

(No Model.)

ESTANISLAO CABALLERO DE LOS OLIVOS.
AERIAL NAVIGATION.

No. 542,100.

Patented July 2, 1895.

Fig 1.

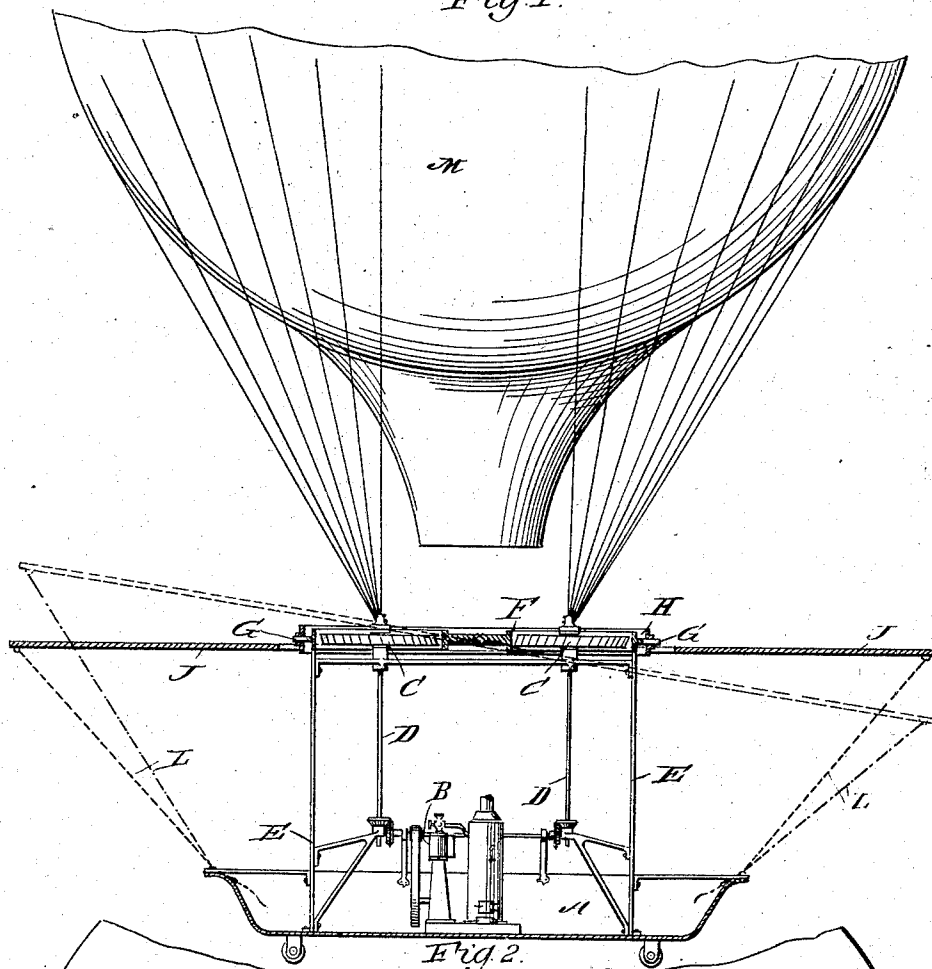
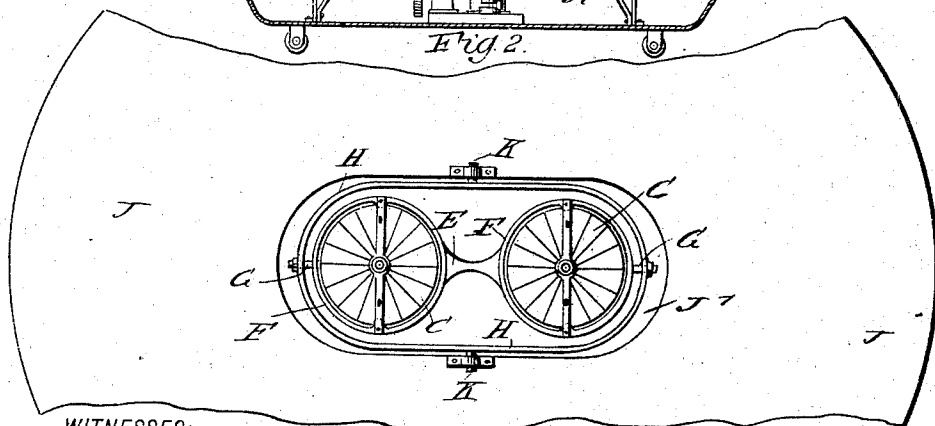


Fig 2.



WITNESSES:

Paul Jakob
John Lotka

INVENTOR

Estanislao Caballero de los Olivos

BY

Munn & Co
ATTORNEYS.

UNITED STATES PATENT OFFICE.

ESTANISLAO CABALLERO DE LOS OLIVOS, OF NEW YORK, N. Y.

AERIAL NAVIGATION.

SPECIFICATION forming part of Letters Patent No. 542,100, dated July 2, 1895.

Application filed December 11, 1894. Serial No. 531,455. (No model.)

To all whom it may concern:

Be it known that I, ESTANISLAO CABALLERO DE LOS OLIVOS, a citizen of the Republic of Mexico, at present residing in the city of New York, in the county and State of New York, have invented certain new and useful Improvements in Aerial Navigation, of which the following is a full, clear, and exact description.

My invention relates that class of aerial vessels that are provided with aeroplanes and sustaining - screws rotating about vertical axes.

The object of my invention is to provide an aerial vessel of the above indicated class in which the aeroplane is utilized to impart to the vessel a movement in any direction, while the sustaining-screws are independent of the aeroplane and serve to control the ascent or descent of the vessel.

The invention consists of certain features of construction and combinations of parts that will be hereinafter described and claimed.

Reference is to be had to the accompanying drawings, in which—

Figure 1 is an elevation of the apparatus, partly in section; and Fig. 2 is a broken plan thereof with the balloon removed.

Like letters indicate like parts in both views.

The improved aerial vessel comprises a basket A, carrying the machine or engine B for operating the sustaining-screws C. The latter are secured upon shafts D, journaled in a framework E, secured to the basket A.

The frame may be provided with rings F adjacent to the sustaining-screws C. To the frame E is pivoted, by means of trunnions G, an elongated ring H, surrounding the sustaining-screws C and their inclosing-rings F.

To the ring H is pivoted, preferably at right angles to the line connecting the trunnions G, the aeroplane J, supported through the medium of the trunnions K. It will be understood that this way of attaching the aeroplane

forms a universal joint and permits of adjusting the inclination of the aeroplane relatively to the plane of the sustaining-screws in any direction desired. I prefer to employ a circular aeroplane to insure a uniform action to whatever side the aeroplane may be inclined. The position of the aeroplane

may be adjusted and maintained by means of ropes L or equivalent devices. The aeroplane is provided with an aperture J' to permit of its being inclined without colliding with the framework or the sustaining-screws.

It will be understood that the sustaining-screws C are intended to raise the vessel and control its ascent and descent. If it should not be considered feasible or advisable to provide a machine capable of raising the entire weight of the vessel and its occupants, a balloon M will be connected with the framework E to assist in sustaining the vessel, so that a less powerful engine will suffice for the successful operation of the screws C. According to the rotary speed of the said screws the vessel will either ascend or descend or remain at a constant altitude.

As long as the aeroplane is in a horizontal position the ascending or descending movement of the vessel will be in an essentially vertical direction. If, however, the aeroplane is set at an inclination to the (horizontal) plane of the sustaining-screws, the reaction of the air striking the inclined surface will cause a forward movement of the vessel in the direction of the highest point of the aeroplane if the vessel is ascending and in the opposite direction if the vessel is moving downward. The direction of the forward movement, therefore, may be changed or reversed without altering the speed of the engine or the position of the sustaining-screws by a suitable adjustment of the aeroplane.

I desire it to be understood that the aeroplane is independent of the sustaining-screws C—that is, the adjustment of the aeroplane does not involve an adjustment of the screws, but the aeroplane is adjusted relatively to the said screws. Considerable power would be required to adjust the plane of the sustaining-screws, owing to the well-known tendency of rotating bodies to preserve their axes of rotation, and it is thought that an attempt to adjust or incline the rotating screws, in case they were constructed to move in unison with the aeroplane, would in all probability result in inclining the basket, while the aeroplane and the screws thereon would remain essentially horizontal. According to my invention, however, the plane of rotation of the sustain-

ing-screws is not changed, and this arrangement obviously is an improvement over the construction I have alluded to above.

Various modifications may be made without departing from the nature of my invention as defined in the appended claims. Instead of two sustaining-screws, I may employ only one, or any other number of them, the shape of the aperture in the aeroplane being changed accordingly. The mode of suspension of the aeroplane may likewise be altered and different constructions of universal joints may be employed in lieu of the one illustrated by the drawings. I may even dispense with a universal joint and pivot the aeroplane directly to the frame, the steering of the vessel being in that case effected by means of a rudder of any approved construction. In any event the aeroplane is adjusted independently of the supporting screw or screws. The latter may be set in motion by the muscular power of an operator or operators.

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

1. The combination, with the framework and the sustaining screw journaled therein to rotate about an essentially vertical axis, of an aeroplane movably connected to the frame to permit of inclining said aeroplane rela-

tively to the sustaining screw, substantially as described.

2. The combination with the framework and the sustaining screw journaled therein to rotate about an essentially vertical axis, of an aeroplane movably connected to the frame and provided with an aperture through which passes the screw when the aeroplane is inclined relatively thereto, substantially as described.

3. The combination, with the framework and the sustaining screw journaled therein to rotate about an essentially vertical axis, of an aeroplane pivoted to the frame to permit of inclining said aeroplane relatively to the sustaining screw, substantially as described.

4. The combination, with the framework and the sustaining screw journaled therein to rotate about an essentially vertical axis, of an aeroplane connected to the frame by means of a universal joint, whereby the aeroplane can be inclined in any direction relatively to the sustaining screw, said aeroplane being provided with an aperture for the sustaining screw, substantially as described.

ESTANISLAO CABALLERO DE LOS OLIVOS.

Witnesses:

JOHN LOTKA,
JNO. M. RITTER.