N° 28,710 A.D. 1906

Date of Application, 15th Dec., 1906

Complete Specification Left, 13th June, 1907—Accepted, 26th Sept., 1907

PROVISIONAL SPECIFICATION.

"Improvements in Aeronautical Machines"

I, THOMAS WIGSTON KINGLAKE CLARKE, of 9, St. Andrews Square, Surbiton, in the County of Surrey, Civil Engineer, do hereby declare the nature of this invention to be as follows:—

This invention relates to machines for sailing in the air, and has for its objects to facilitate the control of such machines and thereby to ensure their stability and safety, as also to improve certain details of their construction with a view to increasing their strength and diminishing their weight and the resistance offered to the air.

An aëronautical machine constructed according to this invention comprises two horizontal and parallel surfaces which constitute the main supporting surfaces and are composed of sail-cloth or other suitable fabric stretched over frameworks composed of light spars composed of wood, metal or other suitable material held apart by means of struts arranged at intervals and maintained in position by means of diagonal wire or cord ties. These two supporting surfaces are rigid, or are as rigid as the materials employed in their construction permit, and, speaking generally, are not intended to partake of flexure of any kind, although exposed parts such as corners may be of a collapsible or yielding character in order to avoid injury on coming into contact with the ground. At each extremity of the upper of the two supporting surfaces before referred to is provided a prolongation which projects beyond the lower supporting surface, and is formed in such a manner as to partake of flexure, the nature and extent of which flexure is subject to control in such a manner that either the front or the rear tip of the outer extremity of the prolongation may be raised or lowered in relation to the plane of the upper surface; a slight twist being thereby imparted to either or both of these portions. According to one mode of imparting this twisting movement to each of the said prolongations of the upper supporting surface, I attach to the front and rear tips thereof two spars, the opposite or lower extremities of which are brought together at or about the level of the lower surface and attached to a transversely sliding block. By means of lines which lead to the hand of the operator, this block is caused to advance or retire, with the effect that the leading tip of the prolongation is raised and the trailing tip is depressed; or *vice versâ*; a twist being, in either case, imparted to the said prolongation. The block before referred to may be arranged to move in a straight line or in a curve, according to the degree of twist desired to be imparted to the prolongation.

In the construction of aëronautical machines, it is desirable that the spars whereon the sails are stretched, as also the struts and other portions of the apparatus, should present the smallest possible resistance to the air. It is also desirable that they should possess considerable strength and a fair amount of rigidity. With this object in view, I construct each spar, strut or other part, of two sections of bamboo obtained by cutting a bamboo into three, four or more, parts longitudinally, and fitting two such comparatively flat annular segments together. When provided with fine wire bindings at intervals, or secured together by means of hard-wood dowels dipped in marine glue, a

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spar of flattened oval section, finishing in two sharp edges, is obtained; same possessing great strength in relation to its weight, and considerable stiffness.

For the ties employed for maintaining the various parts of the apparatus in their proper relative positions, I prefer to employ music wire; and in order to impart greater reliability to the eyes whereby such wires are fastened to the various parts of the apparatus, I form them in the following manner: Upon the extremity of the wire intended to form the loop, I thread a tube of brass, mild steel or other suitable metal, and then form the loop by making two turns in the tube-sheathed wire. The extremity of the wire which projects beyond the tube is then twisted round the opposite end of the tube or round the standing part of the wire, where it may, if desired, be soldered, although I do not regard this as essential. The turns formed in the tube-sheathed wire form the eye, the thimble usually employed being dispensed with.

Dated this 15th day of December, 1906.

For the Applicant,
G. G. M. HARDINGHAM,
Chartered Patent Agent.
Clun House, Surrey Street, London, W.C.

COMPLETE SPECIFICATION.

"Improvements in Aeronautical Machines."

I, THOMAS WIGSTON KINGLAKE CLARKE, of 9, St. Andrews Square, Surbiton, in the County of Surrey, Civil Engineer, do hereby declare the nature of this invention and in what manner the same is to be performed to be particularly described and ascertained in and by the following statement:—

This invention relates to machines for sailing in the air, and has for its objects to facilitate the control of such machines and thereby to ensure their stability and safety, as also to improve certain details of their construction with a view to increasing their strength and diminishing their weight and the resistance offered to the air.

In the accompanying drawings, Figs. 1 and 2 illustrate respectively in front elevation and in plan view an aeronautical machine embodying my improvements. Figs. 3, 4 and 5 illustrate certain details of construction hereinafter more particularly referred to.

An aeronautical machine constructed according to this invention comprises two horizontal and parallel surfaces a a^1 which constitute the main supporting surfaces and are composed of sail-cloth or other suitable fabric stretched over frame works b b^1 composed of light spars composed of wood, metal or other suitable material held apart by means of struts c arranged at intervals and maintained in position by means of diagonal wire or cord ties c^1. These two supporting surfaces are rigid, or are as rigid as the materials employed in their construction permit, and, speaking generally, are not intended to partake of flexure of any kind; although exposed parts such as corners may be of a collapsible or yielding character in order to avoid injury on coming into contact with the ground. At each extremity of the upper of the two supporting surfaces before referred to is provided a prolongation a^2 which projects beyond the lower supporting surface a^1, and is formed in such a manner as to partake of flexure, the nature and extent of which flexure is subject to control in such a manner that either the front or the rear tip of the outer extremity of the prolongation may be raised or lowered in relation to the plane of the upper surface; a slight twist being thereby imparted to either or both of these portions. According to one mode of imparting this twisting movement to

each of the said prolongations of the upper supporting surface, I attach to the front and rear tips thereof two spars d d, the opposite or lower extremities of which are brought together at-or about the level of the lower surface and attached to a transversely sliding block d^1. By means of lines d^2 which lead to the hand of the operator at d^3, (the operator's body being supported upon a hammock d^4), this block is caused to advance or retire, with the effect that the leading tip of the prolongation is raised and the trailing tip is depressed, or *vice versâ*; a twist being in either case imparted to the said prolongation. The block before referred to may be arranged to move in a straight line or in a curve, according to the degree of twist desired to be imparted to the prolongation.

In the construction of aeronautical machines, it is desirable that the spars whereon the rails are stretched as also the struts and other portions of the apparatus, should present the smallest possible resistance to the air. It is also desirable that they should possess considerable strength and a fair amount of rigidity. With this object in view, I construct each spar, strut or other part, of two sections of bamboo obtained by cutting a bamboo into three, four or more, parts longitudinally, and fitting two such comparatively flat annular segments together as shewn in Figs. 3 and 4. When provided with fine wire bindings e at intervals, or secured together by means of hard-wood dowels dipped in marine glue, a spar of flattened oval section, finishing in two sharp edges, is obtained; same possessing great strength in relation to its weight, and considerable stiffness.

For the ties employed for maintaining the various parts of the apparatus in their proper relative positions, I prefer to employ music wire; and in order to impart greater reliability to the eyes, whereby such wires are fastened to the various parts of the apparatus, I form them as shewn in Fig. 5. Upon the extremity of the wire intended to form the loop, I thread a tube f of brass, mild steel or other suitable metal, and then form the loop by making two turns in the tube-sheathed wire. The extremity of the wire which projects beyond the tube is then twisted round the opposite end of the tube or round the standing part of the wire, where it may, if desired, be soldered, although I do not regard this as essential. The turns formed in the tube-sheathed wire form the eye, the thimble usually employed being dispensed with.

Having now particularly described and ascertained the nature of my said invention and in what manner the same is to be performed, I claim:—

1. In an aëronautical machine having two horizontal and parallel main supporting surfaces of a rigid character, providing each extremity of the upper surface with an extension which projects beyond the lower supporting surface and is of a flexible character, substantially as set forth.

2. In an aëronautical machine of the type in which the main supporting surfaces consist of fabrics stretched over bamboo or other wooden frames, constructing such frames of two segments of a hollow cylinder, such as a bamboo, which when secured together present, in cross-section, a flattened oval with two sharp edges, substantially as herein described.

3. In an aëronautical machine, the employment of wire ties having eyes formed from a metal tube through which the wire is threaded and the tube subsequently twisted to form a loop, substantially as described with reference to Fig. 5 of the accompanying drawings.

Dated this 25th day of May, 1907.

For the Applicant,
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Redhill: Printed for His Majesty's Stationery Office, by Love & Malcomson, Ltd.—1907.

Fig. 1.

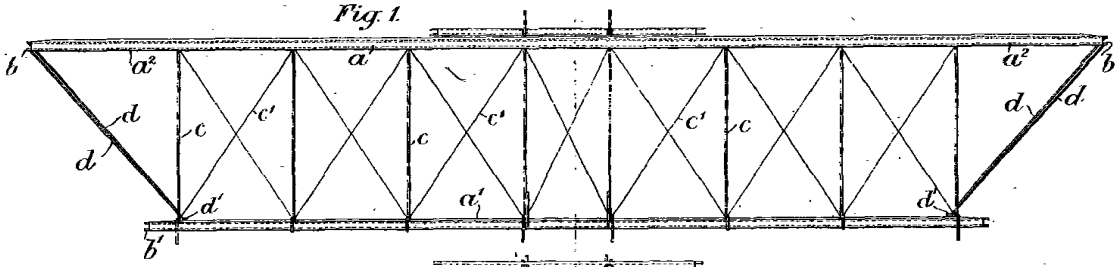

Fig. 2.

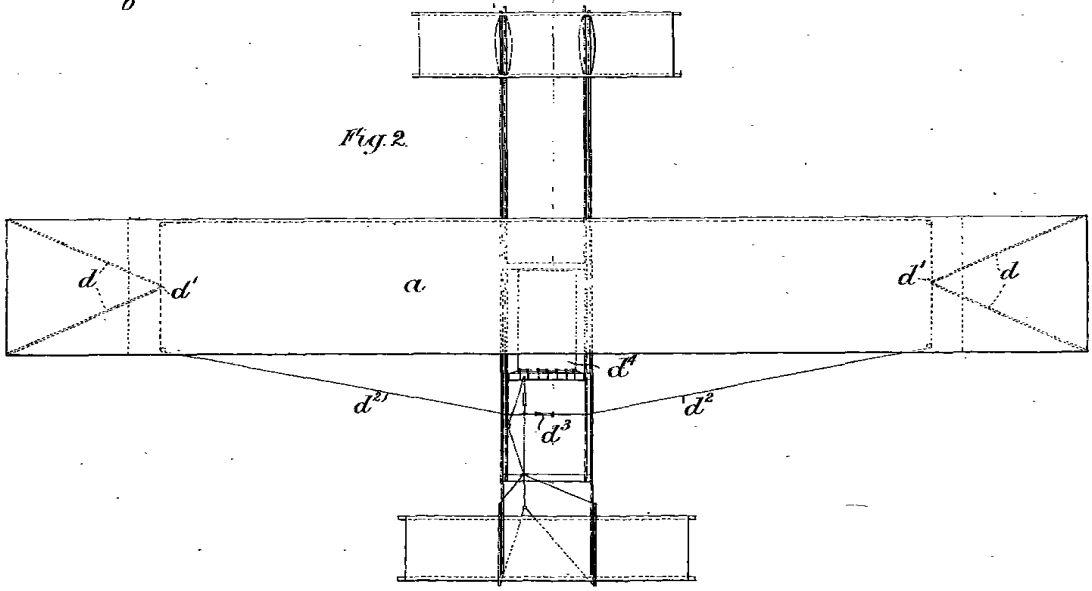

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Fig. 1.

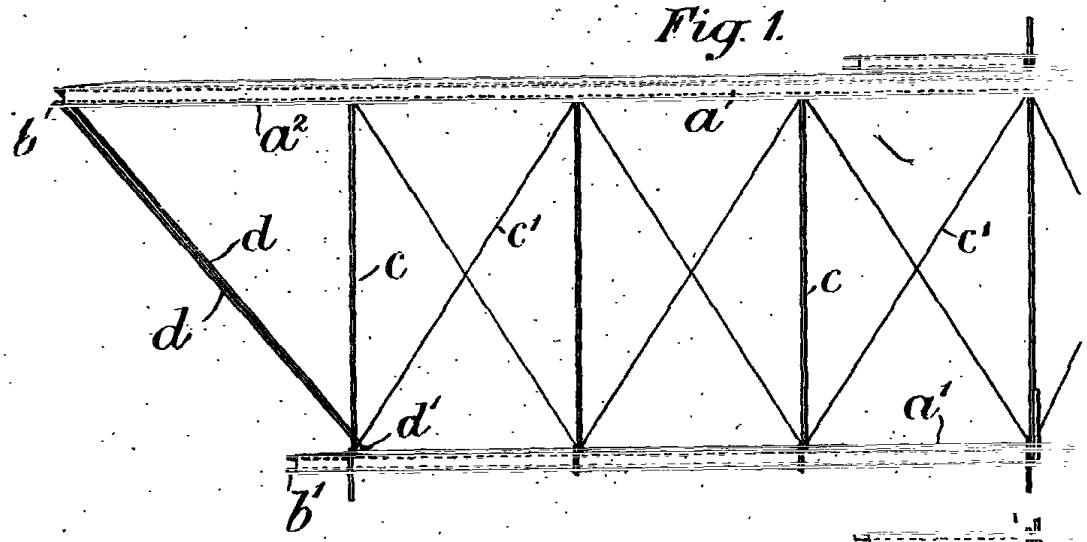
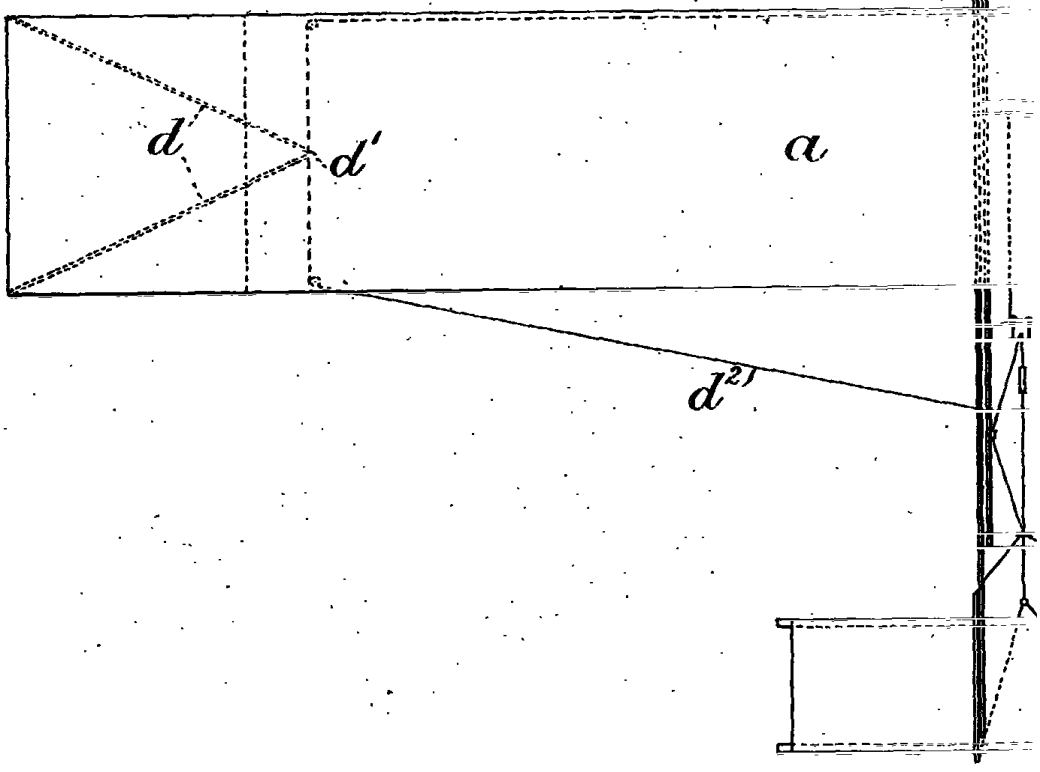
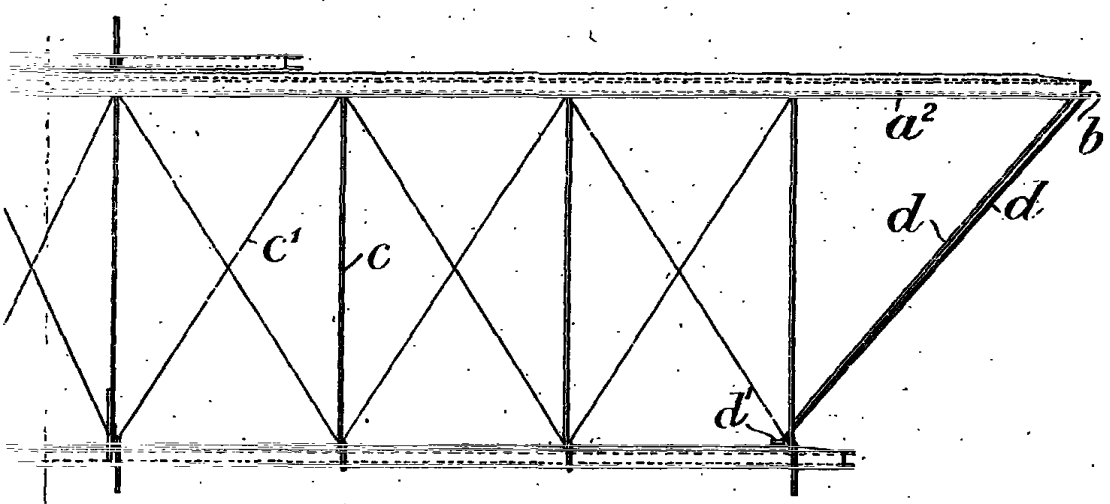
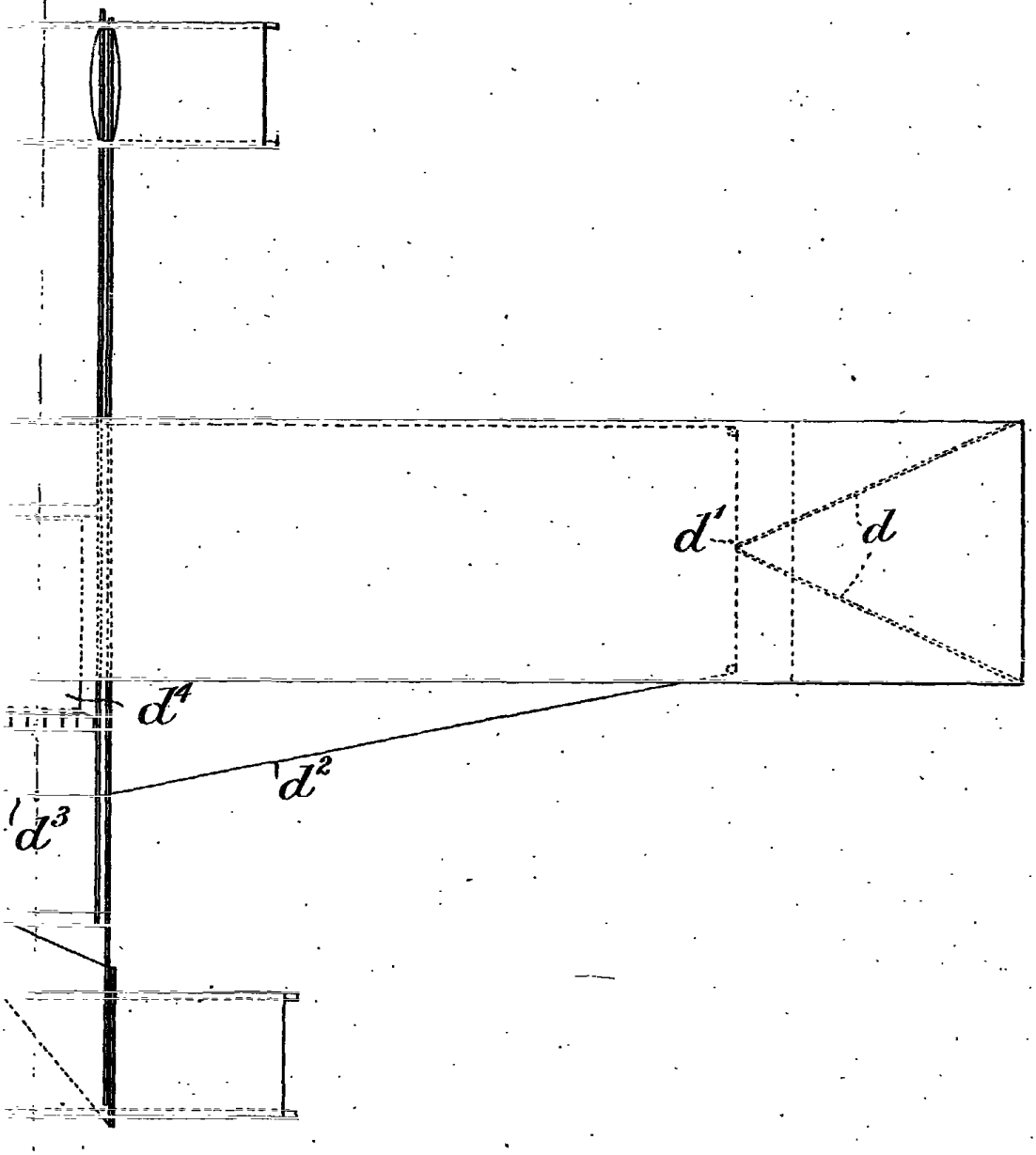


Fig. 2.







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[This Drawing is a reproduction of the Original on a reduced scale.]

Fig. 3.

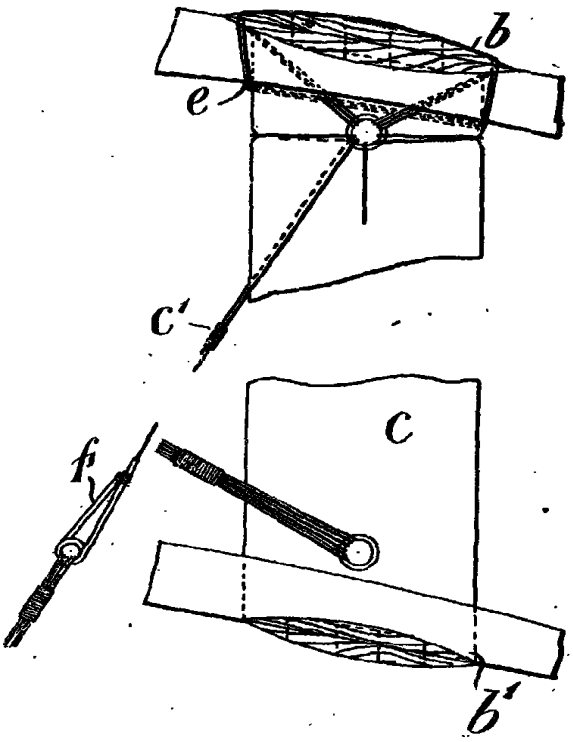


Fig. 4.

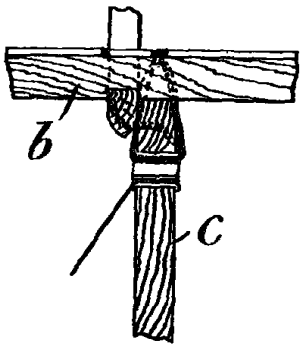
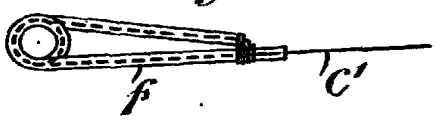


Fig. 5.



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