March 17, 1925. 1,529,988

R. DENAULT

FUSELAGE FOR AEROPLANES

Filed Dec. 10, 1923

Fig. 1.

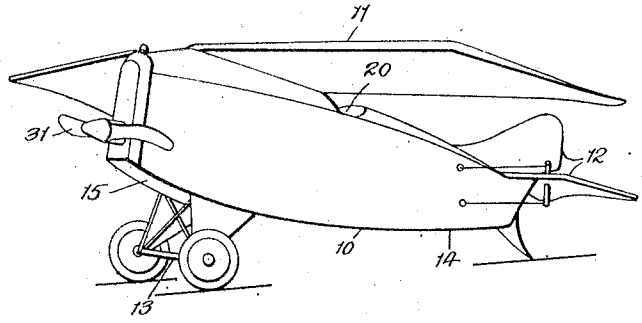


Fig. 2.

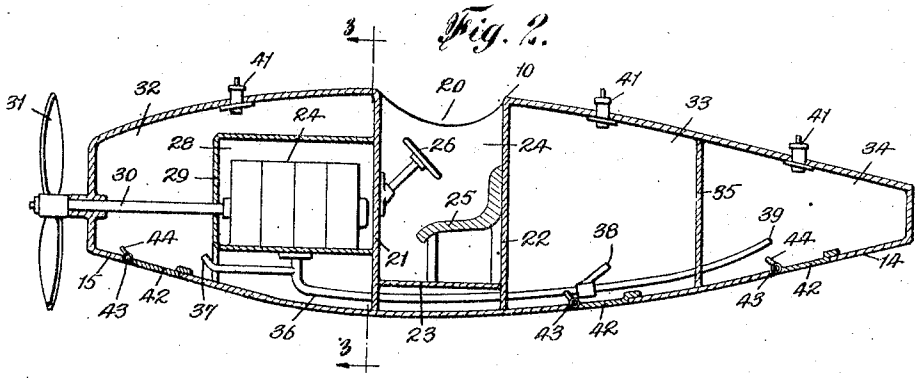
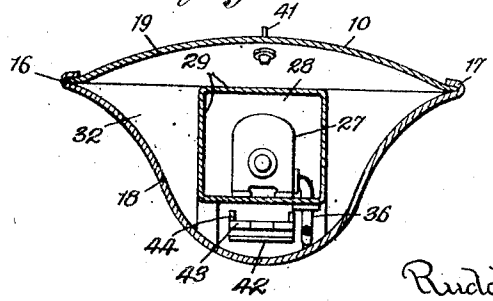


Fig. 3.



INVENTOR

Rudolph Denault

BY

W. T. Criswell

ATTORNEY

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UNITED STATES PATENT OFFICE.

RUDOLPH DENAULT, OF BROOKLYN, NEW YORK.

FUSELAGE FOR AEROPLANES.

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To all whom it may concern:

Be it known that I, RUDOLPH DENAULT, a subject of the King of England, and a resident of New York, borough of Brooklyn, in the county of Kings and State of New York, have invented certain new and useful Improvements in a Fuselage for Aeroplanes, of which the following is a full, clear, and exact specification.

This invention relates more particularly to a form of body adapted to be used in a class of airships.

My invention has for its object primarily to provide a fuselage or body designed to be employed for aeroplanes and the like, and which is of a form adapted to be charged with gaseous fluid for increasing its buoyancy. The invention also contemplates the utilization of the gaseous products of the exhaust from the engine of the apparatus for charging the body to enhance its buoyancy which in turn will tend to facilitate the ascent and descent of the apparatus as well as serving to enable travel in the air to be accomplished with minimum consumption of fuel. The invention consists essentially of a hollow body which may be approximately ovaliform in cross-section, and lengthwise of the exterior of the body intermediate its lower and upper extremities may be laterally projecting flanges for taking the air to assist the flight of the apparatus. Interiorly of the body may be one or a number of air-tight chambers for being charged with gaseous fluid to lessen the weight of the body, and when the apparatus is propelled by a combustion engine the gaseous products of exhaust are conveyed to the chambers for increasing the buoyancy of the body.

Another object of the invention is to provide each chamber with means operative by the gaseous fluid for maintaining a determined volume of gas in each chamber so that the liability of overstraining the body will be avoided, and to also prevent liability of choking the engine when the chambers are charged with gaseous products of the exhaust; and a further object of the invention is to provide a fuselage of a simple and efficient construction which may be made in any appropriate size.

With these and other objects in view, the invention will be hereinafter more fully explained with reference to the accompanying drawing forming a part of this specification in which similar characters of reference indicate corresponding parts in all the views, and will then be pointed out in the claims at the end of the description.

In the drawing, Figure 1 is a perspective view of an aeroplane constructed according to one form of my improved fuselage.

Fig. 2 is an enlarged longitudinal vertical section, partly in elevation, taken through a fuselage of somewhat a modified shape to the fuselage shown in Fig. 1, and

Fig. 3 is an enlarged sectional view, partly in elevation, taken on the line 3—3 of Fig. 2.

The fuselage has a hollow air-tight body 10 carrying one or more wings or planes, as 11, as well as being provided with suitable steering rudders, as 12, and a suitable wheel carriage, as 13. The body 10 may be of any appropriate size and shape, though the form of the body illustrated is somewhat ovaliform in cross section with a tapered rear end, as 14, and a tapered forward end, as 15. Extending lengthwise of the exterior of the body intermediate its lower and upper extremities may be laterally protruding flanges or extensions, as 16, 17. These flanges may be provided by forming the lower wall or part of the body cross sectionally in somewhat a bell-shape, as at 18, and forming the top or upper wall of the body cross-sectionally in a convex-shape, as at 19. In order that the body may be normally of relative lightness in weight its walls may be made of aluminum or an alloy of aluminum and magnesia metals or other suitable material, and centrally of the top wall 19 may be an opening or entrance, as 20, to admit the pilot into the body. The walls of the body are airtight in their construction.

Within the body at the entrance 20 are spaced transverse air-tight partitioning members 21, 22 having between their lower parts an air-tight floor, as 23, to provide a compartment 24 for the pilot, and in this compartment may be a suitable seat, as 25, in front of which may be an appropriate steering wheel, as 26. When the aeroplane is of a form adapted to be driven by a combustion engine as 27, it may be inclosed in a compartment, as 28, formed by partitioning members, as 29, provided in the body of the fuselage adjacent the partition or wall 21 of the pilot compartment 24. The drive shaft 30 of the engine is journaled in one of

the partitions or walls of the compartment 28 and journaled in the forward end of the body so that the shaft extends a suitable distance in front of the body, and on the forward end of this drive shaft may be a propeller, as 31.

The remaining space interiorly of the body 10 may provide a single air-tight chamber, though the interior is preferably divided to provide in the forward part of the body a chamber 32 and to provide chambers 33 and 34 in the rear part of the body by constructing an air-tight partition member 35 across the interior of the body between the pilot compartment 24 and the rear end of the body.

The flanges 16 and 17 of the body serve for taking the air when the apparatus is travelling to assist its flight, and to promote the buoyancy of the body by lessening its normal weight, the chambers 32, 33, 34 may be charged with any suitable gaseous fluid, such as the class of gas commonly used in balloons or airships, and the delivery of the gaseous fluid may be accomplished by forcing the gas under pressure through a pipe or duct, as 36. The pipe 36 may lead from the chamber 32 or elsewhere into the other chambers, and this pipe may be provided with outlets, as 37, 38, 39, one leading into each of the chambers 32, 33, 34. When the apparatus is driven by the engine the buoyancy of the body may be increased by connecting the inlet end, as 40, to the exhaust outlet of the engine for utilizing the gaseous products of the exhaust to charge the chambers by causing the gaseous products to be delivered through the pipe.

To prevent overstraining the body by charging the chambers with excess of the gaseous fluid, that is, to maintain in the chambers a volume of the gas approximating two-thirds or three-fourths the weight of a like volume of the air exteriorly of the body, and to also maintain the gas at a pressure less than the pressure at the exhaust of the engine, on preferably the top of the body and leading into each of the chambers 32, 33, 34 is a blow-off device or safety valve, as 41. Each of these valves may be of any well known or preferred type adapted to operate when the gas or gaseous products of exhaust in the chambers exceed a determined pressure for allowing the excess of the gas to escape, and in turn the engine will also be prevented from choking. Moreover, when gaseous products of exhaust are employed for charging the chambers, in the underside of the lower wall 18 of the body, is provided door closed outlets, as 42, one leading from each of the chambers. The door of each of these outlets is of a form providing airtight joints, and each door is preferably hinged, at 43, to swing inwardly of the body as well as being under the tension of a spring, as 44, normally serving to force the door snugly in closed position on its respective outlet. Any sediment or soot from the products of exhaust which may accumulate in the body may be removed in any convenient manner through the outlets 42 after the doors are swung open.

In the foregoing description, I have embodied the preferred form of my invention, but I do not wish to be understood as limiting myself thereto, as I am aware that modifications may be made therein without departing from the principle or sacrificing any of the advantages of this invention, therefore, I reserve to myself the right to make such changes as fairly fall within the scope thereof.

Having thus described my invention, I claim as new and desire to secure by Letters Patent:—

1. In a fuselage for aeroplanes, a hollow air-tight body including a lower wall portion of approximately a bell-shape in cross-section and a curved upper wall across the entrance of the lower wall portion, providing lengthwise of the exterior of the body intermediate its lower and upper extremities laterally protruding flanges, and a door controlled outlet in the underside of the body.

2. In a fuselage for aeroplanes, a hollow air-tight body including a lower wall portion of approximately a bell-shape in cross-section and a curved upper wall across the entrance of the lower wall portion, providing lengthwise of the exterior of the body intermediate its lower and upper extremities laterally protruding flanges, spaced partitions in the body dividing its interior into chambers, and door controlled outlets in the underside of the body, one leading into each chamber.

3. In a fuselage for aeroplanes, a hollow air-tight body including a lower wall portion of approximately a bell-shape in cross-section and an upper wall across the entrance of the lower wall portion, providing lengthwise of the exterior of the body intermediate its lower and upper extremities laterally protruding flanges, a door controlled outlet in the underside of the body, means for conveying the gaseous products of exhaust from the engine to the interior of the body, and means on the body operative by the gaseous products when under a given pressure for maintaining a determined volume of the gases in the body.

4. In a fuselage for aeroplanes, a hollow air-tight body including a lower wall portion of approximately a bell-shape in cross-section and an upper wall across the entrance of the lower wall portion, providing lengthwise of the exterior of the body intermediate its lower and upper extremities laterally protruding flanges, spaced partitions in the body dividing its interior into chambers, door controlled outlets in the un-

derside of the body, one leading into each chamber, a pipe leading from the exhaust port of the engine for conveying the gaseous products of exhaust from the engine to the chamber and said pipe having outlets, one leading into each chamber, and valve controlled means on the body leading from each chamber for being operated by the gaseous products when under a given pressure in each chamber for maintaining therein a determined volume of the gases.

This specification signed and witnessed this 8th day of December A. D. 1923.

RUDOLPH DENAULT.

Witnesses:
W. T. CRISWELL,
J. FREDERICK CRYER.