V. OLHOVSKY.

AEROPLANE.

APPLICATION FILED MAY 31, 1918.

1,365,339.

Patented Jan. 11, 1921.

2 SHEETS—SHEET 1.

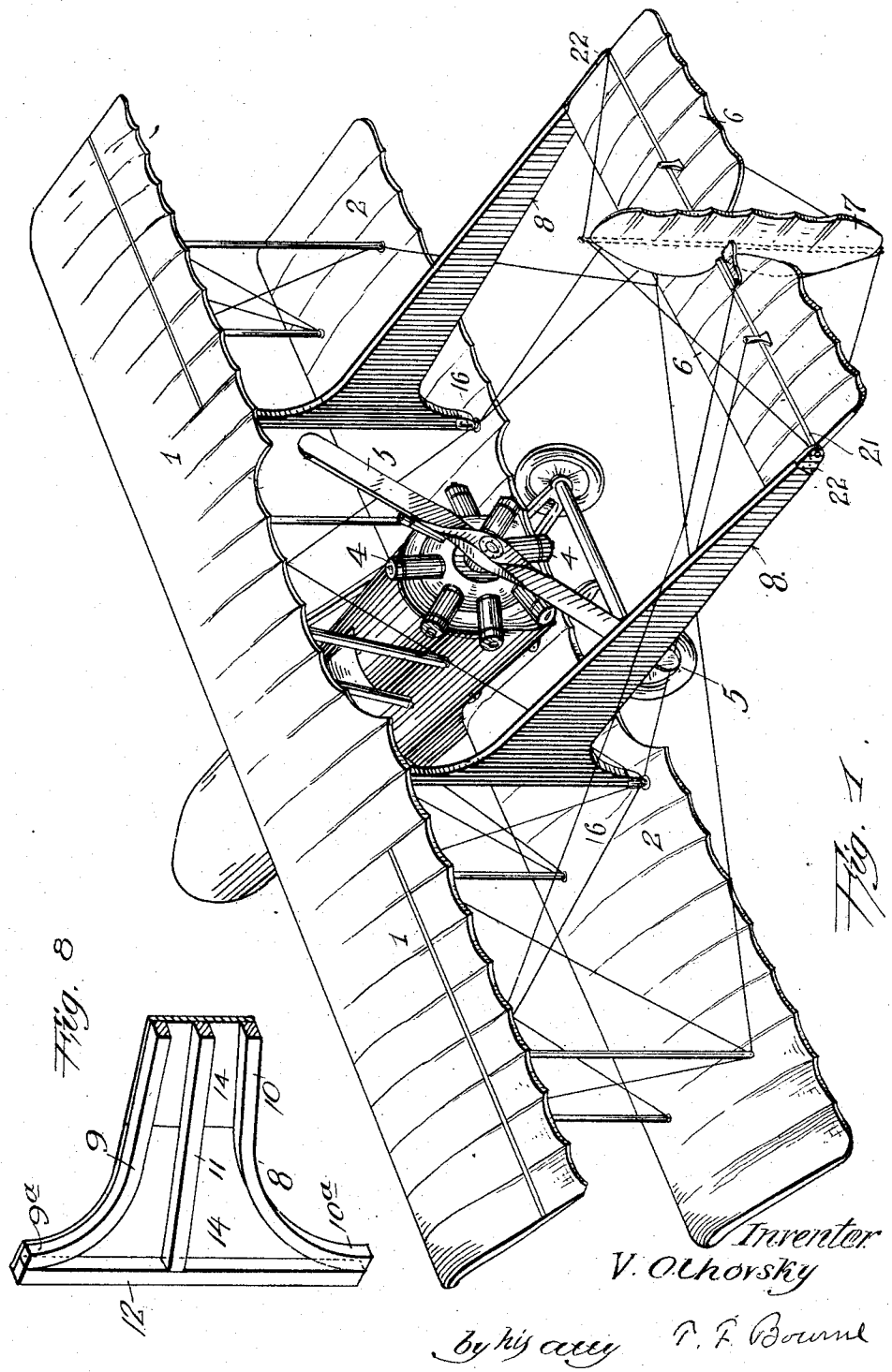


Fig. 1.

Fig. 8

Inventor
V. Olhovsky

by his atty F. F. Bourne

V. OLHOVSKY.

AEROPLANE.

APPLICATION FILED MAY 31, 1918.

1,365,339.

Patented Jan. 11, 1921.

2 SHEETS—SHEET 2.

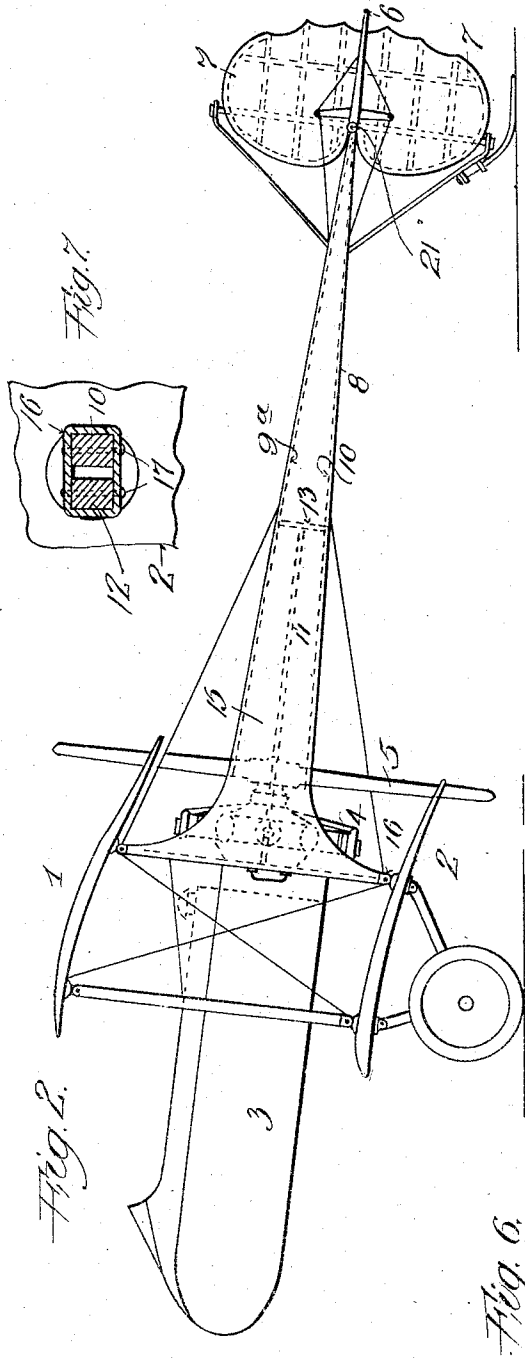


Fig. 2.

Fig. 7.

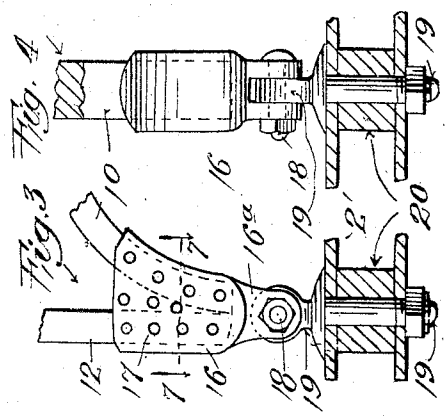


Fig. 4

Fig. 3

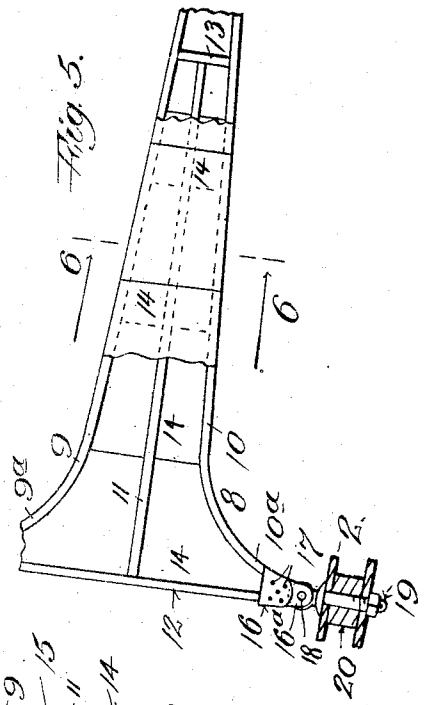


Fig. 5.

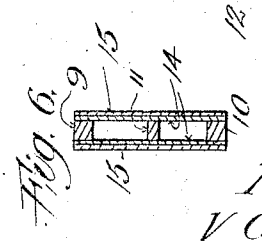


Fig. 6.

Inventor

V Olhovsky.

By his atty R. P. Bourne

UNITED STATES PATENT OFFICE.

VLADIMIR OLHOVSKY, OF NEW YORK, N. Y., ASSIGNOR TO ERNST J. OHNELL, OF BROOKLYN, NEW YORK.

AEROPLANE.

1,365,339. Specification of Letters Patent. Patented Jan. 11, 1921.

Application filed May 31, 1918. Serial No. 237,621.

To all whom it may concern:

Be it known that I, VLADIMIR OLHOVSKY, a subject of Russia, and resident of New York city, borough of Manhattan, in the county of New York and State of New York, have invented certain new and useful Improvements in Aeroplanes, of which the following is a specification.

The object of my invention is to provide supporting means in aeroplanes for the elevating planes, rudders, and the like, which shall provide great strength and rigidity with lightness in weight, and whereby to reduce air resistance during flight of the aeroplane.

My invention comprises novel details of improvement and combinations of parts that will be more fully hereinafter set forth and then pointed out in the claims.

Reference is to be had to the accompanying drawings forming part hereof, wherein,

Figure 1 is a perspective view of an aeroplane embodying my invention; Fig. 2 is a side view of Fig. 1; Fig. 3 is a detail, and Fig. 4 is an edge view of Fig. 3, illustrating means of connecting my improvements with a wing of an aeroplane; Fig. 5 is a fragmentary detail of my improvements; Fig. 6 is a cross section on the line 6, 6, in Fig. 5; Fig. 7 is a cross section on the line 7, 7, in Fig. 3, and Fig. 8 is a perspective detail of a portion of my improvements.

Similar numerals of reference indicate corresponding parts in the several views.

In the accompanying drawings the numerals 1, 2, indicate the wings of an aeroplane, 3 indicating the fuselage, 4 an engine and 5 a propeller, all of which parts may be constructed in any wellknown manner. My improvement comprises mainly the construction of a frame extending between the wings and rearwardly thereof, for the support of the elevating plane 6 and rudder 7, which plane and rudder may be constructed in any wellknown manner. My improved frame is indicated generally at 8, and comprises upper and lower spaced longitudinally extending bars or braces 9, 10 and an intermediate longitudinal bar or brace 11. The bars 9, 10 at their forward ends are shaped respectively with upward and downward curved portions 9^a, 10^a, between which a vertical brace 12 is located, and the bars 9, 10 extend in a tapering direction toward the tail or outer end of frame 8, where the frame is relatively narrow. The bars 9, 10, 11 are one above the other, and at a suitable point intermediate the length of frame 8 I provide a cross brace 13 suitably secured as by nails or the like to the bars 9, 10 and 11 and the forward end of bar 11 is correspondingly secured to brace 12. The members 9, 10, 11, 12 and 13 are relatively narrow, and may be made of suitable wood for lightness in weight and strength. On opposite sides of said bars and braces I secure strips 14 which may be of wood like veneer and which extend transversely across said bars on the outside thereof. Said strips may be secured to said bars and braces in any suitable manner, such as by nails or screws and gluing, the edges of which strips 14 preferably abut. The strips 14 may be applied in one or more layers. When said strips have been secured to said bars and braces a layer of suitable fabric 15 is preferably glued along the exterior surfaces of said strips to close the joints thereof and render the frame 8 waterproof. The height of the forward ends of frames 8 are such as to fit between opposing planes 1, 2, to which the frames 8 are secured. Said frames may be secured to said planes in any suitable manner. I have illustrated hollow metallic heads 16, which may be cast or forged to shape, receiving the corresponding ends of frames 8 to which frames said heads may be secured by rivets or bolts 17. Heads 16 may be provided with one or more ears or lugs 16^a to receive bolts or rivets 18 that pass through said lugs and through eye-bolts 19 secured to the brace bars 20 of the wings. Such parts 16, 18 and 19 may be provided at both the upper and lower ends of the forward portions of frames 8 in connection with the wings 1, 2.

Frames 8 are shown secured to the wings in spaced relation on opposite sides of the engine and propeller, and extend in parallel relation, whereby the propeller may rotate in the space between said frames. At their outer ends the frames 8 are connected together by a rod 21 suitably secured to heads 22, preferably of metal, fastened to the outer ends of frames 8, whereby said frames are braced and retained spaced at their tail ends. The elevating plane 6 may be journaled upon said rod 21 in any desired manner, and the rudder 7 may be pivotally connected with rod 21 in any suitable manner. Suitable guy wires may connect the ends

of frames 8 or rod 21 with the wings 1, 2, and guy wires may connect top and bottom portions of the rudder with the rod 21 or frames 8 all in a wellknown manner of bracing in aeroplanes. Suitable operating wires may also be connected with the planes 6 and rudder 7 in any wellknown manner.

In accordance with my improvements the frames 8 are of relatively light thin rigid construction to properly support planes 6 and the rudder, and said frames extend at right angles to the wings and also serve as braces between the wings, whereby a firm structure is produced. Since the frames 8 are thin and taper from their forward to their rearward ends, they have the required strength without presenting resistance to the air in a forward direction of flight as well as in vertical or lateral directions of maneuver.

While I have illustrated the use of my improved frames 8 in a bi-plane it will be understood that such frames may be used in aeroplanes having any desired number of wings. And while I have shown the propeller operative in the space between the frames 8, it will be understood that the propeller may be operated in the nature of a tractor at the forward end of the fuselage, in a wellknown manner.

While the bars and strips of the frames 8 may be of wood, united as before described, it will be understood that said bars and strips may be of metal suitably secured together, as by welding or the oxy-acetylene process, and that the strips 14 may be in several pieces on each side of the frame, or each strip may be in a single piece. The frame 8 is practically hollow whereby the lightness referred to is obtained. Furthermore, the hollow frame may comprise one or more strips or sheets of suitably thin metal folded to produce the hollow form referred to and the edges of such metal may be secured together by welding, as set forth.

Having now described my invention what I claim is:

1. A frame for supporting aeroplane parts comprising spaced upper and lower bars, the inner ends of said bars being curved in opposite directions, and a transverse brace at the ends of the curved parts of said bars, and strips extending crosswise to and secured to said bars.

2. A frame for supporting aeroplane parts comprising spaced upper and lower bars, the inner ends of said bars being curved in opposite directions, and a transverse brace at the ends of the curved parts of said bars, strips extending crosswise to and secured to said bars, and an intermediate bar between the first named bars secured to said strips.

Signed at New York city, in the county of New York, and State of New York this 23rd day of May, A. D. 1918.

VLADIMIR OLHOVSKY.