C. W. WALLER.

FLYING MACHINE.

APPLICATION FILED OCT. 6, 1910.

999,278.

Patented Aug. 1, 1911.

2 SHEETS—SHEET 1.

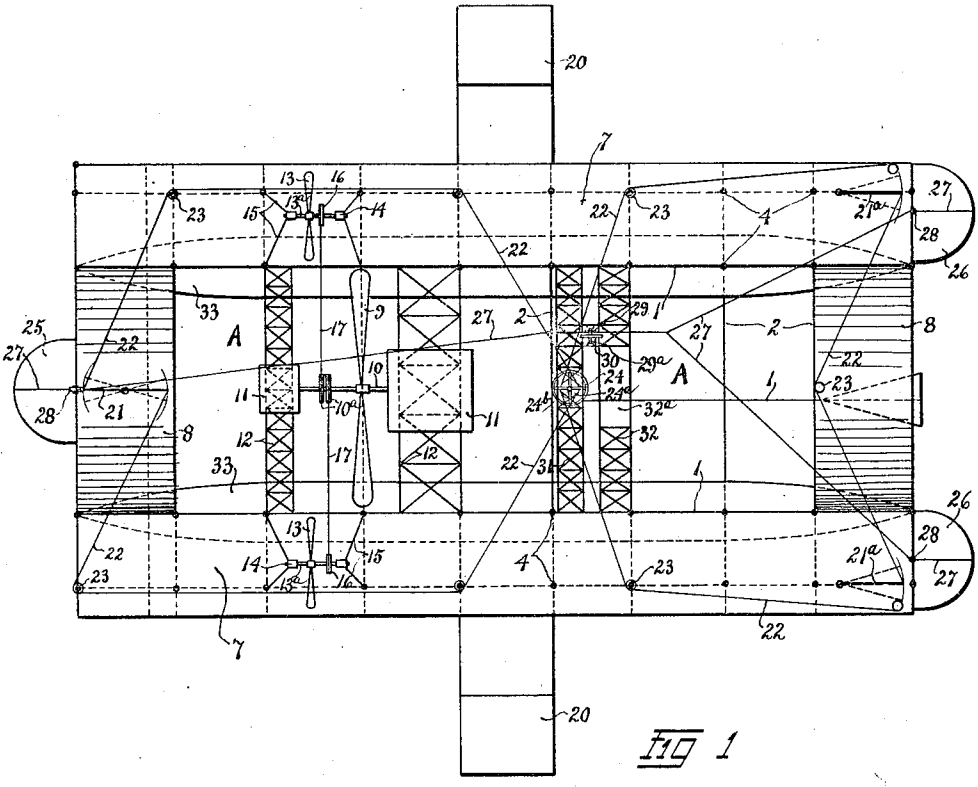

Fig 1

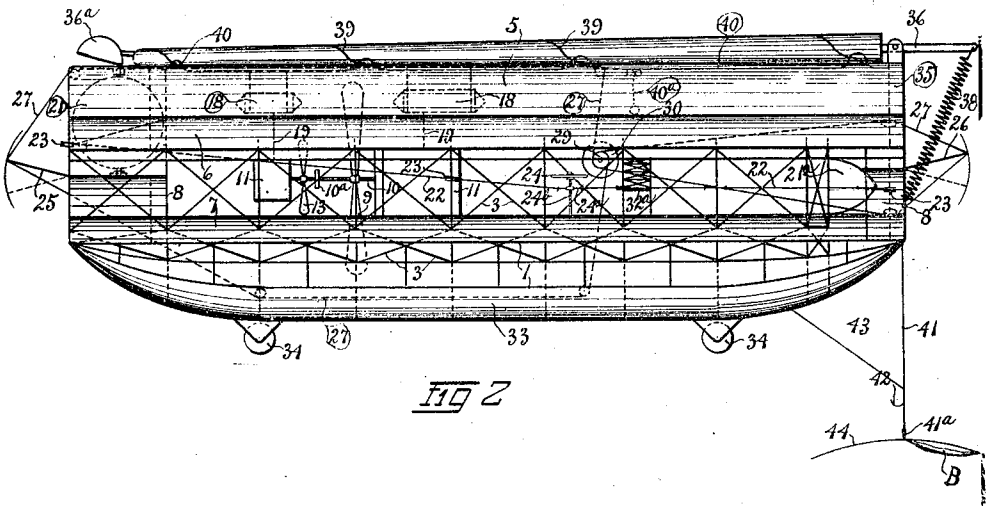

Fig 2

Witnesses
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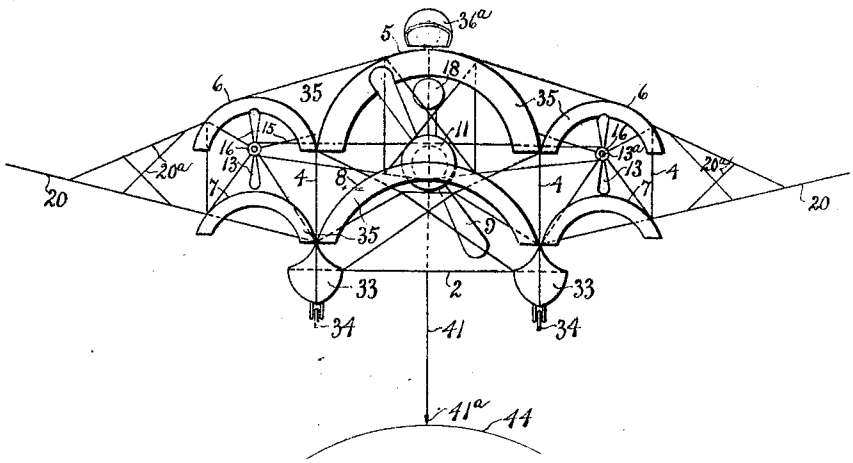

FIG 3

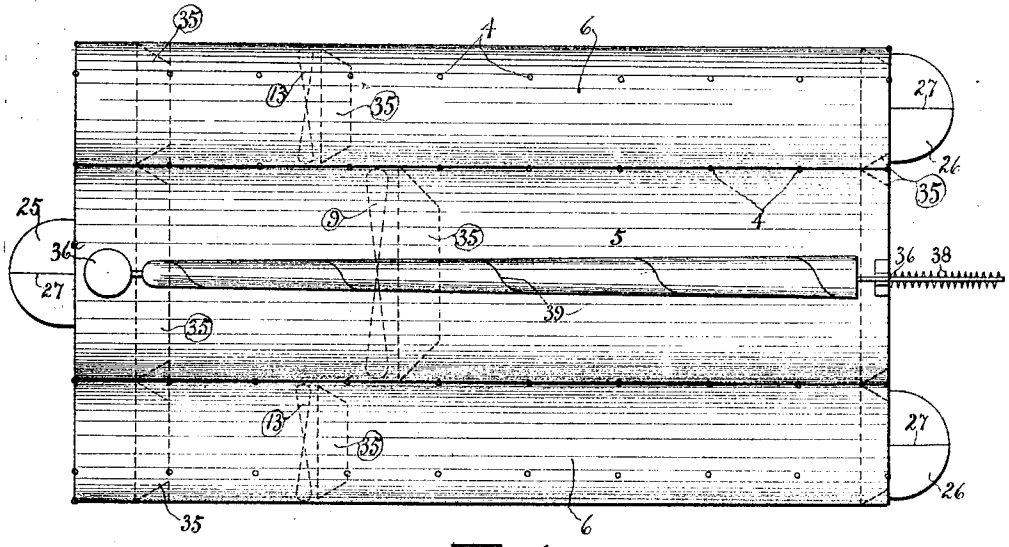

FIG 4

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UNITED STATES PATENT OFFICE.

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FLYING-MACHINE.

999,278. Specification of Letters Patent. Patented Aug. 1, 1911.

Application filed October 6, 1910. Serial No. 585,566.

To all whom it may concern:

Be it known that I, CHARLES W. WALLER, a citizen of the United States, residing at Chicago, in the county of Cook and State of Illinois, have invented certain new and useful Improvements in Flying-Machines, of which the following is a specification.

My invention relates to improvements in flying machines, and more particularly to such machines of the aeroplane type comprising one or more aeroplanes adapted to be carried or propelled through the air by means of suitable propellers and balanced by means of suitable vertically and horizontally arranged rudders.

My invention relates more particularly to improvements in aeroplanes, the primary object being to provide a new form of aeroplane adapted to present a more effective sustaining surface on its underside as well as being adapted to more effectively maintain lateral balance.

A further object of the invention is to improve the arrangement and relative disposition of the respective aeroplanes, as well as to provide a novel arrangement of vertical and horizontal rudders adapted to cooperate with the aeroplane for controlling the direction of flight, as well as for maintaining or restoring equilibrium to meet the exigencies of flight.

A still further object is to provide improved means in the form of pontoons for safely effecting a landing upon a body of water.

With the above mentioned and other objects in view, the invention consists in the novel construction, arrangement and combination of parts, hereinafter described, illustrated in some of its embodiments in the accompanying drawings, and particularly pointed out in the appended claims.

Referring to the accompanying drawings, forming a part of this specification, Figure 1, is a top plan view of a flying machine of the aeroplane type constructed in accordance with my invention, the upper main and lateral aeroplanes being removed for the purpose of clearer illustration of the parts. Fig. 2, is a side elevation of the same, the lateral balancing planes being removed. Fig. 3, a front elevation of the same, the front rudders being removed. Fig. 4, a top plan view, the lateral balancing planes being removed.

Similar numerals of reference designate like parts throughout all the figures of the drawings.

The improved machine comprises a trussed frame made up, in the present instance, of a plurality of longitudinally extending bars 1, suitably connected by means of a plurality of connecting transverse bars or members 2, and suitably braced by means of suitable truss members 3. The frame also comprises a plurality of upright standards 4, by means of which the superposed aeroplanes are supported and connected to each other.

The aeroplanes are of concavo-convex shape so as to present a longitudinally troughed underside or sustaining surface and preferably extend longitudinally in the direction of flight as shown.

In the present embodiment of my invention I have shown an upper and a lower set of longitudinally troughed aeroplanes comprising a main plane 5, and lateral planes 6, the lower or subjacent plane comprising lateral planes 7, connected at their front and rear by means of short connecting planes 8, and providing an intermediate open space A, beneath the upper or main plane 5, as shown most clearly in Fig. 1, of the drawings. A main propeller 9, is mounted in the open space A, immediately beneath the main plane 5, said propeller 9, being mounted on a driving shaft 10, connected to suitable engines or motors 11, supported on trussed frames or bridge members 12.

Propellers 13, are mounted and interposed between the side or lateral planes 6, and 7, by means of propeller shafts 13^a, mounted in suitable bearings 14, carried by suitable brace bars 15. The propellers 13, are driven or actuated, in the present instance, by means of sprocket wheels or pulleys 16, provided with suitable sprocket chains or beltings 17, passing over sprocket wheels or pulleys 10^a, on the main propeller shaft 10. Liquid fuel or gasolene storage tanks 18, may be carried beneath the main plane 5, and connected to the engines or motors 11, by means of suitable supply pipes 19.

The lateral planes 6, and 7, are preferably provided with upwardly and outwardly inclined lateral balancing planes 20, suitably sustained and braced by means of the trussed frames 20^a, as illustrated in Figs. 1, and 3, of the drawings.

As a means for controlling the direction of flight, as well as for maintaining or restoring equilibrium, fore and aft, vertical rudders 21, and 21^a, are mounted between the planes 5, and 8, and the lateral planes 3, and 7, respectively, said rudders being connected at their free ends or sides to controlling wires or cables 22, passing over suitable guide pulleys or elements 23, and connected to a steering wheel 24, by means of a sheave pulley 24^a, mounted on the steering shaft 24^b.

Fore and aft horizontally disposed rudders 25, and 26, are suitably mounted at the fore and after ends of the machine, respectively, said rudders 25 and 26, being adapted to be controlled and operated by having their free ends provided with controlling wires or cables 27, passing over suitable guide pulleys or elements 28, and connected to a sheave pulley 29, said sheave pulley being carried upon the horizontally disposed steering shaft 29^a, mounted in suitable bearings and provided with a steering wheel 30. The steering wheels 24, and 30, together with their attachments and mountings are supported on trussed bridge members 31, and 32, the latter providing a seat 32^a, for the operator.

As a means for safely effecting a landing and supporting the machine upon a body of water, longitudinally extending pontoons 33, are carried beneath the aeroplanes, said pontoons being also provided with supporting wheels 34, for supporting the machine on land.

The troughed aeroplanes may be normally disposed at any suitable or desired angle of incidence, and as a further means of adding to the sustaining power of the aeroplane as the latter are driven through the air by the propellers, circular or crescent shaped auxiliary aeroplanes 35, are mounted on the under or troughed sides of the planes and inclined rearwardly and downwardly therefrom, said auxiliary planes being preferably disposed in close proximity and to the rear of the propellers 9, and 13, as illustrated most clearly in Fig. 3, of the drawings.

As a means of safety in descending in case of accident or disarrangement of the parts, a parachute may be provided comprising a pole or stem member 36, pivotally mounted at the rear of the machine and normally folded forward with its free end extending in the direction of flight and held in such folded position against the resistance of a oiled spring 38. The parachute is maintained in its folded position by means of a spirally wound cord 39, secured at suitable intervals through the loops of a longitudinally extending retaining cord 40. The retaining cord 40, extends downwardly as at 40^a, in proximity to the operator, (see Fig. 2), so that by pulling the part 40^a, the parachute may be loosened to cause the spring 38, to bring the parachute into a vertical or operative position. The free end of the parachute pole or stem member is preferably provided with an air cup 36^a, for the purpose of allowing air pressure to act upon the same and assist in throwing the parachute to its operative position when released through the medium of the releasing cord 40.

As a weapon for use in warfare, a depending pivotally mounted rod member 41, may be provided at the rear of the machine, said rod member being provided at its free end with a knife member 41^a, and a hook member 42. The rod member may be folded longitudinally in its longitudinal position or suspended in its vertical or operative position by means of a cord 43, said member 41, when in its vertical or operative position being adapted to cut a slit B, in a hostile gas bag or dirigible 44, as illustrated in Figs. 2, and 3, of the drawings, and the hook member 42, is adapted for use in coming into engagement with a hostile aeroplane for turning or upsetting the same while in the air.

From the foregoing description, taken in connection with the accompanying drawings, the operation and advantages of my invention will be readily understood.

Having thus described an embodiment of my invention, what I claim and desire to secure by Letters Patent is—

1. In a flying machine, an upper and a lower set of aeroplanes, the upper set comprising a main longitudinally troughed aeroplane, and longitudinally extending troughed lateral aeroplanes, and the lower set comprising subjacent lateral aeroplanes of like form connected by front and rear planes and providing an intermediate open space beneath said main plane.

2. In a flying machine, a frame provided with superposed aeroplanes having their under sides longitudinally troughed, balancing planes carried at the sides of said aeroplanes and pontoons carried by said frame beneath said aeroplanes.

In testimony whereof I have affixed my signature, in presence of two witnesses.

CHARLES W. WALLER.

Witnesses:

GEORGE D. FEATHERSTONE,

GEORGE H. DARLINGTON.