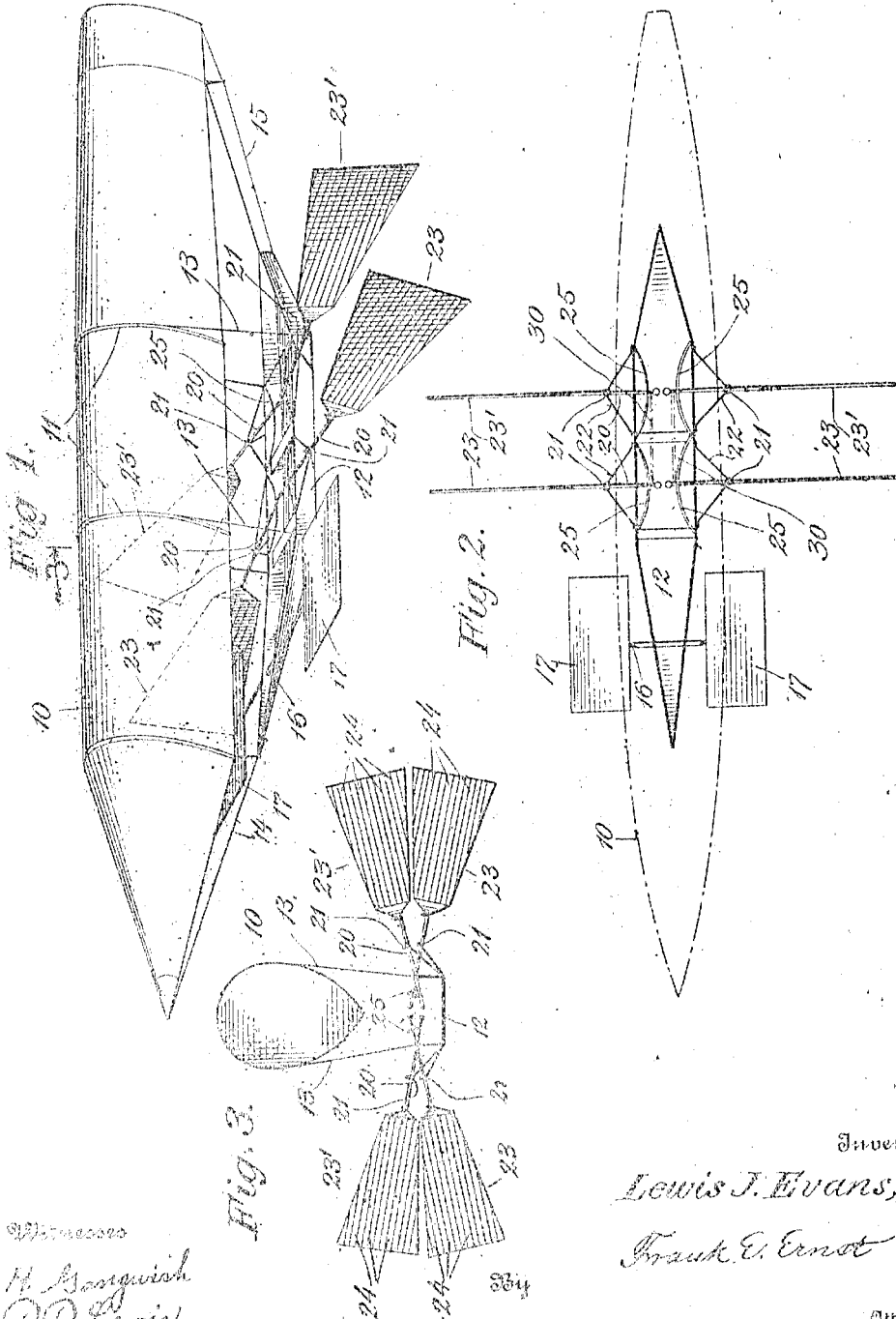


1,061,363.



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Fig. 4.

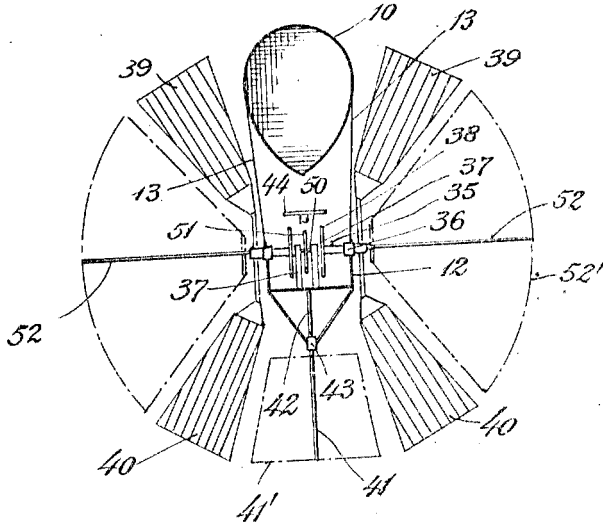
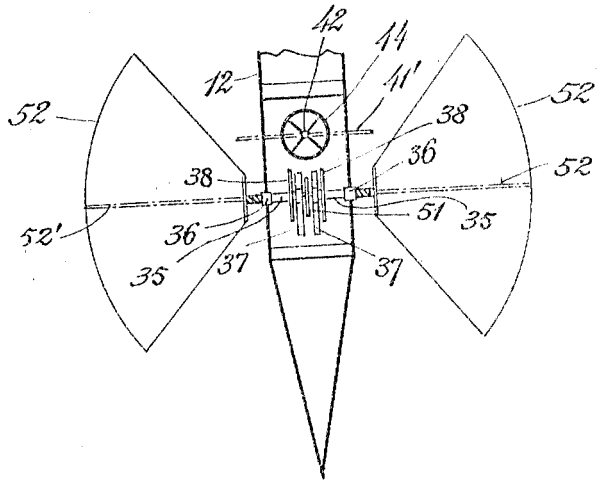


Fig. 5.



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AIRSHIP.

1,061,363.

Specification of Letters Patent.

Patented May 13, 1913.

Application filed June 14, 1911. Serial No. 633,066.

To all whom it may concern:

Be it known that I, LEWIS J. EVANS, a citizen of the United States of America, residing at Kirkwood, in the county of Broome and State of New York, have invented certain new and useful Improvements in Airships, which the following is a specification, reference being had therein to the accompanying drawings.

This invention relates to air-ships, and more especially to that class thereof in which a balloon is used in connection with adjustable aero-planes whereby the direction of travel may be varied, and it has for its object the provision of improved hand-manipulated propelling means together with novel suspension device therefor, as will be hereinafter described and particularly defined in the claims.

The invention has been illustrated in the accompanying drawings, in which similar characters denote similar parts, and in which—

Figure 1, is a perspective view of an air-ship embodying my invention. Fig. 2, is a plan thereof, Fig. 3, represents a vertical cross-section on line 3, of Fig. 1. Fig. 4— shows a section similar to Fig. 3, illustrating a modification, and Fig. 5— is a plan view thereof.

Briefly stated, my improved air-ship comprises a balloon adapted to lift the weight of one or more passengers seated in a car which is suspended in fixed relation to the balloon and tends to preserve its equilibrium. One or more sets of wind or air oars are employed as a means whereby the ship may be propelled and navigated, while one or more pairs of adjustable aero-planes are provided for inclining the travel of the ship either upward, or on a level, or downward, as the case may be. The oars may be pivoted on outriggers similar to those of racing-shells, but are maintained for horizontal motion in a predetermined path and so suspended that the operator does not have to sustain or counterbalance the weight of the overhang of the oars, the outriggers being preferably so arranged that one oar is movable in a different horizontal plane than that of the adjacent oar on the same side of the air-ship.

Referring to the drawings, 10 denotes a balloon preferably formed in its contour similar to that of a fish and consisting of an

envelop or covering which may be reinforced or braced in any desired manner and has girdles 11 from which the car 12 is suspended by stays 13. End stays 14, 15 running from the ends of the car, fore and aft, steady the latter longitudinally. Extending laterally through the front end of the car is a shaft 16 which carries at its outer ends aero-planes 17, which may be adjusted to different inclinations as desired, and serve as means for controlling the movement of the entire air-ship in either upwardly, or downwardly, or level directions, as the case may be, with another pair on rear of car, if desired. In the present instance the propelling means consist of one or more sets of oars, each comprising a stem 20 pivoted at 21 on an outrigger frame 22, and also a blade 23, 23' formed of a series of pivoted parallel slats 24, which yield to the air when the blade is moved toward the front of the car, but will remain in closed condition during the return or active stroke. Means are provided for maintaining each oar in its original substantially level condition, so that, therefore, the operator is relieved from upholding the oars, these means consisting preferably of an arcuate track 25 secured to the side of the car in concentric relation to the pivot 21 and disposed above the handle-end or stem 20.

By referring to Fig. 3— it will be noted that the rear set of oars 23' swing in a plane higher than that of the front oars, so that consequently the sets of oars act upon different strata of air and therefore become more effective in operation. If desired both pairs of oars may be connected for movement in unison, as for instance by links indicated by dot-and-dash lines 30, in Fig. 2— so one person may work both pairs of oars.

In Fig. 4 I have illustrated a modification of the oars, which are here mounted in pairs at each side of the car on diametrically opposite sides of pairs of shafts which extend across the car and are preferably in alignment with each other. In the present instance each shaft consists of a tubular sleeve 35 journaled in bearings 36, 37 and may be oscillated therein by a hand wheel 38 of any suitable construction, and, in order to make the oars 39, 40 effective to propel the air-ship, the shutters or slats thereof open toward the same side in both instances, that is either toward the front of the air-

ship, or toward the rear thereof. It will, therefore, be seen that when the oars 39, 40 are oscillated to both sides of a vertical line, the air-ship will either move ahead or backward according to which side of the oars the shutters are suspended on. Likewise it will be understood that when the oars are oscillated to both sides of a horizontal plane the air-ship may be caused to rise or descend, as the case may be. It will, furthermore, be evident that the oscillation of the oars to both sides of an angularly inclined plane will cause the ship to ascend or descend and simultaneously move forward or backward, so that therefore, such ascent and descent will be on an incline. This arrangement of the cars will also enable the operator to stop the movement of the ship suddenly, by turning the oars into a vertical position shown in Fig. 4 so that the flat sides of the oars face the front. By arranging the cars in such a manner that the flats of one set of oars face toward the front, while the flats of the other set of cars face toward the rear, the oscillation of the oars will cause the ship to turn sidewise in proportion to the speed with which the oars are worked.

Means are provided for steering the ship sidewise, regardless of the operation of the oars as just described, these means consisting of a rudder-blade 41 mounted upon a shaft 42 which is journaled in a bearing 43 and also in the car (not shown), and which may be operated to deflect said blade as desired by a hand-wheel 44. When the blade is in the position shown by dot-and-dash lines 41', it will also act as a check member for the movement of the ship. Extending through both of the tubular sleeves 35 above mentioned, and journaled therein, is a shaft 50 provided with a hand wheel 51 and carrying at its outer ends a pair of aero-planes 52 which may be angularly adjusted to control the ascent and descent of the air-ship, or to check its course when in position shown by dotted line 52'.

It will be noted in Fig. 4 that when the oars and the aero-planes and the rudder blade are held in position there illustrated, they will present a comparatively large and almost unbroken surface, and it, therefore, follows that if the different members should all be brought into horizontal position, they will act in a great measure to retard the drop of the air-ship in case of accident to the balloon.

Changes may be made in the particular construction and organization of the elements constituting my improved air-ship, and I wish it to be distinctly understood that I do not confine myself to the particular form of oar, and oar-supporting and guiding means shown and described.

I claim:

1. In an air-ship, the combination with a car, and raising means therefor, of a pair of alined shafts extending transversely of said car and journaled therein, oars radially extending from said shafts, and means for rocking said shafts independently of each other.

2. In an air-ship, the combination with a car, and raising means therefor, of a pair of tubular alined shafts extending transversely of said car and journaled therein, radially extending oars carried by said shafts respectively, means for rocking said shafts independently of each other; a spindle journaled within said tubular shafts aero-planes on said spindle, and means for moving said shaft to vary the inclination of said aero-planes.

3. In an air-ship, the combination with a car, and raising means therefor, of a pair of alined shafts extending transversely of the car, oars extending radially therefrom, means for rocking said shafts, a spindle parallel with said shafts, aero-planes on said spindle, and means for moving said spindle.

4. In an air-ship, the combination with a car, and raising means therefor, of a pair of alined shafts extending transversely of the car, oars extending radially therefrom, means for rocking said shafts, a spindle parallel with said shafts, aero-planes on said spindle, and means for moving said spindle, and a rudder disposed below the bottom of the car and movable from within the same.

5. In an air-ship the combination with a car, and raising means therefor, of a pair of alined shafts extending transversely of the car, oars extending radially therefrom, means for rocking said shafts, a spindle parallel with said shafts, aero-planes on said spindle, and means for moving said spindle, a vertical rod extending through the bottom of the car, a rudder blade carried on the lower end thereof, and a hand wheel on the upper end thereof.

6. In an air-ship the combination with a car and raising means therefor, of a pair of alined shafts extending transversely of said car and journaled therein, oars radially extending from said shafts, and means for rocking said shafts independently of each other, a vertical rod extending through the bottom of the car, a rudder blade thereon and shaped substantially to fill the space between said oars, and means for turning said rod.

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

LEWIS J. EVANS.

Witnesses:

EDW. S. GRANGER,
EDWARD FEPELEY.