

D., B. & L. KOHNKE.
AEROPLANE.
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1,052,003.

Patented Feb. 4, 1913.

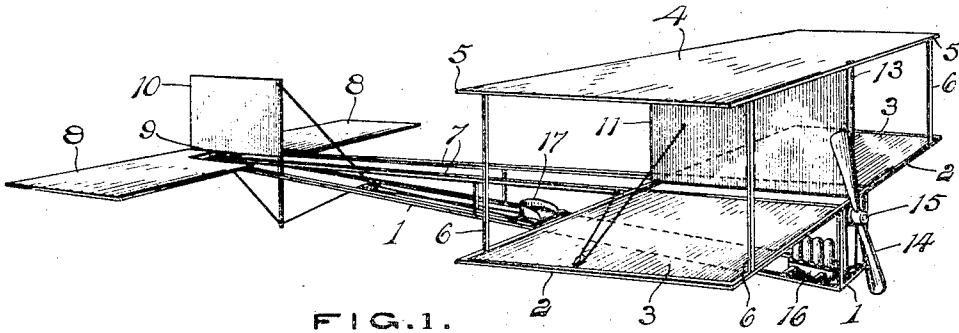


FIG. 1.

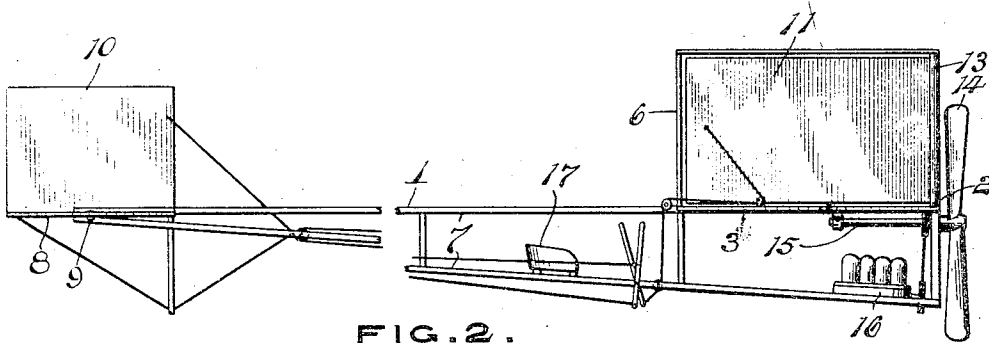


FIG. 2.

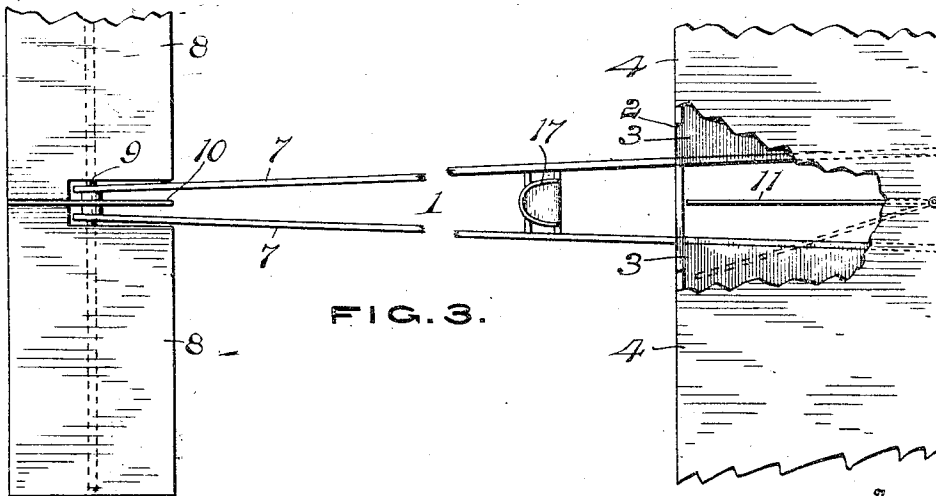


FIG. 3.

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AEROPLANE.

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Specification of Letters Patent.

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To all whom it may concern:

Be it known that we, DAVID KOHNKE, BENJAMIN KOHNKE, and LOUIS KOHNKE, citizens of the United States of America, residing at Detroit, in the county of Wayne and State of Michigan, have invented certain new and useful Improvements in Aeroplanes, of which the following is a specification, reference being had therein to the accompanying drawings.

This invention relates to aeroplanes and to a disposition thereof whereby stability and ease of control are obtained with a fewness of parts and working members that increase ease of operation and minimize liability to accidents.

The invention also includes means for shifting the balance of the machine to meet certain conditions of flight.

The invention consists in the matters hereinafter set forth and pointed out in the appended claims.

In the drawings, Figure 1 is a perspective view of a machine embodying the invention; Fig. 2, a side elevation of the same, and Fig. 3, a plan view with parts broken away to show the construction and shorten the figure.

As herein shown a suitably braced and trussed main frame arranged to combine strength with lightness is disposed in the line of flight which the machine is to take and carries a transverse frame 2 near its forward end on which a pair of oppositely disposed lower body planes 3 are arranged with an interval between their inner ends which may be substantially the width of the main frame at this point. An upper body plane 4 is supported on a suitable upper frame 5 in spaced parallel relation to the lower planes 3, suitable struts 6 and the necessary bracing being employed to hold the parts in proper relation.

At the rear end of the main frame whose members 7 preferably converge rearwardly as indicated, a tail plane 8 is tiltably mounted on a transverse member 9 and has suitable connections whereby its forward edge may be raised and lowered for the purpose of raising and depressing the rear of the machine when under flight. Lateral movement of the rear of the machine is opposed by an upright plane 10 that is mounted on the same transverse member 9 as the other

rear plane and is arranged in upright position to tilt therewith as desired.

A rudder plane 11 which also serves as a stability plane, is pivoted centrally between the lower planes 4 and the upper plane 5 on a member 13 that is substantially perpendicular to the latter planes at the forward edge portions thereof so that it swings freely above the opening between the two lower planes. It is to be understood that angular movement and adjustment of this plane is obtained by any suitable rigging, extending to the operator's station.

A propeller 14 at the forward end of the machine is driven by a shaft 15 which is operatively connected to a motor 16 that is mounted on the main frame below the level of the lower main planes. To carry the center of gravity back, the operator's seat 17 is mounted on the main frame between the front and rear planes so that it may be shifted at will of the operator forward or back. The usual accessories for motor control, tilting of the planes and general operation of the machine are of course provided but they do not *per se* form a feature of this invention.

When the machine is in flight the turning of the rudder plane swings the machine laterally as desired. If the machine tends to tilt, this tilting, which is usually accompanied by the swinging of the head of the machine laterally in the direction of inclination, is overcome by shifting the rudder plane in that direction, the resistance at once righting the machine and counteracting the turn. If, for any reason, the motor stops the consequent depression of the head of the machine due to the weight of the motor is counteracted by the shifting of the seat of the operator rearwardly and coincident movement of the tiltable rear frame so that the machine may be made to soar for a long time without aid of the propeller and may be safely brought to earth without injury to the operator. As there are only two movable planes the machine is extremely simple to control and is not liable to accidental disarrangement under flight.

Obviously, changes in the details of construction may be made without departing from the spirit of the invention and we do not care to limit ourselves to any particular form or arrangement of parts.

What we claim is:—

1. In an aeroplane, a main frame disposed in the line of flight of the machine, a transverse frame at the forward end thereof, a pair of lower main planes oppositely disposed on the transverse frame in spaced relation, a main plane above and in parallel relation to the lower main planes, a transverse member oscillatory on the rear end portion of the main frame, a rear plane on the oscillatory member, an upright plane on the oscillatory member parallel to the line of flight of the machine, a stability rudder plane pivotally secured between the upper and lower main planes on an axis substantially intersecting the forward marginal lines thereof, a motor on the main frame adjacent the main planes, an operator's seat longitudinally adjustable on the main frame back of the motor, and means for controlling the movable planes from the operator's seat.

2. In an aeroplane, a main frame disposed in the line of flight of the machine, a transverse frame at the forward end portion thereof, a pair of separated main planes secured on the transverse frame, an upper main plane above the lower pair in substantially parallel relation thereto, a transverse member journaled on the rear portion of the main frame, a rear plane on the transverse member tiltable therewith in and out of parallel relation with the main planes, an upright plane centrally disposed on the transverse member above the rear plane in substantially axial alinement with the main frame, a stability rudder plane pivotally secured at its forward end on the main frame at a point substantially abreast the forward margin of the main planes and in substantially perpendicular relation thereto, a propeller at the forward end of the machine, a motor on the main frame adjacent the main planes for operating the propeller and an operator's seat longitudinally movable on the main frame back of the motor.

3. In an aeroplane, a main frame disposed in the line of flight of the machine having upper and lower side members that converge toward their rear end portions, a transverse frame secured to the forward end portions of the upper side members of the main frame, a pair of lower main planes secured on the transverse member with their inner end portions in separated relation, an

upper main plane secured at an interval above and in substantially parallel relation to the lower main planes, a stability rudder plane pivoted between the upper and lower main planes on an axis substantially perpendicular thereto and near the forward margins thereof, a motor supported on the lower portions of the main frame adjacent the main planes, a propeller at the forward end of the machine driven by the motor in substantial alinement with the space between the lower main plane, an operator's seat longitudinally adjustable on the main frame back of the motor, and a pair of transversely disposed planes on the rear end portion of the frame tiltable on an axis transverse to the main frame and parallel to the main planes.

4. In an aeroplane, a main frame disposed in the line of flight of the machine, a transverse frame secured on the forward end portion thereof, a pair of lower main planes extending from the ends of the transverse frame inwardly toward the main frame, an upper main plane supported on the transverse frame in substantially parallel relation to the lower main frames, a stability rudder plane pivoted on an axis substantially at right angles to the forward marginal portions of the main planes below the upper main plane and above the interval between the lower main planes, a motor on the main frame adjacent the main planes, a propeller driven by the motor on the forward end portion of the main frame, an operator's seat movable longitudinally on the main frame back of the motor, a transverse member pivoted on the rear end portion of the main frame substantially parallel to main planes, a rear plane mounted on the transverse member to tilt in and out of parallel relation with the main planes, an upright plane secured to the rear plane in substantially axial alinement with the main frame, and means for controlling the planes from the operator's seat.

In testimony whereof we affix our signatures in presence of two witnesses.

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Witnesses:

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