparatus of the invention which comprises hardware inter connections to move hassle free air movement from inhalation port, impeller and/or compressor and to output nozzle port.

The most preferred embodiment, air inhale tunnel conduit jet propulsion apparatus is configured into aircraft shaped fuselage, said air suction input ports are *configured* at fore and top of the fuselage and at fore of the wings through which air flow is sucked into the tunnel conduit inside the vehicle fuselage, sucked air is compressed by compressor and released through exit nozzles configured at aft of the fuselage and at aft of the wings. An air compression chamber is provided in the path of the tunnel conduit with multiple valve members which are operable to regulate flow of the air through the multiple input pots and exit nozzles.

Alternately high pressure air tunnel conduit is also defined as air conduit circuit that comprises inhalation port, impeller and/or compressor and output nozzle port configured with inter connections.

In the next embodiment, air inhale tunnel conduit jet propulsion apparatus is configured into helicopter shaped fuselage, said air suction input ports are configured at fore and top of the fuselage through which air flow is sucked into the air tunnel conduit circuit inside the vehicle fuselage and multiple exit nozzles configured at the tail of the fuselage and at bottom of the of the fuselage through which fast moving and/or pressurized air flow is released. An air compression chamber is provided with multiple valve members inside the air conduit circuit which are operable to regulate flow of the air through the multiple input ports and exit nozzles.

Alternately in this preferred embodiment of helicopter shaped body, the modules of the apparatus and method of the invention is incorporated inside the helicopter shaped body of the vehicle, in which, the fixed/swivel suction port modules are configured at fore of the fuselage angularly upwards. Fixed/swivel diffusion nozzle members are configured at aft/end of the fuselage angularly downwards.

In another embodiment, air inhale tunnel conduit jet propulsion apparatus is configured into drone shaped fuselage, said air suction input ports are configured at top of the wings and top of the fuselage through which air flow is sucked into the air tunnel conduit circuit of the vehicle fuselage and multiple exit nozzles configured at bottom of the wings/arms and at bottom of the fuselage through which air flow is released. An air compression chamber is provided with multiple valve members which are operable to regulate flow of the air through the multiple input pots and exit nozzles.

In the preferred embodiment for drone shaped body, the module of the apparatus and method of the invention is incorporated inside the drone shaped body of the vehicle, in which, the fixed/swivel suction port modules are configured above the arms of the drone and Fixed/swivel diffusion nozzle members are configured at the bottom of the arm of the drone right below the suction port. In addition to the arrangement of arms, the fixed/swivel suction port modules are configured above the fuselage of the drone and fixed/swivel diffusion nozzle members are configured at the bottom of the fuselage of the drone.

In another alternate application of the invention is that an arrangement is made to use the prior art jet-vehicle with a provision of giving a inhaled air of tunnel conduit to the engines fixed to the wings for burning the fuel which is shown in diagrams and in detailed description of the drawings.

According to the present invention apparatus is configured with air compression for jet propulsion with a cowl around the impeller and compressor, energy loses are minimum, thereby problems of prior art devices are solved and improvements are achieved.
Suction ports through which air flow is sucked into the tunnel conduit inside the fuselage and multiple exit nozzles through which air flow is released from the vehicle. An air compression chamber is provided along with multiple valve members which are operable to regulate flow of the air through the multiple exit nozzles. The exit ports are configured in an array inclined in the opposite direction of the cruise of the vehicle.

In another preferred embodiment of the invention, the modules of the apparatus and method of the invention is incorporated inside the fuselage of oval shaped body with extended wings, in which, the fixed/swivel suction port modules are configured at fore of the fuselage and to fore side of the both the extended wings of this body. Fixed/swivel diffusion nozzle members are configured at aft/end of the fuselage and aft side of the extended wings.

In the preferred embodiment of aeroplane shaped, the modules of the apparatus and method of the invention is incorporated inside the airplane shaped body of the vehicle, in which, the fixed/swivel suction port modules are configured at fore of the fuselage and to fore side of the both the wings of the aeroplane. Fixed/swivel diffusion nozzle members are configured at aft/end of the fuselage and aft side of the wings. In this embodiment jet engine has tunnel conduit connectivity for air supply to burn fuel from the tunnel conduit from air input ports.

In this method, air and/or clouds and also rain water is used for diffusion as thrust making material. This method is more advantageous because the created low pressure at front of the fuselage reduces the drag and gives traction force and forward pull. The developed low pressure on top of the fuselage gives lift to the air vehicle in addition to the aerodynamic lift. This method of compression and/or acceleration of air, takes energy and transfers as thrust through diffusion for voyage of the vehicle.

In the most preferred embodiment of this invention, drag coefficient becomes bear minimum in comparison with prior art vehicles because air is sucked at forefront of the fuselage angularly towards up, there by developing low pressure at foreface of the fuselage to minimize the drag coefficient, there by all the problems mentioned in the prior art are solved.

All embodiments of this invention has low pressure above the fuselage due to air suction, atmospheric pressure under the fuselage, and nozzles releases accelerated air gives thrust as per Newton third law, aircraft takes-off vertically with less power than the prior art vehicles there by solves problems of the prior art vehicles.

Thrust required to move floating body in the air is too minimum because drag is only air resistance which is minimized in these embodiment of the invention because of the developed low pressure due to suction at forefront and angularly above the fuselage.

Newton 3rd conveys that there is equal reaction against action, applies to this invention that vehicle moves forward when air is sucked inside. Also due to suction, low pressure at front of the fuselage pulls vehicle forward there by drag becomes further less than the drag of prior art vehicles. The invention solves the major problems/improvements and also applicable to the newton 3rd law. The Newton 3rd law reaction also applicable to this invention at fore and aft of the fuselage compared the prior art vehicles there by it gets doubled benefits in improving/solving the problems. Because Drag is minimised, forward pull and lift of the vehicle is improved, this invention is advantageous than all air vehicles used presently hence this invention is novel with subject matter, non-obvious and useful for industrial application.

The invention is abbreviated in short form as FAICJ apparatus means Fuselage Air Inhaling Acceleration, and Jet (FAIAJ) apparatus and method for vehicles of aeronautics to generate lifting, traction, drag reduction, thrusting and propulsion.

Brief description of the accompanying drawings

A clear understanding of the key features of the invention summarized above may be had by reference to the appended drawings, which illustrate the method and apparatus of the invention, although it will be understood that such drawings depict preferred embodiments of the invention and, therefore, are not to be considered as limiting its scope with regard to other embodiments which the invention is capable of contemplating. The described examples, together with the drawings, will make apparent to those skilled in the art how further forms of the invention may be realised. Accordingly:

The present invention will be understood more fully from the detailed description given herein after and from the accompanying drawings of the preferred embodiment of the present invention, which, however, should not be taken to be limitative to the invention, but are for explanation and understanding only.

Fig. 1 is an illustration of the apparatus and method of the invention showing simplified functional and schematic block diagram.

Fig. 2 a prospective view diagram illustrating a preferred embodiment of the apparatus and method of this invention when it is made to function inside the fuselage of aeroplane.

Fig. 3 a prospective view diagram illustrating a preferred embodiment of the apparatus and method of this invention when it is made to function inside and over fuselage of Helicopter.

Fig. 4 a prospective view diagram illustrating a preferred embodiment of the apparatus and method of this invention when it is made to function inside the Drone shaped fuselage.

DETAILED DESCRIPTION OF THE PREFERRED EMBODIMENTS

The present invention will be discussed hereinafter in detail in terms of the preferred embodiment of the present invention with reference to the accompanying drawings. In the following description, numerous specific details are set forth in order to provide a thorough understanding of the present invention. It will be obvious, however, to those skilled in the art that the present invention may be practiced without these specific details. In other instance, well-known structure are not shown in detail in order to avoid unnecessary obscurity of the present invention.

In the following detailed description, for the purpose of explanation, numerous specific details are set forth in order to provide a thorough understanding of the disclosed embodiments. It will be apparent, however that one or more embodiments may be practiced without these specific details. In other instances, well-known structures and devices are schematically shown in order to simplify the drawings.

Although the present invention has been illustrated and described with respect to exemplary embodiment thereof, it should be understood by those skilled in the art that the foregoing and various other changes, omission and additions may be made therein and thereto, without

departing from the spirit and scope of the present invention. Therefore, the present invention should not be understood as limited to the specific embodiment set out above but to include all possible embodiments which can be embodied within a scope encompassed and equivalent thereof with respect to the feature set out in the appended claims.

For instance, while the foregoing discussion has been given for the components placed in the fuselage without specific mention of the location, present invention is applicable for power source and motor mounted bellow the wings or in the cockpit. Needless to say, the configured position of the components are anywhere with the flying craft except for air-input-ports and nozzle output ports which have specific places as mentioned in the description to suite architecture of vehicle. And also it is to mention that motor means AC motor or DC motor or BLDC motor.

According to the present invention Fig 1 articulates the simplified functional and schematic block diagram of the invention "air inhale tunnel conduit jet propulsion apparatus and method for flying craft to generate lifting, traction, drag reduction, thrusting and propulsion.

The apparatus shown in Fig1 comprises air suction/impelling swivel inlet ports components 111 and 112 at fore of the fuselage of flying vehicle, configured to air impeller/compressor components 121 and 122 which are operated by torque generating engine 101 or by motor 161. The developed low pressure at fore of the fuselage generates drag reduction and develops traction.

For clarity sake, fuselage outlines of the vehicle are not shown in Fig 1. Further the apparatus comprises air suction/impelling swivel inlet ports components 113 and 114 on top of the fuselage connected to air compressor components 123 and 124 which are operated by torque generating machine 101 or by motor 161. The developed low pressure at top of the fuselage generates lift, traction and drag reduction.

For simplicity, torque connections, swivel control and control apparatus connections grouped and are shown as component 172. Components 141,142 are compressed air tunnel conduits are disposed between air compressors components 121,122,123,124 and multilevel compressor component 131. Output of the component 131 is connected to high pressure air chamber component 181 through high pressure air tunnel conduit 143.

The Discharge high pressure tunnel conduit component 145 is disposed between the output of the component181 and the discharge control components 125 and 126. The components 125 and 126 releases pressurised air through swivel nozzle components 191 and 192. When the apparatus is operated the Vehicle gets forward thrust because of the fast leaving air.

The Discharge high pressure tunnel conduit component 144 is disposed between the output of the component181 and the discharge control components 127 and 128. The components 127 and 128 pushes pressurised air through swivel nozzle components 193 and

194. When this apparatus is operated the Vehicle gets forward thrust because of the fast leaving air.

Angle and direction of the swivel input ports and nozzle output ports decides direction, lift and forward movement of the vehicle. The Quantity of air sucked and quantity of air released for thrust decides the speed of the vehicle. The 100 represents direction of the inhaled air into air input ports. The 102 represents direction of the diffused air out from air jet-nozzle nozzles.

The torque generating engine component 101 drives alternator component 151. The output of alternator is rectified and used to charge the battery bank component 171. The component 151 includes Alternator, AC to DC rectifier, inverter and flight control apparatus. Flight can be operated by battery power and/or through inverter and compressor motors without the power source from Engine.

Fig. 2 is a prospective view diagram illustrating a preferred embodiment of the apparatus and method of this invention when it is made to function in the Aeroplane shaped fuselage.

All components of Fig 1 are disposed inside and along the body of the aeroplane except suction inlet ports and diffusion nozzles.

The air suction/impelling swivel inlet ports components 201,202,203 at fore of the fuselage and wings of the Aeroplane, connected by means of tunnel conduit component 221 to air compressor components 121, 122,123,124 which are operated by torque generating engine 101 or by motor 161. The developed low pressure at fore of the fuselage and wings, generates traction and drag reduction. The components 201,202 and 203 are shown as one of the possible representation as bunch/group of inlet ports together and this formation is not the limiting factor for actual construction of the Flight. Another configuration of power engine under wings is used to drive impellers and compressors which is not shown as separate diagram for simplicity can be understood by art.

The Discharge high pressure tunnel conduit component 231 is disposed between the output of the component 125,126,127,128 and fixed/swivel nozzle output port components 211,212,213 and 214. The components 125,126,127 and 128 releases pressurised air through fixed/swivel nozzle output port components 211,212,213 and 214. When this apparatus is operated the Vehicle gets forward Lift and thrust because of the fast leaving air. The direction and speed of travel is decided by the angle of the swivel nozzles which are controlled by control component 151. The 200 represents direction of the inhaled air into air input ports. The 210 represents direction of the diffused air out from air jet-nozzle nozzles.

Fig. 3 a prospective view diagram illustrating a preferred embodiment of the apparatus and method of this invention when it is made to function inside the Helicopter shaped fuselage.

All components of Fig 1 are disposed inside and along the body of the helicopter shaped flying vehicle, except suction inlet ports and diffusion nozzles.

The air suction/impelling swivel inlet ports components 302 at fore of the fuselage and 301 on top of the fuselage of the air vehicle, connected by means of tunnel conduit component 321 to air compressor components 121, 122,123,124 which are operated by torque generating engine 101 or by motor 161. The developed low pressure at fore and top of the fuselage, generates traction, lift and drag reduction. The components 301,302 are shown as one of the possible representation as bunch/group of inlet ports together and this formation and location of the power source and motor is not the limiting factor for actual construction of the invention. The Discharge high pressure tunnel conduit component 331 is disposed between the output of the component 125,126,127,128 and swivel nozzle output port components 311,312. The components 125,126,127 and 128 releases pressurised air through swivel nozzle output port components 311,312. When this apparatus is operated the Vehicle gets forward Lift and thrust because of the fast leaving air. The direction and speed of travel is decided by the angle of the swivel nozzles which are controlled by control component 151. The 300 represents direction of the inhaled air into air input ports. The 310 represents direction of the diffused air out from air jet-nozzle nozzles.

Fig. 4 a prospective view diagram illustrating a preferred embodiment of the apparatus and method of this invention when it is made to function inside a Drone shaped vehicle.

All components of Fig 1 are disposed inside and along the body of the drone shaped air vehicle, except suction inlet ports and diffusion nozzles.

The air suction/impelling swivel inlet ports components 401,402,403,404 on top of the wings of the fuselage of the air vehicle, connected by means of air tunnel conduit component 421 to air compressor components 121, 122,123,124 which are operated by torque generating engine 101 or by motor 161. The developed low pressure on top of the vehicle, generates traction, lift and drag reduction. The components 401,402,403,404 are shown as one of the possible representation as funnel, this formation of shape is not the limiting factor for actual construction of the Flight.

The Discharge high pressure tunnel conduit component 431 is disposed between the output of the component 125,126,127,128 and swivel nozzle output port components 411,412,413,414. The components 125,126,127 and 128 releases pressurised air through swivel nozzle output port components 411,412,413,414. When this apparatus is operated the Vehicle gets forward Lift and thrust because of the low pressure on top of vehicle and due to fast leaving air under the vehicle. The direction and speed of travel is decided by the angle of the swivel nozzles which are controlled by control component 151. The 400 represents direction of the inhaled air into air input ports. The 410 represents direction of the diffused air out from air jet-nozzle nozzles.

Number of wings is not the limiting factor, as four wings only shown in this figure for diagrammatic representation only.

Claims

1. An air jet apparatus being mounted in flying craft, comprising:
   at least one air inhale tunnel conduit operably connected to control mechanism;
   at least one air-input port connected to said air inhale tunnel conduit;
   at least one air impeller and/or air compressor disposed inside the said air inhale tunnel conduit;
   at least one power source means configured to supply power to generate torque energy to rotate said air impeller and/or air compressor;
   at least one air-jet nozzle configured to release fast moving air to generate thrust.
2. The air jet apparatus according to claim 1 wherein said air inhale tunnel conduit means having said air-impeller and/or air-compressor configured to inter connect the output of said air input port to the input of said air jet nozzle enabling air flow, thereby providing passage for inhaled air to diffuse through air jet nozzle.
3. The air jet apparatus according to claim 1 wherein said air-input port having an open entry for air inhalation configured at fore and/or top of the fuselage and/or wings and/or arms of flying craft, output of said air-input port is configured with said air inhale tunnel conduit.
4. The air jet apparatus according to claim 1 wherein said air-input port is rigidly fixed and/or swivel-able with respect to flying craft;
5. The air jet apparatus according to claim 1 wherein said air impeller and/or air compressor configured for air flow connectivity with output of air-input port and input of the air jet nozzle, said air impeller and/or compressor is operated by torque energy of the said power source;
6. The air jet apparatus according to claim 1 wherein said power source is adapted to consume combustible fuel, and/or solar power, and/or rechargeable battery power source, said power source delivers torque energy to rotate said air impeller and/or air compressor;
7. The air jet apparatus according to claim 1 wherein air-jet nozzle configured at aft of said fuselage and/or wings and/or arms of the flying craft, said air-jet nozzle is rigidly fixed and/or swivel-able with respect to flying craft.
8. wherein the quantity of the air inhaled in to said air input port and the air diffused out by said jet nozzle is controllably operated by said control mechanism;
9. The air jet apparatus according to claim 1 wherein said control mechanism controllably operates angle and direction of air-input vent and air jet nozzle thereby enables the manoeuvring of the said flying.
10. The air jet apparatus according to claim 1 wherein said air input port at fore of the fuselage and wings and/or arms are configured to inhale the air results creation of

pressure in front of the fuselage and/or wings and/or arms respectively, thereby created pulling force moves flying craft forward;

11. The air jet apparatus according to claim 1 wherein said air inhale tunnel conduit is preferably cylindrical pipe capable of bearing fast moving air;
12. The air jet apparatus according to claim 1 wherein said air inhale tunnel conduit includes high pressure air container means in series configured to hold pressurised air, and operation of said pressurised air through air-jet-nozzle enables thrust for emergency landing in case said power source fails;
13. The air jet apparatus according to claim 1 wherein said control mechanism housed inside the fuselage is configure to regulate the inhaled air through said air-input port and air diffused through said air-jet nozzle results operation and manoeuvring of the flying craft at required speed, altitude, pitch, roll and yaw.
14. The air jet apparatus according to claim 1 wherein said air-input port at top of the fuselage and/or at fore of the wings and/or arms and said air-jet outlet at bottom of the fuselage and/or at aft of wings and/or arms respectively configured in combinational arrangement enables said flying craft to takes-off vertically and to land vertically;
15. The air jet apparatus according to claim 1 wherein air-impeller and/or air compressor is interleaved in between air-input port and air jet nozzle.
16. A method for operating an air jet apparatus being mounted inside and/or along flying craft, comprising:

    at least one air inhale tunnel conduit operably connected to control mechanism;

    at least one air-input port connected to said air inhale tunnel conduit;

    at least one air impeller and/or air compressor disposed inside the said air inhale tunnel conduit;

    at least one power source means configured to supply power to generate torque energy to rotate said air impeller and/or air compressor;

    at least one air-jet nozzle configured to release fast moving air to generate thrust.

    comprising steps of:

a. creation of low pressure at fore of the fuselage and wings and/or arms by means of operating said impeller and/or said compressor thereby the said low pressure minimises the drag caused due to wind attack on said fuselage during cruise of flying craft and generates pulling force;
b. energising said inhaled air by kinetic and potential energy by means of operation of said impeller and said compressor thereafter filling and delivering continuously said energised air to said air inhale tunnel conduit;
c. Diffusing the said energised air through said air-jet outlet thereby enabling thrust for forward motion of the said flying craft.

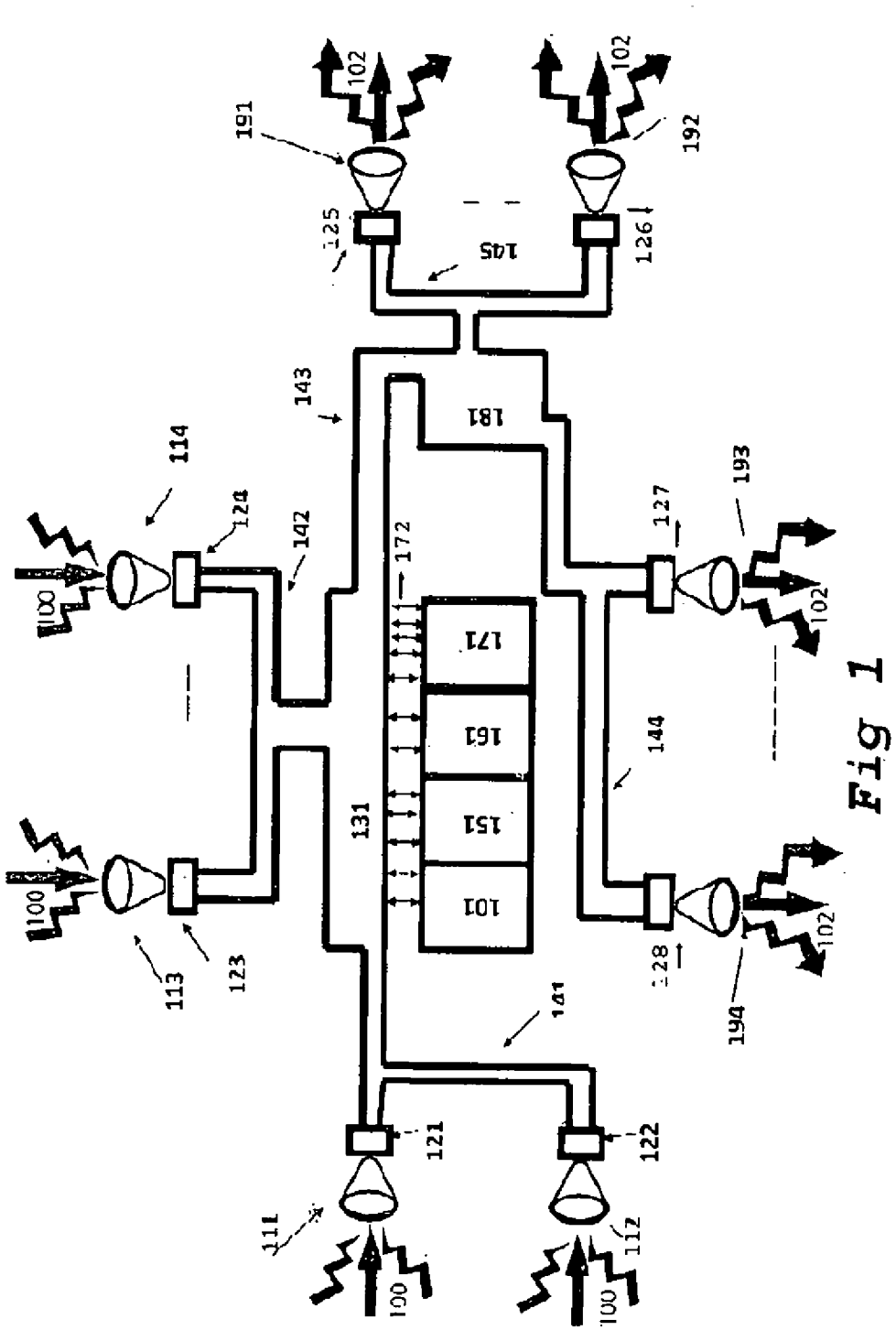

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Fig 1

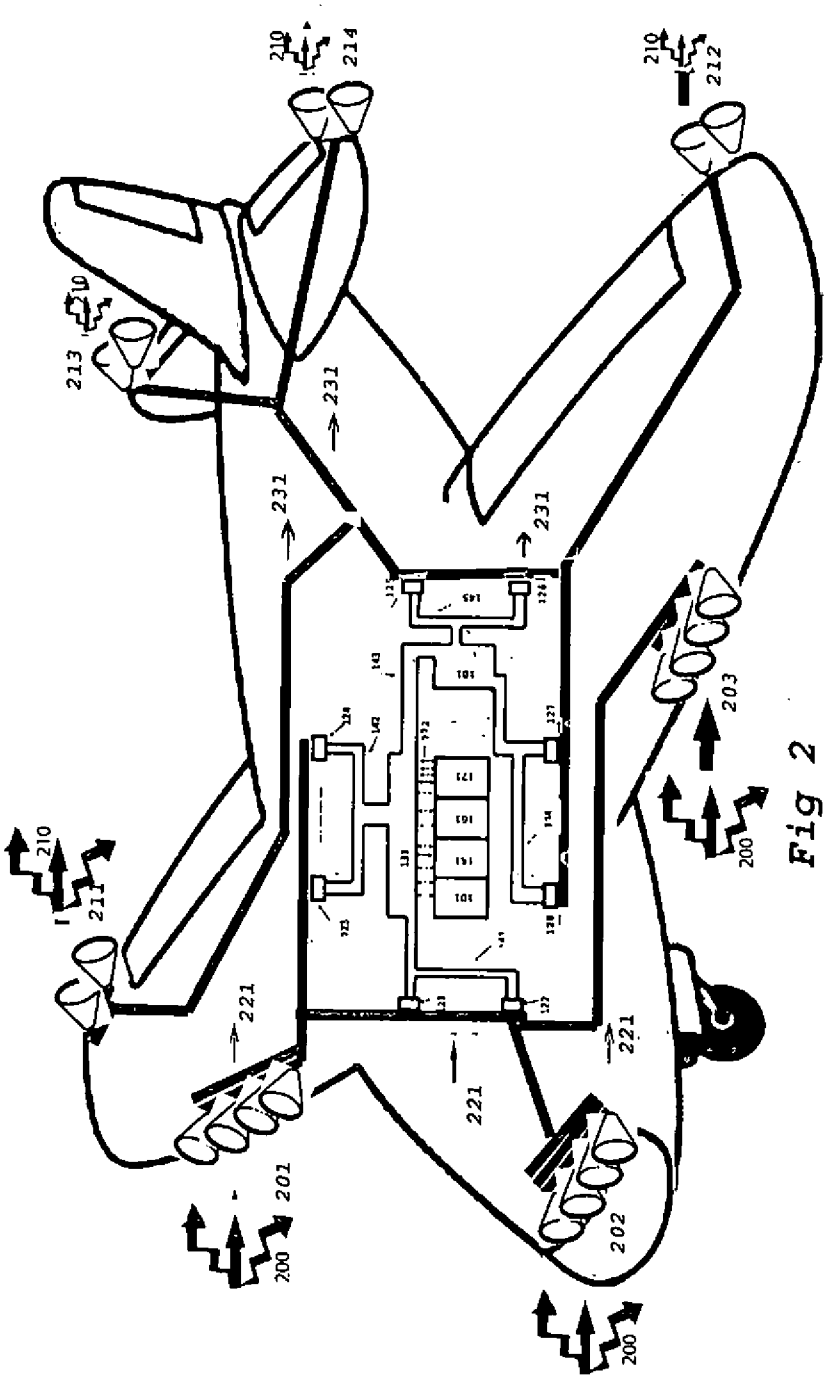

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Fig 2

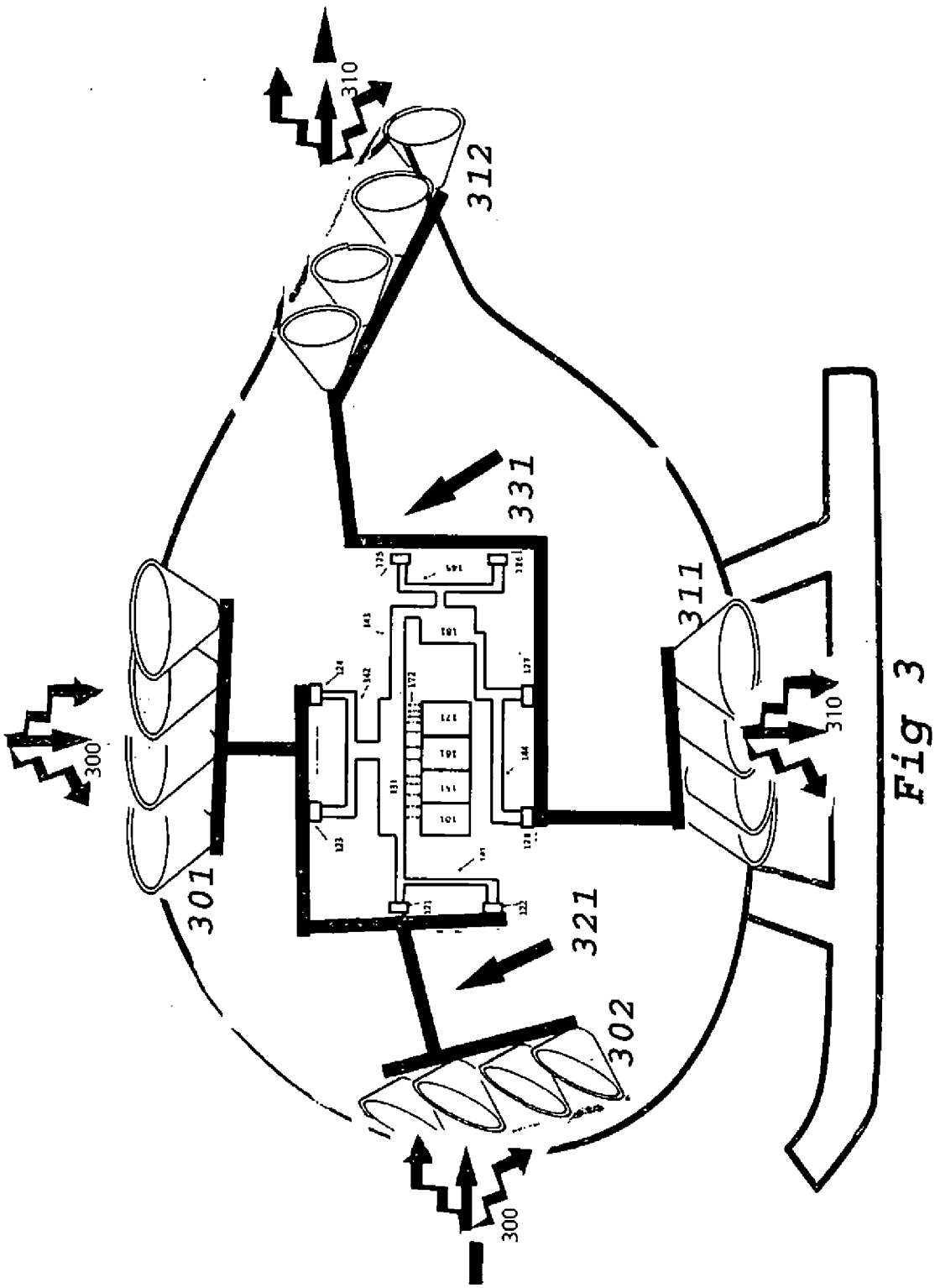


Fig 3

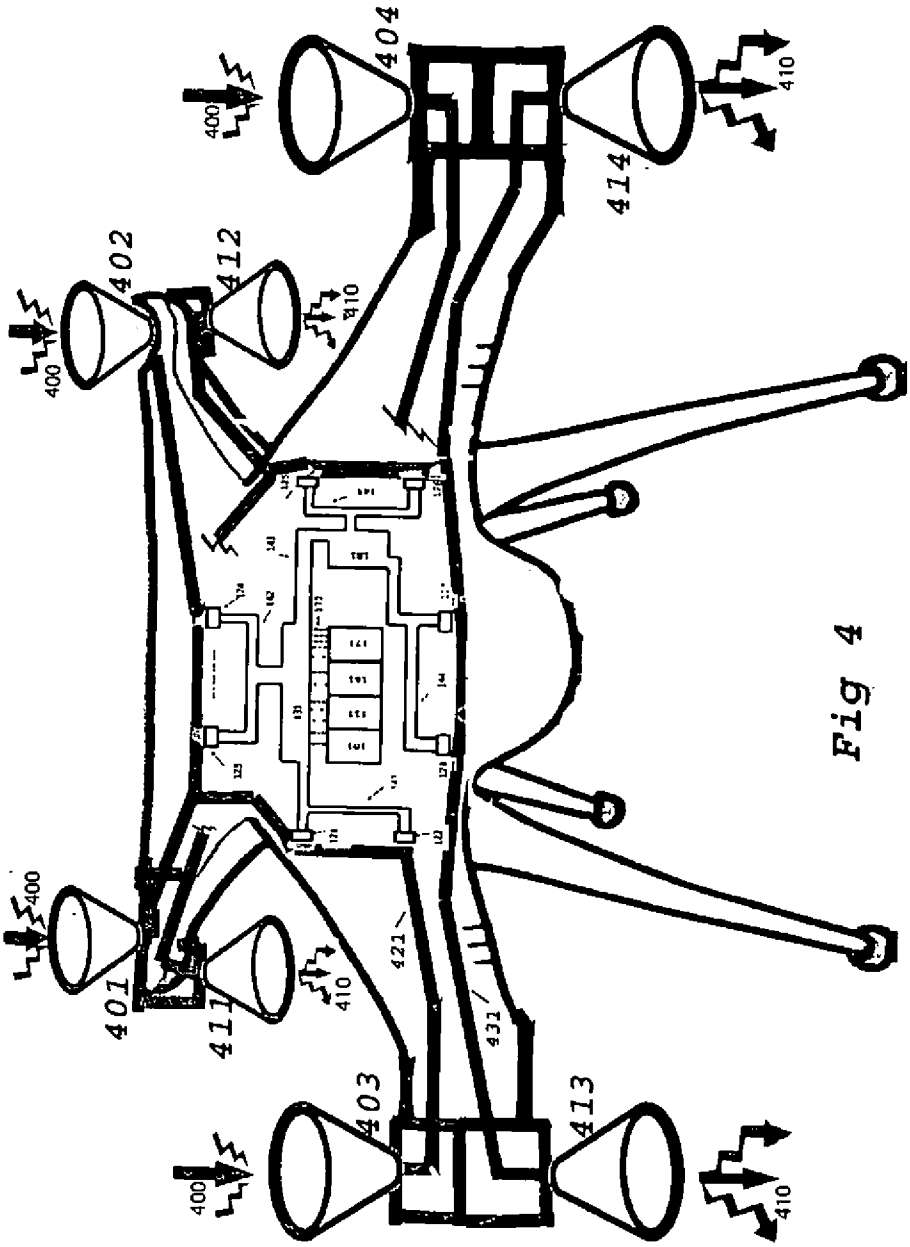


Fig 4

INTERNATIONAL SEARCH REPORT

International application No.
PCT/IN2018/000050

A. CLASSIFICATION OF SUBJECT MATTER
B64C29/00 Version=2019.01

According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)

B64C

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practicable, search terms used)

TotalPatent One, IPO Internal Database,

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	US3191886A (BRISTOL SIDDELEY ENGINES LTD) 29-06-1965 (29 Jun 1965); column 1, lines 23-24, lines 42-51; column 3, lines 24-32; column 6, lines 1-8; column 7, lines 64-71; column 8, lines 51-52;	1-3, 5-7,9,11,13-16
Y	Fig 1;	4, 12
Y	WO2017151029A1 (WANG, LIFRNG) 08-09-2017 (08 Sept 2017); Claim 1,9;	12
Y	US6918244B2 (Dickau, John Eugene) 19-07-2005 (19 July 2005) Column 7, line 22 - line 39;	4

☐ Further documents are listed in the continuation of Box C. ☒ See patent family annex.

* Special categories of cited documents:
"A" document defining the general state of the art which is not considered to be of particular relevance
"E" earlier application or patent but published on or after the international filing date
"L" document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified)
"O" document referring to an oral disclosure, use, exhibition or other means
"P" document published prior to the international filing date but later than the priority date claimed
"T" later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention
"X" document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone
"Y" document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art
"&" document member of the same patent family

Date of the actual completion of the international search	Date of mailing of the international search report
28-02-2019	28-02-2019
Name and mailing address of the ISA/ Indian Patent Office Plot No.32, Sector 14,Dwarka,New Delhi-110075 Facsimile No.	Authorized officer Dharmendra Pal Telephone No. +91-1125300200

INTERNATIONAL SEARCH REPORT

International application No.
PCT/IN2018/000050

Box No. II Observations where certain claims were found unsearchable (Continuation of item 2 of first sheet)

This international search report has not been established in respect of certain claims under Article 17(2)(a) for the following reasons:

1. ☐ Claims Nos.:
because they relate to subject matter not required to be searched by this Authority, namely:

2. ☐ Claims Nos.:
because they relate to parts of the international application that do not comply with the prescribed requirements to such an extent that no meaningful international search can be carried out, specifically:

3. ☒ Claims Nos.: 8,10
because they are dependent claims and are not drafted in accordance with the second and third sentences of Rule 6.4(a).

Box No. III Observations where unity of invention is lacking (Continuation of item 3 of first sheet)

This International Searching Authority found multiple inventions in this international application, as follows:

1. ☐ As all required additional search fees were timely paid by the applicant, this international search report covers all searchable claims.

2. ☐ As all searchable claims could be searched without effort justifying additional fees, this Authority did not invite payment of additional fees.

3. ☐ As only some of the required additional search fees were timely paid by the applicant, this international search report covers only those claims for which fees were paid, specifically claims Nos.:

4. ☐ No required additional search fees were timely paid by the applicant. Consequently, this international search report is restricted to the invention first mentioned in the claims; it is covered by claims Nos.:

Remark on Protest

☐ The additional search fees were accompanied by the applicant's protest and, where applicable, the payment of a protest fee.

☐ The additional search fees were accompanied by the applicant's protest but the applicable protest fee was not paid within the time limit specified in the invitation.

☐ No protest accompanied the payment of additional search fees.

INTERNATIONAL SEARCH REPORT
Information on patent family members

International application No.
PCT/IN2018/000050

Citation	Pub.Date	Family	Pub.Date
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WO 2017151029 A1	08-09-2017	CN 205559070 U	07-09-2016
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