Nov. 22, 1927. 1,650,113

W. D. CLARK

FLYING MACHINE

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Fig. 1.

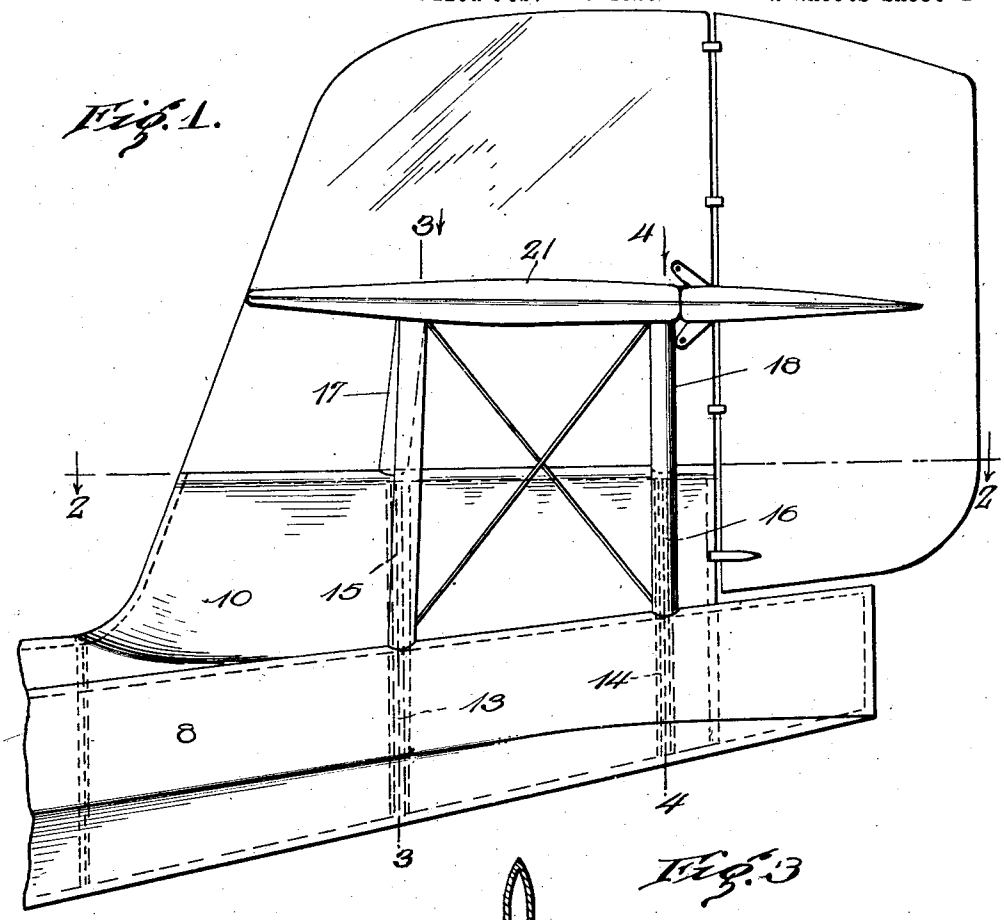
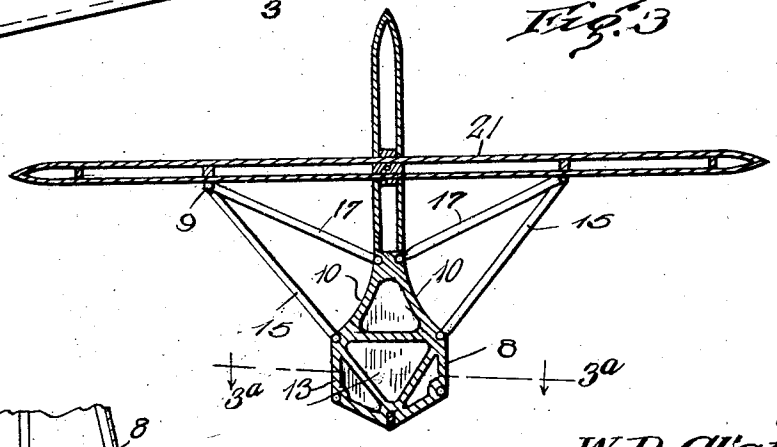


Fig. 3



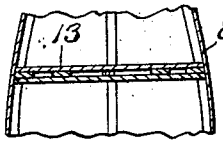


Fig. 3a

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Fig. 2.

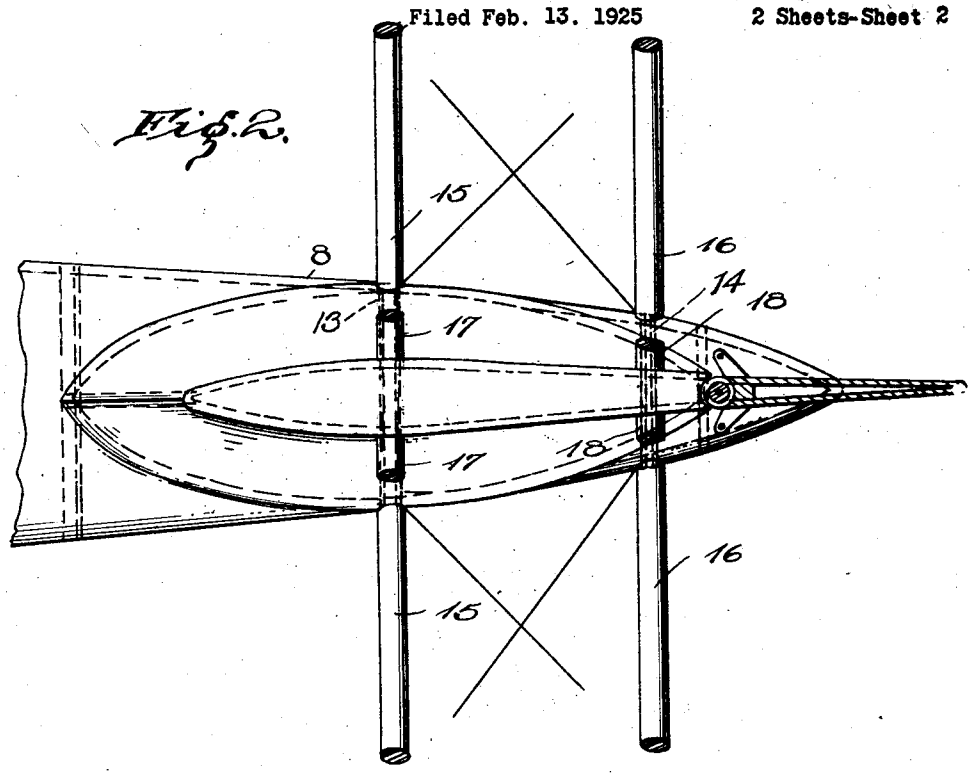
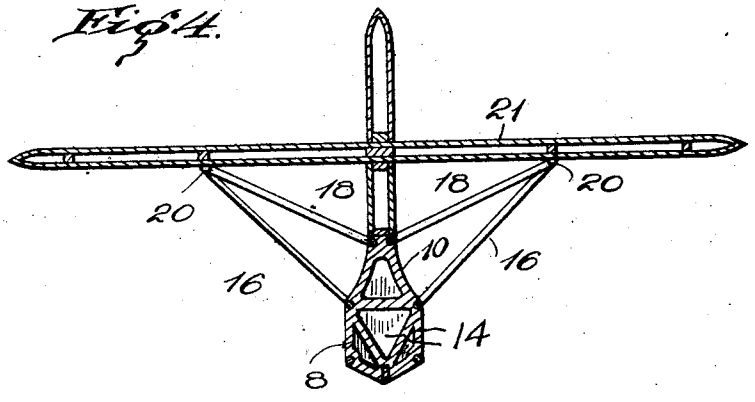


Fig. 4.



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UNITED STATES PATENT OFFICE.

WILLIAM DOUGLAS CLARK, OF WASHINGTON, DISTRICT OF COLUMBIA.

FLYING MACHINE.

Application filed February 13, 1925. Serial No. 9,059.

This invention relates to improvements in flying boats, hydroplanes or the like and more particularly to the construction of the empennage or tail group.

One of the objects of the present invention is to provide a rigid and simple means for supporting the empennage or tail surfaces on a flying boat. The practice has been to brace from the upper and lower longérons in the hull proper. This results in long struts, which reduces their stiffness; also the lower ends of the struts are awash as the stern of the flying boat sinks into the water when getting under way, preparatory to taking off, thus increasing the resistance to propulsion and planing.

A further object is to provide a construction of the above general character of practical and inexpensive construction which will be lighter but more reliable and durable than constructions now in general use.

Other objects will be in part obvious and in part hereinafter pointed out.

In the accompanying drawings wherein is shown one of various embodiments of the invention and in the several views of which corresponding parts are indicated by similar reference characters;

Figure 1 is a fragmentary side view of a flying boat showing the tail surfaces in detail.

Figure 2 is a horizontal section on line 2—2 of Figure 1.

Figures 3 and 4 are cross sections on lines 3—3 and 4—4 of Figure 1.

Figure 3ª is a section on the line 3ª—3ª of Figure 3.

Referring now to the drawings in detail and more particularly to Figure 1, 8 indicates the rear portion of the body of a flying boat or the like of usual streamline construction and is provided above the rear extremity thereof with a streamline protuberance or base 10 on the after-deck above the body or hull portion 8, for supporting the vertical fin immediately thereabove. Rigid frames or bulkheads 13 and 14 are positioned in this after-body which are adapted to coincide with the spacing or strengthening members or spars in the tail surface which are carried up into the base 10 to make a durable and rigid hull construction.

External bracing struts 15 and 16, Figures 3 and 4 are provided at each side of the tail piece 8 extending upwardly at an angle and are joined at their lower ends to the bulkheads in the base. A second pair of struts 17 and 18 extend at an angle from either side of the base 10 to the horizontal plane 21, the struts 15 and 17 being connected at the point 9 while the struts of the second set are connected at points 20.

By this arrangement the length of the base of the triangle formed by the struts 15, 16, 17 and 18 is increased so that both the vertical and horizontal components of the force due to the air load on the tail surfaces are transmitted more directly into the hull structure. The struts are also reduced in length and are thereby well out of water.

It will thus be seen that the present invention provides a more rigid yet simpler means for supporting the tail surfaces on the flying boat and being positioned well above the usual water line materially decreases the resistance as the boat takes off from the water.

What I claim is:—

1. In a flying boat tail construction, in combination, a streamline base formed integral with the hull above the deck of the after-body and comprising pairs of struts extending upwardly therefrom at each side for supporting horizontal tail surfaces.

2. In a flying boat tail construction, in combination, a streamline base on the after-deck and rigidly connected therewith, a horizontal plane above said base and pairs of struts extending downwardly therefrom at different angles to the upper and lower parts of said base.

3. In a flying boat tail construction, in combination, a base on the after-body above the water line, a horizontal tail plane above said base and a pair of triangular strut arrangements at each side for supporting the tail plane, and rigid frames or bulkheads within the base at the point of connection therewith of said triangular strut arrangement.

4. In a flying boat tail construction, in combination, a base on the after-body above the water line, a horizontal tail plane above said base, two pairs of triangular strut arrangements at each side for supporting the tail plane, and rigid frames or bulkheads within the base at the point of connection therewith

of said triangular strut arrangements, said struts being flexibly connected with the tail plane and the base.

5. In an empennage for flying boat hull construction, a rigid streamline base formed integral with said hull construction, and extending above the deck line of the after-body, a vertical fin on said base, a horizontal plane and pairs of upwardly and outwardly converging diagonal struts from said base meeting at given points for supporting the horizontal plane.

Signed at Washington, District of Columbia, this 24th day of December, 1924.

WILLIAM DOUGLAS CLARK.