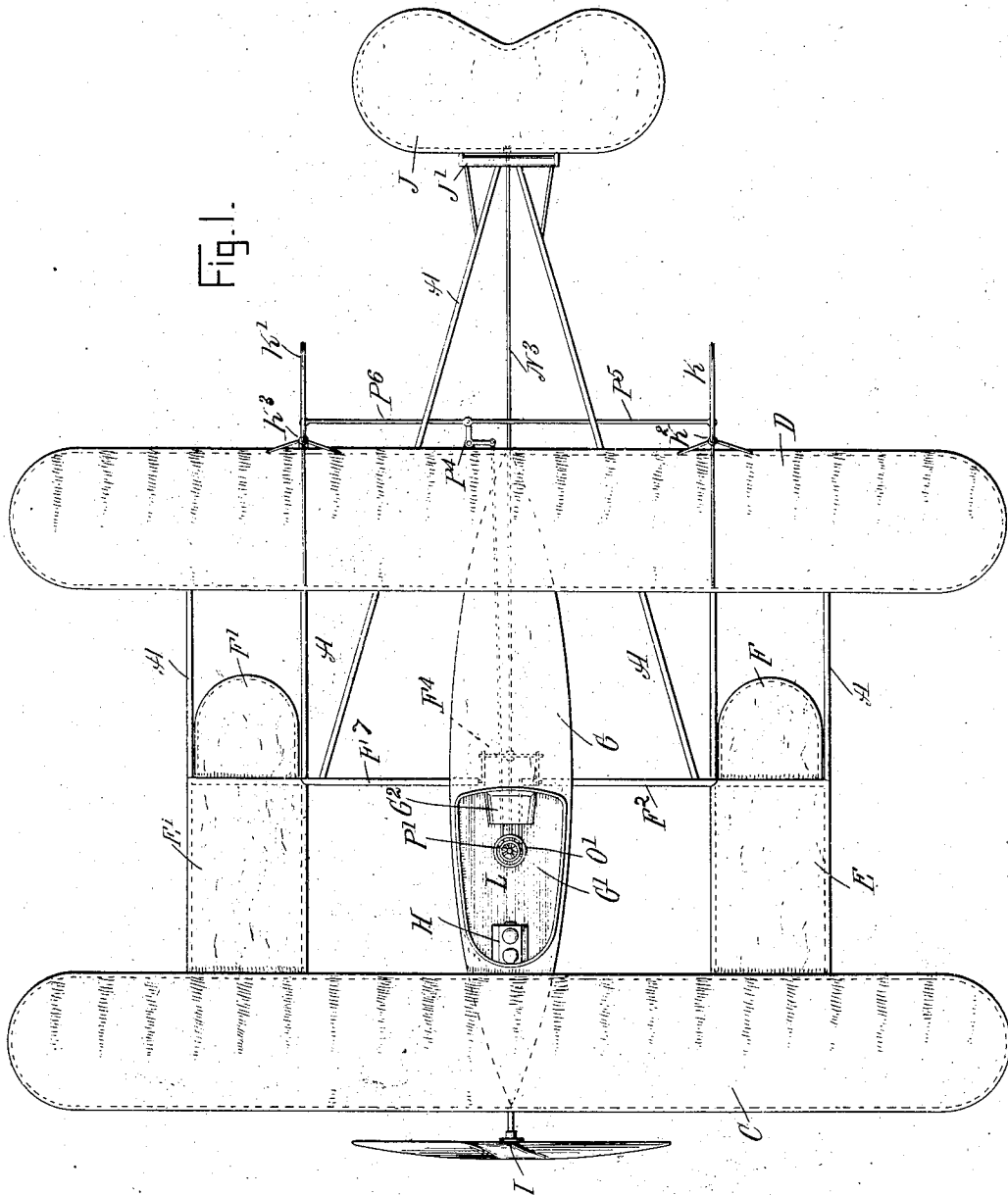


F. C. LAMBERT.
AEROPLANE.
APPLICATION FILED OCT. 16, 1911.

1,024,941.

Patented Apr. 30, 1912.

3 SHEETS—SHEET 1.



WITNESSES

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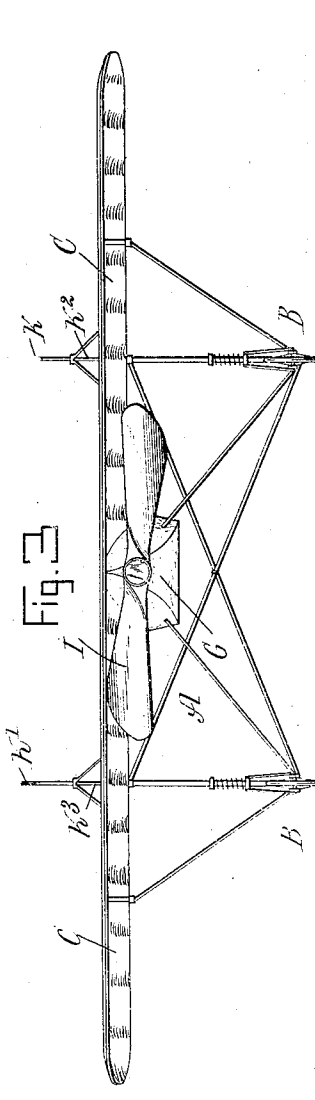
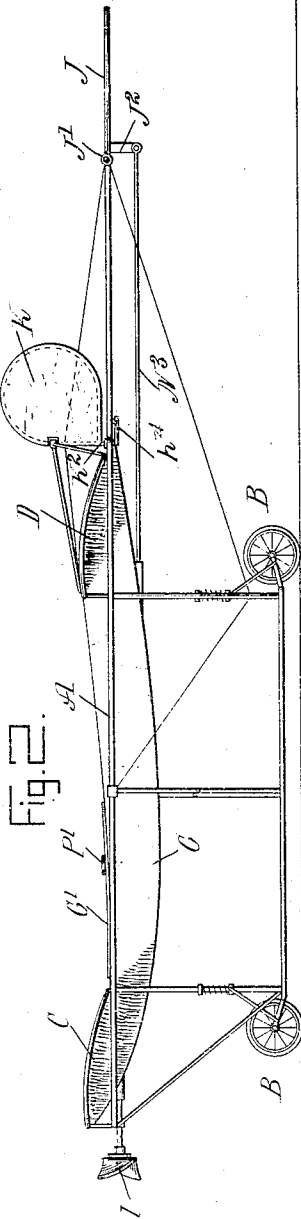
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3 SHEETS—SHEET 2.



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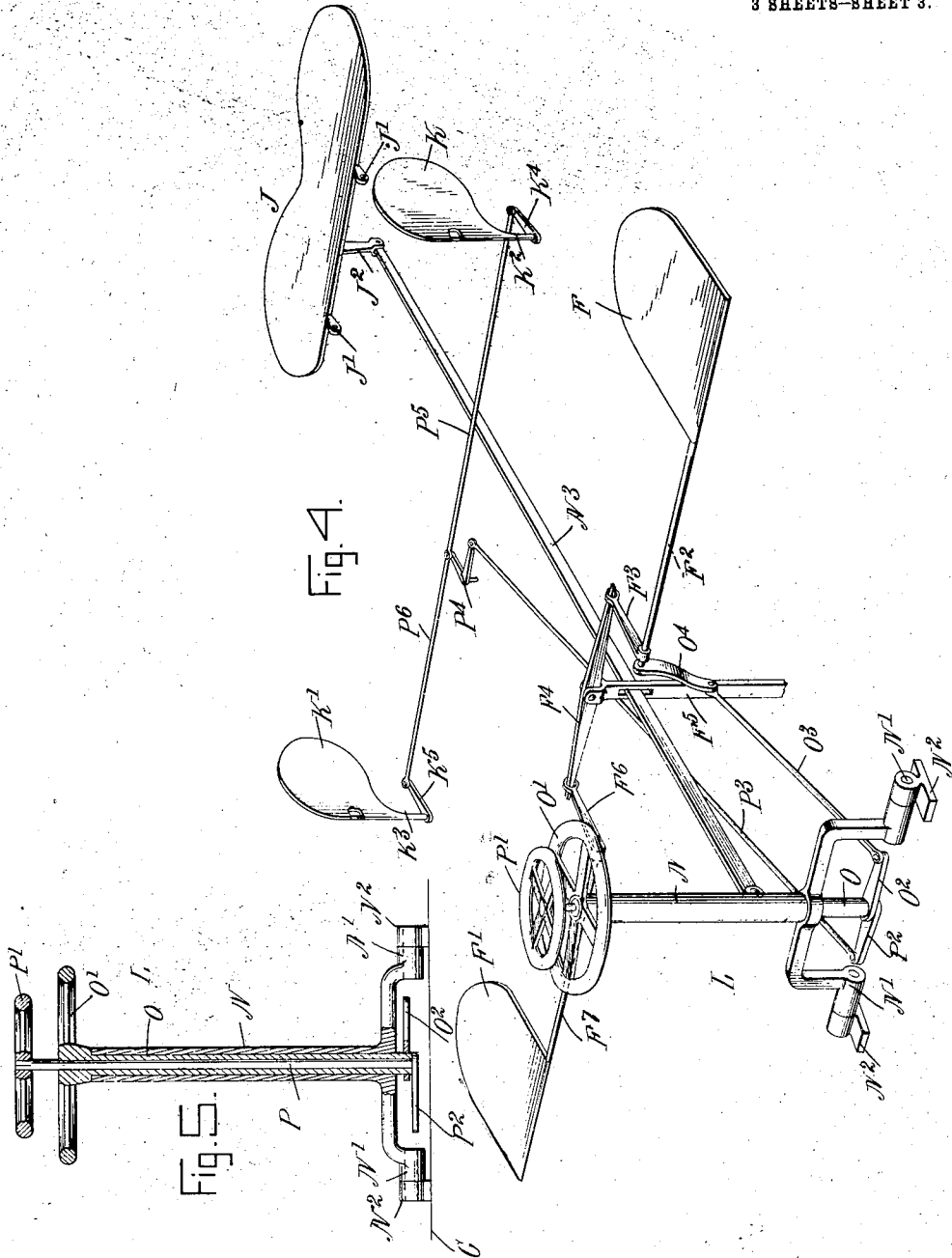
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3 SHEETS—SHEET 3.



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AEROPLANE.

1,024,941.

Specification of Letters Patent.

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To all whom it may concern:

Be it known that I, FREDERICK C. LAMBERT, a citizen of the United States, and a resident of the city of New York, borough of the Bronx, in the county and State of New York, have invented a new and Improved Aeroplane, of which the following is a full, clear, and exact description.

The object of the invention is to provide a new and improved aeroplane, arranged to provide a large sustaining surface for carrying a heavy load, to enable the aviator to readily maintain the equilibrium and thus avoid undue swaying, and to permit easy control of the sidewise steering means and the raising and lowering means. For the purpose mentioned, use is made of a framework carrying front and rear sustaining planes slightly inclined upwardly and forwardly, a basket on the framework, underneath the said plane, for containing the motor, aviator and passengers as well as the actuating mechanism, a propeller on the front end of the framework, a raising and lowering tail plane at the rear end of the framework, sidewise steering rudders, ailerons mounted to swing up and down intermediate the fixed sustaining planes, and actuating means under the control of the aviator for controlling the said tail plane, steering rudders and ailerons.

A practical embodiment of the invention is represented in the accompanying drawings forming a part of this specification, in which similar characters of reference indicate corresponding parts in all the views.

Figure 1 is a plan view of the aeroplane; Fig. 2 is a side elevation of the same; Fig. 3 is a front end elevation of the same; Fig. 4 is a perspective view of the tail plane, steering rudders, ailerons and the actuating mechanism for actuating the said parts; and Fig. 5 is a cross section of the actuating means.

A suitably constructed framework A supports a running base B and front and rear main sustaining planes C and D slightly inclined forwardly and upwardly and spaced apart, as plainly indicated in Figs. 1 and 2. On the framework A is also mounted side sustaining planes E and E' extending rearwardly from the rear edge of the front sustaining plane C to approximately half way the distance between the sustaining planes C and D. Ailerons F and F' are mounted to swing up and down on the framework A

immediately in the rear of the side sustaining planes E and E' to maintain the aeroplane in the desired equilibrium by swinging the ailerons F and F' simultaneously up and down but in opposite directions one relative to the other, as hereinafter more fully described.

The framework A supports at its middle a basket G, preferably in the form of a boat having pointed ends and closed at the bottom, sides and part of the top, to leave a cock pit G' for the aviator and passengers as well as for supporting a motor H for driving a propeller I arranged immediately in front of the forward sustaining plane C. On the rear end of the framework A is pivoted at J' a tail plane J adapted to swing up and down for elevating or lowering the aeroplane when in flight, it being understood that when the tail plane is swung downward from a horizontal position, the aeroplane is directed downwardly, and when the tail plane J is swung upward from a horizontal position the aeroplane is directed upwardly.

On the framework A are mounted vertically-disposed rudders K and K' located equidistantly from the longitudinal center of the aeroplane, and the said rudders K and K' are provided with vertically-disposed shafts K² and K³ journaled in suitable bearings attached to the framework A immediately in the rear of the rear sustaining plane D.

In order to control the ailerons F, F', the tail plane J and the rudders K, K', use is made of an actuating mechanism L arranged in the cock pit G' in front of the aviator's seat G², and the said actuating mechanism L is arranged as follows, special reference being had to Figs. 4 and 5: A hollow post N is provided at its lower end with transversely extending trunnions N' journaled in suitable bearings N² attached to the bottom of the cock pit G'. A link N³ extending longitudinally is pivotally connected at its forward end to the post N, and at its rear end the said link N³ is pivotally connected with an arm J² depending from the pivotal end of the tail plane J so that when the post N is swung forward or backward, a downward or upward swinging motion is given to the tail plane J.

Within the hollow post N is mounted to turn a hollow spindle O provided on its upper end with a hand wheel O' under the con-

trol of the aviator, and on the lower end of the said spindle O is secured a sidewise-extending arm O² pivotally connected by a rearwardly-extending link O³ with an arm O⁴ secured on the shaft F² carrying the aileron F.

On the shaft F² is secured a rearwardly-extending horizontal arm F³ pivotally connected with one end of a lever F⁴ fulcrumed at its middle on a bracket F⁵ held in the basket G, and the other end of the lever F⁴ is pivotally connected with an arm F⁶ secured to the shaft F⁷ of the aileron F'. When the aviator turns the hand wheel O' then the mechanism described imparts a simultaneous turning motion to the shafts F² and F⁷ to swing the ailerons F and F' simultaneously downward or upward but in opposite directions one relative to the other. Thus when the wheel O' is in one direction the aileron F swings upward while the aileron F' swings downward. When the wind tends to swing, say, the right-hand side of the aeroplane downward and the left-hand side upward, then the aviator turns the hand wheel O' so that aileron F swings downward while the aileron F' swings upward, to cause the aeroplane to maintain its equilibrium in a sidewise direction; and in a like manner when the wind tends to move the aeroplane downward at the left-hand side and upward at the right-hand side; then the hand wheel O' is turned in a reverse direction to swing the aileron F' downward and the aileron F upward.

Within the spindle O is mounted to turn a shaft P carrying at its upper end a hand wheel P' located slightly above the hand wheel O' so as to be within convenient reach of the aviator. On the lower end of the shaft P is secured a sidewise-extending arm P² connected by a rearwardly-extending link P³ with a bell crank lever P⁴ fulcrumed on the framework A, and pivotally connected by transverse links P⁵, P⁶ with arms K⁴, K⁵ secured on the lower ends of the shafts K² and K³ of the rudders K and K'. When the operator turns the hand wheel P' then a sidewise swinging movement is given simultaneously to the rudders K, K' in the same direction to steer the aeroplane to the right or to the left according to the direction in which the hand wheel P' is turned.

From the foregoing it will be seen that the actuating mechanism L is within convenient reach of the aviator seated on the seat G², it being understood that on rocking the post N forward or backward the tail plane J is swung up or down for lowering or raising purposes, and on turning the hand wheel O' the ailerons F and F' are swung simultaneously up or down in opposite directions for maintaining an equilibrium, and on turning the hand wheel P' the rudders K, K' are simultaneously turned to the right or left

to steer the aeroplane in the desired direction.

By constructing the aeroplane with front and rear sustaining planes C and D and the side sustaining planes E and E', a large sustaining surface is provided to permit of carrying a heavy load, and by constructing the basket G in the manner described comparatively little resistance is offered by the basket to the air, at the same time the aviator and passengers are protected and the basket increases the sustaining area of the aeroplane. By slightly inclining the sustaining planes C and D in a forward and upward direction the aeroplane is not liable to take a header, and surging of the aeroplane is reduced to a minimum.

Having thus described my invention, I claim as new and desire to secure by Letters Patent:

1. An aeroplane, comprising a framework, main sustaining planes fixed on the said framework one in front of the other and each slightly inclined upwardly and forwardly, side sustaining planes fixed on the said framework and extending rearwardly from the front main sustaining plane and terminating at their rear ends between the forward and rear main planes, and movable ailerons at the rear end of the said side sustaining planes.

2. An aeroplane, comprising a framework, main sustaining planes fixed on the said framework one in front of the other and each slightly inclined upwardly and forwardly, side sustaining planes fixed on the said framework and extending between the ends of the said main sustaining planes and in the same plane therewith, and a basket attached to the said framework and extending with its front and rear ends under the said main sustaining planes.

3. An aeroplane, comprising a framework, main sustaining planes fixed on the said framework one in front of the other and each inclined upwardly and forwardly, side sustaining planes fixed on the said framework and extending rearwardly from the front main plane, said side planes being arranged in the same plane with the main planes and having their rear ends terminating at points forwardly of the rear main plane, and a basket attached to the framework and extending between and beneath the forward and rear main planes.

4. An aeroplane, comprising a framework, a front sustaining plane, a rear sustaining plane spaced from the said front sustaining plane, both planes being fixed to the said framework and slightly inclined upwardly and forwardly, side sustaining planes fixed on the framework immediately in the rear of the front sustaining plane and near the outer sides thereof, said side planes extending rearwardly from said front plane and

terminating at points intermediate the front and rear main planes, ailerons mounted to swing up and down on the framework in the rear of the said side sustaining planes and in the spaces between the same and the rear main plane, and manually-controlled means for moving the said ailerons simultaneously and in opposite directions one relative to the other.

5. An aeroplane, comprising a framework, a front sustaining plane, a rear sustaining plane spaced from the said front plane, both planes being fixed to the said framework and slightly inclined upwardly and forwardly, side sustaining planes fixed on the framework immediately in the rear of the front sustaining plane, near the outer sides thereof, and extending rearwardly and terminating at points forwardly of the rear main plane, said side planes being arranged in the same plane with the said main planes, ailerons mounted on the framework to swing in the spaces between the rear ends of said side planes and the said rear main plane, and a basket fixed to the framework and extending between and beneath the main planes.

6. An aeroplane, comprising a framework, stationary main sustaining planes fixed on the framework one in front of the other, stationary side sustaining planes fixed on the said framework intermediate the said main sustaining planes, and in the same plane therewith, horizontal and vertical rudders movably supported on the framework at the rear of the main planes, and means for actuating said rudders.

7. An aeroplane, comprising a framework, sustaining planes carried by the framework, vertical and horizontal rudders movably mounted on the framework, a steering post provided with a lower fork pivotally mounted in the framework, connections between one of the said rudders and an intermediate point on the said steering post, a steering wheel having its shaft extending through and rotatable within the said steering post

and provided with a lateral extension at its lower end, the axis of said lateral extension in its normal position being in line with that of the pivot of said steering post, and connections between said lateral extension and the other of said rudders.

8. An aeroplane, comprising a framework, sustaining planes carried by said framework, vertical and horizontal rudders movably mounted in said framework, ailerons mounted on opposite sides of the framework and movable in relatively opposite directions, a steering post having a forked lower end pivotally mounted in the framework, a connection between one of the rudders and a point intermediate the ends of the steering post, steering wheels having shafts one within the other and both extending through said steering post and provided with lateral extensions at one end projecting in opposite directions and in substantially the same plane with the axis of the pivot of said steering post, connections between one of said lateral extensions and the other of the rudders, and connections between the other lateral extension and the said ailerons.

9. An aeroplane, comprising a framework, sustaining planes carried by the said framework, transverse shafts journaled at opposite sides of the framework, ailerons secured upon the outer ends of said shafts, and normally extending in horizontal planes, angular levers rigidly secured to the inner ends of said shafts, a transverse rocking lever intermediately pivoted in the framework and with the ends of which are pivotally connected the ends of said angular levers, and connections whereby to rock said intermediately pivoted lever and swing the ailerons in oppositely relative directions.

In testimony whereof I have signed my name to this specification in the presence of two subscribing witnesses.

FREDERICK C. LAMBERT.

Witnesses:

THEO. G. HOSTER,
PHILIP D. ROLLHAUS.