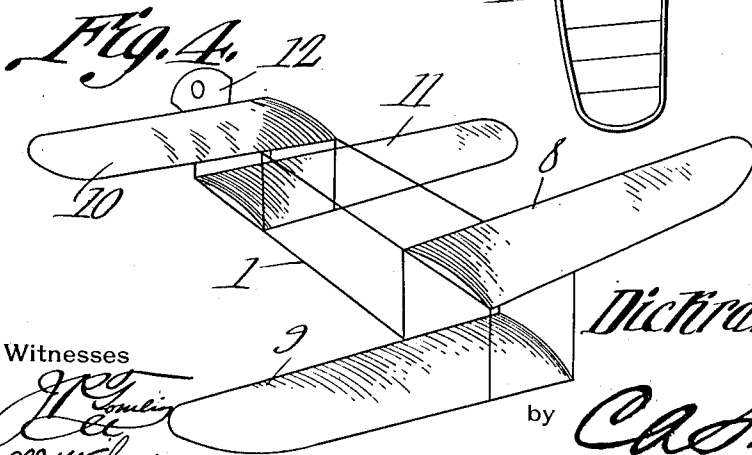
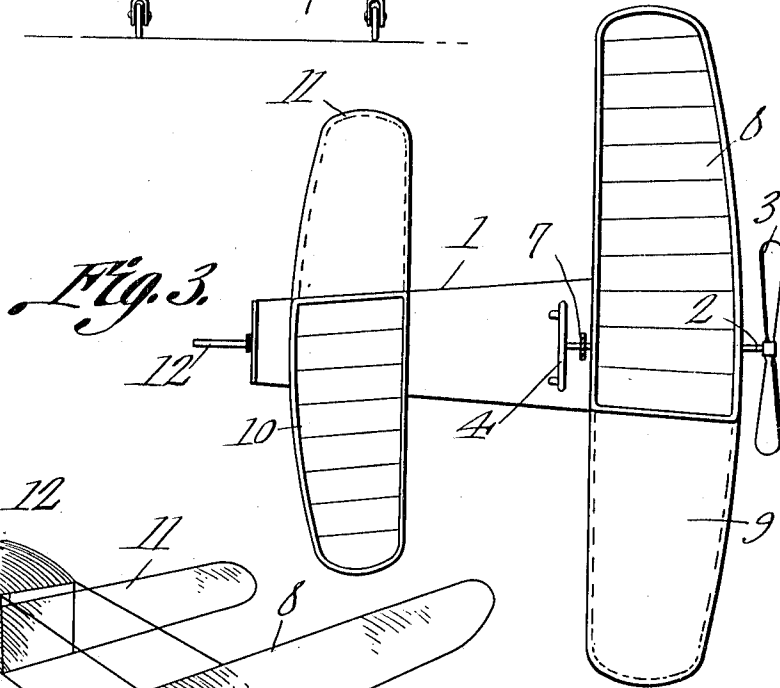
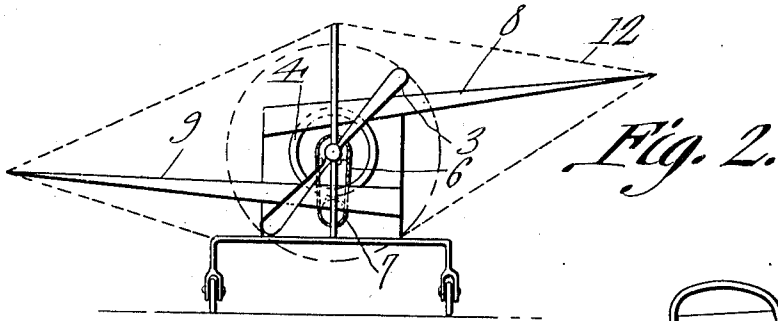
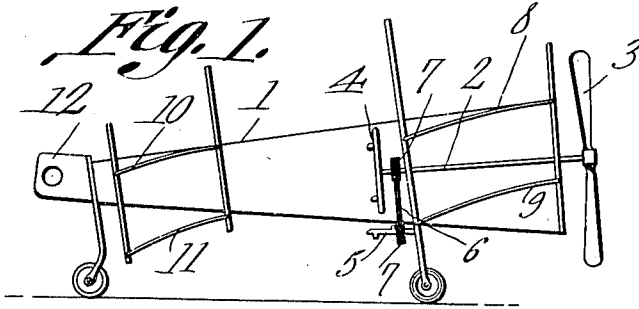


D. G. TERZIAN.
AEROPLANE.

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1,035,660.

Patented Aug. 13, 1912.



Witnesses

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UNITED STATES PATENT OFFICE.

DICKRAN G. TERZIAN, OF WASHINGTON, DISTRICT OF COLUMBIA.

AEROPLANE.

1,035,660.

Specification of Letters Patent.

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To all whom it may concern:

Be it known that I, DICKRAN G. TERZIAN, a citizen of the United States, residing at city of Washington, in the District of Columbia, have invented a new and useful Aeroplane, of which the following is a specification.

This invention relates to aeroplanes, one of its objects being to provide a novel arrangement of sustaining planes whereby danger of capsizing, when subjected to sudden unexpected gusts of wind, is reduced to the minimum.

Another object is to provide improved means whereby the motor, should it become stalled while the machine is in flight, can be easily started by the aviator.

With the foregoing and other objects in view which will appear as the description proceeds, the invention resides in the combination and arrangement of parts and in the details of construction hereinafter described and claimed, it being understood that changes in the precise embodiment of the invention herein disclosed can be made within the scope of what is claimed, without departing from the spirit of the invention.

In the accompanying drawings the preferred form of the invention has been shown.

In said drawings:—Figure 1 is a diagrammatic side elevation of the machine. Fig. 2 is a front elevation, showing the machine in diagram. Fig. 3 is a plan view, the frames of the upper sustaining planes being shown. Fig. 4 is a diagrammatic perspective view showing the relative positions of the planes of each pair.

Referring to the figures by characters of reference 1 designates the frame of the machine and arranged longitudinally within the center of the front portion of this frame is the propeller shaft 2, said shaft being provided at its front end with a propeller 3 and at its rear end with a hand wheel 4 or the like. The motor shaft has been indicated at 5 and motion is adapted to be transmitted therefrom to the shaft 2 by means of a chain 6 and sprockets 7 although it is to be understood that any other suitable power transmitting means may be employed if desired.

By arranging the shafts in the manner herein described and by providing the wheel 4 it will be seen that, should the motor stop, while the machine is in flight, the aviator can start it by rotating the wheel 4. Here-

tofore, in starting the motors of aeroplanes and the like it has been necessary for one or more persons to grasp the propeller and rotate it until the motor starts. This has, obviously, been impossible while the machine is in flight and no means has thus far been devised for starting the motor under these conditions. By utilizing the wheel 4, which is in convenient reach of the aviator, it will be seen that the shaft 2 and the shaft 5 can be actuated so as to start motor while the machine is in flight.

For the purpose of sustaining the machine while in flight, a novel arrangement of sustaining planes has been devised. As shown in the drawings these planes are arranged in pairs, the planes 8 and 9 of the front pair being connected in any suitable manner to the front portion of the frame 1 while the upper and lower rear planes 10 and 11 are connected to the rear portion of the frame 1 in any manner desired. The planes 8, 9, 10 and 11 are disposed in staggered relation, plane 8 being extended from the top of the frame 1 beyond one side of said frame, while the lower plane 9 is extended from the lower portion of the frame 1 and beyond the other side of said frame. Those portions of the planes 8 and 9 which are connected to the frame 1 lap, as shown particularly in Figs. 2 and 4, although spaced apart to form an air passage therebetween and, as shown in Fig. 2, the said planes preferably incline outwardly and upwardly. Guy wires such as indicated by dotted lines at 12 in Fig. 2 are preferably extended from the tips of the planes 8 and 9 to portions of the frame 1 so as thus to hold the planes against displacement relative to the frame.

The rear sustaining planes 10 and 11 are preferably about two thirds of the size of the planes 8 and 9 and the upper plane 10 is extended laterally beyond one side of the frame 1 while the lower plane 11 is extended laterally beyond the other side thereof. The lower plane 9 and the upper plane 10 are located at the same side of the machine while the upper plane 8 and the lower plane 11 are located at the other side of the machine. Planes 10 and 11 are spaced apart at their inner or lapping ends so as to form an air passage similar to that formed between the lapping portions of the planes 8 and 9. Planes 10 and 11 are also preferably inclined laterally and upwardly and

may be provided with any suitable braces, not shown.

Any suitable steering means may be used, a rudder being shown generally at 12.

5 It will be apparent that, while the machine is in flight, the sustaining wings 8 and 9, 10 and 11, will displace air downwardly in the same manner as would the front and rear planes of an ordinary monoplane. In
10 other words, the two planes 8 and 9 present the same sustaining area as would a single plane of a length equal to the distance between the tips of the planes 8 and 9. It has been found, however, that by disposing the
15 sustaining planes in staggered relation, as shown in the drawings, (see particularly Fig. 4) unequal air pressures upon the planes have been more or less equalized and danger of capsizing has thus been reduced
20 to the minimum. This is due, to an extent, to the fact that there is a clear air space between the lapping portions of the planes of each pair and through which air currents are free to pass without having any material
25 effect upon the planes. This arrangement of vents for the air is particularly desirable where the machine is subjected to sudden side gusts which, ordinarily, would tend to destroy the lateral balance of the
30 machine. By disposing the rear planes oppositely to the front planes, the said planes will work in opposition so that any undesirable effect produced by gusts of wind upon one pair of planes will be offset by the
35 beneficial results obtained through the action of the air currents upon the other set of planes. Where a continuous sustaining plane extending from one side to the other of a machine is employed, a gust of wind
40 against the lower or upper surface thereof tends violently to raise or lower the machine bodily and to render it difficult, and sometimes impossible, to restore the balance of

the machine. By arranging the planes as herein described, however, a portion of the
45 air current will, under the conditions mentioned, escape between the planes of each pair and thus minimize the undesirable effect of the wind.

What is claimed is:—

1. An aeroplane having front and rear
50 sustaining planes arranged in pairs, the planes of each pair being extended in opposite directions and lapping at their inner ends.

2. An aeroplane having front and rear
55 pairs of upper and lower sustaining planes, the planes of each pair being extended in opposite directions.

3. An aeroplane having front and rear
60 pairs of upper and lower sustaining planes, the planes of each pair being extended in opposite directions, the upper plane of each pair being at the same side as the lower plane of the other pair.

4. An aeroplane including a frame, and
65 front and rear pairs of upper and lower sustaining planes secured to the frame, the planes of each pair being extended in opposite directions and lapping at their inner ends.

5. An aeroplane including a frame, and
70 front and rear pairs of upper and lower sustaining planes secured to the frame, the planes of each pair being extended in opposite directions and lapping at their inner ends, the upper plane of each pair being at the same side of the frame as the lower plane of the other pair.

In testimony that I claim the foregoing
80 as my own, I have hereto affixed my signature in the presence of two witnesses.

DICKRAN G. TERZIAN.

Witnesses:

SELINA WILLSON,
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