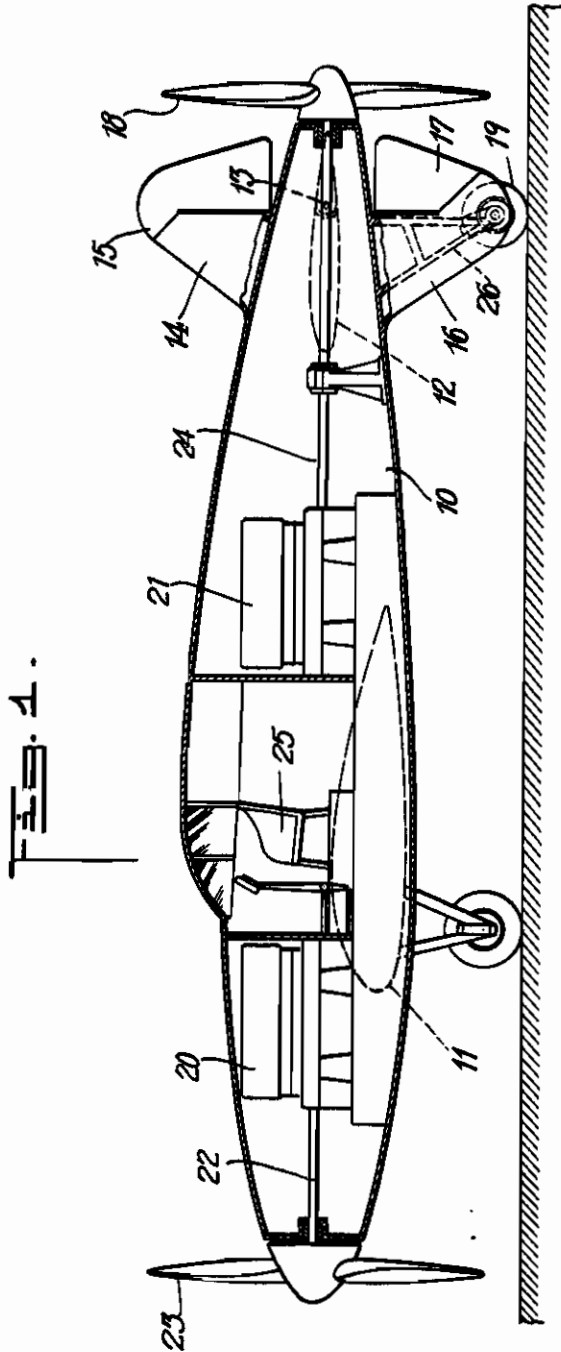


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MULTIMOTOR AIRPLANE  
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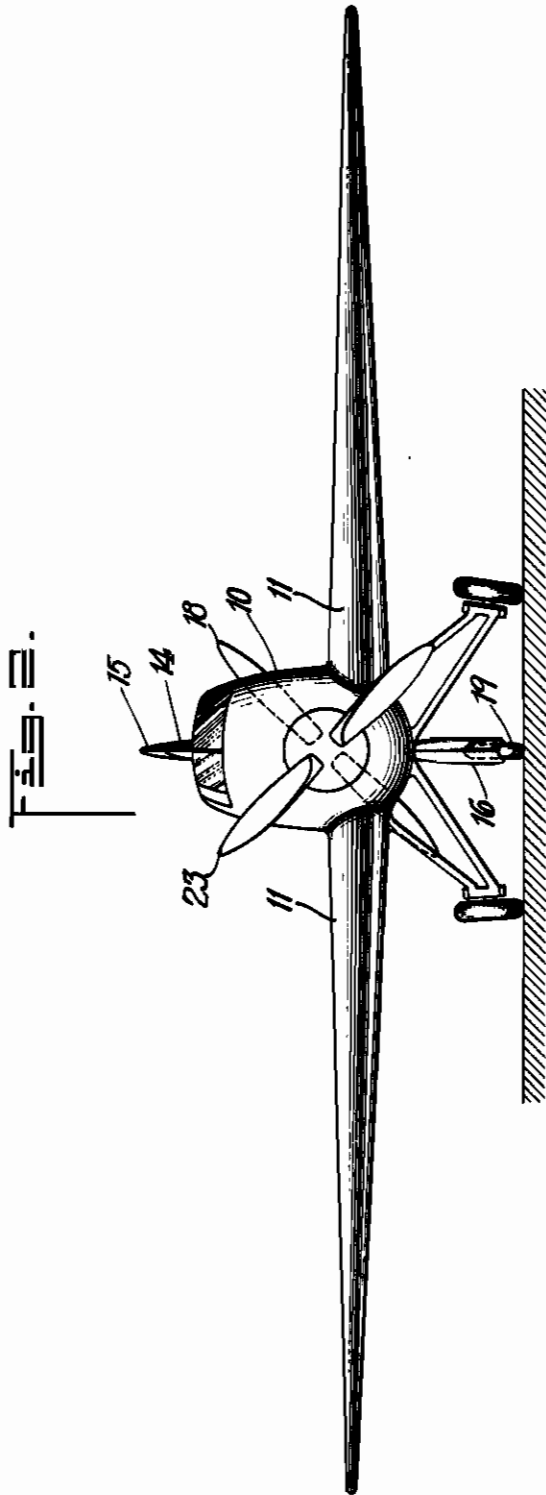


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# ALIEN PROPERTY CUSTODIAN

## MULTIMOTOR AIRPLANE

Claude Dornier, Friedrichshafen A. B., Germany;  
vested in the Alien Property Custodian

Application filed September 27, 1938

The present invention relates to arrangement of motors and propellers in airplanes, more particularly to the location of said motors and propellers with respect to the fuselage and tail unit.

The arrangement of a plurality of powerful motors in high speed airplanes in which the specific wing pressure is very high represents a difficult problem to the airplane designer. It is desirable to reduce the support surfaces and particularly the width of the plane as much as possible. With the conventional method of mounting the motors on both sides of the fuselage the face of the fuselage and motor gondolas takes a considerable part of the total front face of the plane and makes a wide span necessary. This conventional arrangement causes considerable air resistance and also disturbance of air flow in the space between fuselage and motor gondolas.

It is an object of the present invention to provide a design for airplanes which has at least two powerful motors but in which there are no obstructions to air flow on the side of the fuselage and in which the wing span is relatively small. The present invention relates particularly to the design of an airplane having best aerodynamic conditions in spite of the provision of two powerful motors whereby bulky and heavy power transmissions which also cause reduction of power efficiency and the development of undesired torsional moments which development is usually connected with the provision of high power motors are completely eliminated.

It is an object of the present invention to provide an airplane having a fuselage to which the wings are connected and the rear end of which is adapted to carry the tail unit, said airplane being equipped with two powerful motors which are arranged behind one another in said fuselage, the forward motor driving a pull propeller and the rearward motor driving a push propeller the axis of rotation of which coincides substantially with the longitudinal axis of said fuselage.

It is known to place, in the airplane fuselage, two motors behind one another in so called tandem arrangement. In the conventional constructions, however, both motors drive two adjacent propellers which are disposed at the forward end of the fuselage or they both operate one propeller only. It is also known to arrange, in motor gondolas which are not used at the same time for carrying a tail unit, two motors in tandem arrangement of which the forward motor drives a pull propeller and the rear motor a push propeller. Airplane constructions are also known in which a propeller is arranged at

the rear part of the fuselage either in the rear or in front of the tail unit whereby the bearing for the push propeller is embedded in the surface of the fuselage or surrounds the fuselage; this type of construction, whereby the heavy motor is comparatively close to the rear end of the fuselage, has not produced desirable results because the center of gravity is too far rearward.

An object of the present invention is to provide in the fuselage of an airplane a forward motor driving a pulling propeller and a rear motor driving a push propeller. With this arrangement weight and moment of torsion can be so equalized that a most satisfactory airplane operation is obtained.

Further and other objects of the present invention will be hereinafter set forth in the accompanying specification and shown in the drawings which, by way of illustration, show what I now consider to be a preferred embodiment of my invention.

In the drawings:

Figure 1 is a diagrammatic longitudinal sectional view of a fuselage of an airplane according to the present invention.

Figure 2 is a diagrammatic front view of a multimotor airplane according to the present invention.

Like numerals designate like parts in all figures of the drawing.

Referring more particularly to Figures 1 and 2 of the drawings, 10 designates the body or fuselage of the airplane to which the wings 11 and the tail unit comprising conventional elevator fins 12 with elevator rudders 13 fulcrumed thereto are connected. There are, however, two rudder units, an upper vertical stabilizer 14 with rudder 15 linked thereto and a lower stabilizer 16 with rudder 17 linked thereto. The pushing propeller 18 located at the stern of the fuselage necessitates this rudder arrangement whereby stabilizer 16 forms a suitable casing for the support 26 of the tail skid wheel 19 which in airplanes according to the present invention is farther away from the fuselage than usual. Two motors 20 and 21 of substantially equal weight and power are disposed in the interior of the fuselage 10. The shafts 22 and 24 and propellers 23 and 16 connected thereto revolve in opposite directions so that the torsional moments are counterbalanced. The seat 25 of the operator is preferably arranged between the two motors 20 and 21. Ample space is provided between the motors for the crew and instruments.

The power transmission from the motors to the

propellers 23 and 18 is mechanical by means of the shafts 22 and 24 respectively in the embodiment of my invention illustrated; other arrangements, for example, a pneumatic power transmission can be used whereby the motor drives a blower and the propellers are driven by reaction forces.

In large airplanes I may use a plurality of bodies built along the principles as shown in Fig. 1 and carrying wings and tail units.

5 While I believe the above described embodiments of my invention to be preferred embodiments, I wish it to be understood that I do not desire to be limited to the exact details of design and construction shown and described, for obvious modifications will occur to a person skilled in the art.

CLAUDE DORNIER.