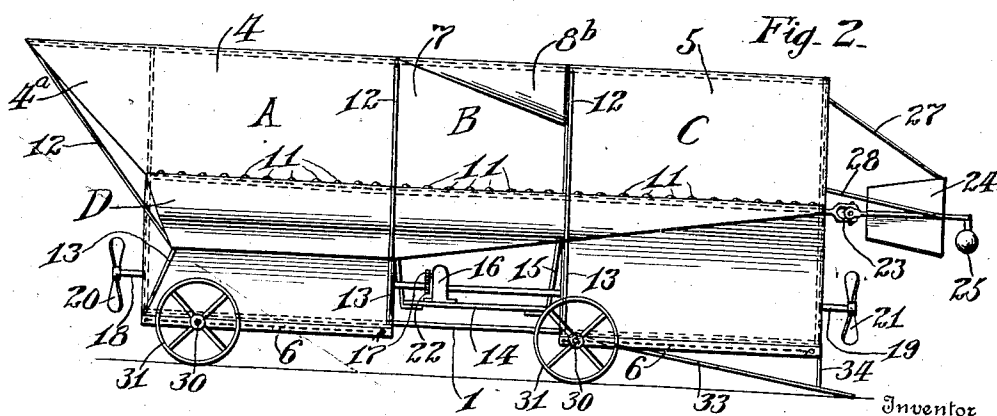
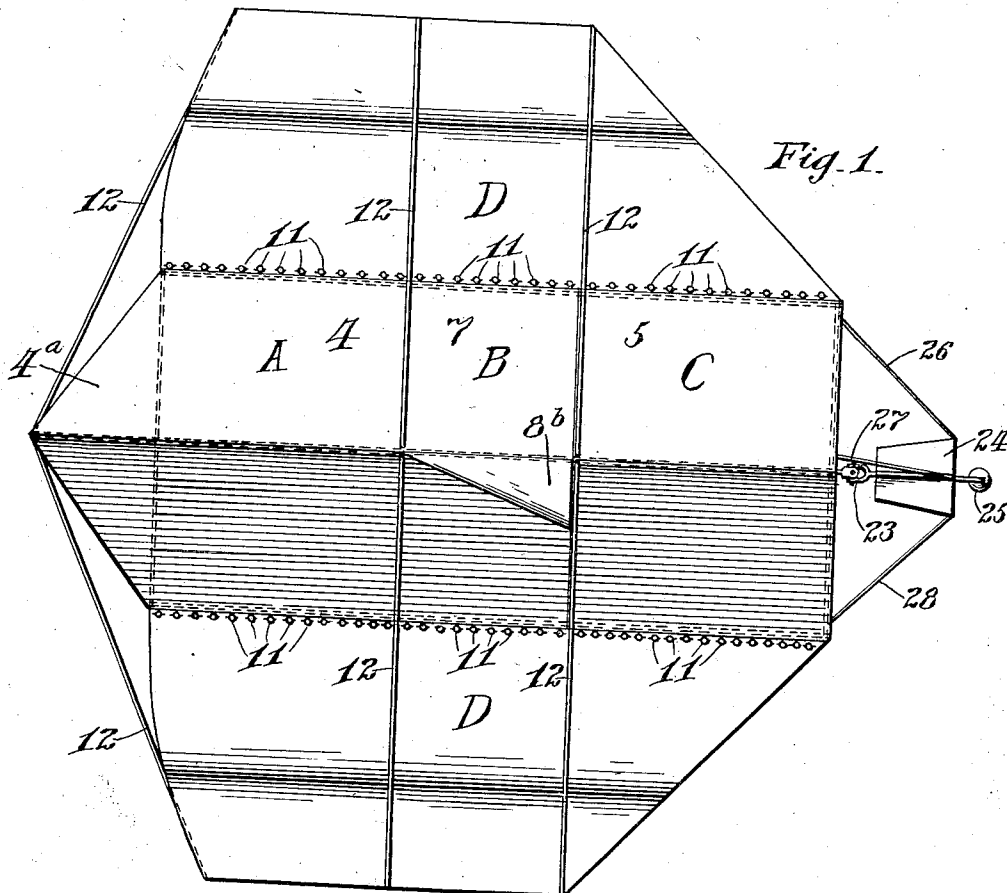


935,862

A. W. REINOEHL.
AEROPLANE.
APPLICATION FILED JAN. 16, 1909.

Patented Oct. 5, 1909.
2 SHEETS—SHEET 1.



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Alfred W. Reinoehl,

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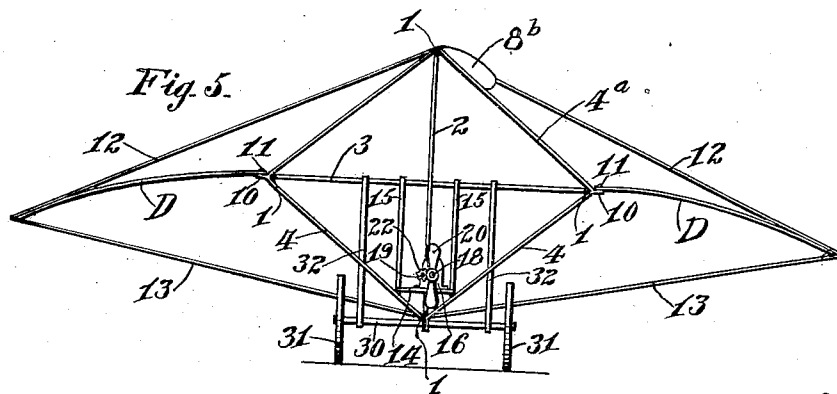
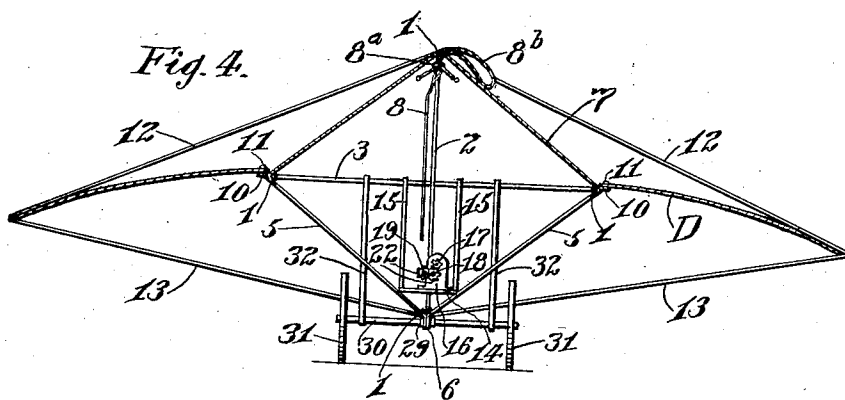
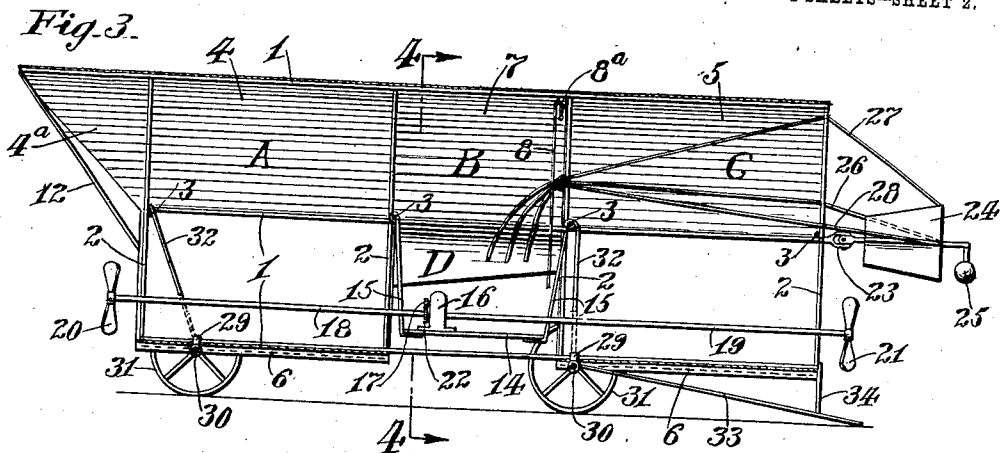
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UNITED STATES PATENT OFFICE.

ALFRED W. REINOEHL, OF PHILADELPHIA, PENNSYLVANIA.

AEROPLANE.

-935,862.

Specification of Letters Patent.

Patented Oct. 5, 1909.

Application filed January 16, 1909. Serial No. 472,631

To all whom it may concern:

Be it known that I, ALFRED W. REINOEHL, a citizen of the United States, residing at Philadelphia, in the county of Philadelphia and State of Pennsylvania, have invented certain new and useful Improvements in Aeroplanes, of which the following is a specification.

My invention relates to improvements in aeroplanes, the object of the invention being to provide a machine of this character, which will embody a maximum of strength and lifting power, with a minimum of weight, and which will be simple and comparatively inexpensive in construction.

A further object is to provide an improved frame work for holding taut, canvas coverings.

A further object is to provide propellers at opposite ends of the aeroplane, driven in opposite directions.

A further object is to provide improved means, whereby air may be permitted to pass between the sections of the aeroplane when desired.

A further object is to provide improved mounting for wheeled trucks to guide the aeroplane over the ground.

A further object is to provide improved steering mechanism, which enables the rudder to be moved in four directions.

A further object is to provide an improved canvas covering for the aeroplane frame, which can be readily removed when desired to repair or replace the same.

With these and other objects in view, the invention consists in certain novel features of construction, and combinations, and arrangements of parts as will be more fully hereinafter described and pointed out in the claims.

In the accompanying drawings, Figure 1, is a top plan view illustrating my improvements. Fig. 2, is a view in side elevation. Fig. 3, is a view in longitudinal section. Fig. 4, is a view in cross section on the line 4-4 of Fig. 3, and Fig. 5, is an end view.

1, 1, 1, 1, represent four parallel rods, extending longitudinally throughout the aeroplane, and in general rectangular formation, relative to each other, and connected at four points by vertical and transverse crossed-rods 2 and 3 respectively, dividing the frame into three main portions, which

for convenience of description, I have given the reference letters A, B and C.

The sections A and C are surrounded by canvas sheets 4 and 5 respectively, said sheets disposed equally on both sides of the upper longitudinal rod 1, thence drawn tightly around the side rods 1, and having perforated edges to receive lacing cords 6 to tighten the canvas around the frame, thus holding it perfectly taut without the employment of any side rods or frame work connecting the rods 1.

The canvas sheet 4 surrounding section A, is preferably made with an integral section 7 to inclose the upper half of the section B. This canvas sheet or section 7 is attached to the frame at the juncture of the cross rod 3 with the rods 1 at the forward end of section B, and is of greatest width at its rear end, so that when left free, the air can pass upward through the sections B and escape between the rear edge of the canvas 7 and the forward end of the canvas 5. To hold this canvas taut during the normal operation of the aeroplane, I have provided an eye 8^a on the vertical rod 2, and passed a cord 8 through said eye. This cord is divided, and its ends are secured to the canvas sections 7 at points equi-distant from the center thereof, so that when the cord is drawn downward through the eye, it will draw this canvas together, causing a central surplus portion to fall over upon the main portion of the canvas, as clearly shown at 8^b in Fig. 4. This cord will of course be held in any approved manner, and only released when the aeroplane is falling, to check the fall. In which case, the canvas section 7 will be bulged out (when permitted by the cord) by the pressure of the air passing through the section B, which will cause the aeroplane to right itself and descend gracefully to the ground. All of these canvas sections 4, 5 and 7, are provided at opposite sides, at points corresponding to the position of the side rods 1, with flanges 10, carrying a series of buttons 11 to which the wing portions D, also of canvas, are to be buttoned, or firmly secured in any other manner. These wings D are held in extended position by means of upper and lower wire stays 12 and 13 respectively, three upper and three lower stays provided at both sides being amply sufficient. The forward

upper stays extend from a forwardly projecting end of the upper rod 1, and the canvas section 4 is so shaped as to provide a forwardly projecting awning like portion 4^a, as clearly shown in Figs. 1, 2 and 3.

In the intermediate section B, the operator's platform 14 is suspended from hanger rods 15, the latter secured to the cross rods 3, and are preferably slightly at an incline as shown, to prevent any swinging movement of the platform. This platform supports a motor 16, which turns a gear 17.

18 and 19 represent forwardly and rearwardly projecting shafts, carrying at their forward and rear ends, propellers 20 and 21 respectively. These shafts 18 and 19 are provided with intermeshing gears 22, with one of which the driving gear 17 engages, so as to transmit motion from the motor to the shafts and drive them in opposite directions. By this means the rear propeller will better take hold of the air, than would be the case, if it were driven in the same direction as to the front propeller, and greater power for flight is thereby attained.

At the rear of the machine and connected by a universal joint 23, is my improved rudder 24, of the four bladed type, having a weight 25, on its outer end as shown. Steering cords 26, 27 and 28 respectively connect the upper portion and the side portions of the rudder with a point adjacent to the platform 14, so as to allow the operator on the platform to manipulate these three cords to change the disposition of the rudder, and to steer the machine through the air. The weight 25 serves to draw the propeller downward, when permitted by the cords, and hence a lower cord is not provided, as it would interfere with the working portion of the aeroplane.

On the lowest longitudinal rod 1, near its forward end, and at a point in rear of its center, clevises 29 are adjustably secured, and are secured upon axles 30, the latter mounted in wheels 31, and these axles are braced by rods 32 connecting them with cross rods 3, so as to prevent pivotal movement of the axles. These wheels are to support the aeroplane on the ground in starting, and alighting, and an incline deflecting bar 33 is secured at one end to the rear axle 30, and is braced at its forward end by a depending rod 34, at the rear end of the machine. This bar 33 when the aeroplane is coming to the ground with its front end elevated, will strike the ground and deflect the aeroplane down upon its wheels.

A great many slight changes might be made in the general form and arrangements of parts described, without departing from my invention, and hence I do not restrict myself to the precise details set forth, but

consider myself at liberty to make such changes and alterations as fairly fall within the spirit and scope of my invention.

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

1. In an aeroplane, the combination with four longitudinal rods, vertical and transverse crossed rods connecting said longitudinal rods at four points dividing the frame thus formed into three sections, canvas coverings entirely surrounding the front and rear sections, canvas coverings surrounding the upper half of the intermediate section, said intermediate canvas section being wider than the space it covers, and a draw string supported in said frame work, and adapted to normally hold said canvas taut.

2. In an aeroplane, the combination with four longitudinal rods, and vertical and transverse crossed rods connecting them, and canvas secured taut around said longitudinal rods forming rectangular planes located one behind the other, of a rudder, a universal joint between said rudder and the rear end of the frame, a weight on the outer end of said rudder, and three steering cords connected to the upper and the outer edges of said rudder.

3. In an aeroplane, the combination with longitudinal rods, vertical and transverse crossed rods secured to the longitudinal rods, canvas around said longitudinal rods forming rectangular planes located one behind the other, a platform supported by said transverse rods, a motor on said platform, forwardly and rearwardly projecting shafts extending over said platform, propellers at the forward and rear ends of the aeroplane secured upon the respective shafts, and means connecting the motor with said shafts.

4. In an aeroplane, the combination with longitudinal rods, vertical and transverse crossed rods secured to the longitudinal rods, canvas around said longitudinal rods forming rectangular planes located one behind the other, a platform supported by said transverse rods, a motor on said platform, forwardly and rearwardly projecting shafts extending over said platform, propellers at the forward and rear ends of the aeroplane secured upon the respective shafts, intermeshing gears on said shafts, and a gear on said motor engaging one of said intermeshing gears to drive the propellers in opposite directions.

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

ALFRED W. REINOEHL.

Witnesses:

R. H. KRENKEL,

J. A. L. MULHALL.