

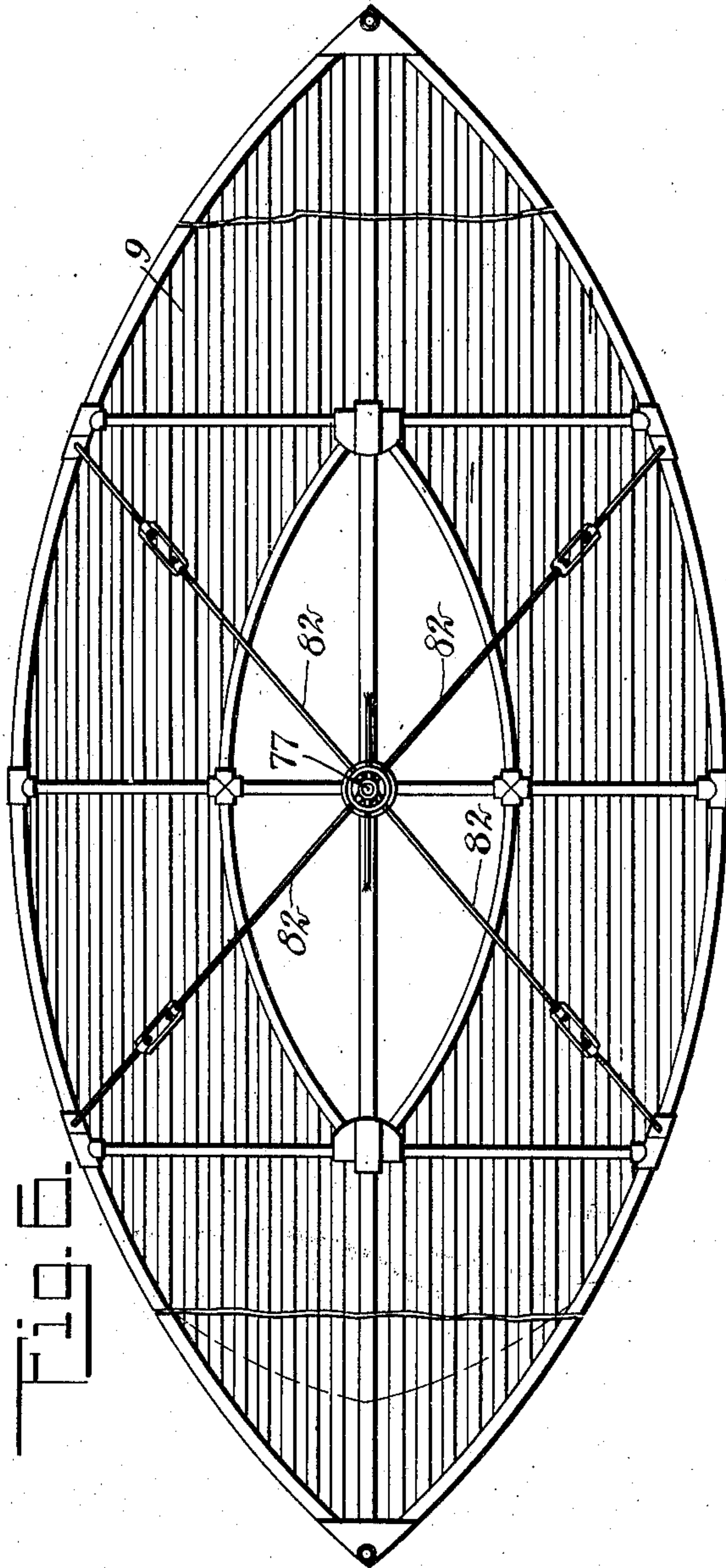
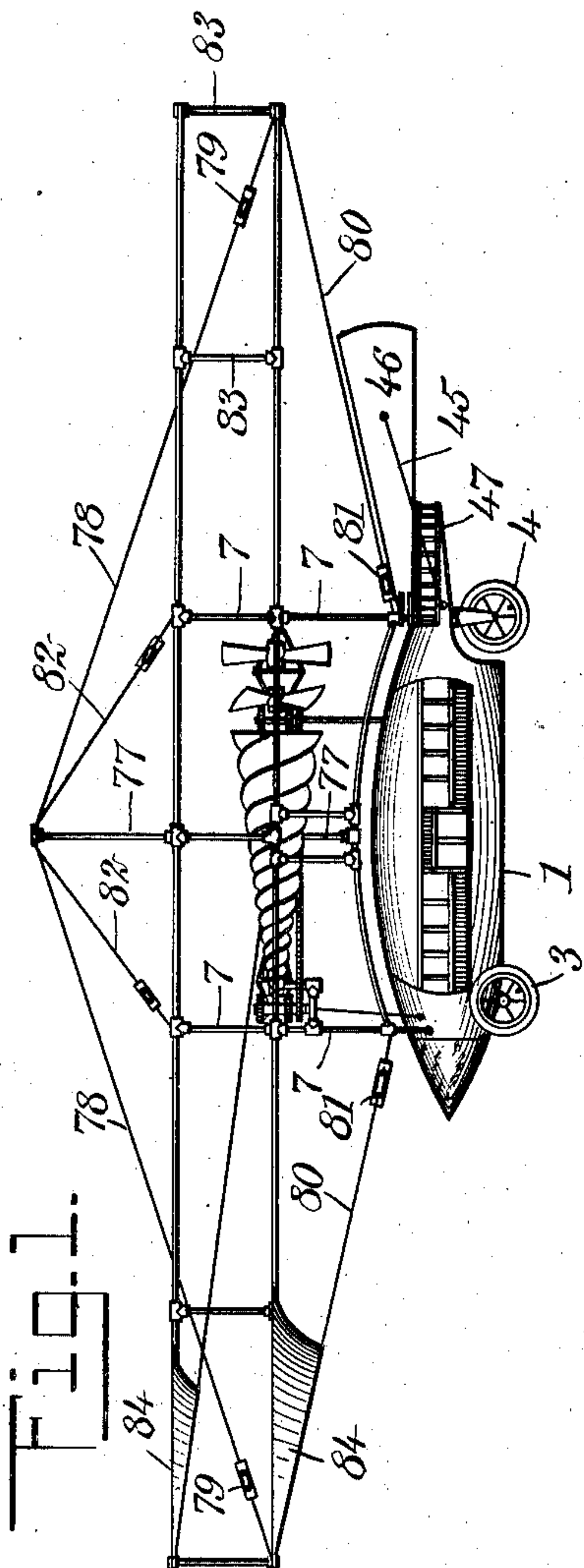
T. M. CREPAR.
FLYING MACHINE.

APPLICATION FILED JUNE 2, 1908.

Patented July 5, 1910.

4 SHEETS—SHEET 1.

963,522.



WITNESSES

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E. B. Marshall

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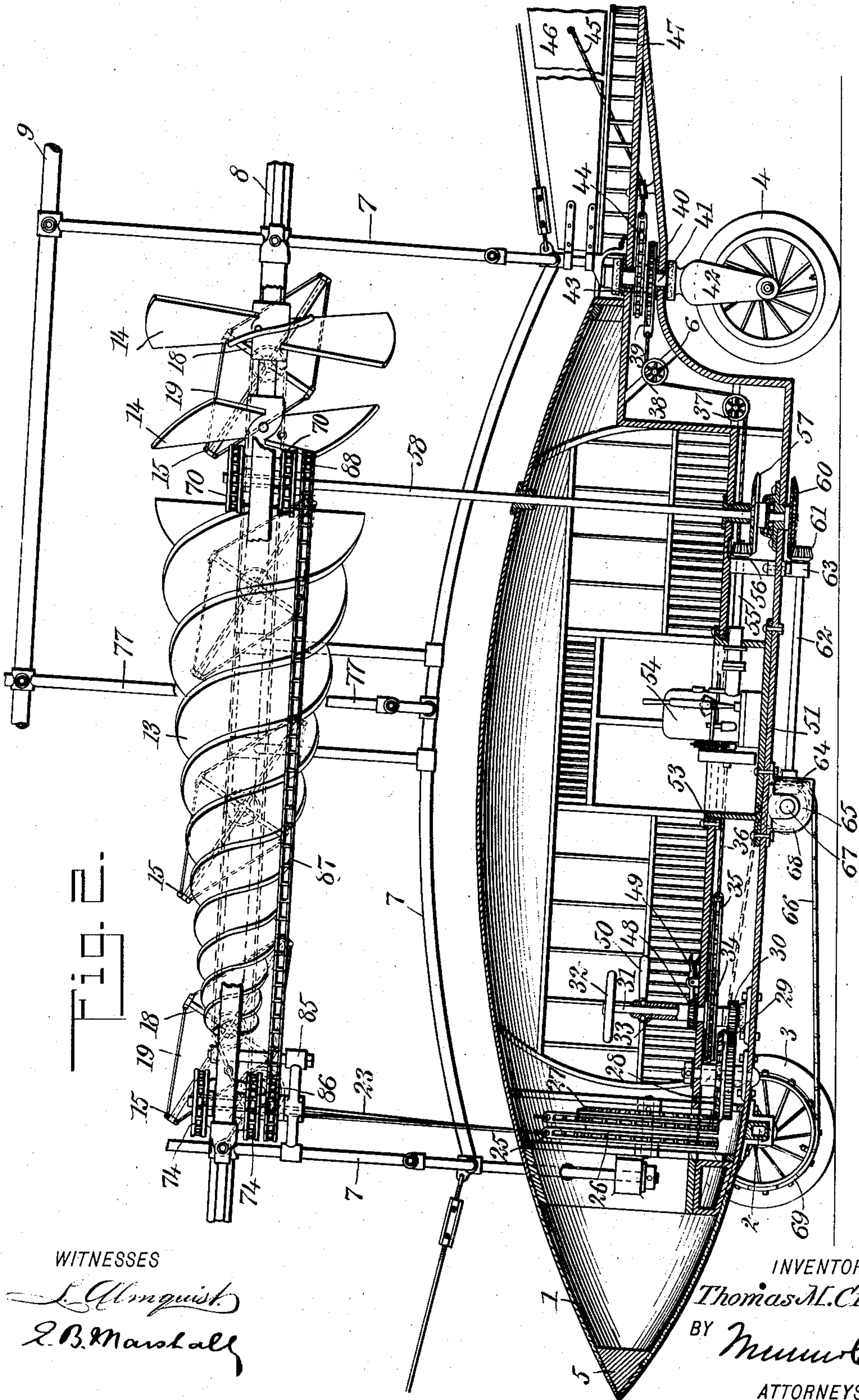
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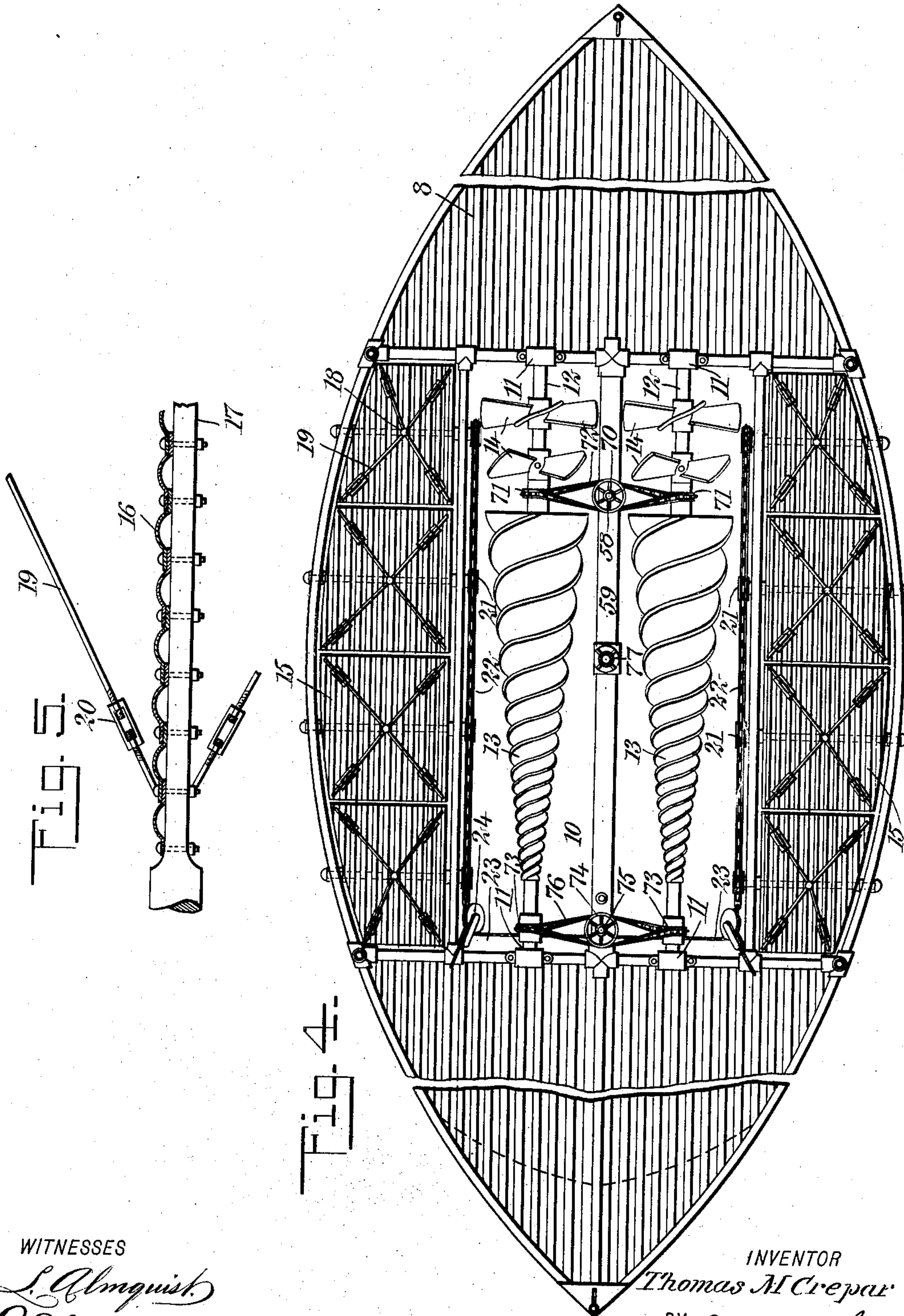
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4 SHEETS—SHEET 4.



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UNITED STATES PATENT OFFICE.

THOMAS MORTIMER CREPAR, OF FARGO, NORTH DAKOTA.

FLYING-MACHINE.

963,522.

Specification of Letters Patent.

Patented July 5, 1910.

Application filed June 2, 1908. Serial No. 436,280.

To all whom it may concern:

Be it known that I, THOMAS M. CREPAR, a citizen of the United States, and a resident of Fargo, in the county of Cass and State of North Dakota, have invented a new and Improved Flying-Machine, of which the following is a full, clear, and exact description.

An object of my invention is to provide a flying machine with variable vanes which together with planes form an aeroplane body, there being an opening in the center of said body in which are disposed propellers and there is disposed another plane over the said main or principal plane, the upper plane also having a central opening therein.

A further object of my invention is to manufacture the vanes and planes of corrugated material, the corrugations running lengthwise of the machine; and to provide conical, spiral propellers which are disposed in the opening in the lower or principal plane of the machine and in the rear of the said conical, spiral propellers to mount aerial screw-propellers of the usual type.

Still other objects of the invention are to provide means to operate the several variable vanes simultaneously and to provide means to drive the flying machine on its automobile wheels, the same means being also adapted to operate the said spiral and screw propellers.

Still another object is to provide heads for the planes which are adapted to assist in giving the flying machine a tendency to move upwardly in flight.

Further objects of the invention will appear in the following more complete description of the invention.

In this specification I will describe my preferred form of the invention, but it will be understood that I do not limit myself thereto, as I consider myself entitled to all forms and embodiments of the invention which may be held to fall within the scope of the appended claims.

Reference is to be had to the accompanying drawings, forming a part of this specification, in which similar characters of reference indicate corresponding parts in all the figures, in which—

Figure 1 is a side elevation of the machine in flight; Fig. 2 is an enlarged sectional side elevation showing the car body and the propelling and steering mechanism; Fig. 3

is an enlarged rear elevation of the machine; Fig. 4 is a plan view showing the main or principal plane with the variable vanes and the propellers; Fig. 5 is an enlarged fragmentary view showing the method of construction of the variable planes; and Fig. 6 is a plan view showing the upper or superimposed plane.

By referring to the drawings, it will be seen that the car 1, which is cigar-shaped, is mounted on axles 2 and automobile wheels 3 and 4 and that its head 5 has a slightly upward inclination. The automobile wheels 3 are disposed on the axle 2 on either side of the forward part of the car and the rear wheel 4 is disposed in a cut-away portion 6 of the car, and above the car and supported by aluminum or other tubing 7, is mounted a main or principal plane 8 and a superimposed plane 9. These planes 8 and 9 are upwardly inclined from the stern to the bow of the flying machine. The planes 8 and 9 are formed of corrugated material to insure greater strength, the corrugations running lengthwise of the car. Through the center of the main or principal plane 8 there is an oblong opening 10, and in this opening are disposed the longitudinal shafts 12, which are secured in bearings 11 at the forward and rear ends of the said opening. On each of these shafts 12 is mounted a conical, spiral screw 13, having its smaller end near the bow and its larger terminal in the rear. Behind each of these conical, spiral screws 13 and mounted on the shafts 12 are two aerial screws 14, one disposed behind the other on each shaft. On each side of the oblong opening 10 in the main or principal plane 8, and extending to the sides of the said plane, are variable vanes 15, which are pivoted transversely to the frame of the said plane 8. As shown in Fig. 5 these planes are formed of corrugated material, the corrugations extending lengthwise of the machine, and if desired, the vanes may be constructed of a plurality of sections 16 which may be bolted together, and to the rods 17, to which the vanes 15 are firmly secured so that they may move with the said rods 17, which are journaled to the frame of the plane 8. A rod 18 is disposed vertically through the center of each of the vanes 15, the rod 18 being firmly secured to the rods 17, and the upper and lower terminals of the rods 18 are secured to the corners of the vanes by means of tie-rods 19, which are

held taut by turn-buckles 20. As stated, the rods 17 of each vane are journaled in the frame of the upper plane 8 and each rod 17 extends inwardly, into the opening 10, and has on its inner terminal, a sprocket wheel 21.

As shown in the drawings, I may have four vanes on each side of the main or principal plane 8, but it will be understood that I may use any number of these vanes to serve the particular purpose for which the flying machine is constructed.

The sprocket wheels 21 on each side of the machine are connected together by means of a sprocket chain 22, the terminals of this sprocket chain being tied, or otherwise fastened to a rope 23 which passes through a block 24 and then down through the car body 1 to a sprocket chain 25 which engages the sprocket wheel 26. This sprocket wheel 26 has two sets of sprocket teeth, one for each of the sprocket chains 25, each sprocket chain 25 having its terminals connected to the terminals of its companion ropes 23, which have their other terminals secured to the terminals of the sprocket chain 22. It will, therefore, be seen that by rotating the sprocket wheel 26 the two sprocket chains 25 will be operated which will, by means of the ropes 23, draw the sprocket chains 22 to and fro, which by means of the sprocket wheels 21, will cause the vanes 15 to assume different positions with reference to the main or principal plane 8. The sprocket wheel 26 in addition to its two sets of sprocket teeth, has on its rear face, a bevel gear 27 which meshes with a bevel gear wheel 28 integral with a gear wheel 29, which meshes with a gear wheel 30 to which a standard 31 is secured, a wheel 32 being mounted on the upper terminal of this standard 31. By means of slight rotation of the wheel 32 the variable vanes 15 will be operated and the forward ends will be thrown upwardly or downwardly to cause the flying machine to ascend or descend. The standard 31 is disposed in a tubing 33, this tubing 33 having at its lower end a sprocket wheel 34 which engages a sprocket chain 35, to the ends of which are secured ropes 36, which extend to the rear of the car and thence over pulleys 37 and 38 to a sprocket chain 39, which engages a sprocket wheel 40 mounted on a standard 41, to the lower bifurcated ends 42 whereof the rear wheels 4 are journaled. On this standard 41 there is also mounted another sprocket wheel 43 which engages a sprocket chain 44 to the ends of which ropes 45 are secured, the other ends of these ropes being fastened to a rudder 46 which is hinged to the frame of the machine. In the rear of the machine and just under the rudder 46 is disposed an observation platform 47. At the bottom of the tubing 33 there is a bevel gear wheel 48 with which a lock 49 is adapted to engage, to hold the rudder in any

predetermined position. By means of the tiller 50 which is secured to the tubing 33, the position of the rudder may be altered, the operator at the same time having immediate control over the variable vanes 15, by means of the wheel 32.

An engine bed 51 is disposed just below the main floor 53 of the car, and on this bed is mounted the motor 54 which may be of any approved type. The motor 54 rotates a shaft 55, to the rear end of which is secured a bevel gear wheel 56 which meshes with a bevel gear wheel 57 which is mounted on a vertical shaft 58. This vertical shaft 58 is journaled in the bottom and top of the car 1 and also in the central longitudinal frame member 59, which is disposed longitudinally of the machine. At the bottom of the vertical shaft 58 and below the bottom of the car 1, there is mounted a bevel gear wheel 60 which meshes with a bevel gear wheel 61, which is mounted on a shaft 62, supported by means of bearings 63 at the bottom of the car 1. At the forward end of this shaft 62 there is a bevel gear wheel 64 which meshes with the bevel gear wheel 65 which is secured to a shaft 67, which is journaled transversely of the car, and on the outer terminals of this shaft 67 are mounted sprocket wheels 68, each of which engages a sprocket chain 66, the sprocket chain 66 engaging sprocket wheels 69 which are mounted on the automobile wheels 3, respectively. To the upper end of the shaft 58 there is secured a sprocket wheel 70 and there are also sprocket wheels 71 on each of the shafts 12, the sprocket wheel 70 being connected to the sprocket wheel 71 by means of a loosely jointed sprocket chain 72. At the forward end of the shafts 12 are mounted sprocket wheels 73, and a sprocket wheel 74 journaled in a standard 75 which is secured to the central frame member 59 and these sprocket wheels are connected by a sprocket chain 76. By this means simultaneous movement of the two conical spiral screws and the aerial screw propellers will be assured.

A central vertical frame member 77 extends up through the machine above the superimposed plane 9 and to the upper terminal of this central vertical member 77 are tied, by means of ropes 78, the forward and rear extremities of the frame, which form the continuation of the lower or principal plane 8, and these ropes 78, which may be of wire are held taut by means of turn-buckles 79, and these same extremities of the frame are tied to the frame members, close to the car by means of ropes 80 which are held taut by turn-buckles 81. The planes 8 and 9 receive their principal support from the frame members 7 and to the upper ends of these frame members 7, which terminate at the upper plane 9, are secured ropes 82 which

have their other terminals secured to the upper extremities of the central vertical frame member 77, these ropes 82 being also held taut by means of turn-buckles. The planes 8 and 9 are held in position relatively to each other by means of frame members 83. At the other end of the frame at a level with the planes 8 and 9 are two heads 84, which are tapered so that they are pointed at their front terminals and which gradually increase in breadth and thickness so that when the flying machine is forced through the air, the heads 84 will have a tendency to lift the car. The sides of each of the heads converge downwardly and the bottom of the head diverges rearwardly from the top, so that the heads will be pointed upwardly relatively to the body of the machine. The heads serve to steady and direct the machine when making curves in the air; the heads being pointed upwardly to give a tendency to rise as the machine is turned.

If desired the vertical shaft 58 may be connected to the shafts 12 in this manner: Two sprocket wheels 70 may be secured on the vertical shaft 58, one of the sprocket wheels 70 being above the main frame 59 and the other being below it. One of the sprocket wheels 71 may then be connected with the upper sprocket wheel 70 on the shaft 58 and the other sprocket wheel 71 may be connected with the lower sprocket wheel 70 on the shaft 58 and below the main frame member 9. The same connection may be made at the forward end of the machine and in order to insure an easy and more accurate drive, sprocket wheels 74, one above and one below the main frame member 59, may be secured to the shaft 75 which is journaled in the said frame and to an extension frame member 85, and to this shaft 75 may be secured another sprocket wheel 86 which may be connected by means of the sprocket chain 87 with another sprocket wheel 88, which is secured on the vertical shaft 58. As seen in Fig. 6 there is a central opening in the superimposed plane 9.

In the operation of my machine, the variable vanes 15 are disposed in alinement with the main or principal plane 8 and if there is any wind blowing, the machine is turned so that its bow will face the breeze. The engine is then started and by means of the shaft 55, the bevel gear wheels 56 and 57, the bevel gears 60 and 61, the shafts 62, the bevel gears 64 and 65, the sprocket wheels 68 and 69 and the sprocket chain 66, the forward wheels 3 are rotated and the car is driven ahead. When the car is moving rapidly and the machine by means of the general upward inclination of the planes, has a tendency to ascend, the forward ends of the variable vanes 15 are pointed slightly upwardly by means of a slight rotation of the wheel 32, and as the machine leaves

the ground the conical spiral screws 13 and the aerial propellers 14 are rotated more rapidly, because there is no longer any surface resistance to the wheels 3, and the car may rise to any desired height, by means of the operation of the variable vanes 15, by the operation of the wheel 32. As the machine flies through space, the operator by means of the tiller 50 can move the rudder 46, so that the machine may make any desired turn. In alighting, the operator should be careful to swing the machine so that it faces the breeze and then to bring it slowly to the ground by means of a proper manipulation of the variable vanes and a suitable reduction or increase in the speed of rotation of the conical, spiral screws and the aerial propellers.

It will be understood that while I have shown the propellers disposed in the opening in the lower plane, the propellers may be disposed in the opening in the upper plane without departing in any manner from the scope of the invention.

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

1. In a flying machine, a corrugated plane, and a head disposed in front thereof, the head being pointed in front, the top of the head being substantially flat with its sides diverging rearwardly, the sides also converging downwardly and the bottom diverging rearwardly.

2. In a flying machine, a plane, a head disposed in front thereof, the head being pointed in front, the top of the head being substantially flat with its sides diverging rearwardly, the sides of the head converging downwardly and the bottom of the head diverging rearwardly, there being an opening in the plane, and a propeller disposed in the opening.

3. In a flying machine, a corrugated plane, a head disposed in front thereof, the head being pointed in front, the top of the head being substantially flat with its sides diverging rearwardly, the sides of the head also converging downwardly and the bottom of the head diverging rearwardly, there being an opening in the plane, and a spiral propeller disposed in the opening.

4. In a flying machine, a plane having an opening in the center, and a series of vanes disposed symmetrically with reference to the plane and away from the opening, the said vanes being adapted to be moved simultaneously at various angles to the said plane.

5. In a flying machine, a plane having a central opening therein, a series of vanes disposed symmetrically with reference to the plane and away from the opening, the said vanes being adapted to be moved simultaneously at various angles to the said plane, and means to so move the vanes.

6. In a flying machine, a corrugated plane having a central opening therein, and a series of vanes disposed symmetrically with reference to the plane and away from the opening, the said vanes being adapted to be moved simultaneously at various angles to the said plane. 5
7. In a flying machine, a corrugated plane having a central opening therein, a series of vanes disposed away from the opening, the said vanes being adapted to be moved simultaneously at various angles to the said plane, and means to so move the said vanes. 10
8. In a flying machine, two planes, one disposed above the other, each having a central opening therein, and a series of vanes which are adapted to assume various angles with reference to the planes. 15
9. In a flying machine, two planes having central openings therein, and a series of vanes disposed symmetrically with reference to one of the planes, the said vanes being adapted to be moved simultaneously at various angles with reference to one of the said planes. 20
10. In a flying machine, two planes having central openings therein, the planes being corrugated, and a series of vanes disposed symmetrically with reference to one of the planes, the said vanes being adapted to be moved simultaneously at various angles with reference to one of the planes. 25
11. In a flying machine, a plane, a head disposed in front thereof, the head being pointed in front, the top of the head being substantially flat with its sides diverging rearwardly, the sides of the head also converging downwardly and the bottom of the head diverging rearwardly, there being an opening in the plane, a propeller disposed in the opening, vehicle wheels journaled to the machine, a motor, and means in connection with the motor for rotating the propeller and the vehicle wheels. 30
12. In a flying machine, a corrugated plane, a head disposed in front thereof, there being an opening in the plane, a conical screw propeller disposed in the opening, vehicle wheels journaled to the machine, a motor, and means in connection with the motor for rotating the propeller and vehicle wheels. 40
13. In a flying machine, a corrugated vane, a standard which passes through the vane and is secured thereto, and means by which the upper and lower terminals of the standard are tied to the corners of the vane. 45
14. In a flying machine, a plane having a central opening, and a conical screw disposed in the said opening. 50
15. In a flying machine, a plane having a central opening, and a conical screw disposed in the said opening, the said conical screw being adapted to act on a substantial body of air below the plane. 55
16. In a flying machine, a plane having a central opening therein, a plurality of spiral screws disposed in the said opening, and a plurality of aerial propellers disposed longitudinally of the spiral screws. 70
17. In a flying machine, a plane having an opening therein, a series of vanes, the said vanes being adapted to be moved at various angles with reference to the said plane, and a spiral screw disposed in the said opening. 75
18. In a flying machine, a plane having an opening therein, a series of vanes which are adapted to be moved at various angles with reference to the said plane, a conical, spiral screw disposed in the said opening, means to operate the said vanes, and means to operate the conical, spiral screw. 80
19. In a flying machine, a corrugated plane having a central opening therein, and a spiral screw disposed in the said opening. 85
20. In a flying machine, a corrugated plane having a central opening therein, a series of vanes disposed symmetrically with reference to the said plane, the said vanes being adapted to be moved simultaneously at various angles with reference to the said plane, and a spiral screw which is adapted to be rotated in the said opening. 90
21. In a flying machine, two planes having central openings therein, a series of vanes, the said vanes being adapted to be moved at various angles with reference to the said plane, and a spiral screw which is disposed in one of the said central openings and is adapted to be rotated. 95
22. In a flying machine, a plane, a series of vanes disposed symmetrically with reference thereto, the said vanes being adapted to be moved simultaneously at various angles with reference to the said plane, a superimposed plane, the said planes having central openings therein, and a spiral screw disposed in one of the said openings and being adapted to be rotated. 100
23. In a flying machine, a car having wheels, a motor which is adapted to drive a vertical shaft, a plane disposed above the car, a plane having an opening therein, a spiral screw disposed in the said opening and adapted to be rotated, means to drive the screw, and means to rotate the wheels, the two said means being adapted to be operated by the vertical shaft. 105
24. In a flying machine, a car having wheels, a motor which is adapted to drive a vertical shaft, a plane disposed above the car, the plane having an opening therein, a series of vanes which are adapted to be disposed at different angles with reference to the plane, a spiral screw disposed in the said opening and being adapted to be rotated therein, means to drive the screw, and means to rotate the wheels, the two said means being operated by the vertical shaft. 110

25. In a flying machine, a car having wheels, a motor which is adapted to drive a vertical shaft, a plurality of planes disposed above the car, one of the planes having an opening therein, a spiral screw disposed in the said opening, means to drive the screw, and means to rotate the wheels, the two said means being operated by the vertical shaft.

26. In a flying machine, a car having wheels, a motor which is adapted to drive a vertical shaft, a plurality of planes disposed above the car, each of the said planes having a central opening therein, a spiral screw disposed in the opening in one of the said planes and being adapted to rotate therein, means to drive the screw, and means to rotate the wheels, the two said means being operated by the vertical shaft.

27. In a flying machine, a car having wheels, a motor which is adapted to drive a vertical shaft, a plurality of planes disposed above the car, each of the planes having a central opening therein, a series of vanes which are adapted to be moved at various angles with reference to one of the planes, a spiral screw disposed in the opening in one of the planes and being adapted to rotate therein, means to drive the screw, and means to rotate the wheels, the two said means being operated by the vertical shaft.

28. In a flying machine, a car having wheels, a motor which is adapted to drive a vertical shaft, a plane disposed above the car, the plane having an opening therein, a spiral screw disposed in the said opening and adapted to be rotated therein, means to drive the screw, means to rotate the wheels, the two said means being operated by the vertical shaft, and a single wheel and a rudder, which are adapted to move together.

29. In a flying machine a plane, a series of vanes disposed symmetrically with reference thereto, the said vanes being adapted to be moved simultaneously at various angles with reference to the said plane, a super-

imposed plane, the said plane having central openings therein, a spiral screw disposed in one of the said openings and being adapted to rotate therein, a rudder, and means to control the rudder.

30. In a flying machine, a plane having a central opening therein, a plurality of spiral screws disposed in the said opening, a plurality of aerial propellers disposed longitudinally of the spiral screws, a rudder, and means to control the rudder.

31. In a flying machine, a plane having a central opening therein, a spiral screw disposed in the said opening and adapted to rotate therein, a rudder, and means to control the rudder.

32. In a flying machine, a car, a plane, a series of variable vanes symmetrically disposed with reference to the plane, means to operate the vanes, a rudder, means to operate the rudder, the said means to actuate the variable vanes being operated by a shaft having a wheel thereon, and a hollow shaft in which the said shaft is disposed, the said hollow shaft being adapted to operate the means to operate the rudder.

33. In a flying machine, two heads at the front of the machine, one head being disposed over the other, the plane of each of the heads being V-shaped and the sides of each of the heads converging downwardly until they meet respectively.

34. In a flying machine, a plane, and a head disposed in front thereof, the head being pointed, with its upper sides and bottom diverging rearwardly, the sides of the head being concave.

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

THOMAS MORTIMER CREPAR.

Witnesses:

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J. LOWELL, Jr.