

L. TROXLER.
FLYING MACHINE.

APPLICATION FILED JAN. 28, 1910.

1,032,967.

Patented July 16, 1912.

4 SHEETS—SHEET 1.

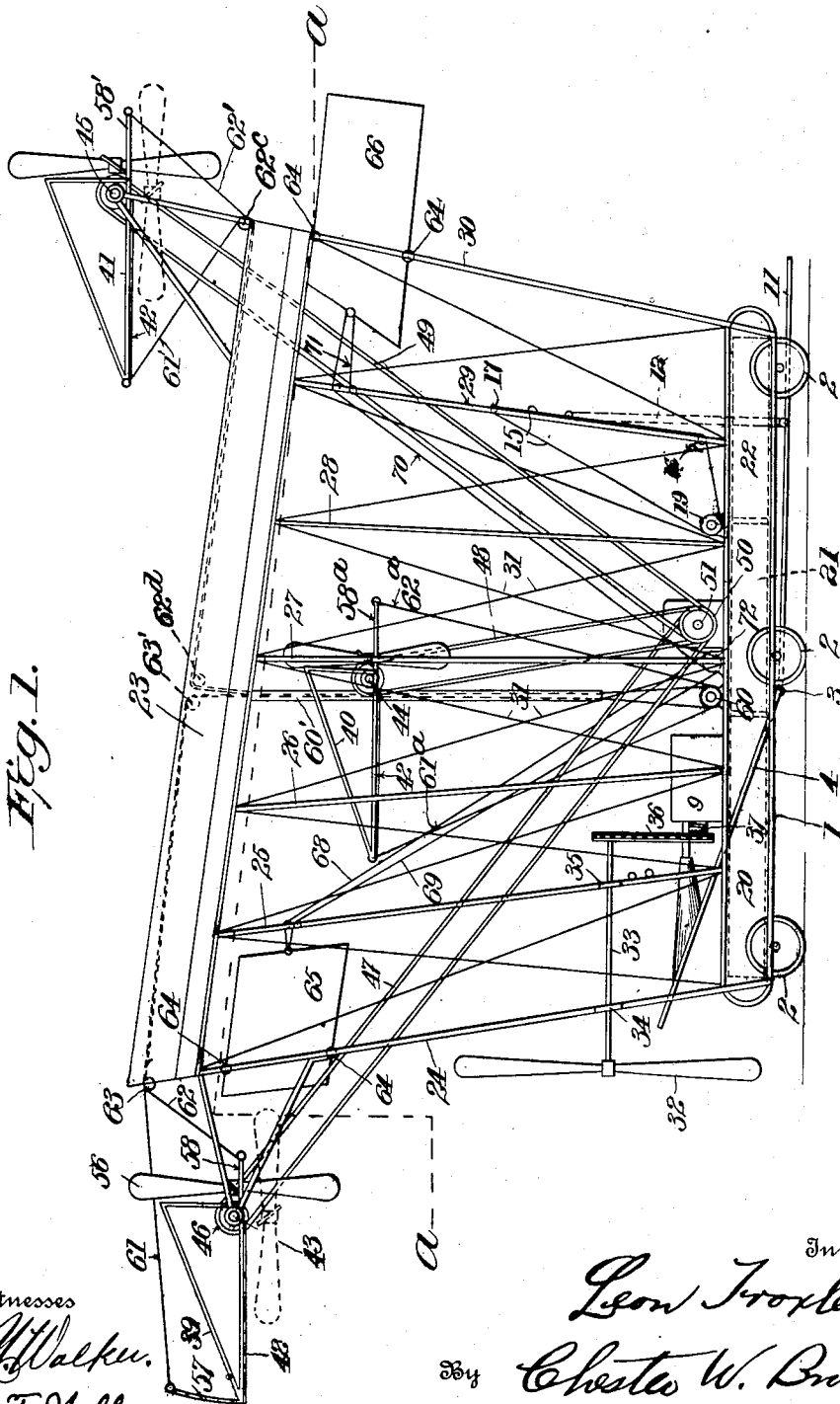


Fig. 1.

Witnesses
C. Walker.
J. T. Walker.

Inventor
Leon Troxler
By Chester W. Brown
Attorney

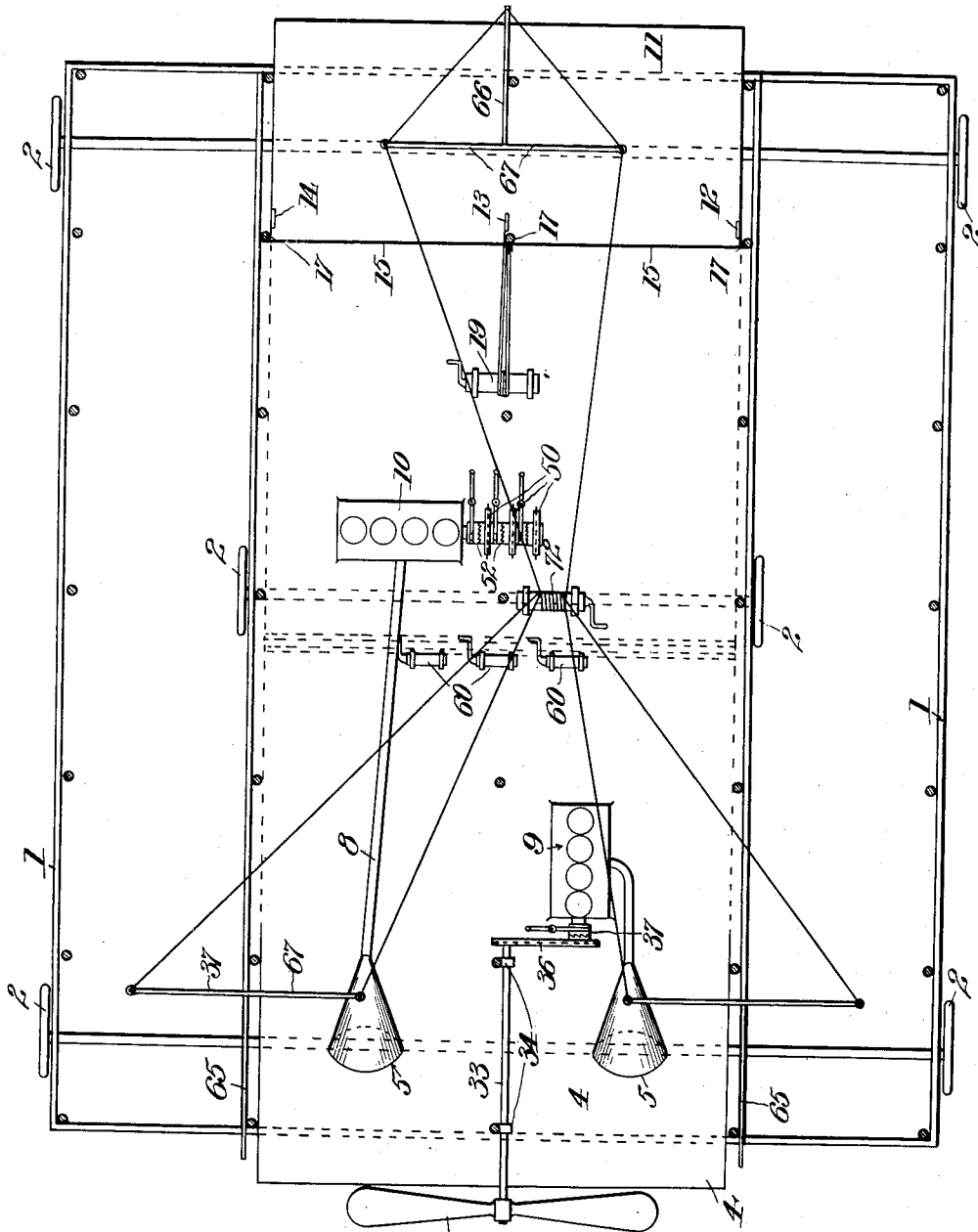
L. TROXLER.
FLYING MACHINE.

APPLICATION FILED JAN. 28, 1910.

1,032,967.

Patented July 16, 1912.

4 SHEETS—SHEET 2.



WITNESSES
C. H. Walker
J. T. Walker

Fig. 2.

INVENTOR
By *Leon Troxler*
Chester W. Brown
Attorney

L. TROXLER.
FLYING MACHINE.

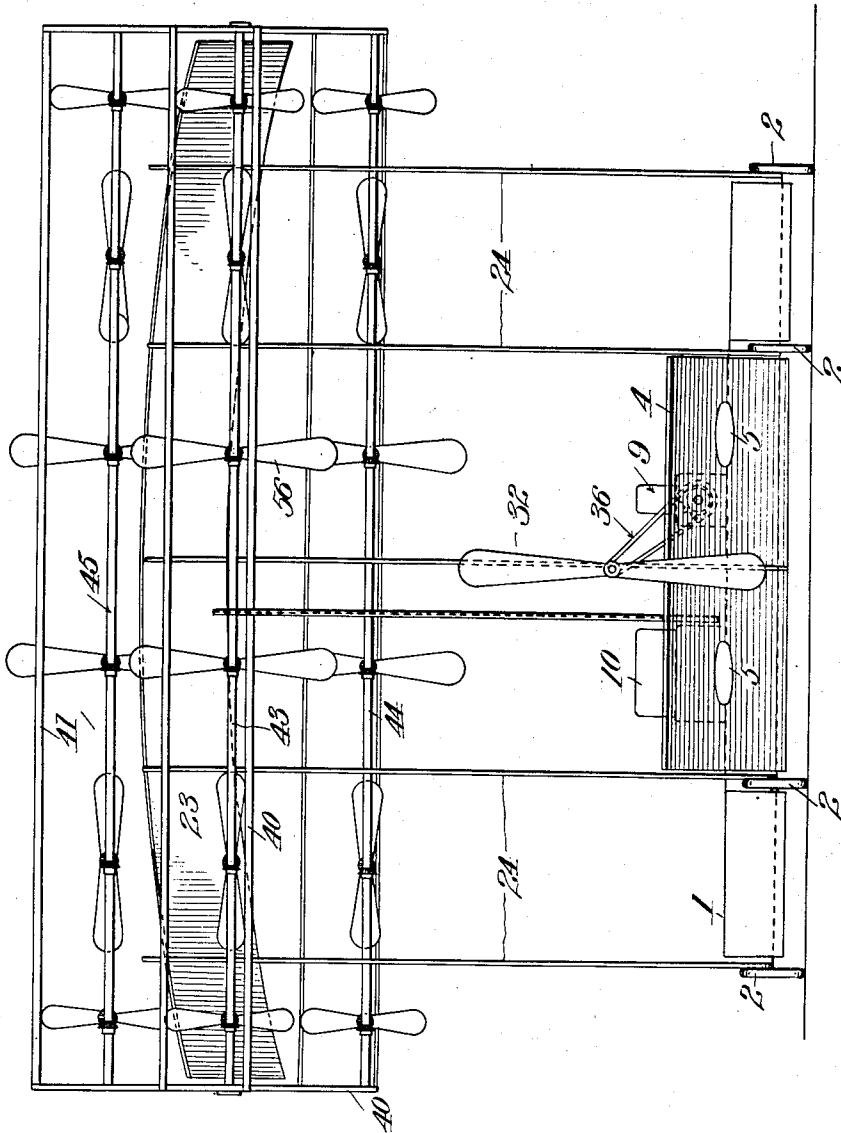
APPLICATION FILED JAN. 28, 1910.

1,032,967.

Patented July 16, 1912.

4 SHEETS—SHEET 3.

Fig. 3.



Witnesses

C. H. Walker.

J. T. Walker.

Inventor

Leon Troxler

By

Chester W. Brown

Attorney

L. TROXLER.
FLYING MACHINE.
APPLICATION FILED JAN. 28, 1910.

1,032,967.

Patented July 16, 1912.

4 SHEETS—SHEET 4.

Fig. 5.

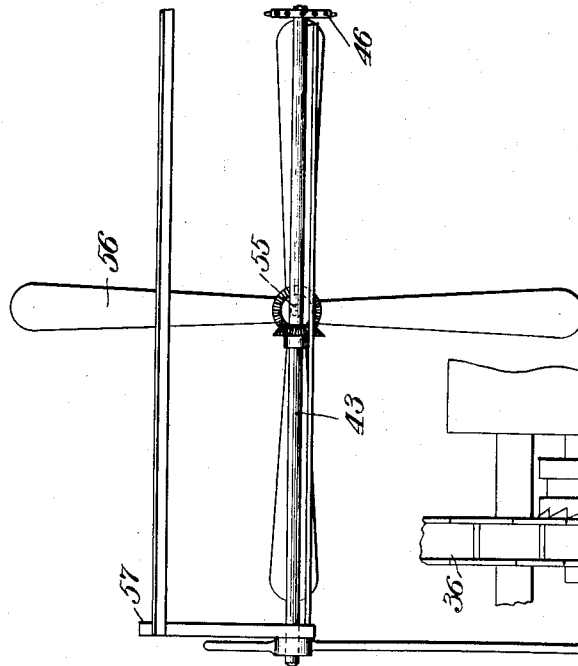


Fig. 6.

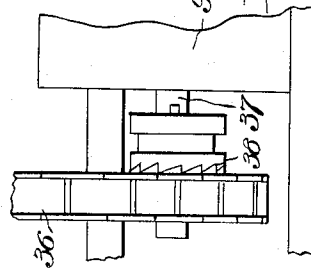
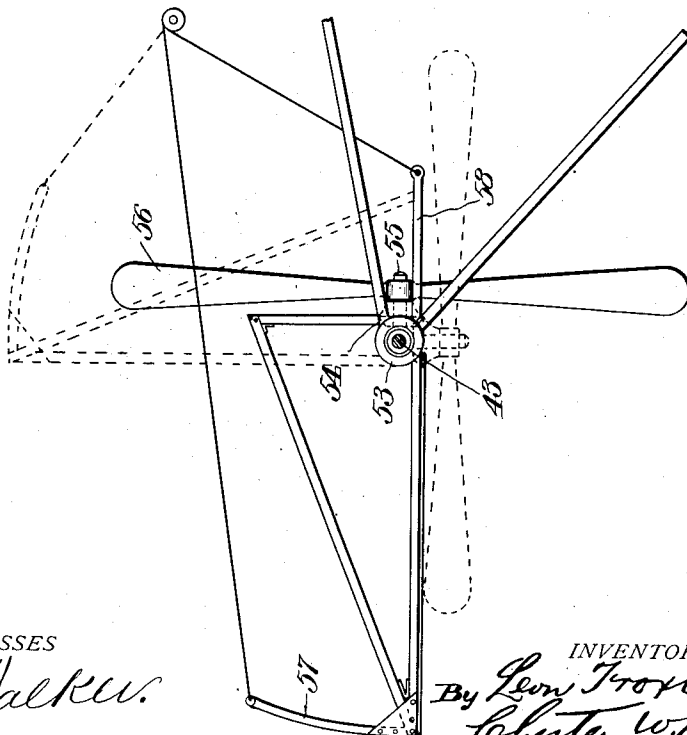


Fig. 4.



WITNESSES

C. H. Walker.
J. T. Walker.

INVENTOR

By *Leon Troxler*
Chester W. Brown
Attorney

UNITED STATES PATENT OFFICE.

LEON TROXLER, OF NEW ORLEANS, LOUISIANA.

FLYING-MACHINE.

1,032,967.

Specification of Letters Patent.

Patented July 16, 1912.

Application filed January 28, 1910. Serial No. 540,652.

To all whom it may concern:

Be it known that I, LEON TROXLER, a citizen of the United States, residing at New Orleans, in the parish of Orleans and State of Louisiana, have invented certain new and useful Improvements in Flying-Machines, of which the following is a specification.

This invention relates to flying machines.

10 One object is to provide a flying machine in which there is a frame having one or more planes and in which the machine is propelled forwardly by means of mechanically operated propellers at such a speed and angle that the pressure of the air sustains the machine in the air.

15 Another object is to provide a machine with means for adjusting the propellers for the purpose of raising the machine vertically or at any desired angle.

20 Another object is to provide an aeroplane flying machine in which the multiple propellers are adjustably mounted to permit of being quickly shifted while in operation from a vertical to a horizontal position or vice versa or to any intermediate position, as required for ascending vertically or at any desired angle, or for descending or balancing against air currents.

25 A further object of the invention is to so construct and arrange the propellers that the air pressure from them will strike the planes at such a position as to assist in sustaining the machine in the air.

30 A further object of the invention is to provide an aeroplane which may be raised directly from the ground or to the place of rest without a run-way or other extraneous mechanism.

35 A still further object of the invention is to provide an aeroplane in which one plane is adjustable with relation to the other to increase or decrease the lifting forces, as desired.

40 With the above and other objects in view, the present invention consists in the combination and arrangement of parts hereinafter more fully described, illustrated in the accompanying drawings, and particularly pointed out in the appended claims, it being understood that changes may be made in

the form, proportion, size and minor details, without departing from the spirit or sacrificing any of the advantages of the invention.

55 In the drawings:—Figure 1 is a side elevation of the invention. Fig. 2 is a horizontal sectional view on the line *a—*a** of Fig. 1. Fig. 3 is a front elevation. Fig. 4 is an enlarged detail side elevation of one of the propeller carrying frames. Fig. 5 is a front view thereof.

Referring now more particularly to the accompanying drawings, the reference character 1 indicates the bottom of the frame-work, preferably mounted on bicycle or other wheels 2.

70 Journaled on a suitable shaft 3 and extending upwardly at any desired angle is the forward plane 4 designed for adjustment to any desired angle in a manner hereinafter explained. This plane has a dual function in that it forms not only a plane but also a "wind break" to shield the machinery, tanks, operators, passengers or other objects resting upon the frame 1.

75 In the forward end of the plane 4 I have placed two funnels 5 and 6 with the major ends disposed outwardly and the minor ends thereof terminating in pipes 7 and 8, respectively, to conduct air currents to the two engines 9 and 10, respectively, for the purpose of cooling the engines. Obviously one or more than two of these funnels may be utilized, if desired, without departing from the spirit of the present invention. It is also obvious that a fan of any usual construction may be operated within said funnels to facilitate the more rapid cooling of the engine, without departing from the spirit of my invention.

80 Pivottally mounted upon the aforesaid shaft 3 is a rearward plane 11 which may be of any desired length and which has three arms 12, 13 and 14 extending upwardly therefrom with wire or other cables 15 connected to the upper ends thereof and extending over the pulleys 16, and 17 and leading to the drum 19, by the rotation of which latter the rearward plane 11 may be raised or lowered, as desired, in the control of the machine.

The motor power for the machine exists in the aforesaid motors 9 and 10 which provide the motor power for the propellers, there being further motor power residing in the tanks 20, 21 and 22 which are used preferably for fuel, but which may be divided so that all or some of the compartments or tanks may contain gas to provide means to maintain the machine afloat in the event that a landing is desired or necessitated in water.

The character 23 indicates the upper plane which may be arcuate in cross section or of any other approved shape, and which is supported and held in position by the numerous supporting uprights 24, 25, 26, 27, 28, 29 and 30, there being suitable tension wires 31 connecting the plurality of supporting uprights to give the structure the strength required.

Mounted in the forward part of the machine is a propeller 32 which is secured upon the outer end of a shaft 33 journaled in the bearings 34 and 35, respectively, of the supporting uprights 24 and 25. On the inner end of the shaft 33 is a sprocket wheel over which runs a chain 36 having connection with a sprocket wheel on the drive shaft 37 of the engine 9, there being a suitable clutch mechanism 38 between the driving chain 36 and the driving shaft 37.

Disposed in the upper part of the frame are three frames 39, 40 and 41, which are composed preferably of angle iron having the required strength and lightness. The outer formation of these frames is preferably V-shaped in cross section to offer as little resistance to the wind as possible, and if desired, the underside of each of these frames may be covered with canvas 42 or other suitable material to form additional plane surfaces. These frames are each journaled upon the shafts 43, 44, and 45, respectively, which shafts are supported in suitable bearings. Intermediate the ends of each shaft is secured a sprocket wheel 46 and from each sprocket wheel 46 of said shafts 43, 44 and 45 leads the chains 47, 48 and 49, which connect with the sprocket wheels 50 mounted on the drive shaft 51 of the aforesaid engine 10, there being a suitable clutch 52 by means of which the sprocket wheels 50 may be thrown into and out of operation while the engine is operating. The frames 39, 40, and 41 are mounted upon their respective shafts so that they may be rotated about their shafts by means herein-after described. There are also mounted upon each of said shafts at suitable distances beveled gears 53 adapted for engagement with the beveled gears 54 carried by the stub shafts 55 mounted in suitable bearings within the respective frames 39, 40 and 41, each of said stub shafts 55 carrying one or

more propellers 56, as shown. It will thus be seen that whenever the shafts 43, 44 and 45 are operatively connected with the engine 10, that the propellers 56 are rotated by means of the beveled gears connecting said shafts with said stub shafts 55. The propellers are preferably mounted to rotate in different directions, as shown, and so that they will be at different points of a circle with a view of reducing vibration. The forward frame 39 has arms 57 and 58 to which are respectively connected the cables 61 and 62. These cables pass over pulleys 63 and 63' at the top of the structure and down through a hollow support 60' to one of the drums 60 (see Fig. 2) there being three drums 60, for coöperation with the frames 39, 40 and 41, as will be explained. The rear frame 41 has a rearwardly extending arm 58' to which is connected a cable 62' there being another cable 61' secured to the forward end of the frame 41. These two cables 61'—62' pass around a pulley 62^c and thence over a pulley 62^d and down through the aforesaid hollow support 60' and connect to one of the drums 60. The intermediate frame 40 has a rearwardly extending arm 58^a to which is connected a cable 62^a, there being a cable 61^a secured to the forward end of the frame 40. These two cables 61^a—62^a are connected to one of the aforesaid drums 60. Each of the drums 60 is provided with means whereby it may be manually rotated for the purpose of operating the respective cables. When the drums are rotated in one direction one cable is pulled upon and when rotated in the opposite direction the other cable is pulled upon, whereby, upon operation of said drums 60, the frames 39, 40 and 41 are manipulated. By this means whenever it is desired to send the machine up vertically, the drums 60 are rotated to turn said frames 39, 40 and 41 backward until the propellers are rotating in a horizontal plane. The engine 10 is then started and all the propellers exert an upward pull, which, with sufficient propellers, will raise the entire machine directly perpendicular or substantially so. When it is desired to move forwardly, the drum 60 is operated to turn the frames 39, 40 and 41 forwardly, causing the sets of propellers associated with said frames to assume the various positions shown in the drawings until the rotation of the propellers is vertical, and the pull of the propellers is then directly forward. At any desired time the propeller 32 may be operated by the engine 9 and further assist in the forward momentum.

Mounted upon the uprights 24 and 29 by hinge joints 64 are rudders 65 and 66, respectively. Each rudder is provided with an arm 67 to which are connected the cables

68 and 69 and 70 and 71, respectively, said cables having connection with a drum 72 mounted at the bottom of the machine in the rear of the drum 60, and by operation of this drum 72, the rudders may be moved to different angles with respect to the forward direction of the machine for the purpose of steering the machine in its flight.

It will be apparent that my improved machine may be operated from a stationary position without the employment of any starting track or mechanism and without the use of supporting wheels 2, the latter being used for convenience in transporting the machine when at rest and also for landing in case the engine 10 should accidentally stop or the propellers 56 should become uncontrollable for any cause while the machine is in flight.

I do not wish to confine myself to the planes as shown, and it will be apparent that any form of plane which offers suitable resistance may be employed without departing from the spirit of my invention, and while I have illustrated the propellers 56 in series of six each, it will be apparent that they are so mounted for convenience of operation and that they may be mounted in series of more than six or less or even singly, providing each one is shiftably mounted as I have described.

What is claimed is:—

1. In a flying machine, a frame, a forward plane pivotally secured on the frame, a rearward plane adjustably mounted on the frame, an upper plane, separate sets of propellers, one set being disposed in front of the upper plane, one set being disposed above the upper plane at the rear of the latter and the other set being disposed beneath the upper plane intermediate the ends of the latter, a motor, driving connections between said motor and said sets of propellers to operate the latter, and means whereby said sets of propellers may be adjusted from the horizontal to the vertical or any angle between the horizontal and vertical.

2. In a flying machine, a frame, a forward plane pivotally secured on the frame, a rearward plane adjustably mounted on the frame, an upper plane, separate sets of propellers, one set being disposed in front of the upper plane, one set being disposed above the upper plane at the rear of the latter and the other set being disposed beneath the upper plane intermediate the ends of the latter, a motor, driving connections between said motor and said sets of propellers to operate the latter, and means whereby said sets of propellers may be adjusted to throw the air pressure against the upper plane.

3. In a flying machine, a frame, a forward plane pivotally secured on the frame,

a rearward plane adjustably mounted on the frame, an upper plane, separate sets of propellers, one set being disposed in front of the upper plane, one set being disposed above the upper plane at the rear of the latter and the other set being disposed beneath the upper plane intermediate the ends of the latter, a motor, driving connections between said motor and said sets of propellers to operate the latter, means whereby said sets of propellers may be adjusted from the horizontal to the vertical or any angle between the horizontal and vertical, an independent propeller, a second motor, and connections between the second motor and the independent propeller to operate the latter.

4. In a flying machine, a frame, a forward plane pivotally secured on the frame, a rearward plane adjustably mounted on the frame, an upper plane, separate sets of propellers, one set being disposed in front of the upper plane, one set being disposed above the upper plane at the rear of the latter and the other set being disposed beneath the upper plane intermediate the ends of the latter, a motor, driving connections between said motor and said sets of propellers to operate the latter, means whereby said sets of propellers may be adjusted to throw the air pressure against the upper plane, an independent propeller, a second motor, and connections between the second motor and the independent propeller to operate the latter.

5. In a flying machine, a frame, a forward plane pivotally secured on the frame, a rearward plane adjustably mounted on the frame, an upper plane, separate sets of propellers, one set being disposed in front of the upper plane, one set being disposed above the upper plane at the rear of the latter and the other set being disposed beneath the upper plane intermediate the ends of the latter, a motor, driving connections between said motor and said sets of propellers to operate the latter, means whereby said sets of propellers may be adjusted from the horizontal to the vertical or any angle between the horizontal and vertical, rudders mounted upon the machine, and means for operating the rudders.

6. In a flying machine, a frame, a forward plane pivotally secured on the frame, a rearward plane adjustably mounted on the frame, an upper plane, separate sets of propellers, one set being disposed in front of the upper plane, one set being disposed above the upper plane at the rear of the latter and the other set being disposed beneath the upper plane intermediate the ends of the latter, a motor, driving connections between said motor and said sets of propellers to operate the latter, means whereby

said sets of propellers may be adjusted to throw the air pressure against the upper plane, forward and rearward rudders, a drum, and connections between the rudders and the drum to operate the rudders to steer the machine.

7. In a flying machine, a frame, a forward plane pivotally secured on the frame, a rearward plane adjustably mounted on the frame, an upper plane, separate sets of propellers, one set being disposed in front of the upper plane, one set being disposed above the upper plane at the rear of the latter and the other set being disposed beneath the upper plane intermediate the ends of the latter, a motor, driving connections between said motor and said sets of propellers to operate the latter, means whereby said sets of propellers may be adjusted from the horizontal to the vertical or any angle between the horizontal and vertical, an independent propeller, a second motor, connections between the second motor and the independent propeller to operate the latter, a rudder mounted upon the machine, a drum, and connections between the rudder and the drum to operate the rudder to steer the machine.

8. In a flying machine, a frame, a forward plane pivotally secured on the frame, a rearward plane adjustably mounted on the frame, an upper plane, separate sets of propellers, one set being disposed in front of the upper plane one set being disposed above the upper plane at the rear of the latter and the other set being disposed beneath the upper plane intermediate the ends of the latter, a motor, driving connection between said motor and said sets of propellers to operate the latter, means whereby said sets of propellers may be adjusted to throw the air pressure against the upper plane, an independent propeller, a second motor, connections between the second motor and the independent propeller to operate the latter, a rudder mounted upon the machine, a drum, and connections between the rudder and the drum to operate the rudder to steer the machine.

9. In a flying machine, a frame, a forward plane mounted upon the frame, a rearward plane adjustably mounted upon the frame, an upper plane, means for supporting the upper plane, sets of propellers mounted adjacent the upper plane, a motor on the frame, connections between said motor and said sets of propellers to operate the latter, an independent propeller, a second motor, connections between the second motor and the independent propeller to operate the latter, and funnels secured to the forward plane and having their minor ends leading to and communicating with said motors to cool the latter.

10. In a flying machine, a frame, propellers, motor power, a combined wind shield and break provided with an opening, and an air conveying element having its outer end fitted in said opening of the shield and break.

11. In a flying machine, a frame, a front and a rear plane, an upper plane, a set of pivotally mounted frames, each pivoted frame having a plane surface, a propeller having operative connection with each pivoted frame, and means for moving the pivoted frames on their pivots to simultaneously adjust said propellers.

12. In a flying machine, a frame, a front and a rear plane, an upper plane, a set of pivotally mounted frames, each pivoted frame having a plane surface, a propeller having operative connection with each pivoted frame, means for moving the pivoted frames on their pivots to simultaneously adjust said propellers, an independent propeller, and rudders to steer the machine.

13. In a flying machine, a frame, a plane, a propeller constructed and arranged in front of said plane to throw air against the underside of the plane at the front thereof, a propeller constructed and arranged beneath the plane intermediate the ends thereof, a propeller constructed and arranged at the rear of the plane above the latter to throw air against the upper surface of the plane, and means for operating the propellers.

14. In a flying machine, a frame, a plane, a propeller constructed and arranged in front of said plane to throw air against the underside of the plane at the front thereof, a propeller constructed and arranged beneath the plane intermediate the ends thereof, a propeller constructed and arranged at the rear of the plane above the latter to throw air against the upper surface of the plane, means for operating the propellers, an independent propeller, and means for operating the latter.

15. In a flying machine, a frame, a plane, a propeller constructed and arranged in front of said plane to throw air against the underside of the plane at the front thereof, a propeller constructed and arranged beneath the plane intermediate the ends thereof, a propeller constructed and arranged at the rear of the plane above the latter to throw air against the upper surface of the plane, means for operating the propellers, and a combined plane and wind break in front of the propeller operating means.

16. In a flying machine, a frame, a plane, a propeller constructed and arranged in front of said plane to throw air against the underside of the plane at the front thereof, a propeller constructed and arranged beneath the plane intermediate the ends there-

of, a propeller constructed and arranged at the rear of the plane above the latter to throw air against the upper surface of the plane, means for operating the propellers, 5 an independent propeller, means for operating the latter, and a plane in front of the means for operating the propellers.

10 17. In a flying machine, a frame, an upper plane, propellers constructed and arranged to throw air against the upper plane to increase the lifting power of the machine, a

motor for operating said propellers, a forward plane constructed and arranged in front of the motor and having an opening, and a funnel disposed in said opening and 15 leading to said motor to cool the latter.

In testimony whereof I affix my signature in presence of two witnesses.

LEON TROXLER.

Witnesses:

CHESTER W. BROWN,
P. A. BECK.