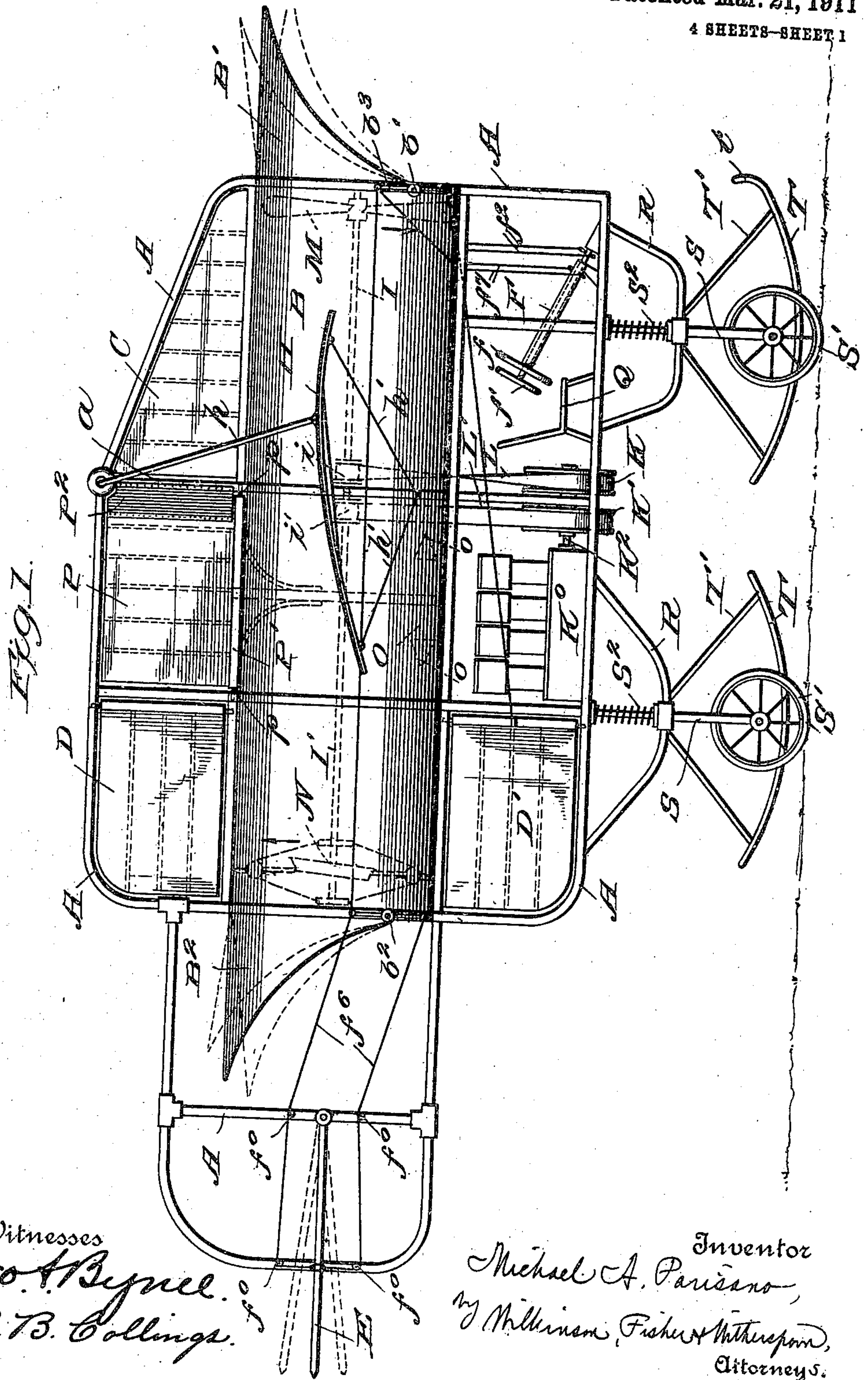


987,596.

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 4 SHEETS—SHEET 1

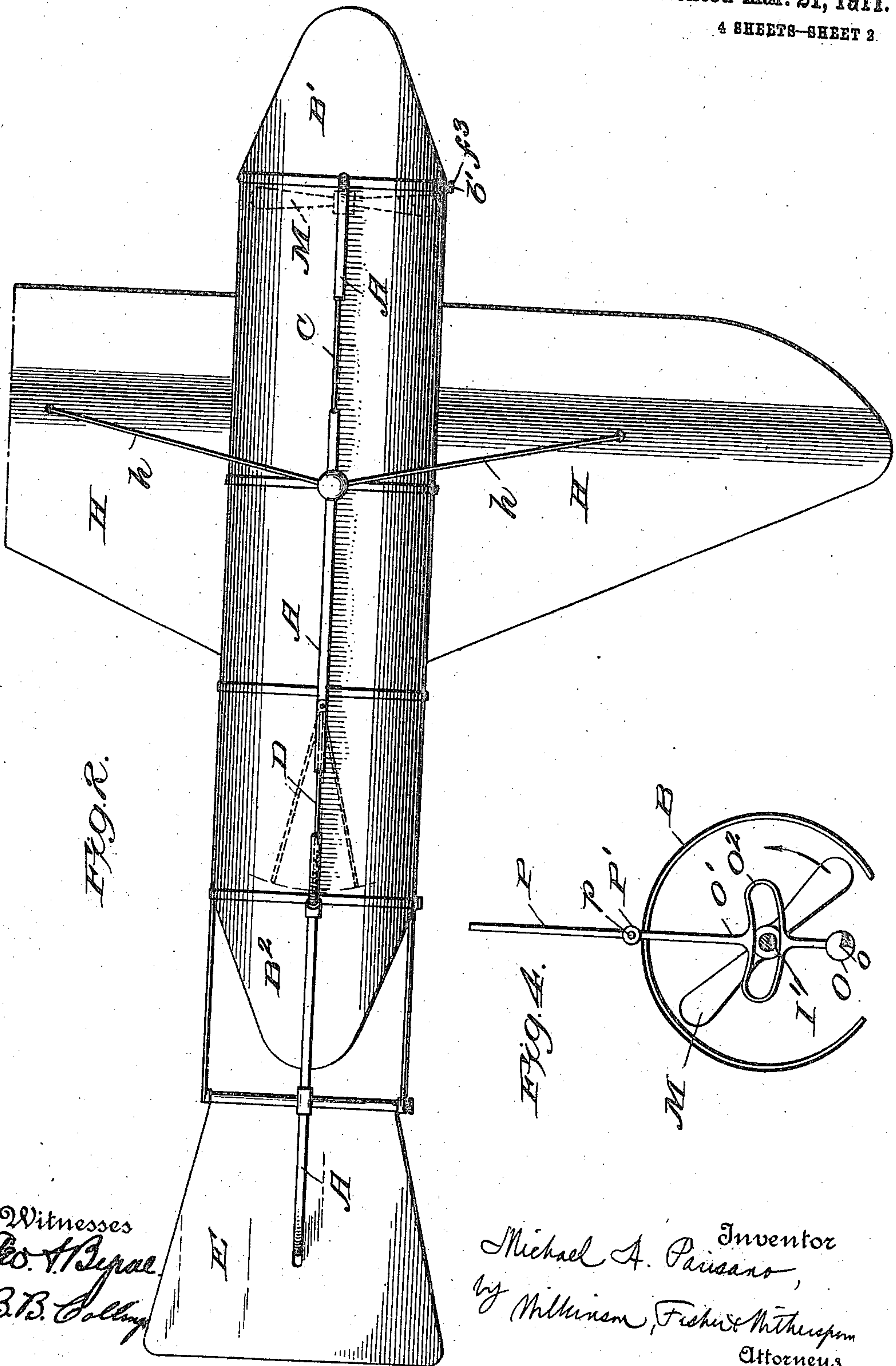


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4 SHEETS—SHEET 2.



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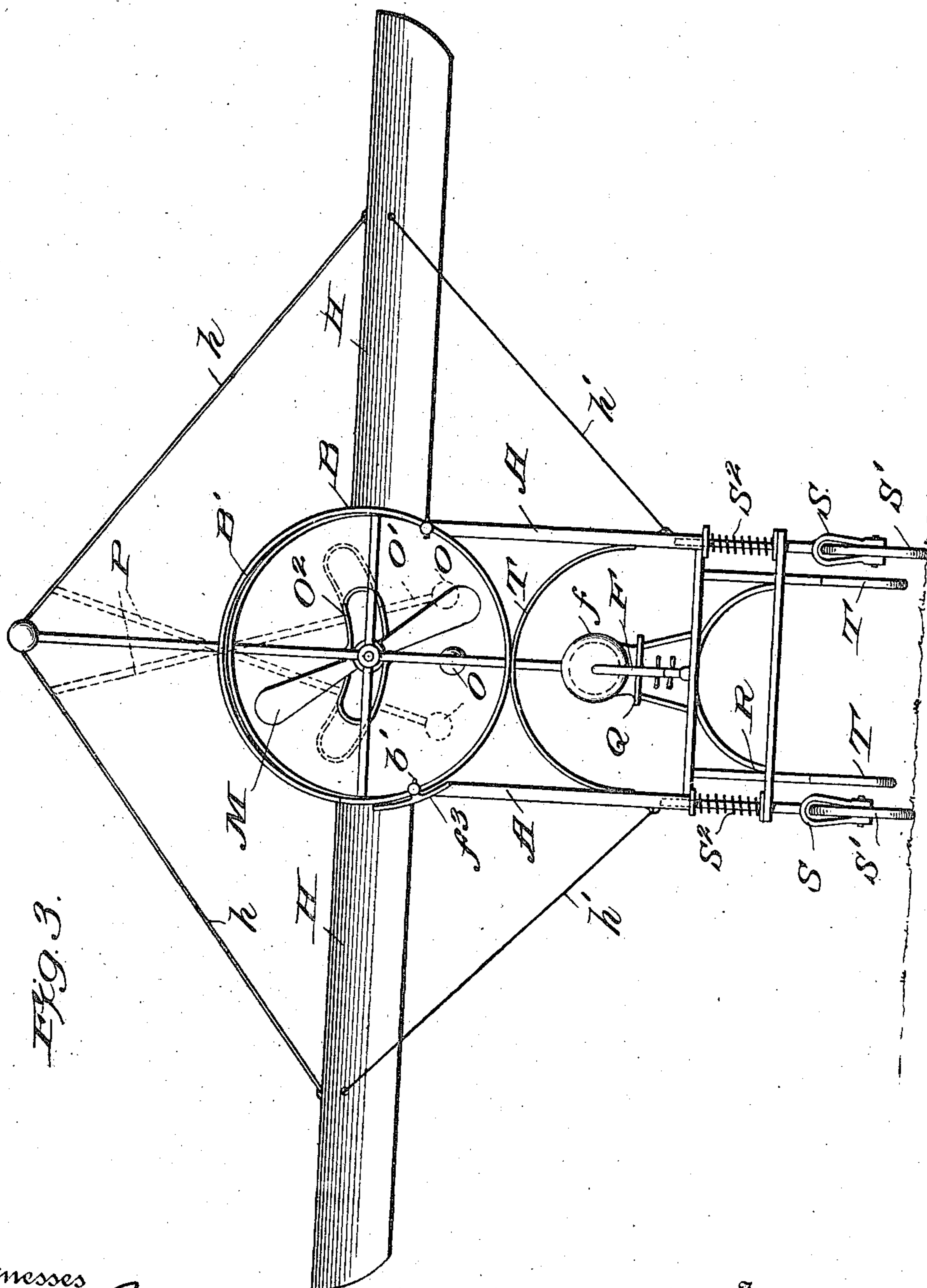
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M. A. PARISANO.
FLYING MACHINE.
APPLICATION FILED MAY 11, 1910.

Patented Mar. 21, 1911.

4 SHEETS—SHEET 3.



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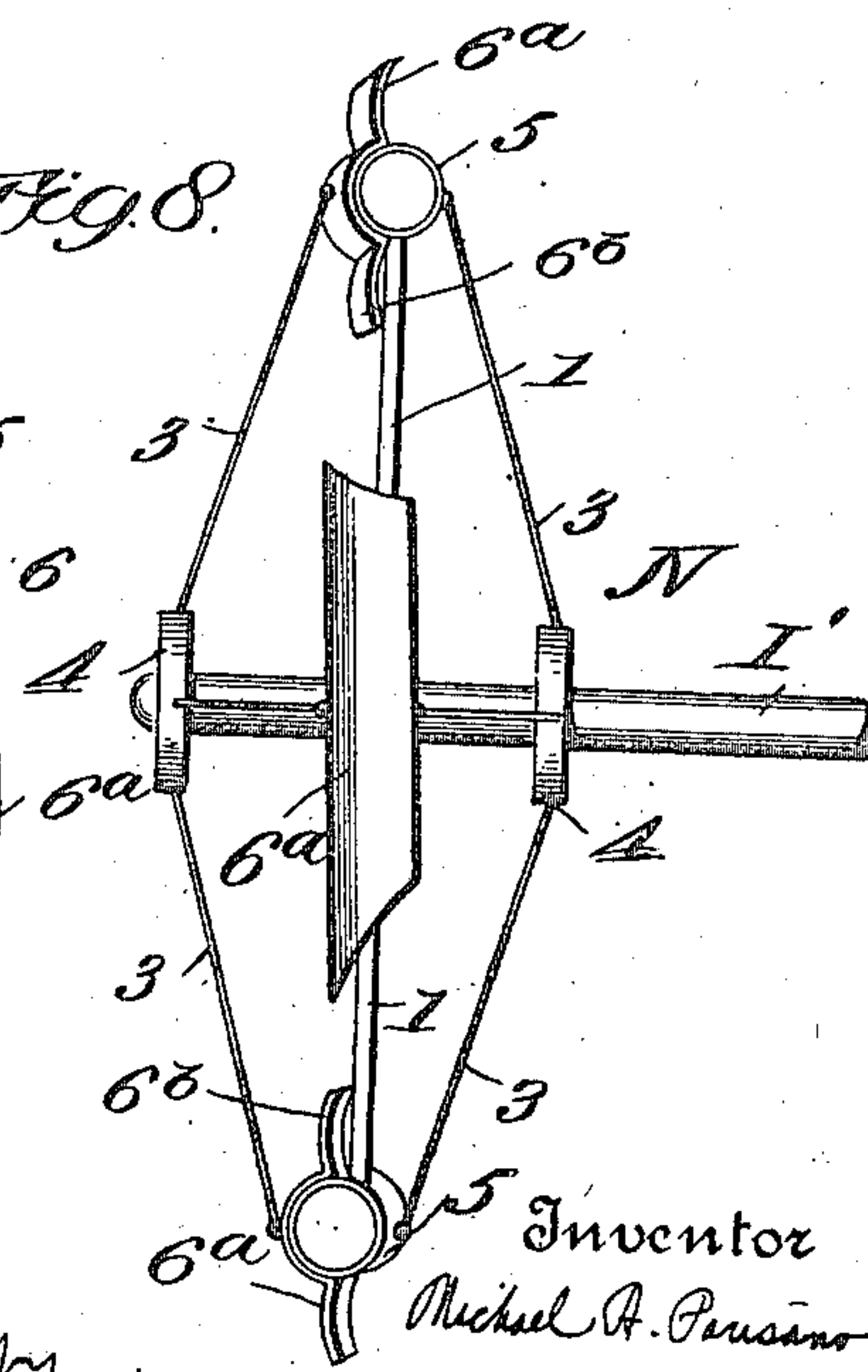
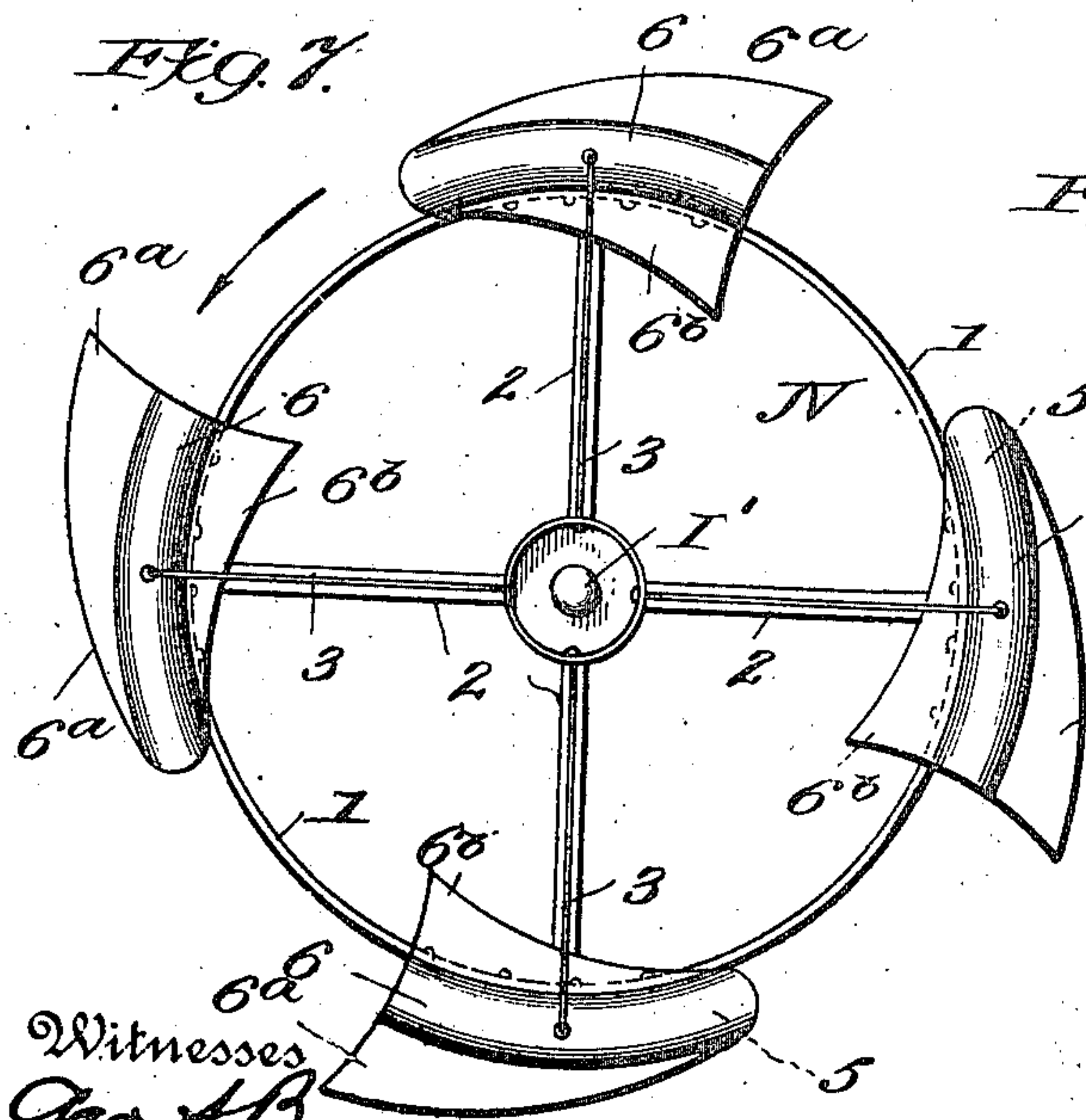
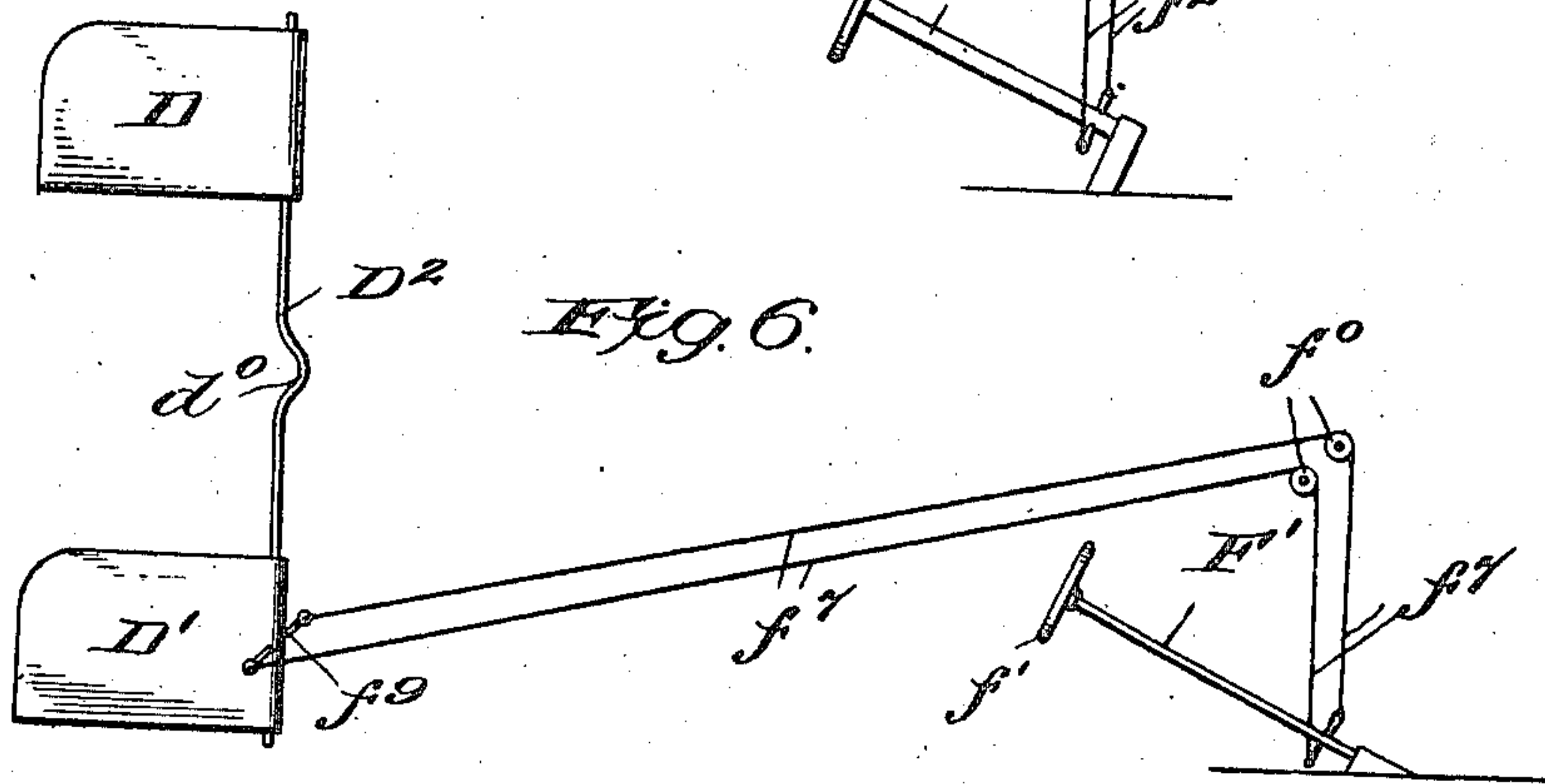
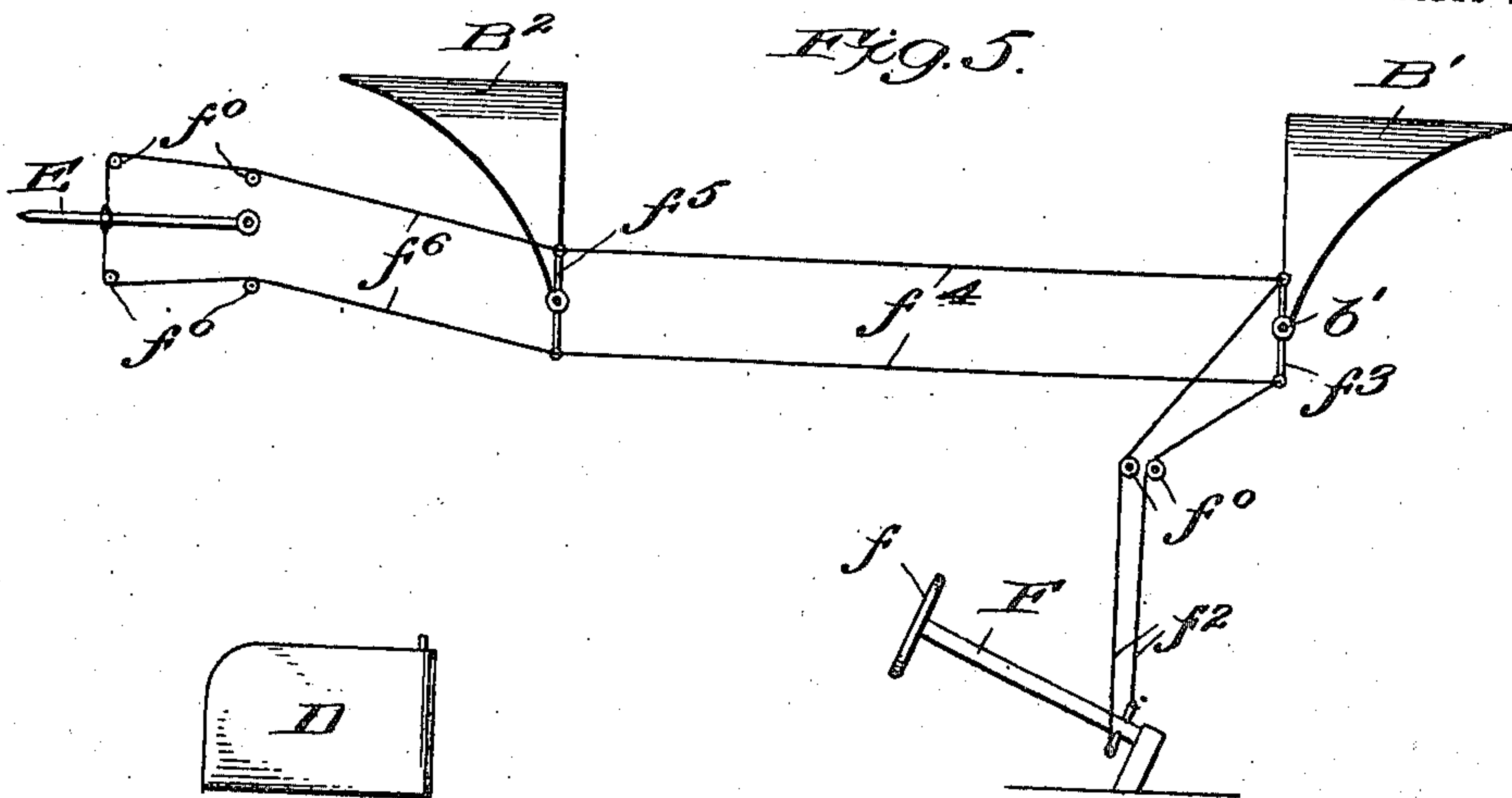
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APPLICATION FILED MAY 11, 1910.

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4 SHEETS-SHEET 4.



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UNITED STATES PATENT OFFICE.

MICHAEL ANGELO PARISANO, OF NEW YORK, N. Y.

FLYING-MACHINE.

987,596.

Specification of Letters Patent. Patented Mar. 21, 1911.

Application filed May 11, 1910. Serial No. 560,719.

To all whom it may concern:

Be it known that I, MICHAEL A. PARISANO, a citizen of the United States, residing at New York, in the county of New York and 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.

My invention relates to improvements in flying machines and it consists in certain novel features which will be hereinafter described and claimed.

The invention will be understood by reference to the accompanying drawings in which the same parts are indicated by the same letters and numerals throughout the several views.

Figure 1, shows a side elevation of the completed machine; Fig. 2, is a plan view, parts being broken away and parts being omitted, for the sake of clearness in the drawings; Fig. 3, is a front elevation; Fig. 4, is a diagram showing the operation of the automatic balancing weight and sail; Fig. 5, is a diagram showing the operation of the rising and diving apparatus; Fig. 6, is a diagram showing the operation of the apparatus for steering laterally; and, Figs. 7 and 8, are details showing the construction of a form of propeller suitable for use with my invention.

A represents the framework of the machine, which is preferably made of tubing of high grade steel, such as for instance, vanadium steel. In this framework the cylinder B is carried in which the propellers are mounted. At the front end of this framework is a cross rudder B' pivoted as at b' and at the rear end is a similar rudder B², pivoted as at b². The rudders B' and B² when in the normal position preferably follow the contour of the cylinder along the upper portion but are cut away in a curve on each side to form a curved arch-shaped structure, as shown in Figs. 1, 2, 3 and 5. For convenience in drawing the claims, I shall term this peculiar construction of rudder as curved arch-shaped rudders pivoted to the framework.

C represents a fixed sail carried by the framework and D and D' are the rudders for steering in the horizontal plane.

E is the tail, which co-acts with the rudders B' and B² to steer the machine in the vertical plane.

F and F' are concentric shafts carrying hand wheels f and f' located in front of the seat Q for the aviator. The shaft F is connected to the rudders B' and B² and the tail E by suitable wires f², cross piece or tiller f³, wires f⁴, cross piece or tiller f⁵ and wires f⁶. Suitable guide pulleys f⁰ are placed where necessary. The lateral steering rudders D and D' are mounted on the shaft d², bent as at d⁰ to clear the propeller shaft, and these rudders are provided with a cross piece or tiller f⁹, connected to the wires f⁷ and to the shaft F'. Thus the vertical steering rudders and the horizontal steering rudders may be both operated by the aviator through the instrumentality of the hand wheels f and f'.

The wings H are curved, as shown in Fig. 1 and are held at the predetermined angle by means of suitable braces such as h and stays h'. The position and curvature of the wings will be determined by experiment but they are intended to be set on the machine and no parts thereof to be movable.

The machine is driven by two propellers mounted in the cylinder B. I have shown a propeller M of the ordinary form mounted on the shaft I in the front end of the cylinder, and a propeller M of a form to be hereinafter described mounted on the shaft I' in the rear end of the cylinder. These two shafts I and I' being driven from the engine K⁰ by the pulleys K and K' fast on the shaft K², the pulleys i and i' on the shafts I and I' respectively, and the belts L and L'.

In order to protect the machine from tilting laterally, I provide an automatic balancing attachment which comprises a weight O, preferably pointed as at o at each end to offer the least resistance to the air currents, which weight is carried by the bar O' provided with the yoke O² into which the propeller shaft I passes, so that the arm O' and the weight O may be free to swing laterally through a given angle about the propeller shaft. This bar O' is rigidly attached to the bar P' pivoted as at p in the frame A, as shown in Figs. 1 and 4. Secured to this bar P' is a rigid canvas screen P connected at its forward edge by accordion plaits of canvas or other flexible material to the vertical rib a of the frame A just in the rear of the sail C.

It will be noted that if either wing is caused to tip up as by the action of irregular air currents, the weight O will tend to maintain its vertical position; then upon attaining the relative position to the rest of the machine indicated by one set of dotted lines in Fig. 3, its action will cause the balancing sail P to swing out in the direction of the lifted wing, and the accordion plaits will act like a jib held out to windward and the airship going ahead at great speed will cause the air to press against this jib-like surface, tending to counteract the tilting up of the wing by pressing the top of the airship over in the direction tending to depress said lifted wing. In this action of the balance sail P the fixed sail C serves to direct the air to the front edge of the balance sail P. In this way the weight and balance sail tend to maintain the vertical axis of the airship in a vertical plane or to prevent one wing from tipping up and the other down.

In order to provide for lighting or for starting the machine, brackets R are provided in which are mounted forks S carrying wheel S' which wheels are normally pressed downwardly below the shoes T by means of the springs S². These springs are strong enough to support the weight of the machine, but yield when the machine descends with considerable force, as in lighting, allowing the shoes T to take the weight of the machine. These shoes are connected by suitable braces T' to the framework A and the front shoe is preferably curved up as at t to prevent catching in the turf, bushes, or the like. Any suitable seat Q is provided for the aviator.

The operation of the device is as follows:—The machine being on the ground, or attached to any suitable starting device, the engine is started driving the propellers, and the rudder B' is elevated and the rudder B² and tail E are simultaneously depressed. This will cause the machine to rise from the ground when it may be steered laterally by the rudders D and D'. Should either wing tilt up, the same will be brought back to "an even keel" by the automatic balance, as previously described. To cause the machine to descend, the rudders B' and B² and the tail E are moved in the reverse direction to that already described, lighting on the wheels S' and in lighting with great force, these wheels will yield and the weight will then be taken up on the shoes T. In the cylinder B one or two propellers may be used, but preferably two, one at each end of said cylinder. These propellers may be of ordinary form, as indicated at M, or may be of the form illustrated at N and shown in detail in Figs. 7 and 8. This form will now be described. 1 represents a ring secured by spokes 2 to the shaft I'. This ring is further braced with stays 3 connected to

similar rings 4 fast on the shaft I'. This ring 1 carries a series of cylindrical tubes cut away irregularly at each end, as shown in Figs. 7 and 8, and set at an angle with the plane of the ring 1, as shown most clearly in Fig. 8. These tubes 5 are bent at each end and carry vanes 6 which are provided with wings 6^a and 6^b of double curvature, as shown. As the shaft I' revolves the air passing through these tubes 5 against the wings 6^a and 6^b reacts on said tubes and wings and tends to press the ship in the forward direction relative to the machine. This form of propeller is believed to be efficient in use and little likely to accidental injury. By having the propellers mounted in the cylinder B the propeller blades push the air directly rearward and do not throw it off radially, thus giving an increased tractive effect and furthermore, propellers so mounted are protected by the cylinder and are not likely to be injured by contact with any of the apparatus, such as stay wires or the like, should same be broken.

It will be noted that the herein described open ended cylinder and its inclosed propeller or propellers, as also its front and rear curved rudders may be used for driving a dirigible balloon as well as a flying machine, and I desire to claim such use.

It will be obvious that various modifications might be made in the herein described apparatus which could be used without departing from the spirit of my invention.

I claim as my invention:

1. A flying machine, comprising a framework, a cylinder carried thereby, curved rudders pivoted at the front and rear of said cylinder and a tail pivoted in rear thereof, means for simultaneously moving said front curved rudder in one direction and for moving the rear curved rudder and tail in the opposite direction, means for steering said machine laterally, one or more propellers journaled in said cylinder with means for driving same, wings projecting laterally from said framework, an automatic balance comprising a pivoted sail with an extensible front connecting said framework and said sail and permitting the oscillation of said sail in said framework, and a weight tending to hold said pivoted sail in the vertical position, substantially as described.

2. A flying machine, comprising a framework, a cylinder carried thereby, curved rudders pivoted at the front and rear of said cylinder and a tail pivoted in rear thereof, means for simultaneously moving said front curved rudder in one direction and for moving the rear curved rudder and tail in the opposite direction, means for steering said machine laterally, one or more propellers journaled in said cylinder with means for driving same, wings projecting

laterally from said framework, an automatic balance comprising a pivoted sail provided with an accordion plait of textile fabric, connecting its front edge with said framework, and a weight tending to normally hold said sail in the vertical position, substantially as described.

3. A flying machine, comprising a framework, a cylinder carried thereby, curved rudders pivoted at the front and rear of said cylinder, said rudders being curved upwardly and outwardly, and being arch-shaped on top, substantially as described, and a tail provided in rear thereof, means for simultaneously moving said front curved rudder in one direction and for moving the rear curved rudder and tail in the opposite direction, means for steering said machine laterally, one or more propellers journaled in said cylinder with means for driving same, and wings projecting laterally from said framework, substantially as described.

4. A flying machine comprising a framework, a cylinder carried thereby, curved rudders pivoted at the front and rear of said cylinder, said rudders being curved upwardly and outwardly, and being arch-shaped on top, substantially as described, and a tail pivoted in rear thereof, means for simultaneously moving said front curved rudder in one direction and for moving the rear curved rudder and tail in the opposite direction, means for steering said machine laterally, one or more propellers journaled in said cylinder with means for driving same, wings secured to and projecting laterally from said framework, and means for automatically compensating for the tipping of the wings in the vertical plane, substantially as described.

5. A flying machine, comprising a framework, a cylinder carried thereby, curved rudders pivoted at the front and rear of said cylinder, means for simultaneously moving said front curved rudder in one direction and for moving the rear curved rudder in the opposite direction, means for steering said machine laterally, one or more propellers journaled in said cylinder with means for driving the same, wings projecting laterally from said framework, an automatic balance comprising a pivoted sail with an extensible front connecting said framework and said sail and permitting the oscillation of said sail in said framework, and a weighted arm tending to hold said pivoted sail in the vertical position, substantially as described.

6. A flying machine comprising a framework, a cylinder carried thereby, curved rudders pivoted at the front and rear of said cylinder, means for simultaneously moving said front curved rudder in one direction and for moving the rear curved rudder in the opposite direction, means for steering said machine laterally, one or more propellers

journaled in said cylinder with means for driving same, wings projecting laterally from said framework, an automatic balance comprising a pivoted sail provided with an accordion plait of textile fabric, connecting its front edge with said framework, and a weighted arm tending to normally hold said sail in the vertical position, substantially as described.

7. In a flying machine the combination with a frame provided with laterally extending wings, of an automatic balance for preventing said machine from dipping, comprising a pivoted frame carried by said framework, a weighted arm tending to hold said frame in a vertical position, canvas stretched over said pivoted frame and forming a pivoted sail, with a plaited canvas connection between said pivoted sail and said framework, substantially as described.

8. In a flying machine the combination with a frame provided with laterally extending wings, of a vertical sail secured to said frame above and between said wings, and an automatic balance for preventing said machine from dipping, comprising a pivoted frame carried by said framework, a weighted arm tending to hold said frame in a vertical position, a sail mounted over said pivoted frame and a flexible connection impervious to air between the front edge of said pivoted sail and said framework, substantially as described.

9. In a flying machine the combination with a frame provided with laterally extending wings, of a vertical sail secured to said frame above and between said wings, and an automatic balance for preventing said machine from dipping, comprising a pivoted frame carried by said framework, a weighted arm tending to hold said frame in a vertical position, canvas stretched over said pivoted frame and forming a pivoted sail with an accordion plaited canvas strip connecting said pivoted sail with said framework, substantially as described.

10. A flying machine, comprising a framework, a cylinder carried thereby, means for steering said machine laterally, and in the vertical plane, one or more propellers journaled in said cylinder, with means for driving same, carried by said frame, wings projecting laterally from said framework, an automatic balance comprising a pivoted sail provided with an accordion plait of textile fabric, connecting its front edge with said framework, and a weighted arm tending to normally hold said sail in the vertical position, substantially as described.

11. A flying machine, comprising a framework, a cylinder carried thereby, curved rudders pivoted at the front and rear of said cylinder, said rudders being curved upwardly and outwardly, and being arch-shaped on top, substantially as described,

and a tail pivoted in rear thereof, means for simultaneously moving said front curved rudder in one direction and for moving the rear curved rudder and tail in the opposite
5 direction, pivoted rudders for steering said machine laterally, a propeller journaled in said cylinder, with means for driving same, carried by said frame, and wings projecting laterally from said framework, substantially
10 as described.

12. In an apparatus for navigating the air, a propelling means comprising a cylinder open at both ends, a curved rudder pivoted at each end of said cylinder, said rudd-

ders being curved upwardly and outwardly, and being arch-shaped on top, substantially as described, means for simultaneously moving said rudders in reverse directions about their pivots, one or more propellers mounted in said cylinder, and means for driving said
20 propellers, substantially as described.

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

MICHAEL ANGELO PARISANO.

Witnesses:

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HENRY NATEMEYER.