

J. E. MARSHALL.
FLYING MACHINE.
APPLICATION FILED AUG. 15, 1910.

1,038,168.

Patented Sept. 10, 1912.

3 SHEETS—SHEET 1.

FIG. 2

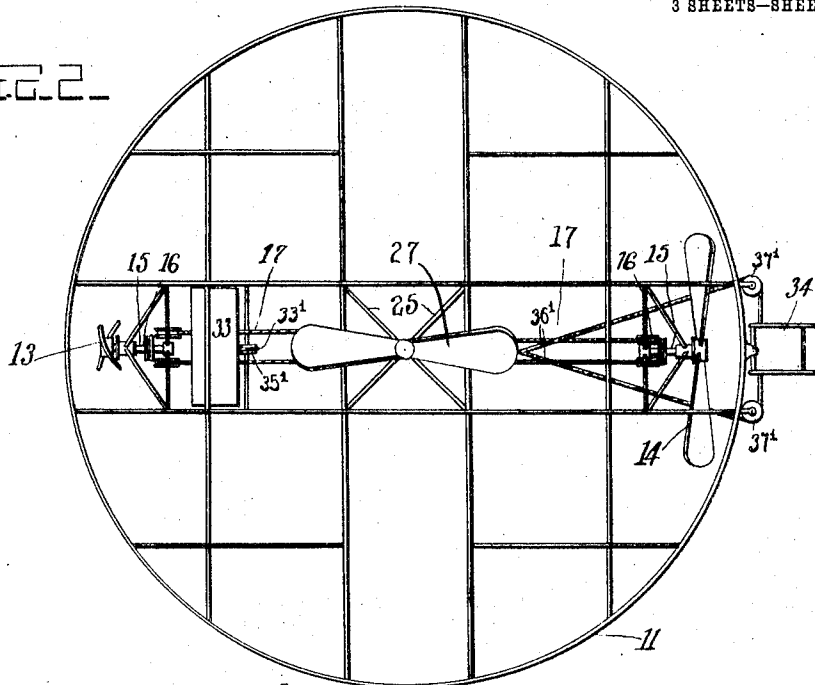
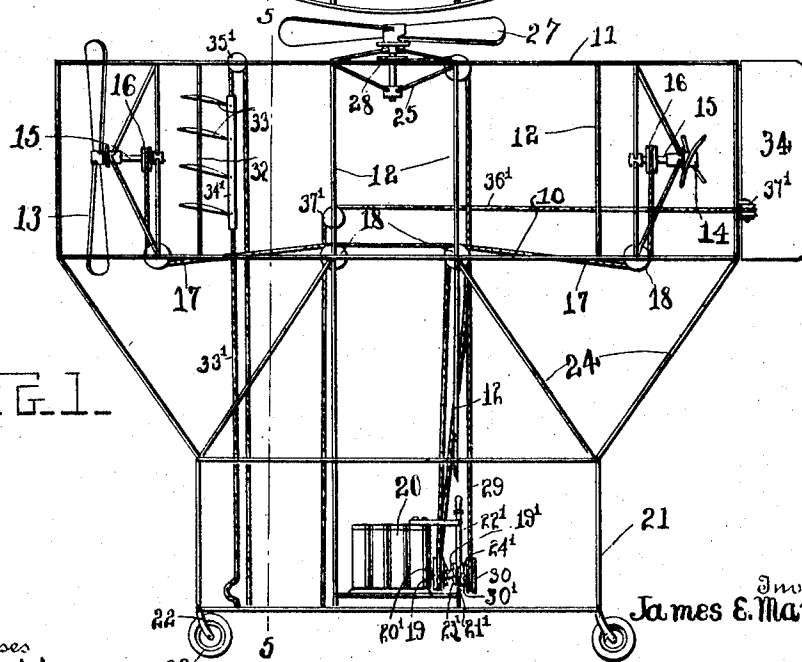


FIG. 1



Witnesses
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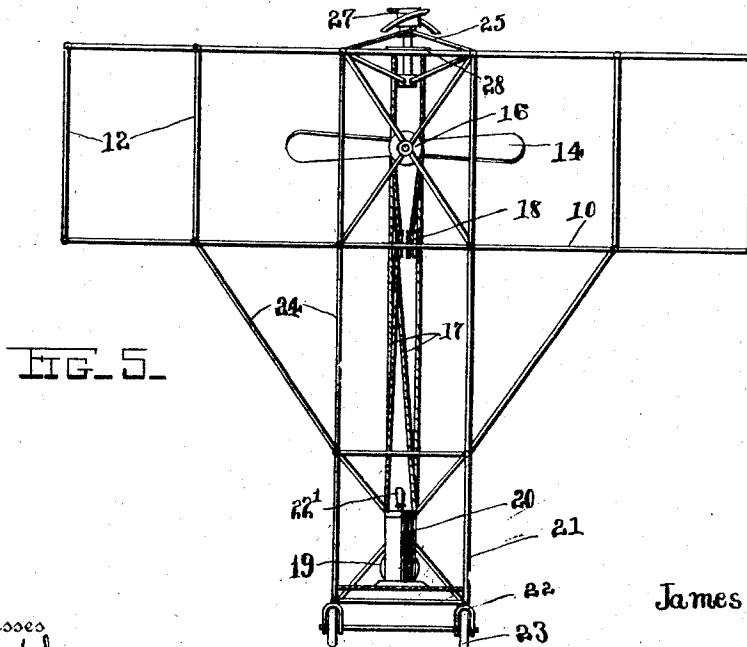
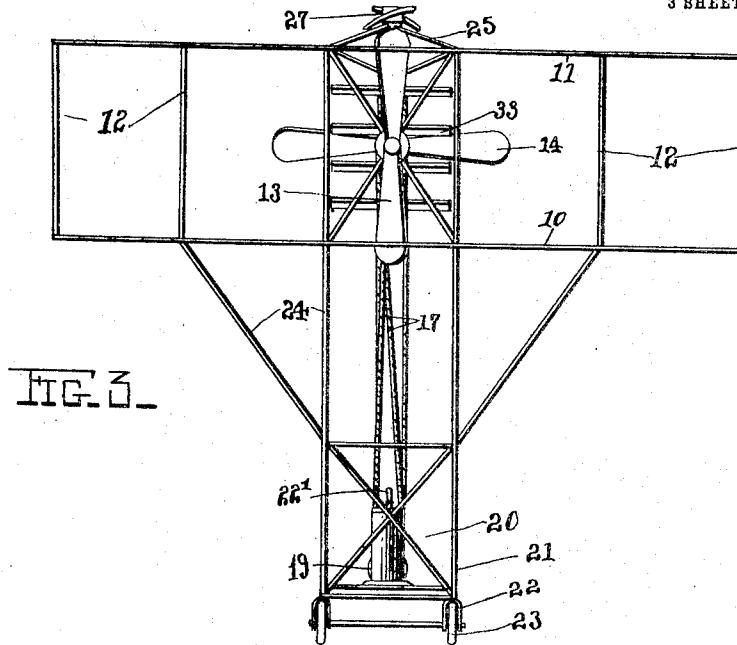
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3 SHEETS—SHEET 2.



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3 SHEETS-SHEET 3.

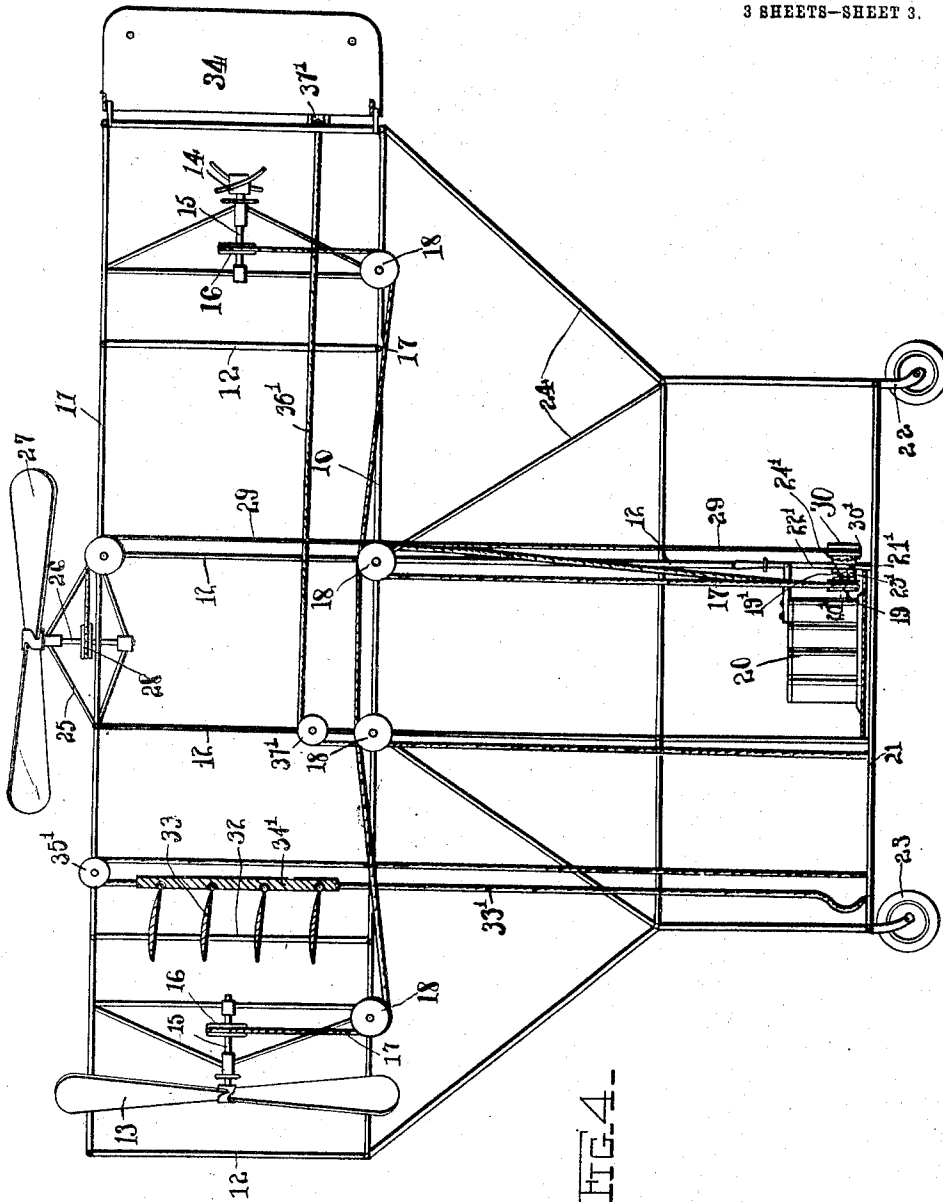


FIG. 4-

Witnesses
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UNITED STATES PATENT OFFICE.

JAMES E. MARSHALL, OF NEW YORK, N. Y.

FLYING-MACHINE.

1,038,168.

Specification of Letters Patent.

Patented Sept. 10, 1912.

Application filed August 15, 1910. Serial No. 577,161.

To all whom it may concern:

Be it known that I, JAMES E. MARSHALL, a citizen of the United States, residing at New York, in the county of New York, State of New York, have invented certain new and useful Improvements in Flying-Machines; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same.

The invention relates to a flying machine and more particularly to the class of aeroplanes of the circular planescope type.

The primary object of the invention is the provision of a machine of this character in which there are arranged superposed circularly shaped main planes which latter support a depending carrier so that the said carrier may be lifted into the air for the sailing thereof during its flight.

Another object of the invention is the provision of a machine of this character in which the carrier of the machine will be prevented from capsizing during the flight thereof thus avoiding possibility of injury to the passengers or an operator of the machine while sailing or navigating through the air above land and water.

A further object of the invention is the provision of a machine of this character which is simple in construction, although possessing the requisite amount of strength, and that is thoroughly reliable and efficient in operation and inexpensive in manufacture.

With these and other objects in view the invention consists in the construction, combination and arrangement of parts as will be hereinafter more fully described, illustrated in the accompanying drawings, disclosing the preferred form of embodiment of the invention, and pointed out in the claims hereunto appended.

In the drawings:—Figure 1 is a side elevation of a machine constructed in accordance with the invention. Fig. 2 is a top plan view thereof. Fig. 3 is a front elevation. Fig. 4 is a vertical longitudinal sectional view through the machine. Fig. 5 is a transverse sectional view on the line 5—5 of Fig. 1.

Similar reference characters indicate corresponding parts throughout the several views in the drawings.

Referring to the drawings by numerals 10

and 11 designate spaced circularly shaped planes the same being of identical size and are connected by suitable vertical stay rods 12 and disposed between these planes at diametrically opposite points thereof near their peripheries are front and rear propeller wheels 13 and 14, the wheels being fixed to stud shafts 15 journaled in suitable bearings connected to the said planes.

On the stud shafts 15 of the propeller wheels are grooved pulleys 16 over which is trained an endless cable 17 the latter being also trained over suitable ball bearing guide rollers 18 journaled in suitable bearings upon the plane 10 and this cable 17 is also trained over a driving wheel 19 of a suitable motor 20 the latter being mounted within a carrier 21 which latter is connected to the plane 10 in suspended relation relative thereto as will be hereinafter more fully described. This carrier 21 is provided with suitable brackets 22 in which are journaled ground or guide wheels 23 the latter being of any desirable construction as may be required so as to permit the traveling of the carrier upon the ground during the initial starting of the machine in its flight. The carrier 21 is connected to the plane 10 through the medium of diagonally arranged rigid brace bars or rods 24 which are connected to the said plane 10 and to the carrier at suitable intervals thereof.

Located medially of the top plane 11 is fixed a spider bracket 25 in which is disposed a vertical rotatable shaft 26 to the upper end of which is fixed a horizontally rotatable propeller wheel 27, the shaft 26 being provided with a grooved pulley 28 over which is trained an endless cable 29 the latter being also trained over a driving wheel 30 of the motor 20.

It will be noted that the front and rear propeller wheels 13 and 14 are disposed so as to effect the advancement of the machine when lifted in the air while the horizontally rotatable propeller wheel 27 serves to lift the machine to the desired height in the air for the proper navigating of the said machine in the air.

In order to independently operate the horizontally and vertically rotatable propeller wheels, the shaft 20' of the motor carries a slidable clutch element 21' which is splined on the shaft and adapted to be shifted by a pivotal lever 22' and said slidable clutch element 21' is provided with

opposed clutch faces 23' and 24' adapted for engagement with the clutch faces 19' and 30' formed upon the loose pulleys 19 and 30. By this construction the clutch element may be moved on the shaft 20 to engage with either of the pulley wheels for independently driving the vertical and horizontal propeller wheels and permit the machine to ascend or advance in its travel as will be found desirable.

Fixed between the circular planes 10 and 11 directly in rear of the front propeller wheel 13 are vertical standards or posts 32 the latter being spaced apart and between which are arranged horizontal guide planes 33 the latter being pivoted in the posts 32 for rocking movement and these guide planes 33 are adapted to be simultaneously operated by any suitable means so as to effect the ascending and descending of the machine during its flight. This operating means consists of a cable 33' which is connected to a bar 34' which pivotally connects the rear edge of each guide plane, preferably centrally thereof for simultaneous movement and one end of the cable is disposed over a pulley 35' supported from the top plane 11 so as to permit the guide planes to be inclined upwardly or downwardly or positioned horizontally with respect to the carriage.

Suitably pivoted directly in rear of the rear propeller wheel 14 between the planes 10 and 11 are vertically disposed rudders 34 which latter may be operated in any suitable manner for the guiding of the machine in any desired course while in the air. These rudders will enable the machine to be turned and also determine its course of travel in the air and this operation is accomplished by means of cables 36' which are extended around pulleys 37' arranged upon opposite sides of the rudders 34 and connected to each of the rudders so as to pivot the same in opposite directions from the carriage.

It is thought that from the foregoing construction and operation of the invention it will be clear and therefore a more extended explanation has been omitted.

What is claimed is:—

1. In an aeroplane, a pair of circularly shaped planes disposed in vertical spaced relation to each other, a carrier suspended from the lowermost plane diametrically thereof, a horizontally rotatable propeller wheel supported axially above the uppermost plane and front and rear vertically rotatable propeller wheels disposed between said planes, the axes of all of said wheels being arranged in a common plane.

2. In an aeroplane, a pair of circularly shaped planes disposed in vertical spaced relation to each other, a carrier suspended from the lowermost plane, a horizontally ro-

tatable propeller wheel supported above the center of the uppermost plane, front and rear vertically rotatable propeller wheels disposed between said planes and means for independently operating the horizontally and vertically rotatable propeller wheels, said wheels being arranged on a line diametrically of the planes.

3. In an aeroplane, a pair of circularly shaped planes disposed in spaced relation one above the other, a wheeled carrier suspended from the lowermost plane, a horizontally rotatable propeller wheel supported above the uppermost plane, front and rear vertically rotatable propeller wheels simultaneously operable, means for independently operating the horizontally and vertically rotatable propeller wheels, a plurality of horizontally disposed guide planes pivotally arranged rearwardly of and adjacent to the forward vertically rotatable propeller wheel and operating means therefor.

4. The combination with a pair of spaced circularly shaped planes located one above the other in coincident relation; of a carrier supported by said planes, a plurality of horizontally pivoted guide planes arranged for pivotal movement at the forward portions of the planes, independently rotatable horizontally and vertically arranged propeller wheels, one of said propeller wheels being arranged centrally above the uppermost circular plane and the remaining propeller wheels being arranged upon sides diametrically opposite thereof, means for simultaneously rotating the forward and rear propellers and means for simultaneously raising or inclining said guide planes.

5. The combination with a pair of spaced circularly shaped planes of the same diameter and positioned in coincident relation; of a carrier suspended by said planes, a plurality of horizontally pivoted guide planes disposed between the first named planes and adjacent to the forward ends thereof, means for operating said guide planes to raise and lower the machine independently rotatable horizontally and vertically arranged propeller wheels, one of said propeller wheels being arranged upon the axial line of the planes and the remaining propeller wheels being arranged diametrically opposite thereto and vertically disposed pivotal rudders supported by said first named planes rearwardly thereof for guiding the machine.

6. The combination with a pair of vertically spaced planes of circular formation and a carrier arranged longitudinally and centrally therebeneath; of braces supporting said carrier and converging outwardly to the sides of the planes, a plurality of horizontally mounted guide planes adapted for vertical pivotal movement, vertically disposed spaced braces supporting said guide

planes, means connected to all of said guide planes for simultaneous tilting of the same, independently operable lifting and propelling means carried by the planes, the propelling means being arranged upon a common horizontal line adjacent the forward and rear ends of the planes and outwardly of the carrier, a pair of vertically disposed spaced parallel rudders mounted for lateral pivotal movement at one end of the machine outwardly of one of the propelling mechanisms for advancing the machine and means for operating said rudders simultaneously from the carrier.

7. The combination with a pair of spaced circularly shaped planes located in coincident relation; of a carrier suspended lengthwise beneath said planes and terminating inwardly of its ends, said carrier having its side portions located upon lines parallel to each other and arranged from a forward to a rearward direction upon diametrically opposite sides of the centers of the planes, a plurality of horizontally arranged and vertical spaced guide planes disposed between the first named planes, independently rotatable horizontally and vertically arranged

propeller wheels, means for simultaneously operating the vertically arranged propeller wheels, the horizontally rotatable propeller wheel being arranged centrally above the uppermost circular shaped plane, means for operating the guide planes, the remaining propeller wheels being arranged below the horizontal rotatable propeller wheel and between the circular shaped planes at the front and rear thereof, vertically disposed pivotal rudders supported by said first named planes directly in rear of the rearmost propeller wheel and outwardly of the planes, means for independently driving said propeller wheels from a common motor, said vertical rotatable propeller wheels being simultaneously operable and ground wheels carried by said carrier, said horizontally arranged guide planes being arranged for vertical pivotal movement in rear of the front propeller.

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

JAMES E. MARSHALL.

Witnesses:

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BERNARD P. DAVIS.