

A. H. EDWARDS.
 AFROPLANE OR THE LIKE OR ANALOGOUS MACHINE OR DEVICE.
 APPLICATION FILED FEB. 17, 1909.

1,023,556.

Patented Apr. 16, 1912.

4 SHEETS—SHEET 1.

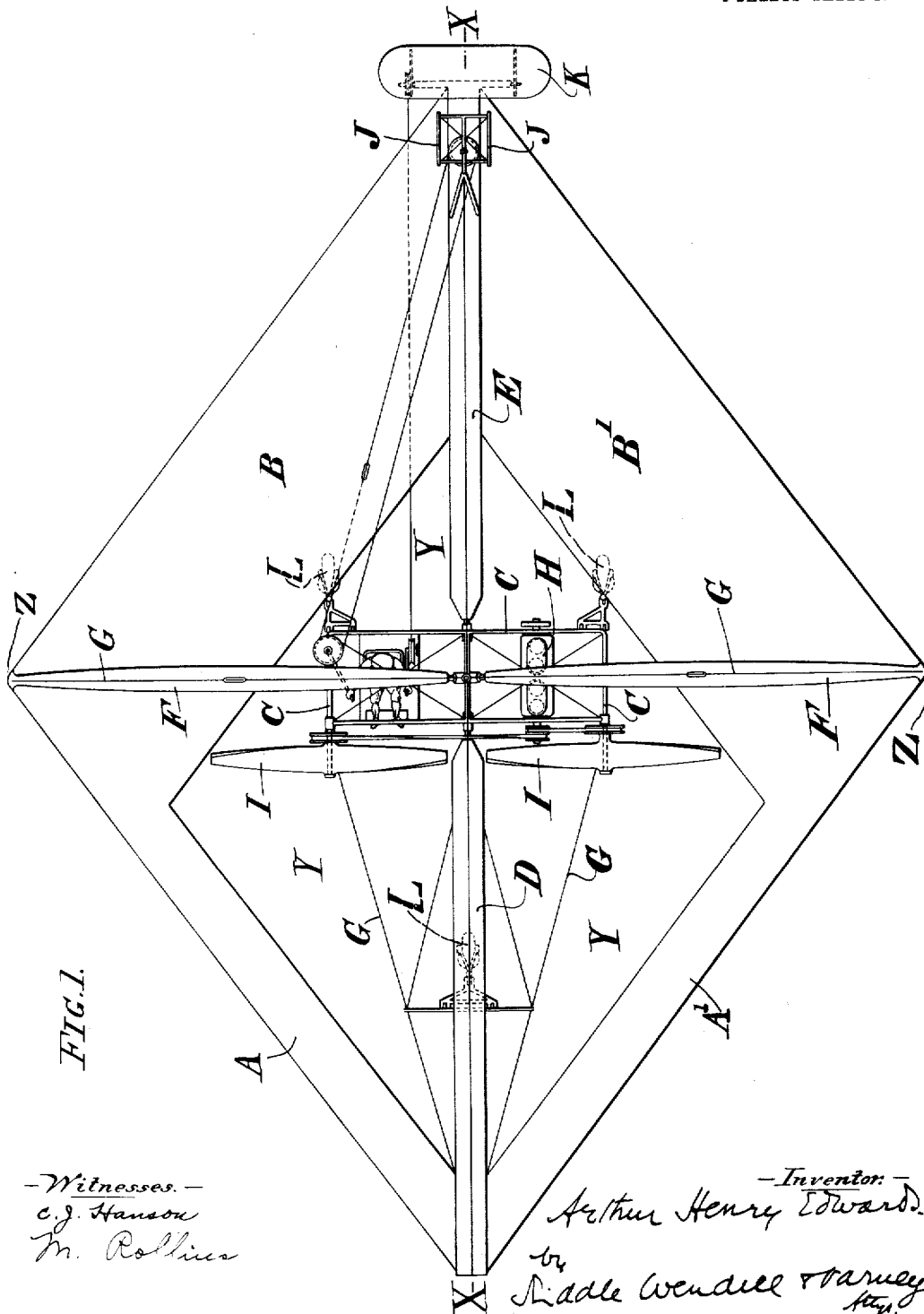


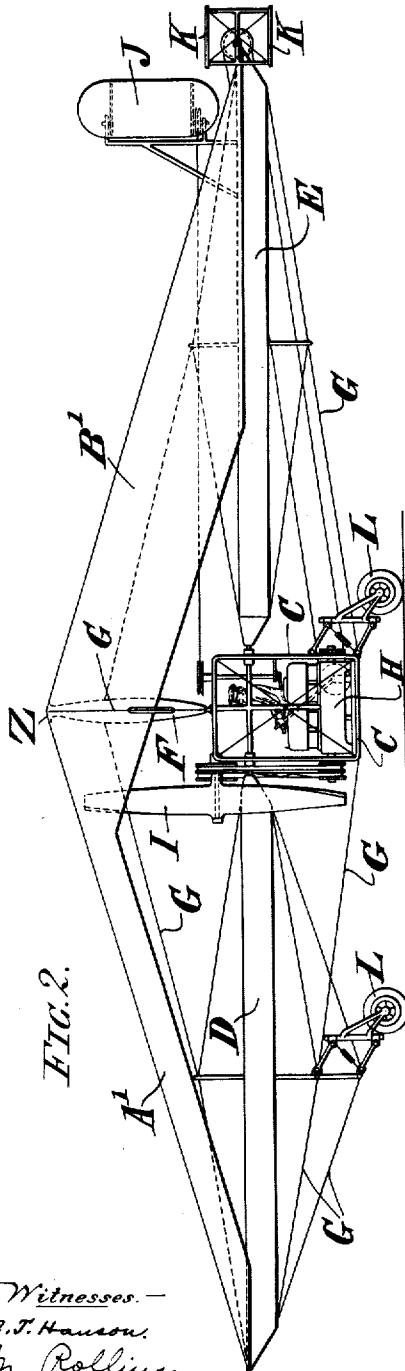
FIG. 1.

—Witnesses—
 C. J. Hanson
 M. Rollins

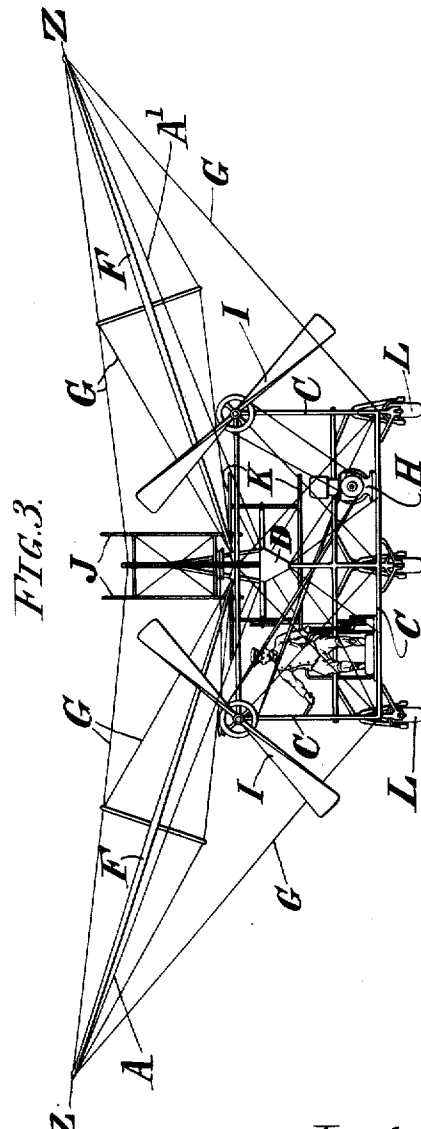
—Inventor—
 Arthur Henry Edwards
 by
 Liddle Wendell Starkey
 Atty.

1,023,556.

4 SHEETS—SHEET 2.



- Witnesses. -
C. T. Hanson.
J. M. Rollins



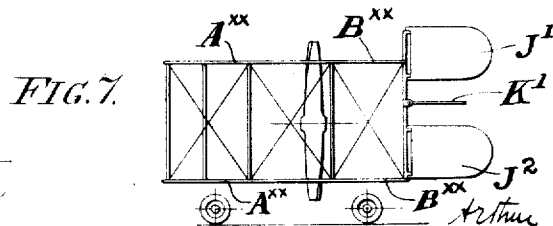
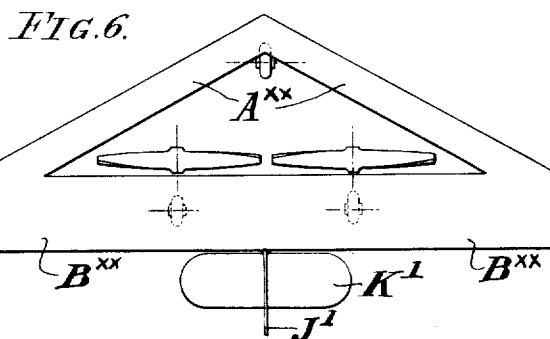
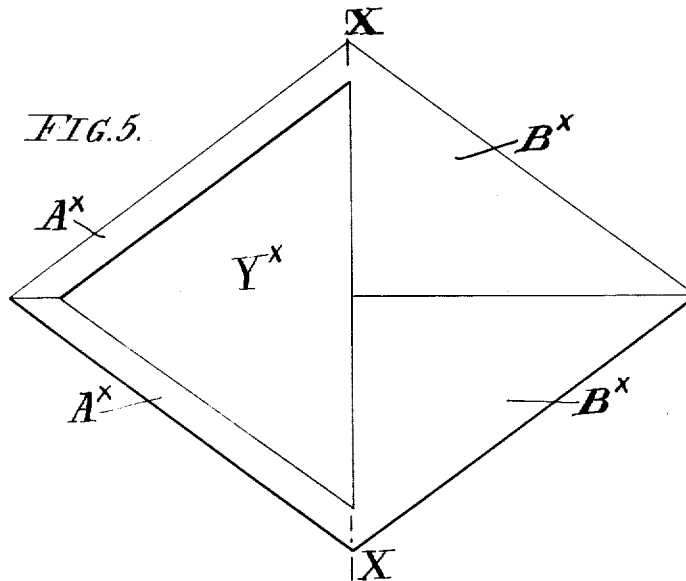
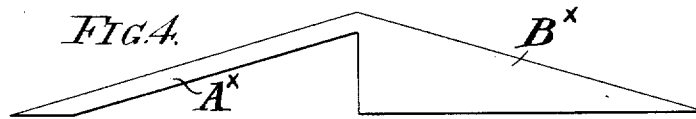
^N Arthur Henry Edwards. ^{-Inventor-}
by Liddle Wendell Varney _{attys.}

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4 SHEETS—SHEET 3.



Witnesses
C. J. Hanson
M. Rollins

—Inventor—
Arthur Henry Edwards
by
Ludlow Wendell Overmyer
Att'y.

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4 SHEETS—SHEET 4.

FIG. 8.

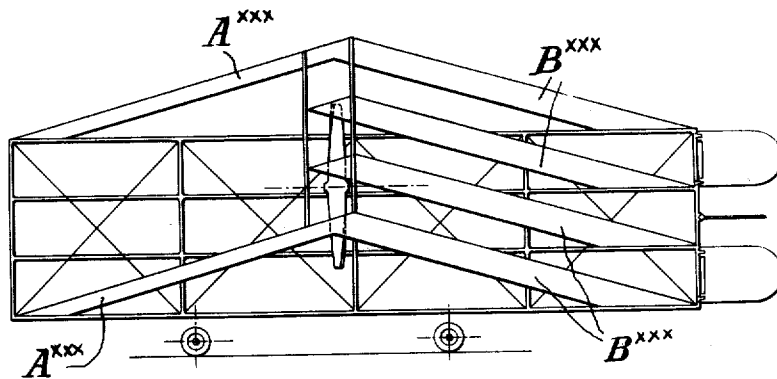
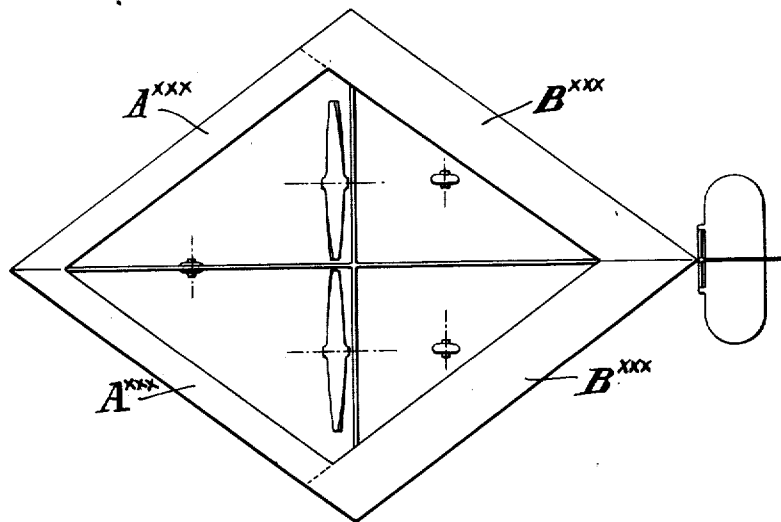


FIG. 9.



—Witnesses—
C. J. Hanson
M. Rollins

—Inventor—
Arthur Henry Edwards
by
Lillian Wendell Varney
Attys.

UNITED STATES PATENT OFFICE.

ARTHUR HENRY EDWARDS, OF STOKE NEWINGTON, LONDON, ENGLAND.

AEROPLANE OR THE LIKE OR ANALOGOUS MACHINE OR DEVICE.

1,023,556.

Specification of Letters Patent.

Patented Apr. 16, 1912.

Application filed February 17, 1909. Serial No. 478,428.

To all whom it may concern:

Be it known that I, ARTHUR HENRY EDWARDS, engineer, a subject of the King of Great Britain, residing at 96 Lordship road, Stoke Newington, London, England, have invented certain new and useful Improvements in or Relating to Aeroplanes or the Like or Analogous Machines or Devices, of which the following is a specification.

This invention has for its object improvements in or relating to aeroplanes and any similar or analogous apparatus or devices such as are called or are known as hydroplanes, kites, flying machines, and the like all of which for the sake of brevity I will hereinafter refer to as "aeroplanes."

According to my present invention; the aeroplane is constructed with forwardly converging planes at the front, and with rearwardly converging planes or other planes or plane at the rear; the rearward plane or planes in all cases being of greater total superficial area than the total superficial area of the said forwardly extending planes. The said forwardly extending and converging planes meet and terminate at or about the longitudinal center line of the aeroplane, and such forwardly extending and converging planes may, or may not as desired, be inclined to one another or otherwise inclined *e. g.* inclined downward from about the point where the said forwardly extending planes join the rearward plane or planes, which latter also may or may not, as desired, be arranged at an incline *i. e.* extending rearwardly and downwardly from the point where they meet the forward planes; so that, the highest point of all the said planes would, or might, be at or about the said meeting point of the forwardly extending planes and the rearwardly extending plane or planes; or for example the forward and rearward planes, on either side respectively of the aeroplane, may lie in one oblique plane parallel to the longitudinal center line of the aeroplane. The rear part of the aeroplane according to this invention may advantageously be formed with two broad planes extending rearwardly and converging in a line coincident with the point of convergence of the forwardly extending planes *i. e.* parallel with the longitudinal center line of the aeroplane, so that, in plan view, the aeroplane thus constructed would have a large central opening (*e. g.* approximately diamond shape) in the for-

ward part of the aeroplane. These front and rear converging planes are advantageously of equal length and so proportioned that the center of air pressure upwardly (during flight) is approximately in the center of the aeroplane; for instance each of the back planes may be made about three and a half times wider than each of the front planes. Or instead of having two rearwardly extending broad planes, as previously described, I may employ one single rearwardly extending plane approximately V-shaped or triangular shaped with the point of the V-shaped plane extending rearwardly, while the broadest part of the V-shaped plane has attached thereto the aforesaid forwardly extending narrow planes—thus leaving approximately a V-shaped or triangular shaped opening in the forward part of this arrangement of aeroplane. Or instead of the single rearwardly extending plane (forming one continuous surface) being shaped as just described, the said rearwardly extending plane may be of other suitable shape, as for example, same may be of rectangular form and extending to any suitable distance across the width of the aeroplane, and extending to any suitable distance rearwardly, while the forward part thereof (toward the extreme ends thereof) will have the narrow forwardly extending and forwardly converging planes formed or mounted thereon or suitably attached thereto. In this form of aeroplane the forwardly extending planes and rear plane all lie in one horizontal plane. If desired (either with or without the said forwardly extending planes being inclined or not with respect to the rearwardly extending plane or planes) all or any of said planes may be curved or arranged at any different pitch or pitches as desired with respect to the other plane or planes. Also any number of super-imposed planes (or so-called "decks") according to this invention may be employed in any aeroplane. Furthermore, if desired, the aforesaid planes or any of them may be arranged and mounted—and means provided—so as to enable the pitch or the angle of inclination of said planes to be altered relatively to one another or relatively to the horizontal plane, as desired—even when the aeroplane is in flight for which purpose for example the respective planes may be mounted in independent frames each of which latter may be swung or tilted into any desired

position and secured in each such position by any suitable and well known means. Any suitable motor and propellers or propelling mechanism may be arranged and mounted in a suitable manner together with any desired platform, carriage, seat or car, etc., and same may be suspended from said planes (or plurality of superimposed planes) or attached or secured thereto in any suitable manner. Any suitable means are also provided for steering the aeroplane or rendering same dirigible.

In the accompanying drawings:—Figure 1. is a plan view of an aeroplane in accordance with my present invention. Fig. 2. is a view thereof in side elevation. Fig. 3. is a front end view thereof. Figs. 4 to 9 show various modifications as hereinafter explained.

Referring now to Figs. 1 to 3:—A A¹ are the forwardly extending and forwardly converging planes which converge and meet at the longitudinal center line X of the aeroplane. B B¹ are the rearwardly extending and rearwardly converging planes which also converge and meet at the said center line X. These planes A and B on one side meet and join as shown and the planes A¹ and B¹ on the other side similarly meet and join as shown, thus leaving the clearance or opening Y between same. These planes A A¹ and B B¹ are securely mounted on the main carrier frame or carriage C on the forwardly extending rigid arm or member D and the rearwardly extending rigid arm or member E both these arms or members D and E being rigidly affixed to the carriage C. Any suitable stays or rigging may be provided on the carriage and connected to any desired parts of the aeroplane—as for example the rigid spars F and the wire rigging G to impart stability to the aforesaid planes A A¹ and B B¹; any suitable means being employed as desired for attaching the planes and the arms D E together and planes and the spars and rigging together. The arms or members D and E may advantageously be made of light girder work and covered with material such as canvas for the purpose of strength and lightness. Any suitable motor—such as the internal combustion motor H—may be mounted in the carriage C; and any suitable propellers provided such as the two propellers I driven by said motor. Also any suitable steering devices may be employed such as the rudder J adapted to be turned by the aviator around a vertical axis and a rudder K adapted to be turned (by the aviator) around a horizontal axis. L L are the running wheels for making contact with the ground when starting or stopping said wheels being mounted on the carriage C and forward arm D in any suitable manner as for example mounted on spring brack-

ets as shown. Any usual or suitable means are provided to enable the aviator to control the motor and the aforesaid rudders, etc. The aforesaid rearward planes B B¹ are illustrated as having a superficial area about three and a half times the area of the forward planes A A¹. In the arrangement illustrated in these Figs. 1 to 3; the point where the forward planes A A¹ meet at the line X (Fig. 1) and the rearward planes B B¹ meet at said line X, is the lowest point of said planes; the highest point thereof being at the tips Z at each side of the aeroplane: the two planes A and B lying in the same plane with one another and the two planes A¹ and B¹ lying in the same plane with one another; the common plane of said planes A and B being at or about an angle of 150° or 160° to the common plane of the said planes A¹ B¹.

Referring now to Figs. 4 and 5:—Fig. 4 is a side edge view and Fig. 5 a plan of a modified construction of the planes—omitting the under structure and motor, etc. In this arrangement the forwardly converging planes A^x A^x are similar to the planes A A¹ in Figs. 1 to 3; but, instead of the two broad rearwardly extending planes B B¹ of Figs. 1 to 3, in this modification the rearwardly extending planes B^x meet along the transverse center line X; so that the opening Y^x in the aeroplane in this case is formed entirely between the forwardly extending planes A^x.

Referring now to Figs. 6 and 7:—Fig. 6 is a plan, and Fig. 7 an edge view, of another modification in which the rearwardly extending plane B^{xx} is made in a single plane and much wider than and of a different shape to Figs. 4 and 5; this wide single plane B^{xx} being employed flat, as also the forwardly extending planes A^{xx}; all these planes, A^{xx} and B^{xx} not only being flat but all lying in the same common plane; and two of these planes A^{xx} and B^{xx} may be arranged as shown in Fig. 7 in two "decks" with two independent vertical rudders J¹ J² as well as the horizontal rudder K¹. Instead of two independent vertical rudders I may employ one deep rudder extending from the top deck to the lowest deck (or of greater depth), of such flexible construction as to allow the upper and lower ends to be operated separately; with this form of vertical rudder the horizontal rudder K is cut away in the center.

Referring now to Figs. 8 and 9:—Fig. 8 is a plan and Fig. 9 a side edge view of another modification wherein the planes are arranged similarly to Figs. 1 and 3 but in this modification the rearwardly extending planes B^{xxx} are only about half the width of the broad plane B B¹ in Figs. 1 to 3; and consequently a greater number of these planes A^{xxx} B^{xxx} (Fig. 8) must be employed

for example as illustrated in Fig. 9 four decks of these planes are employed. It will be obvious however that with all or any of the arrangements of planes illustrated I may employ any suitable number thereof superimposed or otherwise arranged to form as many "decks" as desired. Also it will be obvious that I may employ any suitable form of rudder or means to steer direct or control the flight of the aeroplane other than those illustrated.

What I claim is:—

1. An aeroplane having rearwardly extending supporting plane means, two forwardly extending and converging planes the area of the former being greater than the combined areas of the latter and a triangular opening formed between said forwardly converging planes and said opening extending to a point near the extreme front end of said forwardly converging planes.

2. An aeroplane having a rearwardly extending plane, two forwardly extending planes arranged to converge forwardly the area of the former being greater than the combined areas of the latter and a triangular opening formed between said forwardly converging planes and said opening extending to a point near the extreme front end of said forwardly converging planes.

3. An aeroplane having rearwardly extending planes and forwardly extending planes, the latter being arranged to converge and their combined areas being less than the combined areas of the former and a triangular opening formed between said forwardly converging planes and said opening extending to a point near the extreme front end of said forwardly converging planes.

4. An aeroplane having rearwardly extending planes arranged to converge rearwardly, and forwardly extending planes, the latter being arranged to converge forwardly and an opening between said planes and said opening extending to a point near the extreme front end of said forwardly converging planes.

5. An aeroplane having rearwardly extending planes arranged to converge rearwardly and forwardly extending planes, the latter being arranged to converge forwardly and the combined areas of the latter being

less than the combined areas of the former and an opening between said planes and said opening extending to a point near the extreme front end of said forwardly converging planes.

6. An aeroplane having rearwardly extending planes arranged to converge rearwardly, and forwardly extending planes, the latter being arranged to converge forwardly and a triangular opening formed between said forwardly converging planes and said opening extending to a point near the extreme front end of said forwardly converging planes.

7. An aeroplane having rearwardly extending planes arranged to converge rearwardly, and forwardly extending planes, the latter being arranged to converge forwardly and the combined areas of the latter being less than the combined areas of the former and a triangular opening formed between said forwardly converging planes and said opening extending to a point near the extreme front end of said forwardly converging planes.

8. An aeroplane having converging planes extending rearwardly from the transverse center line, and converging planes extending forwardly from the transverse center line, said planes also being inclined toward the ends from the transverse center line, and the forward and rear planes upon the same side lying in the same common plane, and the common planes being inclined to each other.

9. An aeroplane having converging planes extending rearwardly from the transverse center line, and converging planes extending forwardly from the transverse center line, said planes also being inclined toward the ends from the transverse center line, and the forward and rear planes upon the same side lying in the same common plane, and the common planes being inclined to each other and an opening formed between the forwardly extending planes.

In witness whereof I have hereunto set my hand in the presence of two witnesses.

ARTHUR HENRY EDWARDS.

Witnesses:

HENRY BIRKBECK,

HERBERT D. JAMESON.