

P. D. RIORDAN.

AEROPLANE.

APPLICATION FILED FEB. 27, 1911.

Patented Jan. 23, 1912.

2 SHEETS—SHEET 1.

1,015,711.

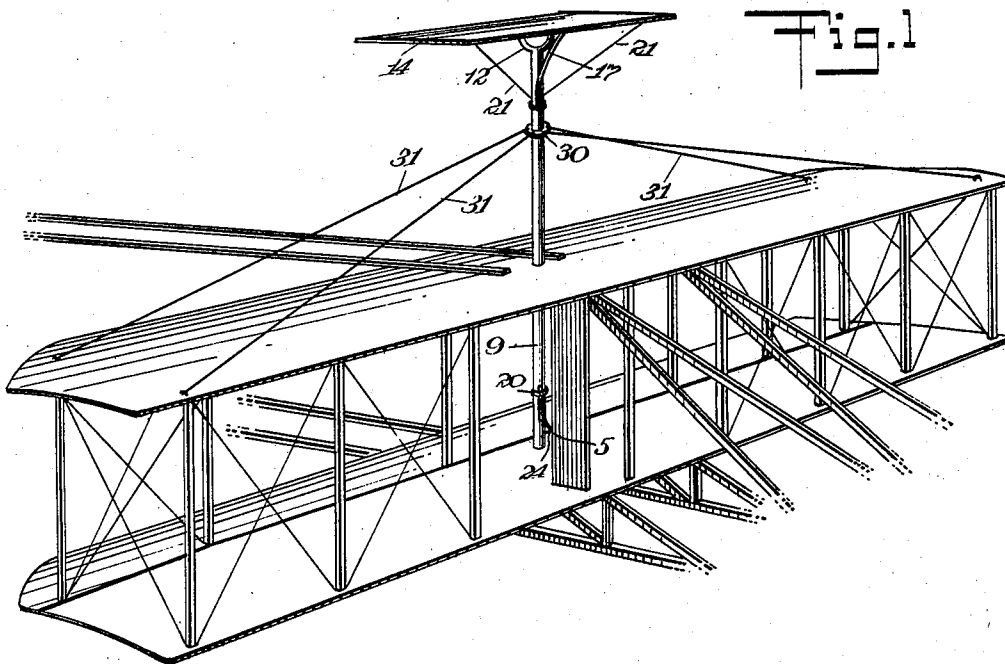


Fig. 1

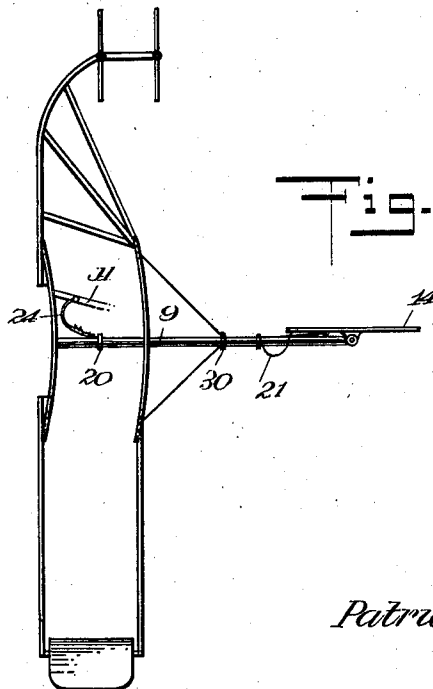


Fig. 2

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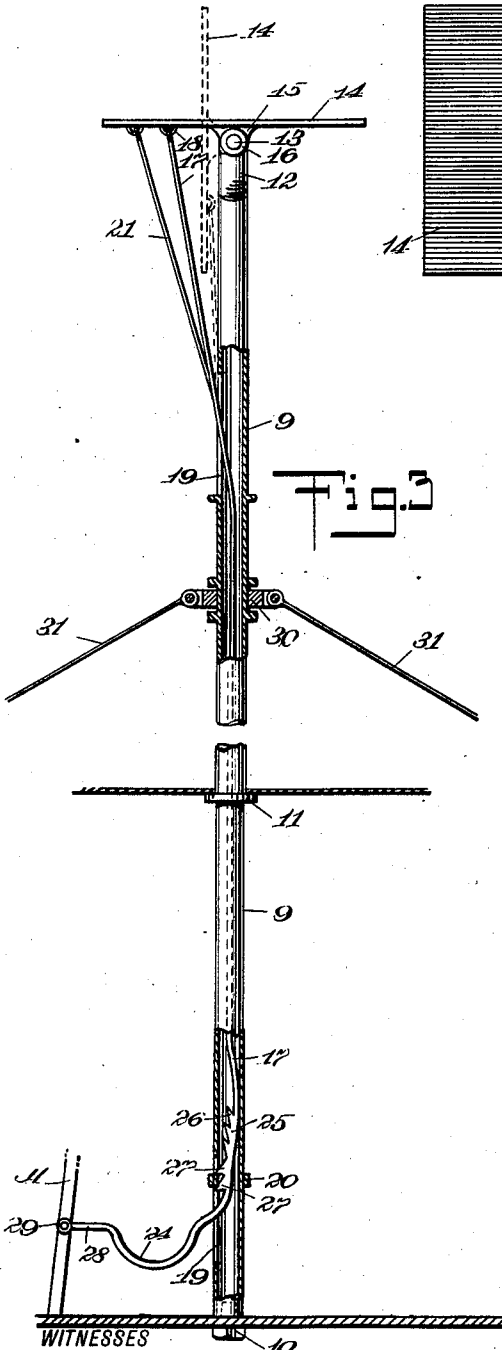


Fig. 3

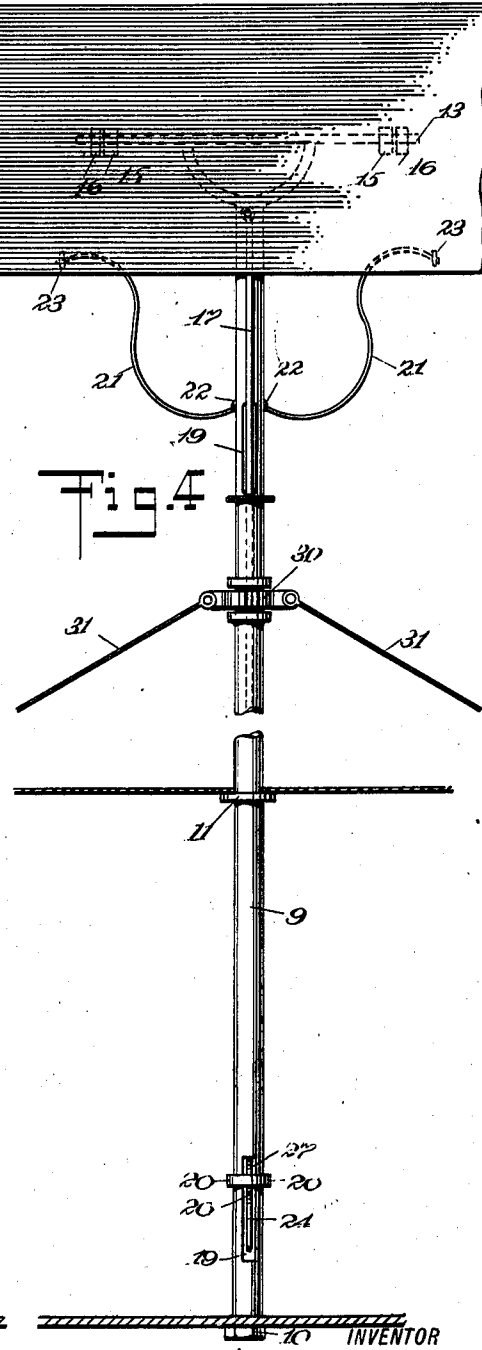


Fig. 4

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UNITED STATES PATENT OFFICE.

PATRICK D. RIORDAN, OF ARNOT, PENNSYLVANIA.

AEROPLANE.

Specification of Letters Patent.

Patented Jan. 23, 1912.

1,015,711.

Application filed February 27, 1911. Serial No. 611,056.

To all whom it may concern:

Be it known that I, PATRICK D. RIORDAN, a citizen of the United States, and a resident of Arnot, in the county of Tioga and State of Pennsylvania, have invented a new and Improved Aeroplane, of which the following is a full, clear, and exact description.

The principal object which the present invention has in view is to provide an emergency righting device which may be manually arranged to correct the riding position of the aeroplane in the event of tilting or falling.

With this object in view the invention consists in providing for aeroplanes of usual construction an auxiliary plane of relatively small area, disposed above the body of the machine and operable manually to change the relative angle of the said auxiliary plane to the main or carrying planes to present a resistance to the rush of air when falling.

One embodiment of the present invention is disclosed in the structure illustrated in the accompanying drawings, in which like characters of reference denote corresponding parts in all the views, and in which—

Figure 1 is a perspective view of a portion of an aeroplane provided with a righting plane constructed and arranged in accordance with the present invention; Fig. 2 is a view of the same, showing the aeroplane in the position of falling and the righting plane as set to correct the riding position of the aeroplane; Fig. 3 is a detail view, on an enlarged scale, showing the righting plane and means for mounting and controlling the same, the said plane being shown in normal position; and Fig. 4 is a similar view, the plane being shown in operative position.

As shown in the accompanying drawings, the aeroplane is provided with a mast 9, preferably constructed of hollow tubing. The mast is pivotally mounted on a stud 10 in the lower structure of the aeroplane. The said mast is extended through the upper plane and held in position thereon by means of a collar 11. The collar 11 may be fixedly mounted on the mast 9 by any suitable means. The upper end of the mast 9 is forked, and is provided with a yoke 12, which yoke properly braces a horizontally disposed shaft 13. The shaft 13 forms a pivot for the righting plane 14, the plane being provided with hinge lugs 15, which lugs are pierced to form bearings on the

shaft 13. The shaft 13 is properly disposed and held in position relative to the lugs 15 by means of collars 16.

The plane 14 is rocked about the shaft 13 from the position shown in full lines in Fig. 3 to the position shown in dotted lines in said figures. It is controlled in its movement by means of a pull rod 17 which is pivotally secured to the plane 14 by an eyelet 18. The rod 17 is extended through a slot 19 in the side of the mast 9, and is held in position thereon by a collar 20 located at the foot of the mast, the said rod extending through the hollow tube thereof. To normally lift the plane to the horizontal position there are provided springs 21. The springs 21 are, as shown best in Figs. 3 and 4 of the drawings, connected to the mast 9 at 22, and to eyelets 23 adjacent the edge of the plane 14. In the vertical position of the plane 14 the springs 21 are bent substantially as shown in Fig. 4 of the drawings. When the plane 14 is in the horizontal position, as shown in Fig. 3 of the drawings, the springs are substantially straight.

The pull rod 17 is constructed as best shown in Fig. 3 of the drawings, and is formed of spring metal bar of suitable size and resiliency. At the lower end the rod is bent to form a stirrup loop 24 which is extended through the slot 19 in convenient position for the foot of the aviator. Adjacent the fixed collar 20 with which the mast 9 is provided the rod 17 is flattened to form the toothed section 25. The section 25 is provided with a series of saw teeth 26 upwardly faced, which may be extended under the collar 20 when the rod 17 is drawn down to extend the plane 14, as shown in Fig. 4 of the drawings. It will be noted that there are three teeth 26, this construction admitting of placing the plane 14 at different angles. At the lower end of the section 25 are formed the teeth 27. The teeth 27 are faced downward and are provided to override the collar 20 and maintain the plane 14 in the horizontal position. The plurality of teeth 27 permits a variable disposition of the plane 14 when approximately parallel with the line of flight of the aeroplane. The rod 17 is further provided with an extension 28, having formed in the end thereof an eyelet 29 or other suitable device whereby the end may be temporarily secured to any suitable stanchion or standing fixture secured to the frame of the aero-

plane, such as shown at A in Figs. 2 and 3 of the drawings, whereby the mast is held in its normally stationary position.

In the operation of the plane 14 it will be understood that the same is provided to right the aeroplane when the same is falling, as illustrated in Fig. 2 of the drawings. It being uncertain as to the direction in which the aeroplane will tilt or list it becomes necessary that the plane 14 shall be shifted a quarter turn in both directions, which would present the flat vertical face of the plane to the line of fall or flight of the aeroplane. This movement of the plane 14 is imparted by the aviator pushing upon the stirrup loop 24 to rotate the mast 9 when desired, the said loop being for that purpose loosened from the frame member A. By providing a foot mechanism for thus operating the mast 9 and plane 14, the aviator is left at liberty to use his hands in the manipulation of the various mechanisms provided for steering and guiding the machine. It will be noted that where desired the plane 14 may be disposed to assist the rudder or levitating plane of the aeroplane. It will be understood that the rotation of the mast 9 is readily controlled by the movement of the aviator when the extension 28 is freed from the frame member A, the mast being freely rotated on the stud 10 and guided by the collars 11 and 30. To shift the plane 14 from the horizontal position, as shown in Fig. 3, the aviator places his foot in the stirrup 24 and presses downward on the rod 17. To do this he first releases the teeth 27 from engagement with the collar 20 by moving the stirrup toward the mast. The downward pull on the rod 17 rocks the plane 14 and uptilts the said plane to the position shown in dotted lines in Fig. 3 and in full lines in Fig. 4. If the plane 14 is to be maintained

in the position shown in Fig. 4 the aviator moves the stirrup 24 to permit the teeth 26 to engage the collar 20. The engagement by the teeth 26 of the collar 20 maintains the rod 17 in its depressed position and the plane 14 in the vertical disposition. It will thus be seen that the stirrup loop 24 and the toothed section 25 of the rod 17 may be manipulated to change the angle of the plane 14 and to hold the same in the various adjusted positions thereon.

The mast 9 is supported in the aeroplane perpendicular to the carrying frame thereof by means of guy wires 31, 31. The wires 31, 31 are suitably secured to a collar 30, within which the mast 9 is rotatably mounted.

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

1. In an aeroplane, a mast erected substantially midships and rotatably mounted, having at the upper end thereof cross arms; an auxiliary plane pivotally mounted on said cross arms; means for rocking said aeroplane on said cross arms; and means for rotating said mast.

2. In an aeroplane, a mast rotatably mounted in the frame of said aeroplane and extended above the framing structure of said aeroplane; an auxiliary plane pivotally mounted on said mast for disposition perpendicular to or parallel with said mast; manually operative means for rocking said auxiliary plane on said mast; and manually operative means for rotating said mast.

In testimony whereof I have signed my name to this specification in the presence of two subscribing witnesses.

PATRICK D. RIORDAN.

Witnesses:

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JOHN D. KEEFE.