2 Sheets—Sheet 1.

J. F. CAMERON

Air-Ship.

No. 210,238. **Patented Nov. 26, 1878.**

Fig: 1.

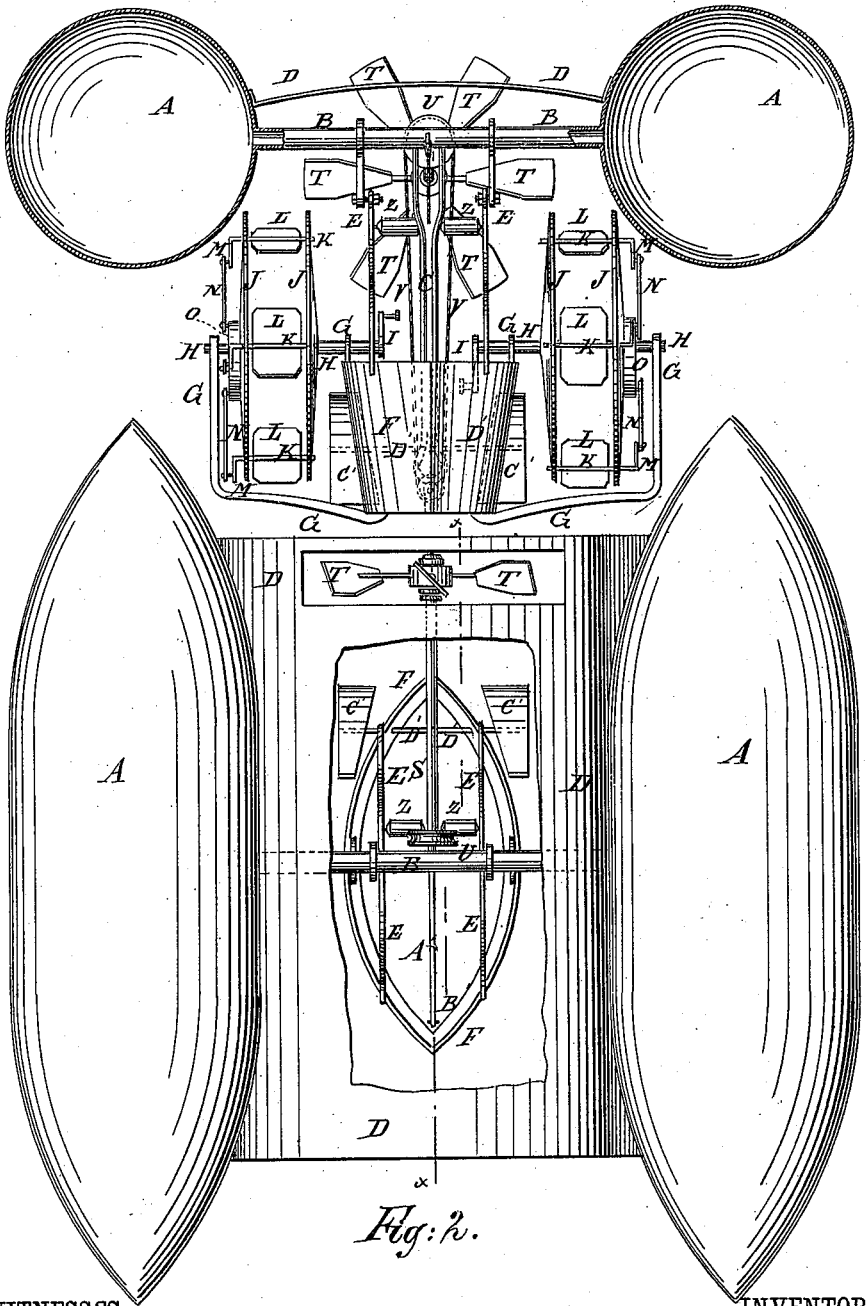

Fig: 2.

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Fig: 3.

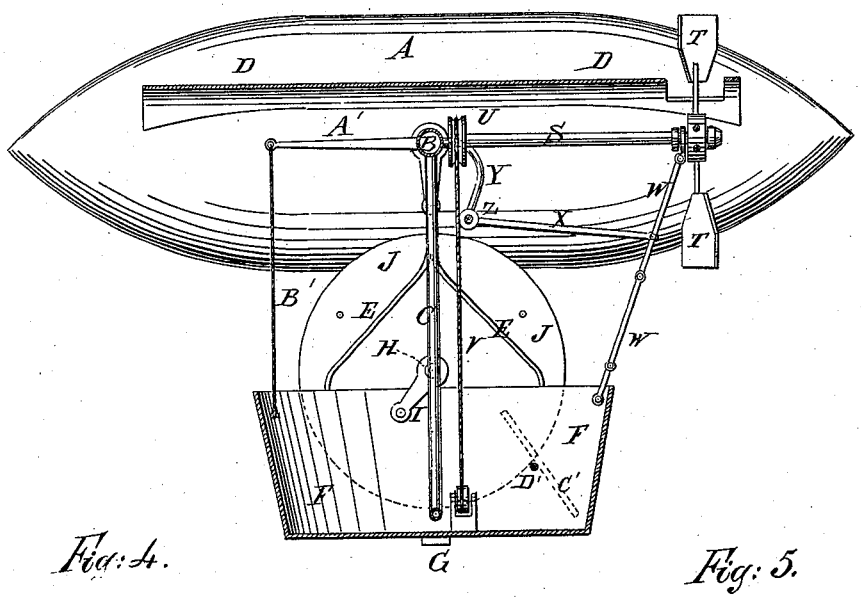


Fig: 4.

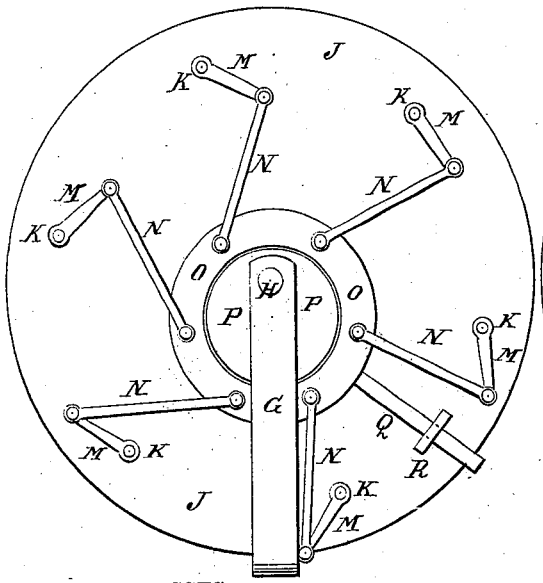
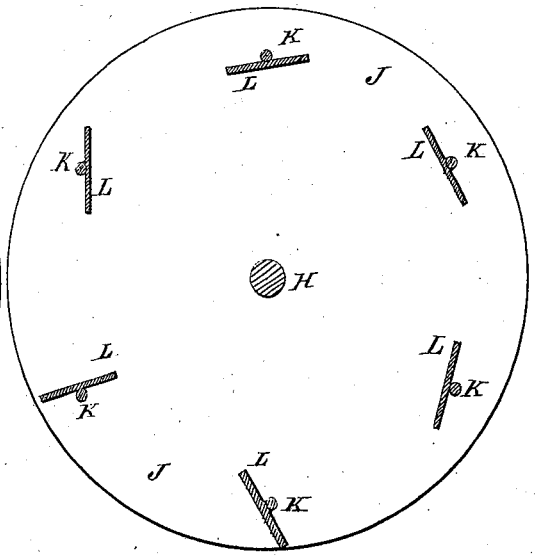


Fig: 5.



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JOHN F. CAMERON, OF NEW YORK, ASSIGNOR TO ELIZABETH W. M. CAMERON, OF BROOKLYN, NEW YORK.

IMPROVEMENT IN AIR-SHIPS.

Specification forming part of Letters Patent No. **210,238**, dated November 23, 1878; application filed August 28, 1878.

To all whom it may concern:

Be it known that I, JOHN F. CAMERON, of the city, county, and State of New York, have invented a new and useful Improvement in Air-Ships, of which the following is a specification:

Figure 1, Sheet 1, is a front view, partly in section, of my improved air-ship. Fig. 2, Sheet 1, is a top view of the same, part being broken away to show the construction. Fig. 3, Sheet 2, is a longitudinal section of the same, taken through the broken line *x x*, Fig. 2. Fig. 4, Sheet 2, is a side view of one of the side propellers. Fig. 5, Sheet 2, is a detail section of one of the side propellers.

Similar letters of reference indicate corresponding parts.

The object of this invention is to furnish an improved air ship or vessel, which shall be so constructed that it may be propelled and guided through the air horizontally or at any desired angle up or down while carrying passengers and freight.

The invention consists in the combination of the hollow cylinders, the connecting-tube, the arched connecting-diaphragm, and the suspended boat with each other in the combination of the U-tube with the tube that connects the cylinders and with the suspended boat; in the combination of the shaft, the propeller-wings, the pulley and band, the jointed supporting-bar, the connecting-bar, and the bracket and rollers with each other and with the cylinders, the connecting-tube, the arched diaphragm, and the suspended boat; and in the combination of the rigid lever and the rope with the connecting-tube, the cylinders, the arched diaphragm, and the suspended boat, as hereinafter fully described.

A are two large hollow cylinders, tapered at their ends, and connected at the centers of their adjacent sides by a tube, B, opening into them. The cylinders A are designed to be filled with hydrogen gas, and from their connecting-tube B a U-tube, C, leads down to the engine-furnace, so that the temperature of the gas may be raised and lowered as may be required to correspond with the temperature of the surrounding air. The cylinders A are connected along their adjacent sides for almost their entire length by an arched diaphragm, D, of canvas or other suitable material. From the connecting-tube B is hung, by a jointed or hinged connection, E, a boat, F, so that the said boat may remain horizontal, however much the cylinders A may be inclined. The boat F must be made large enough to carry a hydrocarbon-engine, to furnish the propelling power, oil for fuel, the passengers, and the freight. The boat F and its load also serve as a keel or ballast to the ship, to cause it to be more readily guided and controlled.

In bearings in supports G attached to the boat F revolve the shafts H, to which the paddle-wheels or side propellers are attached, and to the inner ends of which are attached the cranks I to receive the propelling power from the engine. J are the disks or side frames of the wheels, which are attached to the shafts H, and to which, near their rims, are pivoted the paddle-shafts K. To the shafts K, between the disks J, are rigidly attached the paddles L, and to their ends, upon the outer sides of the wheels, are rigidly attached the crank-arms M. To the outer ends of the crank-arms M are pivoted the outer ends of the connecting-rods N, the inner ends of which are pivoted to the collar O, placed upon the eccentrics P. The eccentrics P are attached to the supports G, in which the shafts K revolve, and the collars O are kept from turning upon the disks J while being carried around the eccentrics P by arms Q, attached to them, and which pass through keepers R, attached to the said disks, or by other suitable means. The eccentrics P are so arranged that the paddles L may act upon the air while moving downward and rearward to propel the ship upward and forward, but may pass through the air edgewise while moving upward and forward, so that they will not retard the upward and onward movement of the said ship.

S is a shaft placed beneath and parallel with the rear part of the diaphragm D, and to the rear end of which are attached propeller-wings T. The forward end of the shaft S revolves in bearings attached to the connecting-tube B, and to its forward part is attached a pulley, U, around which passes a band, V. The band V also passes around a pulley connected with

and driven by the engine. The rear part of the shaft S revolves in bearings in the upper end of the supporting-bar W, the lower end of which is attached to the stern of the boat F. The supporting-bar W has three hinge-joints formed in it, and to it, a little above the middle joint, is pivoted the rear end of the connecting-rod X, the forward end of which is pivoted to a bracket, Y, attached to the tube B. To the lower end of the bracket Y are pivoted two rollers, Z, which, when the cylinders A are inclined, press against the band V and keep it taut. With this construction, when the cylinders A are inclined, the bracket Y and the connecting-rod X bend the supporting-bar W correspondingly at its joints, so that the shaft S will always be supported parallel with the cylinders.

It will be observed that when the cylinders A are inclined, the propeller S T will have a lifting as well as a propelling effect.

To the tube B is rigidly attached the inner end of a long lever, A′, to the outer end of which is attached a rope, B′. The outer end of the rope B′ is secured at the bow of the boat F, so that the cylinders A can be readily inclined at any desired angle. When the ship is standing upon the ground, and it is desired to rise into the air, the cylinders A are inclined, the engine is started, and the said ship rises into the air. When the desired height has been attained, the cylinders A are brought into a horizontal position, and the ship is sustained by the buoyancy of the gas in the said cylinders, by the volume of air beneath the diaphragm D, and by the lifting effect of the side propellers. To descend, the cylinders A are inclined, and the motion of the propellers is reversed.

The air-ship is guided laterally, or turned to the right or left, by rudders C′ at the opposite sides of the stern of the boat F. The rudders C′ are attached to shafts D′, which pass in through the sides of the boat F, and are operated by levers or other suitable means.

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

1. The combination of the hollow cylinders A, the connecting-tube B, the arched connecting-diaphragm D, and the suspended boat E F with each other, substantially as herein shown and described.

2. The combination of the U-tube C with the tube B, that connects the cylinders A, and with the suspended boat E F, substantially as herein shown and described.

3. The combination of the shaft S, the propeller-wings T, the pulley and band U V, the jointed supporting-bar W, the connecting-bar X, and the bracket and rollers Y Z with each other and with the cylinders A, the connecting-tube B, the arched diaphragm D, and the suspended boat E F, substantially as herein shown and described.

4. The combination of the rigid lever A′ and the rope B′ with the connecting-tube B, the cylinders A, the arched diaphragm D, and the suspended boat E F, substantially as herein shown and described.

JOHN F. CAMERON.

Witnesses:

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