S. H. GILSON.

AEROMOTOR.

APPLICATION FILED OCT. 27, 1908.

933,548.

Patented Sept. 7, 1909.

4 SHEETS—SHEET 1.

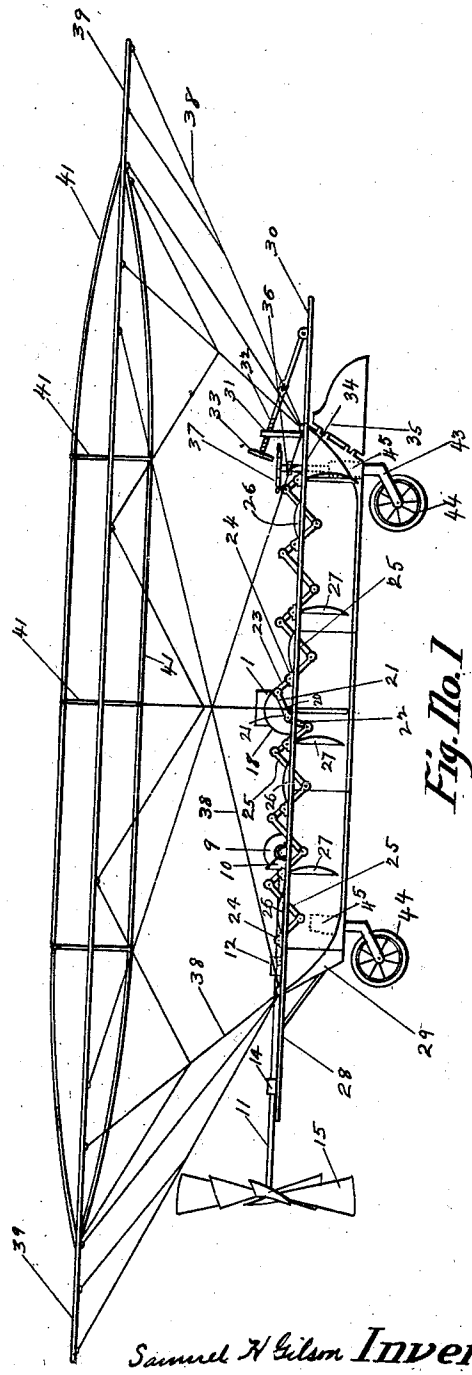

Fig. No. 1

Witnesses
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4 SHEETS—SHEET 2.

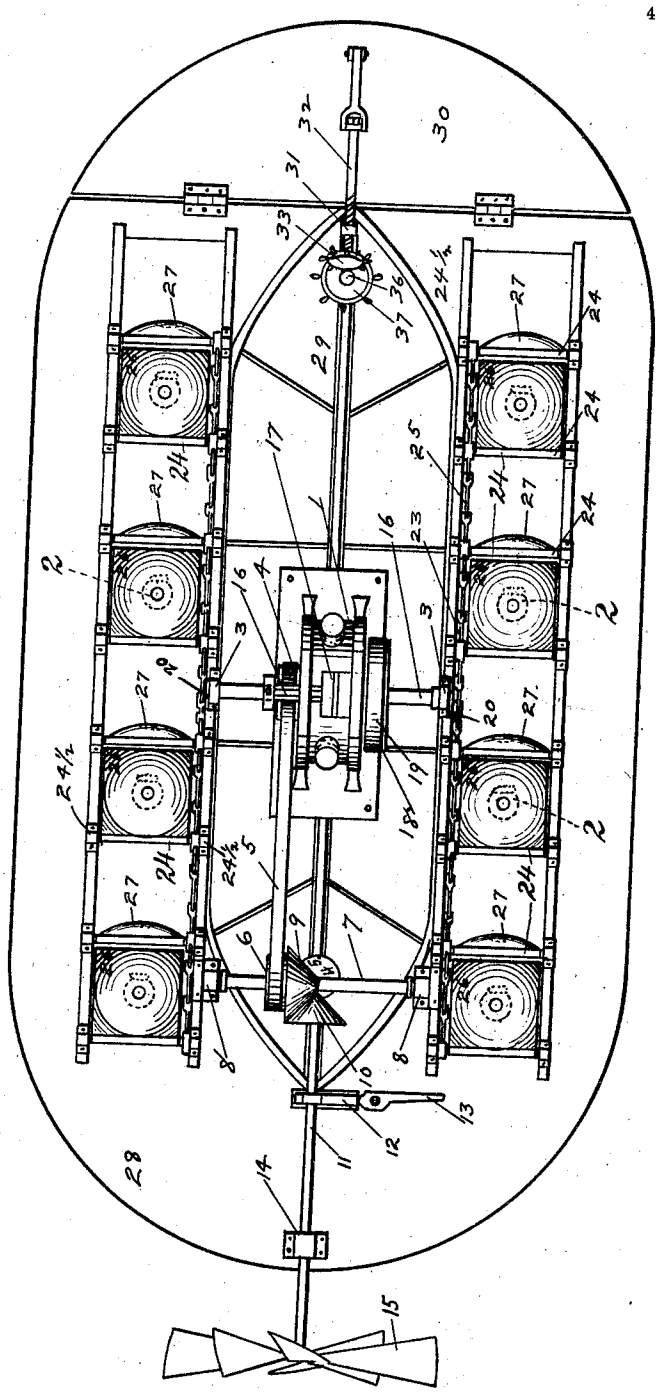

Fig. No. 2

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4 SHEETS—SHEET 3.

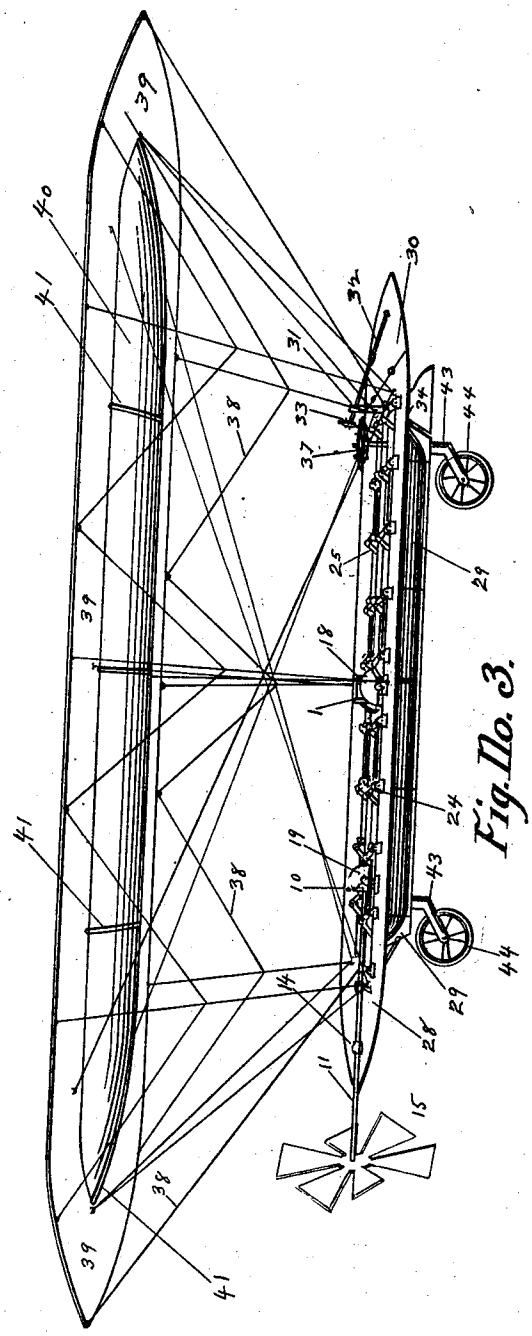

Fig. No. 3.

Witnesses
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4 SHEETS—SHEET 4.

Fig. 4.

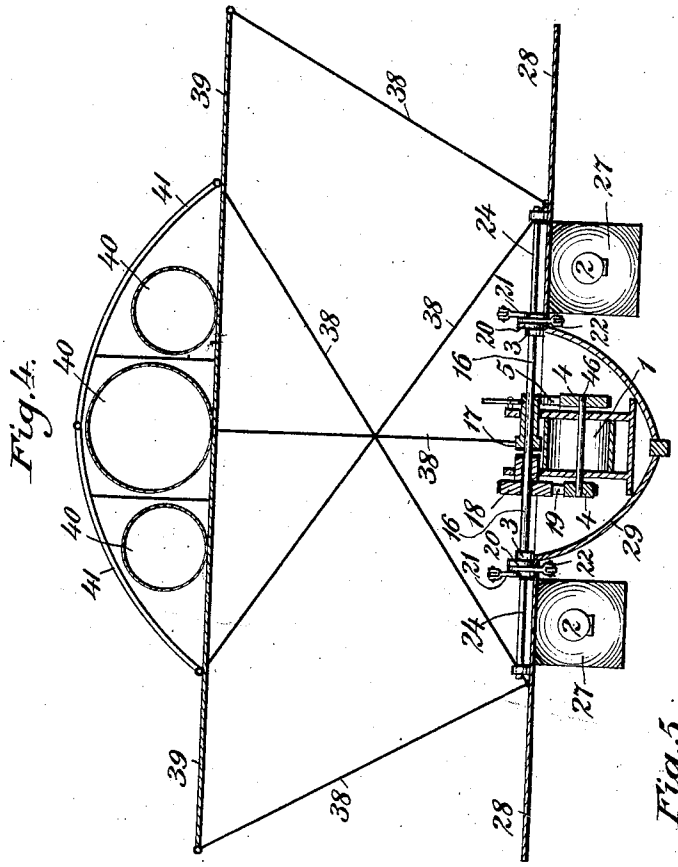


Fig. 5.

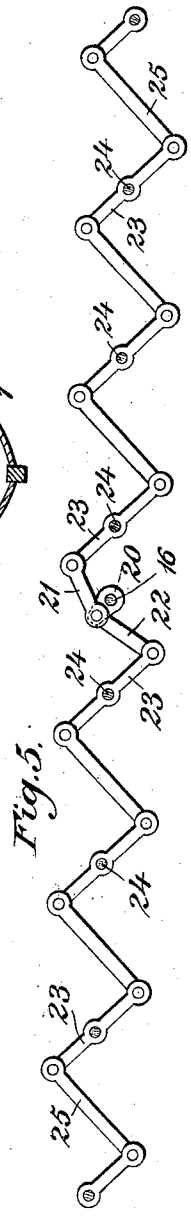


Fig. 7.

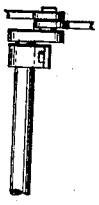
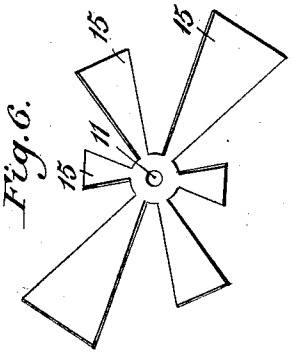


Fig. 6.



Witnesses:

Sam Raney

J. P. Mannes

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Inventor:

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Attorney

UNITED STATES PATENT OFFICE.

SAMUEL H. GILSON, OF SALT LAKE CITY, UTAH, ASSIGNOR OF ONE-HALF TO JAY S. MILNER, OF SALT LAKE CITY, UTAH.

AEROMOTOR.

933,548. Specification of Letters Patent. Patented Sept. 7, 1909.

Application filed October 27, 1908. Serial No. 459,790.

To all whom it may concern:

Be it known that I, SAMUEL H. GILSON, a citizen of the United States, residing at Salt Lake City, in the county of Salt Lake and State of Utah, have invented certain new and useful Improvements in Aeromotors, of which the following is a specification.

The purpose of my invention is to provide an aeromotor that carries the motive power to lift, and propel the motor, with sufficient power to convey other weight; and to provide gas inflated reservoirs or balloon arrangements that have buoyancy enough to keep them above the aeromotor and so secured thereto that the equilibrium of the aeromotor is always maintained and it can not turn over. This I do by the invention illustrated in the accompanying drawings in which similar numerals indicate like parts throughout the several views.

Figure 1 is a side elevation of the aeromotor frame and mechanical parts. Fig. 2 is a plan view of the deck. Fig. 3 is an isometric view of the machine. Fig. 4 is a vertical section lengthwise through the counter-shaft and vertically in alinement therewith through all the other parts. Fig. 5 is an enlarged vertical elevation of the arms of the rocking shafts and the links connecting them. Fig. 6 is a rear elevation of the propeller. Fig. 7 is a detail of the cranks and connections.

The engine 1 is one of the ordinary powerful type engines and is located below the lower plane or deck 28, in the hull 29, of the aeromotor; and it imparts motion to the main shaft 46, that is directly below counter-shaft 16, and that is mounted in bearings, and carries thereon pulleys 4, similar in construction, one located near the one side and the other near the other side of the hull 29. One of the pulleys 4 carries belt 5, that operates pulley 6, on the counter-shaft 7 that is mounted in suitable bearings 8. The counter-shaft 7 carries a conically shaped friction gear 9, that is fitted to engage by friction with a cone shaped gear 10, which is secured on the propeller shaft 11, said shaft is held in place by bearings 12 and 14 and it is so constructed that with the lever 13, it can be thrown into or out of commission. On the outer end of the propeller shaft 11 is the propeller 15. The propeller 15 has a plurality of pairs of blades each succeeding pair being one half the length of the preceding pair and the angle of pitch of each succeeding pair of blades increases as their length decreases so that all of the air within the area of a circle described by the longest blades is utilized. Mounted on the lower plane or deck 28 in suitable bearings 3, is the counter-shaft 16, that carries thereon a loose pulley 18, which is provided with a friction gear 17. Belt 19 incloses and engages loose pulley 18 and pulley 4 on the main shaft beneath the loose pulley 18. The counter-shaft 16 is also provided on the ends thereof with cranks 20. Fitted on said cranks 20 are one end of links 21 and 22. The upper end of the links 21 are pivoted to the upper end of the arm 23 of the rocking shafts 24 immediately in front of the counter-shaft 16. The lower ends of the links 22 are pivoted to the lower arms 23 of the rocking shafts 24 next in the rear of the counter-shaft 16. Links 25 are pivoted, one end to the lower arm of one rocking shaft and the other end to the upper arm of the next succeeding rocking shaft as you would move forward from the counter-shaft 16. And as you move to the rear from said shaft 16 the links 25 are pivoted one end to the upper arm 23 of one rocking shaft 24 and the other end to the lower arm 23 of the next succeeding rocking shaft.

Fitted on or integral with the rocking shafts 24 are the wings 26 and 27, and the wings 26 and 27 are constructed alike, a concavo-convex form, the convex side uppermost and are provided near the center with a valve 2, that is shown dotted in, and that is secured thereto on the concave side and so arranged that when the wings are raised the valve opens and when they are lowered the valve closes, the purpose being to allow air to pass through them freely in the upward stroke and yet not allow any air to pass through them in the downward stroke, and said wings are so adjusted on said rocking shafts 24, that wings 26 are in a horizontal position when wings 27 are in a vertical position, and the mechanism is so adjusted that wings 26 are descending when wings 27 are ascending and vice versa. The front part of the deck 30 is hinged to the deck 28 so that it may be raised or lowered from the horizontal at its front edge. This change of position is controlled by a threaded and swiveled bar 32, one end of which is fastened to the hinged deck 30, the threads of which bar engage the

threads of a vertical standard 31. And said bar 32 has also provided on the other end thereof a hand-wheel 33. The hull 29 is constructed of a light, yet strong framework and covered with material that is light, yet impervious to water, the intention being to so construct the hull as to offer but slight resistance to the air when the aeromotor is in motion, at the same time should the aeromotor descend into the water for any purpose, no injury would occur and the aeromotor could rise from the water as well as from the land, the hull being of sufficient depth that the lower plane or deck 28 would not touch the water, although a part of the hull 29 might be submerged therein. A rudder 34 is hinged to the front end of the hull 29 and by means of the ropes 35 passing around the rudder standard 36 and as operated by rudder wheel 37, the rudder may be turned to the right or to the left. On the lower end of the rudder standard 36 is fitted a wheel fork 43. A similar wheel fork is provided at the rear of the hull, but is stationary and within those forks are ordinary automobile wheels 44. The upper ends of the wheel forks 43 are fitted within the air chests 45 that are filled with compressed air so that the jar of the aeromotor striking the ground would be cushioned on the air in chests 45.

Secured to the deck 28 by flexible guide ropes or stays 38 at a plane parallel to the deck is the upper plane 39. Secured to said plane 39 is the cigar shaped gas reservoirs 40 that are held in place by spread tubes 4 which are part of the frame of the plane. The number of these reservoirs may be increased to three or more the drawings herein showing but one.

An equal number of wings 26 and 27 are provided on each side of the aeromotor.

The description of the parts and the mechanism moving them applies as well to one side as to the other. It is not the intention of the inventor to confine himself to any particular number of wings the intention being to provide a part of the lifting power and also some of the propelling power for the lower plane by these rapidly moving wings 26 and 27.

The propelling power of propeller 15 as applied to the planes 39 and 28, and especially to 28 when its front part 30 is raised, is sufficient to overcome gravity when aided by the upward power of the wings 26 and 27.

It is not the intention to use the gas reservoirs 40 for any lifting purpose, except to carry the plane 39, the object being solely to maintain the upper plane 39 at all times above the lower plane or deck 28 by the inflated reservoirs 40, and the two are so stayed and held together by the flexible stays 38, that the two planes are parallel at all times and the lower deck and moving mechanism can not be turned over, but its equilibrium will be maintained while in the air and on the ground by the buoyancy of gas reservoirs 40.

The frames for the planes 28 and 39 are built of strong, yet light tubular shaped metal and are covered with some light strong material as near impervious to air as can be secured.

The reservoirs 40 having been inflated by forcing hydrogen or other gas therein sufficient to raise the upper plane 39 and hold the aeroplanes in equilibrium on the wheels 44, and power being imparted to the counter-shaft 16 by the engine 1, the propeller 15 having been thrown into commission by means of the lever 13, the wings 26 and 27 are given rapid motion and this causes the aeromotor to move forward on the wheels. The front part 30 of the deck being then tilted up by means of the hand-wheel 33, being turned for that direction—the aeromotor then leaves the ground. The downward motion is given the aeromotor by lowering the front part 30 of the deck below the plane of the deck. Its direction is at all times under the control of the aeronaut, the lateral by means of the rudder 34 and the vertical by the hinged deck 30.

Having thus described my invention, I desire to secure by Letters Patent and claim.

1. In an aeromotor the combination of, two covered planes that are spaced apart and guyed to each other by flexible stays, cigar shaped inflated reservoirs which are incased within the upper plane, and a power driven propeller having a plurality of pairs of blades each succeeding pair one half the length of the preceding pair and whose angle of pitch increases as the length decreases.

2. In an aeromotor the combination of, two covered planes that are spaced apart and guyed to each other by flexible stays, cigar shaped inflated reservoirs which are incased within the upper plane, with power driven rocking shafts which are linked together, and concavo-convex wings secured thereon having a valve near the center.

3. In an aeromotor the combination of, two covered planes that are spaced apart and guyed to each other by flexible stays, cigar shaped inflated reservoirs which are incased within the upper plane, and a power driven shaft that is mounted in bearings and located below the lower plane, a braced and covered hull that carries said bearings, pulleys on said shaft, belts for said pulleys one of which incloses a pulley on a counter-shaft that is mounted in bearings near one end of the said lower plane, a conically shaped friction gear on said counter-shaft, a conically shaped friction gear fitted on one end of a propeller shaft, bearings for said shaft which permit limited lateral motion, a propeller on the other end of said pro-

peller shaft, with a counter-shaft which is secured to the lower plane near its center, a loose pulley on said last mentioned counter-shaft with means for tightening it on said shaft when desired, cranks on each end of said counter-shaft, links pivoted on said cranks, one of which is pivoted to the upper and the other to the lower end of the arms of rocking shafts, rocking shafts mounted in bearings on said lower plane, and links pivotally connected to the upper arm of one and the lower arm of the next rocking shaft, concavo-convex wings secured on said rocking shafts and valves near the center of said wings, as and for the purposes described.

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

SAMUEL H. GILSON.

Witnesses:
L. R. CULVER,
SAM RANEY.