A. E. MAIDEN.

INFLATED AEROPLANE.

APPLICATION FILED AUG. 7, 1909.

975,263.

Patented Nov. 8, 1910.

2 SHEETS—SHEET 1.

Fig: 1.

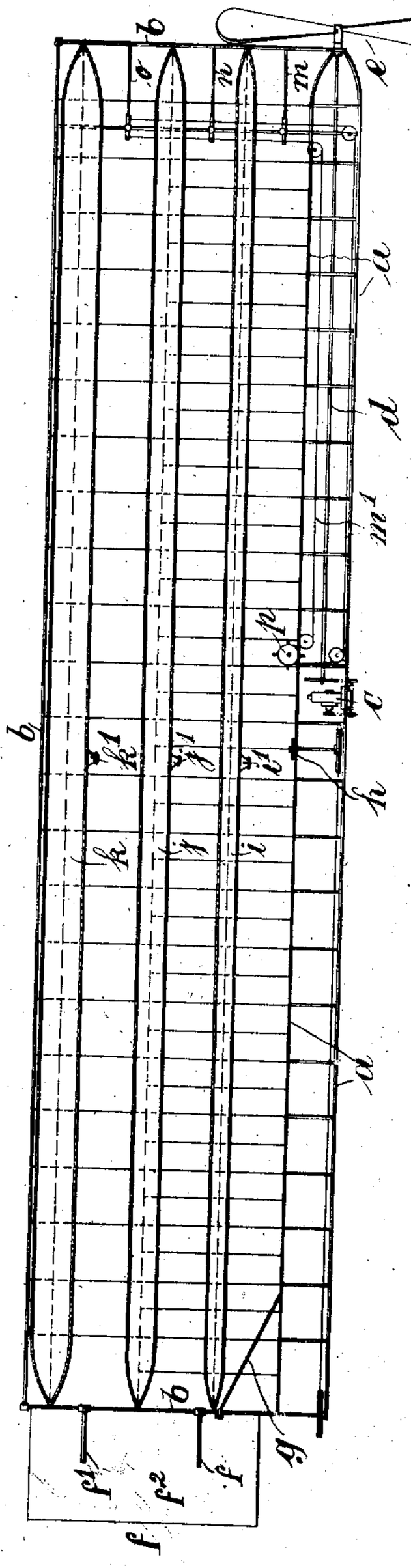
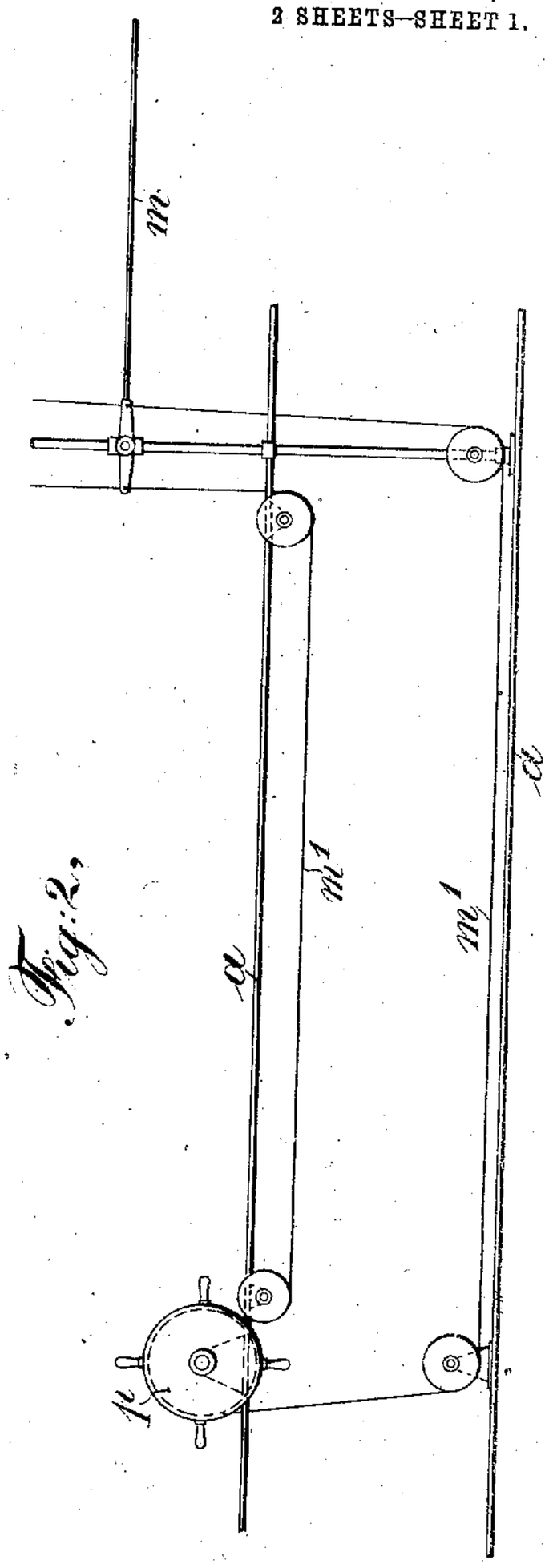


Fig: 2.



Witnesses:

S. Pethi-Kalmedo.

Flora Greenwald.

Inventor

Arthur E. Maiden

By his Attorney

L. K. Böhm.

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2 SHEETS—SHEET 2.

Fig: 3,

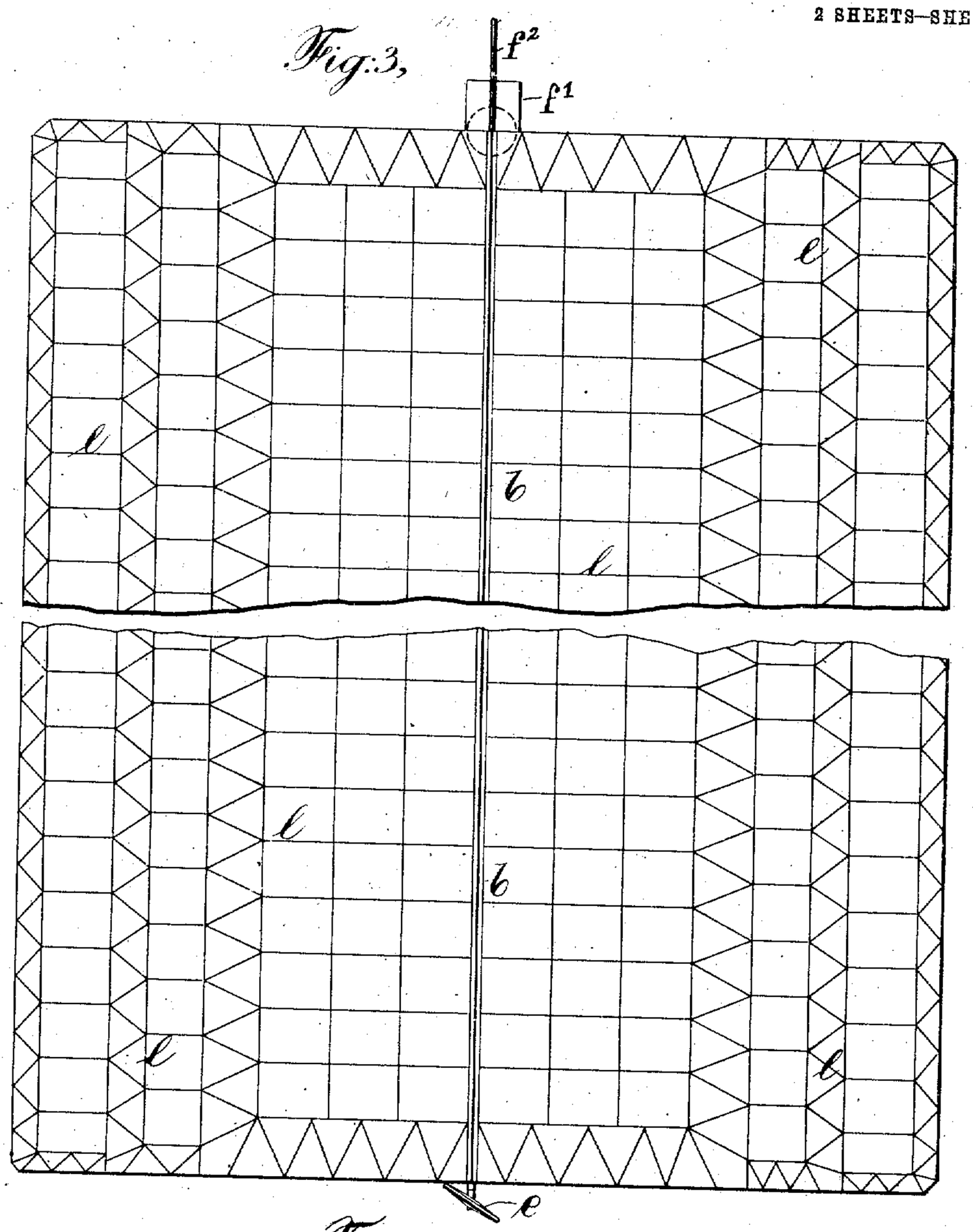
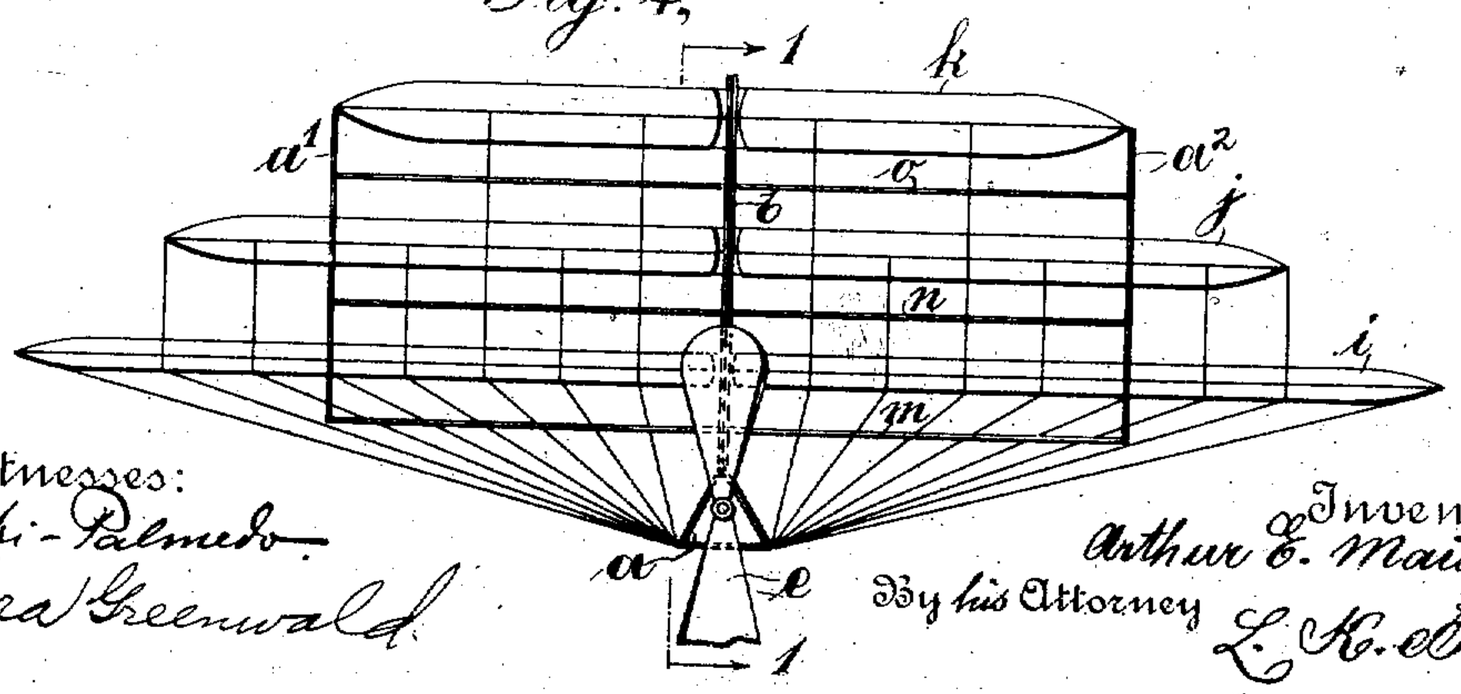


Fig: 4,



Witnesses:
S. Rhi-Palmedo
Flora Greenwald

Inventor
Arthur E. Maiden
By his Attorney
L. K. Böhm

UNITED STATES PATENT OFFICE.

ARTHUR E. MAIDEN, OF FORT LEE, NEW JERSEY, ASSIGNOR OF ONE-HALF TO EDWARD L. CRANS, OF NEW YORK, N. Y.

INFLATED AEROPLANE.

975,263. Specification of Letters Patent. **Patented Nov. 8, 1910.**

Application filed August 7, 1909. Serial No. 511,670.

To all whom it may concern:

Be it known that I, ARTHUR E. MAIDEN, a citizen of the United States of America, and a resident of the borough of Fort Lee, county of Bergen, State of New Jersey, have invented certain new and useful Improvements in Inflated Aeroplanes, of which the following is a specification.

This invention has reference to novel aeroplanes distinguished by one or more hollow planes adapted to be inflated by hydrogen or other light gases thus assisting in supporting the machine while offering a minimum resistance to the wind or heavy air currents. In accordance with this novel construction an aeroplane may be made having a hollow plane or planes of limited capacity so that same is still heavier than the air or the hollow plane or planes may have larger capacity holding more gas whereby an aeroplane may result which floats without rising and if the hollow plane or planes are of still larger capacity the larger quantity of gas therein will impart rising power thereto. In the first instance, the inflated plane or planes aid in supporting the machine and after rising keep same at a desired height while it will not sink rapidly in case of injury to the raising and propelling mechanism. In the second instance, when the inflated aeroplane is so constructed that it floats, more power from the motor may be applied to the propelling mechanism, and in the third instance the aeroplane will rise higher up into the air than those of former construction and thus may be brought out of the reach of guns. Means are provided on the novel aeroplane for assisting in raising and lowering same and facilitating the maneuvering in the air. Each hollow plane is divided into separate compartments insuring a safe landing in case of damage to one compartment and permitting of arranging the supporting frame work in a more substantial manner, all as will be fully described hereinafter with reference to the accompanying drawing, in which:

Figure 1 represents in longitudinal section, on line 1, 1 of Fig. 4, an inflated aeroplane, embodying in desirable form the present improvements. Fig. 2 is an enlarged detail view of the mechanism for assisting in the raising and lowering of the aeroplane and facilitating the maneuvering. Fig. 3 shows the aeroplane in top plan view, and Fig. 4 is a front elevation of same.

Similar characters of reference denote like parts in all the figures.

Referring to the drawings *a* represents the lower frame work made of light wood or other suitable material which may be strengthened by light metal braces. In the center of the aeroplane a vertical frame member *b* is provided which extends in form of network down onto the lower frame work portion *a*. In the lower portion of the frame work in about the middle of the apparatus there is mounted a motor *c* of any approved construction for aerial navigation. The motor drives a horizontal shaft *d* on which the propeller *e* is mounted which is arranged preferably in the front of the machine. The rudder *f* is mounted at the rear of the machine and operated by means of a lever arrangement *g* which connects with a small hand wheel *h* mounted near the motor so that the operator may easily operate it without leaving that section of the machine. The rudder consists of three parts, two parts f^1 and one part f^2, the parts f^1 being arranged at right angles to the part f^2 as shown in Fig. 1.

Above the lower frame work *a* there are the planes which are adapted to be inflated. These planes *i*, *j*, *k* are supported between and carried by the upper frame work and the supporting network *b*. In the drawing three such planes are shown of which the lower one *i* is represented to be the largest extending farthest out in a horizontal direction viewing Fig. 4 of the drawing. The middle plane *j* does not extend quite so far and the upper one *k* is still smaller. This arrangement tends to keep the aeroplane in its normal position and balance, it preserves its buoyancy with the center of gravitation and insures a steadier movement of the apparatus. When cross winds strike the aeroplane under certain angles the machine is less liable to assume a slanting or angular position than if the three planes are of even size or the planes would be arranged in reverse order.

In order to render it possible to connect the network *b* in a safe and substantial manner with the lower portion of the frame work each plane consists of two halves as may be seen from Fig. 4. One half of

each plane is located to the left of the vertical central frame network and the other to the right of same. The outer ends of the plane *k* are secured to vertical frame members of which the members a^1, a^2 are shown in Fig. 4 and the outer end of the other planes may be held in position by suitable cords. The planes are each provided with a valve i^1, j^1, k^1 for filling same with gas or allowing the gas to escape. The planes are made of the usual material which holds gas securely. In order to keep the planes in their shape a network of cords 1 surround same as shown in Fig. 3. The network is suitably secured to the frame work in the usual manner.

For the purpose of assisting the aeroplanes to rise and fall and facilitating the maneuvering of same a mechanism is provided which consists essentially of a number of vanes *m*, *n*, *o*, located in the front portion of the machine, one below each plane. These vanes may be set at various angles in relation to the horizontal planes so that in one instance the air strikes the lower surface of same whereby a rising tendency is imparted or if set so that the air strikes the top surface of same a lowering or falling tendency is imparted. It is self evident that these vanes assist in maneuvering in the air. The vanes are each connected to ropes as for instance shown in Fig. 2 where the vane *m* is connected to a rope m^1 which passes over pulleys and a hand wheel *p* which, when turned in one direction, tends to raise the vanes and if turned in the other direction lowers same.

The gas holding capacity of the planes of a certain size of machine is limited by the width and length of said planes. When a machine shall be so constructed as to float without rising the height of the planes is preferably increased whereby the gas holding capacity likewise increases. For machines which are lighter than the air the height of the planes is correspondingly increased, preserving, however, the character of aeroplanes. All three planes may be of the same height but preferably the lower plane is of less height than the middle plane and the top plane is higher than the middle one whereby the aeroplane preserves its buoyancy with the center of gravitation.

I claim as my invention:

1. An aeroplane comprising an inflated plane, frame and net work for supporting said plane, and means for raising, propelling and steering the aeroplane.

2. An aeroplane comprising inflatable planes, frame and net work for supporting said planes, means for raising propelling and steering same, and means for assisting in raising, lowering and manipulating.

3. An aeroplane comprising inflatable horizontal planes, frame and net work for supporting said planes, a motor, a propeller driven by said motor, and a rudder.

4. An aeroplane comprising supporting frame work having a central vertical frame member, divided horizontal planes adapted to be inflated so arranged that one half is located at the left and one at the right of said vertical frame member, a motor, a propeller, adjustable vanes adapted to be set at various angles to the planes, and a rudder.

5. An aeroplane comprising supporting frame work having a central vertical frame member in form of network, divided horizontal planes arranged so that one half is at the right and one at the left of said central network, cord network around the planes secured to the frame work, a motor, a propeller, a rudder, and adjustable vanes one below each plane adapted to be set at various angles in relation thereto.

6. In an aeroplane, a plurality of inflatable planes so arranged that the lowest one is the broadest, gradually decreasing in breadth to the top one which is the narrowest.

7. In an aeroplane, a plurality of inflatable planes so arranged that the lowest one is the broadest but of least height, and successively decreasing in breadth and increasing in height so that the top one is the narrowest but the highest.

8. In an aeroplane, an inflatable plane divided into two adjoining halves and located in one horizontal plane.

9. In an aeroplane, an inflatable plane divided longitudinally into two adjoining halves located in one horizontal plane, and supporting frame work between the two halves.

Signed at New York, N. Y., this 30th day of July 1909.

ARTHUR E. MAIDEN.

Witnesses:

FLORA GREENWALD.

LUDWIG K. BOHM.