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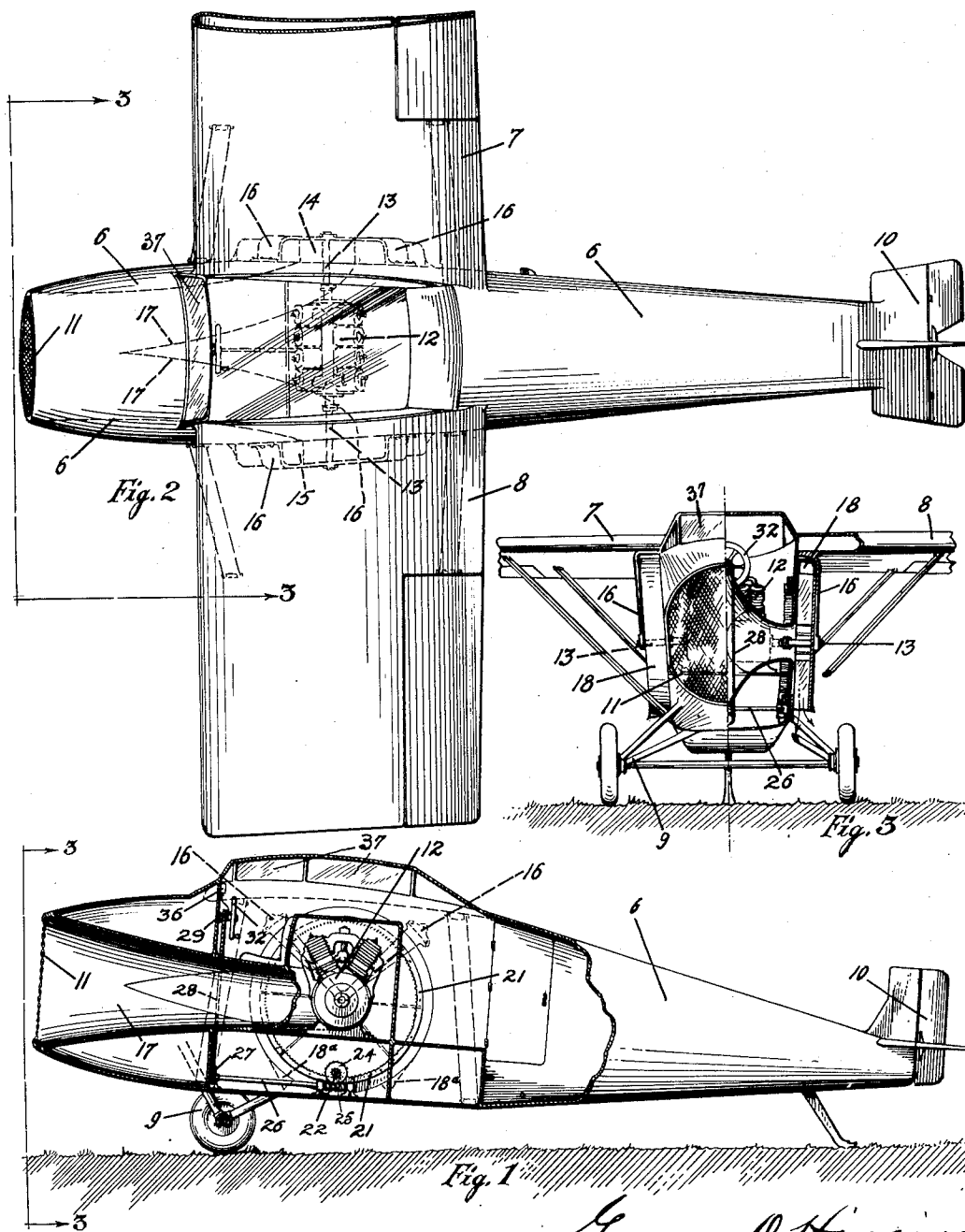
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FLYING MACHINE

Filed Aug. 22, 1927

2 Sheets-Sheet 1



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INVENTOR.

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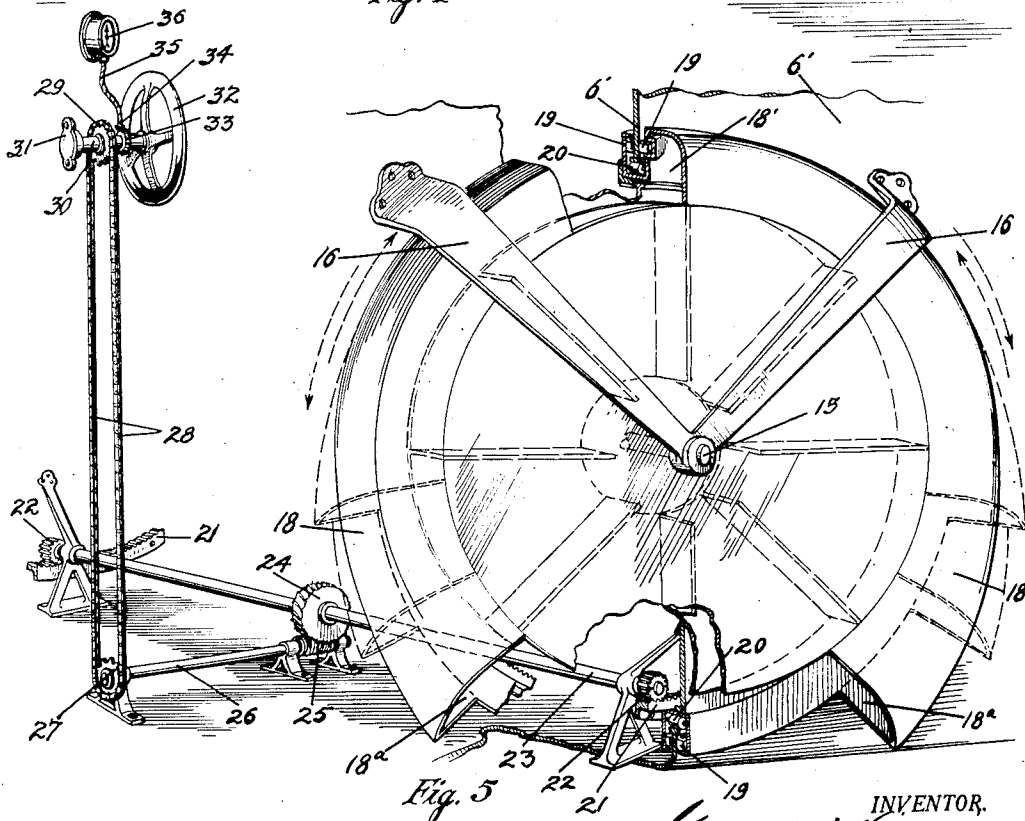
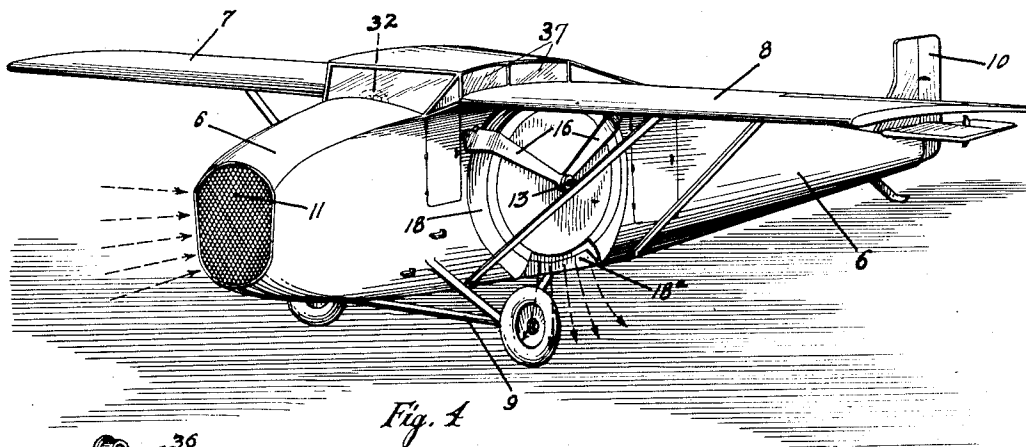
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UNITED STATES PATENT OFFICE

GEORGE D. HIGGINS, OF LOS ANGELES, CALIFORNIA

FLYING MACHINE

Application filed August 22, 1927. Serial No. 214,587.

My invention relates to heavier-than-air flying machines and more particularly to a type of air plane having the supporting planes, but instead of having the usual propeller, operating in the manner now common in planes, I have provided a flying machine with the fuselage or body open in front, with fans or blowers mounted at the opposite sides and connected to draw air in through the front of the fuselage and discharge it downwardly, or rearwardly, or forwardly, as may be desired, for the purpose of propelling said flying machine forwardly and also for the purpose of lifting said flying machine during its forward movement, the discharge of said air downwardly under the force of said fans or blowers creating an upward movement of the body of said flying machine.

So far as I am aware, I am the first to provide a fuselage with fans or blowers on its opposite sides, with air conduits therefrom leading out through the front of said fuselage and with control mechanism around said fans or blowers adapted to be manipulated to determine the discharge of the air from the fan or blower, that is, whether its discharge will be downwardly, rearwardly or forwardly.

In the drawings accompanying this application and in which I illustrate one embodiment of my invention, I have shown these side fans or blowers set at slight angles relative to the vertical, whereby their planes if extended downwardly would converge, and whereby the air currents discharged downwardly from the opposed fans converge, with a tendency to maintain the equilibrium of the plane during flight.

Another departure from the usual construction used in flying machines, my motor is set back in the fuselage and the driving shaft is transverse of the fuselage, the propelling fans or blowers being mounted on the opposite ends of said power shaft.

In order to more fully explain my invention, I will now describe the same as illustrated on the accompanying two sheets of drawings and in which:

Figure 1 is a side elevation of a flying machine embodying my invention, with the

front part thereof in section, longitudinally thereof;

Figure 2 is a top plan view of said flying machine;

Figure 3 is a front view with the right hand portion shown in section;

Figure 4 is a perspective view of a complete flying machine embodying my invention;

Figure 5 is an enlarged perspective view, partly in section, showing one of the fans or blowers, with the controlling mechanism for the direction of discharge of the air therefrom and with the mechanism for manipulating the same.

Referring now in detail to the drawings, I will describe the particular embodiment of my invention here shown. The fuselage or body is designated 6, the planes are designated 7 and 8, the running gear is designated 9, and the control rudders are designated generally 10. The fuselage is open at its forward end as shown and said open end is covered with a screen 11. Mounted in the body or fuselage and in substantial axial alinement under the planes 7 and 8, is the motor, designated as a whole 12, with the driving shaft 13, extending from the opposite ends thereof, and provided at its opposite ends and at the opposite sides of said body or fuselage with two fans, or blowers, 14 and 15. Mounted on the sides of the body are two arms or brackets, 16, 16, shown clearly in Figs. 4 and 5, attached at their upper ends to the body 6, and at their lower ends joined in a supporting bearing for the propeller or power shaft 13.

The inside of said fuselage, forwardly of the motor, is provided with partition members, 17, 17, converging at their forward ends and diverging at their rearward ends and forming air conduits from the main open end or inlet of the fuselage to the opposite sides of the fuselage and to the central portions of the fans or propellers, as will be understood from Figs. 1, 2 and 3. As the air is drawn into the forward open end of the fuselage it is deflected to the opposite fans and discharged therefrom in a manner now to be described.

Revolubly mounted in the open sides of the fuselage, around said fans or blowers, are

two shields or guards, or deflectors, 18, 18, one on each side and similar in construction and operation. These air deflectors 18, each comprise an annular housing of S-form in cross section, one side of which overlies the ends of said fan or blower, as at 18', Fig. 5, while the other, or reverse portion of which receives the edge of the side of the fuselage, as at 6', with rollers bearing on the opposite sides thereof, designated 19, 19, and with an edge roller 20, running around the inner edge of said body member 6', whereby said shield or annular deflector can be revolved about the axis of said power shaft 13, by means of mechanism to be described. The inner side of said annular deflector or shield 18, is provided with an internal gear or rack 21, with which meshes a gear 22, on a shaft 23, having intermediate its ends a worm gear 24, in mesh with a worm 25, on a shaft 26, provided with a sprocket wheel 27, to which runs a sprocket chain 28, from an operating sprocket wheel 29, on a short shaft 30, supported in suitable bearings 31, in the pilot's quarters, with an operating hand wheel 32, for operating said shaft, and through said sprocket chain, said annular deflectors or shields. The same connections run to both of said deflectors or shields, 18, 18, as will be understood from Fig. 5, only one connection, however, being fully shown.

Mounted on the short shaft 30, near the hand wheel 32, is a beveled gear 33, with which meshes another beveled gear 34, connected with a flexible shaft 35, the other end of which is connected with an indicator 36, in front of the pilot, for indicating the position of the deflectors or shields and the direction of the discharge therefrom.

Said deflectors or shields, it will be seen, are open at one segment, as at 18^a, and this opening can be turned to different positions for the discharge. When it is turned downwardly in its lowermost position, the air from the fans is discharged downwardly, and as said fans are slightly on an angle, the discharge is slightly inwardly under the fuselage, as may be understood from Fig. 3. When said shields or deflectors are turned to position the open segment rearwardly, then the discharge is rearwardly and the reaction or thrust is forwardly, supplementing the pull forwardly caused by the suction being applied through the open front end of said fuselage. If said shields or deflectors are turned to put the discharge opening in front, then the discharge of the air is forwardly and the tendency is to slow down the forward movement of the machine. These shields or deflectors can be turned to the desired positions by the simple manipulation of the control wheel 32, and its connections, as illustrated in Fig. 5.

The pilot's quarters are preferably covered with glass windows 37, around the sides and above the fuselage and wings, as indicated in Fig. 4.

It will be understood, of course, that approved materials and methods of building the fuselage, the wings, the bracing and other common parts will be followed, and that my invention is more particularly represented by the general construction and arrangement which provides an open ended fuselage for the sucking in of air from the front of the machine to give propulsion, to the fans or blowers, or propellers at the opposite sides to cause said suction, and the discharge of the air in different directions, under control, for the reaction on the machine, as before referred to, and while I have shown but one embodiment of my invention, I am aware that many changes in the details of construction and arrangement can be made therein, and I do not, therefore, limit my invention to the showing made for descriptive purposes, except as I may be limited by the hereto appended claims.

I claim:

1. A flying machine including in combination, a fuselage, carrying wings, steering means, the fuselage being open at its forward end and covered with a screen, propeller fans mounted on the opposite sides of said fuselage, under said wings, means providing air conduits from the front of said fuselage to said propeller fans, power mechanism connected to drive said fans, movable shields about said fans for controlling and directing the discharge of air from said fans, and means for moving the same.
2. A flying machine including in combination, a fuselage, carrying wings, steering members at the rear of said fuselage, said fuselage being open at its forward end, a screen over said open end, means forming air conduits through said fuselage, propeller fans intermediate the ends of said fuselage and housed to suck in air through said open front end of said fuselage and said air conduits, adjustable means around said propeller fans for controlling the direction of the discharge therefrom, means for manually adjusting said controlling means, power furnishing mechanism in said fuselage, and driving connections to said propeller fans.
3. A flying machine including in combination, a fuselage, carrying wings, steering members at the rear of said fuselage, said fuselage being open at its forward end, a screen covering said open end, means forming air conduits through said fuselage, propeller fans mounted on the opposite sides of said fuselage under said wings, said fans being set at angles from the vertical with their lower sides converging, revoluble housings about said propeller fans on the sides of said fuselage, said housings having openings therein, and adapted to be revolved to different positions to position the discharge openings therein downwardly, rearwardly or forwardly, means for moving the same manually,

power furnishing means and driving connections therefrom to said propeller fans.

through, of propeller means comprising a propeller wheel at each side of said fuselage, a motor for driving said propeller wheels, an annular shield of U-shape in cross section around each propeller wheel, with a section of said shield cut out to form a discharge opening in direct radial alinement from said wheel, and means for shifting said shields circumferentially to differently position said discharge openings.

Signed at Los Angeles, Los Angeles County, California, this 17th day of August, 1927.

GEORGE D. HIGGINS.

4. In a flying machine having a fuselage, carrying wings and steering means, means for propelling said flying machine including means forming air conduits longitudinally through said fuselage from the front end thereof, propeller fans connected with said air conduits for sucking air rearwardly through said conduits, controlling means for regulating the direction of the discharge of said air from said propelled fans, power mechanism connected for driving said propeller fans, and indictating means for indicating the direction of discharge of said air from said propeller fans.

5. In a flying machine having a fuselage, carrying wings and steering means at the rear end of said fuselage, means for propelling said flying machine including means forming air conduits from the front end of said fuselage rearwardly, two propeller fans mounted on the opposite sides of said fuselage under said wings and connected to draw air through said air conduits rearwardly, means surrounding said fans for regulating the direction of discharge of said air from said fans, means for manually adjusting said surrounding means simultaneously, power furnishing means, and driving connections therefrom to said propeller fans, substantially as described.

6. In a flying machine, a fuselage having its front end open to form an air conduit rearwardly to a location intermediate the ends of said fuselage and turned outwardly in two branches opening through the opposite sides of said fuselage, carrying wings across said fuselage over said side outlets of said air conduit, side propellers mounted one at each side of said fuselage opposite said air conduit outlets, a motor for driving said propellers, an annular shield around each propeller and shiftable circumferentially, said shield being open in one segment to form a radial discharge of air from said conduit, whereby said discharge can be directed in different directions, as desired, and means for turning said shields.

7. In a flying machine, a fuselage having an air conduit from its front end to a position under its wings and divided into branches directed out through the opposite sides of said fuselage, carrying wings across said fuselage above said side outlets, a side propeller in each side, opposite said outlets for drawing air through said conduit and discharging it at the side of said fuselage, an annular shield around each propeller, U-shape in cross section and open in one segment, and means for turning said shield circumferentially to position said segmental opening in different positions, substantially as described.

8. In a flying machine, in combination with a fuselage having an air conduit there-

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