H. VAN WIE.

FLYING MACHINE.

APPLICATION FILED FEB. 10, 1912.

1,048,239.

Patented Dec. 24, 1912.

3 SHEETS—SHEET 1.

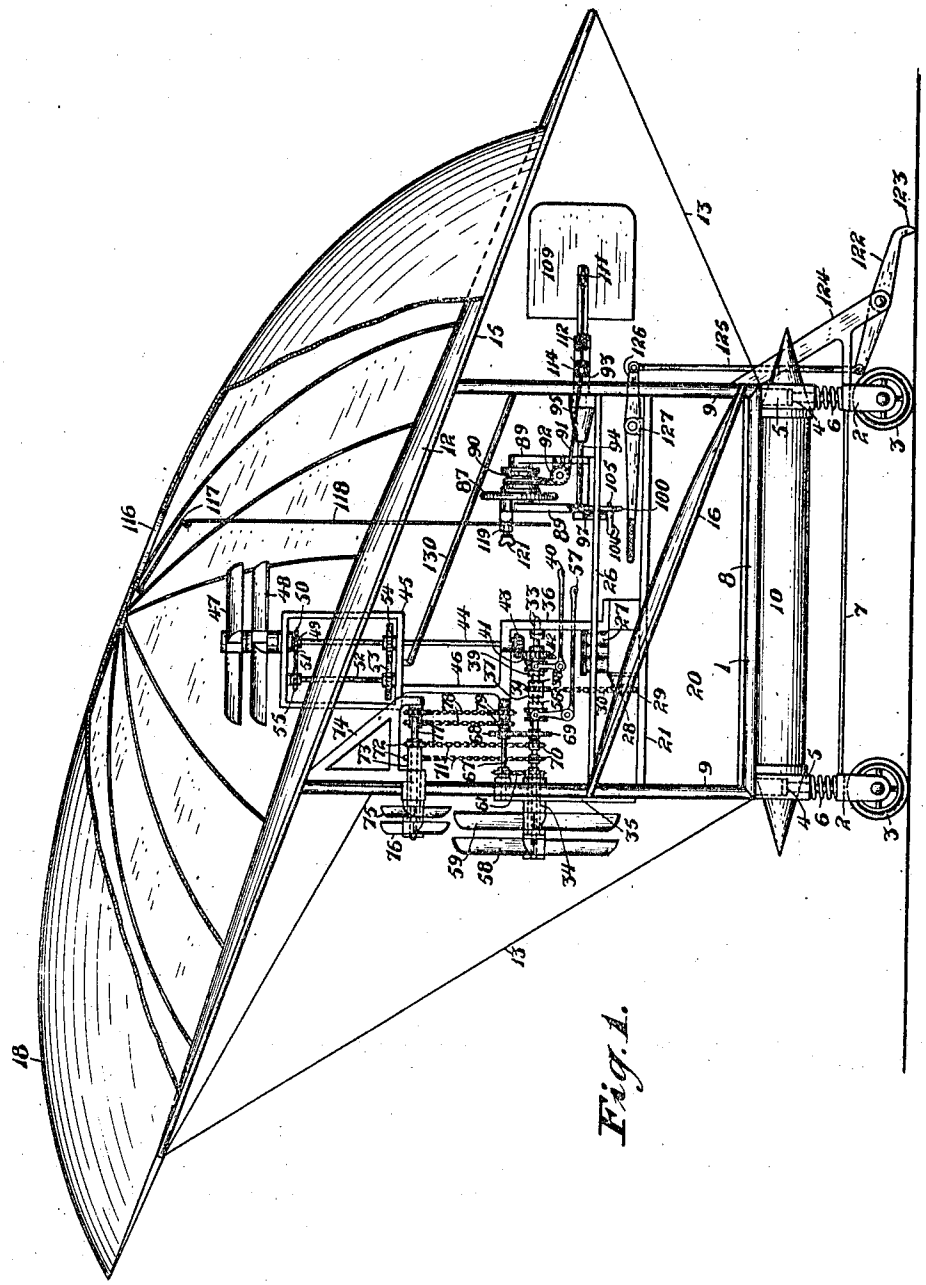

Fig. 1.

WITNESSES

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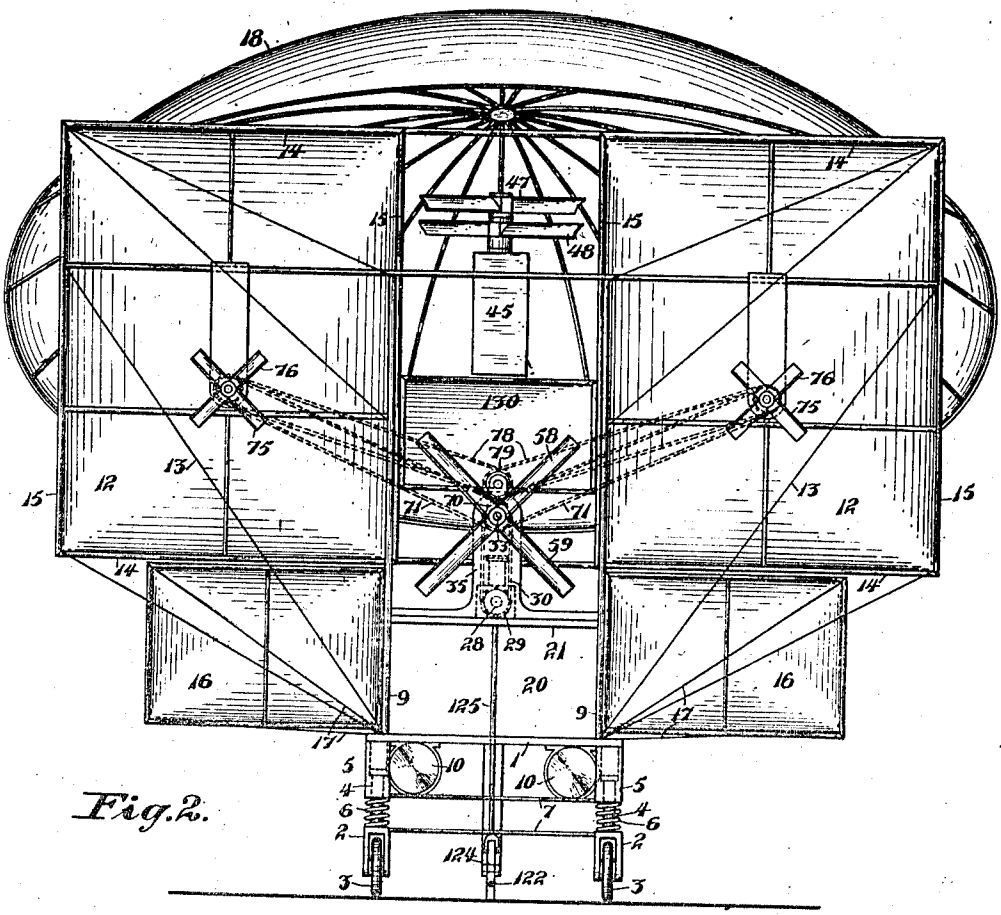

Fig. 2.

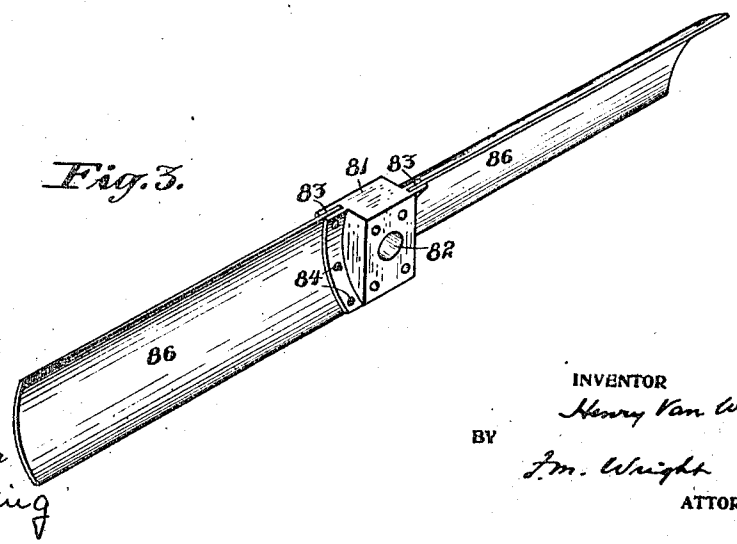

Fig. 3.

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3 SHEETS—SHEET 3.

Fig. 4.

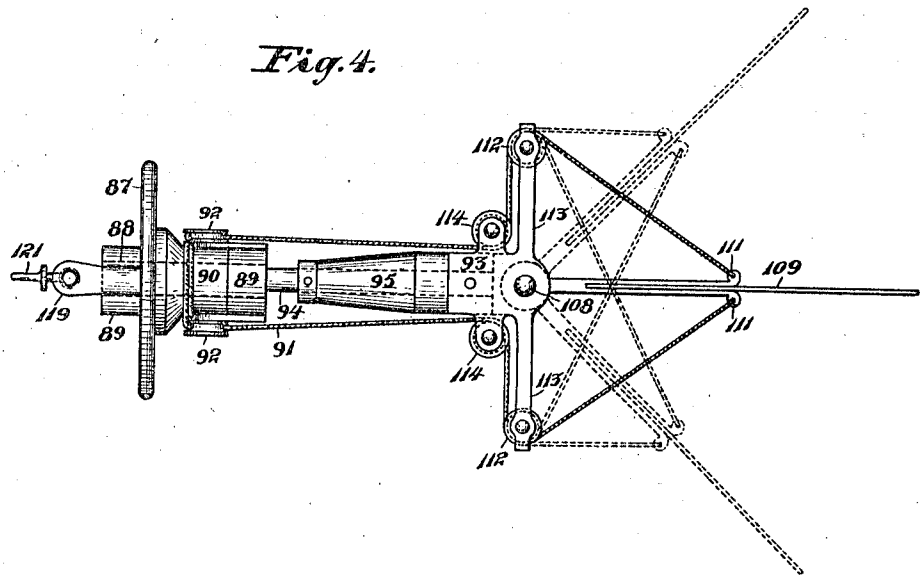
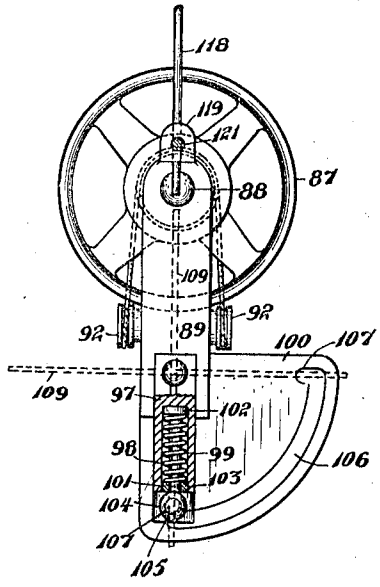


Fig. 5.



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FLYING-MACHINE.

1,048,239. Specification of Letters Patent. Patented Dec. 24, 1912.

Application filed February 10, 1912. Serial No. 676,806.

To all whom it may concern:

Be it known that I, HENRY VAN WIE, a citizen of the United States, residing at San Francisco, in the county of San Francisco and State of California, have invented new and useful Improvements in Flying-Machines, of which the following is a specification.

The present invention relates to improvements in flying machines, and the object of the invention is to provide a flying machine which can rise from the ground immediately, and without having to travel for a considerable distance on the surface thereof, one in which the parachute, for providing for the safety of the passengers, will be so constructed and arranged as to operate also as an aeroplane, one with main and auxiliary aeroplanes arranged and disposed in the most advantageous manner possible for effecting the propulsion and safety of the flying machine, one having an improved construction of aeroplanes; and one so constructed, that the center of gravity is much lower than the buoyant surfaces, so that the machine cannot, in ordinary use, overbalance.

In the accompanying drawing, Figure 1 is a side view of my improved flying machine; Fig. 2 is a front view thereof; Fig. 3 is an enlarged perspective view of a propeller; Fig. 4 is an enlarged plan view of the steering mechanism; Fig. 5 is an enlarged front view of the same.

Referring to the drawings, 1 indicates a carriage or truck having four yokes 2 connected by the wires 7 in which yokes are rotatably mounted wheels 3. Extending upwardly from each yoke is a headed pin 4 slidable in a vertical guide in a standard 5, a coiled spring 6 being interposed between said yoke and standard. Upon said standards is erected a frame having horizontal members 8 and vertical posts 9. Secured to said frame below the horizontal members are pontoons 10, which serve as floats for supporting the flying machine if it should alight on the water. The vertical posts are made considerably longer in the longitudinal than in the transverse direction of the flying machine, to reduce the extent of surface opposing movement through the air. The front vertical posts 9 of said frame are higher than the rear vertical posts, and secured to said frame, and extending upward forwardly at an oblique angle, are main aeroplanes 12 tied to the frame of the machine by tie-wires 13, and having transverse members 14 and longitudinal members 15. Arranged at the sides of the main frame, at a considerable distance below the main aeroplanes, are auxiliary aeroplanes 16 secured to the main frame by tie-wires 17. Both the main and the auxiliary aeroplanes are made concavo-convex in form, so as to have large buoyant efficiency when propelled through the air. Secured to the main aeroplanes and extending above the same is a circular parachute 18, concavo-convex in form, being of much greater depth than the aeroplanes. The main aeroplanes 12 are spaced from one another, although their transverse members 14 are common to both, while the parachute extends over substantially the whole surface of said main aeroplanes as well as over the intermediate space between them. The parachute 18 extends in front, and beyond the outer side edges, of the two main aeroplanes 12. It is formed of fabric such as is used for aeroplanes, stretched over ribs 128, radiating from a circumference of a small central opening 116, hereinafter more fully referred to. It is thus substantially rigid, and is sufficiently deep to enable it to act as a parachute, while sufficiently shallow to greatly assist in elevating the airship without unduly reducing its speed.

The cabin 20 for passengers is contained between the lower horizontal members 8 of the main frame and upper horizontal members 21 of said frame. The engine 27 and the operating mechanism are supported by the upper horizontal members 21 and are surrounded with a suitable rail 26. The engine 27 rotates a shaft 28, which, by means of a sprocket wheel 29 thereon and a sprocket chain 30 rotates a sprocket wheel 31 on a sleeve 32 on a shaft 33, having its front bearing in a sleeve 34 in a frame plate 35 supported by the front posts 9 and its rear bearing in a standard 36 supported on said engine casing. The sleeve 32 has in front and rear of said sprocket wheel clutch members 37, 38. The rear member 38 is adapted to engage a clutch 39, slidable on a sleeve 41 on to the shaft 33 and operated by a hand lever 40, said clutch being rotatable with said sleeve 41. Said sleeve 41 has secured thereon a bevel gear 42, which meshes with a bevel gear 43 on a vertical shaft 44, having a lower bearing in said standard 36 and upper bearings in a frame 45 supported

on said standard in the space between the two main aeroplanes by an angle piece 46, said shaft carrying at the extreme upper end a propeller 47 within, and at substantially the center of, the parachute. Immediately below the propeller 47 is a propeller 48, of which the blades are reversed in propulsive direction to those of the propeller 47, and carried by a sleeve 49 around the shaft 44 and having its bearing in the frame 45, said sleeve carrying a sprocket wheel 50 rotated by a sprocket chain 51 driven by a sprocket wheel 55 on a countershaft 52 rotating in bearings in said frame, said countershaft 52 being driven by a gear wheel 53 meshing with a gear wheel 54 on the shaft 44. It will be seen that, by this arrangement of shaft and countershaft, the two propellers are rotated in opposite directions, and the efficiency of both propellers is thereby increased, since the lateral thrust upon the air, and slip thereof, past one propeller are neutralized by the action of the other propeller. The other clutch member 37 is adapted to be engaged by a clutch 56, operated by a hand lever 57, and slidable on, and rotatable with, the shaft 33, said shaft carrying at its front end a propeller 58. Immediately behind said propeller 58 is another propeller 59, having blades arranged reversely to those of the propeller 58, and mounted on the sleeve 34. Said sleeve 34 is rotated by a sprocket chain 61 from a counter shaft 67 having its bearings in the frame plate 35 and the angle piece 46, having thereon a gear wheel 68 meshing with a gear wheel 69 upon the shaft 33. Thus said propellers, by their rotation in opposite directions, one behind the other, give the greatest possible efficiency. The shaft 33 has secured thereon sprocket wheels 70, around which extend sprocket chains 71, which engage sprocket wheels 77 on sleeves 73 having their bearings in frames 74 supported by one of the transverse members 14 and carrying propellers 75. Immediately in front of each propeller 75 is a second propeller 76 having reversely arranged blades, and secured on a shaft 77 rotated by a sprocket chain 78 extending around a sprocket wheel 79 on the countershaft 67, and thus rotated in opposite directions to the corresponding propeller 75. In this way said propellers 75 and 76 likewise are made as efficient as possible.

An important feature of my improved flying machine consists in the specific construction of these propellers as shown in Fig. 3. Each propeller comprises a hub or block 81 having a central aperture 82 by which it can be secured upon the shaft, and, extending from opposite sides thereof, and in opposite directions, are grooves or channel-ways 83 in which are secured, by rivets 84 or other desired means, the ends of the propeller blades 86. In cross section these propeller blades are made substantially parabolic in form, the surface of each blade near the front edge being substantially parallel to the direction of rotation, or transverse to the shaft, so that it meets with little resistance in passing through the air. But said surface gradually curves from the front edge to the rear edge, so that, at the rear edge of the blade, the surface is at a considerable angle with the plane of rotation, and thus has a maximum effect in thrusting back the air and consequently in deriving power therefrom to propel the flying machine. By this construction, therefore, the propeller blades first expend as little force as possible in penetrating the air in their revolution, and then gradually force the air into a rearward direction. This being the form of the blades, the grooves or channels on opposite sides of the block are naturally given the same form.

The steering is effected by means of a steering wheel 87 mounted on a shaft 88 having its bearings in standards 89 and carrying a drum 90. Around, and secured to, said drum is wound a cable 91 which passes down to, and around, two pulleys 92, rotatably supported upon one of the standards 89, and thence to a steering frame 93. Said steering frame is secured to a shaft 94 rotatable in a bearing 95, the front edge of said shaft passing through the front standard 89. On the front end of said shaft is secured an arm 97 having a deep socket 98, in which is a spring 99 coiled around a stem 101 and compressed between a head 102 on said stem and an apertured guide 103 screwed into said socket. Extending forwardly from the outer end of said stem is a handle 104 by which said stem can be drawn downwardly in said socket against the pressure of said spring. A plate 100 secured to the standard 89 is formed with a slot 106 in the shape of a quadrantal arc having at its ends inward extensions 107 to receive a reduced end 105 of the handle 104. Said handle is normally held by the pressure of said spring in one or the other of said recesses, but by pulling said handle against said spring it can be moved into the arcuate portion of the slot, and to the other end thereof, and, upon being released, is drawn by the spring into the other recess, and is held therein by the pressure of said spring. In this way, the shaft can be quickly turned through a right angle about its axis while being securely held in either terminal position. In said steering frame 93 is pivoted, as shown at 108, a rudder 109, to the sides of which are attached, as shown at 111, the ends of the cable 91, said cable passing around pulleys 112 mounted in the ends of arms 113 oppositely extending from said frame in line with said pivot, then around pulleys 114 on said steering frame, and thence to the pulleys 92 be-

fore described. Thus by turning the steering wheel, the rudder can be drawn to one side or the other, while the steering frame can be turned through a right angle to convert the rudder from a horizontal to a vertical rudder, or conversely.

The parachute is formed with the small opening 116 near its center to enable it to efficiently perform its function, said opening being closed by a valve 117 operated by a rod 118 passing through an apertured arm 119 extending from the front standard 89 and held in any desired position by a thumb screw 121. When it is desired to descend, said rod is operated to open said valve. I also provide an efficient form of brake for holding back the machine until the engine is running well and for arresting the flying machine after having alighted upon the ground. This comprises a lever 122 having a hooked rear end 123 adapted to penetrate the ground and impede the movement of the flying machine thereon, said lever being pivoted on a frame 124 extending rearwardly from the frame of the flying machine. The forward end of the lever is connected by a link 125 to the end lever 126 suitably pivoted upon a standard 127 on the deck of the operating room. Above the steering wheel and therefore directly beneath the space intervening between the two main aeroplanes is supported an upwardly and forwardly sloping roof or canopy 130 which protects the aviator from the downward current of air produced by the upper propellers, and at the same time serves as an additional auxiliary aeroplane.

1 claim:—

In combination, two main aeroplanes of greater length than width and concaved both longitudinally and transversely on their under sides, and spaced apart, and a circular parachute also concave on its under side and of much greater depth than the aeroplanes, the circumference of said parachute being in close proximity to the upper surface of said aeroplanes, and said parachute extending beyond the front and outer side edges of said aeroplanes.

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

HENRY VAN WIE.

Witnesses:
F. M. WRIGHT,
D. B. RICHARDS.