F. W. BALDWIN.

TORPEDO.

APPLICATION FILED MAY 7, 1920.

1,410,872. Patented Mar. 28, 1922.

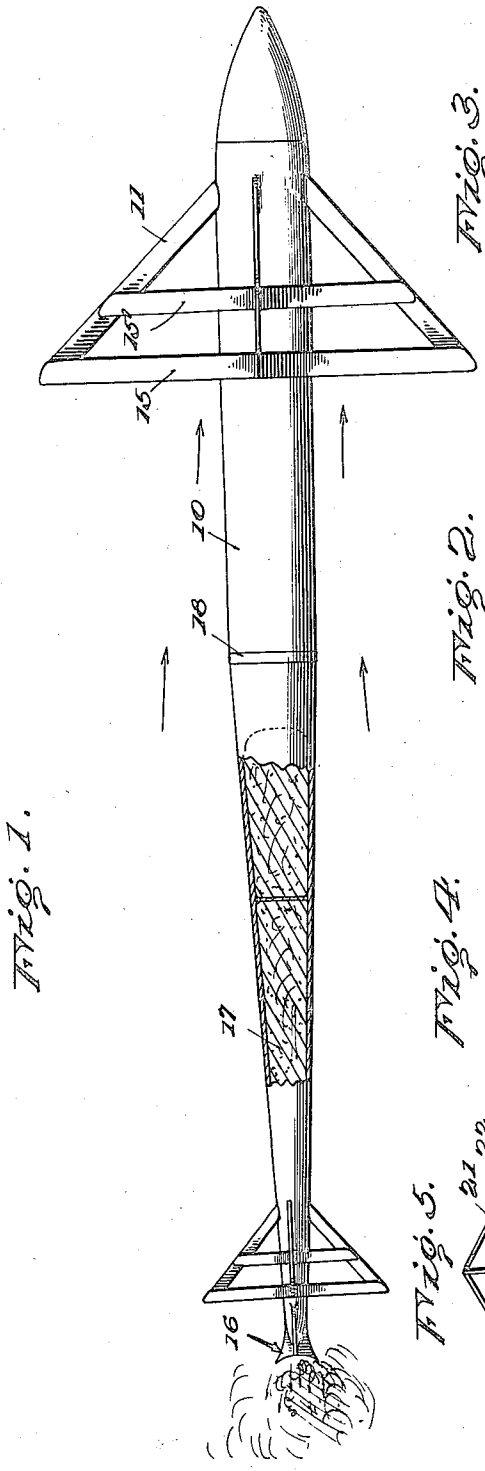


Fig. 1.

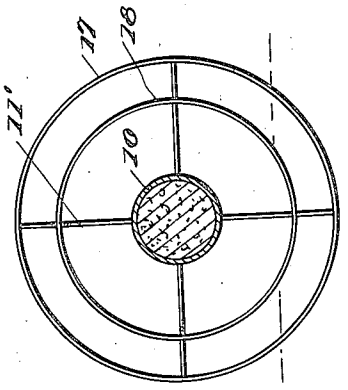


Fig. 3.

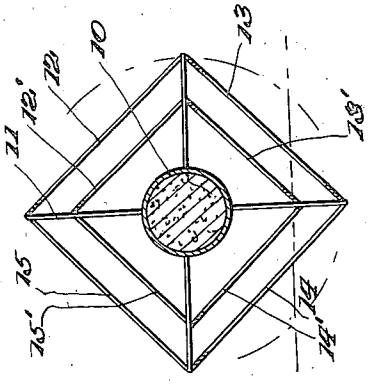


Fig. 2.

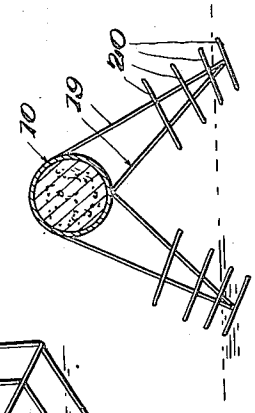


Fig. 4.

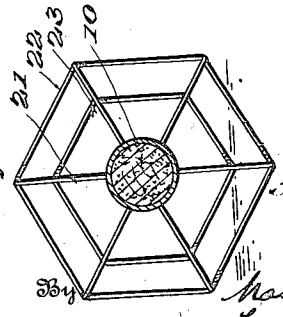


Fig. 5.

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TORPEDO.

1,410,872. Specification of Letters Patent. Patented Mar. 28, 1922.

Application filed May 7, 1920. Serial No. 379,528.

To all whom it may concern:

Be it known that I, 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 Torpedoes, which invention is fully set forth in the following specification.

The present invention is an improvement in torpedoes, and has for its object to provide a simpler, cheaper, and more efficient device of the character described.

The present invention eliminates the necessity of the complicated mechanism now utilized for propelling torpedoes and also the mechanism now employed for maintaining the torpedo at a predetermined depth beneath the water after it has been fired.

Briefly stated, the invention consists of a torpedo casing, the front end of which carries the explosive charge and the rear end the propulsive material, and means for supporting the body of the torpedo above the water during its progress toward the target at which it has been fired.

The invention will be better understood by reference to the accompanying drawing, wherein—

Fig. 1 is a side elevation, partly in section, of a torpedo embodying the present invention;

Fig. 2 is a transverse section of the same, showing the particular construction and arrangement of the struts and hydrofoils which support the main body of the torpedo;

Fig. 3 is a modification wherein the hydrofoils are arranged in the form of concentric circular members;

Fig. 4 is a further modification employing two independent series of hydrofoil blades, each of which is arranged on a pair of strut members projecting from the body of the torpedo; and

Fig. 5 is an additional modification showing a hexagonal arrangement of hydrofoil blades.

Referring to the drawings, wherein like reference numerals indicate like parts, 10 indicates the torpedo casing which is supported at each end above the water by a set of hydrofoils. The particular construction of hydrofoils may be varied within wide limits, but I prefer to employ the same construction at each end. As shown in Figs. 1 and 2, strut members 11, here shown as four in number, project rearwardly and outwardly from the torpedo casing and have secured thereto four hydrofoil members 12, 13, 14 and 15. A second set of hydrofoils, parallel to the first set, is composed of members 12′, 13′, 14′ and 15′. The hydrofoil set at the rear of the machine is similarly constructed.

It will be observed that the planes 13 and 14, for example, are arranged at a very substantial dihedral angle which conduces to great stability in the structure. The advantage of the structure illustrated in Figs. 1 and 2 resides in the fact that it is unnecessary to maintain the torpedo in any particular uppermost position, as it will ride on one set of the hydrofoils as well as another. It will be observed that, by supporting the torpedo above the water, the speed of travel is largely increased. Experience during the late war developed the fact that it was by no means impossible for a ship to avoid a torpedo that had been fired at it, because of the slow speed of travel of the torpedo. With a torpedo embodying the present invention and which would travel very much faster than the type of torpedo now employed, it would be practically impossible to avoid the torpedo if it were properly aimed.

I prefer to drive my torpedo by jet propulsion, using for that purpose any suitable or well known nozzle 16. The propulsive material may be of any suitable or desired kind, but I prefer to employ a charge of high-power smokeless powder 17 carried in the rear end of the torpedo casing. A barrier 18 separates the smokeless powder from the explosive charge that is carried in front of said barrier.

It will be observed that, by use of the present invention, I have dispensed with the necessity for the complicated and costly driving mechanism heretofore employed, and also the costly mechanism for maintaining the torpedo at a predetermined depth of submergence. I use with the present torpedo any suitable control for maintaining the direction of the torpedo, as the well known gyroscopic control.

The present invention results in a torpedo which not only moves much faster than the present type but is infinitely more simple in construction, costs but a fraction of the cost of the present type of torpedo, and weighs very much less than the present type

of torpedo notwithstanding the fact that it can be made to carry a much larger explosive charge.

A torpedo such as above described may be launched in any suitable manner and the propulsive charge ignited by any of the usual and well known means, such as a fuse, percussion cap, etc.

Fig. 3 shows a modification of the particular means for supporting the torpedo above the water and consists in the provision of four struts 11′ arranged similarly to the struts in Fig. 1 and supporting two circular hydrofoil members 17 and 18 which are preferably arranged on said struts on the same transverse planes as are, for example, members 15 and 15′ of Fig. 1. This circular arrangement has the obvious advantage that rolling or rotation of the torpedo, if such took place, would in no way affect the operation of the same. The same fact is true of the construction shown in Figs. 1 and 2. It will be appreciated that the same advantages secured by the dihedral arrangement of the hydrofoil blades, as particularly described in connection with Figs. 1 and 2, apply with equal force to this construction.

Fig. 4 illustrates a further modification of the means of support for the torpedo. In this embodiment there are provided two sets of hydrofoils, each of which comprises a pair of struts 19. A plurality of hydrofoil blades 20 are carried by each pair of struts 19, and these blades are preferably arranged at a dihedral angle in order to give stability to the structure. A similar mounting, as heretofore stated, is provided at the rear of the torpedo. A further advantage of the dihedral arrangement of the blades is that the torpedo will travel in a substantially direct line for the target without any longitudinal or porpoise-like oscillation which would take place if the blades were not arranged at a dihedral angle.

Fig. 5 illustrates a further modification of the means of support for the torpedo and comprises six rearwardly inclined struts 21, preferably arranged as are struts 11 in Fig. 1; and carrying two hexagonal series of hydrofoil blades 22 and 23. The effect of this arrangement is substantially that secured by the arrangement of Fig. 2 except that, by the provision of the six-sided support, the dihedral angle is reduced.

While, for the sake of clearness, several embodiments of the inventive idea have been herein shown and described, it is to be understood that the invention is not limited to the particular construction shown but that the inventive idea is susceptible of various other mechanical expressions within the limits of the appended claims.

What is claimed is:—

1. In a torpedo, a casing, means for driving the torpedo, and means surrounding the casing for supporting the torpedo above the surface of the water.

2. In a torpedo, the combination of a casing, means for driving the torpedo carried thereby, and means surrounding the casing at either end of the torpedo for supporting the same above the surface of the water.

3. In a torpedo, the combination of a casing, a set of hydrofoils surrounding the casing and carried at one end of said torpedo, and a second set of hydrofoils carried at the other end thereof.

4. In a torpedo, the combination of a casing, and means surrounding the casing for supporting the same above the surface of the water, said means comprising strut members and hydrofoil blades carried thereby.

5. In a torpedo, a casing, an explosive charge carried in one end thereof, propulsive material carried in the other end thereof, strut members projecting from said casing, hydrofoil blades carried thereby and surrounding said casing, similar strut members extending from the other end of said casing, and hydrofoil blades carried by said second strut members.

6. In a torpedo, a casing, and means for supporting the casing above the surface of the water, said means comprising a plurality of strut members projecting from said casing, and two sets of hydrofoil blades carried thereby and surrounding said casing.

7. In a torpedo, a casing, and means for supporting the casing above the surface of the water, said means comprising a plurality of strut members projecting from said casing, and two sets of hydrofoil blades carried thereby, said blades being arranged at a dihedral angle with respect to each other and surrounding said casing.

In testimony whereof I have signed this specification.

FREDERICK W. BALDWIN.