

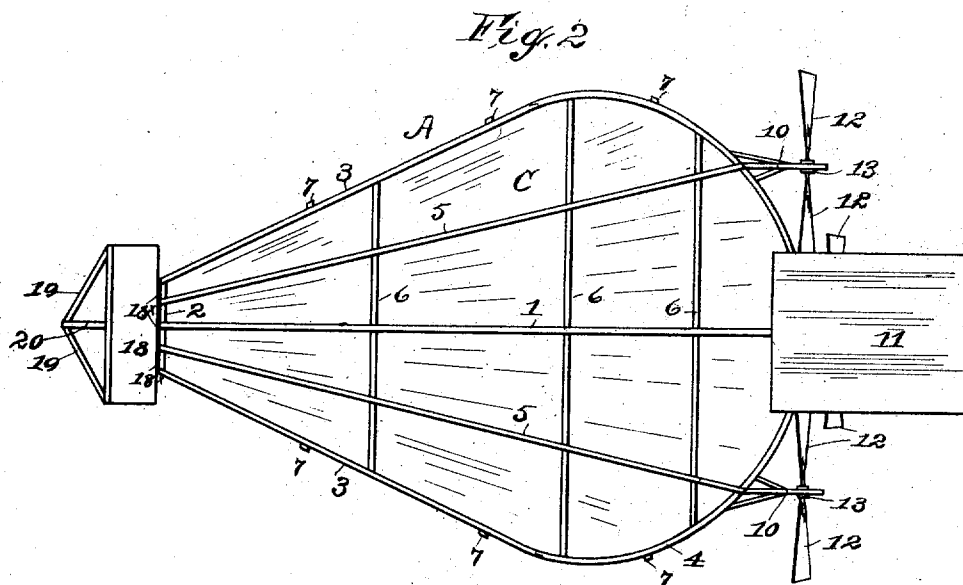
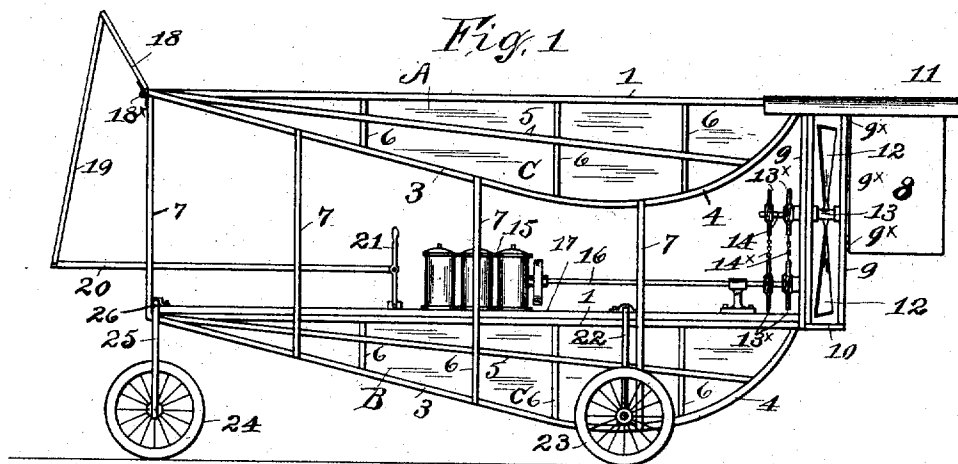
J. M. DAVIS.
AEROPLANE.

APPLICATION FILED JAN. 31, 1910.

973,632.

Patented Oct. 25, 1910.

2 SHEETS—SHEET 1.



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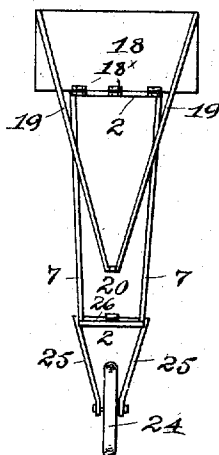


Fig. 3

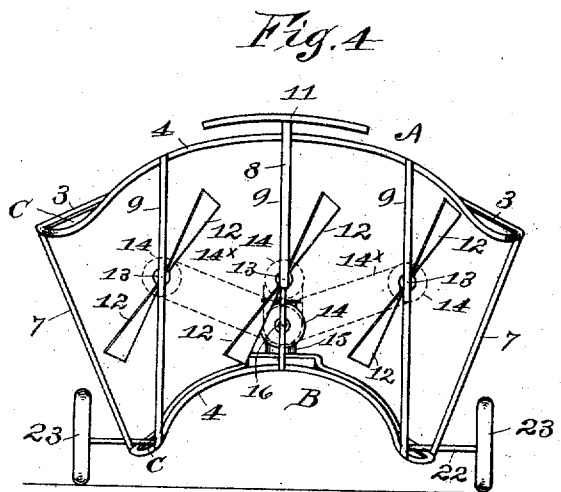


Fig. 4

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UNITED STATES PATENT OFFICE.

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AEROPLANE.

973,632.

Specification of Letters Patent.

Patented Oct. 25, 1910.

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To all whom it may concern:

Be it known that I, JOHN M. DAVIS, a citizen of the United States, and resident of McGraw, in the county of Cortland, in the State of New York, have invented new and useful Improvements in Aeroplanes, of which the following, taken in connection with the accompanying drawings, is a full, clear, and exact description.

This invention relates to the type of aeroplanes which embody two planes disposed parallel one above the other, and provided at one end with propelling and steering devices, the lower plane having mounted thereon a suitable motor for driving the propelling device.

The main object of the present invention is to produce a simple and efficient structure wherein the air will offer minimum degree of resistance to its travel and thus allow the aeroplane to be driven at a speed coincident with the full capacity of the motor.

A further object is to provide an aeroplane of the aforesaid type which can be easily and reliably controlled in its travel.

To that end the invention consists primarily in the peculiar construction of the two planes, and secondarily in the novel arrangement and construction of the propelling devices and rudder supported at the rear ends of the planes, and furthermore it consists in the novel arrangement of an adjustable tilt-plane supported at the front end of the structure for governing its ascent and descent.

In the accompanying drawings Figure 1 is a side elevation of the aeroplane embodying my improvements; Fig. 2 is a plan view of the same; Fig. 3 is a front view, and Fig. 4 is a rear view.

Like characters of reference indicate like parts in the several views of the drawings.

A and B denote two correspondingly shaped planes which are of the same length, and are disposed parallel one above the other. Each of these planes comprises in its structure a frame, to the bottom of which is suitably fastened a covering composed of canvas or other material.

To obtain the best results, I make the frame of the upper plane of greater width throughout than that of the lower plane whereby it carries practically double the

square-feet of canvas covering the said lower frame.

The essential feature of my invention consists in combining two planes disposed as aforesaid, each plane having a straight transverse front end and gradually and uniformly increased in width toward its rear end, and at the same time having a uniformly increased cross-sectional curvature in corresponding direction.

The frame of each plane comprises a central longitudinal beam —1— extending full length thereof and fastened at its forward end to a comparatively short transverse bar —2—, from the opposite ends of which bar extend two rearwardly divergent and inclined side members —3—3— which are preferably straight and are fastened at their rear ends to a rearwardly curved member —4—. Said curved member —4— is deflected upward from its end portions so as to allow it to be fastened to the aforesaid beam —1— as clearly shown in Figs. 1 and 3 of the drawings. Each frame also comprises a series of straight longitudinal braces —5—5— which extend from the bar —2— to the rear curved member —4— and are inclined rearwardly, and arched transverse braces —6—6— fastened to the frame-members —3—3— and braces —5—5—. Rear end member —4— of the upper frame is preferably of semi-circular shape, while the corresponding member of the lower frame is of semi-elliptical shape owing to the latter frame being of less width than the upper and the fact that the two frames are of the same length.

It will be understood that the members of each frame may be united in any convenient or well known manner, and that the canvas covering —C— may be fastened to the frame in any suitable manner.

The two planes are rigidly connected by stays —7—7— which are secured at their ends to the frame-members —2—3— and are obviously inclined outwardly.

At the rear of the aeroplane is provided a rudder —8— consisting of a horizontally swinging board and having a hinged connection with a supplemental frame rigidly fastened to the rear ends of the two planes and disposed in line with the central longitudinal beams of the aforesaid frames. This

supplemental frame may be of any suitable construction, however, it consists preferably of two parallel upright front and rear members —9—9— and horizontal top and bottom members —10—10— connecting the ends of the said upright members.

The rudder is hinged to the rear frame member —9— as indicated at —9*— and projects above the upper plane, and may be operated by any mechanism common to aeroplanes. On the top of the rudder is provided a shield —11— which may consist of a board and is rigidly fastened to the rudder at the center of its width. This shield has its forward end projecting over the top plane and is curved correspondingly with the rear end portion of the plane. Said shield assists very materially in controlling the aeroplane.

At the rear ends of the two planes, I provide a series of propellers, preferably three, one being disposed directly in front of the rudder and the other two disposed at opposite sides of the central propeller. Each propeller comprises a plurality of radially disposed blades —12—12— rigidly united by a hub —13— secured to a longitudinally disposed shaft —14—. The shaft of the central propeller is journaled in suitable bearings on the upright members —9—9— of the rudder-supporting frame. The shafts of the two side propellers are journaled in upright members of like frames rigidly secured to the frames of the two planes. Upon the top of the lower plane is mounted the motor —15— for driving the propellers. Any suitable mechanisms may be employed for transmitting motion from the motor-shaft —16— to the shafts —14—14— of the propellers, however, each mechanism consists preferably of a pair of sprocket-wheels —13*— secured to the motor-shaft and propeller-shaft respectively and a chain —14*— running upon said sprocket-wheels. It is obvious that in order to throw said mechanisms into and out of operative connection with the motor-shaft, I provide the well known clutch-devices (not necessary to be shown). The motor is preferably mounted upon a suitable base —17— fastened to the top of the frame of said lower plane.

To effectually control the aeroplane in its ascent and descent, I provide the forward end thereof with a tilt-plane —18— which may be of any suitable construction and has a hinged connection with the front transverse bar —2— of the upper plane as indicated at —18*—. Any suitable mechanism may be provided and so arranged as to be conveniently operated by the person in charge whereby the said tilt-plane can be set at different angles of inclination, either rearward or forward. The mechanism which I propose to use comprises a pair of

downward convergent arms —19—19— extending from the lower face of the tilt-plane and having their adjacent ends pivotally connected to the forward end of a longitudinal rod —20— extending along the top of the lower plane —B—, the rear end of which rod is pivotally connected to a suitable supported lever —21— disposed to be actuated by either the hand or foot. It will be evident that by adjusting the tilt-plane, the aeroplane can be readily directed in an upward or downward course. To the rear end portion of the frame of the lower plane is suitably fastened a transverse axle —22— which is preferably arched to extend across the top of the frame, and on said axle are journaled two wheels —23—23—. At the front end of the lower plane is provided a single wheel —24— which may be journaled between the depending arms —25—25— formed integral with or rigidly secured to the ends of a transverse bar —26— secured to the top of the frame of said plane.

By providing these wheels —23—23—24—, the aeroplane may be propelled along the ground, as usually practiced, in order to cause the same to take flight.

What I claim is:—

1. An aeroplane comprising two planes disposed one above the other, and the upper plane having the greater area, each plane formed with a flat front end portion and having a transverse curvature gradually increasing from its flat portion to the rear end thereof as set forth.

2. An aeroplane comprising two planes disposed parallel one above the other and each consisting of a frame having a suitable covering; the upper plane having greater area than the lower, and each plane formed with forwardly convergent sides, a straight transverse front end, and a curved rear end as set forth.

3. An aeroplane comprising two rigidly united planes arranged parallel one above the other, and each plane having forwardly convergent sides, and a gradually increasing cross-sectional curvature toward its rear end, a tilt-plane having a hinged connection with the front end of the upper plane, and a rudder connected to the rear ends of the two planes and provided on its top with a shield curved transversely to correspond with the rear end portion of the upper plane and extending over the same as set forth.

4. An aeroplane comprising two planes of equal lengths and disposed parallel one above the other, and both formed with forwardly convergent sides, the upper plane having the greater area, and each plane being formed with a flat front end portion and having a gradually increasing cross-section curvature from its flat portion to

the rear end and the latter end curved outwardly, a tilt-plane hinged to the front end of the upper plane and projecting beyond the sides thereof, and a horizontally swinging rudder supported at the rear ends of the two planes and provided on its top with a shield curved correspondingly with the transverse curvature of the rear portion of the upper plane and extending over said plane as set forth.

JOHN M. DAVIS.

Witnesses:

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