W. H. NOSWORTHY & S. J. PRESCOTT.

HYDROAEROPLANE.

APPLICATION FILED JUNE 26, 1914.

1,152,654. Patented Sept. 7, 1915.

Fig. 1.

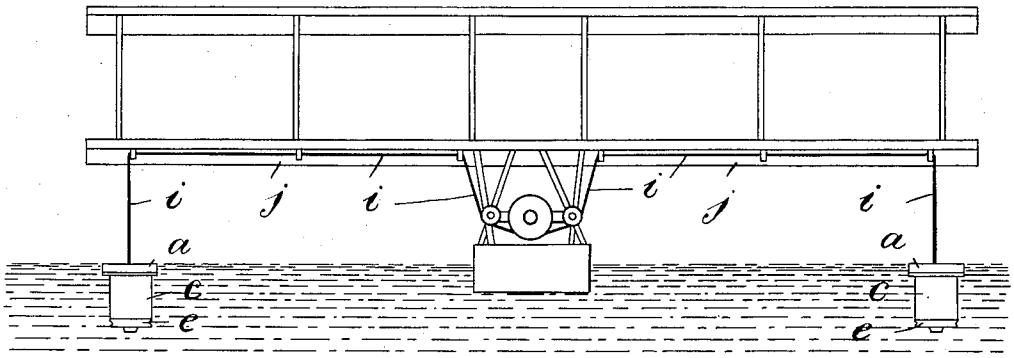


Fig. 2.

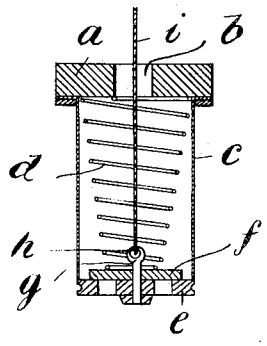
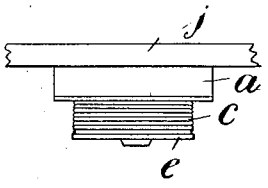


Fig. 3.



Witnesses.

Albert G. Barnes.

Arthur Dreichlinger.

Inventors:

William Henry Nosworthy

and

Samuel James Prescott

by

Hyde & Heide

Attorneys.

UNITED STATES PATENT OFFICE.

WILLIAM HENRY NOSWORTHY AND SAMUEL JAMES PRESCOTT, OF LONDON, ENGLAND.

HYDROAEROPLANE.

1,152,654. Specification of Letters Patent. Patented Sept. 7, 1915.

Application filed June 26, 1914. Serial No. 847,537.

To all whom it may concern:

Be it known that we, WILLIAM HENRY NOSWORTHY and SAMUEL JAMES PRESCOTT, subjects of His Majesty the King of England, residing at London, England, have invented certain new and useful Improvements in Hydroaeroplanes, of which the following is a specification.

This invention relates to hydro-aeroplanes and is directed to securing or promoting lateral steadiness of such machines when waterborne.

By and in accordance with the present invention provision is made to effectively damp rolling action of the machine when traveling, or riding at anchor, on the water, and to this end water buckets or their equivalents are adapted to be suspended one from each side of the supporting plane or planes and adjacent to the extremities thereof; these water buckets or their equivalents being formed of a material giving a power or tendency to float in the water, an appropriate material being oak which has a specific gravity slightly less than water. In smooth water the buckets or equivalent on each side of the machine would be submerged in the water, but under a lateral rolling motion of the machine they would be alternately lifted and submerged, this alternate lifting of the buckets on either side, effectively dampening the rolling motion of the hydro-aeroplane, in virtue of the opposing force of the weight of water contained in the buckets. Means for releasing the water contained in said vessels, such as a valve arranged for release when the buckets are to be put out of use, or perforations, may be made in the said vessels whereby the water may enter and drain away gradually, or the expedient of tilting the buckets may be adopted. Provision for withdrawing and storing the buckets will be made in appropriate manner; for example, rope gear may be provided whereby the water-vessels may be pulled up to the under-side of the plane or planes of the machine, or hauled into the floats or chassis when said vessels are not in use. The water vessels may be collapsible so that they will occupy less space when stowed away, and in this construction special means are provided whereby the space occupied when collapsed is very small.

The invention may be conveniently and advantageously carried into practice as shown in the accompanying drawings in which—

Figure 1 is a front view of a hydro-aeroplane showing the invention applied thereto. Fig. 2 is a sectional elevation of one of the water buckets in the open position. Fig. 3 is an elevation of the bucket in the closed or collapsed position.

In the illustrated exemplar form of the invention each bucket consists of a disk float *a* having an aperture *b* therein, and to this float is suspended a self-extendible waterproof bellows or casing *c*, the automatic extension of the bellows being conveniently and advantageously derivable in virtue of a spiral spring *d* which is of a tapered form so that the coils thereof may fit one within the other when the bellows or casing *c* is collapsed thus allowing the said casing to occupy a very small space. The base of the bucket is formed by an apertured plate *e* of relatively high specific gravity and fitted on the upper side with a non-return disk valve *f* whereby on the lowering of the bucket into the water, water may enter the bucket by way of the apertured base *e*, but any substantial return of the water is prevented by the disk *f* acting as a non-return valve. Guidance for the disk valve *f* is furnished as depicted by a stem *g* fastened to the base *e* and having provision such as by means of an eye *h* for connecting the bucket to rope gear whereby the buckets may be withdrawn from the water and collapsed against the underside of the supporting planes of the machine or hauled into the floats of the chassis of the machine. The rope gear will have suitable provision for locking it in the desired position.

The drawings illustrate conventionally a rope winding gear *i* for pulling the floats in a collapsible state against the underside of the supporting plane *j* see Fig. 3.

In operation the aperture *b* of the float *a* admits of a rapid release of the water in the act of collapsing the buckets but if desired the release of the contents may be facilitated

by side apertures in addition or in substitution to the aperture *b*.

The buckets will be adjusted or suited to the specific gravity of the water so that they float therein when fully submerged. By making the top of the bucket of relatively low specific gravity and the base of relatively high specific gravity a rapid immersion of the bucket or the like in the water is gained.

In operation any lateral tilting of the machine is at once opposed by the weight of a water filled bucket on the rising side of the machine, and the result would be that the machine would slide sidewise in the water and recover its horizontal position, whereas with the present system of employing floats on each side of the main hydro-aeroplane float there is nothing to resist the tilting motion until the side float on the descending side of the machine becomes water-borne and by the time this occurs the machine is heeled over to such an extent that a gust of wind or a wave striking the underside of the planes is liable to complete the heeling movement and turn the machine completely over, but in accordance with the present invention the submerged water filled bucket on the descending side of the machine is inactive for the time being and an effective resistance is realized on the ascending side of the machine.

Having thus described the nature of our said invention what we claim and desire to secure by Letters Patent is:—

1. In or in connection with hydro-aeroplanes, lateral balancing water vessels having flotation means buoying the vessels when immersed, means for lowering and raising said vessels into and out of the water, and means permitting the admission and discharge of water to and from the said vessels, substantiallv as described.

2. In or in connection with hydro-aeroplanes, collapsible lateral balancing water vessels having flotation means buoying the vessels when immersed, means for lowering and raising said vessels into and out of the water, and means permitting the admission and discharge of water to and from the said vessels, substantially as described.

3. In or in connection with hydro-aeroplanes, a collapsible lateral balancing water vessel having flotation means buoying the vessel when immersed, and means associated with the said vessel for permitting the admission and discharge of water to and from the said vessel, substantially as described.

4. In or in connection with hydro-aeroplanes, a lateral balancing water vessel comprising a top of relatively low specific gravity, a casing suspended therefrom, a base of relatively high specific gravity secured to the said casing, and means associated with the said vessel for permitting the admission and discharge of water to and from the said vessel, substantially as described.

5. In or in connection with hydro-aeroplanes, a lateral balancing water vessel comprising a top of relatively low specific gravity, a collapsible casing suspended therefrom, a base of relatively high specific gravity secured to the said casing, and means associated with the said vessel for permitting the admission and discharge of water to and from the said vessel, substantially as described.

6. In or in connection with hydro-aeroplanes, a lateral balancing water vessel comprising an apertured top of relatively low specific gravity, a casing suspended therefrom, an apertured base of relatively high specific gravity secured to the said casing, and a non-return valve control fitted to the said base, substantially as described.

7. In or in connection with hydro-aeroplanes, a lateral balancing water vessel comprising an apertured top of relatively low specific gravity, a collapsible casing suspended therefrom, an apertured base of relatively high specific gravity secured to the said casing, and a non-return valve control fitted to the said base, substantially as described.

8. In or in connection with hydro-aeroplanes, a lateral balancing water vessel comprising a top of relatively low specific gravity, a self-extendible collapsible casing suspended therefrom, a base of relatively high specific gravity secured to the said casing, and means associated with the said vessel for permitting the admission and discharge of water to and from the said vessel, substantially as described.

9. In or in connection with hydro-aeroplanes, a lateral balancing water vessel comprising a top of relatively low specific gravity, a collapsible casing suspended therefrom, a base of relatively high specific gravity secured to the said casing, a spiral spring located within the said casing between the top and the base, and means associated with the vessel for permitting the admission and discharge of water to and from the said vessel, substantially as described.

10. In or in connection with hydro-aeroplanes, a lateral balancing water vessel comprising a top of relatively low specific gravity, a collapsible casing suspended therefrom, a base of relatively high specific gravity secured to the said casing, a tapered spiral spring located within the said casing between the top and the base, and means associated with the vessel for permitting the admission and discharge of water to and from the said vessel, substantially as described.

11. In or in connection with hydro-aeroplanes, a lateral balancing water vessel comprising an apertured top of relatively low

specific gravity, a collapsible casing suspended therefrom, an apertured base of relatively high specific gravity secured to the said casing, a non-return valve fitted to the apertured base, and a spiral spring located within the said casing between the top and the base, substantially as described.

In testimony whereof we affix our signatures in presence of two witnesses.

WILLIAM HENRY NOSWORTHY.
SAMUEL JAMES PRESCOTT.

Witnesses:
ARTHUR DUEICHLINGER,
ALBERT GEORGE BARNES.