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AEROPLANE.

APPLICATION FILED AUG. 31, 1909.

1,035,701. Patented Aug. 13, 1912.

FIG. 1

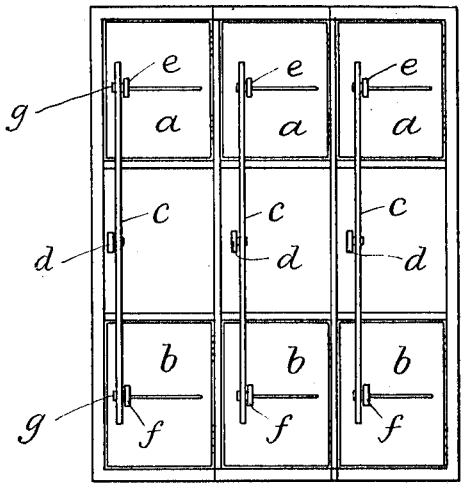


FIG. 2

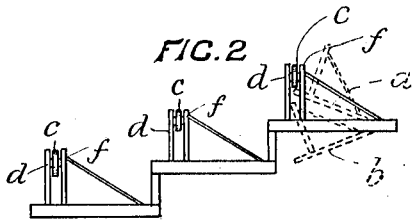
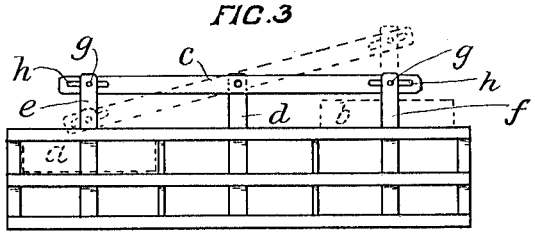


FIG. 3



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AEROPLANE.

1,035,701. Specification of Letters Patent. Patented Aug. 13, 1912.

Application filed August 31, 1909. Serial No. 515,504.

To all whom it may concern:

Be it known that we, CHARLES ARTHUR BEAUCHAMP PICKARD HAWKINS and BERTRAM OGILVIE, subjects of the King of Great Britain, residing at Napier, in the Dominion of New Zealand, have invented new and useful Improvements in or Relating to Aeroplanes; and we do hereby declare the following to be a full, clear, and exact description of the same.

This invention relates to aeroplanes, and especially to the planes used for balancing the machine while in the air, in order to prevent any side dipping action owing to variable currents, especially when encountering side winds. Hitherto, these planes have been mechanically actuated by the manipulator of the machine, who has to employ mechanism to adjust the planes in order to maintain the equilibrium of the machine. The consequence is that a considerable amount of attention is required to properly control the machine in this respect.

The present invention consists in so mounting these planes and connecting those on one side of the machine with those on the other side that the adjustment of the planes will be entirely automatic, and thus the aeroplane be maintained in equilibrium automatically. In carrying out the invention, these planes are hinged along their forward ends to the frame of the machine in such a manner that they will be capable of turning up and down on their hinges in a plane longitudinally with the machine. The planes on one side are then respectively connected with the corresponding planes on the other side by means of approved mechanical devices of such a nature that when the plane on one side is depressed, the plane on the other will be raised a corresponding amount, and vice versa. Consequently, should an extra air pressure strike on one side of the machine, the planes on that side will be lifted on their hinges, while those on the other will be depressed, and thereby tend to raise this latter side to keep it level with the raising action of the extra wind pressure on the first side. Thus, the variations of the wind or air pressure upon the two sides of the machine will be automatically compensated for, and the aeroplane kept in equilibrium in this respect. When the pressure on both sides is equal, the planes will adjust themselves in the same positions relatively to the machine.

In the accompanying drawings,—Figure 1 is a diagrammatic plan of the planes of an aeroplane, illustrating the manner of mounting the outer planes and connecting those on one side with those on the other. Fig. 2 is a side elevation, and Fig. 3 is a front elevation thereof.

The frame for carrying the planes is made in any of the well known ways, and in this invention the planes *a*, *b*, on the respective sides of the aeroplane are each hinged at their forward ends, so that they may rise and fall on their hinges, longitudinally with the machine. The planes on the one side are connected with those on the other by any suitable mechanism, such that they will actuate one another in reverse directions, that is, that one will turn up on its hinges when the other turns down, and vice versa. The means shown in the drawings consist of a connecting rod *c*, that is pivotally attached at its center by means of a loose pivot connection, to the end of a pillar *d* carried upon the aeroplane center. This rod is then pivoted at its two ends to vertical pillars *e* and *f*, extending upward from the respective side planes *a* and *b*, by means of pins *g* passing through longitudinal slots *h* formed in the ends of the rod. This manner of connection provides for the up and down movement of the one plane being communicated reversely to the other, while the pillars *e* and *f* remain vertical in relation to the planes. Other means for connecting these planes may, however, be employed to provide for the same effect, and it is not desired to confine our invention to those shown in the drawings.

It will be apparent that so long as the planes on both sides are under equal influences as regards wind currents, they will assume the same position relatively to the aeroplane frame. Should the influence be varied tending to raise the aeroplane on one side, the planes on this side will rise on their hinges, thus forming deflecting vanes tending to lower such side, while the planes on the other side will be depressed a corresponding amount and form deflecting vanes with a tendency to raise such side. Thus

the aeroplane will automatically retain its equilibrium in the manner desired.

What we do claim as our invention, and desire to secure by Letters Patent, is,—

1. In an aeroplane, the combination of a frame having longitudinal and cross pieces dividing the frame with a plurality of corresponding equal central and side sections: central planes fixed over the central sections; side planes disposed in the respective side sections and hinged at the front edges to the cross pieces; central pillars fixed upright near the middle of the rear edge of the central planes; side pillars fixed near the middle of the rear edge of the side planes perpendicular to the respective side planes; braces connecting the upper ends of the side pillars to the front edge of the respective side planes; connecting rods pivoted on the front face of the upper ends of the front pillars and having slotted ends disposed across the rear face of the upper ends of the side pillars; and pins in said side pillars and engaging in the slots of the connecting rods.

2. In an aeroplane, the combination of a frame having central and side sections; a central plane fixed over the central section; side planes disposed in the side sections and hinged therein at their front edges; a central pillar fixed upright near the rear edge of the central plane; side pillars fixed upright on the rear part of the side planes; braces connecting the upper ends of the side pillars to the front edges of the respective side planes; a connecting rod pivoted to the upper end of the central pillar and having longitudinal slots in its ends; and pins in the upper ends of the side pillars and engaging in the slots.

3. In an aeroplane, the combination of a central plane, a pair of side planes, one hinged at its forward edge at each end of the central plane; a central pillar; a connecting rod pivoted to the central pillar and having slots in its ends; and pins carried by the side planes and engaging in the slots.

In testimony whereof, we have signed this specification in the presence of two subscribing witnesses.

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