S. P. WATT.

AIRSHIP.

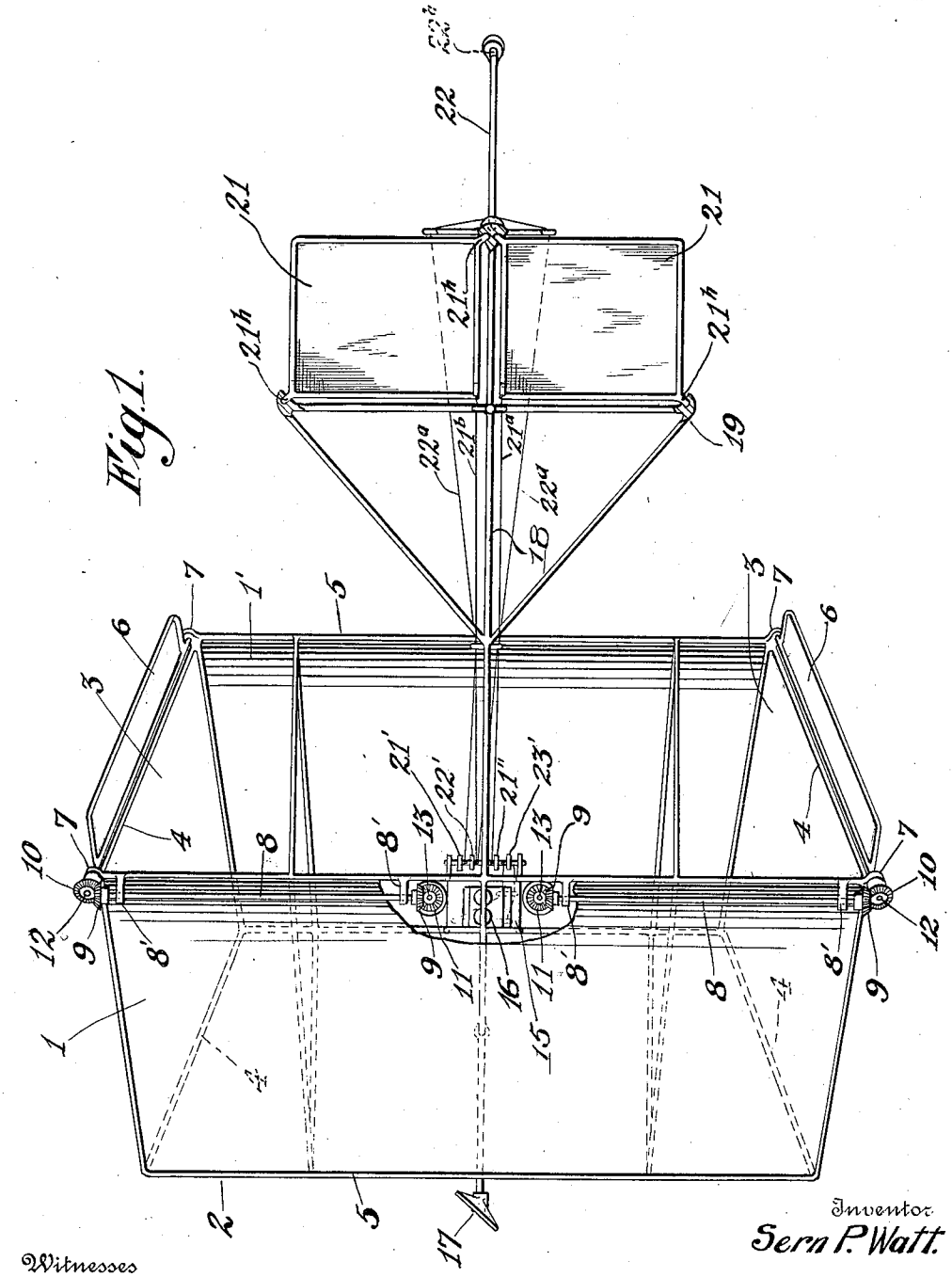
APPLICATION FILED NOV. 30, 1910.

1,022,715.

Patented Apr. 9, 1912.

2 SHEETS—SHEET 1.

Fig. 1.



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2 SHEETS—SHEET 2.

Fig. 2.

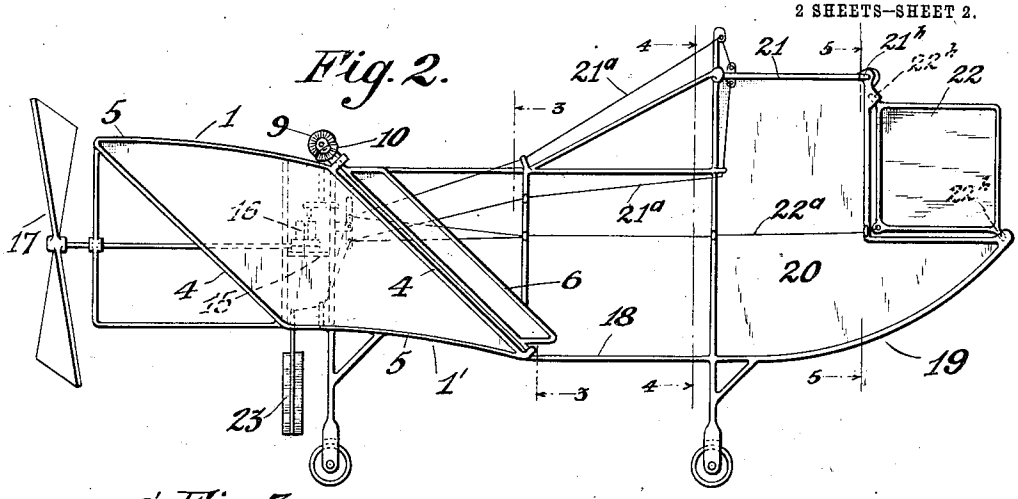


Fig. 3.

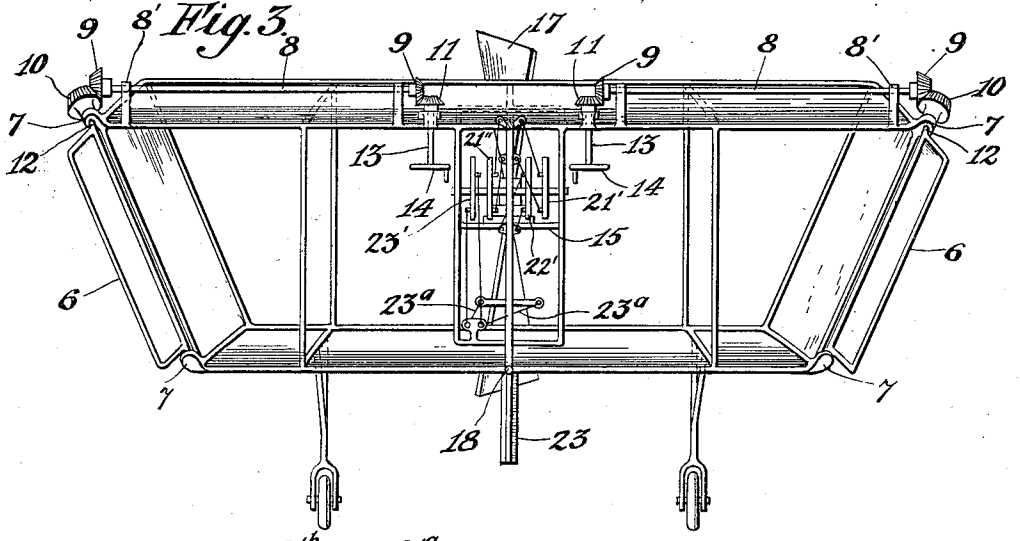


Fig. 4.

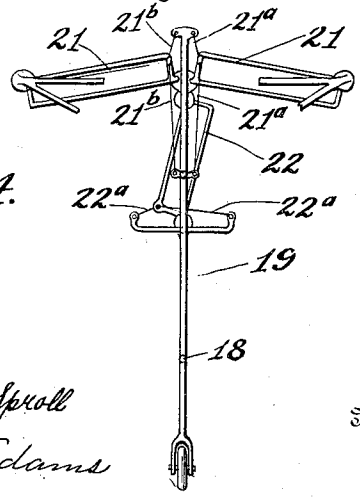
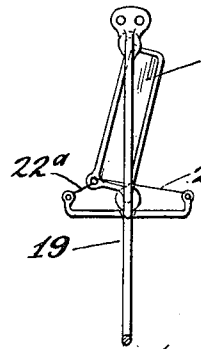


Fig. 5.



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UNITED STATES PATENT OFFICE.

SERN P. WATT, OF SEATTLE, WASHINGTON, ASSIGNOR OF ONE-HALF TO FRANCIS G. FRINK, OF SEATTLE, WASHINGTON.

AIRSHIP.

1,022,715. Specification of Letters Patent. Patented Apr. 9, 1912.

Application filed November 30, 1910. Serial No. 594,986.

To all whom it may concern:

Be it known that I, SERN P. WATT, a citizen of the United States of America, and a resident of the city of Seattle, in the county of King and State of Washington, have invented certain new and useful Improvements in Airships, of which the following is a specification.

My invention relates to flying machines, having particular reference to an improved construction of aeroplane, and a fundamental object thereof resides in novel provisions for the maintenance of stability.

A further object consists in providing a construction which facilitates getting squarely into the wind or maintaining the course.

Further, the invention resides in steering mechanism of novel construction and arrangement, and further, in so applying the propelling force as to insure speed and steadiness.

With the above and other objects in view, to be referred to as my description progresses, my invention consists in certain features of construction, arrangements and combinations of parts hereinafter described and succinctly defined in my annexed claims.

Referring to the accompanying drawings illustrating a preferred embodiment of my invention, and in which like numerals of reference indicate like parts throughout the several views: Figure 1 is a top plan of an aeroplane constructed in accordance with my invention. Fig. 2 is a side elevation thereof. Fig. 3 is a transverse section taken on line 3—3 of Fig. 2. Fig. 4 is a section taken on line 4—4 of Fig. 2, with the horizontal rudders adjusted to cause a lifting of the aft portion of the machine, as in making a descent, and Fig. 5 is a vertical section taken on line 5—5 of Fig. 2, with the vertical rudder adjusted as for lateral steering.

In carrying out my invention I provide a main sustaining plane, composed of surfaces 1, 1′, which are preferably arched and inclined upward in a forward direction. These surfaces are secured in any desired manner on the forwardly disposed substantially rectangular frame part 2 in superimposed relation and the upper preferably forwardly of the lower, by which arrangement I am enabled to provide greater horizontally disposed area by avoiding superposition of lifting surfaces thereby admitting a biplane construction having a monoplane action.

Planes 3 and sustaining surfaces 1, 1′ are of suitable fabric, and as now considered, form side, top and bottom inclosing walls respectively for frame part 2, a convenient arrangement consisting in securing said planes 3 at their side edge portions to the intermediate or vertical frame bars 4, and to the adjacent end bars of the upper and lower open or rectangular frame sections 5, across which latter the surfaces 1, 1′ extend and are secured, in any suitable manner.

In accordance with my present construction planes 3 act in a two-fold balancing or righting capacity, serving to correct listing or side tilting, and lateral deviation from the course, the same with such objects in view diverging rearwardly and being inclined upwardly and outwardly toward respective sides of the machine, as clearly shown in Figs. 1 and 3, whereby upon tipping or turning, as the case may be, the power of the plane toward which the tip or turn occurs is increased while the power of the other plane is decreased.

Reference numeral 6 indicates auxiliary plane sections which are arranged to form continuations of planes 3, and being relatively adjustable through which pressures can be transferred to the respective sides of the machine. As now considered, auxiliary planes 6 are pivotally supported in suitable bearings 7 on the rear vertical bars 4 for this adjustment, and are controlled through suitable mechanisms, both of which being identical in construction, a description of one will suffice.

The controlling mechanism for a plane 6 comprises a driven shaft 8, journaled in suitable bearings 8′, on upper frame section 5, and provided on its end portions with bevel gears 9 meshing with similar gears 10 and 11, fixed to spindle 12 of the said plane, and a drive shaft 13, respectively. The respective drive shafts 13 extend downwardly and are provided with hand wheels, as 14, disposed in proximity to a platform 15, mounted at the contiguous transverse edge portions of surfaces 1, 1′, and between the latter, to thereby bring the effective load centrally in a longitudinal direction with

the center of gravity well down but above the lower surface 1′. Platform 15 affords a desired means of support for the operator and for the motor, as 16, for driving the propeller 17, which latter is arranged in front of the sustaining plane to effect an application of the propelling force to the machine above its center of gravity and as nearly as possible at the height of the center of resistance.

Reference numeral 18 indicates a rearwardly extending portion of the frame, comprising upper and lower longitudinal rails forming a rigid connection between frame part 2 and a tail frame 19, which latter is provided with suitable auxiliary planes lending stability to the machine. As now considered, this tail frame is provided with a vertical plane 20 which acts in the capacity of a keel and preferably extends to and between horizontal rudders 21 which are, for the purpose of obtaining greater efficiency, disposed above the main sustaining plane, so as to be removed from the area of disturbed air in the path of the machine. At its rear portion, tail frame 19 supports a vertical rudder 22 which for the sake of compactness is mounted for angular adjustment in the angle of a rear vertical rail, of the tail frame, whose lower end portion lies horizontally and projects rearwardly, as clearly shown in Fig. 2.

Rudders 21 and 22, in accordance with my invention, swing on diagonal axes, as 21^h, 22^h respectively, the axes of rudders of 21 converging rearwardly so that these rudders can lie in opposing planes, either inclined upwardly or downwardly in a forward direction toward one another, to thereby hold the air and crowd it inwardly against plane 20.

Rudder 22 through its diagonal adjustment, in steering the machine laterally imparts a tilt incident to the curve traversed. A rudder 23 mounted under the lower surface 1′ of the sustaining plane is also provided for lateral steering and while obviously capable of being independently employed, is particularly designed to be used in conjunction with rudder 22 under unfavorable conditions to thereby relieve the machine frame of torsional strains, as will be readily understood.

Rudders 21, 22 and 23 can be operated in any suitable manner, the adjusting means shown comprising the operating levers 21′, 21″, each connected by flexible connections or cables 21^a, 21^b respectively with a respective rudder 21, and other levers, as 22′, 23′, connected with rudders 22 and 23 respectively by flexible connections 22^a, 23^a.

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

1. In an air ship, a frame, a sustaining plane on said frame comprising superimposed surfaces one of which is spaced forwardly of the other, and balancing planes extending between said surfaces and diverging in both rearward and upward directions.

2. In an air ship, a supporting frame, balancing means on said frame comprising rearwardly diverging planes, and angularly adjustable plane sections arranged to form continuations of said planes.

3. In an air ship, a supporting frame, balancing means on said frame comprising rearwardly diverging upwardly and outwardly inclined planes, and angularly adjustable plane sections each projecting beyond one edge of a respective plane to form a continuation thereof.

4. In an air ship, a supporting frame, balancing means on said frame comprising rearwardly diverging planes, and plane sections arranged lengthwise of the rear edges of said planes and hinged at one edge for swinging of their free portions outwardly from the outer faces of said planes.

Signed at Seattle, Washington this 10th day of November 1910.

SERN P. WATT.

Witnesses:
FRANCIS G. FRINK,
ARLITA ADAMS.

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