J. ANDERSON.

FLYING MACHINE.

APPLICATION FILED DEC. 31, 1909.

984,255.

Patented Feb. 14, 1911.

4 SHEETS—SHEET 1.

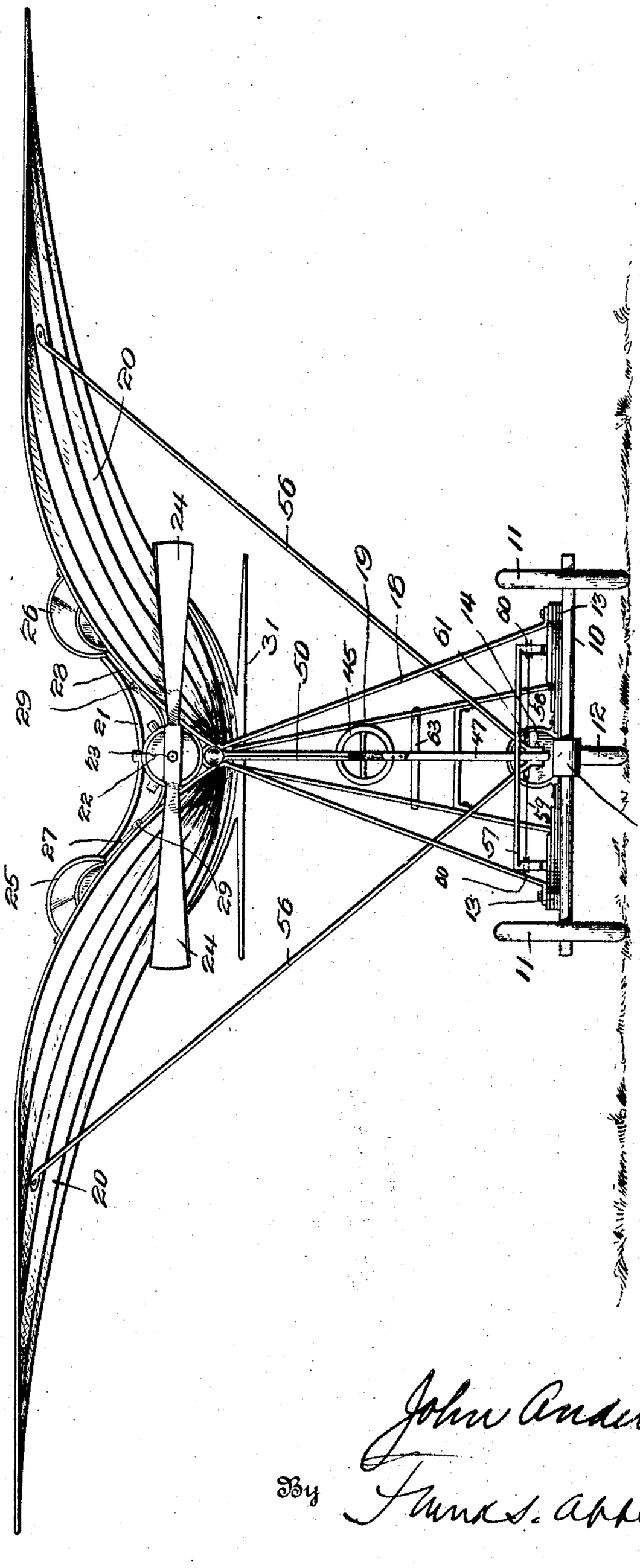

Fig. 1.

Witnesses

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4 SHEETS—SHEET 2.

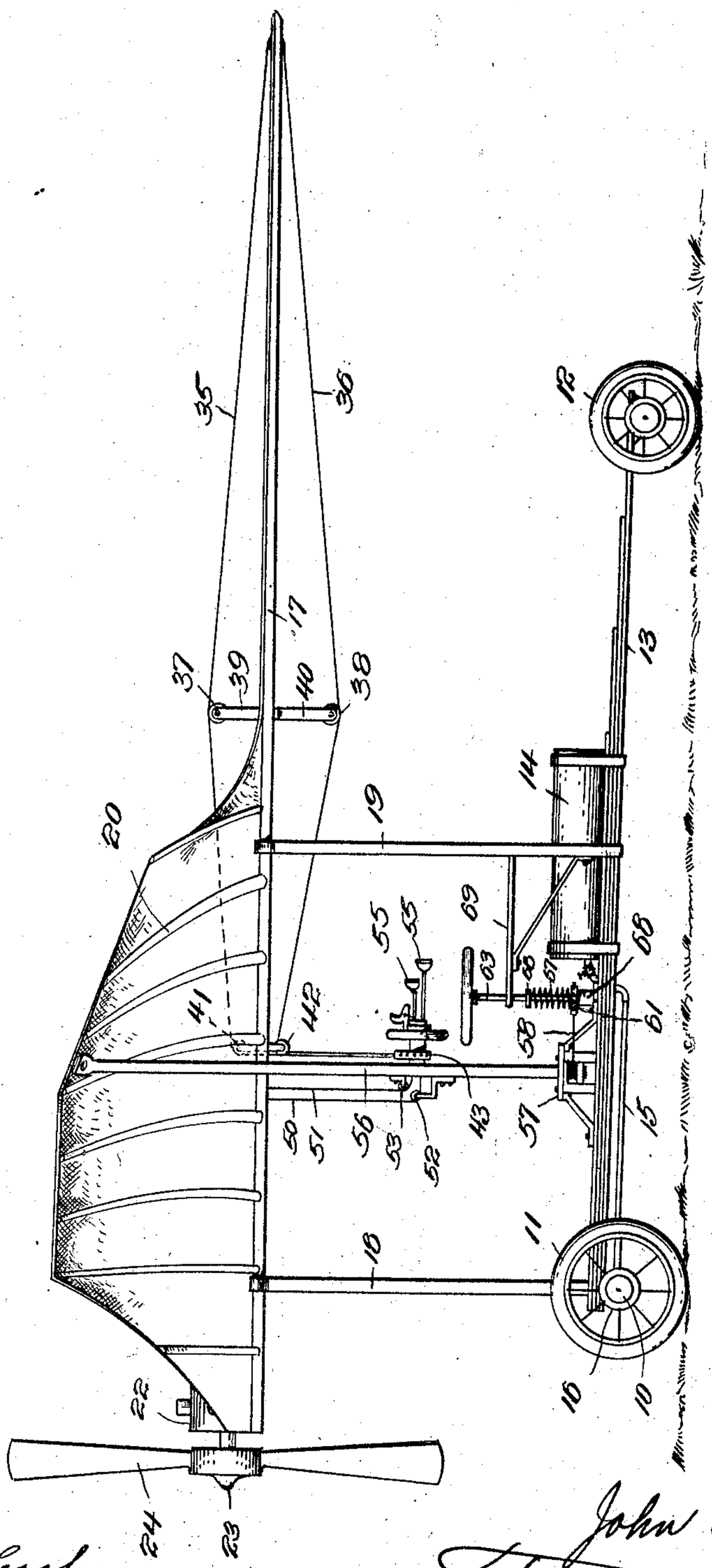

Fig. 2.

Witnesses

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4 SHEETS—SHEET 3.

Fig. 3.

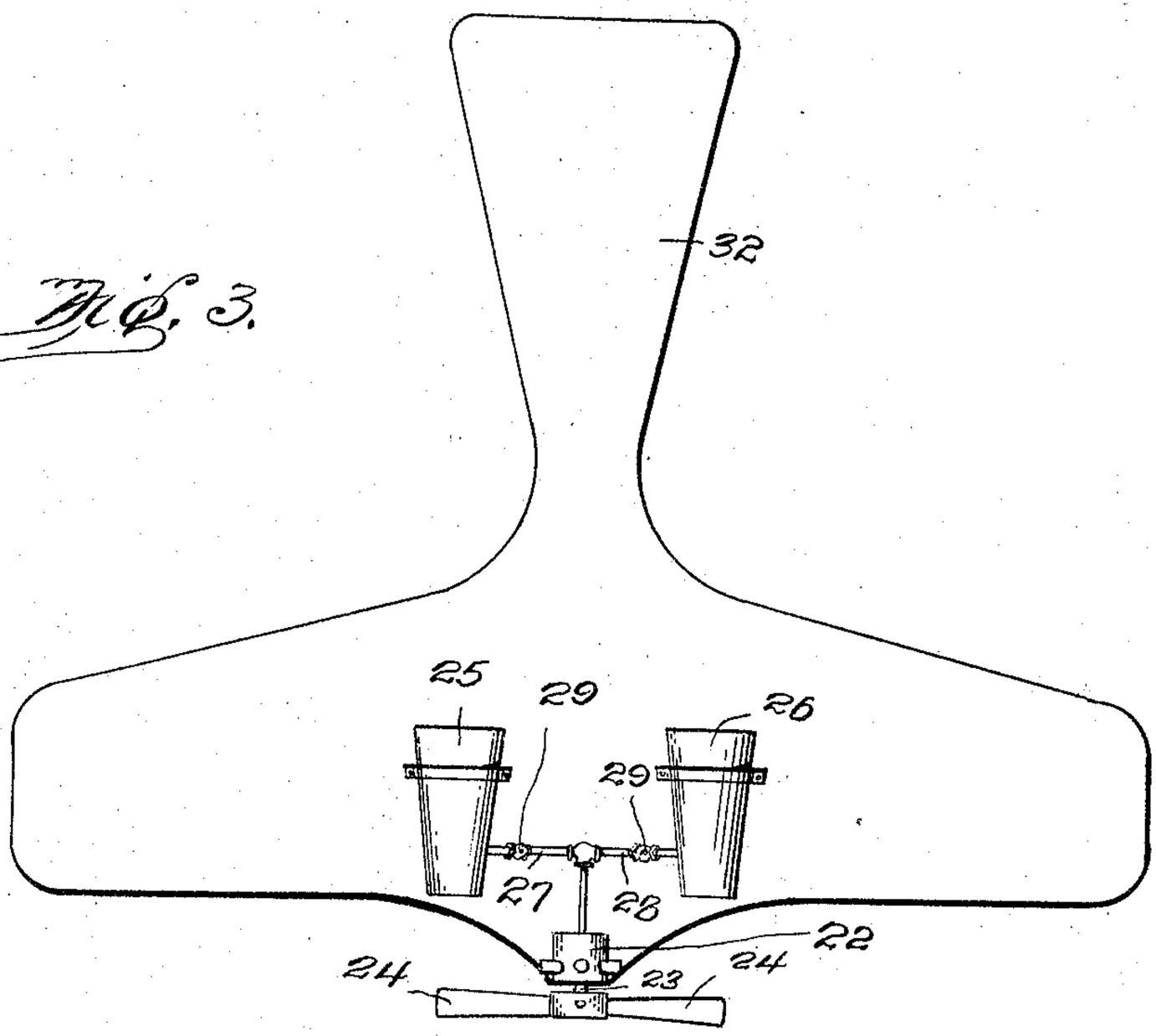
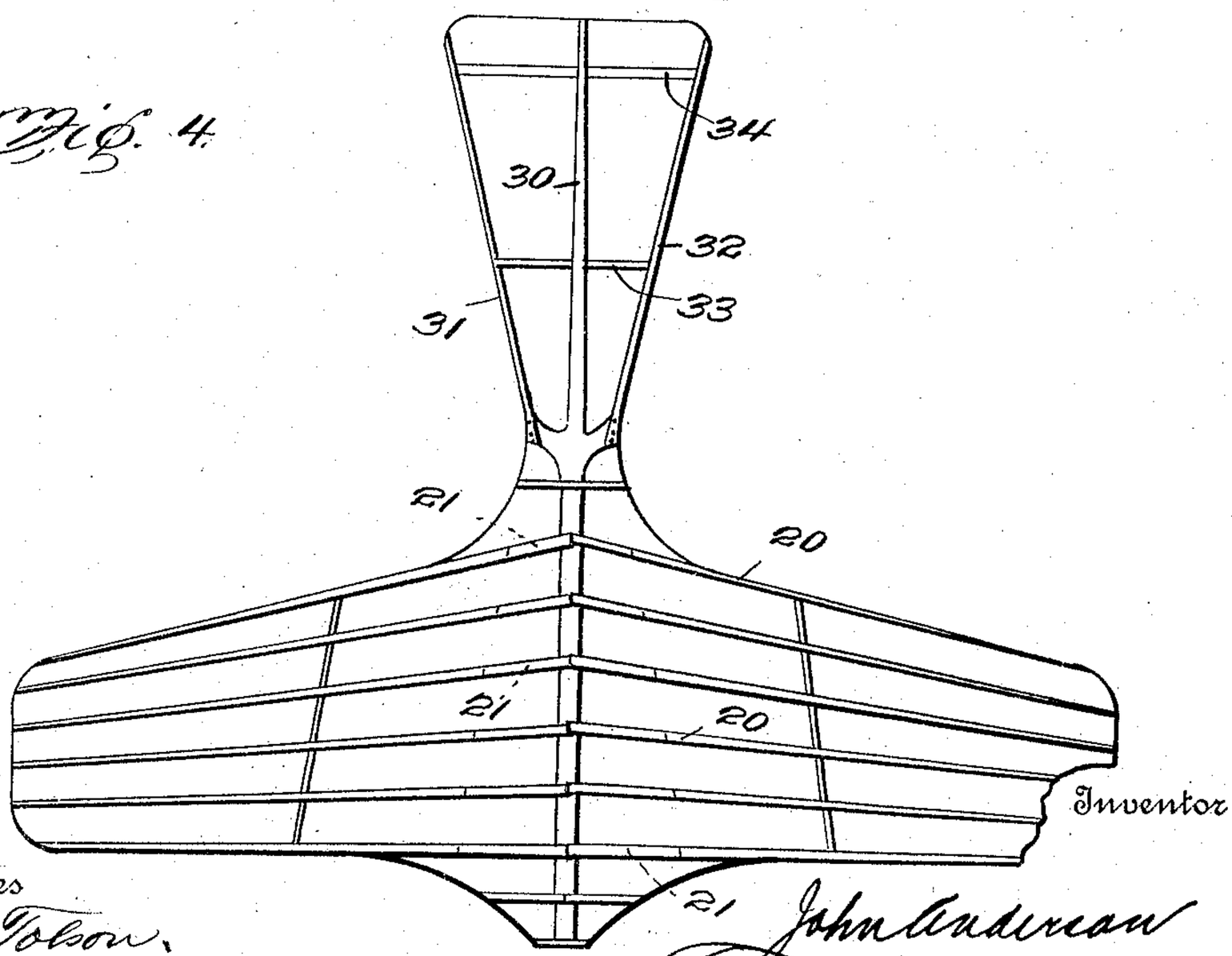


Fig. 4.



Witnesses

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4 SHEETS—SHEET 4.

Fig. 5

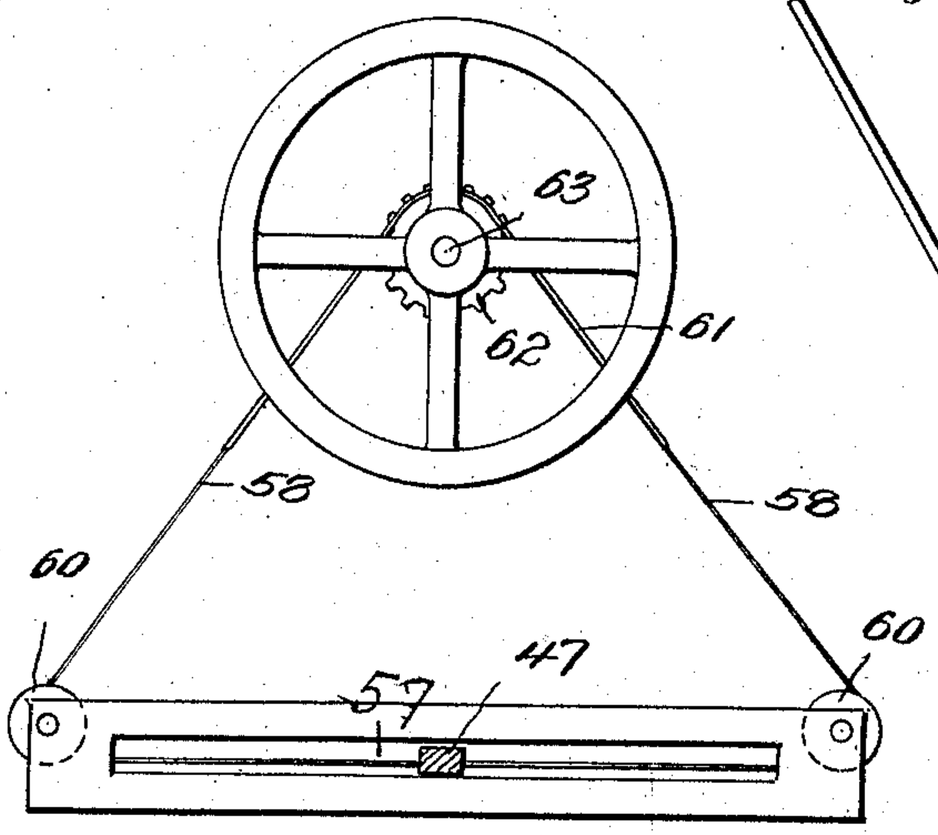


Fig. 6

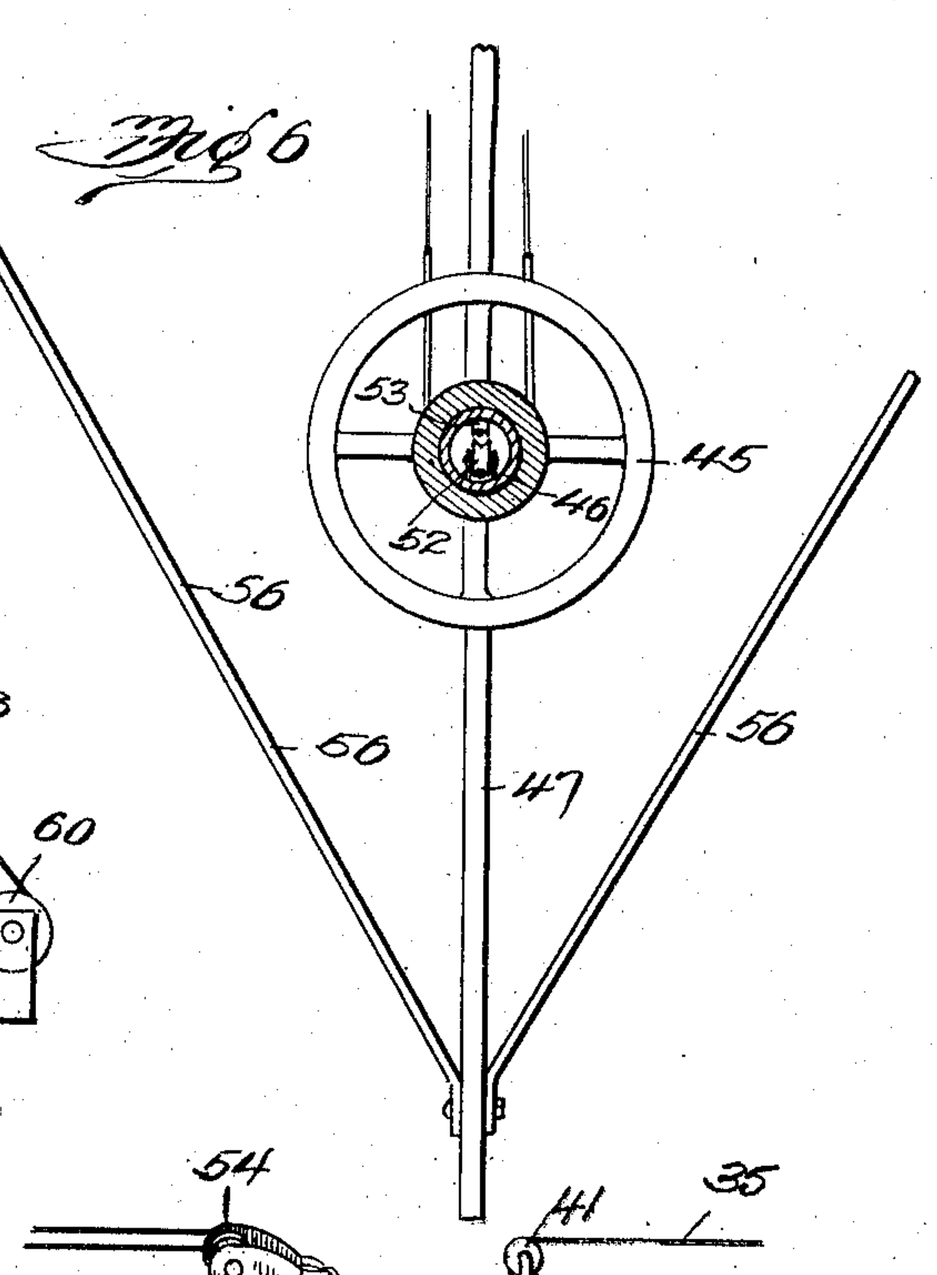


Fig. 7.

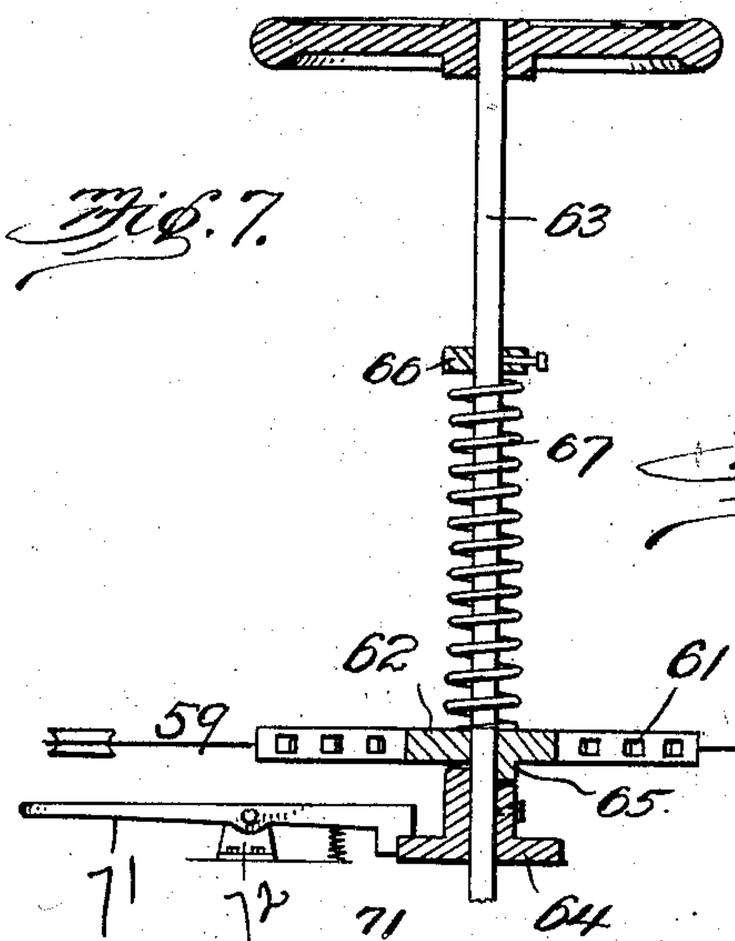
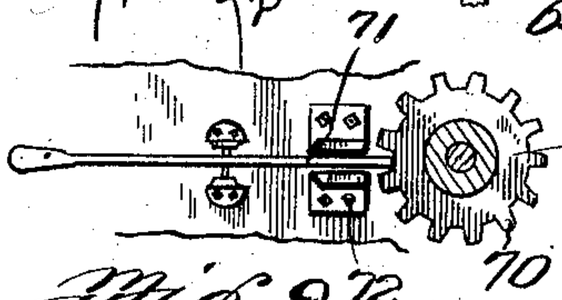


Fig. 8.

Fig. 9.



Witnesses

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UNITED STATES PATENT OFFICE.

JOHN ANDERSON, OF WEST MOUNT VERNON, MAINE.

FLYING-MACHINE.

984,255. Specification of Letters Patent. **Patented Feb. 14, 1911.**

Application filed December 31, 1909. Serial No. 535,809.

To all whom it may concern:

Be it known that I, JOHN ANDERSON, a citizen of the United States of America, and resident of West Mount Vernon, in the county of Kennebec and State of Maine, have invented certain new and useful Improvements in Flying-Machines, of which the following is a specification.

This invention relates to flying machines and particularly to those of the aeroplane type.

An object of this invention is to produce a novel form of truck capable of traveling on the ground during the time the momentum is being developed to cause the plane to lift the apparatus to begin the flight, means being provided on said truck for distributing vibration or shock on alighting and novel means being provided for propelling the truck while it is on the ground.

A still further object of this invention is to provide an aeroplane in the general form of a bird, the wings of which are practically rigid with respect to the central beam, and means being further provided for connecting the truck to the central beam in a manner to permit oscillation of the truck with relation to said beam.

A still further object of this invention is to provide an aeroplane in which the plane may be tilted with relation to the truck and in which a rudder or steering device may be deflected vertically for the purpose of directing the plane upwardly or downwardly according to the direction of travel desired by the operator.

Furthermore, an object of this invention is to produce an air ship, the planes of which are of the general contour of the wings of a bird and in the production of which I utilize a central beam, with diverging ribs, the said ribs being utilized to hold a fabric forming the planes.

With the foregoing and other objects in view, the invention consists in the details of construction and in the arrangement and combination of parts to be hereinafter more fully set forth and claimed.

In describing the invention in detail, reference will be had to the accompanying drawings forming part of this specification wherein like characters denote corresponding parts in the several views, in which—

Figure 1 illustrates a view in elevation from the front of the air ship; Fig. 2 illustrates a side elevation thereof; Fig. 3 illustrates a top plan view, partly broken away, to expose the motor and the connections therewith for supplying fuel thereto; Fig. 4 illustrates a plan view of the frame with the fabric omitted; Fig. 5 illustrates an enlarged detail of the steering gear for changing the position of the wings; Fig. 6 illustrates a detail view partly in section on an enlarged scale for adjusting the rudder; Fig. 7 illustrates a sectional view of the steering gear for the wings; Fig. 8 illustrates a sectional view of the rudder operating mechanism; and Fig. 9 illustrates a detail view showing means for holding the wing-steering gear against movement.

In these drawings, I have shown a truck having a front axle 10 with wheels 11 thereon and a rear wheel 12 intermediate the front wheels. The front axle and the rear wheel are connected by springs 13 which converge from the front to the rear and form a triangular frame for supporting the structure to be presently explained. In order to produce a spring action on alighting, I prefer that the springs 13 should be of the leaf type and of such strength as to properly perform the function ascribed to them. A compressed air tank 14 may be secured to the truck in any appropriate way and it is desirable that the said tank have a pipe or connection 15 leading therefrom to a motor 16 on the axle 10 in order that the truck may be propelled on the ground as stated when the flying machine is to be started.

The aeroplane is provided with a central beam 17 to which hangers or stays 18 are connected at the front of the truck and hangers or stays 19 are connected intermediate the length of the truck so that as the aeroplane ascends, the truck will be carried with it and series of ribs 20 extend from the beam 17 on each side thereof and are of appropriate curvature to form wings simulating those of a bird. I have found in practice that the ribs near the front of the beam should be curved less abruptly than the ribs near the rear end of the beam and that the ends of the tibs or tips thereof should terminate practically in the same plane, thus forming wings, the tips of which are practically straight or parallel with the beam whereas the intermediate portion of the wings should

be curved in such a way as to produce planes the arcs of which gradually increase toward the rear.

In order to strengthen the structure of the planes I provide braces 21 extending across the beam thereabove, the ends of said braces being secured to the ribs. There is a space formed between the braces and the ribs which accommodates the motor 22 preferably of the gasolene type. The shaft 23 of the motor extends forwardly and is provided with a propeller 24 which propeller may be of any ordinary construction. The upper surfaces of the planes are provided with fuel containers or tanks 25 and 26 having feed pipes 27 and 28 respectively leading to the motor and it is my purpose to provide the said feed pipes with check valves 29 in order to prevent fuel from passing from one tank to the other should they reach unequal elevations through the movement of the plane.

In the construction of the rudder I may extend the beam 17 to form the central portion 30 of the frame of the rudder and I have so shown the frame in Fig. 4. I also provide the rudder frame with the sides 31 and 32 and connect the sides and central portion 30 by the cross strips 33 and 34. For the purpose of deflecting the rudder the cables 35 and 36 are connected to the cross piece 34 and said cables are run over pulleys 37 and 38 respectively which are mounted on posts 39 and 40 extending from the beam 17. The cables 35 and 36 are also run over pulleys 41 and 42 respectively and have their ends connected to an apertured band 43 which is in engagement with a toothed wheel 44. The toothed wheel 44 in turn is made integral with a hand operated wheel 45 mounted on a sleeve 46 which sleeve in turn is applied to a stem 47 which depends from the beam 17. I have shown the hand wheel 45 as having a dog 47ª in engagement with its hub in order that said dog may be utilized to hold the hand wheel at different positions of adjustment after the rudder has been set to a proper position. By swinging the dog 47ª on its pivot 48, its nose 49 may be disengaged from the hub of the hand wheel and said hand wheel will then be brought to be manipulated for moving the cables through the mechanism just described and it is believed that the effect produced on the said rudder by the manipulation just indicated will be appreciated and understood by reference to Fig. 2. I have shown the sleeve 46 as being provided with two flexible connections 50, and 51 which are run over guide wheels 52 and 53 respectively and over a pulley 54. These flexible connections are provided for application to a valve of the fuel supply for the motor in order to control the material fed to said motor. As shown in the drawing, the flexible connections are provided with handles 55 by which they are manipulated.

In order to tilt the planes in guiding the aeroplane, I provide the stem 47 which as stated has its upper end connected to the beam and said stem is provided with braces 56 which are connected to the stem near the lower end thereof and to ribs of the aeroplane, thus forming a substantially triangular structure which, as it is oscillated, communicates movement to the planes. For the purpose of swinging the stem transversely of the truck I provide a guiding frame 57 in which the lower end of the stem travels and I connect to opposite sides of the said stem the cables 58 and 59 which cables are run over pulleys 60 and connected to opposite ends of an apertured strip 61 which apertured strip is engaged by the teeth of the pinion 62 mounted to rotate freely on the operating shaft 63. The operating shaft carries a clutch member 64 which is keyed to it and said clutch member acts in conjunction with a clutch member 65 which is formed on the hub of the pinion 62. A sleeve 66 is adjustably held on the shaft 63 and forms an abutment for one end of a spring 67 which spring has its opposite end bearing against the pinion to force the clutch members into engagement. By reason of the fact that the pinion 62 is free to partially rotate on the shaft 63 the aeroplane is permitted to move to a slight degree without affecting the truck and upon undue movement of the aeroplane the truck will be tilted because of the fact that the stem would have a connection with the truck through the cables and the gearing just described, it being understood that the shaft 63 is rotatable in the bearing 68 carried on the truck and in a bearing formed in the arm 69 extending from the rear stays 19. The arm 69 also forms a seat for the operator and it may be of any width desired for that purpose.

As a means for holding the clutch member 64 in different positions of adjustment, the periphery of said clutch member is provided with teeth 70 which are engaged by a foot operated detent 71 pivotally connected to the bracket 72. This last mentioned arrangement is provided for the purpose of preventing the mechanism from becoming uncontrollable through the action of currents of air of unusual force.

The purpose of having the wings rigid with the beam is to permit the two wings to move in unison, one of which will be elevated while the other descends and vice versa. By reason of the rigid connection, the wings may be tilted from side to side for the purpose of maintaining equilibrium or for the purpose of steering or guiding the machine. By proper manipulation of the planes travel can be directed in a curve and

by moving the rudder change in elevation may be attained. As the means for accomplishing the result have been fully set forth in the foregoing specification, further description of the operation is believed to be unnecessary.

I claim—

1. In an air ship, an aeroplane having a beam, ribs extending laterally therefrom, a cover for the ribs, braces for the ribs, a rudder capable of being flexed, means for flexing the rudder, a stem fixed to and depending from said beam at its forward end, braces effecting connection between said ribs and said stem, at its lower end, said beam, ribs, stem and braces all being relatively fixed, and means for oscillating the structure last defined through said stem.

2. In an air ship, a truck, a beam, hangers from the truck to the beam, a stem connected to the beam, planes extending from the beam, braces from the planes to the stem, means for oscillating the stem, and means for retaining the stem at different positions of adjustment, said beam, planes and stem all being relatively fixed.

3. In an air-ship, an aeroplane having a beam, planes extending laterally therefrom, a pendent stem fixed to said beam, at its forward end, means for bracing said beam with said planes in fixed position, means for controlling the movement of said planes including a manually actuated shaft equipped with a toothed wheel, an apertured flexible member engaging the teeth of said toothed member, flexible connections between said apertured flexible member and said pendent stem, and guiding means for said flexible connections arranged laterally of and in alinement with said stem.

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

JOHN ANDERSON.

Witnesses:

L. E. BARKLEY,

E. M. MOORE.