

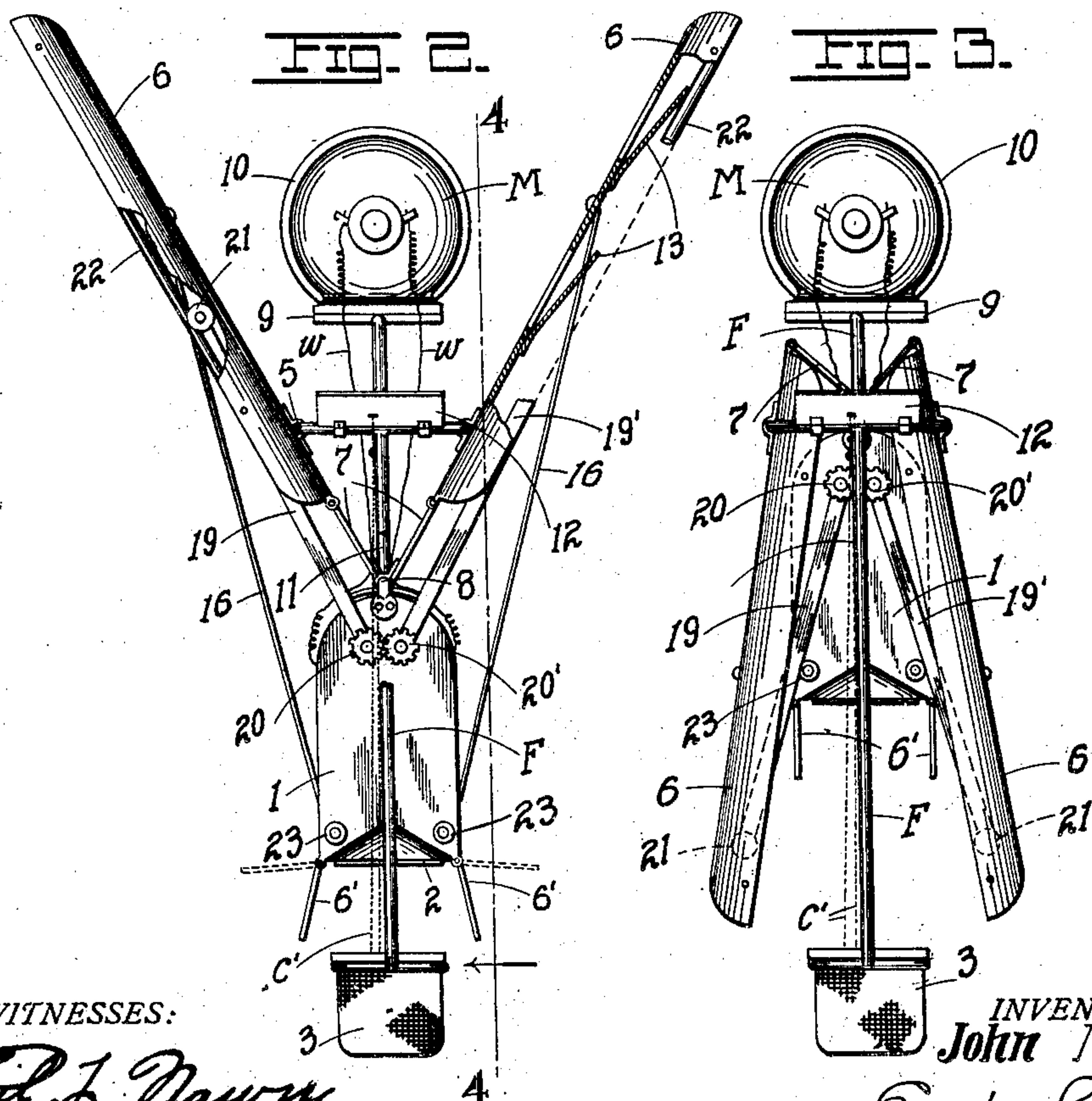
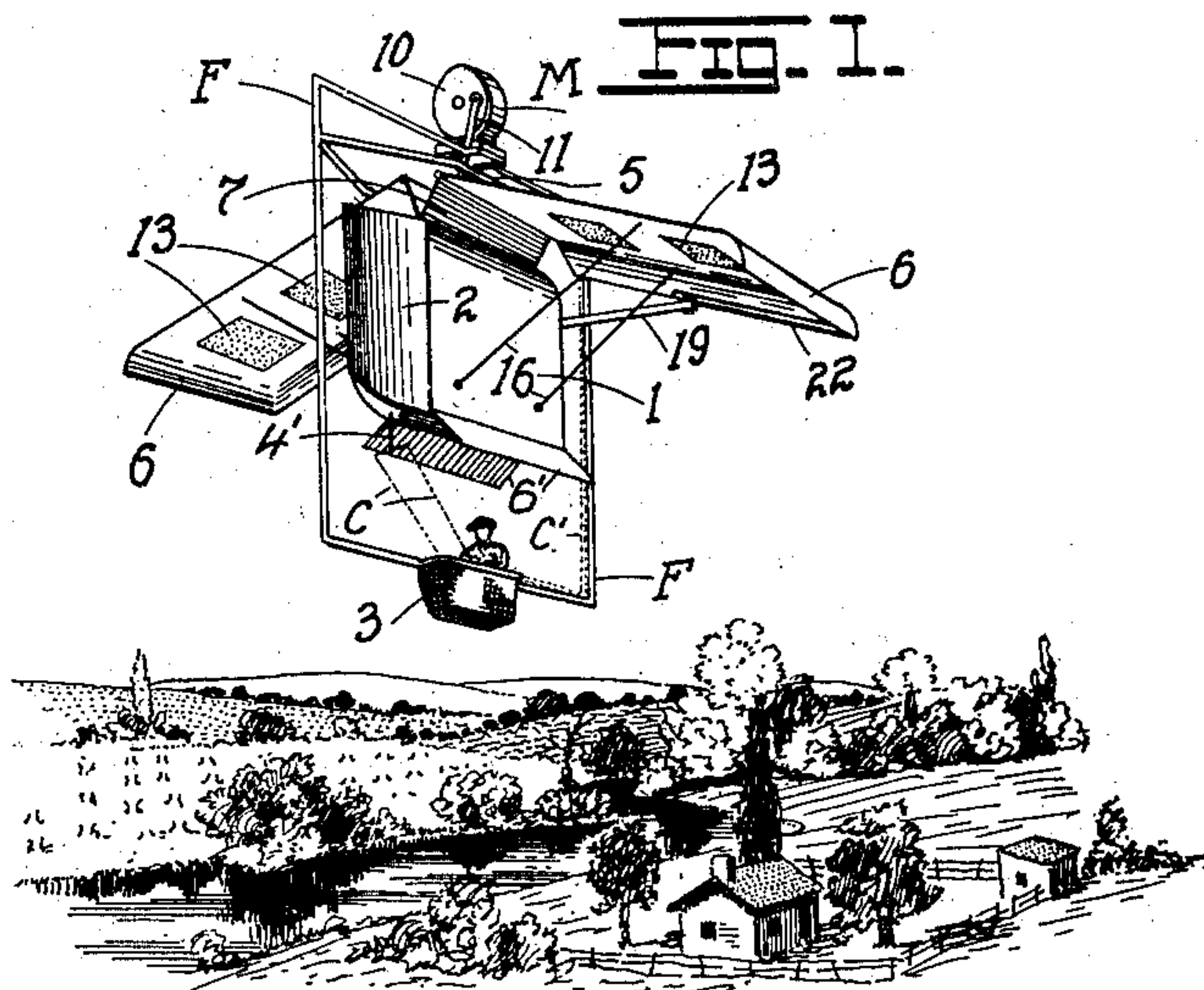
No. 840,078.

PATENTED JAN. 1, 1907.

J. MEDEN.
AIR SHIP.

APPLICATION FILED JAN. 10, 1906.

2 SHEETS—SHEET 1.



WITNESSES:

Phil J. Nawn
M. D. Whitcomb

INVENTOR.

John Meden

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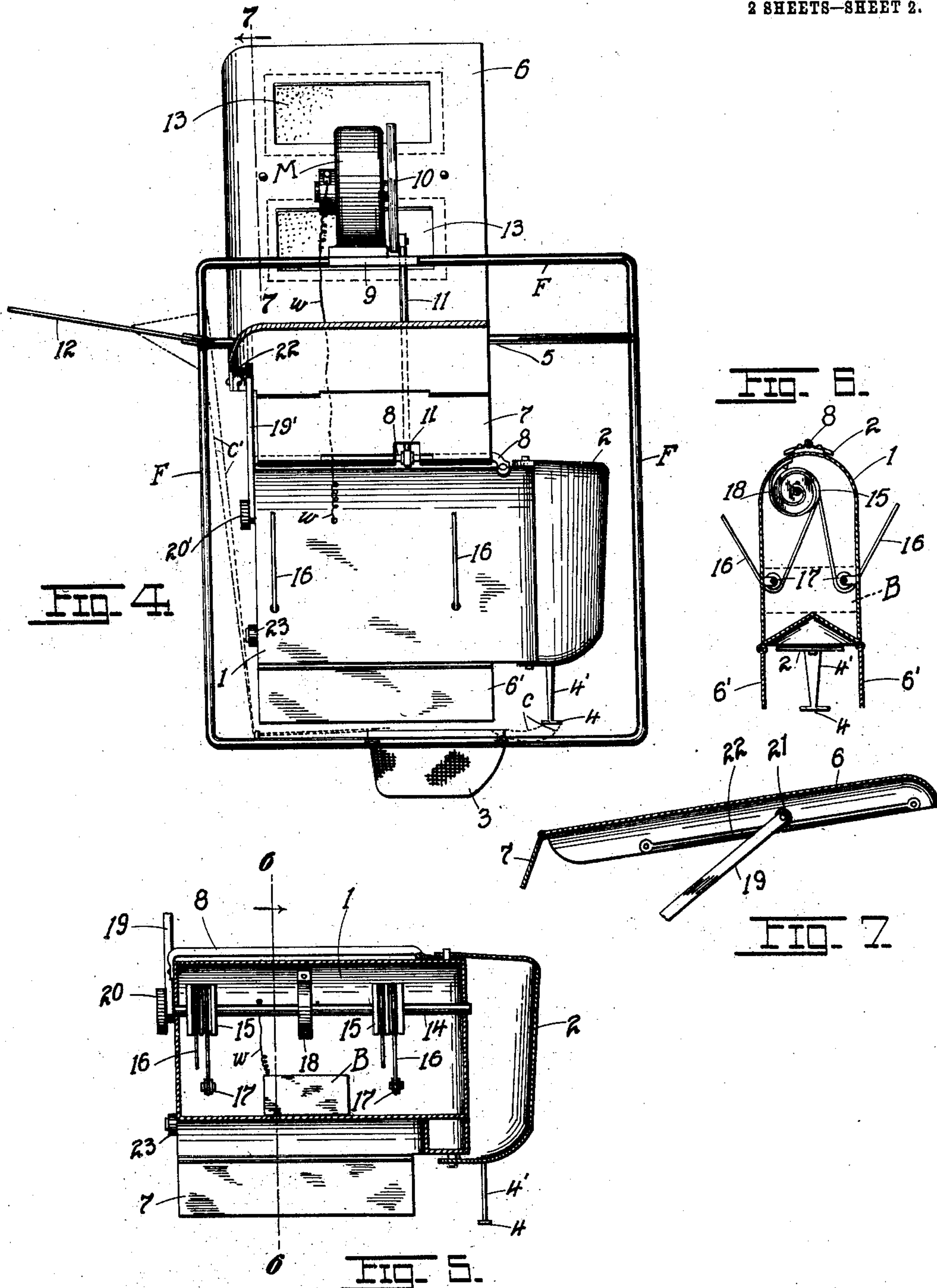
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JOHN MEDEN, OF ST. LOUIS, MISSOURI.

AIR-SHIP.

No. 840,078.

Specification of Letters Patent.

Patented Jan. 1, 1907.

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To all whom it may concern:

Be it known that I, JOHN MEDEN, a citizen of the United States, residing at St. Louis, State of Missouri, have invented certain new and useful Improvements in Air-Ships, of which the following is a full, clear, and exact description, reference being had to the accompanying drawings, forming a part hereof.

My invention has relation to improvements in air-ships; and it consists in the novel construction and arrangement of parts more fully set forth in the specification and pointed out in the claims.

In the drawings, Figure 1 is a perspective of the air-ship in flight. Fig. 2 is a rear elevation with wings fully open. Fig. 3 is a rear elevation with wings closed. Fig. 4 is a vertical section on line 4 4 of Fig. 2. Fig. 5 is a longitudinal vertical sectional detail through the body of the ship. Fig. 6 is a transverse vertical section on line 6 6 of Fig. 5; and Fig. 7 is a vertical sectional detail of the wing at the rear edge thereof, showing the rail for the travel of the retarding-arm, the section being on line 7 7 of Fig. 4.

The object of my invention is to construct an air-ship whose operating parts shall conform as nearly as possible to corresponding parts in flying birds, the method of propulsion of the bird being imitated in all essential particulars.

A further object is to construct an air-ship which need not necessarily be supplemented by the ordinary gas field or bag, one requiring in its construction a minimum number of parts, one readily controlled by the operator, one having its propelling-wings disposed to the best advantage relatively to the body portion of the ship, and one possessing further and other advantages better apparent from a detailed description of the invention, which is as follows:

Referring to the drawings, 1 represents the body portion or casing of the ship, being preferably oblong in shape and having a tapering prow 2, hinged to the body portion and oscillating in a horizontal plane for purposes of steering the ship. The prow may be deflected to the right or left by the operator, seated in the basket 3, by means of cords *c c*, secured to the terminal arms 4 of a depending post 4', carried by the prow. The body or ship proper is encompassed by an enveloping frame F, having an upper horizontal overhanging portion, the sides of said overhanging portion forming the hinge-rods 5 for

the wings 6 6, which freely oscillate about said rods. To the inner projecting portions of the wings—that is, the portions extending beyond the hinge-rods—are hinged the link-plates 7, which are in turn hinged along their inner edges to the upper horizontal rod 8, disposed along the ridge or roof of the body 1. In this way the body becomes suspended from or coupled directly to the wings, which are in turn supported by the frame F, and it is obvious from the connections described that as the body reciprocates up and down within the frame the wings will correspondingly oscillate about the hinge-axes 5. It thus becomes necessary to reciprocate the body to insure propulsion for the wings. This reciprocation is accomplished as follows: Mounted on a platform 9, forming an extension of the frame, is an electric motor M, whose shaft terminates in a crank-disk 10, from which depends a connecting-rod 11; said rod operating through an opening in the platform and its lower end being coupled to the member 8. The current is supplied by the wires *w w*, leading to a storage battery B, conveniently housed within the body portion or ship 1, the current being turned on or off by any suitable switch mechanism (not shown) within easy reach of the operator. The sides of the ship are provided with supplemental wings 6' 6', which open and shut with the fall and rise of the ship, thereby steadying the latter in its movements, and the rear of the frame is provided with a hinged aeroplane 12, from which lead suitable cords *c' c'* over pulleys and guide-loops to the basket 3, Fig. 4. With the upward oscillations of the wings 6 6 it is of course necessary that the air be permitted to pass freely through them, and for this purpose I provide the same with gate-valves 13, which are rigidly hinged or riveted at one edge, being free to yield or open for an upward movement of the wing, so as to permit the air to pass freely, and automatically closing against any passage of air for a downward oscillation of the wing, Fig. 2.

Since it is desirable that the wings shall be retarded in their upward oscillations and move rapidly in their downward stroke to develop the proper lifting power, some provision must be made to effect the retarding movement referred to. This is accomplished as follows: Disposed within the body 1 is a shaft or rod 14, having bearings in the terminal walls of the ship, the shaft carrying

grooved pulleys 15, over which are wound cables 16, the cables passing through the sides of the body and guided over rollers or pulleys 17, opposite the openings in the ship's sides, the ends of the cables being secured to the wings 6 6. The shaft 14 is secured at an intermediate point to one end of a flexed or coiled spring 18, whose opposite end is fixed to the wall of the body portion 1. Now as the wings oscillate upwardly they exert a pull on the ends of the cables 16, and since the middle portions of the cables are wound over the pulleys 15 the draft on the cable ends tends to rotate and, in fact, does rotate the shaft 14 about its axis against the tension exerted by the spring, the resisting power of the spring of course retarding the movement of the wings upwardly. The moment, however, that the wings begin their downward movement such downward movement is assisted by the tension of the spring, which tends to restore the rock-shaft 14 to its original position, the return of the shaft rotating the pulleys 15 in the opposite direction and drawing in the outer ends of the cables, which were pulled out or unwound with the previous upward oscillation of the wings. The rear end of the rock-shaft 14 terminates in an arm 19, having a pinion 20 disposed at its axis of oscillation. This pinion 20 meshes with a corresponding pinion 20' of a similar arm 19', pivoted adjacent to the arm 19 on the rear wall of the ship-body 1. With the rocking of the shaft 14 a coextensive oscillation is imparted to the arm 19 and a corresponding rotation to the pinion 20, (which in point of position is on the axis of the shaft 14,) and since the pinion 20 meshes with the pinion 20' a corresponding oscillation is imparted to the arm 19'. In other words, the arm 19 oscillates with the shaft 14 and the arm 19' oscillates in the opposite direction simultaneously—that is to say, the arms 19 19' oscillate in unison with the wings, being that the latter serve to rock the shaft 14, which in turn imparts motion to the arms. The free ends of the arms 19 19' carry rollers 21, which travel on rails 22, which are secured to the inner surfaces of the inwardly-turned rear edges or flanges of the wings, Figs. 2, 4, 7. The arms 19 19' thus serve to steady the wings, serving in the nature of guides therefor in their upward oscillations and serving as assistants thereto in their downward oscillations. (They serve as assistants to the wings in the downward oscillations, being that the arms are returned under the resilient action of the spring 18 to their closed position or that position corresponding to the relaxed condition of the spring.)

Summarized, therefore, the operation is as follows: As the motor-shaft revolves the connecting-rod 11, leading therefrom, reciprocates the body 1 up and down, and this in turn oscillates the wings. These in their upward

stroke are retarded by the cables 16 and arms 19 19' under the action of the spring 18, the air passing freely through the wings by the opening of the gate-valves 13. In the downward oscillation of the wings they move rapidly, so as to secure a good purchase on the air, the valves 13 closing. In their downward stroke the wings are of course assisted by the draft on the cables 16 and the tendency of the arms 19 19' to return to their closed position under the tension of the spring, the arms 19 19' in their sudden return to their closed position under the circumstances being properly cushioned by striking the rubber buffers 23 23.

Having described my invention, what I claim is—

1. In an air-ship, a suitable frame, a motor carried thereby, wings hinged to the frame on either side thereof and oscillating in a vertical plane, a suitable centrally-disposed body, links connecting the adjacent inner portions of the wings to said body, intermediate connections between said motor and body for imparting to the latter a vertically-reciprocating movement, whereby the wings will oscillate in unison therewith but in contrary direction thereto, substantially as set forth.

2. In an air-ship, a suitable frame, a motor carried thereby, wings hinged to the frame on either side thereof and oscillating in a vertical plane, a centrally-disposed body suspended from the inner edges of the wings within the frame, suitable driving-gear interposed between the motor and body for imparting to the latter a vertically-reciprocating movement whereby the wings are correspondingly oscillated therewith but in a direction contrary to such reciprocations, a pair of spring-controlled arms pivotally mounted in the rear of the body portion, pinions for meshing the pivotal ends of the arms, the spring tending to normally force the arms to a closing position, means forming a part of the wings for engaging the free ends of the arm, whereby the tension of the springs retards the wings in their upward movement, the arms assisting the downward stroke or oscillation of the wings, substantially as set forth.

3. In an air-ship, a frame, a pair of main driving-wings hinged thereto and disposed on either side thereof, a body or ship suspended centrally from the inner adjacent edges of the wings, and supplemental wings disposed along the bottom at the sides of the body portion, substantially as set forth.

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

JOHN MEDEN.

Witnesses:

EMIL STAREK,

MARY D. WHITCOMB