J. S. JORGENSEN.

AIRSHIP.

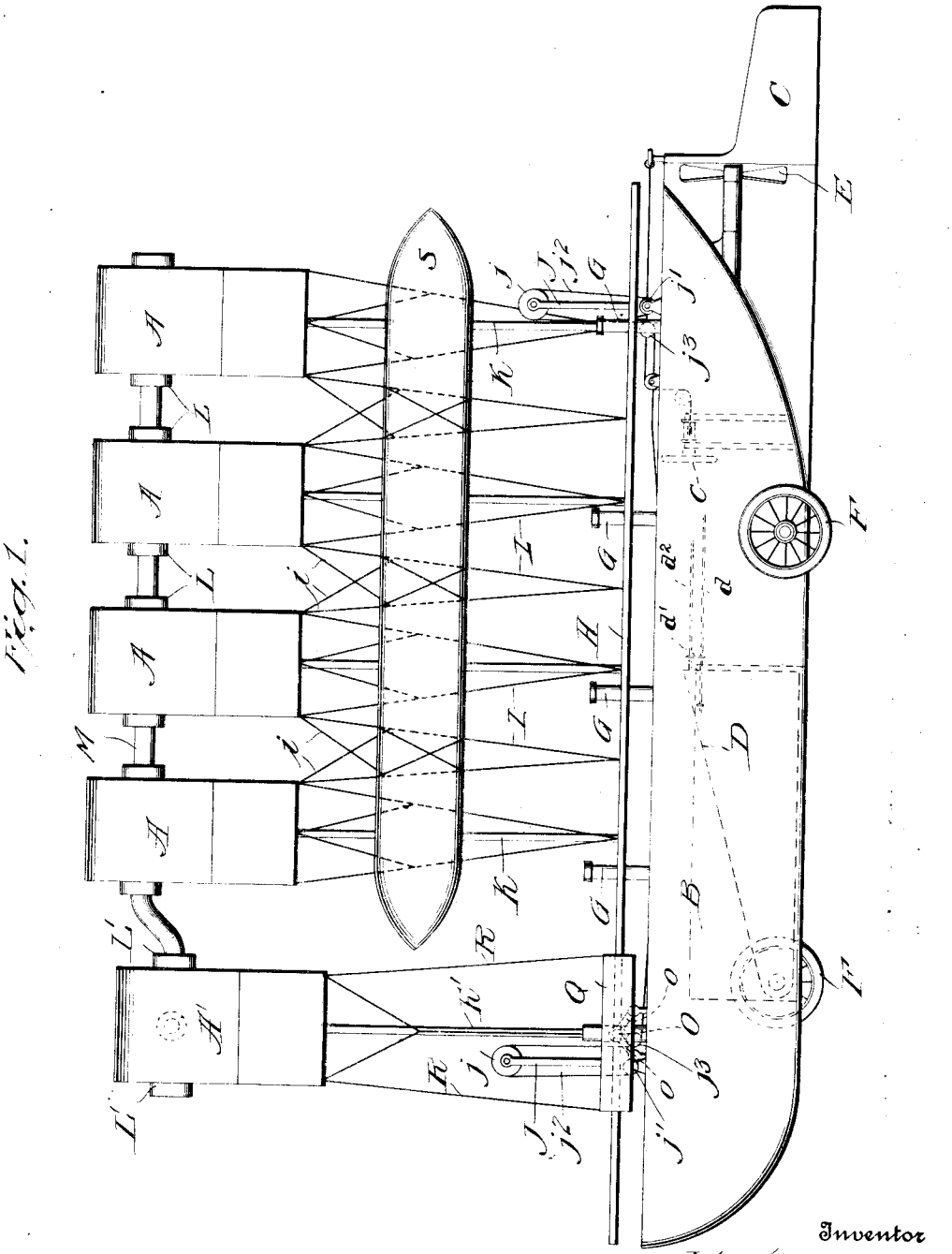
APPLICATION FILED NOV. 23, 1912.

1,068,501.

Patented July 29, 1913.

3 SHEETS—SHEET 1.

Fig. 1.



Inventor

John S. Jorgensen,

Witnesses

T. L. Mockabee

E. Williamson

By Chas. E. Riordan

Attorney

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3 SHEETS—SHEET 2.

Fig. 2.

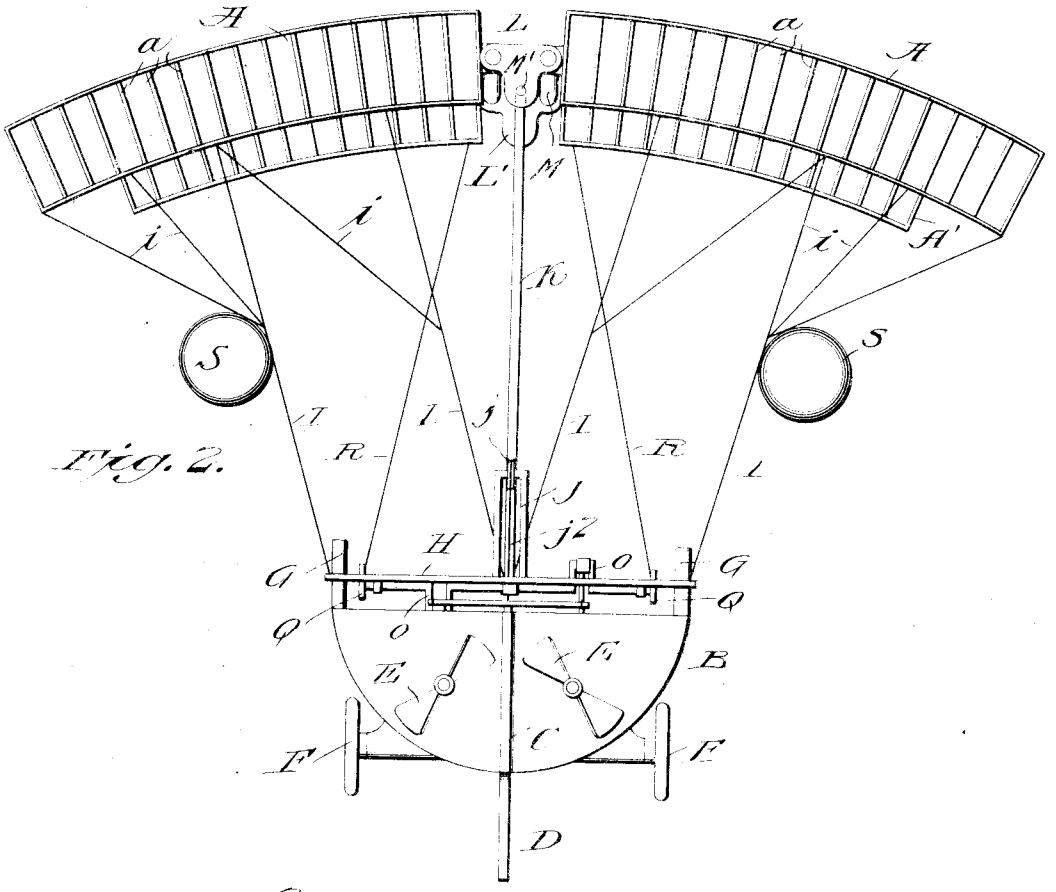
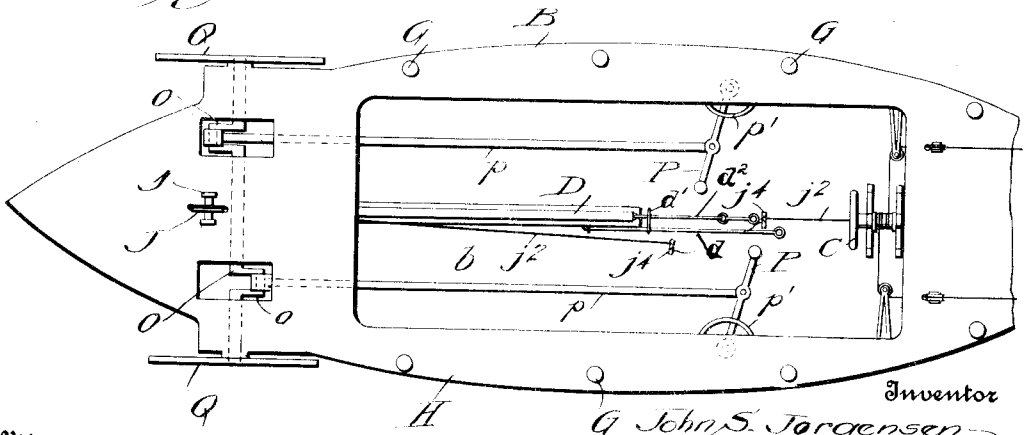


Fig. 3.



Witnesses

T. L. Macdaniel

E. Williams

Inventor

G. John S. Jorgensen

By Chas. E. Riordan

Attorney

J. S. JORGENSEN.

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3 SHEETS—SHEET 3

Fig. 5.

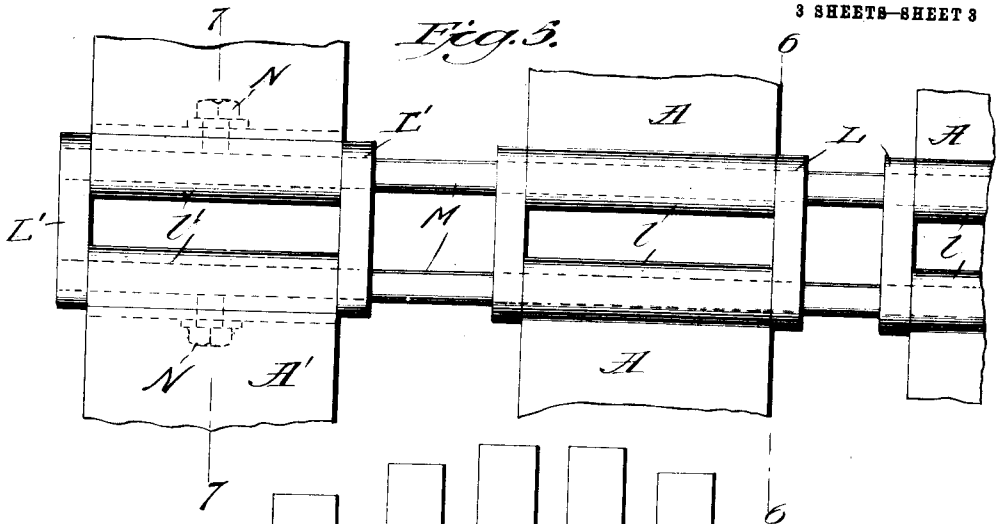


Fig. 4.

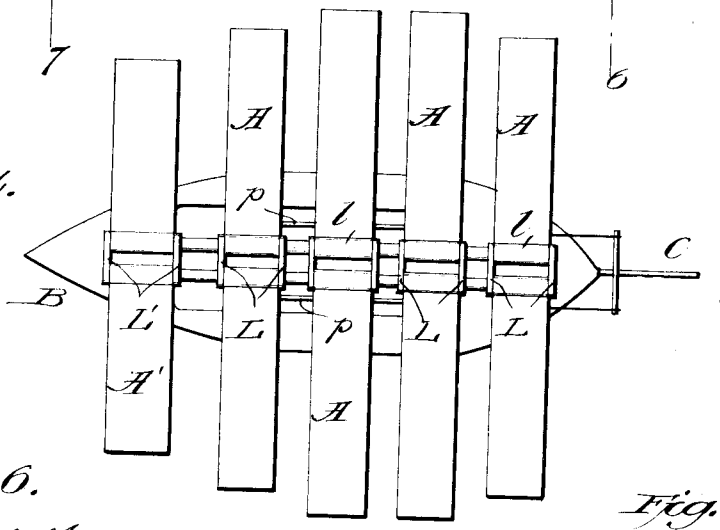
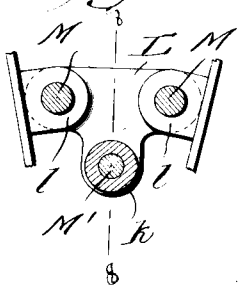


Fig. 6.



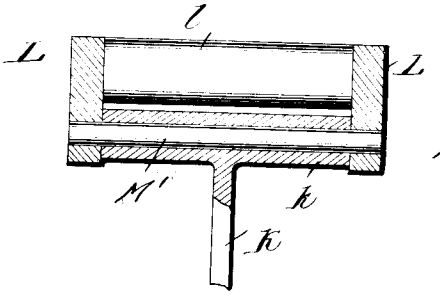


Fig. 7.

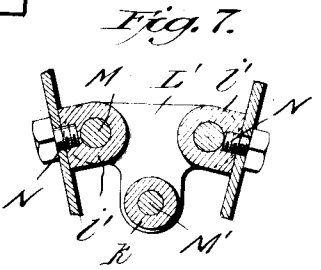


Fig. 8.

Witnesses

E. K. Mackaye

E. Williams

Inventor

John S. Jorgensen

By Chas. E. Riordan

Attorney

UNITED STATES PATENT OFFICE.

JOHN S. JORGENSEN, OF RENO, NEVADA, ASSIGNOR OF ONE-HALF TO MORRIS MILLER, OF RENO, NEVADA.

AIRSHIP.

1,068,501. Specification of Letters Patent. Patented July 29, 1913.

Application filed November 23, 1912. Serial No. 733,134.

To all whom it may concern:

Be it known that I, JOHN S. JORGENSEN, a citizen of the United States, residing at Reno, in the county of Washoe and State of Nevada, have invented certain new and useful Improvements in Airships, of which the following is a full, clear, and exact specification.

This invention relates to air ships or flying machines of the dirigible or heavier than air type.

The objects of the invention are to increase the stability of the machine in the air, to provide improved means for guiding the same in the air or water, to generally simplify its construction, and adapt it to be propelled either in the air or water.

The invention will first be hereinafter described in connection with the accompanying drawings, which constitute a part of this specification and then more particularly pointed out in the claims at the end of the description.

In the accompanying drawings, in which the same reference characters are used to indicate similar parts throughout; Figure 1 is a side elevation of an air ship constructed in accordance with this invention, the center board being indicated in dotted lines in its raised position; Fig. 2 is a rear end elevation of the airship; Fig. 3 is a top plan view of the boat or car, the rear end thereof being broken away; Fig. 4 is a top plan view of the airship as a whole; Fig. 5 is an enlarged detailed view of the front portion of the connecting bars for the wings or planes, showing portions of said wings attached to said bars; Fig. 6 is a sectional view taken on the line 6—6 of Fig. 5; Fig. 7 is a sectional view on the line 7—7 of Fig. 5, and Fig. 8 is a sectional view on the line 8—8 of Fig. 6.

The stability of the airship is maintained largely by supporting the boat from the wings so that the former acts as a pendulum with respect to the latter, by using a certain arrangement of air tight compartments, and by employing a center board such as is used on sail boats, these devices being under easy control of the operator who, by suitably adjusting them according to the velocity of the wind, etc., trims the airship so that it will automatically balance itself under the action of the different air currents. The steering of the machine is effected by the use of tilting planes for guiding upward and downward and a rudder for guiding laterally. The mechanism employed for controlling the tilting planes divides the necessary force to be exerted between the two arms of the operator, thus rendering this steering operation more easy to accomplish and more reliable.

Referring more particularly to the drawings, A designates a series of box-shaped planes arcuate in shape and having longitudinal partitions *a*, which are also arranged to coincide with the radii of the arcs of their respective planes. These planes or wings are arranged in pairs side by side but spaced apart laterally and end to end. The number and dimensions of the planes, of course, vary according to the size of the car B. Said car is preferably constructed in the shape of a boat which will be seaworthy in case the airship should capsize and fall into the water. For this purpose and also to add buoyancy to the airship, the car or boat is built with an air tight chamber extending around and below the pit *b*. The boat is provided with a rudder C controlled by the usual hand wheel *c*, with a center board D. The center board D may be mounted and operated in the usual manner and as shown a rod *d* is secured to the framework of the boat, on which rod a hook *d'* is pivoted and the hooked end thereof is adapted to slip over the rod d^2 when the centerboard is up or in inoperative position, said rod d^2 being pivotally connected to the centerboard and acting as a handle for raising and lowering the centerboard. The boat is also provided with twin propellers E, driven by a motor (not shown) for propelling the machine either in the air or water. Said boat or car is also equipped with wheels F for supporting the machine on the ground. Furthermore, the boat has upstanding pins G arranged at intervals on its upper surface at either side of the pit *b* for guiding a separate upper deck H which is provided with corresponding perforations fitting loosely around said pins.

The deck H is rigidly attached to the planes A by the rods I suitably disposed so as to maintain a fixed relation between said parts, there being brace rods *i* used where necessary. The boat or car may be supported below the deck, in any suitable manner whereby it can be adjusted vertically to pre-

serve the stability of the airship in the same manner as a pendulum is lengthened or shortened for regulating a clock. For this purpose, I have illustrated a pair of jacks or hoists, one arranged near each end of the boat, and each comprising an upright frame J on the deck, a pulley j on said frame, another pulley j' secured to the boat below and preferably in vertical alinement with the frame, and a cable or chain j^2 having one end attached to the deck, passed first over the pulley j', thence up through the deck and over the pulley j and thence down through the deck again where it may be passed under a sheave j^3 and fastened to a cleat j^4 in the bottom of the pit. It is obvious that by paying out the cables or chains j^2, the boat will be lowered away from the deck, thereby having the effect of lengthening the pendulum, and that by hauling in on said cables or chains, the opposite effect will be produced.

The deck may also be suspended from the frames or wings A by supports or hangers K attached at their lower ends to the deck and at their upper ends to brackets L which connect the planes of each pair together. Said brackets may comprise T-shaped plates having perforations in the opposite end portions of their heads, and other perforations in the lower end portions of their stems. Through the perforations in the heads of said plates, there are passed bars M extending longitudinally of the airship through all the wings A which are connected thereto by sleeves l fitted between adjacent pairs of the plates. Sleeves k, Fig. 8, on the upper ends of the hangers K are mounted around short bars M′ engaging the perforations in the stems of the brackets.

The front ends of the bars M are extended beyond the forward pair of wings A, and are preferably offset downwardly, as clearly shown in Fig. 1. On these projecting end portions of said bars there are mounted a pair of the brackets L′ from the stems of which depend a hanger K′ secured to the deck in the same manner as the hangers K. On the portions of the bars M arranged between the brackets L′, there are fitted sleeves l' to which a pair of steering or guiding planes A′ constructed similarly to the planes A, are swiveled, as at N, Figs. 5 and 7, so that they may be tilted up or down by suitable means under the control of the operator.

As here illustrated, the mechanism for controlling the guiding planes A′ includes a transverse shaft O journaled in the forward part of the deck and having oppositely extending cranks o to which connecting rods p are attached leading to operating levers P, pivoted at opposite sides of the pit opening and adapted to be simultaneously swung in opposite directions by the arms of the operator. Said levers may be secured at their desired adjustments by racks and pawls of ordinary construction which are indicated in a general way at p' in Fig. 3. On the opposite ends of the shaft O there are fixed longitudinally extending arms Q which project in opposite directions from their points of connection. These arms are normally disposed in a plane parallel to the deck, as shown in Fig. 1, but are designed to be tilted one way or the other when the shaft is turned by the operation of the hand levers P. Each end portion of each of the arms is connected to a corresponding point on one of the steering planes A′ by cables or rods R, whereby the tilting of the arms Q will impart a corresponding movement to said planes.

It will thus be seen that by actuating the hand levers P and the steering wheel c, the operator may readily guide or steer the machine in an upward or downward course or toward either side, as desired, the adjustment of the boat or car with respect to the deck, and the disposition of the center board, coöperating to preserve the stability of the airship in all its movements. In order to add buoyancy to the machine, cigar shaped hollow air tight bodies S may be secured to the connecting rods I and brace rols i at each side of the airship, as best illustrated in Fig. 2. Said bodies S made of aluminum or other light material adapted to float on the water serve their purpose best when placed inwardly of the planes determined by the outer ends of the wings and corresponding sides of the boat. These tanks S add buoyancy to the machine and assist in balancing the boat on the water when high waves are encountered and the boat lists and by the aid of these tanks the gunwale of the boat is prevented from going under the water and will otherwise assist in the righting of the boat in high seas.

Should it become necessary or desirable to descend upon a body of water, the boat is adapted to travel thereon, being driven by the propellers E, steered by the rudder C, and retained in upright position by the center board D.

As illustrated in Fig. 4, the length of the wings may be varied to comply with the contour of the boat in order to make the airship more symmetrical and more easily maintain its equilibrium. Thus, the two middle pairs of wings or planes A may be substantially equal in length, the two end pairs of said planes A somewhat shorter, and the steering planes A′ still shorter.

It is obvious that changes may be made in the details of construction of the invention as herein illustrated and described without departing from the spirit or sacrificing the advantages thereof. For instance, the manner of connecting the planes to one another and to the deck, and the means for adjusting

the boat vertically with respect to the deck may be modified so long as they fall within the terms of the appended claims.

Having thus fully described my invention what I claim as new and desire to secure by Letters Patent of the United States is:—

1. In an airship the combination with supporting planes, of a deck secured in fixed relation to said planes, a balancing member arranged below the deck and provided with guiding means extending through the deck for guiding the balancing member when the same is raised and lowered, and means for raising and lowering said member with respect to the deck.

2. In an airship, the combination with supporting planes, of a deck secured in fixed relation to said planes and having a series of perforations, a balancing member arranged below the deck and having upstanding pins extending through the perforations in the deck, and means to raise and lower said member with respect to the deck.

3. In an airship, the combination with supporting planes, of a car hung therefrom, tilting planes for guiding the machine, means for tilting said planes including a shaft, means of connection between said shaft and the tilting planes, oppositely extending cranks on said shaft, two hand levers, and connecting rods between the cranks and respective levers, whereby said levers may be simultaneously operated for tilting the planes.

In testimony whereof I have signed my name to this specification in the presence of two subscribing witnesses.

JOHN S. JORGENSEN.

Witnesses:
W. G. McArdle,
Harry G. Parker.