

PATENT SPECIFICATION

DRAWINGS ATTACHED

830,816



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COMPLETE SPECIFICATION

Improvements relating to the Propulsion of Vehicles.

I, MAURICE GÉRARD LOUIS MARIE JOSEPH DE SAN, a subject of the King of the Belgians, of BP 164-Goma, à Luboga, Territoire de Rutshuru, Kivu, Belgian Congo, do hereby declare the invention, for which I pray that a patent may be granted to me, and the method by which it is to be performed, to be particularly described in and by the following statement:—

Case No. 3717

This invention relates to aircraft and other vehicles, and concerns especially methods and apparatus for their propulsion.

The vehicle according to the invention comprises a solenoid or one or more closed circuits, (which may, but need not, be circular), for example a large metal ring, adapted to be maintained in a supra-conductive state and to be traversed by a powerful electric current so as to produce a magnetic field, means to ionize the region about the vehicle (assuming this region is not normally conductive), and means to pass electric current through said region.

The current which passes in the conductive region about the vehicle experiences in the magnetic field of the solenoid or of said circuits, a reaction force at right angles to the plane containing the lines of magnetic force and the direction of the current, as is well known; the direction in which this force acts depends on the direction of the current and of the magnetic field, and is governed by a well-known law of magnetism.

The ions which by their motion transmit the current are subjected to a force due to the magnetic field (as has been mentioned above) and impart their consequent acceleration to the molecules of said region by reason of the continual collisions in the course of thermal movement. The reaction to this force on the ions is transmitted to the vehicle through the magnetic field and causes it to move in the opposite direction.

The exciting circuit or circuits are thermally

insulated and maintained at the very low temperature required to bring them to the above-mentioned supra-conductive state. The cooling necessary to compensate the heat received from the exterior may be effected by circulating a liquified gas such as helium and allowing it to evaporate, possibly at reduced pressure.

The solenoid or exciting circuit or circuits carrying the powerful current setting up the magnetic field will be subject to disruptive mechanical forces due to the forces set up by the current and the magnetic field.

The accompanying drawings show by way of example and not of limitation, one embodiment of the invention, where the invention is applied to an aircraft. In the drawings:—

Figure 1 is a side view of the aircraft;

Figure 2 is a section on the line A—B (Figure 3), and

Figure 3 is a plan of the aircraft.

The reference numerals are applied in the drawing as follows:—

1, the lines of force of the magnetic field.

2, the current path.

3, a highly conductive exciting circuit in the form of a ring.

4, the electrodes, forming the points at which the current leaves and arrives respectively.

5, the path of ionizing electrons in the magnetic field.

6, the source of ionizing electrons.

7, the direction of travel of the vehicle.

8, the exterior surface of the aircraft.

The aircraft is caused to move by the reaction on the field set up by the supra-conductive exciting circuit by the ions of the air ionized at 5 which travel between the two electrodes 4 along the current paths indicated at 2, the direction depending on the sign of the ions. These ions are accelerated in the opposite direction to the thrust upon the aircraft and meet a very large number

of air molecules to which they transmit their accelerations. Thus a considerable mass of air is affected and accelerated in the opposite direction to that of the movement of the aircraft and a good propulsive effect is obtained. The necessary current can be produced by means of well-known kind, or can be electrically charged particles emitted by radioactive bodies.

The ionization of the air can be effected in various ways; for example by an electron source 6 located as shown in Figures 1 and 3, where the magnetic lines of force leave the apparatus forwardly thereof. As is known, the electrons will tend to follow the lines of force and "wind up" around them. They will thus ionize the air on their lines of motion forwardly of the aircraft.

The electron source can be a heated metal surface held at high negative potential. A source of ultra-violet radiation can also be used, as well as the particle-emission of radioactive bodies.

One possible consequence of the method of propulsion outlined above is the avoidance of the supersonic speed shock wave. Air ahead of the aircraft, which is ionized, and therefore conductive, enters the magnetic field at high speed and the ions in such air are accelerated perpendicularly to the lines of force of the field and to the line of movement (the direction depending on the sign of the ions). Thus an electric circuit is produced which is closed in the ionized air.

Ahead of the supra-conductive circuit or of such circuits the lines of force of the magnetic field lie in one direction; directly above such circuit or circuits the lines of force lie in the opposite direction; thus the currents induced at those positions are opposite in direction. A circuit is accordingly established and current will flow. Since this current came about as a result of the movement of a conductor in a magnetic field it will oppose such relative movement and thereby exert a rearward force on the conductive air and thus a forward force (*i.e.* a force in the direction of the arrow 7) on the vehicle. By this rearward force on the air the friction upon the exposed surfaces of the aircraft will be reduced as will also the compression of the air forward of the aircraft.

The aircraft can be steered by varying the relation between the current above and below the aircraft, the greater current giving rise to greater thrust: by such means a couple is obtained acting to turn the aircraft in the vertical plane. Lateral forces can be obtained in the same way by setting the current at an angle to the direction of movement of the aircraft, for example by the use

of poles which are asymmetrical in relation to the longitudinal axis of the aircraft. The oblique thrust thus obtained gives a resultant lateral force which progressively alters the direction of movement of the aircraft.

With a vessel floating or submerged in water the method of propulsion described above occurs without alteration, with the sole difference that the surroundings of the vessel will not require to be ionized because of the ions due to the various dissolved salts, which exist to a sufficient extent even in rivers and lakes.

With a surface vessel the water will doubtless serve for propulsion to the exclusion of the air.

WHAT I CLAIM IS:

1. A vehicle comprising a solenoid or one or more closed exciting circuits (which may, but need not, be circular) for example a large metal ring, maintained in a supra-conductive state and traversed by a powerful electric current so as to set up a magnetic field, means to ionize the fluid surrounding the vehicle (said means being present only if the fluid is not ordinarily in ionized condition) and means to pass electric current through said surrounding fluid, whereby the vehicle is propelled due to reaction between the last mentioned electric current and said magnetic field.

2. A vehicle as claimed in Claim 1, wherein said solenoid or exciting circuit or circuits is/are adapted to cause a rearward force on the fluid forwardly of the vehicle by induction of current therein, and thus a forward force on the vehicle.

3. A vehicle as claimed in Claim 1 or in Claim 2, having an exciting circuit or circuits which is/are adapted to steer the vehicle in the plane perpendicular to the circuit(s) by causing asymmetry between the circuits in the surrounding fluid above and below the circuit(s).

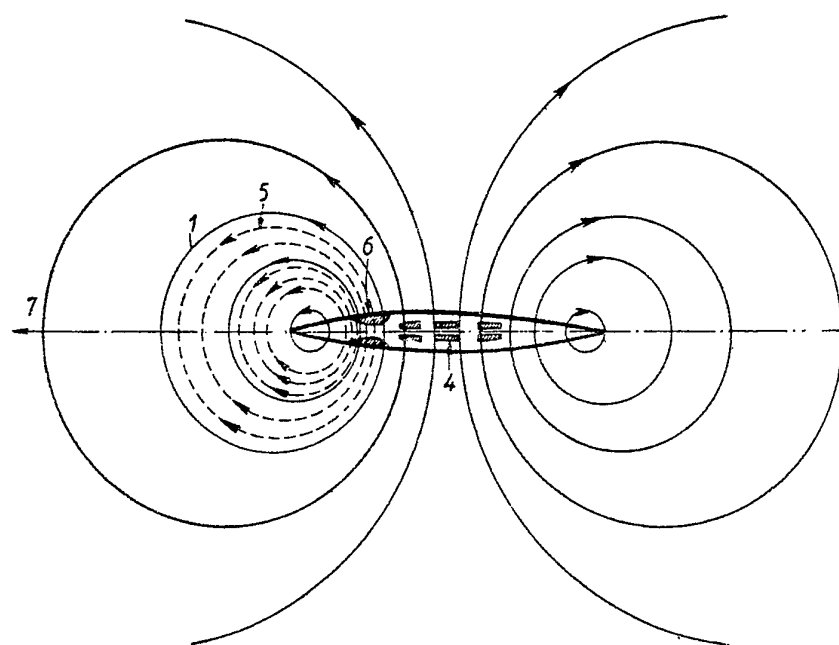
4. A vehicle as claimed in any of Claims 1 to 3, having an exciting circuit or circuits which is/are adapted to steer the vehicle in the plane of said circuit(s) by displacement of the points of entry and departure of the circuit in the surrounding fluid.

5. A vehicle as claimed in any of the preceding Claims, the vehicle being an aircraft.

6. An aircraft arranged to be propelled as herein described with reference to the accompanying drawings.

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FIG. 1.



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2 SHEETS

This drawing is a reproduction of
the Original on a reduced scale.

SHEETS 1 & 2

FIG. 2.

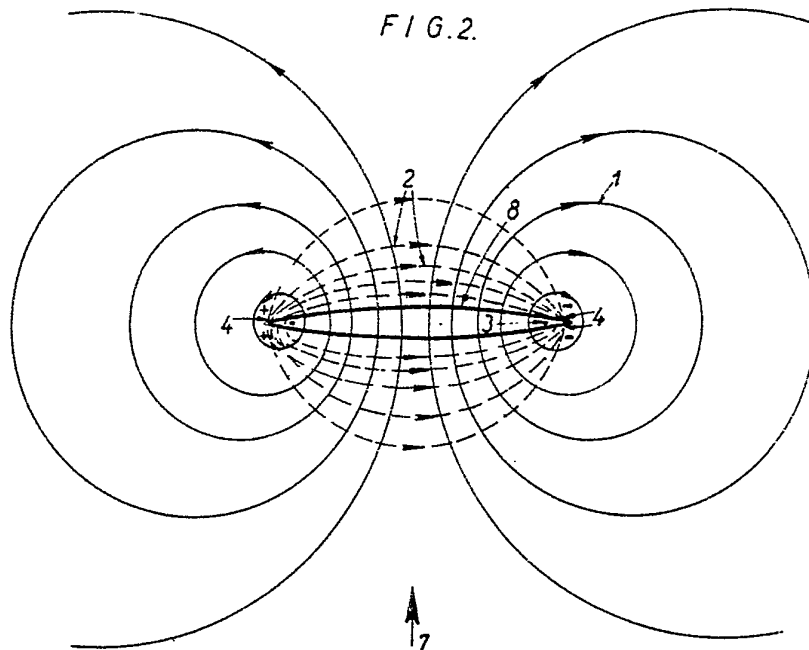


FIG. 3.

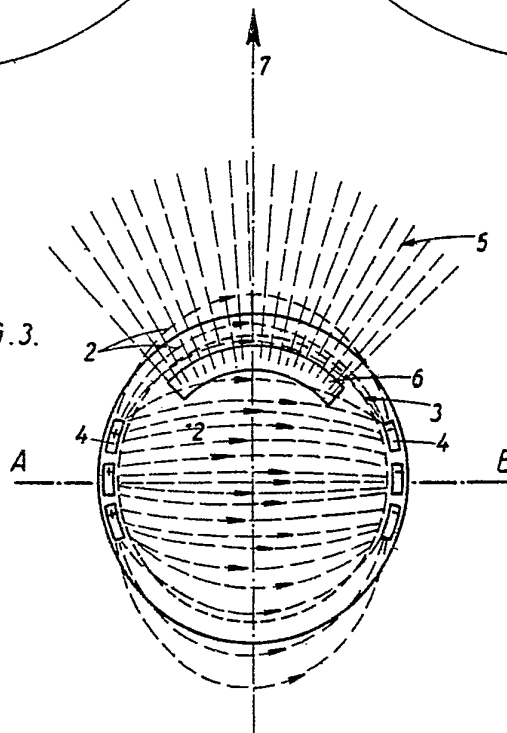


FIG. 1.

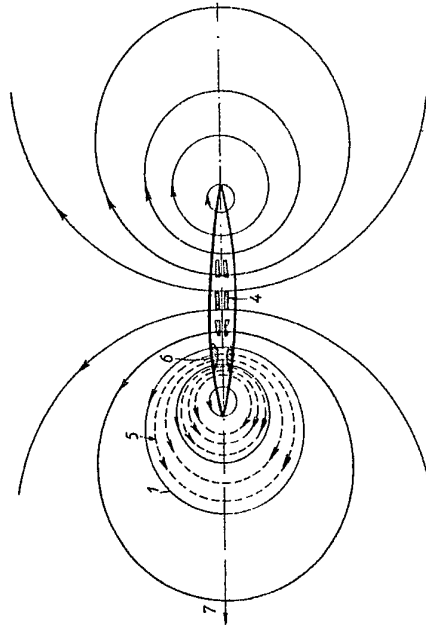


FIG. 2.

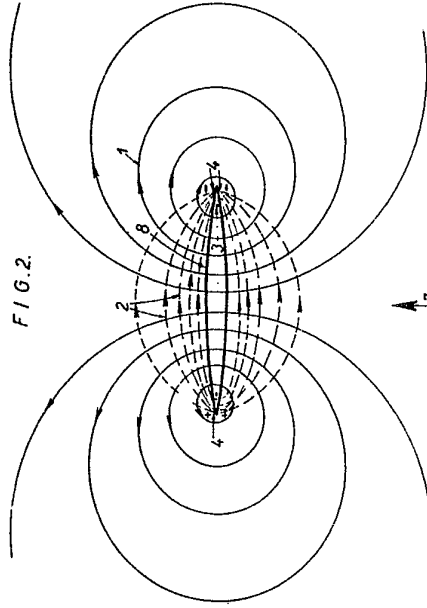


FIG. 3.

