V. PRITELLI.

AIRSHIP.

APPLICATION FILED JULY 23, 1918.

1,351,301. **Patented Aug. 31, 1920.**

4 SHEETS—SHEET 1.

Fig. 1.

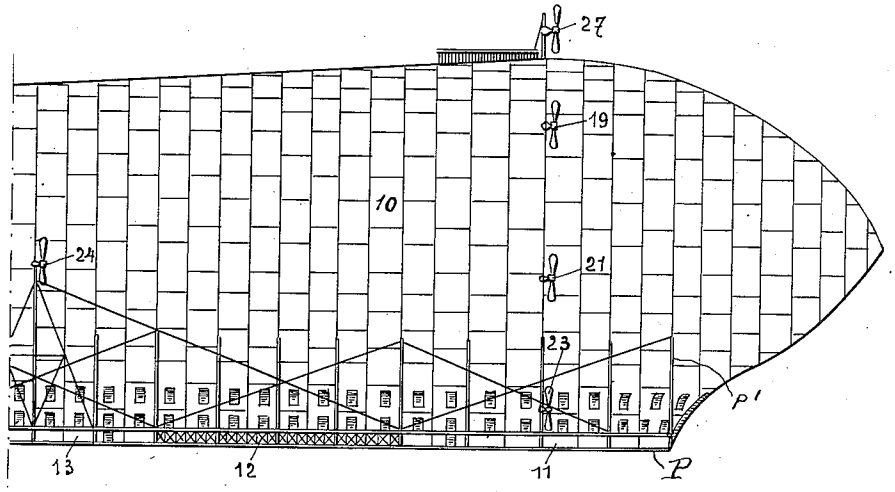
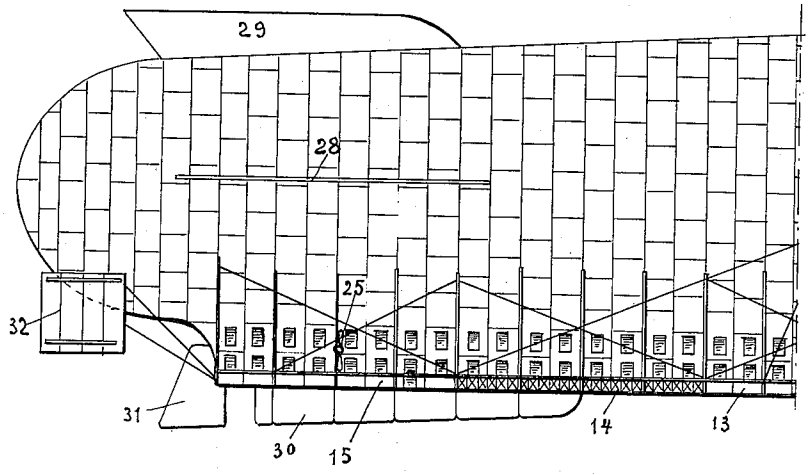


Fig. 2.



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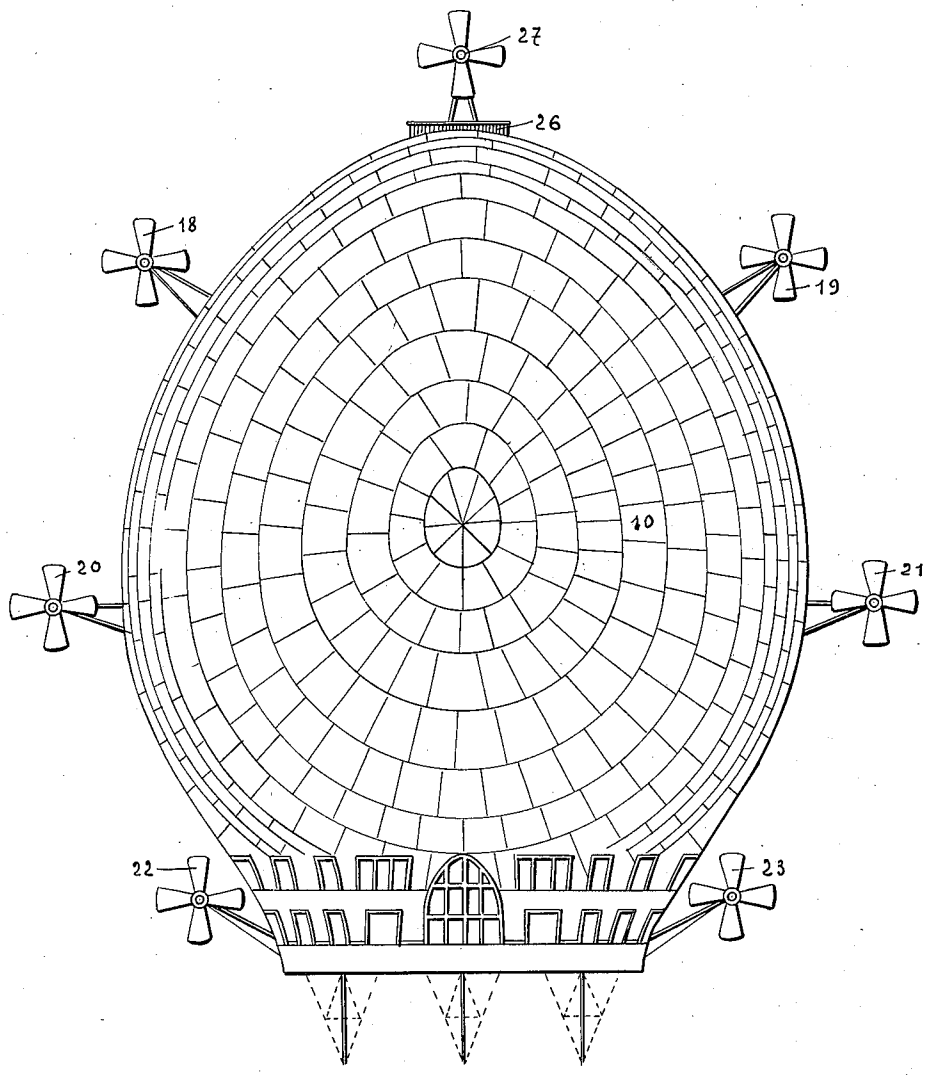
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4 SHEETS—SHEET 2.

Fig. 3.



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4 SHEETS—SHEET 3.

Fig. 4.

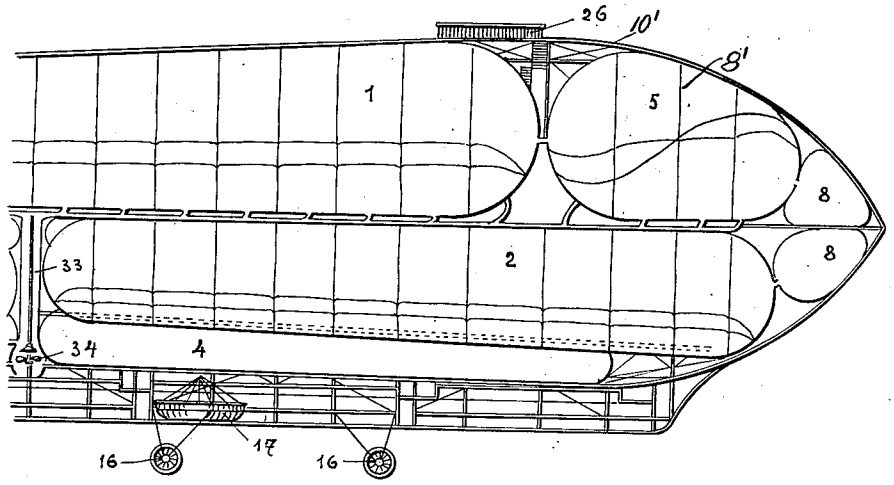
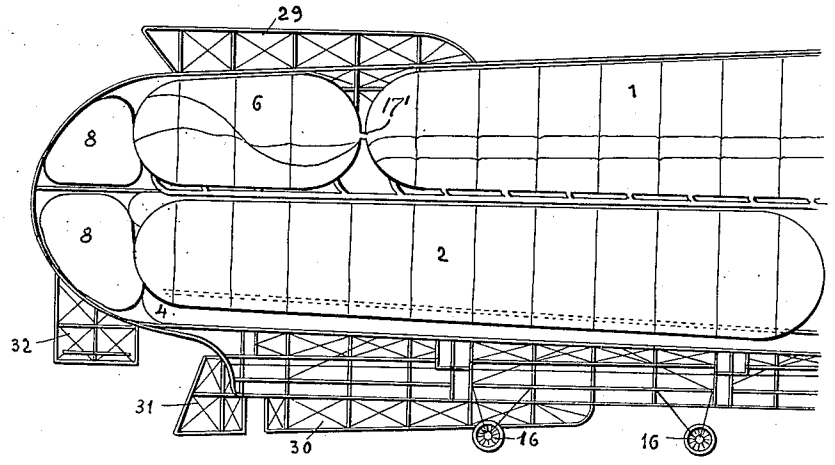


Fig. 5.



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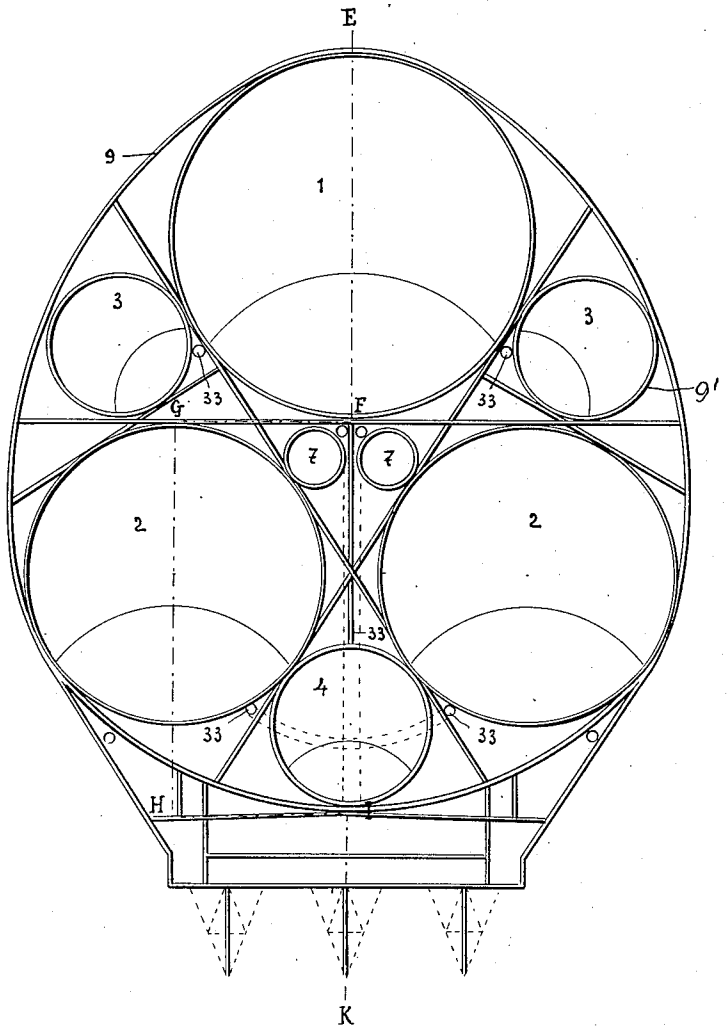
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4 SHEETS—SHEET 4.

Fig. 6.



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UNITED STATES PATENT OFFICE.

VINCENZO PRITELLI, OF ROME, ITALY.

AIRSHIP.

1,351,301. Specification of Letters Patent. Patented Aug. 31, 1920.

Application filed July 23, 1918. Serial No. 246,394.

To all whom it may concern:

Be it known that I, VINCENZO PRITELLI, a subject of the King of Italy, and residing at 137 Via Merulana, Rome, Italy, have invented certain new and useful Improvements in Airships, of which the following is a specification.

The invention relates to airships and its object is more particularly to provide an airship which is capable to navigate at high altitudes, to rise rapidly and to travel at great speed and which is easily controlled and combines a considerable lifting power with a maximum carrying capacity.

With these and other objects in view, the invention consists substantially in the construction as hereinafter described and as shown in the annexed drawings, in which

Figures 1 and 2 show the airship in side elevation, Fig. 2 being drawn in continuation of Fig. 1 the land wheels being omitted,

Fig. 3 is an end elevation,

Figs. 4 and 5 are a longitudinal section on line E—F—G—H—I—K of Fig. 6, Fig. 5 being drawn in continuation of Fig. 4, and

Fig. 6 is a cross section of the airship.

In the form of construction shown in the drawings, the balloon is built up with fifteen ballonnets which are arranged as follows: one large ballonnet —1— in the top part, four ballonnets —2— in the bottom part, two at the right and two at the left hand side of the balloon, four smaller ballonnets —3— in the lengthwise extending spaces between the ballonnets —1— and —2—, two ballonnets —4— in the bottom part between each two ballonnets —2—, a ballonnet —5— at the forward and a ballonnet —6— in the rear end of the balloon. Four ballonnets —7— are arranged in the central space between the ballonnets —1— and —2— and six ballonnets —8— are placed three in the forward and three in the rear end of the balloon.

These fifteen ballonnets are inclosed within a framework built up with steel tubes bent into ovoidal hoops —9—, and inside the framework are provided hoops 9′ to hold the ballonnets in place and in spaced relation.

The ovoidal hoops —9— have a varying size and shape in accordance with the varying cross section of the balloon, and they are interconnected by lengthwise arranged aluminium tubes and stayed by aid of steel girders 10′ which hold them in place and allow a lower platform P being secured to the framework by means of outside suspensions p', this said platform being also built up with aluminium tubes and steel girders.

The envelop —10— of the framework consists of aluminium plates which are fastened on the ovoidal hoops —9— and on the steel girders, and this aluminium sheeting incloses also the lower platform, where it is provided with openings closed by shutters to serve as windows.

The platform is divided into five compartments such as —11—, —12—, —13—, —14— and —15—, of which those —11—, —13— and —15— contain the navigating rooms, the living quarters for the crew and passengers, the provisions, also the power plant which is suitably split up, for example, by housing the motors for the propellers —18—, —19—, —20—, —21—, —22— and —23— in the forward compartment, the motor for the propellers —24— in the central and the motor for the propellers —25— in the rear compartment, while the compartments —12— and —14— serve preferably to contain wheels —16— for traveling on land and the compartment —12— also an observation car —17— adapted to be lowered from the airship for reconnoitering and similar purposes. Gangways 15′, extending alongside compartments 12 and 14, provide means for access from one compartment to another.

The airship is constructed so that it may be easily taken apart and its length be increased, if desired, by mounting additional hoops more particularly in the main section of the balloon and by providing additional ballonnets in accordance with the increased length of the balloon.

The balloon is easily accessible between the spaced ballonnets so that these latter may be readily inspected and repaired when required, and easy access is thus afforded to an upper platform —26— which carries the motor for driving the propeller —27—.

It is evident that this provision of a plurality of suitably disposed and lengthwise extending ballonnets within the balloon prevents the safety of the airship being interfered with through one of the ballonnets getting out of order and any damages thereof may be readily repaired, and the stability of the airship will thus never be disturbed.

The ballonnets are covered with a double ply cloth with an inside rubber layer which is doubled at the rear end where the hydrogen produces the maximum pressure during flight.

Each ballonnet is divided inside into a plurality of vertical cells 8′ which communicate between them by means of openings provided in the vertical partitions, and a lengthwise extending diaphragm within each ballonnet divides the same into two parts, an upper and a lower one. The upper part which takes up about two thirds of the entire cross sectional area, is filled with hydrogen, while the lower part contains air intended to compensate the varying pressure of the hydrogen at the various altitudes and under the varying atmospheric conditions. These horizontal diaphragms are arranged so that they may lay themselves against the lower surface of the respective ballonnet when the hydrogen has reached the maximum pressure. The hydrogen spaces of the various ballonnets are in open intercommunication through passages 17′, as clearly shown in Fig. 5. The ballonnets —5— and —6— arranged respectively at the forward and the rear end of the balloon, serve to control its horizontal position. These ballonnets are divided into two halves by aid of a loosely arranged diaphragm which is adapted to lay itself against half the upper or the lower surface of the ballonnet. They are provided with an inlet and an outlet piping for the air of compensation, in order to maintain more easily the longitudinal equilibrium and to facilitate the ascent and descent of the airship.

Lengthwise arranged tubes —33— serve to interconnect the air chambers of the ballonnets by aid of valves of usual type which close against outgoing pressure, but open freely under ingoing pressure, also to supply air to the compensating chambers when the pressure of the hydrogen tends to diminish, a blower —34— being arranged at the mouthpiece of the tubes —33— to blow air into, or draw air from, the compensating chambers.

At high altitudes where the atmosphere is very rare, the pressure of the hydrogen increases and the air of compensation is thus caused to escape and to enter the spaces between the ballonnets, from where it passes through openings in the ceiling into the compartments —11—, —13— and —15—, which said openings are provided with automatic control valves, so as to supply air for respiration when the airship is flying at high altitudes.

The propellers may work independently one from the other and at different speeds, so that the airship may be readily caused to travel in any desired direction, which also facilitates the work of the rudders and the ascent and descent of the airship and maintains the same more securely at the desired altitude.

For this purpose, the propellers —18— to —23— and —27— are arranged around the airship along the line of the largest cross section, where the air is denser on account of the compression produced by the nose of the air ship during flight. Two propellers —24— are placed laterally of the central compartment and provided with reversible blades for a ready forward and backward drive, while two other propellers —25— are placed at the stern end of the balloon laterally of the rear compartment. These latter propellers —25— are provided with swiveling bearings so that their angular position respecting the horizontal axis of the airship may be varied, which arrangement serves also to facilitate the ascent and descent of the airship and to maintain more securely its equilibrium.

The required dirigibility and stability of the balloon are obtained by means which comprise horizontally arranged wings —28— provided with a mobile rear end so that their inclination may be varied and the ascent and descent be facilitated, vertical wings and steadying surfaces, an upper one —29— and three lower ones —30—, which serve to secure longitudinal stability, three vertical rudders —31— and a twoplane rudder —32— arranged astern at a higher level than the platform.

It will be understood that many of the constructional details as hereinbefore set forth may be varied within the scope and the purpose of the invention.

What I claim is:

An airship including a series of spaced ballonnets, diaphragms dividing the ballonnets into hydrogen and air chambers, the hydrogen chambers of the respective ballonnets being in open communication, and means for delivering air under pressure to the air chamber of any or all of the ballonnets to force the gas therefrom, a platform supported by the ballonnets, propellers arranged on the line of maximum length transverse the longitudinal dimension of the air ship, a vertical wing mounted above the ballonnets, a plurality of vertical wings arranged below the ballonnets, and a plurality of rudders.

In testimony whereof I have signed my name in the presence of two subscribing witnesses the 22nd day of June, 1918.

VINCENZO PRITELLI.

Witnesses:
RODOLFO GAMARONI,
ENRICO VARIANO.