M. H. WHALEN.

AIR SHIP.

APPLICATION FILED APR. 7, 1908.

922,228.

Patented May 18, 1909.

3 SHEETS—SHEET 1.

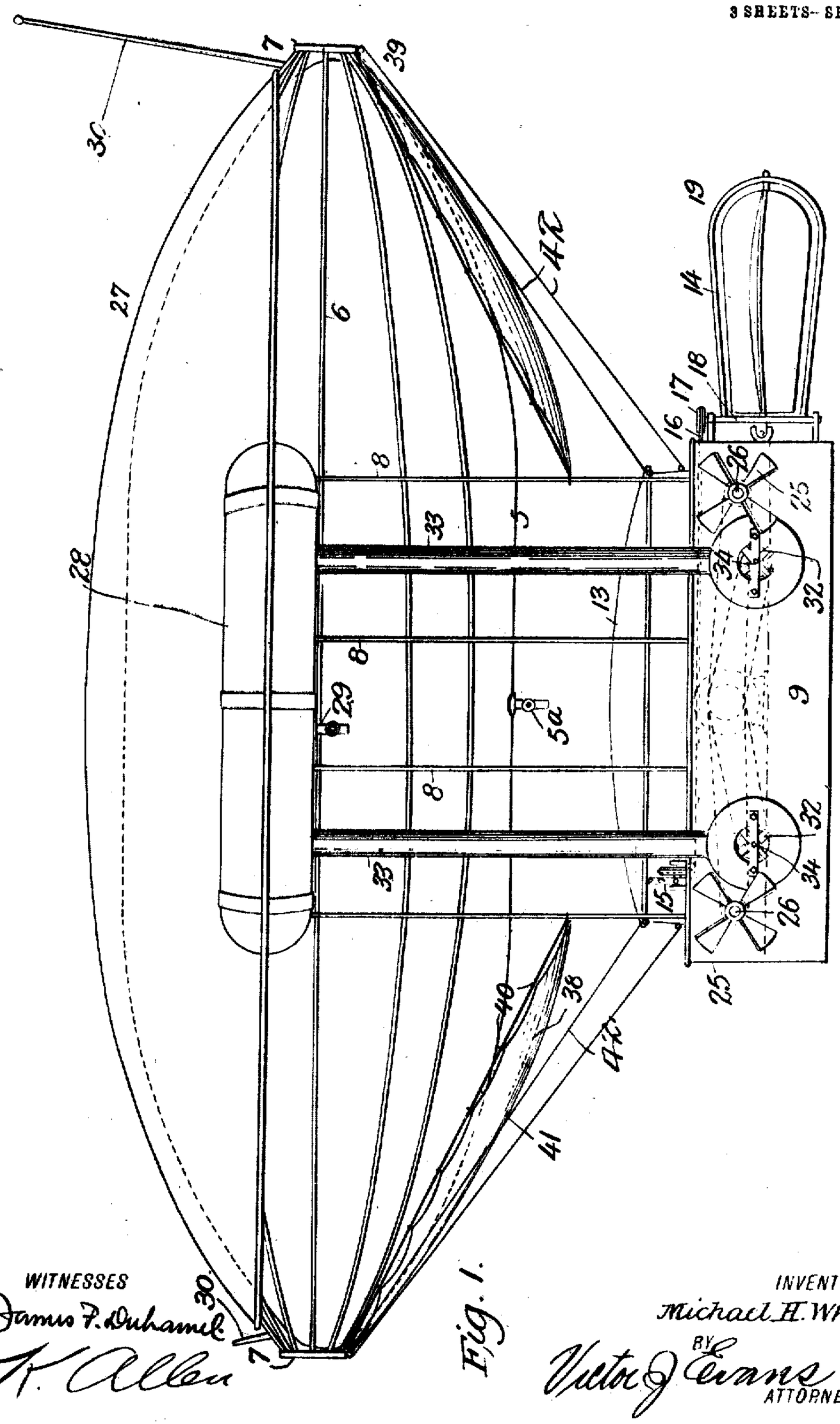


Fig. 1.

WITNESSES

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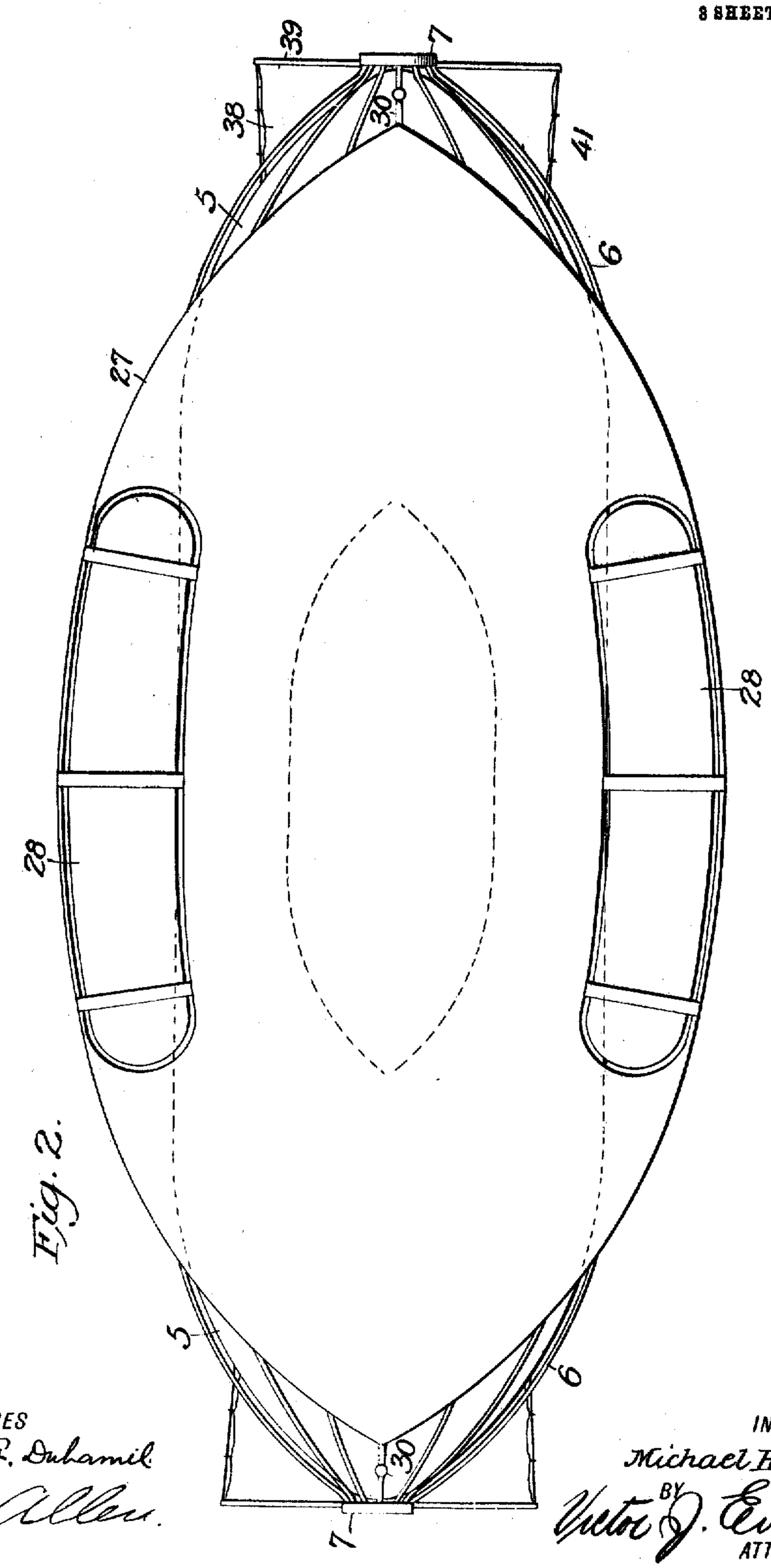


Fig. 2.

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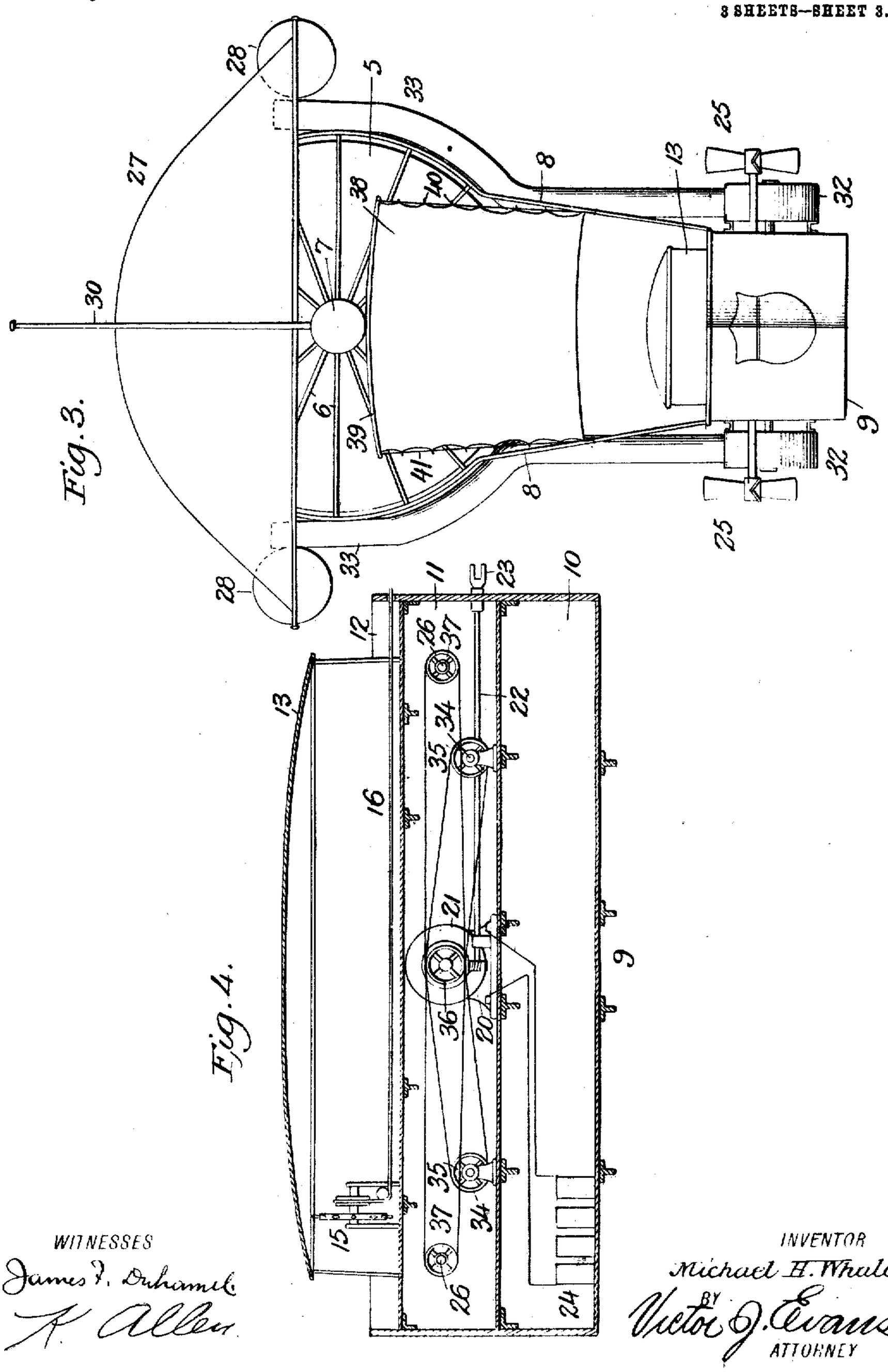


Fig. 3.

Fig. 4.

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# UNITED STATES PATENT OFFICE.

MICHAEL H. WHALEN, OF NEW YORK, N. Y.

## AIR-SHIP.

No. 922,228. Specification of Letters Patent. Patented May 18, 1909.

Application filed April 7, 1908. Serial No. 425,757.

*To all whom it may concern:*

Be it known that I, MICHAEL H. WHALEN, a citizen of the United States, residing at New York, in the county of New York and State of New York, have invented new and useful Improvements in Air-Ships, of which the following is a specification.

This invention relates to airships and has for its object the addition of certain features to a gas bag or balloon to give buoyancy to the ship and assist in its propulsion and direction, as will be more fully explained in the following specification, set forth in the claims and illustrated in the drawings, where;

Figure 1 is a side elevation of the airship. Fig. 2 is a plan view of the same. Fig. 3 is a front view Fig. 4 is a vertical sectional view of the car.

This invention is an air ship of that type in which a balloon is employed to elevate and hold in suspension a car to contain the operators, passengers and the propelling and steering mechanism and as is usual the balloon 5 is confined within a netting or light frame work from which the car hangs and has an inflating nipple 5ª. The balloon is in this instance inclosed in a frame or cage 6 of light metal converging to the end pieces 7 and to the lower ends of the vertical members 8 of this frame is attached the car 9 constructed of very light material yet having sufficient strength to support the passengers and apparatus above referred to. This car 9 is divided into three compartments, the lower one 10 for storage, the intermediate section 11 for the machinery and the upper one or deck 12 for the passengers and may be partly housed in with glass as at 13.

The rear of the car carries a rudder 14 which is hinged to same and is turned on its hinges by means of a pilot wheel 15 at the forward end of the deck 12 and through the medium of the chain or rope 16 running to the rear of the car and around a wheel 17 on the pivotal shaf' 18 of the rudder carrying frame 19. The r' der 14 is an elongated fan and is rotated through the medium of the worm gearing 20 at the motor 21 which rotates the shaft 22 having a universal joint 23 to permit of the movement of the rudder on the shaft 18 while it rotates.

The motive force is preferably an electric motor 21 operated by means of the battery 24 and not only operates the rudder but rotates the propelling fans 25, four or more in number situated at the front and rear of the car and whose shafts 26 pass through same from side to side. These fans not only propel but their construction assist in raising the car.

The balloon is surmounted by a canopy 27 supported by the frame 6, and concave on its under side. This canopy is of light material and nearly the length of the balloon. It carries on each side a small bag 28 with an inflating nipple 29 and at each end of the canopy is a pole 30 supporting a wireless telegraphic collector 31 or which may be used for other purposes such as flags or decorations. The bags 28 are adapted to buoy the canopy 27 and to retain it in a horizontal position normally. When the motor 21 is in operation it will be seen that air currents created by the fans 32 will be conveyed upwardly through the pipes 33 and discharged therefrom upon the under side of the canopy, and by reason of the shape of said canopy which, as may be stated, is of concavo-convex form, the air currents will be deflected outwardly and downwardly at the sides of the said canopy and also from the fore and aft thereof and will be forced outwardly in the form of jets and discharged against heavier or natural air to form what may be termed a buoyant layer entirely around the said canopy, thus greatly assisting in the raising of the machine.

At each side of the car are inclosed fans or blowers 32 discharging into vertical pipes 33 which terminate beneath the canopy. These fans are carried by shafts 34 which pass through the car, have pulleys 35 which are driven by the pulleys 36 on the motor shaft through the necessary belting. The shafts 25 also have pulleys 37 which carry belts driven by the motor.

At each end of the ship is an aeroplane 38 which is in the nature of a sail the upper ends being carried by arms 39 supported by the end pieces 7. The sides of the sails having eyes 40 to run on the rods 41 and they are furled and unfurled by the ropes 42. When these sails are set the rear one catches the wind and aids in pushing the car forward and if found desirable either one or the other may be hauled down as much as necessary.

In addition to the lifting power of the bag or balloon 5 and bags 28 it will be seen that the fans 14 and 25 also exert a force to lift the ship besides propel it. The sails 38 also

assist in the elevating and propulsion of the ship.

It is obvious that a gas motor may be employed instead of the electric motor or any motor of light construction and a maximum efficiency may be used.

Other modifications and alterations may be made in the construction of the device without departing from the essential features above referred to.

What I claim as new and desire to secure by Letters Patent is:

1. In an air ship, the combination with a gas bag, of a wire cage surrounding the same, a canopy on the cage, supplemental gas bags carried by the canopy, a car with a motor hung from the cage and a revolving rudder hinged at the rear of the car and rotated by the motor.

2. In an air ship, the combination with a gas bag, of a wire frame surrounding same, a canopy above the frame and bag, cross arms at each end of the frame, a car hung from the frame, wires connecting the ends of the cross arms with the car, flexible planes carried on the wires and adapted to be lowered and raised, and propelling fans.

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

MICHAEL H. WHALEN.

Witnesses:
JAMES F. DUHAMEL,
MAE W. CLINTON.