

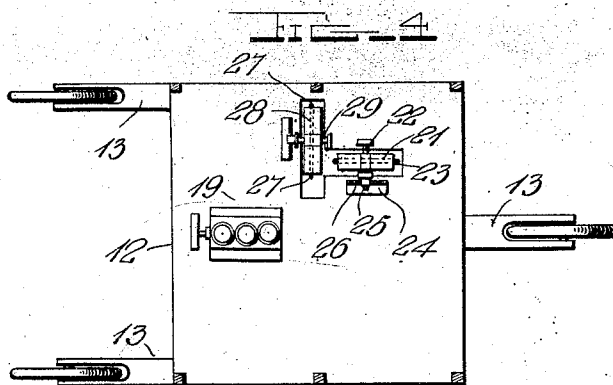
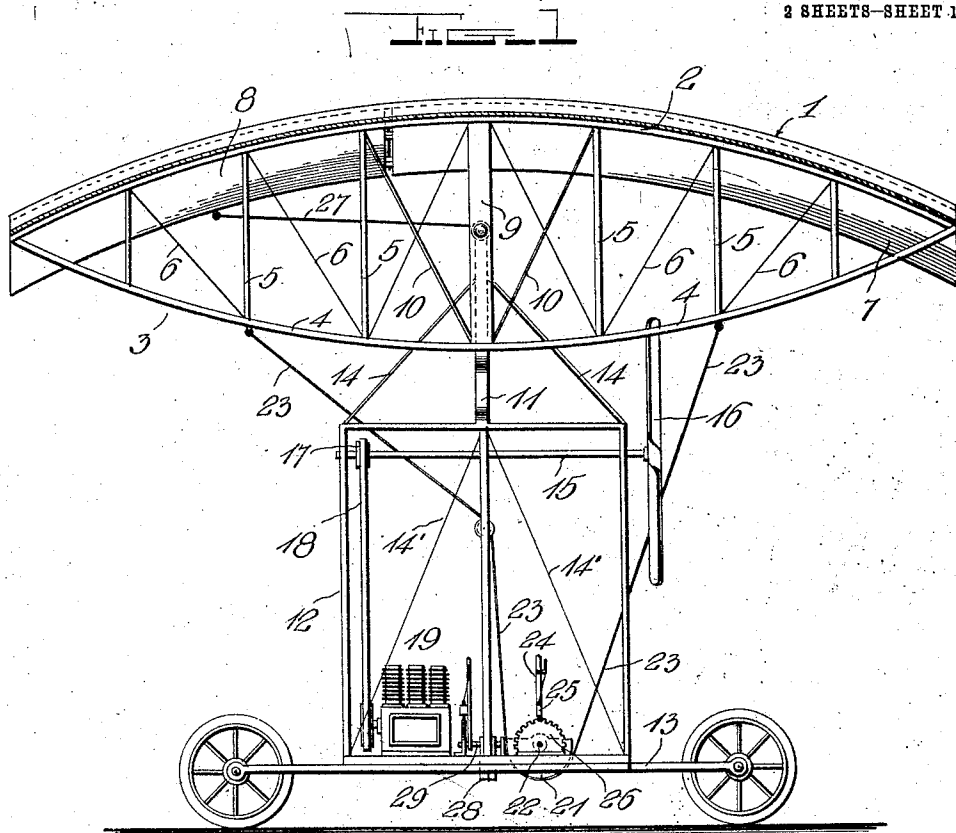
W. F. SMITH.
AEROPLANE.

APPLICATION FILED AUG. 22, 1910.

992,816.

Patented May 23, 1911.

2 SHEETS-SHEET 1.



Witnesses

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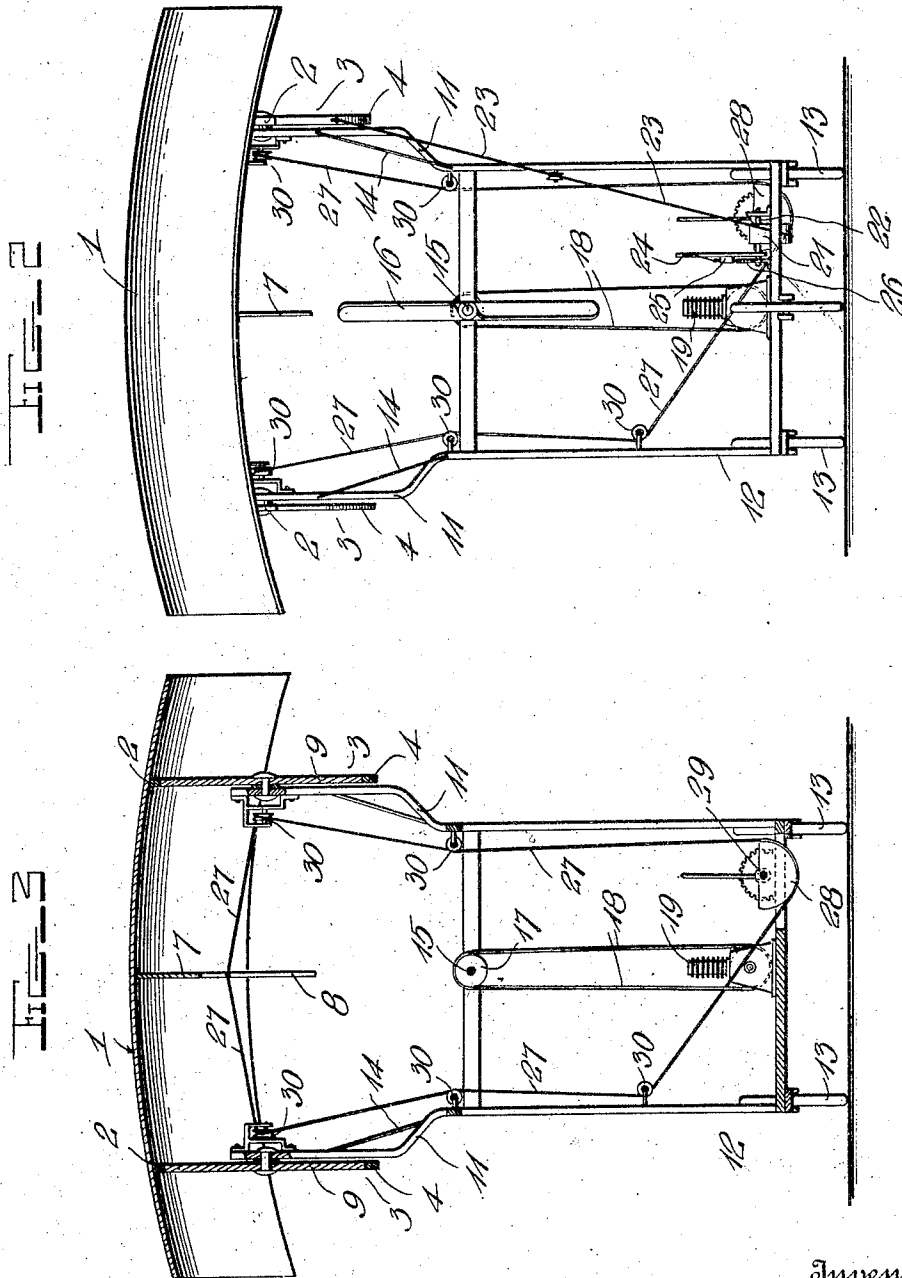
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UNITED STATES PATENT OFFICE.

WILLIAM F. SMITH, OF ROODHOUSE, ILLINOIS.

AEROPLANE.

992,816.

Specification of Letters Patent.

Patented May 23, 1911.

Application filed August 22, 1910. Serial No. 578,358.

To all whom it may concern:

Be it known that I, WILLIAM F. SMITH, a citizen of the United States, residing at Roodhouse, in the county of Greene and State of Illinois, have invented certain new and useful Improvements in Aeroplanes; and I do declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same.

This invention relates to improvements in aeroplanes.

One object of the invention is to provide an aeroplane having an improved construction and arrangement of sustaining and guiding planes and means whereby the latter are operated.

With this and other objects in view, the invention consists of certain novel features of construction, combination and arrangement of parts as will be more fully described and particularly pointed out in the appended claims.

In the accompanying drawings: Figure 1 is a side view partly in section of an aeroplane constructed in accordance with the invention; Fig. 2 is a front end view of the same; Fig. 3 is a vertical cross sectional view taken on a line with the pivotal connection of the car with the main plane; Fig. 4 is a plan view of the car frame and truck.

In the embodiment of the invention I provide a main sustaining plane 1, consisting of a suitable fabric stretched over a frame 2 which is preferably curved longitudinally and which is also slightly curved transversely. The frame 2 of the sustaining plane is braced on its under side adjacent to its opposite edges with longitudinally extending truss brace frames 3 each of which comprises a downwardly curved bar 4 connected at its opposite ends to the frame 2 adjacent to the opposite ends thereof. The bar 3 is further connected to the frame 2 by a series of vertical bracing ribs 5 between which are arranged a series of diagonal brace rods or wires 6. By thus arranging the truss braces and connecting the same with the frame 2 the sustaining plane will be securely braced and supported.

Secured to the under side of the plane frame 2 and along the center of the same is a downwardly projecting longitudinally extending stationary guiding plane 7 which serves as a fin for keeping the aeroplane in

a straight course or preventing the same from drifting sidewise. The stationary guiding plane 7 extends from the forward end of the main plane to a point a short distance beyond the center thereof and to the end of said stationary guiding plane is pivotally connected a movable guiding plane or rudder 8 which is adapted to be operated for steering the machine in the desired direction. The stationary and movable members of the rudder are constructed in the form of suitably braced frames over which is stretched a suitable fabric.

Secured to the truss frames 3 and the main plane frame 2 midway between the ends of the latter are upper car supporting bars 9, the lower ends of which are connected to the truss braces 4 and are braced by diagonally arranged brace rods 10. To the bars 9 are pivotally connected the upper ends of lower car supporting bars 11 to which are fastened a car 12 which may be of any suitable construction and which is here shown as being provided with a three wheeled truck 13 whereby the machine is adapted to run along the ground before making an ascent. The frame of the car is braced by inclined brace bars 14 and 14' arranged thereon as shown.

In the upper portion of the car frame is revolubly mounted a propeller shaft 15 having on its forward end a propeller 16, and on its rear end a drive pulley 17. The pulley 17 is operatively connected by a belt 18 to a motor 19 whereby the machine is propelled.

In order to direct the course of the machine upwardly or downwardly as when ascending or descending I provide means whereby the plane 1 may be tilted to throw the forward end thereof upwardly or downwardly. The tilting mechanism for the plane 1 comprises a drum 21 which is fixed on a rock shaft 22 mounted in suitable bearings in the truck frame of the car. Passed around the drum 21 and connected at its opposite end to the truss frames 3 of the plane 1 is a tilting cable 23 whereby when the shaft 22 and drum 21 are rocked the frame will be rocked in one direction or the other, and the frame thus tilted in the desired direction. The shaft 22 and drum 21 are provided with an operating lever 24 which is rigidly connected thereto at its lower end and is provided with a pawl 25 adapted to be engaged with the teeth of a segmental

rack 26 whereby the lever is fastened and the shaft 22 and drum 21 locked in position for holding the plane 1 at the desired angle.

The rudder 8 is operated to steer the machine in the desired course by an operating cable 27 which is passed around the segmental drum 28 rigidly mounted on a rock shaft 29 journaled in the track frame of the car as shown. The ends of the cable 27 pass through suitable guide pulleys 30 arranged at the necessary points on the car frame and are connected to the opposite sides of the rudder 8 whereby when the rock shaft 29 and drum 28 are rocked one way the rudder will be swung around and when said shaft and drum are rocked the other way, the rudder will be swung in the opposite direction thereby steering the machine in the desired course.

From the foregoing description taken in connection with the accompanying drawings, the construction and operation of the invention will be readily understood without requiring a more extended explanation.

Various changes in the form, proportion and the minor details of construction may be resorted to without departing from the principle or sacrificing any of the advantages of the invention as defined in the appended claims.

Having thus described my invention, what I claim is:

1. An aeroplane comprising a horizontally disposed sustaining plane, a centrally depending rigid guiding plane on the under side of said sustaining plane extending from the front end thereof to a point short of the rear end of the same, a vertically disposed rudder hinged at its front end to the rear end of said rigid guiding plane, bracing frames secured to and depending from the sustaining plane near the sides thereof, hanger bars secured to said bracing frames, a car, side bars rising from the car and pivoted at their upper ends to said hanger bars, a propeller mounted on the car, a plane-adjusting mechanism mounted on the car and adapted

to tilt the sustaining plane, and a rudder-operating mechanism also mounted on the car and adapted to swing the rudder laterally with respect to the sustaining plane.

2. In an aeroplane, a sustaining plane, truss brace frames connected with the frame of said sustaining plane whereby the latter is rigidly braced, a vertical longitudinally disposed guiding plane or fin secured to the center of said sustaining plane and projecting a suitable distance below the same, a movable steering plane hingedly connected to the rear end of said guiding plane, a car frame pivotally connected to the truss brace frames of said sustaining plane, a wheeled truck secured to said car frame, a propeller operatively mounted in the upper portion of the latter, a cable operating drum mounted in said car frame, a tilting cable operatively engaged with said drum and connected at its opposite ends to the opposite ends of the sustaining plane frame whereby said plane may be tilted upwardly or downwardly to direct the course of the machine when ascending or descending, an operating lever connected to said drum and a pawl and ratchet locking mechanism for said lever whereby said drum is locked to hold the plane at the desired angle, a steering drum operatively mounted in said car frame, steering cables engaged with said drum and operatively connected with said movable steering plane whereby the latter may be swung in one direction or the other for steering the machine, an operating lever connected with said drum and a pawl and ratchet locking mechanism whereby the drum is locked and holds the rudder in the desired position.

In testimony whereof I have hereunto set my hand in presence of two subscribing witnesses.

WILLIAM F. SMITH.

Witnesses:

JOHN JONES,
J. W. MELLEN.