J. C. TELFER.

AEROPLANE.

APPLICATION FILED APR. 17, 1911.

1,030,942.

Patented July 2, 1912.

3 SHEETS—SHEET 1.

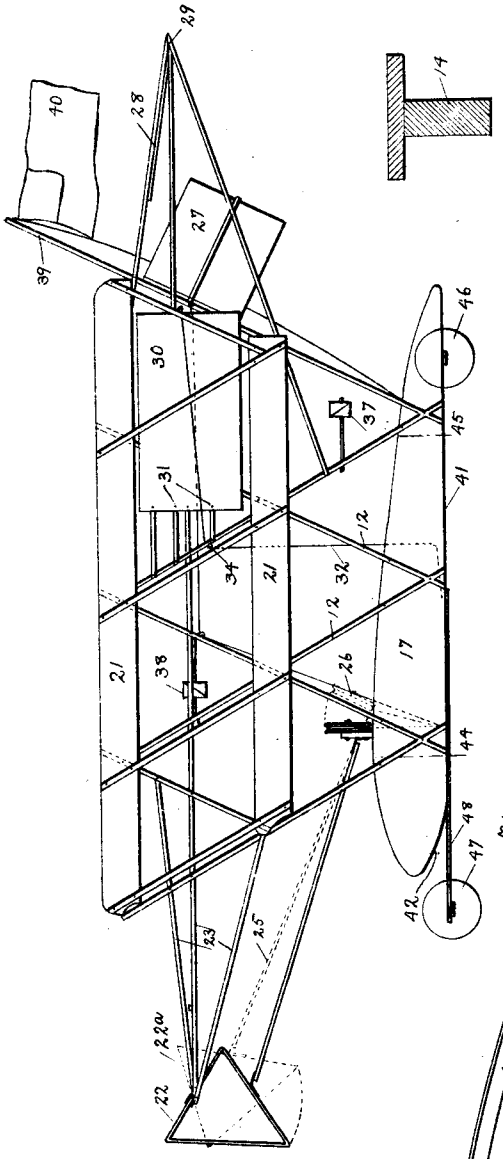

Fig. 1

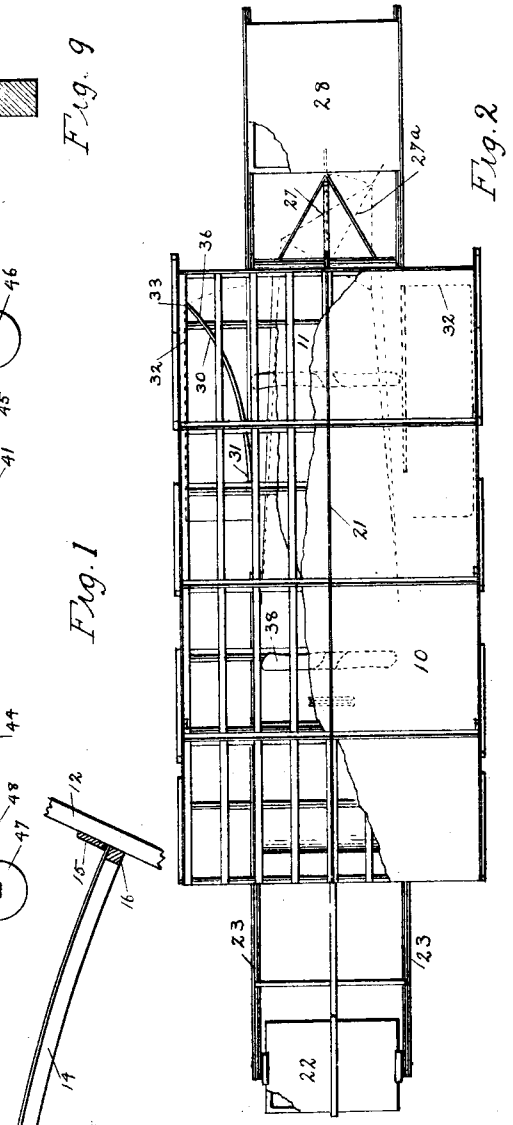

Fig. 2

Fig. 9

Fig. 8

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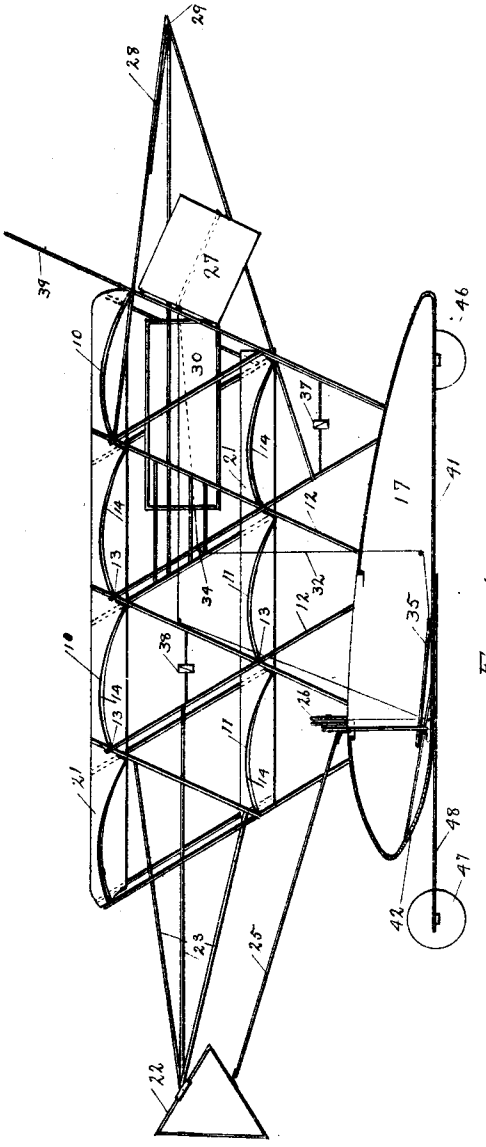

Fig. 4

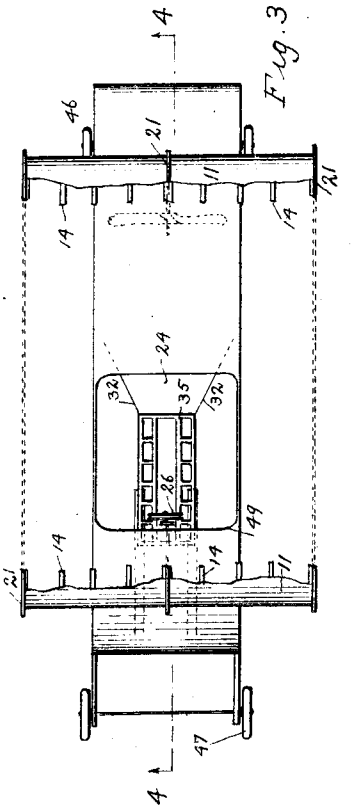

Fig. 3

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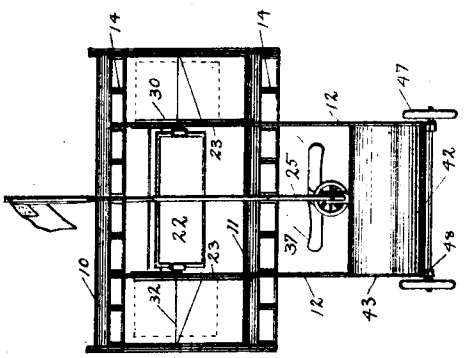
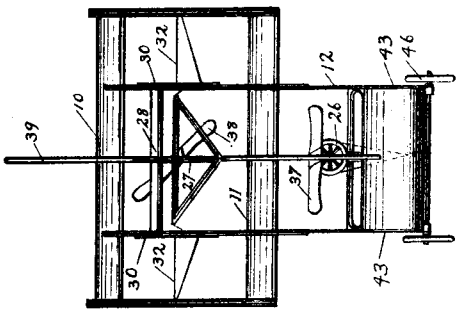


Fig. 5



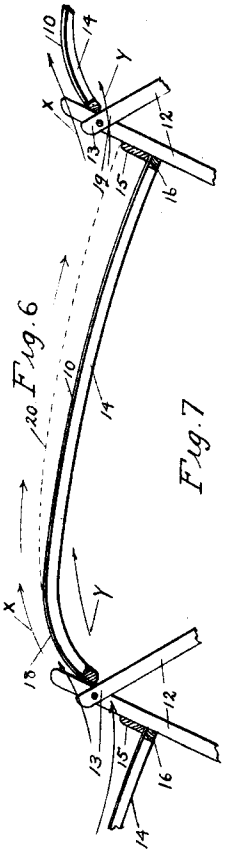


Fig. 6

Fig. 7

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UNITED STATES PATENT OFFICE.

JOHN C. TELFER, OF SPOKANE, WASHINGTON.

AEROPLANE.

1,030,942. Specification of Letters Patent. Patented July 2, 1912.

Application filed April 17, 1911. Serial No. 621,713.

To all whom it may concern:

Be it known that I, JOHN C. TELFER, citizen of the United States of America, residing at Spokane, in the county of Spokane and State of Washington, have invented certain new and useful Improvements in Aeroplanes, of which the following is a specification.

This invention pertains to aeroplanes and has for its object to provide a construction that will be best adapted to take full advantage of the advanced science and knowledge of the laws governing air currents, aerial flights, including mechanical poise, stability and general equipment for the purposes of counteracting the laws of gravity, side and conflicting currents of air, creating and utilizing rarefactions and cushions of air, and of rising directly from the surface of the earth and water and alighting thereon.

Other and further objects and purposes will be hereinafter described and shown in the accompanying drawings.

The arrangement of the elevating and sustaining planes and surfaces is preferably that of oblong construction, the greater extent being longitudinal, the planes being disposed in tandem, a multiple system of planes, one above the other, staggered, however, preferably with the center of the lower planes directly or nearly beneath the longitudinal connections of the planes above, there being a less number of planes in each succeeding lower tier of planes, by one. The carrying capacity of the vessel is at the lower portion of the mechanism where engine, freight, passengers and operators are provided space. Rarefactions of air are effected above the planes by the construction of planes of special curved surfaces, with deflectors and other detail parts between and cushions of air are effected beneath the planes by the same construction together with other parts operating in conjunction or in aid of the same. The planes of the vessel and the boat body are bound rigidly together by means of struts crossing each other at an angle and bound together by substantial mechanical means. I avoid the use of wires or other metals in the frame work or binding as much as possible as metals expand and contract with the change of temperature in passing from a lower to a higher and from a higher to a lower altitude.

The boat body, or as I denominate the same, the hydro-plane, has a flat bottom in cross section and curved upwardly longitudinally at its front end, has vertical sides, a top curved downwardly at both ends and flat in cross-section, the front portion of the body being of a greater diameter vertically than the back portion, the curve downwardly at the front portion being greater and shorter than the curve downwardly at the rear portion, the longitudinal curve of the top of the body, however, being continuous from one extreme to the other.

The hydroplane is mounted on front and rear trucks, the front trucks being forward of the body thereof and connected thereto by means of longitudinally arranged arms constructed of resilient material whereby the same may bend over the curved under surface of the front end of the same to minimize the force of the impact of the mechanism in alighting from a flight. Longitudinal vertical planes are set at right angles with the tandem planes and practically horizontal therewith and may be of greater or less number as the width of the tandem planes may justify or require and serve to check the inflow of lateral air currents upon the tandem planes to preserve the rarefaction provided by other constructions. Vertical planes constructed of resilient materials extending rearwardly from near the longitudinal center of the planes and intermediate the same, vertically, anchored at their front ends only, may be mechanically manipulated laterally at their rear ends as a stabilizing means for the vessel, to counteract adverse winds and assist in bringing the same to a sudden stop and in hovering over a predetermined place.

I place particular stress upon the construction whereby the great weight of the mechanism is a distance below the planes and wherein is provided housing for freight, passengers, machinery, etc., the operator unusually protected from exposure to the elements and heavy currents of air, and upon the rigid construction of the planes and general mechanism.

A pilot and rudder are provided and other details of construction which will be hereinafter described and illustrated in the accompanying drawings.

Figure 1, is a side elevation of the complete mechanism. Fig. 2, is a top plan view of the same with a portion of the canvas of the planes broken-away. Fig. 3, is a top

plan view of the boat or hydro-plane together with a broken-away view of the planes and other mechanism. Fig. 4, is a longitudinal sectional view of the complete mechanism taken through the center thereof, indicated on Fig. 3 by the line 4—4. Fig. 5, is a rear end elevation of the complete mechanism. Fig. 6, is a front end elevation of the complete mechanism. Fig. 7, is a side elevation of one complete support for a plane together with the rear end of the support ahead of it, the front end of the support succeeding it, the ends of struts used for the frame of the aeroplane and serving several other functions, together with a sectional view of air current deflectors and beams for the ends of the plane supports. Fig. 8, is a side elevation of one of the supports for the planes and showing its manner of connection with a strut, and beam and an air current deflector, and Fig. 9, is transverse sectional view of the said support.

I have shown two series of planes in tandem 10 and 11, one above the other, the upper series having four sections and the lower, three. This permits of the breaking of joints, placing the center of the lower sections almost directly underneath of where two of the sections of the upper plane are joined. It permits also of using the struts 12 at an angle, crossing each other as at 13, where they are united by screws or other mechanical means, permits of the use of the struts 12 as supporting means for the plane supports 14 and the use of the same to support the deflectors 15 and the beam 16. The struts 12 also serve to unite the boat or hydro-plane 17 with the remainder of the mechanism, each part cooperating with other parts to make a very strong and rigid mechanism without adding unusual weight. The plane sections are curved downwardly at their front ends, as at 18, and have a sloping horizontal descent rearwardly, are connected at their front ends with the struts 12, where two of them cross, beam 16 being provided as a rest for the extreme ends thereof. The rear ends of said plane sections are secured to beams 16 and to the struts 12, a short distance below where the struts cross each other. A deflector 15 for air currents rests transversely of the plane supports across their rear ends and are attached to the sloping sides of the struts 12, giving the deflectors 15 an upward and rearward slant. An opening 19, for the passage of a certain amount of air, is left between the rear ends of the plane sections and the front ends of the succeeding sections. In the forward flight of the vessel through the air, the upward bows 18 of the planes 10 and 11 are the portions to first come in contact with the air. The sections of the planes sloping downward as they extend rearward produce rarefactions of the air, something as indicated in Fig. 7 by the dotted line 20, between which and the tops of the planes 10 the rarefactions are. Air striking the planes at the front ends or coming in contact with cushions of air directly ahead of the front ends thereof, will be forced across the sections of the planes in the direction of the arrows in Fig. 7, a portion of it going over the front ends of the succeeding sections as shown by arrows X and a portion under the same through the openings 19 as shown by the arrows Y. The deflectors 15 serve to start air currents coming in contact with them, on an upward, rearward angle, a portion of the air going through the openings 19 directly above the deflectors and helping to form air cushions for upward pressure under the succeeding sections of planes. The rarefactions above the planes as mentioned are calculated to aid in the ascent of the vessel, as the vessel will have a tendency to rise to fill the partial vacuum. I protect these rarefactions as far as possible by providing horizontal, vertical, longitudinally arranged guards 21, calculated to check the inflow of air from the sides of the vessel. These guards are practically horizontal with the planes, one placed at each side thereof and in the drawings one in the center, but additional ones may be added between the ones shown on vessels large enough and wide enough to require them.

A pilot plane, 22, normally horizontal, but capable of being varied therefrom when desired, as shown by dotted lines 22^a, is carried by supports 23 attached to the framework of the vessel. This pilot 22 is manipulated by the operator in the cock-pit 24 of the hydro-plane 17, by means of rods 25 and a wheel 26. A rudder 27 is manipulated by cables.

A practically horizontal plane 28, at the rear of the vessel, is carried by the supports 29 attached to the framework of the vessel. Vertical planes 30 attached at their front ends 31 to the frame of the vessel and extending rearward have cables 32 attached to their rear ends 33, such cables passing over pulleys 34 and into the cock-pit 24, where they are attached to the foot treadle 35, by means of which the operator may bow out laterally the rear ends of the said planes as at 36 in Fig. 2, to assist in checking the forward speed of the vessel and in combating adverse winds.

I have shown two propellers, one, 37, at the rear of the vessel between the hydro-plane 17 and the plane 11 above it and one at 38 near the front and between the upper plane 10 and the intermediate plane 11. The angular post 39 supported by the mechanism carries the rudder 27, which is capable of lateral adjustment, as shown by

the dotted lines 27ª, in the manner heretofore mentioned. This post 39 also supports the flag 40.

The hydro-plane 17 has a bottom 41 horizontal in cross section, but curved upwardly at its front end 42, has vertical sides 43, a top curved downwardly at both ends and horizontal in cross section, the front portion of the body being of a greater diameter vertically as at 44, than the rear portion the same distance from the end, as at 45. The backward slope of the top of the body should be such that the rear of the body will be wedge shape.

The hydro-plane 17 is mounted on trucks, the rear trucks 46 being underneath the body and the front trucks 47 in front or in advance of the body and being carried by supports 48 of resilient material, so that in an impact with the earth the force will be minimized.

Wind shield 49 at the front of the cockpit 24 is for the protection of the operator.

The body of the hydro-plane 17 is calculated to house the engines, freight and passengers.

Having thus described my invention, what I claim as new and useful and desire to secure by Letters-Patent, is,

1. In an aeroplane a multiple system of planes in tandem, one above the other, the lower system of planes having a less number of sections than the plane immediately above the same by one, the center of the lower sections being nearly vertically under the point of joining of the sections of the planes immediately above, struts crossing each other and set on an angle longitudinally and reaching from the highest to the lowest system of planes, the sections of the planes curved in longitudinal section, the front ends set higher than the rear ends of the sections in advance and beams extending transversely of the planes and secured to the struts and the ends of the sections of the planes.

2. In an aeroplane a multiple system of planes in tandem, one above the other, the lower system of planes having a less number of sections than the plane immediately above the same by one, and center of the lower sections being nearly vertically under the point of joining of the sections of the planes immediately above, struts crossing each other and set on an angle longitudinally and reaching from the highest to the lowest system of planes, the sections of the planes curved in longitudinal section, the front ends set higher than the rear ends of the sections in advance and beams extending transversely of the planes and secured to the struts and the ends of the sections of the planes, together with planes secured vertically at their front ends at a point in the mechanism vertically between the systems of planes, and to the rear of the longitudinal center, made of resilient material and adapted to be curved outwardly at their rear ends by means of cables reaching to foot treadles at the base of the boat or hydro-plane and longitudinally arranged vertical planes adjacent to the systems of planes first above described.

3. In an aeroplane a multiple system of planes in tandem, one above the other, the lower system of planes having a less number of sections than the plane immediately above the same by one, the center of the lower sections being nearly vertically under the point of joining of the sections of the planes immediately above, struts crossing each other and set on an angle longitudinally and reaching from the highest to the lowest system of planes, the sections of the planes curved in longitudinal section, the front ends set higher than the rear ends of the sections in advance and beams extending transversely to the planes and secured to the struts and the ends of the sections of the planes together with a boat body or hydro-plane attached to the lower ends of the angular struts.

4. In an aeroplane having planes in tandem curved in longitudinal section, the front ends set higher than the rear ends of the sections in advance: deflectors on the tops of the planes and at their rear ends and extending upwardly.

5. In an aeroplane a multiple system of planes in tandem, one above the other, the lower system of planes having a less number of sections than the plane immediately above the same by one, the center of the lower sections being nearly vertically under the point of joining of the sections of the planes immediately above, struts crossing each other and set on an angle longitudinally and reaching from the highest to the lowest system of planes, the sections of the planes curved in longitudinal section, the front ends set higher than the rear ends of the sections in advance and beams extending transversely of the planes and secured to the struts and the ends of the sections of the planes together with deflectors on the tops of the planes and the sections thereof and at their rear ends and extending upwardly.

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

JOHN C. TELFER.

Witnesses:
WILLIAM H. KAYE,
M. F. MENDENHALL.