Dec. 20, 1932. P. NACHTSHEIM 1,891,650

AEROPLANE

Filed Oct. 3, 1930 2 Sheets-Sheet 1

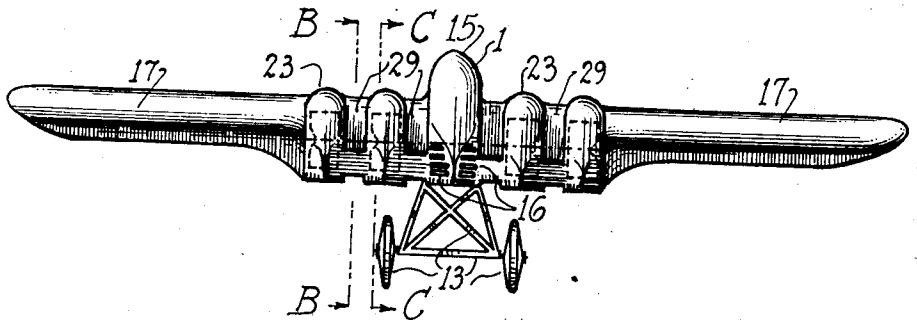


Fig. 1

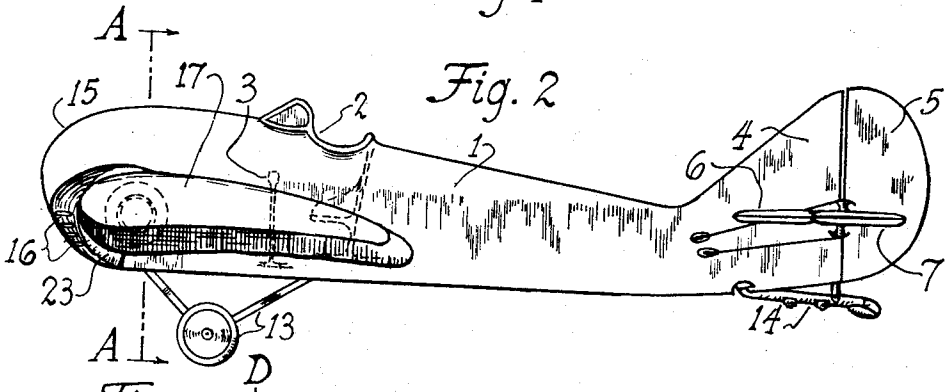


Fig. 2

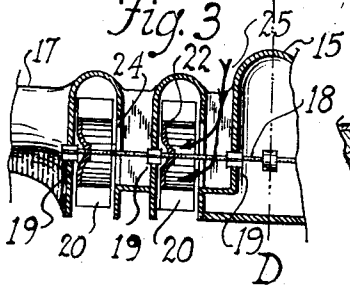


Fig. 3

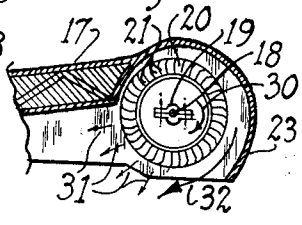


Fig. 4

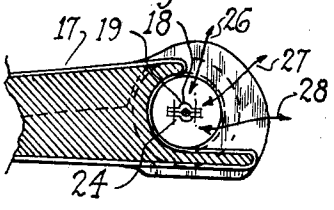


Fig. 5

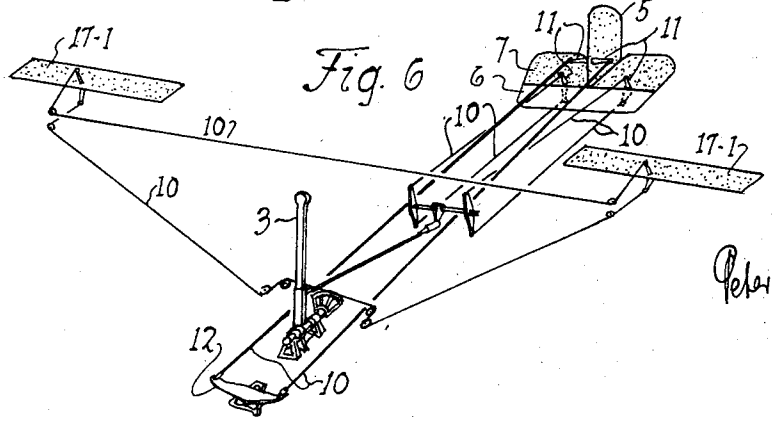


Fig. 6

Peter Nachtsheim
INVENTOR

Dec. 20, 1932. P. NACHTSHEIM 1,891,650

AEROPLANE

Filed Oct. 3, 1930 2 Sheets-Sheet 2

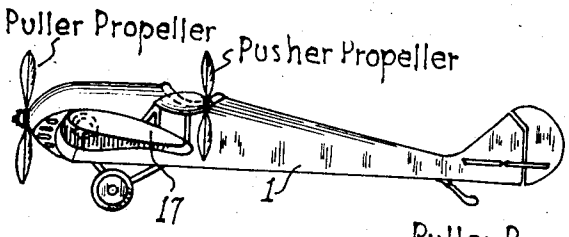


Fig. 7

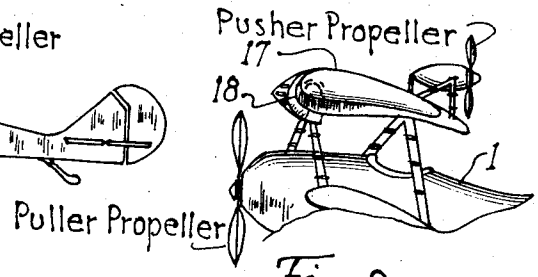


Fig. 8

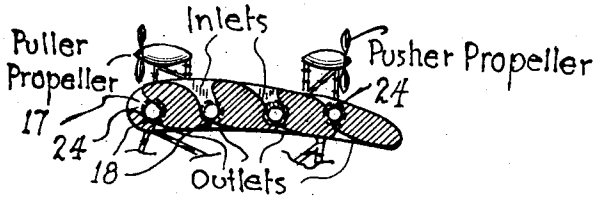


Fig. 9

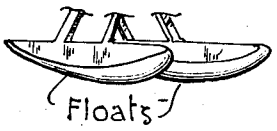


Fig. 10

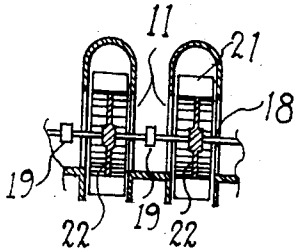


Fig. 11

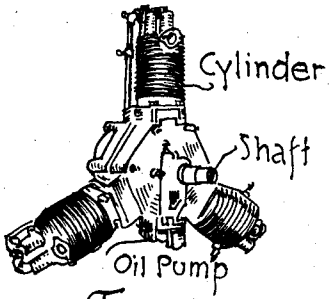


Fig. 12

Peter Nachtsheim.

INVENTOR

Patented Dec. 20, 1932 1,891,650

UNITED STATES PATENT OFFICE

PETER NACHTSHEIM, OF NEW YORK, N. Y.

AEROPLANE

Application filed October 3, 1930. Serial No. 486,161.

This invention relates to a new type aeroplane, employing as its motive power a new kind of principle, similar to the actual flying of birds, only instead of moving the wings, a like condition is created by this invention, in that a vacuum or suction lift is maintained over and ahead of the wings and pressure is maintained under the wings. This condition with the added principle as employed in motorless gliders will permit of low speed flying and cruising and also will reduce to a minimum the take-off-distance and landing-distance so necessary in present day aeroplanes. Of course, higher speeds are easily obtainable, if so desired, but it is the reduction obtainable through this invention in the straight forward tractive force, so necessary at high speed in present aeroplanes, that will reduce flying to a safer and more useful art through my invention.

My invention simulates as nearly as possible the actual flight of a bird. A bird combines flapping of its wings with a forward thrust; in my invention the same thing occurs in a translated form.

Present aeroplane controls are used in the same manner as on present day aeroplanes, namely vertical rudders to guide the aeroplane right or left, elevators to guide the aeroplane up or down and ailerons to control rolling or balancing.

The arrangement of the aeroplane may be changed from the preferred form shown, so as to place the flight actuating parts on the rear of the wings and thus effecting a pusher aeroplane instead of the tractor aeroplane shown, also the actuating parts may be multiplied, so as to have a series of them in a horizontal or nearly horizontal plane. It is also understood that my invention is applicable to land planes as well as sea planes or a combination of them both, and that it can be incorporated in a monoplane, biplane, triplane, multiplanes or any combination or modification of these types.

In general, the preferred form of my invention consists of an aeroplane with a body or fuselage, tail, elevators, rudder, fin, wings with ailerons, landing gear and a power plant, consisting of one or more centrifugal blowers, mounted on a common shaft, actuated by an engine or any other force, with these blowers taking suction through side-inlets from the air above and forward of the aeroplane only. The discharge of these blowers is directed down and rearward. By arranging the blowers side by side, alternating with suction inlets and placing them at the forward end of the wings, a suction lift is created over the forward end of the wings and by discharging the air directly below and rearward, compression is maintained under the wings. If it should be desirable, one or more pusher or puller propellers may be used, such as are now used on most aeroplanes, in combination with this or any other modified form of my invention. Fuel and oil tanks may be placed in the wings or body or fuselage.

Another object of my invention is the elimination of the roaring of present day aeroplanes, if such is desired for special purposes. Since it is possible to reduce the flying speed considerably it will be possible to pass through the air, say at night, or in a fog, without much noise.

Other and further objects of the invention will be apparent from the disclosures in the accompanying drawings and specification. The invention, in a preferred form, is illustrated in the accompanying drawings and hereinafter more fully described, consisting in features of construction, combination and arrangements of parts and elements. Similar reference characters indicate corresponding parts throughout the several views in the drawings.

In the accompanying drawings:

Figure 1 is a front elevation of the aeroplane;

Figure 2 is a side elevation of the aeroplane:

Figure 3 is a partial sectional view along line A—A of Figure 2;

Figure 4 is a partial sectional view along line C—C of Figure 1;

Figure 5 is a partial sectional view along line B—B of Figure 1;

Figure 6 is an isometric view of the control elements of the aeroplane.

Figure 7 is a side view of a monoplane with added pusher and puller propellers, as now in use.

Figure 8 is a partial side view of the top wing of a biplane, triplane, multiplane or any combination or modification of these types, showing the new actuating device at the front of the wings, and with added pusher and puller type propellers, as now in use.

Figure 9 shows a partial side view of the wing of a monoplane, also the top wing of a biplane, triplane, multiplane or any combination or modification of these types, showing the new actuating device in series in a horizontal or nearly horizontal plane, with added pusher and puller propellers, as now in use.

Figure 10 shows a partial side view of the lower part of a seaplane for all the types mentioned above, namely, monoplane, biplane, triplane, multiplane or any modification or combination of these types, to be used with the new actuating device or devices, also with or without puller and pusher propellers, as now used.

Figure 11 shows a partial front sectional view of the new actuating device, showing double inlets to the blowers.

Figure 12 shows a partial sectional view of the driving shaft or shafts at the center, using a shaft mounted engine drive.

In referring to aeroplane or aeroplanes in any of the following paragraphs and claims it is understood that this term besides the preferred form of monoplane also is used in a generic sense and refers to and includes biplanes, triplanes, multiplanes, also any combination or modification of these types as well as land planes as well as sea planes or a combination of them both, except where it refers specifically to any particular type.

As shown in the drawings:

Reference numeral 1 indicates generally the fuselage of an aeroplane, consisting of structural members and a covering of suitable material, containing the cockpit 2,—with seat, control stick 3 attached to the end of control wires, also containing room for all instruments (not shown); the fuselage also carries the engine (not shown) and the fuel tanks (not shown). If desired, there can be provided in the fuselage additional room for passengers or other useful load. To the rear of the fuselage are attached the vertical fixed fin 4, movable vertical rudder 5, the fixed horizontal stabilizer 6 and the movable elevators 7, all constructed of suitable materials. The rudder is hinged to the fin and the elevators are hinged to the stabilizer. Control wires 10 are fastened on one end to horns 11 on the rudder and elevators. The control wires of the rudder on the other end fasten to the rudder bar 12, and the control wires of the elevators fasten on the other end to the control stick 3.

The forward portion of fuselage 1 is supported by a forward landing gear and wheels 13, of conventional design.

The rear of the fuselage, also called empennage, is supported by tail skid 14 of conventional design; in its place a wheel may be used. The forward end of the fuselage terminates in a faired shape in order to cut down wind resistance. Cowling 15 affords protection for the engine (not shown) that is placed below it. The underside of the cowling is cut back like an arrow, in order to assist in riding the air, and it has openings 16 for admission of air, that will be used to cool the engine or radiator of the engine. Fastened to the lower portion of the fuselage are flying wings 17 of the established aerofoil construction. At the outer rear edge of the wings are ailerons 17–1, hinged to the wings and controlled through control wires 10, fastened to the control stick 3. Built into the forward central part of the wings and running through the fuselage is shaft 18, resting in suitable bearings 19, built into the structure. Mounted on the shaft are blowers 20, with blades 21. The inclination of the blades may be varied to any desired pitch or curvature for any special duty requirements. The number of the blowers depends on the size of the aeroplane and may be increased or decreased to suit. Also as stated before, several shafts with attached blowers may be arranged parallel in series in a horizontal or nearly horizontal plane. The hub 22 of the blowers is fastened to the shaft, it has smooth surfaces and flowing curves, sloping towards the inlet to deflect the air to the blades with the least possible resistance. The hub is secured also to the blades through a driving disc and rim (not shown). I have shown single inlet blowers, double inlet blowers may also be used. Over the forward top half of the blower is built housing 23, as shown in Figure 4. The lower rearward bottom half of the housing is open. The sides of the housing are vertical and have circular opening 24 for the inlet of air, which travels in the path indicated by arrow 25, and arrows 26, 27, 28, exerting a suction lift. Between housings of the individual blowers are spaces 29, open to the top and forward, the bottom and rear are housed off, in order to control the direction of the air to be drawn in. These inlet spaces may be varied, so that the resultant suction lift may be either more vertical or more horizontal; also sliding shutters may be attached to spaces 29 for control of the opening direction and the resultant suction lift, depending on whether more upward or more forward pull is desired. The housing 23 is faired or streamlined, so as to offer the least resistance to the air. As the blowers revolve in the direction of arrow 30 of Figure 4 the air drawn in through openings 24 of the housing will be discharged

through the centrifugal force of the revolving blades 21 in the direction of arrows 31 and 32 in a downward and rearward direction, causing compression under the wings. Under cowling 15 of Figure 3 along centerline D—D of the aeroplane is the engine (not shown); any drive, manual or otherwise may be used to turn shaft 18, and with said shaft all the attached blowers 20, exerting thereby a suction lift in an upward and forward direction and also creating a compression and air movement under the wings and rearward.

It is evident that by increasing the combined traction and lift of the aeroplane over the combined resistance and weight, it is possible to take off without any run.

Any variation in arrangements of parts but according to this new principle I claim as falling within the scope of my invention.

The same principle as applied to a full sized aeroplane for actual flying as covered by the attached specification is also applicable to models of such an aeroplane or to toy-sized aeroplanes; only for such models and toys the control surfaces will be fixed or hinged in such a way to permit setting of them before flight, and for a power plant the following may be used: The ends of the blower shaft will be extended through the housing and terminated in an eye-hook; on the forward extreme outside of the wings a bracket eye-hook will be fastened to the wings, so that rubber bands can be strung from the eye-hooks of the shaft to these eye-hooks on the wings in such a way as to be clear of any interference with the wings and with said rubber bands in a direction, that is an extension of the shaft itself, and having the two sets of rubber bands arranged symmetrically about the center line of the machine. Then by twisting the rubber bands and releasing them the shaft can be turned for a few minutes duration, enabling the model or toy to fly, or also an idler pinion with hooks on both sides and transmission to the main shaft can be used instead, especially when it is desirable to increase the number of blowers, when hooks at both ends of the wing can serve to secure the rubber or flexible bands for the same purpose as mentioned above.

Might state here also that this centrifugal force, utilized in this aeroplane, is utilized in present day blowers for air and in pumps for liquids.

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

1. An aeroplane actuating device comprising an aeroplane having supporting wings, a plurality of means mounted on a horizontal axis or axes to centrifuge air installed on both sides of and spaced symmetrically about the longitudinal centerline of the aeroplane, additional means to direct the suction supply of air from forward and above, also means to lead the air suction supply through the first mentioned means and means to direct the centrifuged air rearward and backward.

2. An aeroplane actuating device comprising an aeroplane having supporting wings, a plurality of centrifugal blowers on both sides of and installed in equal numbers and symmetrically on each side of the longitudinal center of the wings, having an individual operating housing for each blower, with inlets at their central part for the admission of air, said housings shaped to form a positive passage for the air after it leaves the blower blades with means for directing the discharge of air after it leaves said blowers and housings, having also alternating with each housing and for each blower, suction inlets with means to direct the suction of air, said blowers with housings and suction inlets being placed upon a wing axis and centering on a common, rotatable shaft, parallel to the length of the wings at the front of the same, with the shaft supporting and holding the blowers and the shaft being supported by suitable bearings built into the aeroplane and the wings, the housings and suction inlets being supported and built into the front part of the wings, with a power plant centrally placed to drive the shaft and blowers.

3. An aeroplane having a plurality of centrifugal blowers mounted on a horizontal axis, on each side of and spaced symmetrically about the longitudinal centerline of the aeroplane mounted on and fastened to a common rotatable shaft, means to support said shaft and blowers parallel to the length of the wings at the front of the same, housings built around each blower, suction inlets for each blower and alternating with same, means for causing a controlled passage for air starting at the suction inlets, going through the blowers and discharging from the blower housings, means to apply force to the center of above mentioned shaft at the longitudinal center of the aeroplane with means to turn the shaft and the blowers.

4. An aeroplane actuating device comprising an aeroplane having supporting wings, a plurality of centrifugal blowers installed on both sides of and symmetrically on each side of the longitudinal center of the wings, having an individual operating housing for each blower, with inlets at their central part for the admission of air, said housing shaped to form a positive passage for the air after it leaves the blower blades with means for directing the discharge of air after it leaves said blowers and housings, having also alternating with each housing and for each blower, suction inlets with means to direct the suction of air, said blowers with housings and suction inlets being placed upon a wing axis and centering on a common rotatable shaft, parallel to the length of the wings at the rear of the same, with the shaft supporting

and holding the blowers and the shaft in turn being supported by suitable bearings built into the aeroplane and the wings, the housings and suction inlets being supported and built into the rear part of the wings, with a power plant centrally placed to drive the shaft and blowers.

5. An aeroplane having a plurality of centrifugal blowers on each side of and spaced symmetrically about the longitudinal centerline of the aeroplane, mounted on and fastened to a common rotatable shaft, means to support said shaft and blowers parallel to the length of the wings at the rear of the same, housings built around each blower, suction inlets for each blower and alternating with same, means for causing a controlled passage for air starting at the suction inlets, going through the blowers and discharging from the blower housings, means to apply force to the center of above mentioned shaft at the longitudinal center of the aeroplane with means to turn the shaft and the blowers.

6. An aeroplane actuating device as described in claim 2, having also a propeller or propellers, pusher or puller type or both, engine driven, in addition to above described actuating device.

7. An aeroplane as described in claim 3, having also a propeller or propellers, pusher or puller type or both, engine driven, in addition to above described actuating device.

8. An aeroplane actuating device as described in claim 4, having also a propeller or propellers, pusher or puller type or both, engine driven, in addition to above described actuating device.

9. An aeroplane as described in claim 5, having also a propeller or propellers, pusher or puller type or both, engine driven, in addition to above described actuating device.

10. An aeroplane actuating device comprising an aeroplane having supporting wings, a plurality of centrifugal blowers installed on both sides of and symmetrically on each side of the longitudinal centerline of the wings, having an individual operating housing for each blower, with inlets at their central part for the admission of air, said housings shaped to form a positive passage for the air, after it leaves the blower blades with means for directing the discharge of air after it leaves said blowers and housings, having also alternating with each housing and for each blower, suction inlets with means to direct the suction of air, said blowers with housings and suction inlets being placed upon two or more wing axes and centering on two or more common, rotatable shafts, parallel to the length of the wings and starting at the front of the wings and continuing parallel with each other to the rear of the wings, with the shafts supporting and holding the blowers and the shafts being supported by suitable bearings built into the aeroplane and the wings, the housings and suction inlets being supported and built into the wings, with a power plant or power plants centrally placed to drive shafts and blowers.

11. An aeroplane having a plurality of centrifugal blowers on both sides of and spaced symmetrically about the longitudinal centerline of the aeroplane, mounted on and fastened to two or more common, rotatable shafts, means to support said shafts and blowers parallel to each other and to the length of the wings and said shafts running from the front edge of the wings to the rear edge of same, housings built around each blower, suction inlets for each blower and alternating with same, means for causing a controlled passage for air starting at the suction inlets, going through the blowers and discharging from the blower housings, means to apply force to the center of above mentioned shafts at the longitudinal center of the aeroplane with means to turn the shafts and the blowers.

12. An aeroplane actuating device as described in claim 10, having also a propeller or propellers, pusher or puller type or both, engine driven, in addition to above described actuating device.

13. An aeroplane as described in claim 11, having also a propeller or propellers, pusher or puller type or both, engine driven, in addition to above described actuating device.

PETER NACHTSHEIM.