

S. B. EVERSEN & J. McLARTY.

FLYING MACHINE.

APPLICATION FILED JUNE 17, 1912.

1,054,099.

Patented Feb. 25, 1913.

2 SHEETS—SHEET 1.

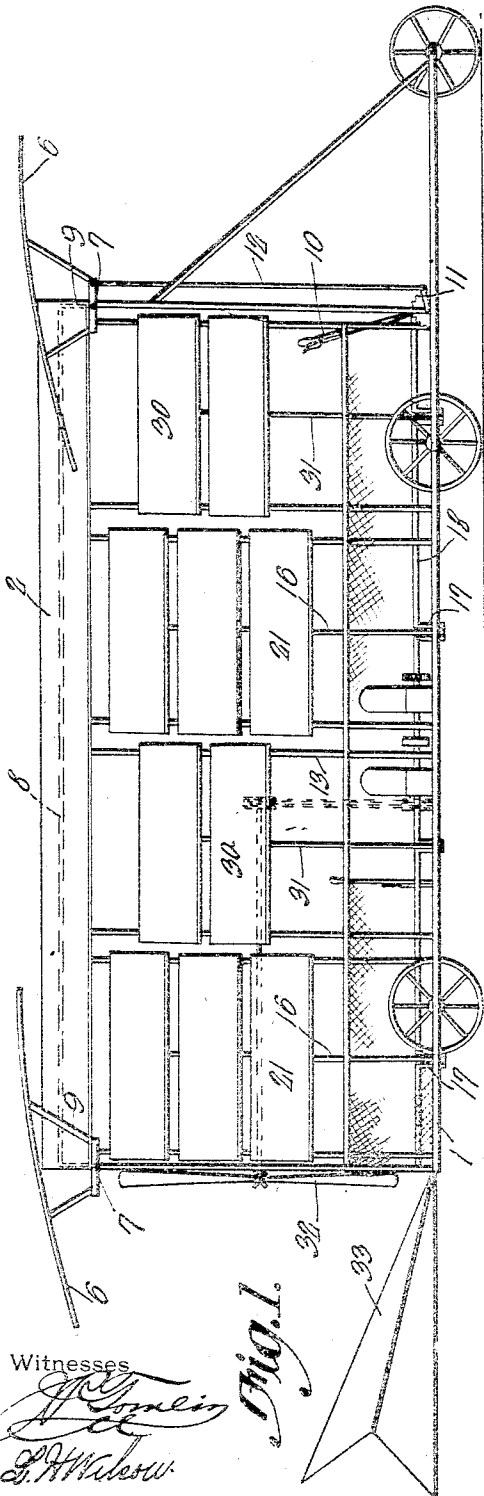


Fig. 1.

Witnesses

J. E. Jones
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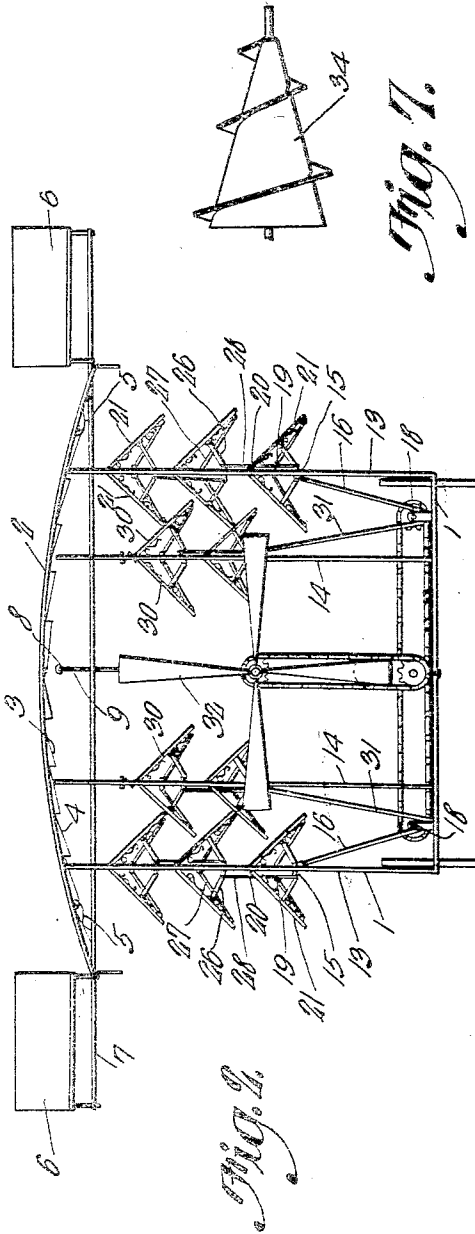


Fig. 2.

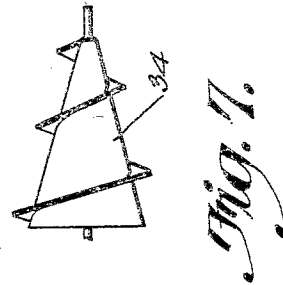


Fig. 3.

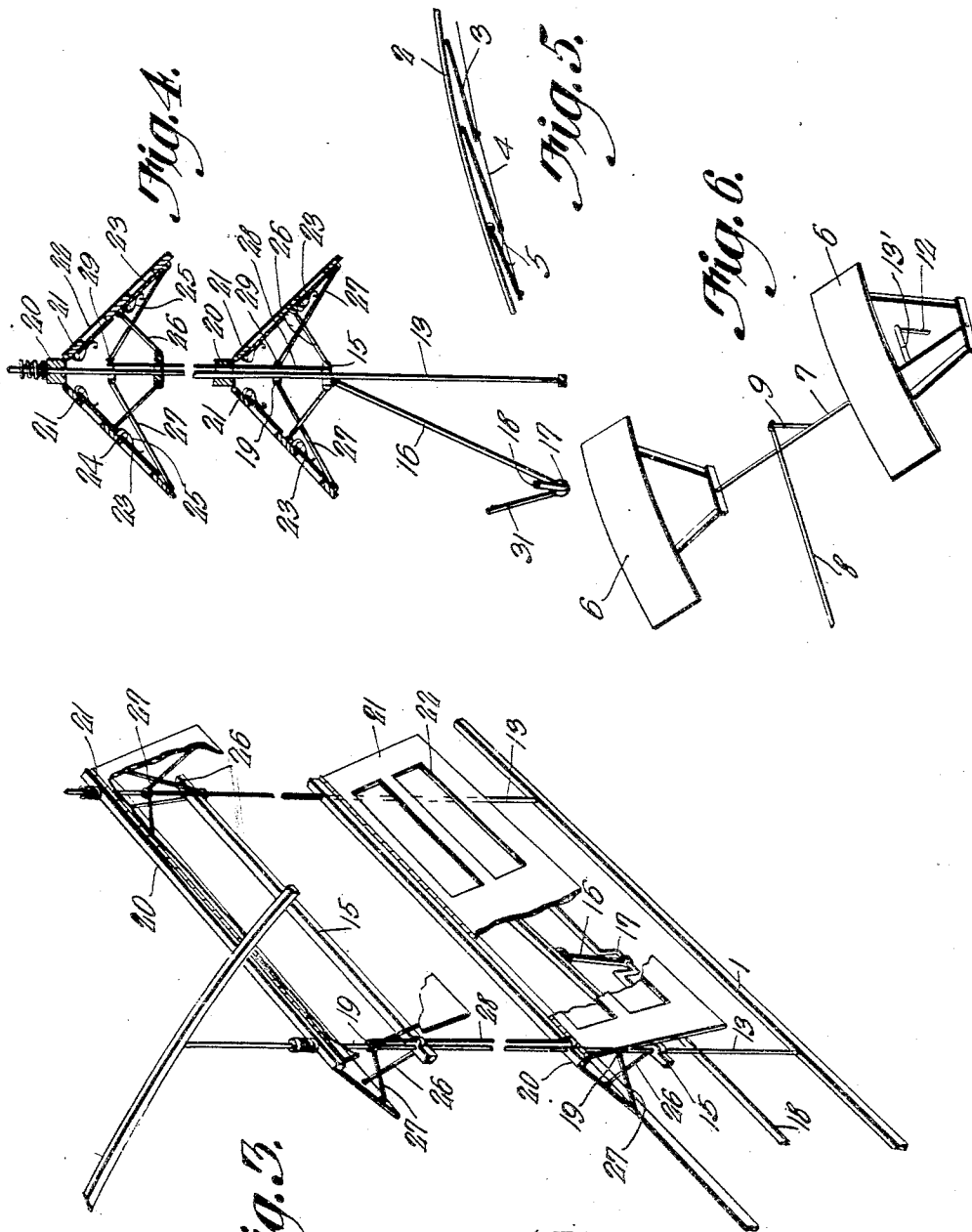
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Fig. 3.

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UNITED STATES PATENT OFFICE.

SERN B. EVERSEN AND JOHN McLARTY, OF SEATTLE, WASHINGTON.

FLYING-MACHINE.

1,054,099.

Specification of Letters Patent.

Patented Feb. 25, 1913.

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To all whom it may concern:

Be it known that we, SERN B. EVERSEN and JOHN McLARTY, citizens of the United States, residing at Seattle, in the county of King, State of Washington, have invented a new and useful Flying-Machine, of which the following is a specification.

This invention relates to flying machines of the heavier than air type, one of its objects being to provide improved means whereby the machine can be caused to ascend vertically, there being additional means in the form of sustaining planes for elevating the machine and maintaining it at a desired elevation while said machine is being propelled forwardly.

A further object is to provide a machine of this character having combined therewith a top plane so constructed as to offer no resistance to the ascent of the machine but which will operate as a parachute for retarding the downward movement thereof.

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 side elevation of the machine. Fig. 2 is an end elevation thereof. Fig. 3 is a perspective view of portions of one group of lifting planes and adjacent parts. Fig. 4 is a vertical transverse section through said group of lifting planes. Fig. 5 is an enlarged end elevation of a portion of the sustaining plane. Fig. 6 is a perspective view of two of the elevating planes. Fig. 7 is a side elevation of a modified form of propeller which may be used in connection with the machine.

Referring to the figures by characters of reference 1 designates the frame of the machine, the same being preferably formed of light tubes and the top of this frame is covered by a sustaining plane 2 made up of longitudinally extending flaps 3 hingedly connected to the top of the frame and adapt-

ed to lap and to bear one against the other while the machine is descending so as thus to cooperate to form a continuous sustaining plane designed to displace air downwardly and thus retard the downward movement of the machine. As shown in the drawings these flaps are preferably disposed in two series extending in opposite directions from the center of the sustaining plane, the flaps of each series being connected by a flexible element 4, there being a spring 5 bearing against the outer flap of each series so as to constantly exert a pressure against said flap and, through the connection 4, upon the remaining flaps of the series. Obviously, therefore, the flaps normally remain closed but as the spring 5 is comparatively light, it will be seen that they will swing open automatically during the ascent of the machine in order to permit air to pass downwardly between the flaps. Arcuate elevating planes 6 are mounted upon the end portions of front and rear transversely extending shafts 7 journaled in the upper portion of the frame 1. The two shafts 7 are connected by a rod 8 pivotally attached to arms 9 upstanding from the shafts 7. These arms 9 and the rod 8 are preferably located between the central flaps 3 of the sustaining plane 2 while the elevating planes 6 are located beyond the sides of the sustaining plane. Any suitable means may be employed for actuating the elevating planes. For example, a lever 10 may be located in the frame 1 at a point where it can be easily reached by the aviator and an arm 11 may be extended from the fulcrum of this lever and connected, by means of a rod 12, to an arm 13' extending radially from one of the shafts 7. As arm 11 is fixedly connected to lever 10 it will be seen that, by manipulating said lever, planes 6 can be simultaneously swung about the longitudinal axes of the shafts 7 and their angle of incidence thus varied at will.

Mounted within the frame 1 adjacent each side thereof is a series of outer guides 13 and inner guides 14, all of said guides being parallel and perpendicular to the bottom of the frame 1. Mounted on the outer guides 13 is a longitudinally extending cross head 15 adapted to reciprocate on the guides and connected, at two or more points, by pitmen 16, to cranks 17 carried by a longitudinally extending shaft 18. These cranks 17 extend in the same direction so

that the cross head 15 will be maintained parallel with the bottom of the frame 1 during the reciprocation of said cross head. Slidably mounted on the guides 13 directly above the cross head 15 are blocks 19 and top strips 20 are also slidably mounted on the guides 13 at points above the blocks 19. Hingedly connected to the top strips 20 are downwardly diverging lifting planes 21 each of which has openings 22 therein covering approximately two-thirds of the area of the plane. These openings are normally closed by means of spring pressed flaps or valves 23 hingedly connected to the lower faces of the planes as shown at 24 and having springs 25 for holding them normally shut. Thus it will be seen that when the planes 21 move upwardly in the manner hereinafter described, the valves or flaps 23 will open and permit air to pass downwardly through the openings 22 whereas, during the downward movement of the planes 21, the flaps or valves 23 will be closed and air will be displaced downwardly.

Upwardly diverging connecting bars 26 are pivotally attached to the cross head 15 and to the lower faces of the planes 21 and connecting bars 27 are pivotally attached to the blocks 19 and diverge downwardly, the lower ends of said bars being pivotally connected to the inner faces of the planes 21 close to the lower edges thereof. Rods 28 are fixedly connected to the blocks 19 and extend downwardly past the cross head 15, these rods being adjustably attached to the cross head in any suitable manner, as by means of set screws 29 or the like. Thus it will be seen that by unfastening rods 28 from the cross head 15, the blocks 19 can be shifted toward or from the cross head and the planes 21 can be shifted to any desired angle relative to each other and then secured by fastening the rod 28 against movement relative to the cross head. After the planes 21 have thus been adjusted, the cross head 15 and the parts carried thereby can be reciprocated along the guides 13 by rotating the crank shaft 18. The outer guides 13 carry spaced series of planes 21, the planes of these series being grouped together in pairs, as heretofore described and said pairs being superposed. One cross head 15 is provided for the corresponding pairs of the several series but the blocks 19 of each series are connected together by the rod 28 which extends upwardly through the several cross heads 15. Thus by adjusting the rod 28 within the lower cross head 15 all of the planes of the series to which the said rod belongs, can be simultaneously adjusted. Furthermore by reason of this rod connection between the various cross heads, the planes of all of the series will be reciprocated together.

The inner guide rods 14 are provided with pairs of downwardly diverging planes 30 disposed back of the spaces between the adjacent series of planes 21 and extending preferably into said series. These planes 30 are connected together in the same manner as are the planes 21 and the series of planes 30 are adapted to be reciprocated along the guides 14 by means of pitmen 31 connected to certain of the cranks 17 on the shaft 18. Thus it will be seen that, during the rotation of the shaft 18, the planes 21 and 30 will be reciprocated along the guides 13 and 14 and will displace air downwardly, the frame 1 and the sustaining plane 2 being lifted during the downward displacement of air by the planes 21 and 30 and the flaps 3 closing so as to momentarily sustain the machine while the planes 21 and 30 are moving upwardly during the first half of rotation of shaft 18. If preferred, however, the planes 30 can be caused to move downwardly while the planes 21 are moving upwardly and a continuous elevation of the machine will thus be obtained instead of the intermittent or step by step movement produced in the manner hereinbefore described.

It is to be understood, of course that inner and outer series of lifting planes 21 and 30 are to be located at both sides of the machine and that the two series at each side are to be operated by a single shaft extending between them, as shown at 18. These two shafts can be connected together by means of any suitable gearing and one or more motors may be utilized for driving them. One or more propellers 32 may be utilized for propelling the machine forward and, by manipulating the elevating planes 6, it will be seen that during the forward propulsion of the machine, the same can be caused to soar after the fashion of an ordinary machine of the monoplane or biplane type. In the drawings a rudder has been shown at 33 and this can be operated by any suitable mechanism (not shown).

It will be apparent that, should the lifting planes 21 and 30 fail for any reason and should the elevating planes 6 be insufficient for sustaining the machine while being propelled forward, the flaps 3 will close automatically and thus prevent the passage of air upwardly between them. As a result the plane 2 will thus operate as a parachute or sustaining plane and will retard the downward movement of the machine so that it will descend without injury to the occupants thereof.

Instead of utilizing a propeller such as shown at 32, a substantially conical propeller having a spiral blade 34 thereon may be used, as shown in Fig. 7. Although the elevating planes have been shown arranged in front and rear pairs, they can, if desired, be located

above the sustaining plane 2, and a single elevating plane be extended across the top of the plane 2 at the front and rear ends thereof.

5 The entire frame of the machine is preferably made of tubular sections which can be used as gas containers. Furthermore suitable gas containers can be located within the machine and can be used for seats, these containers being easily removable and having means whereby they can be attached to the occupants of the machine and thus used as life preservers.

What is claimed is:—

15 1. An airship including a series of lifting planes arranged in pairs, the planes of each pair diverging downwardly, means for simultaneously adjusting the planes of said series angularly relative to each other, each of said planes including an opening, a valve for closing said opening during the downward movement of the plane, guides for the planes, and means for reciprocating the planes.

25 2. An airship including oppositely disposed series of lifting planes, the planes of each series being superposed and arranged in pairs, the planes of each pair diverging downwardly, means connected to the planes of each series for simultaneously adjusting all of the planes in said series angularly, and means for reciprocating the planes of each series together along a substantially vertical line.

35 3. An airship including inner and outer series of lifting planes, each series consisting of superposed pairs, the planes of each pair diverging downwardly and the pairs of each series being connected to reciprocate together, guides for the pairs of each series, means connecting the planes of each

pair for adjusting them angularly relative to each other, a connection between said means for effecting simultaneous adjustment of all of the pairs of the series, and means 45 for shifting the planes of each series in opposite directions respectively along their guides.

4. An airship including a frame, parallel series of upwardly extending guides arranged longitudinally of the frame, a series of superposed pairs of lifting planes mounted to reciprocate upon the guides of each series, a connection between the planes of each series, means for adjusting the planes 55 of each pair angularly relative to each other, a connection between said means for effecting simultaneous adjusting of all of the planes, a shaft extending longitudinally of the frame and between the two series of guides, means for rotating the shaft, and separate connections between the shaft and the respective series of planes for simultaneously reciprocating said series in opposite directions respectively, a transversely 65 arched sustaining plane extending over the lifting planes and including flaps adapted to close together and sustain the frame when relieved of the action of the lifting planes, and front and rear pairs of arcuate lifting 70 planes mounted for simultaneous shifting action about transverse axes, said sustaining plane being extended between the elevating planes of the two pairs.

In testimony that we claim the foregoing 75 as our own, we have hereto affixed our signatures in the presence of two witnesses.

SERN B. EVERSEN.
JOHN McLARTY.

Witnesses:

BURTON E. BENNETT,
ARTHUR FINLAYSON.