

G. RASMUSSEN.

AEROPLANE.

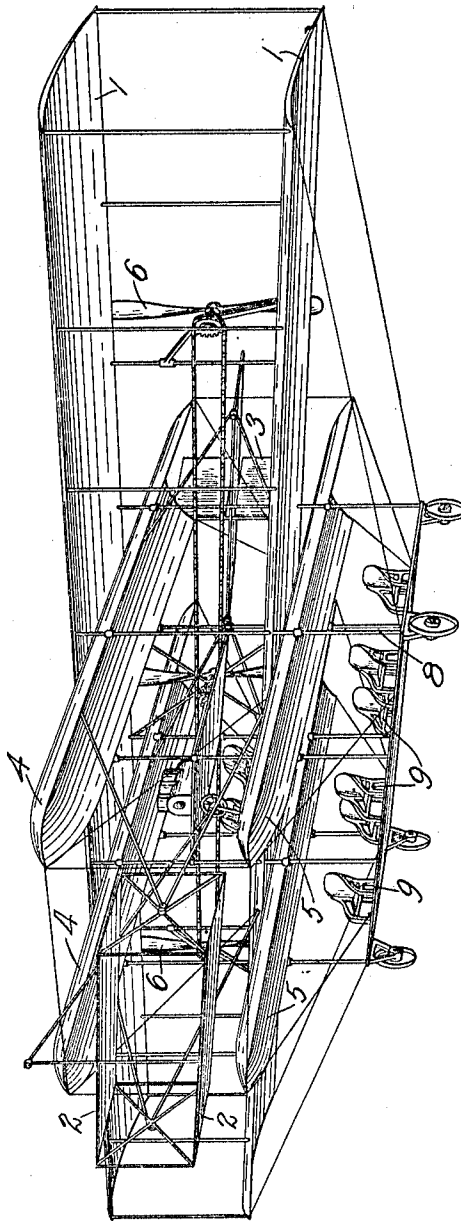
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1,035,103.

Patented Aug. 6, 1912.

2 SHEETS—SHEET 1.

Fig. 1



Witnesses
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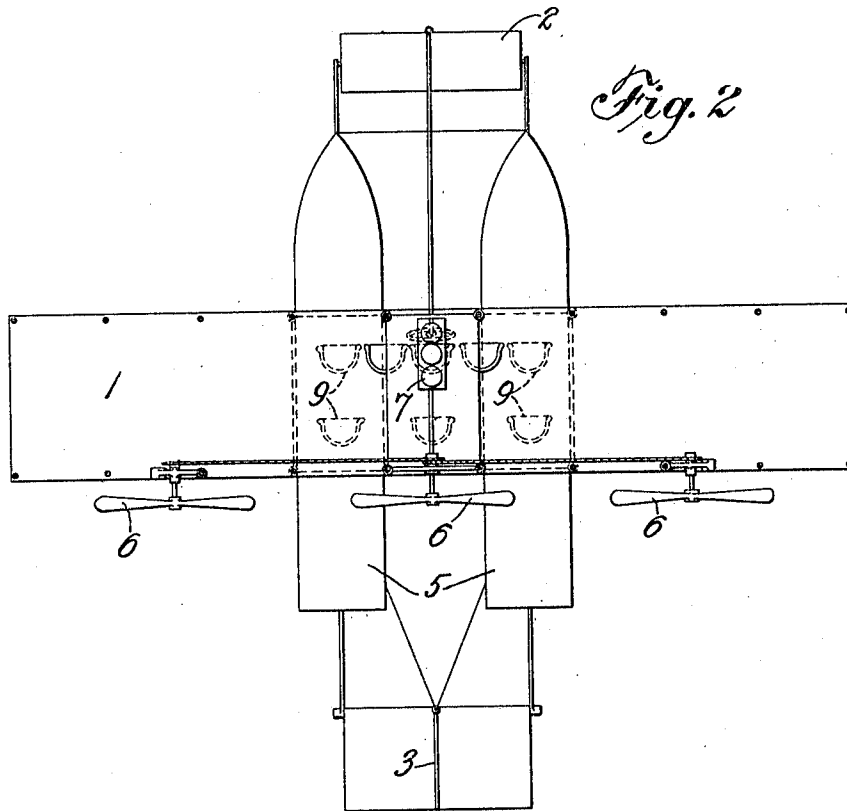


Fig. 2

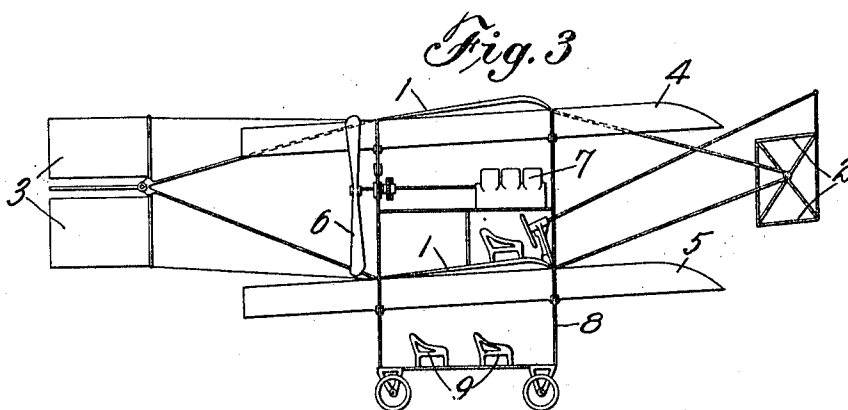


Fig. 3

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UNITED STATES PATENT OFFICE.

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AEROPLANE.

1,035,103.

Specification of Letters Patent.

Patented Aug. 6, 1912.

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To all whom it may concern:

Be it known that I, GERHARDT RASMUSSEN, a citizen of the United States, and a resident of New York city, borough of Queens, county of Queens, and State of New York, have invented certain new and useful Improvements in Aeroplanes, of which the following is a full, clear, and exact specification, such as will enable others skilled in the art to which it appertains to make and use the same.

My invention relates to certain improvements in aeroplanes and more particularly to improvements in the type of aeroplane known as the bi-plane. As will be understood, in this type of machine the sustaining power is derived solely from the reaction of two superposed planes with the air, these planes being placed transversely of the direction of motion of the aeroplane. These planes, while giving the necessary stability with regard to the horizontal axis of the line of motion, afford very little, if any, with regard to the axis transverse of the line of motion. A further disadvantage of these machines as now built is that the driver's and passenger's seats are placed on the surface of the lower plane, thus keeping the center of gravity of the aeroplane very high with regard to the sustaining force. This condition also increases the instability rendering aviation a dangerous sport and accordingly retarding its progress as a science.

The construction above noted necessitates the positioning of the engine in the rear of the driver, making its working parts inaccessible to him and his machine during flight. Failure of parts of the engine to perform their respective functions properly, has been, up to the present time, one of the most prolific sources of accidents. Were it possible for these parts to be reached and adjusted by the aviator or his mechanic in flight, many serious accidents could be averted.

The principal object of my invention is to so improve the bi-plane as to remove the above mentioned objections, and as a further object I desire to increase the lifting capacity of such machines without adding such surfaces as might tend to offer such resistance as would require a great increase in driving power. In accomplishing this result I am enabled to provide an underslung passenger carriage, owing to the in-

creased lifting power above spoken of. By placing the passengers and, if desired, the driver in this structure, the center of gravity of the aeroplane is materially lowered and an effect analogous to that of a ship's keel is produced, giving great stability to the machine when in flight. In addition, the placing of the driver under the lower plane, enables me to support my motor on this plane in-front of and above him, thus making the parts accessible and adjustable at all times. This is possible both because of the steadying effect due to the low center of gravity and the improved utilization of the space.

All of these improvements above noted are accomplished, in some instances, directly and some indirectly by the placing of preferably essentially torpedo-shaped planes transverse of both the upper and lower main supporting planes. By essentially torpedo-shaped, I do not mean to limit myself to precisely the form of such a figure, as portions of either end thereof may be omitted, making the same truncated. These first-mentioned planes I prefer to make in cross-section curved and concave downward although it is within the scope of my invention to vary their shape, number and position as I desire. By the construction I usually use, as shown in the accompanying drawings, the main planes and the entire aeroplane is braced, and the surfaces are of such a shape as to offer little resistance upon the rising of the machine, to act as parachutes upon unduly rapid descent, and to provide an additional sustaining and steadying surface during normal operation.

Reference is now had to the accompanying drawings, in which—

Figure 1 is a perspective view of my aeroplane; Fig. 2 is a plan view thereof with the upper planes removed; and Fig. 3 is a side elevation.

In my preferred embodiment, I have two rectangular supporting planes 1, extending transversely of the line of motion of the aeroplane, and lateral and vertical control tips 2 and 3, such as are in common use in machines of this type. These rectangular planes present their longest side at right-angles to the line of motion. It is this style of plane that I term in the claims, a "bi-plane". My upper auxiliary planes 4 I place transversely of the upper plane and preferably, although not necessarily sub-

stantially, in the same geometric plane therewith. These auxiliary planes extend to the front and rear of the main plane to any desired extent and these surfaces serve to
 5 give balance to the machine with regard to the horizontal axis at right angles to the line of motion. This balancing effect may well be likened to that afforded a tight-rope walker by his pole. The shorter side of
 10 these planes, which may be rectangular, although I make them essentially torpedo-shaped, is presented to the air as the aeroplane is driven forward. My auxiliary planes extend across and transverse to the
 15 main plane and by transverse I mean that their longer axes are at right-angles to the longer axis of the planes in the bi-plane above defined. The auxiliary planes I prefer to make in cross-section concave downward and curved. By this means a minimum resistance is offered by them while rising, and a parachute effect is secured if the machine drops too swiftly. My lower planes
 20 5, if I provide any, are analogous in shape and relative position as the upper ones. These planes are supported by any desired means although they may be integral with the sustaining planes.

I force the machine forwardly by propellers 6, of which I prefer to use three; and these propellers are driven by a suitable motor, 7. This motor I place upon a superstructure in such a position relative to the driver that he may at all times easily reach
 35 to adjust or repair any of its parts. I am enabled to shift this weight by reason of the "keel" effect of the passengers above spoken of and also because of the additional steadying effect furnished by the auxiliary planes projecting forwardly and rearwardly. To produce the "keel" effect, I place a structure under all of the planes, the added weight of this structure being taken care of by my auxiliary planes.

45 The under-slung carriage which I prefer to use to carry passengers in, is of any suitable construction and since its primary function is to carry seats 9 for passengers it may be made in sections consisting of rods or

any suitable framework, with a seat mounted on each section.

All details of design such as the shape, number and position of the auxiliary planes; the placing of the motor with respect to the driver, provided it is accessible to him while
 55 the machine is in flight, and the passengers' carriage with its arrangement of seats, may be varied without departing from the spirit of my invention.

Having thus described my invention what I claim as new and desire to secure by Letters Patent of the United States is:

1. A bi-plane having main sustaining planes and auxiliary planes extending across and substantially transverse thereto, said
 65 auxiliary planes being concave downward in cross section.

2. A bi-plane having main sustaining planes and auxiliary planes said planes being curved and concave downward and arranged in pairs on the upper and lower main planes and transverse thereto.

3. A bi-plane having main sustaining planes and a plurality of auxiliary planes substantially transverse thereto and integral
 75 therewith said auxiliary planes projecting beyond the edges of said main planes in substantially the same geometric plane.

4. A bi-plane having main sustaining planes and two pairs of planes, said planes
 80 being in cross-section concave downward and curved, one pair being substantially in the same geometric plane with the upper main plane and one pair being substantially in the same geometric plane with the lower
 85 main plane; each pair being substantially transverse of the said main planes, said auxiliary planes being positioned in pairs on each side of the central horizontal axis of the aeroplane along the line of motion.

In testimony whereof I have signed my name to this specification in the presence of two subscribing witnesses.

GERHARDT RASMUSSEN.

Witnesses:

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 H. E. RAABE.