Nov. 11, 1930. I. GLANSCHNIG 1,781,455

AEROPLANE

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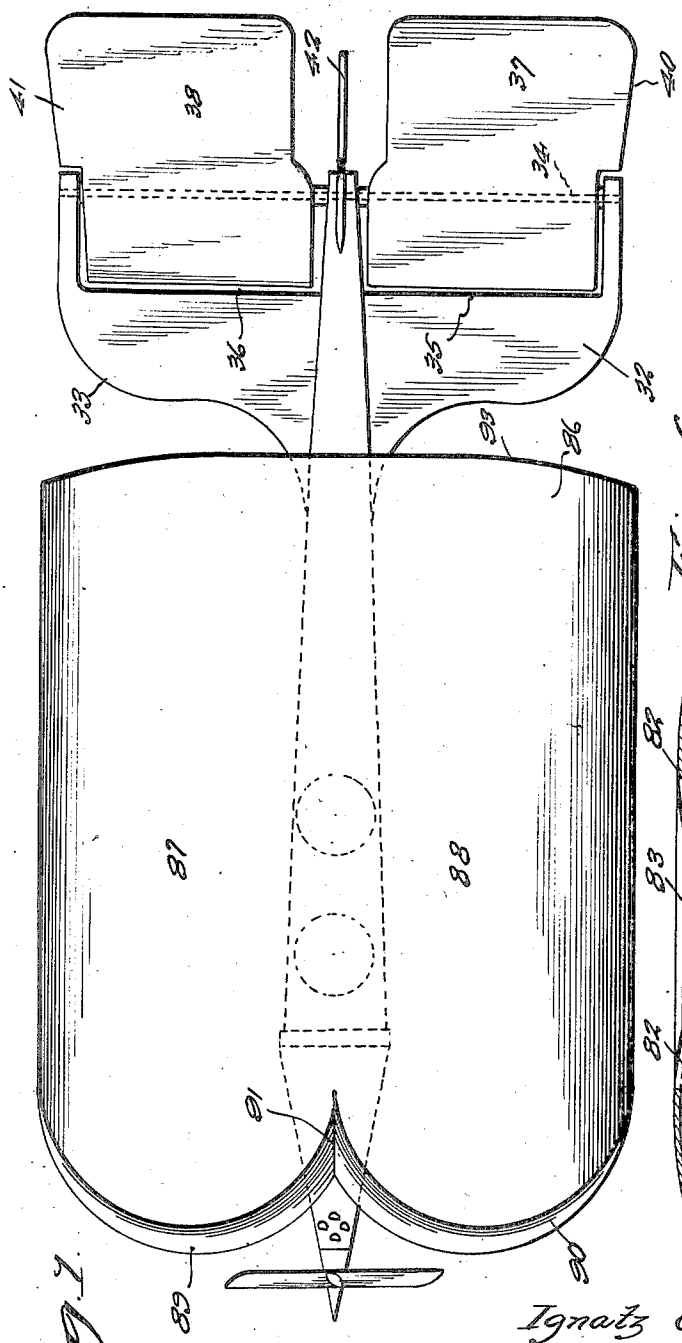


Fig. 1.

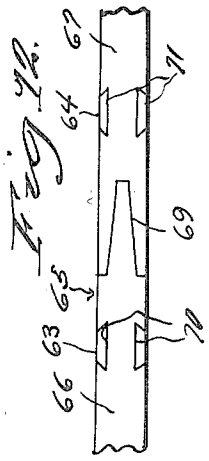


Fig. 2.

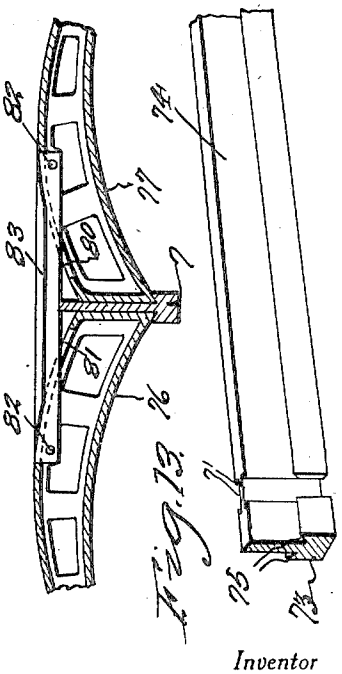


Fig. 3.

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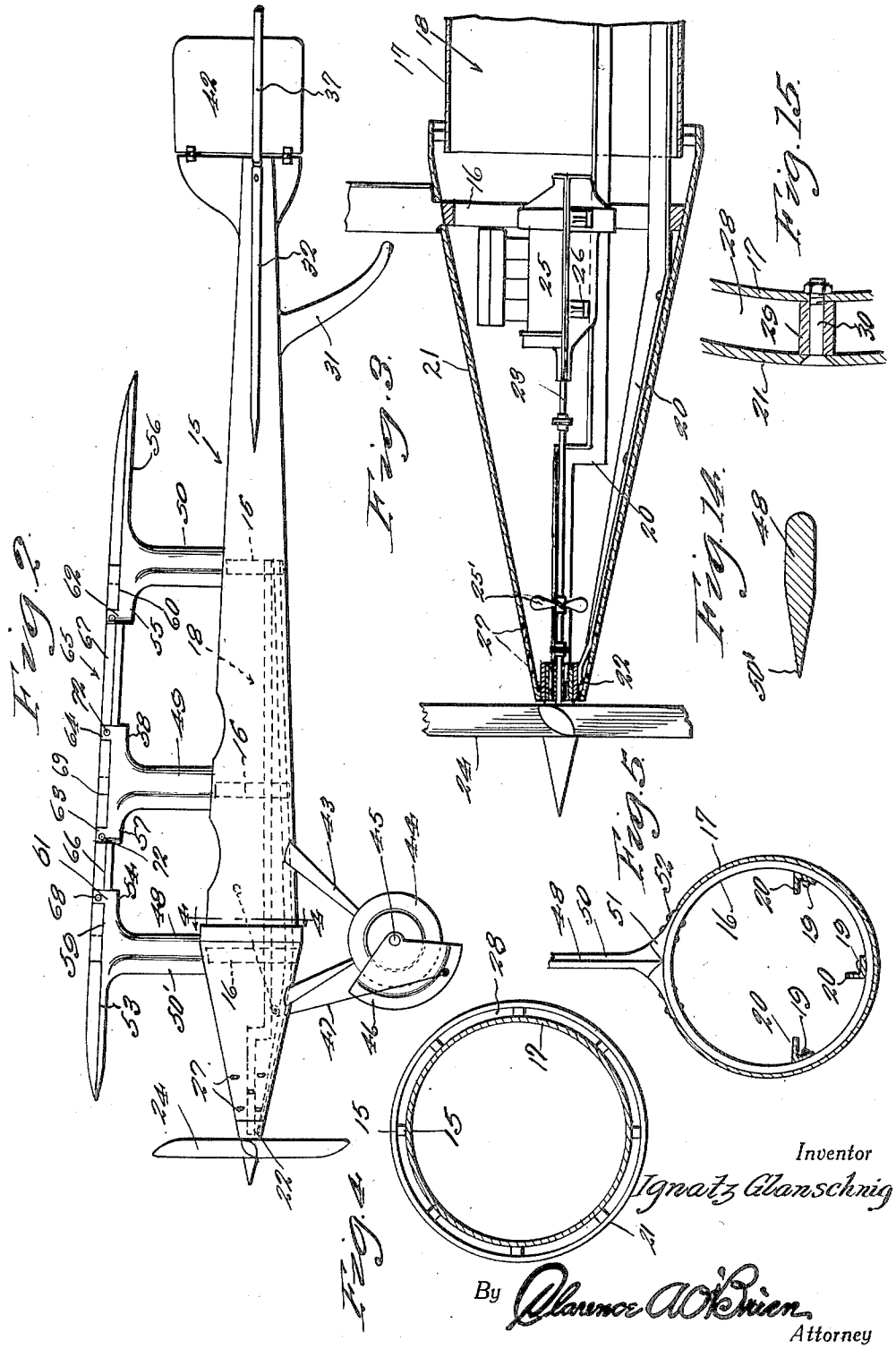
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AEROPLANE

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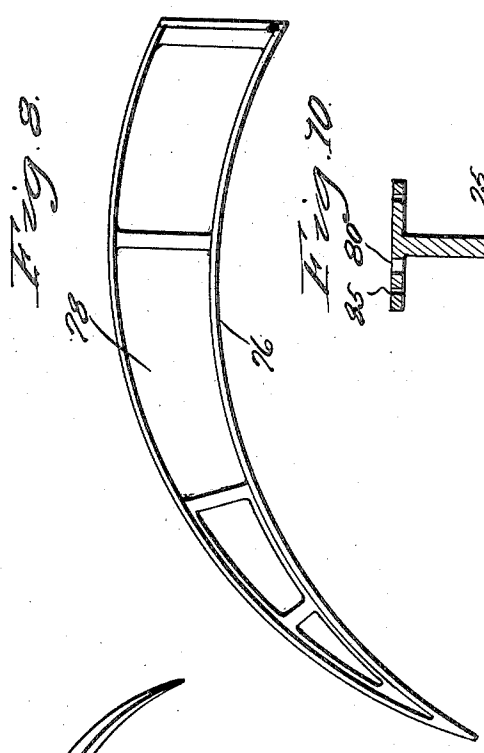
Inventor
Ignatz Glanschnig

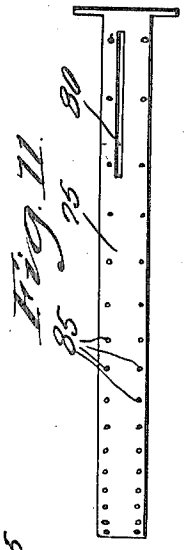
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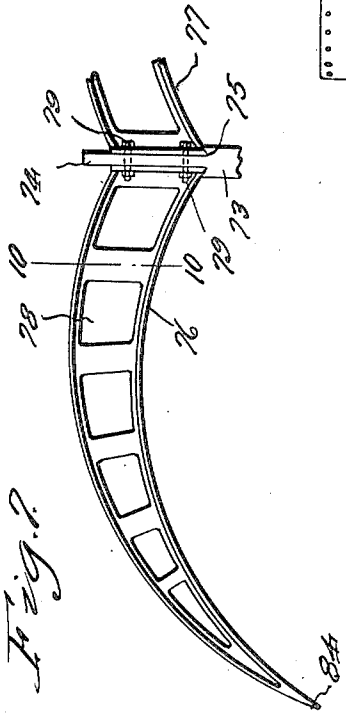
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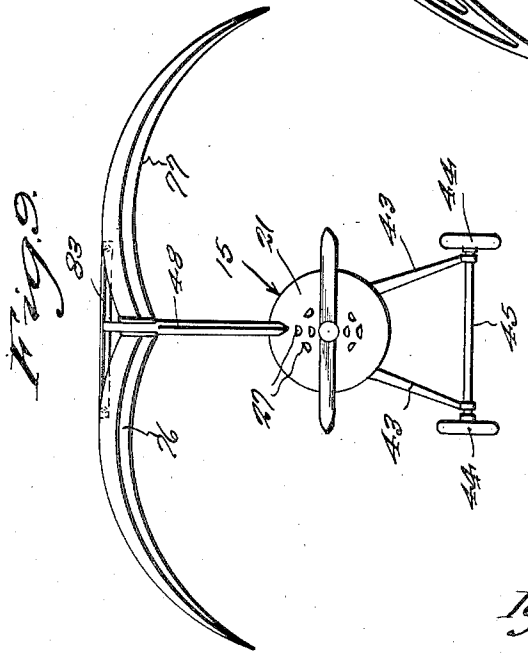
AEROPLANE

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Patented Nov. 11, 1930 1,781,455

UNITED STATES PATENT OFFICE

IGNATZ GLANSCHNIG, OF GARY, INDIANA, ASSIGNOR OF TWENTY-FIVE PER CENT TO JOHN D. MEYERS, OF HOBART, INDIANA

AEROPLANE

Application filed December 5, 1929. Serial No. 411,839.

This invention relates to aeroplanes, the merit of which resides in its perfect stream lining, its parachute wings, and its relatively large, easy rock-elevators.

The parachute wings are formed with a transverse curvature to facilitate the landing in a safe gliding position, and at the same time to retard the fall of the ship through the air in event the engine stalls.

Another object of providing parachute wings, is to give a great lifting power, and since the weight is suspended far below the center of the wings, thus bringing the center of gravity at a low point, the chance for the plane to get out of righted position is reduced.

A further feature of the invention is to provide relatively large elevators that make it possible to land easily and safely under different conditions, and to further provide for pivoting the elevators at a point approximately one-third of their length from the leading edge so as to require a minimum force to rock such a relatively large surface.

A further object of the invention, is to provide an aeroplane which is very speedy in small models, and in the large models may be used for commercial transportation.

Another object of the invention is to provide a gentle outwardly and rearwardly tapering, stream line from the nose of the propeller to a point on the fuselage that is greater than in the conventional type of aeroplane, and to further provide an inwardly and rearwardly tapering stream line from the aforementioned point to the end of the fuselage to minimize the air resistance.

Other objects of the invention, are to provide in a manner as hereinafter set forth, an airplane of the character referred to, which is strong, compact and durable, relatively light for its strong construction, very simple in its method of assembly, highly efficient for its intended purposes and comparatively inexpensive to manufacture and operate.

With the foregoing and other objects in view, the invention consists of a novel construction, combination and arrangement of parts, as will be hereinafter more specifically described and illustrated in the accompanying drawings, wherein is disclosed an embodiment of the invention, but it is to be understood that changes, variations and modifications may be resorted to without departing from the spirit of the claims hereto appended.

In the drawings wherein like reference characters denote corresponding parts throughout the several views:—

Fig. 1 is a top plan view of the aeroplane in accordance with the present invention.

Fig. 2 is a side elevation thereof with the wing ribs and covers removed therefrom.

Fig. 3 is a fragmentary vertical sectional view in detail through the forward portion of the fuselage.

Fig. 4 is a transverse vertical section through the fuselage taken substantially on the line 4—4 of Fig. 2.

Fig. 5 is a transverse detailed section through the fuselage illustrating the method of securing the upright support to the ring support.

Fig. 6 is a transverse, fragmentary section in detail through the longitudinal bar support and the wing ribs.

Fig. 7 is an end elevation of one of the ribs secured to the uprights or longitudinal bar support.

Fig. 8 is an elevation of a modified form of the rib.

Fig. 9 is a front elevation of the aeroplane in accordance with the present invention, with the wing covering removed.

Fig. 10 is a vertical section through one of the ribs, taken substantially on the line 10—10 of Fig. 7.

Fig. 11 is a top plan view of one of the ribs.

Fig. 12 is a fragmentary top plan view of the longitudinal bar support.

Fig. 13 is a fragmentary, perspective view of the longitudinal bar support for the ribs.

Fig. 14 is a horizontal, transverse section through one of the upright supporting members.

Fig. 15 is an enlarged section taken substantially on the line 15—15 of Fig. 4.

Referring to the drawings in detail, 15 in-

dicates generally a hollow fuselage, which is constructed with three spaced rings 16 intermediate its ends. About the rings 16 is secured the fuselage shell or cover 17 that is made from bendable sheet material ordinarily used in aeroplane construction.

The shell or cover 17 extends only from the forward ring 16 to the rear end of the machine. The customary openings are formed in the shell to gain access to the cockpit of the fuselage indicated at 18. The rings 16 are disposed in alinement with each other and the inner peripheries are secured by rivets 19 to three longitudinally extending, radially spaced angle bars 20 of light and strong construction.

These angle bars 20 extend between the rings and project forwardly of the forward ring and are disposed in the lower semi-circle of the rings, at less than quadrants from each other. From the forward ring 16 the angle bars taper regularly to the apex or nose of the fuselage, to which is secured the forward shell or cover 21.

A roller bearing 22 is secured in the converging ends of the angle bars 20 at the apex, thru which extends the drive shaft 23 and on the outer end of this drive shaft is secured a propeller 24 that is formed in accordance with that disclosed in my application, Ser. No. 386,368, filed August 16, 1929.

A prime mover 25, which in the form shown, is a conventional straight line, internal combustion engine, rests on and is secured to the intermediate angle bar 20 and moreover has laterally disposed bosses 26 on the opposite sides of the cylinder block that are bolted to the projecting flanges on the side bars 20, thereby securely anchoring the engine.

An air cooling fan 25′ is confined in the forward cover 21 and is coupled to the drive shaft 23, which draws air through the openings 27. The air is forced rearwardly about the engine, and discharges through an annular space 28 between the base of the inner end of the forward cover 21 and the forward end of the fuselage shell 17, these repective ends being held in spaced relation by a bushing 29 mounted on the shank of a bolt 30 that couples them together.

A tail skid 31 is secured to the under side of the fuselage adjacent the rear end. Projecting from the opposite sides, adjacent the rear end of the fuselage, are a pair of angular-shaped extensions or fins 32, 33 that form lateral stabilizer supports, in one of the legs of each of which is journaled the outer ends of the shaft 34, the shaft at its center being journaled through the rear end of the fuselage.

Between the extensions 32, 33 and the end portions of the fuselage are a pair of pockets 35, 36 in which are rockably supported on the shaft 34, a pair of relatively large horizontal stabilizing planes 37, 38. The shaft 34 forms a pivot at a point one-third the length of the stabilizers from the leading edge thereof, which permits the rocking of the stabilizer through the controls, not shown, with comparative ease, considering the relatively large areas. The free side edges 40, 41, flare inwardly from the rear outer rounded, corners and terminate flush with the ends of the legs of the extensions 32, 33.

A vertically disposed rudder 42 is pivoted between the stabilizer on the end of the fuselage. A frame or wheel supporting structure 43, is supported on the bottom of the fuselage and has journaled thereto the ground engaging wheel 44 supported on the shaft 45.

A hollow segmental shaped cover 46 for each wheel is pivoted to the shaft 45, and is pointed on its leading edge. The cover 46 may be swung from the position shown in Fig. 1, by controls 47 when it is desired to land. The cover breaks the wind resistance on the wheels.

Three alined upright supports 48, 49 and 50, are longitudinally spaced from each other, and project along the center or axis of the fuselage and are pointed as at 50′ on their leading edges. The lower end of each support merges in an arcuate flange 51, and each of the flanges is secured to one of the rings 16 by the rivets 52. The forward upright support 48 is formed with an integral forward and rear arm 53 and 54, while the rear upright support 50, is formed in a like manner with a forward and rear arm 55 and 56.

The intermediate upright 49 merges at its top in the forwardly and rearwardly extending arms 57, 58 and all of the arms on the three uprights are in longitudinal alinement with each other. The forward and rear uprights 48 and 50 are formed with pockets or depressions 59, 60 in the top edges and overlapping the sides of each of the pockets are a pair of upstanding lugs 61, 62 on the opposite sides of the pockets and which lugs are formed on the ends of the respective arms 54, 55.

The arms 57, 58 are each formed with a pair of upstanding spaced lugs 63, 64, at their ends. A sectional longitudinal supporting bar indicated generally at 65 is secured rigidly between the uprights. The bar 65 is formed in two sections, 66, 67, which on the top edge is flush with the top of arms 53 and 56.

The forward end of section 66 is formed with a cavity which is dovetailed with a shoulder or an arm 53 that projects into the pocket 59. This section 66 is supported on its end in the pocket 59 and anchored between the pair of lugs 61, by the rivets 68. The abutting ends of the sections 66, 67 are dovetailed together as at 69 in Fig. 12 of the

drawings, between the upstanding pairs of lugs 63, 64, which are countersunk in the pairs of dove-tailed grooves 70, 71.

The respective inner ends of the sections 66, 67 are secured to the pairs of lugs 63, 64 by rivets 72. The rear end of section 67 is secured to the rear upright 50 in a manner similar in all respects to the way the forward end that section 66 is secured to the forward upright 48.

In vertical cross section the sections 66, 67 between the arms (Fig. 13), are formed with an enlarged base 73, merging with a relatively thin web 74, that has a V-shaped groove 75 in the shoulders between their juncture. The forward and rear arms 53, and 56 are in vertical cross section, similar to that shown in Fig. 13, with the exception of that portion, where the pockets 59 and 60 are formed.

A plurality of pairs of ribs, are secured to the extensions 53 and 56 or the section of the supporting bar 65, the number of pairs being determined by the size and weight of the fuselage that is to be carried by the wings formed by the ribs. Complementary ribs of each pair are designated at 76, 77 and are I-shaped in cross section. The webs between the flanges of the ribs can be cut out to any size to provide various sized spaces 78, the various sizes being illustrated in Figs. 7 and 8.

The spaces 78 may be utilized, since they are in longitudinal alinement, for storage compartments, passenger space, or any other utility. The inner ends of the ribs 76, 77 of each pair are formed with flanges that abut against the web 74 of the bar sections 66, 67 or the extensions 53, and lower inner corners thereof, are seated in the grooves 75.

The cover that is disposed about the ribs to form the wings, is tucked in the grooves 75 prior to the attachment of the wing to form securing means for the cover. Any number of bolts 79 may be used to secure the ribs to the webs 74.

Each one of the pairs of ribs 75, 76 is formed with a slot 80, 81 and these slots are in alinement with each other for the purpose of anchoring the cross bar braces 83 by means of pins 82 to prevent movement of the ribs.

The lower flanges on the ribs 75, 76, are of the same radius of curvature, and the upper flanges are of the same radius, but the curvature of the upper and lower flanges are unlike whereby they merge in a point 84 at the tip of the ribs. The upper and lower flanges of the ribs, are formed with openings 85 to receive rivets or other fastenings by which the wing covering 86 is anchored to the pairs of ribs, thereby forming wings on the opposite sides of the fuselage.

The wing cover 86 on top of the ribs conforms to the shape of the top flanges on the respective pairs of ribs, with the exception that it is substantially flat along the longitudinal median line to include the cross braces 83. The covering for the lower face of the ribs conforms to the shape of the lower flanges on the ribs.

The wings 87, 88 extend longitudinally of the fuselage, and the major portion of the length of the wings, intermediate the ends thereof, terminates in a substantially straight trailing edge 93. The leading edges 89, 90 of each wing are curved, merging with each other in a V-shaped pocket 91 at the longitudinal median line of the aeroplane.

The leading edge of each wing declines forwardly from the top surface to the lower surface, as will be clearly understood by referring to Fig. 1 of the drawings. It will be seen from the drawings that the outer tip ends of the pairs of ribs 76, 77 terminate below the inner points of attachment of the ribs, thereby forming a parachute-like wing.

It is to be understood that by describing in detail herein any particular form, structure, or arrangement, it is not intended to limit the invention beyond the terms of the several claims, or the requirements of the prior art.

Having thus described my invention, what I claim as new is:—

1. An aeroplane comprising a substructure including a fuselage, a plurality of aligned vertically disposed longitudinally spaced rings, a shell supported on the outer periphery of the rings to form the body of the fuselage, longitudinal brace bars extending between the rings and secured to the inner peripheries of said rings, said brace bars projecting forwardly of the forward ring and converging at the nose of the fuselage to form a support for the engine, and a support for a roller bearing for the drive shaft, a superstructure including a plurality of upright supports secured at their lower ends to the rings and projecting above the fuselage along the center line thereof, a longitudinal bar support secured to the upper ends of the upright supports, and pairs of transversely curved wing supporting ribs secured at their inner ends to the aforementioned superstructure.

2. An aeroplane comprising a superstructure including a fuselage; a plurality of aligned vertically disposed longitudinally spaced rings, a shell supported on the outer periphery of the rings, a shell supported on the outer periphery of the rings to form the body of the fuselage, longitudinal brace bars extending between the rings and secured to the inner peripheries of said rings, said brace bars projecting forwardly of the forward ring and converging at the nose of the fuselage to form a support for the engine, a support for a roller bearing for the drive shaft, a superstructure including a plurality of upright supports secured at their lower ends to the

rings and projecting above the fuselage along the center line thereof, a longitudinal bar support secured to the upper ends of the upright supports, pairs of transversely curved wing supporting ribs secured at their inner ends to the aforementioned superstructure, and the upper and lower edges of the ribs of different curvatures that coincide in a point at the tips of the ribs.

3. An aeroplane comprising a substructure including a fuselage, a plurality of aligned vertically disposed longitudinally spaced rings, a shell supported on the outer periphery of the rings to form the body of the fuselage, longitudinal brace bars extending between the rings and secured to the inner peripheries of said rings, said brace bars projecting forwardly of the forward ring and converging at the nose of the fuselage to form a support for the engine, a support for a roller bearing for the drive shaft, a superstructure including a plurality of upright supports secured at their lower ends to the rings and projecting above the fuselage along the center line thereof, a longitudinal bar support secured to the upper ends of the upright supports, pairs of transversely secured curved wing supporting ribs secured at their inner ends to the aforementioned superstructure, and the tip ends of the ribs terminating at a point below the point of attachment with the superstructure to form a parachute-like wing structure.

4. An aeroplane comprising a superstructure including a fuselage; a plurality of aligned vertically disposed longitudinally spaced rings, a shell supported on the outer periphery of the rings to form the body of the fuselage, longitudinal brace bars extending between the rings and secured to the inner peripheries of said rings, said brace bars projecting forwardly of the forward ring and converging at the nose of the fuselage to form a support for the engine, a support for a roller bearing for the drive shaft, a superstructure including a plurality of upright supports secured at their lower ends to the rings and projecting above the fuselage along the center line thereof, a longitudinal bar support secured to the upper ends of the upright supports, pairs of transversely curving wing supporting ribs secured at their inner ends to the aforementioned superstructure, the upper and lower edges of the ribs having different curvatures that coincide in a point at the tips of the ribs, adjacent ribs formed with alined slots, and a brace bar anchored in the slots to form braces for the ribs.

5. An aeroplane comprising a substructure including a fuselage, a plurality of aligned vertically disposed longitudinally spaced rings, a shell supported on the outer periphery of the rings to form the body of the fuselage, longitudinal brace bars extending between the rings and secured to the inner peripheries of said rings, said brace bars projecting forwardly of the forward ring and converging at the nose of the fuselage to form a support for the engine, a support for a roller bearing for the drive shaft, a superstructure including a plurality of upright supports secured at their lower ends to the rings and projecting above the fuselage along the center line thereof, a longitudinal bar support secured to the upper ends of the upright supports, pairs of transversely secured curved wing supporting ribs secured at their inner ends to the aforementioned superstructure, and the tip ends of the ribs terminating at a point below the point of attachment with the superstructure to form a parachute-like wing structure, adjacent ribs formed with aligned slots, and a brace bar anchored in the slots to form braces for the ribs.

6. An aeroplane comprising a substructure including a fuselage, a plurality of aligned vertically disposed longitudinally spaced rings, a shell supported on the outer periphery of the rings to form the body of the fuselage, longitudinal brace bars extending between the rings and secured to the inner peripheries of said rings, said brace bars projecting forwardly at the forward ring and converging at the nose of the fuselage to form a support for the engine, a support for a roller bearing for the drive shaft, a superstructure including a plurality of upright supports secured at their lower ends to the rings and projecting above the fuselage along the center line thereof, a longitudinal bar support secured to the upper ends of the upright supports, pairs of transversely secured curved wing supporting ribs secured at their inner ends to the aforementioned superstructure, and the tip ends of the ribs terminating at a point below the point of attachment with the superstructure to form a parachute-like wing structure, adjacent ribs formed with aligned slots, a brace bar anchored in the slots to form braces for the ribs, and means on the upper and lower edges of the ribs for securing the wing covering to the ribs.

In testimony whereof I affix my signature.

IGNATZ GLANSCHNIG.