A. T. ZEISE.

FLYING MACHINE.

APPLICATION FILED DEC. 1, 1911.

1,052,199.

Patented Feb. 4, 1913.

Fig. 1.

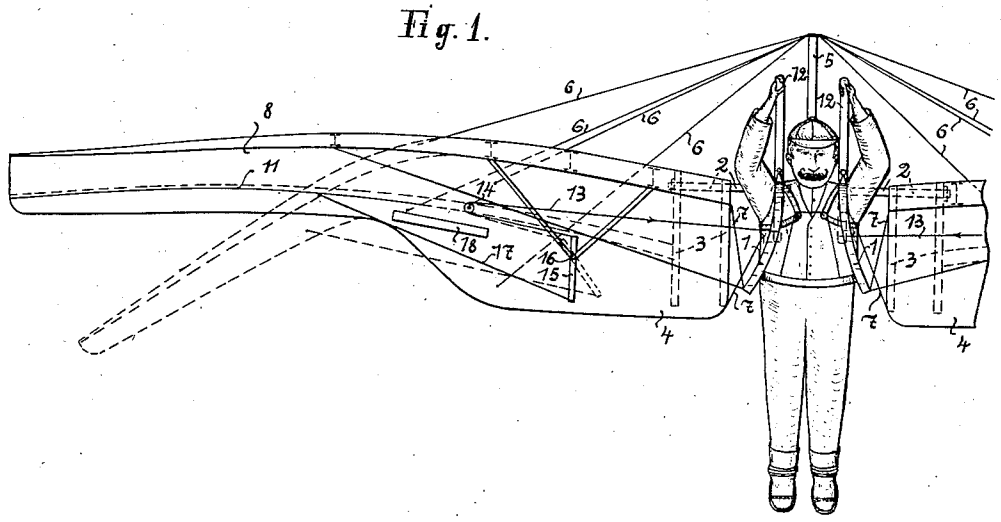


Fig. 2.

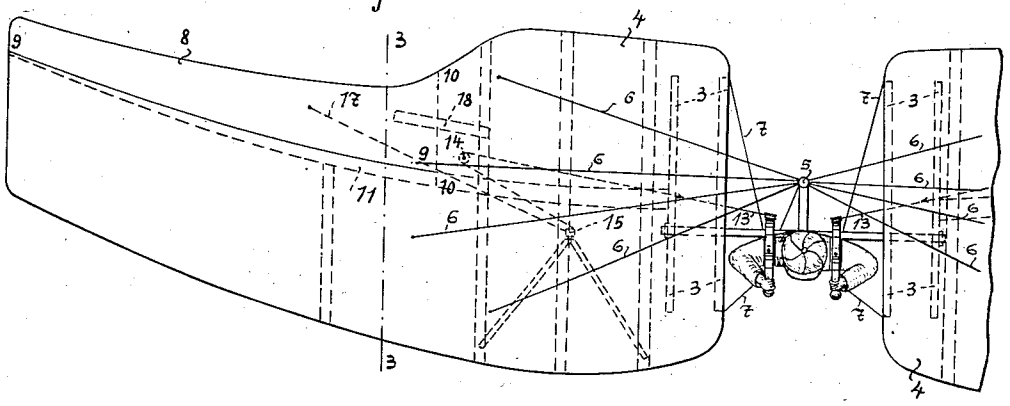
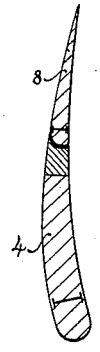


Fig. 3.



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ALFRED THEODOR ZEISE, OF ALTONA-OTHMARSCHEN, GERMANY.

FLYING-MACHINE.

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To all whom it may concern:

Be it known that I, ALFRED THEODOR ZEISE, a subject of the German Emperor, residing at 43 Margaretenstrasse, Altona-Othmarschen, in the German Empire, have invented new and useful Improvements in Flying-Machines, of which the following is a specification.

This flying machine may be impelled by a motor or by human force. It has at least two sustaining planes to each of which is connected a movable wing which can be moved downward by the motor or the aviator. When in its normal position the wing forms a uniform surface with the sustaining plane.

This invention is based on the fact, noticed when observing flying birds, *e. g.* a hawk, that at a certain inclination of the sustaining planes the greater part of the air resistance is reduced to *nil*, so that air flowing against the bird imparts it a forward motion. Consequently, when the wind is sufficiently strong it is possible to move against it with sustaining planes of a suitable inclination. In order, however, to obtain the desired velocity when there is no wind or it is not strong enough, according to this invention movable wings have been connected with the sustaining planes.

Reference is to be had to the accompanying drawings in which as an example a flying machine to be attached to the body of the aviator is shown and in which—

Figure 1 is an elevation, Fig. 2 a plan view of the machine, Fig. 3 is a section on line 3—3 of Fig. 2.

The flying machine comprises two bent strips 1 of aluminium or other suitable material which are placed on the shoulders of the aviator and fixed to his body by means of belts, straps, etc., in such a manner as to allow him to move his body freely, *e. g.* for steering. The two strips are at the back of the aviator connected by a transverse rod 2 which by means of ribs 3, 3 holds the sustaining planes 4. Fixed to rod 2 is an upright 5 to which parts serving to maintain the sustaining planes, such as ropes, wires, etc., 6 are attached. Other ropes or wires 7 connect the lower surfaces of the sustaining planes with the ends of strips 1.

The cross section of the sustaining plane is that of a bird's wing, see Fig. 3, that is, it is rather broad in front and becomes gradually narrower toward the end. Its upper surface is convex while its lower surface is hollow. Both surfaces are curved rather strongly in front. Toward their ends they gradually decrease in curvature or are even straight.

Part of the sustaining plane, viz. the rear part 8 of its end is separated from the sustaining plane along line 9—9 (Fig. 2) so that it is in connection with it only along line 10—10.

Double-armed levers 12 are rotatably carried on the shoulder parts of strips 3 the upper ends of which the aviator can take hold of. The upper arms of the levers 12 are longer than their lower ones, so that, if the ratio is, say, 4 to 1, a force of 33 pds. exerted on each long arm will result in a force of 132 pds. at the end of each short arm. A wire or the like 13 is fixed to the end of each lever 12 and is over a roller 14 suspended on plane 4 guided to a double armed lever 15 which is carried in a standard 16 of the sustaining plane. The long arm of this lever is connected to the wing 8 by means of a wire or the like 17. When the aviator pulls down levers 12 wires 13 are pulled in the direction of the arrow which causes lever 15 to move toward the right and to bend wing 8 by means of wire 17. The arm of lever 15 which is engaged by wire 13 is shorter than that to which wire 17 is attached, consequently the way of wire 13 is enlarged in the ratio of lever 15 so that wing 8 strikes out strongly and rapidly even if wire 13 is pulled slightly.

The wing is made elastic so that it automatically returns into its position alongside plane 4 as soon as it is released by wire 13. In order to cause the wing to return more rapidly a laminated spring 18 might be fixed where the wing is connected to the sustaining plane. Preferably the wing 8 is shaped like a bird wing in cross section (Fig. 3) as well as plane 4, experiments having shown that when a wing so shaped is pulled down a partial vacuum forms above it which accelerates its return movement. Lever 16 might also be dispensed with, and wire 13 directly engage wing 8.

The wings may, of course, also be actuated by the legs of the aviator or by the combined action of arms and legs.

For a flying machine having a motor the construction of the sustaining planes and

wings will be the same as just described. Of course, in this case the frame is so constructed that the aviator can sit in it.

To start the machine, a velocity is imparted to it which is sufficient for lifting it off the ground by moving it along an inclined surface, *e. g.* When the wind is strong enough, the machine will then sail. In case of insufficient wind or no wind at all the velocity necessary for sailing and flying is imparted to it by means of the wings.

I claim:

1. In a machine of the character described having sustaining planes and wings, the combination of movable wings with fixed sustaining planes, said wings being so constructed that they can be displaced in relation to the sustaining planes and that in their normal position they form a uniform surface with the said sustaining planes, said wings forming a part of the adjacent sustaining planes which at one end is made in one with the sustaining plane while along its longitudinal edge it is separated from the sustaining plane.

2. In a machine of the character described having sustaining planes and wings, the combination of movable wings with fixed sustaining planes, said wings being so constructed that they can be displaced in relation to the sustaining planes and that in their normal position they form a uniform surface with the said sustaining planes, said wings forming a part of the adjacent sustaining planes which at one end is made in one with the sustaining plane while along its longitudinal edge it is separated from the sustaining plane, the sustaining plane together with the wing being shaped like a bird's wing in cross-section.

3. In a machine of the character described having sustaining planes and wings, the combination of movable wings with fixed sustaining planes, said wings being so constructed that they can be displaced in relation to the sustaining planes and that in their normal position they form a uniform surface with the said sustaining planes, said wings forming a part of the adjacent sustaining planes which at one end is made in one with the sustaining plane while along its longitudinal edge it is separated from the sustaining plane, the wing being shaped like a bird's wing in cross-section.

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