

L. E. CLAWSON.  
 AERIAL MACHINE.  
 APPLICATION FILED NOV. 5, 1908.

971,358.

Patented Sept. 27, 1910

2 SHEETS—SHEET 1.

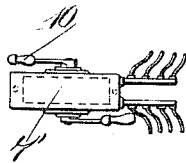
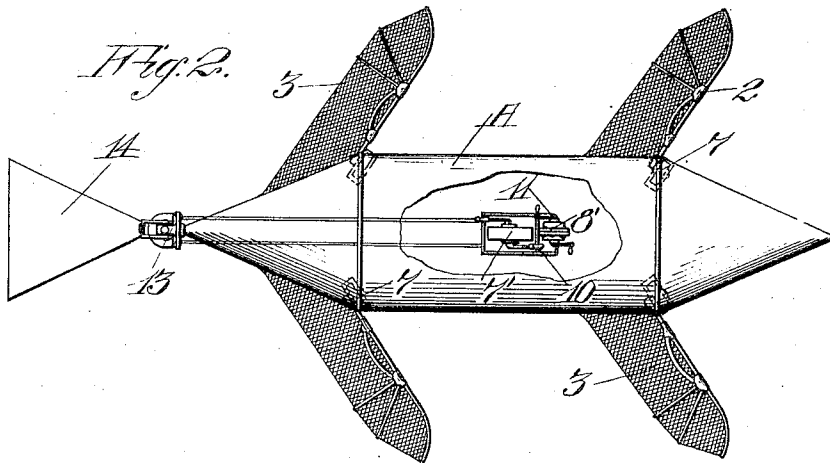
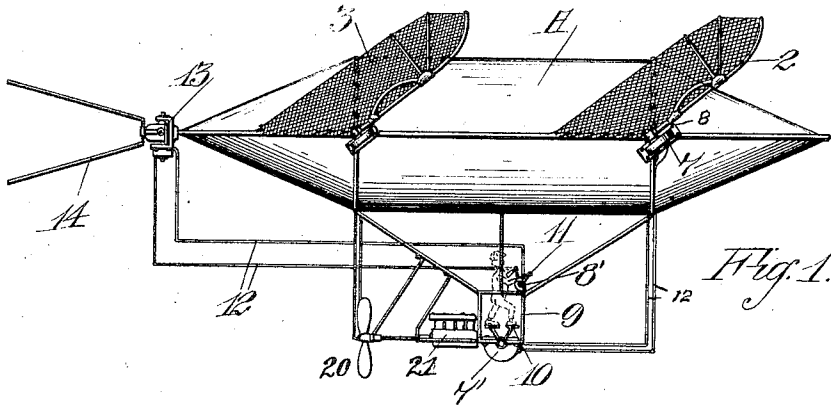


Fig. 4.

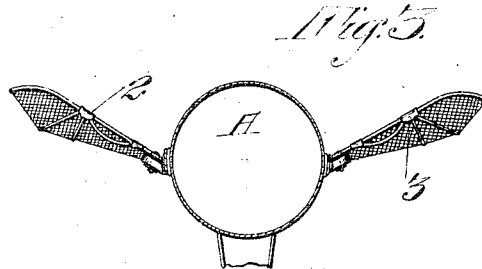


Fig. 5.

WITNESSES

*J. Washburn*  
*W. Purples*

INVENTOR

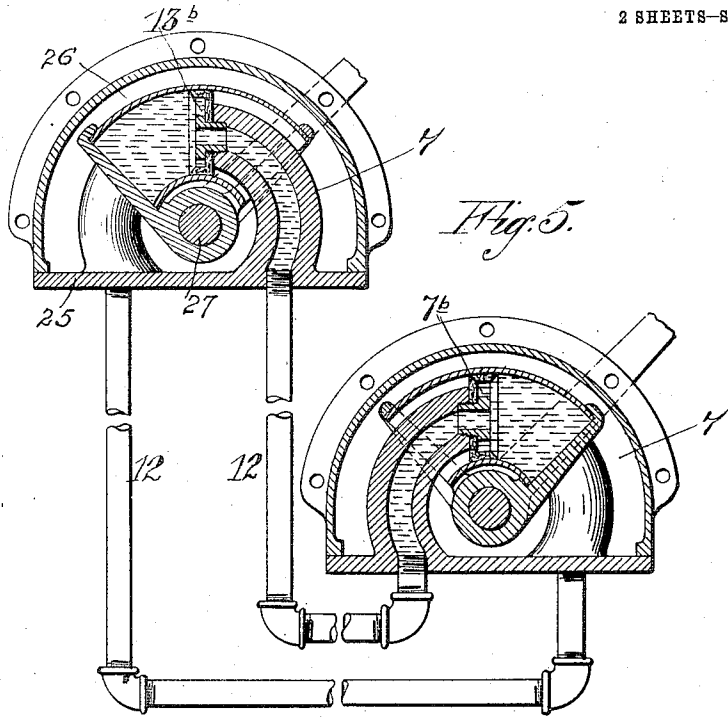
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 BY *Geo. H. Strong*  
 ATTORNEY

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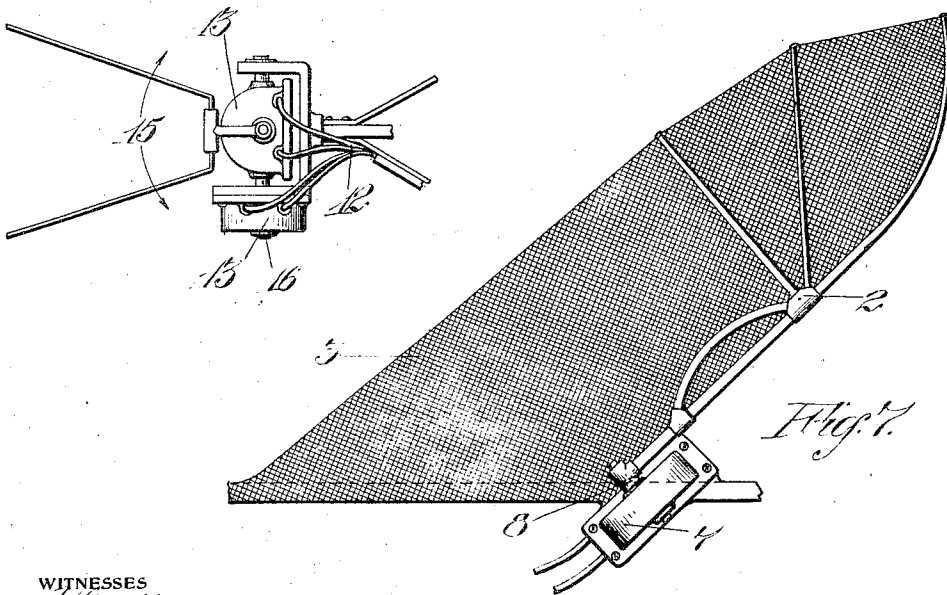
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2 SHEETS—SHEET 2.



*Fig. 6.*

*Fig. 5.*



*Fig. 7.*

WITNESSES  
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# UNITED STATES PATENT OFFICE.

LEONARD E. CLAWSON, OF SAN FRANCISCO, CALIFORNIA.

AERIAL MACHINE.

971,358.

Specification of Letters Patent. Patented Sept. 27, 1910.

Application filed November 5, 1908. Serial No. 461,193.

To all whom it may concern:

Be it known that I, LEONARD E. CLAWSON, citizen of the United States, residing in the city and county of San Francisco and State of California, have invented new and useful Improvements in Aerial Machines, of which the following is a specification.

My invention relates to an apparatus which is especially designed for propulsion through the air.

It consists in a combination of parts, and in details of construction which will be more fully explained by reference to the accompanying drawings, in which—

Figure 1 is a side elevation of my apparatus. Fig. 2 is a plan view. Fig. 3 is a fragmentary vertical sectional view. Fig. 4 is a plan of a fluid transmitting engine. Fig. 5 is a sectional elevation of a pair of such engines. Fig. 6 is a side elevation of the rudder and its operating transmitters. Fig. 7 is an enlarged view of an aeroplane wing, with a connected engine member.

It is the object of my invention to provide an apparatus in which the propelling, carrying mechanism, and aeroplanes or wings, are combined with a gas-holder of limited area designed to only partially support the weight of the apparatus; the driving mechanism and aeroplanes being depended upon for actually raising and propelling the device.

A is a gas-holder of suitable shape and size, though preferably an elongated cylinder having its ends converged so as to reduce the resistance offered to air to as little as possible; the holder being secured to and properly distended by a suitable lightweight frame, and is adapted to constantly retain a sufficient supply of gas to keep the apparatus comparatively buoyant.

Suitable aeroplane or wing-frames 2, covered with a desirable material to form wings 3, are mounted at their inner ends 8 so as to be movable in a downward and backward direction in simulation of the mode of action of the wings of a flying bird, and this motion of the wings 3 gives such necessary addition to the buoyancy of the gas-holder A as will enable the operator to handle the apparatus with little difficulty. The inner ends 8 of each wing-frame 2 are suitably connected to shafts 27, of transmitters 7 by which the vibrating motion is imparted to the wings 3, power to drive

each transmitter being derived from a suitable motor 7'.

I prefer to employ, as a power transmitting device, a hydraulic motor, such as 7', of well known strength and efficiency which is connected by fluid-containing tubes 12', with a sufficient number of motors or transmitters 7 as may be required to operate each wing-frame 2. The prime motor 7' is securely hung in a car or basket depending from the gas-holder and is provided with pedals 10 upon which the operator may throw his entire weight, first on one and then on the other, to force an inelastic fluid through the connecting tubes 12' to the several transmitters 7. The motor 7' and the transmitters 7 are of the same general structure, and are provided with fluid-tight pistons 7<sup>b</sup> and 13<sup>b</sup>, respectively, fitting in movable cylinders 26 secured upon shafts 27, of the motor and transmitters. These pistons are secured to projections formed on base plates 25, and have ducts opening into the cylinders 26, and connecting with the conveying tubes 12'. Thus when the operator actuates the power-generating pedals 10 of the prime motor 7' fluid will be driven out of cylinder 26, circulating through tubes 12' of the several transmitters 7 and effecting a uniform movement of the wings 3.

The oscillation of the wings may be slow or rapid as desired when the machine is in motion, and, if it is wished, may be held motionless when soaring, thus forming aeroplanes. It is to be noticed that the transmitters 7 and the wings 3 are mounted diagonally to the axis of the gas-holder A, and, in consequence, the flapping movements of the wings will also be diagonal, which combined downward and backward movements acts both to lift and propel the machine.

So disposed as to be convenient to the operator are duplex or similar motors 8' designed to be operated by hand cranks 11, and one of the motors 8' is effective through conducting tubes 12, and a transmitter 13 to elevate or depress a suitable rudder 14, while the adjacent motor 8' is adapted, through similar means, to actuate the rudder 14 in a horizontal plane.

I have thus provided a machine in which the lifting and steering mechanism is actuated by power generated by the operator himself, thus giving him absolute control of these elements, but in conjunction therewith

I may employ a suitable propeller 20 to which power may be furnished by a motor 21 of any preferred design or character.

5 I claim and desire to secure by Letters Patent is—

1. An aerial apparatus including a frame, oscillating liquid-containing transmitters and wings fixed to the shafts thereof, a motor adapted to actuate said wings, liquid circulating pipes connecting the motor and wing transmitters, guiding rudders, transmitters connected therewith, motors and pipes connecting with said rudder-controlling transmitters, foot-pedal levers upon the shaft of the motor actuating the wings, and hand levers upon the shafts of the rudder motors.

2. An aerial apparatus including a frame, diagonally mounted wings and liquid filled transmitters, with shafts to which the wings are fixed, rudders turnable upon the frame, transmitters connected to said rudders, a pedal-actuated motor with transmission pipes connecting it with the wing transmitters, manually actuated motors, pipes connecting said motors with the rudder controlling transmitters, the several motors be-

ing capable of operation by the weight and manual power of a single person. 30

3. The combination in an apparatus of the character described, of a supporting frame, pivoted wing aeroplanes, and a horizontally and vertically turnable rudder, a plurality of transmitters acting at right angles to each other and connected to the rudder, and fluid-containing motors, and connections through which power may be transmitted to control the rudder. 35

4. The combination in an apparatus of the character described, of a main frame, pivoted wing aeroplanes, a horizontally and vertically turnable rudder, transmitting mechanism connected with the wings and with the rudder, pedal and manually-actuated motors, connections between the transmitting mechanism and the motors, and a propeller, and an engine connected therewith. 40 45

In testimony whereof I have hereunto set my hand in presence of two subscribing witnesses. 50

LEONARD E. CLAWSON.

Witnesses:

GEO. H. STRONG,  
CHARLES EDELMAN.