

L. A. FISH.

AIRSHIP.

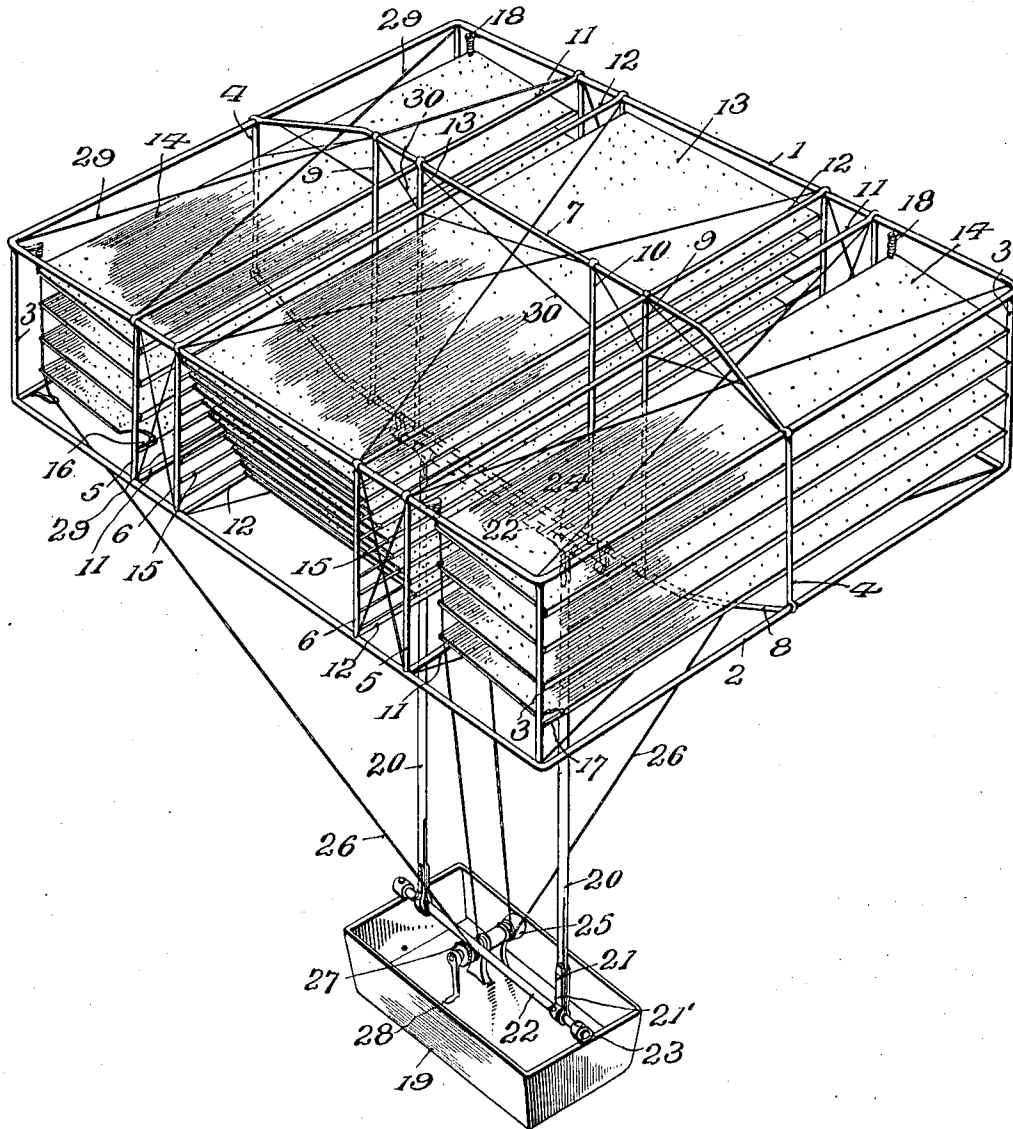
APPLICATION FILED DEC. 18, 1908.

1,021,139.

Patented Mar. 26, 1912.

3 SHEETS—SHEET 1.

Fig. 1.



Inventor

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Witnesses

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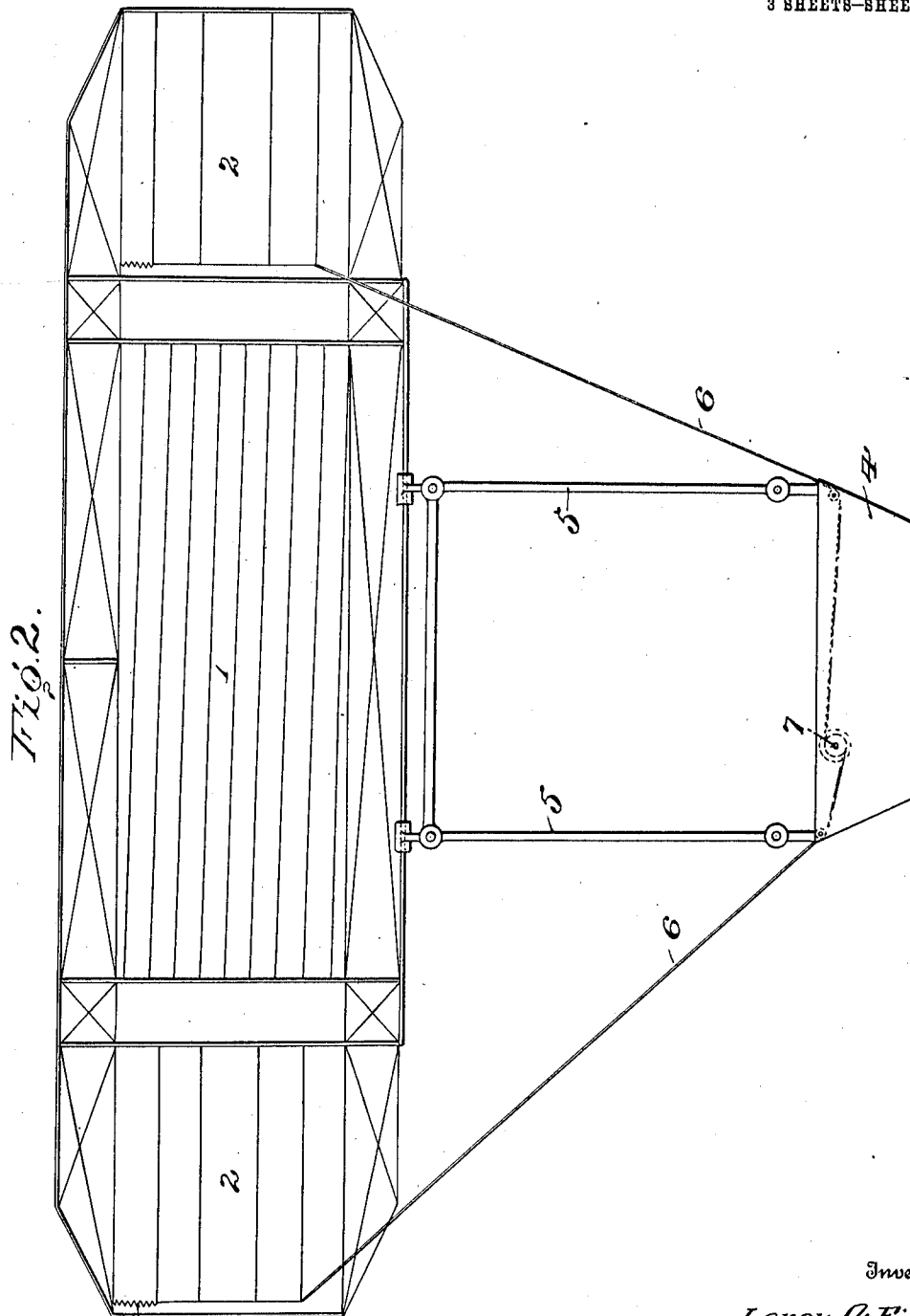
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3 SHEETS—SHEET 2.



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3 SHEETS—SHEET 3.

Fig. 3.

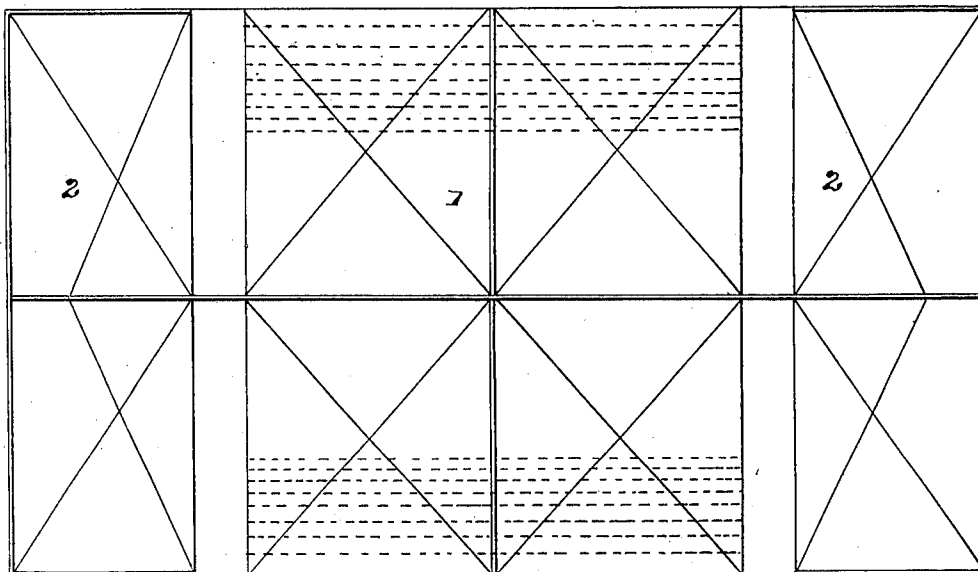
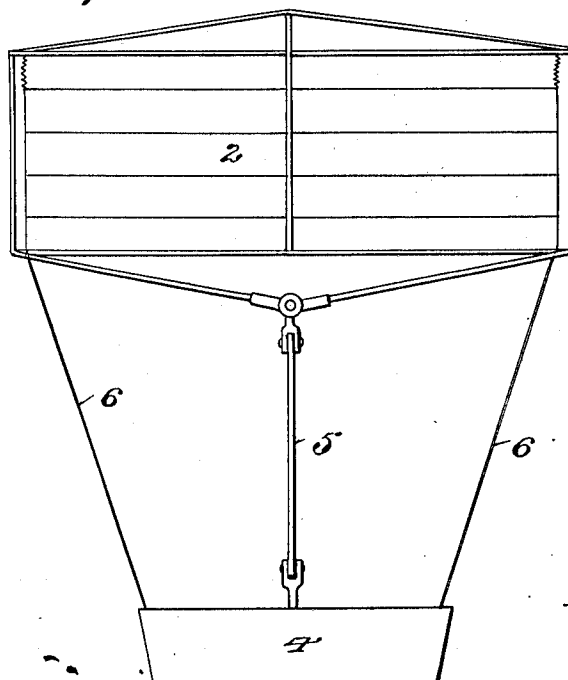


Fig. 4.



Witness

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UNITED STATES PATENT OFFICE.

LEROY A. FISH, OF CLOQUET, MINNESOTA.

AIRSHIP.

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Specification of Letters Patent.

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To all whom it may concern:

Be it known that I, LEROY A. FISH, a citizen of the United States, residing at Cloquet, in the county of Carlton and State of Minnesota, have invented certain new and useful Improvements in Airships, of which the following is a specification.

This invention appertains to the type of machines for navigating the air, embodying planes, whether used in conjunction with a buoyant field or not.

The purpose of the invention is to devise a novel mechanism automatic in operation for maintaining the machine on an even keel, thereby avoiding the casualties attributable to the machine losing its balance.

In accordance with this invention a weight is utilized as the controlling means, since it tends to gravitate and at all times maintain a definite relative position. The weight is connected to planes which are provided for holding the machine level and other means are supplied and act upon the governor planes in opposition to the weight, so as to level the machine and maintain the same in an approximate horizontal position under all conditions.

For a full understanding of the invention and the merits thereof and also to acquire a knowledge of the details of construction and the means for effecting the result, reference is to be had to the following description and accompanying drawings, in which:

Figure 1 is a perspective view of a flying machine constructed in accordance with my invention; Fig. 2 is a side elevation of the same; Fig. 3 is a top plan view of the machine; Fig. 4 is an end view.

Corresponding and like parts are referred to in the following description and indicated in all the views of the drawings by the same reference characters.

The machine illustrated is devoid of propellers or steering means, it being understood that any kind of rudder or propelling means such as commonly employed in dirigible flying machines may be employed.

The framework may be of any desired type and is here shown formed of upper and lower frames 1 and 2 connected by corner posts 3, vertical end braces 4 and spaced intermediate side braces 5 and 6. Extending longitudinally of the framework are upper and lower truss rods 7 and 8 having their opposite ends connected with the adjacent frames 1 and 2 at the vertical braces 4, and

their intermediate portions connected by spaced vertical rods 9 and 10. The rods 9 and 10 are disposed in alinement with the side braces 5 and 6 and are connected with the latter by transverse rods 11 and 12. The rods 11 and 12, together with the side braces 5 and 6 and vertical rods 9 and 10, divide the framework into three independent sections or compartments, the intermediate section or compartment being adapted to receive the stationary lifting planes 13 and the end sections or compartments, the movable or governor planes 14. The lifting planes 13, any number of which may be employed, are rigidly secured to transverse rods 15 connecting the braces 6 and are preferably inclined downwardly, as shown. These lifting planes also preferably increase in width from the bottom of the framework to the top thereof to enable each plane to catch the wind and thus act as a parachute in case of an accident.

The governor planes 14 serve to hold the machine level and also serve to direct the flight of the machine when ascending or descending, as will be more fully explained hereinafter.

The rear longitudinal edges of the governor planes of one set are rigidly secured to transverse rods 16 connecting the intermediate side braces 5, while the rear longitudinal edges of the governor planes of the other set are rigidly secured to transverse rods 17 connecting the adjacent corner posts. The forward longitudinal edges of both sets of governor planes are also rigidly secured to the adjacent end braces 4, the corners of the planes being free and normally supported in a horizontal position by coil springs 18.

The lifting springs are preferably secured to the upper frame 1 at the corners thereof and are connected with the adjacent governor planes so as to normally exert an upward pull thereon.

The governor weight 19 is suspended below the framework of the machine and is mounted to move both longitudinally and laterally, said weight being in the form of a car in which the motor and adjunctive parts and the operator are carried.

The governor weight or car 19, is suspended from the lower truss rod 8 by means of a depending frame, the latter comprising spaced parallel links 20 pivotally connected at 21 to vertical clips 21' rigidly secured to the upper and lower transverse bars 22.

The lower transverse connecting bar 22 is held against rotation by suitable brackets 23 on the car, while the upper transverse bar is suspended from suitable sleeves or collars 24 journaled on the lower truss rod 8, thus to allow both longitudinal and lateral swinging of the suspension frame and car.

Mounted for rotation on the car 19 is a winding drum or windlass 25 to which are connected a plurality of ropes or cables 26, the latter being also connected to the corners of both sets of governor planes for the purpose of deflecting or warping the corners of said planes when the machine is tilted and thus cause the machine to right itself and maintain an even keel. The upper ends of the ropes or cables are connected in any suitable manner to all of the governor planes of the adjacent set, so that all of the planes of each set will be warped or deflected downwardly when a longitudinal pull is exerted on the adjacent cables, and deflected upwardly simultaneously by the action of the springs 18 when the pull or tension on the cables is released.

The windlass is provided with suitable pawl and ratchet mechanism 27 for preventing rearward rotation thereof and also with a handle or crank 28 by means of which the operator may wind the cables upon or unwind said cables from the windlass so as to either slack or place the cables under tension for the purpose of adjusting the position of the governor planes when ascending or descending.

From the foregoing it will be understood that when the machine is level, whether in flight or at rest, the cords or cables 26 are under like tension and hold the corner portions of the governor planes level. Should the machine when in flight depart from an even keel either by dipping forward or rearward or inclining laterally, either to the right or to the left, the weight or car 19 relatively moves and pulls the cords or cables 26 upon the high side of the machine and slackens upon the cords or cables upon the low side, thereby lowering the planes upon one side and permitting the springs 18 to elevate the planes upon the opposite side with the result that the machine is quickly arighted or brought to a level position. When it is desired to ascend, it is merely necessary to rotate the crank 28 in one direction, which renders all of the cables slack and causes the springs 18 to elevate the corners of both the front and rear set of governor planes. In order to descend, the crank is rotated in the opposite direction which causes the cables 26 to deflect or warp the corners of both sets of governor planes downwardly, the stepped arrangement of the stationary lifting planes 13 causing the machine to gradually settle to the ground.

The upper and lower frames 1 and 2 are

preferably reinforced and strengthened by the provision of diagonally disposed brace rods 29, while the truss rods 7 and 8 are also preferably reinforced by similar brace rods or wires 30.

It is to be understood that the weight may be of any construction and that the governor planes may be of any formation, arrangement or number so long as the parts, by reason of their arrangement, move the planes to bring about the results herein stated. It is also to be understood that a separate weight may be employed for actuating the governor planes in lieu of the car and that said weight or car and governor planes may be used in connection with any type of flying machine without departing from the spirit of the invention.

Having thus described the invention, what is claimed as new is:

1. In a flying machine, a supporting frame, a lifting plane carried by the supporting frame, a weight pivotally connected with said supporting frame, a governor plane arranged on one of the transverse edges of the lifting plane and having free corners, and a connection between the weight and the free corners of the governor plane for automatically deflecting said governor plane upon longitudinal or lateral dipping of the supporting frame.

2. In a flying machine, a supporting frame having relatively stationary and movable planes, a weight, a pivotal connection between the weight and supporting frame, means connecting the weight with the forward free corners of the movable planes for deflecting the latter upon longitudinal or lateral dipping of the supporting frame, and means for manually deflecting said movable planes.

3. In a flying machine, a supporting frame, stationary and movable planes carried by the supporting frame, a weight, parallel links forming a pivotal connection between the weight and supporting frame, a connection between the weight and forward free corners of the movable planes for deflecting said movable planes upon longitudinal and lateral dipping of the supporting frame, and springs connected with the movable planes for returning the latter to normal position.

4. In a flying machine, a supporting frame, a plurality of relatively stationary lifting planes carried by the supporting frame and gradually increasing in size from the bottom of the frame to the top thereof, governor planes disposed on opposite transverse edges of the lifting planes, a weight suspended from the supporting frame, and a connection between the weight and governor planes for automatically deflecting the latter upon longitudinal or lateral dipping of the supporting frame.

5. In a flying machine, a supporting frame, a relatively stationary downwardly inclined lifting plane carried by the supporting frame, governor planes disposed on opposite transverse edges of the lifting plane, each having its rear longitudinal edge rigidly secured to the supporting frame and its forward corners free to move vertically, means for normally and yieldably supporting the governor planes in horizontal position, a weight suspended from the supporting frame, and cables forming a connection between the weight and the corners of said governor planes for automatically deflecting the governor planes upon longitudinal or lateral dipping of the supporting frame.

6. In a flying machine, a supporting frame, a stationary lifting plane carried by the supporting frame, governor planes disposed on opposite transverse edges of the lifting plane and having their rear longitudinal edges fixed and their forward corners free to move vertically, means for yieldably supporting the governor planes in horizontal position, a weight depending from and pivotally connected with the supporting frame, a windlass mounted on the weight, cables forming a connection between the windlass and corners of the governor planes for automatically deflecting said governor planes upon longitudinal or lateral dipping of the supporting frame, and means for rotating the windlass to effect the manual adjustment of said governor planes.

7. In a flying machine, a supporting frame having upper and lower truss rods, a stationary lifting plane carried by the supporting frame, movable governor planes disposed on opposite transverse edges of the lifting plane, and normally and yieldably supported in horizontal position, a weight, parallel links forming a pivotal connection between the weight and lower truss rod, and cables forming a connection between the weight and governor planes for automatically deflecting the latter upon longitudinal or lateral dipping of the supporting frame.

8. In a flying machine, a supporting frame having upper and lower truss rods and provided with a plurality of transverse rods dividing the frame into a plurality of sections, a lifting plane carried by the intermediate section of the supporting frame, governor planes carried by the end sections and having their rear edges rigidly secured to the adjacent transverse rods and their forward corners free to move vertically, springs operatively connected with the corners of the governor planes for normally holding the latter in horizontal position, a weight, parallel links forming a pivotal connection between the weight and lower truss rod, cables forming a connection between

the weight and corners of the governor planes for automatically deflecting said governor planes upon longitudinal or lateral dipping of the supporting frame, and means for manually regulating the tension of the cables to change the position of said governor planes.

9. In a flying machine, a supporting frame having upper and lower truss rods and provided with transverse rods dividing the supporting frame into a plurality of sections, braces connecting the opposite ends of the supporting frame, a lifting plane carried by the intermediate section of the supporting frame, governor planes carried by the end sections and having their rear edges rigidly secured to the adjacent transverse bars, and their forward corners free to move vertically, a weight, parallel links forming a pivotal connection between the weight and lower truss rod, springs operatively connected with the corners of the governor planes, and cables forming a connection between the weight and forward corners of the governor planes for automatically deflecting the latter upon longitudinal or lateral dipping of the supporting frame.

10. In a flying machine, a lifting plane, a governor plane having free corner portions, means for normally sustaining the corner portions of the governor plane, a weight, connecting means between the weight and governor plane, and means mounted upon the weight for varying the relative lengths of the connecting means.

11. In a flying machine, front and rear governor planes mounted to move vertically at their front corners, a weight suspended from the machine and adapted to move longitudinally and laterally, and connecting means between said weight and the corner portions of the governor planes.

12. In a flying machine, front and rear governor planes having free corner portions, lifting springs at the front corners of the respective planes, a suspended weight, connecting means between the weight and corner portions of the planes, and means mounted upon the weight for regulating the relative effective lengths of said connecting means.

13. In a navigable air ship, lower and upper parallel horizontal planes spaced some distance apart, connections between said planes for holding them in fixed relation, a swinging seat hinged to the upper plane, front and rear vertically tiltable blades for directing the vertical angle of flight, and connections between said blades and swinging seat for tilting the blades as the planes tilt relatively to the swinging seat, said connections being movable independently of the seat for tilting the blades irrespective of the tilting of the planes.

14. A navigable air ship having a horizontal rudder for regulating the vertical angle of flight, a pendulum on the ship, means for shifting the rudder manually,
5 and additional means for locking the shifting means to the pendulum to cause the rudder to shift automatically.

In testimony whereof I affix my signature in presence of two witnesses.

LEROY A. FISH.

Witnesses:

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FRED C. JOHNSON.

Copies of this patent may be obtained for five cents each, by addressing the "Commissioner of Patents, Washington, D. C."
