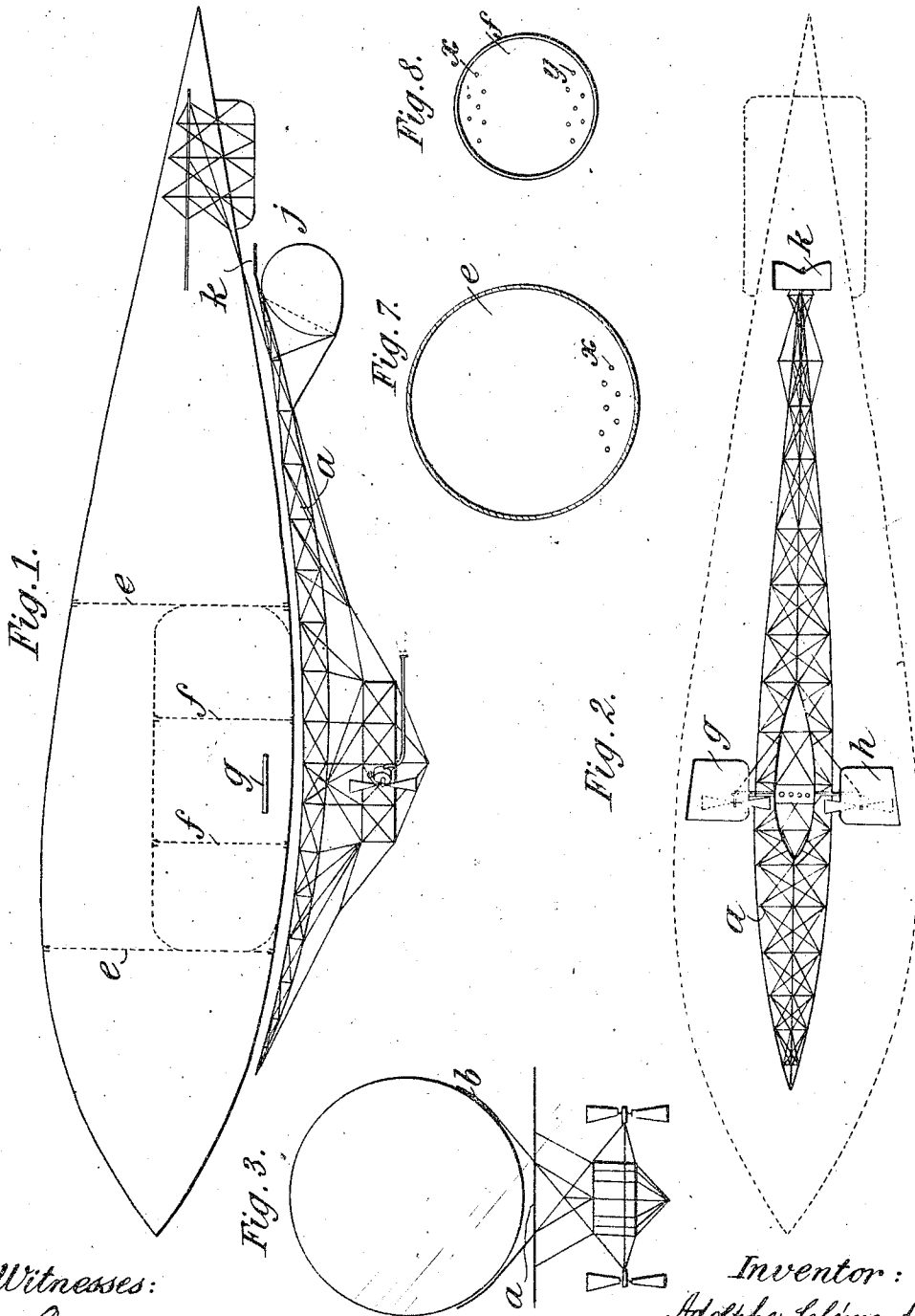


A. CLÉMENT.
DIRIGIBLE AEROSTAT AND THE LIKE.
APPLICATION FILED FEB. 6, 1909.

1,000,495.

Patented Aug. 15, 1911.

3 SHEETS—SHEET 1.



Witnesses:

Irish White
René Muine

Inventor:
Adolphe Clément,

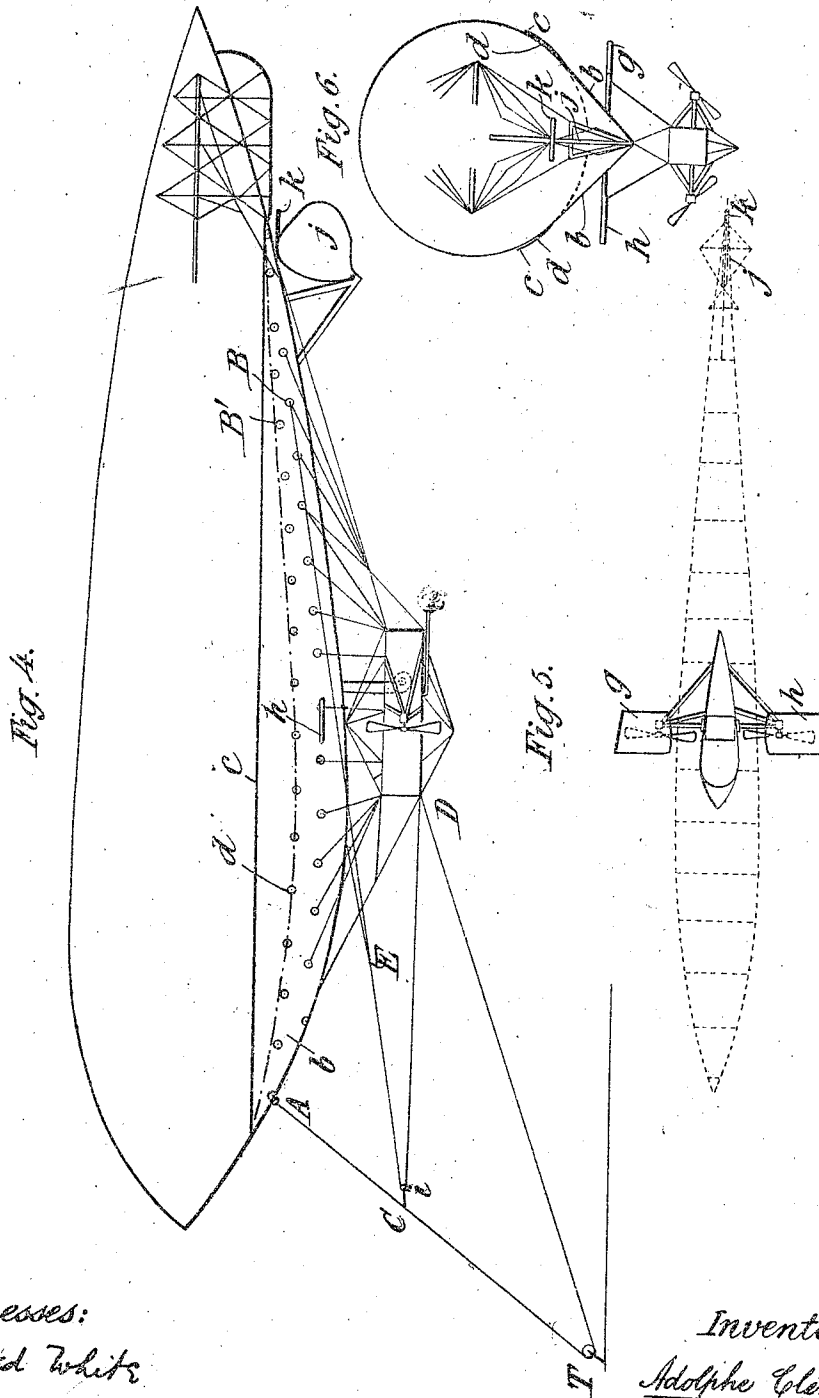
By Attorneys,

Arthur C. Chase & Maeda

A. CLÉMENT.
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Patented Aug. 15, 1911.
3 SHEETS—SHEET 2.



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 DIRIGIBLE AEROSTAT AND THE LIKE.
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 3 SHEETS—SHEET 3.

Fig. 10.

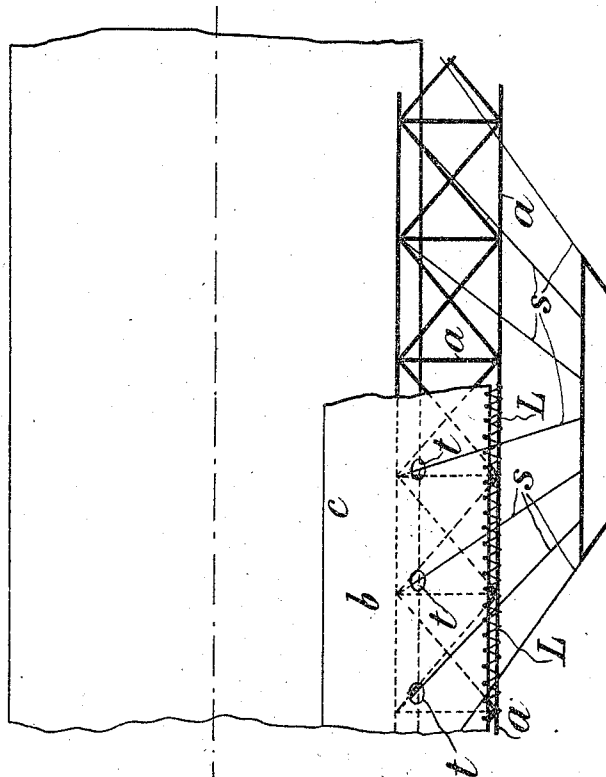
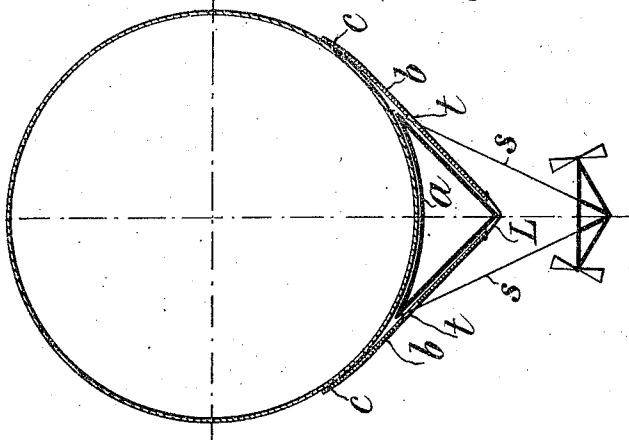


Fig. 9.



WITNESSES:

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UNITED STATES PATENT OFFICE.

ADOLPHE CLÉMENT, OF LEVALLOIS-PERRET, FRANCE.

DIRIGIBLE AEROSTAT AND THE LIKE.

1,000,495.

Specification of Letters Patent. Patented Aug. 15, 1911.

Application filed February 6, 1909. Serial No. 476,515.

To all whom it may concern:

Be it known that I, ADOLPHE CLÉMENT, a citizen of the Republic of France, residing in Levallois-Perret, Seine, France, have invented certain new and useful Improvements in Dirigible Aerostats and the Like, of which the following is a specification.

Experiments made with dirigible balloons of various types, the results of which are sometimes favorable and sometimes unfavorable, have demonstrated that high speeds cannot be reached without affecting the stability and even the strength of the aerostats and have likewise proved the danger of landing. Between the two schools which are divided as to the principle of dirigible balloons, one of which advocates the pliable envelop connected solely by a platform with the car and the other which prefers rigidity of the whole, the present applicant thinks that there is room for a system meeting all requirements. It is in this spirit that he has devised the improvements hereinafter described, which as a whole constitute a novel dirigible balloon presenting a character of novelty both as regards its outward form and as regards the special structure of its reinforced beam forming a keel, and also as regards certain devices which will hereinafter be described with reference to the accompanying drawing, in which:—

Figure 1 is an elevation. Fig. 2 is a lower plan view. Fig. 3 is a section through the main beam of a balloon constructed in accordance with the invention. Fig. 4 is an elevation showing the method of anchoring the balloon to the ground, the openwork net which is laced and buttoned to the reinforced beam forming a keel, which is itself covered. Fig. 5 is a plan view showing the arrangement of the car and of the wings. Fig. 6 is a rear elevation, and Figs. 7 and 8 are front elevations of the openwork partitions of the gas balloon and of the air balloon or "ballonnet" respectively. Figs. 9 and 10 are detail, large scale, views similar to Figs. 3 and 1 respectively.

Referring to Fig. 1, *a* is a reinforced beam or girder forming a keel, approximately triangular, fitted to the lower axial part of the balloon and extending throughout the whole or a part of its length and conforming to its shape. This beam is connected with the balloon by means of an openwork net *b* (Figs. 4 and 6) along straight

or curved seams, with considerable supporting surfaces between the respective seams *c* and the corresponding tangential lines *d* above which the seams are located. This net necessarily serves to reinforce the balloon and at the same time maintains tangential contact notwithstanding the incessant fluctuations due to the internal pressures, which are unstable.

e and *f* are unvarnished elastic partitions which may be openwork at the bottom as regards the partitions of the gas balloon and at the bottom and at the top as regards those of the air ballonnet, as indicated at *x* in Fig. 7 and at *x* and *y* in Fig. 8, and which are intended to render impossible sudden displacements of the gas toward the front or toward the rear,—and to counteract the effects of inertia of the gaseous mass in starting and in stopping.

g and *h* are wings horizontally displaceable and pivoting around a vertical axis (see Fig. 2) either together or independently and in such a manner that in landing they can fold back against the keel fore or aft of their axis.

As in the applicant's opinion a dirigible balloon cannot come to ground in bad weather without risk of damage, the elongated keel (the front and rear of which are higher than the lower part of the balloon) is utilized for providing two points of support A and B. From the point A leads a cable which is anchored to the ground at the point T. At the point C of A T there is a pulley *i*. A cord passes horizontally from the point D on the car over the pulley *i* to E, where it branches out into two cords and rises, being fixed on either side of the keel at B and B'.

The wind tends to lay the balloon upon the ground, but as the angle T A B is indeformable, the balloon inclines from the rear, forms a kite and rises under the influence of the same wind into its original position, its nose to the wind and the whole forming a vane tending to present its minimum resistance or surface to the storm. Owing to this arrangement the height may be selected in accordance with the violence of the wind, the aerial currents or the topographical conditions.

By placing a pulley at T the cable A T may be brought as far as the car D. In this case by means of a winch for example, the

balloon may be brought to ground by hauling a part of C T D upon the car, thus imitating the means employed at sea for coming alongside a quay. Similarly the angle of the balloon may be adjusted by the cable D i E. It is unnecessary to add that so long as the balloon is to form a kite the length of the cord T A must remain fixed, being held stationary by any convenient means. In addition to this, apart from its symmetrical form, the beam is adapted for the attachment to its rigid parts of the steering rudder shown at j and the rudder regulating the height shown at k and also the wings which insures efficiency and a better result from the motive power.

In the case of a beam extending from one end of the balloon to the other, this beam may terminate in front in a spherical cone of rigid material protecting the point of the balloon which would be fitted freely therein.

The car carrying the motor, the propellers and the aeronauts, is suspended in any known or suitable way and enables the propeller or propellers to be located in front or behind, laterally at various heights and even between the keel and the car.

As appears more clearly in the detail views, Figs. 9 and 10, the bolt rope b of hemp is sewed to the balloon along c; it surrounds the girder a and is laced upon this girder by means of cords L. The suspenders s are attached directly to the girder and

pass through the bolt rope b through special openings t provided for the purpose.

What I claim and desire to secure by Letters Patent of the United States is:—

1. A dirigible aerostat comprising a balloon with a longitudinally curved lower profile, a beam on the underside of the balloon, and a net for attaching said beam to the balloon, said net engaging the lower part of the beam so as to support the latter within it and being fastened to the sides of the balloon along lines above the lines at which it is tangent to the balloon, so as to engage the balloon over a surface which is variable with the interior fluctuations of the balloon.

2. A dirigible aerostat comprising a gas balloon containing an air ballonnet located in the lower part of the balloon, flexible permeable partitions e between the balloon and the ballonnet, and flexible apertured partitions f across said ballonnet, said partitions tending by their flexibility and permeability to neutralize the effects of inertia in starting and stopping and to prevent injury by sudden forward or backward movement of gas.

In witness whereof, I have hereunto signed my name in the presence of two subscribing witnesses.

ADOLPHE CLÉME

Witnesses:

JULES ARMENGAUD, Jeune,
ELWOOD AUSTIN WELDEN.