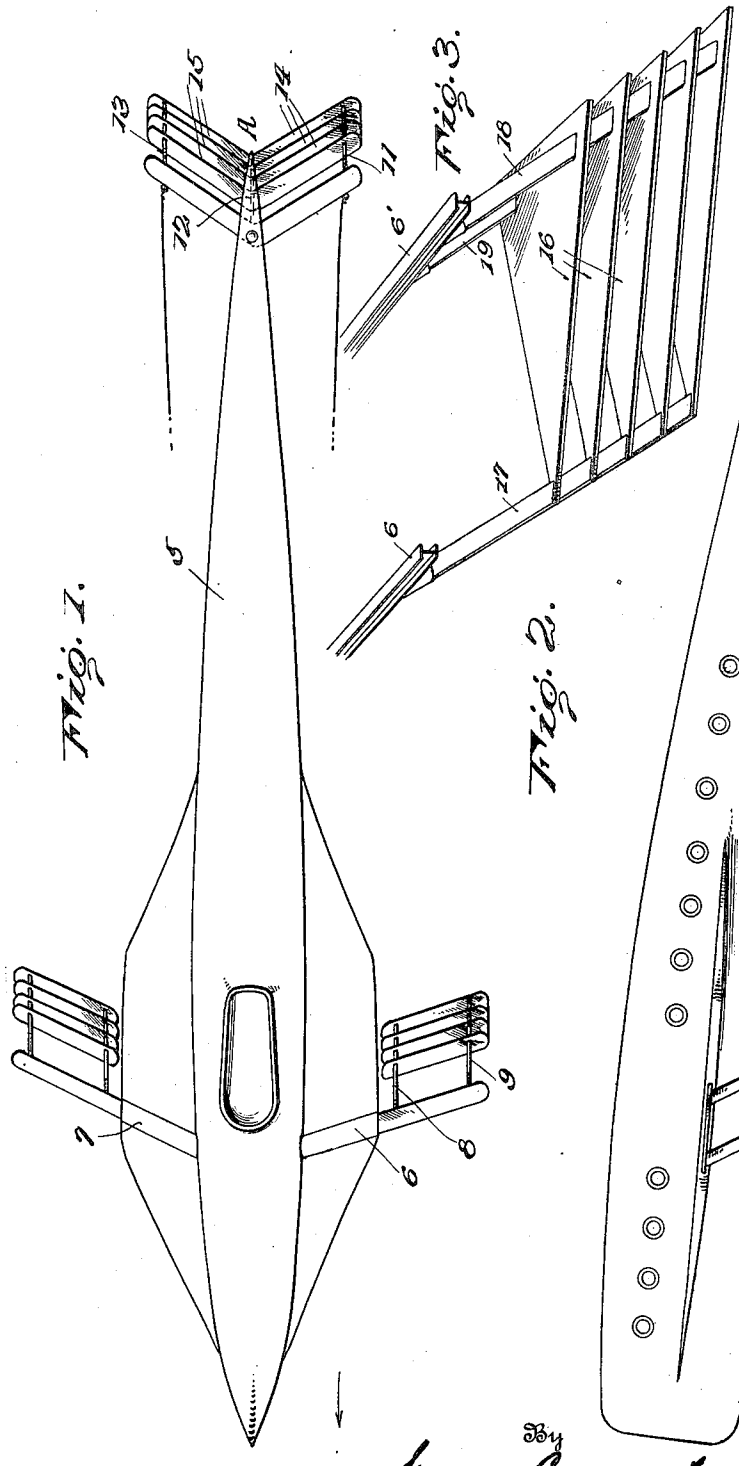
A. G. BELL AND F. W. BALDWIN.

HYDRODROME, HYDROAEROPLANE, AND THE LIKE.

APPLICATION FILED MAY 7, 1920.

1,410,876. Patented Mar. 28, 1922.



Inventor
Alexander Graham Bell
Frederick W. Baldwin
By Munn, Cameron, Lewis & Keelan
Attorneys

UNITED STATES PATENT OFFICE.

ALEXANDER GRAHAM BELL, OF WASHINGTON, DISTRICT OF COLUMBIA, AND FREDERICK W. BALDWIN, OF BADDECK, NOVA SCOTIA, CANADA.

HYDRODROME, HYDROAEROPLANE, AND THE LIKE.

1,410,876. Specification of Letters Patent. Patented Mar. 28, 1922.

Application filed May 7, 1920. Serial No. 379,477.

To all whom it may concern:

Be it known that we, ALEXANDER GRAHAM BELL, a citizen of the United States of America, and a resident of Washington, District of Columbia, and FREDERICK W. BALDWIN, a subject of the King of Great Britain, and a resident of Baddeck, Nova Scotia, Canada, have invented new and useful Improvements in Hydrodromes, Hydroaeroplanes, and the like, which invention is fully set forth in the following specification.

The present invention relates to hydrodromes, hydroaeroplanes and the like, employing submerged hydrofoils, and particularly is an improved construction of the hydrofoil sets.

Heretofore, difficulty has been experienced and damage sustained when hydrodromes and the like were travelling at high speed through the water, by the submerged portions of the struts and blades of the hydrofoil sets hitting obstacles, such as logs, seaweed, and the like; and the object of the present invention is to provide a construction which will readily ride over and clear such obstacles and which is so shaped that the shock due to the fouling of such obstacles is reduced to a minimum.

The invention will be better understood by reference to the accompanying drawings, illustrating one expression of the inventive idea, and wherein—

Fig. 1 is a plan view of the hull of a hydrodrome embodying the present invention;

Fig. 2 is a side elevation of the same; and

Fig. 3 is a modification.

Referring to the drawings wherein like reference numerals indicate like parts, 5 is any usual or suitable hull, and 6 and 7 are a pair of transverse rearwardly extending beams projecting from said hull or float structure. These beams carry the hydrofoil sets, one on each side of the medial fore and aft line of the craft. A third set of hydrofoils A, preferably of a construction hereinafter described, is mounted on a vertical axis at the rear of the hull in the medial fore and aft line of the craft, and is utilized for steering purposes. The three sets of hydrofoils act to support the hull or float structure 5 and associated parts during the planing action.

The two beam sets of hydrofoils are identical and each preferably comprises a pair of rearwardly and downwardly extending strut members 8 and 9 which are connected at their upper ends to the beam 6 on one side of the device and to the beam 7 on the other side of the device. As will be clearly observed from Fig. 1, these struts are arranged in different longitudinal planes. The struts 8 and 9 carry a series of hydrofoil blades 10, which latter are secured to the struts in any suitable or desired manner and act to support the craft during the planing action. These blades project outwardly and rearwardly, the strut 8 of each set supporting each blade near its inner extremity and the strut 9 of each set supporting each blade near its outer extremity. These blades are normally arranged at the desired angle of incidence and the sets are preferably pivoted in any desired manner so that this angle may be changed to meet changed conditions. Preferably, also, the sets are mounted so that they may be swung laterally to alter the dihedral angle of the blades 10. The objects and advantages of such a construction have been fully described and claimed in our copending application Serial No. 379476, filed May 7, 1920.

The improved hydrofoil sets herein could be similarly mounted and swung or mounted and swung in any other desired or suitable fashion.

It is pointed out that the rearwardly inclined struts 8 and 9, and also the rearwardly projecting hydrofoil blades 10, would strike any obstacle a glancing blow and would readily clear seaweed, logs, or the like.

The hydrofoil set A, which is mounted at the rear of the machine in the medial fore and aft line thereof and is utilized for steering purposes, is in effect a combination or joining of the two beam sets. In this instance, three rearwardly inclined struts 11, 12 and 13 are employed, and two series of rearwardly projecting hydrofoil blades are carried thereby. The blades of one series are indicated by the numeral 14, and the blades of the other series by the numeral 15. The outer ends of the blades 14 are suitably connected to the strut 11 and the inner ends of said blades 14 are suitably connected to the strut 12. The outer ends of the blades 15 are similarly connected to the strut 13 and the inner ends thereof to the strut 12. If desired, the blades 14 and 15

may be formed integrally and connected in any suitable or desired manner to said struts.

If desired, hydrofoil sets like A could be used for the beam sets on each side of the medial fore and aft line of the craft, such sets being suitably suspended from beams 6 and 7 or other suitable means. Hydrofoil blades shaped and arranged substantially as shown in Fig. 3 have been found to be self-clearing to a high degree. As there shown, the advance edges of the blades 16 converge to a point at the front. These blades are carried by struts 17, 18 and 19 supported from beams 6 and 6'.

The chance of difficulty by reason of fouled seaweed, for example, or the danger of damage by reason of the submerged portions of the struts or hydrofoil blades hitting an obstruction, is minimized by reason of the fact that all of the submerged elements are inclined or obliquely arranged.

It will be understood that, while on the drawings only the conventional hull of a hydrodrome is shown, the invention is equally applicable to hydro-aeroplanes.

While, for the purpose of illustration, one mechanical embodiment of the inventive idea is herein shown and described in detail, the invention is not limited thereto, but the inventive idea is susceptible of various expressions within the limits of the appended claims.

What is claimed is:—

1. In a device of the character described, the combination of a rearwardly inclined strut and a plurality of hydrofoil blades carried thereby, said blades projecting outwardly from and rearwardly of said device.

2. In a device of the character described, the combination of a pair of rearwardly inclined struts and a plurality of hydrofoil blades carried thereby, said blades projecting outwardly from and rearwardly of said device and each strut supporting each blade near one end thereof.

3. In a device of the character described, the combination of a float structure, a rearwardly inclined beam projecting from said structure, a rearwardly inclined strut extending downward from said beam, and rearwardly projecting hydrofoil blades carried by said strut.

4. In a device of the character described, the combination of a pair of substantially parallel rearwardly inclined struts, and hydrofoil blades carried thereby.

5. In a device of the character described, the combination of a pair of substantially parallel rearwardly inclined struts arranged in different longitudinal planes, and hydrofoil blades carried thereby.

6. In a device of the character described, the combination of a pair of hydrofoil sets, one arranged on each side of the medial fore and aft line of the craft, each set comprising a rearwardly inclined strut and a plurality of hydrofoil blades carried thereby, said blades projecting outwardly from and rearwardly of said device.

7. In a device of the character described, the combination of a pair of hydrofoil sets, one arranged on each side of the medial fore and aft line of the craft, each set comprising a plurality of rearwardly inclined struts and a plurality of hydrofoil blades carried thereby, said blades projecting outwardly from and rearwardly of said device and each strut supporting each blade near one end thereof.

8. In a device of the character described, the combination of a float structure, a rearwardly inclined beam projecting outwardly from each side of said structure, a rearwardly inclined strut extending downwardly from each beam, and rearwardly projecting hydrofoil blades carried by each strut.

9. In a device of the character described, the combination of a pair of hydrofoil sets, one arranged on each side of the medial fore and aft line of the craft, each set comprising a pair of substantially parallel rearwardly inclined struts, and hydrofoil blades carried thereby.

10. In a device of the character described, the combination of a float structure, a pair of hydrofoil sets, one arranged on each side of the medial fore and aft line of the structure, each set comprising a pair of rearwardly inclined struts arranged in different longitudinal planes, and hydrofoil blades carried thereby.

11. In a device of the character described, the combination of a plurality of rearwardly inclined struts and a plurality of sets of rearwardly inclined hydrofoil blades carried thereby.

12. In a device of the character described, the combination of a plurality of rearwardly inclined struts arranged in different longitudinal planes, and a plurality of sets of hydrofoil blades carried thereby.

13. In a device of the character described, the combination of a plurality of rearwardly inclined struts arranged in different longitudinal planes, and a plurality of sets of hydrofoil blades carried thereby, the advance edges of said blades converging to a point at the front.

In testimony whereof we have signed this specification.

ALEXANDER GRAHAM BELL.
FREDERICK W. BALDWIN.