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STABILIZER FOR FLYING MACHINES.

APPLICATION FILED SEPT. 22, 1917.

1,286,860.

Patented Dec. 3, 1918.

2 SHEETS—SHEET 1.

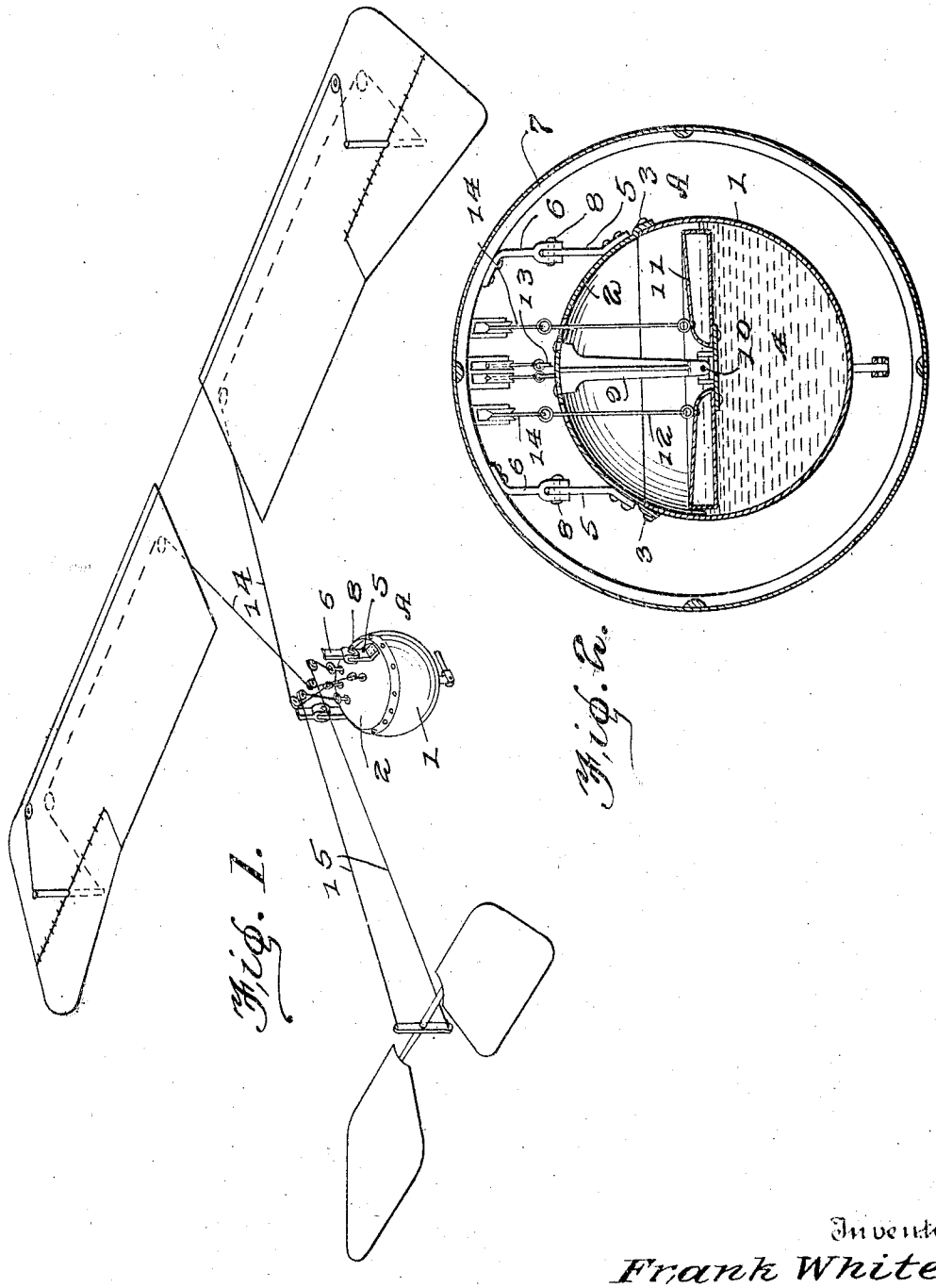


Fig. 1.

Fig. 2.

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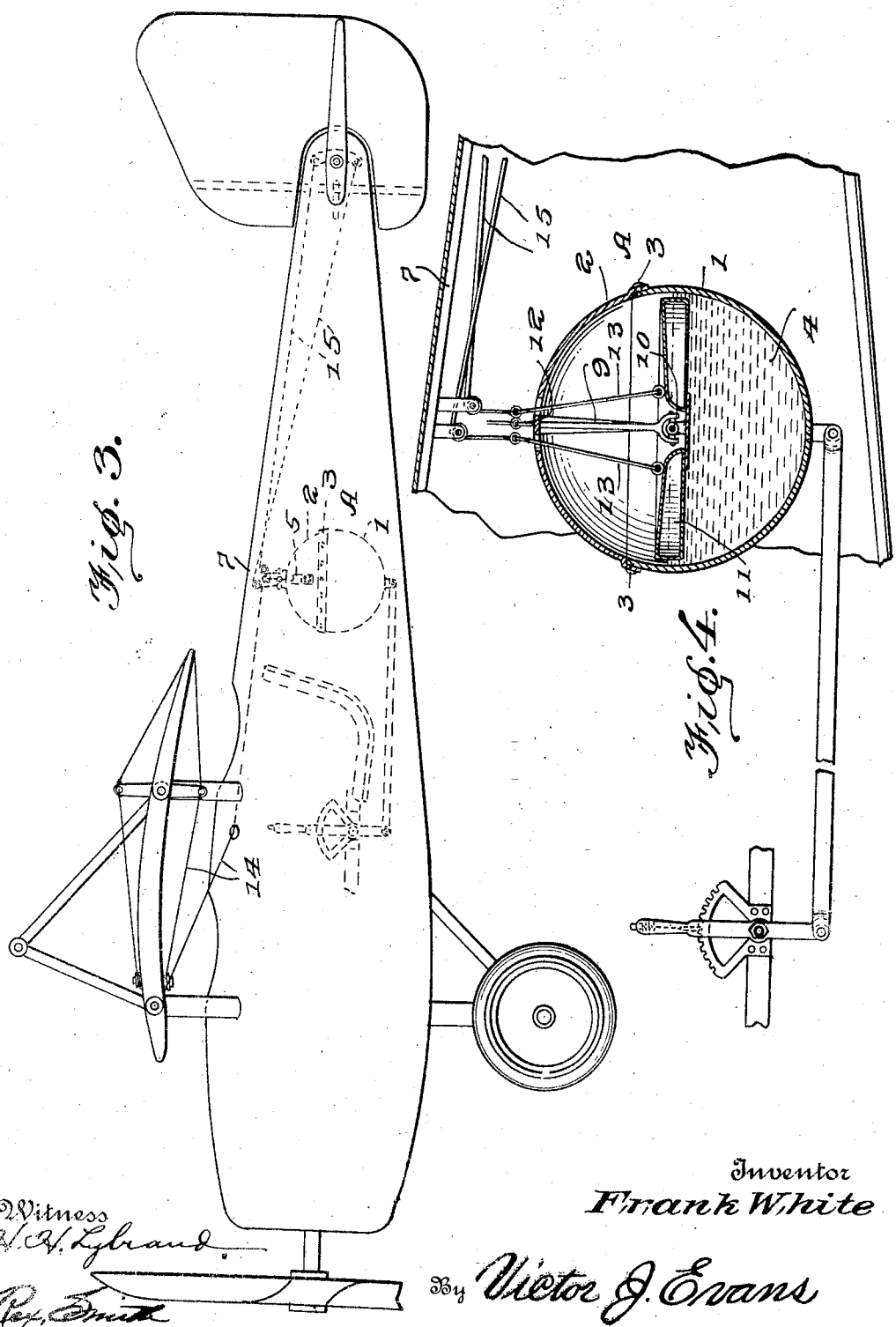
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UNITED STATES PATENT OFFICE.

FRANK WHITE, OF SUMMITVILLE, NEW YORK

STABILIZER FOR FLYING-MACHINES.

1,286,860. Specification of Letters Patent. **Patented Dec. 3, 1918.**

Application filed September 22, 1917. Serial No. 192,725.

To all whom it may concern:

Be it known that I, FRANK WHITE, a subject of the Emperor of Germany, residing at Summitville, in the county of Sullivan and State of New York, have invented new and useful Improvements in Stabilizers for Flying-Machines, of which the following is a specification.

This invention relates to stabilizing means for aircraft, the same being especially designed with reference to the needs of an airplane.

The object of the invention is to provide a simple appliance capable of being applied to and used in conjunction with any type of airplane, for the purpose of automatically controlling the balancing surfaces of a machine, thereby relieving the aviator to that extent.

A further object of the invention is to provide stabilizing means of the character above referred to which may be controlled by the operator when he desires to adjust the angle of ascent or descent as in rising from the ground preparatory to actual flight and in making a landing at the end of a flight.

With the above and other objects in view, the invention consists in the novel construction, combination and arrangement of parts, herein fully described, illustrated and claimed.

In the accompanying drawings:—

Figure 1 is a perspective diagram of an airplane showing the improved stabilizer in its applied relation thereto.

Fig. 2 is an enlarged sectional view of the stabilizer.

Fig. 3 is a side elevation of an airplane illustrating the applied relation of the stabilizer thereto.

Fig. 4 is an enlarged fore and aft vertical longitudinal section throug the stabilizer.

The stabilizer in the preferred embodiment thereof comprises a hollow spherical body designated generally at A and shown as comprising a bottom section 1 and a top section 2, the bottom section 1 being of greater extent and capacity than the top section 2 and the top or cover section 2 being secured by a liquid tight joint to the bottom section 1 by any suitable fastening means 3.

The body A is adapted to contain water or other liquid indicated at 4 and is suspended by means of upwardly extending arms 5 from hangers 6 extending downwardly from a part 7 of an airplane, such as one of the supporting surfaces or planes. The arms 5 are connected to the hangers 6 by means of pivots 8 so arranged as to enable the body A to swing in a fore and aft direction or in line with the normal direction of flight of the airplane.

Extending downwardly from the highest point of the section 2 of the body A is a shaft or hanger 9 which may consist of a rod, and connected to the lower extremity of said shaft or hanger by means of a universal joint 10, is a disk 11 of any suitable description. Connected to the disk 11 is a plurality of upwardly extending rods 12 and 13. The rods 12 are arranged at opposite sides of the hanger or shaft 9 while the rods 13 are arranged one in advance and one in rear of the hanger or shaft 9. The rods 12 are connected to the controls 14 which actuate the lateral balancing surfaces, while the rods 13 are connected to the controls 15 which operate the horizontal rudder.

From the foregoing description taken in connection with the accompanying drawings it will now be understood that when the airplane dips to the right or to the left or when the front of the machine inclines downwardly or upwardly, the water or other liquid 4 in the body A will shift its position and cause a corresponding angular disposition of the disk 11 which lies in contact at all times with the water immediately adjacent to the surface thereof. As a result of the movement of the disk 11, one or more of the rods 12 and 13 will be moved upwardly while the other rod or rods will be moved downwardly. The controls which connect said rods with the fore and aft and lateral balancing planes or surfaces will be correspondingly pulled or slacked with the result that the equilibrium of the airplane will be automatically restored. No attention whatever is required on the part of the aviator who may therefore direct his entire attention to the other controls and even make the adjustments of the engine and the equipment thereof.

I do not desire to be limited to the exact construction illustrated and described as it will be apparent that the number of rods 12 and 13 may be increased or diminished according to the number of devices to be controlled thereby. These and other changes in the form, proportion and minor details of

construction may be resorted to without departing from the principle or sacrificing any of the advantages of the invention.

While the stabilizer has been described as useful in connection with flying machines and aircraft in general, it will be apparent that said stabilizer may also be used with equal efficiency in conjunction with submarine vessels.

I claim:—

1. Stabilizing means for aircraft, comprising a liquid containing body, a member mounted for movement therein controlled by the shifting of the liquid, and a plurality of controlling members arranged to be actuated by said liquid controlled member for automatically shifting the controlling surfaces of an airplane, the controlling members in front and in rear of the center of the body converging upwardly to a meeting point in line with the vertical axis of the body.

2. Stabilizing means for aircraft, comprising a liquid containing body, a member mounted for movement therein controlled by the shifting of the liquid, and a plurality of controlling members arranged to be actuated by said liquid controlled member for automatically shifting the controlling surfaces of an airplane, said liquid controlled member being hung on a universal joint so as to swing under the influence of the liquid in any direction.

In testimony whereof I affix my signature.

FRANK WHITE.