C. DAVIS.

AUTOMOBILE TORPEDO.

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1,234,737.

Patented July 31, 1917.

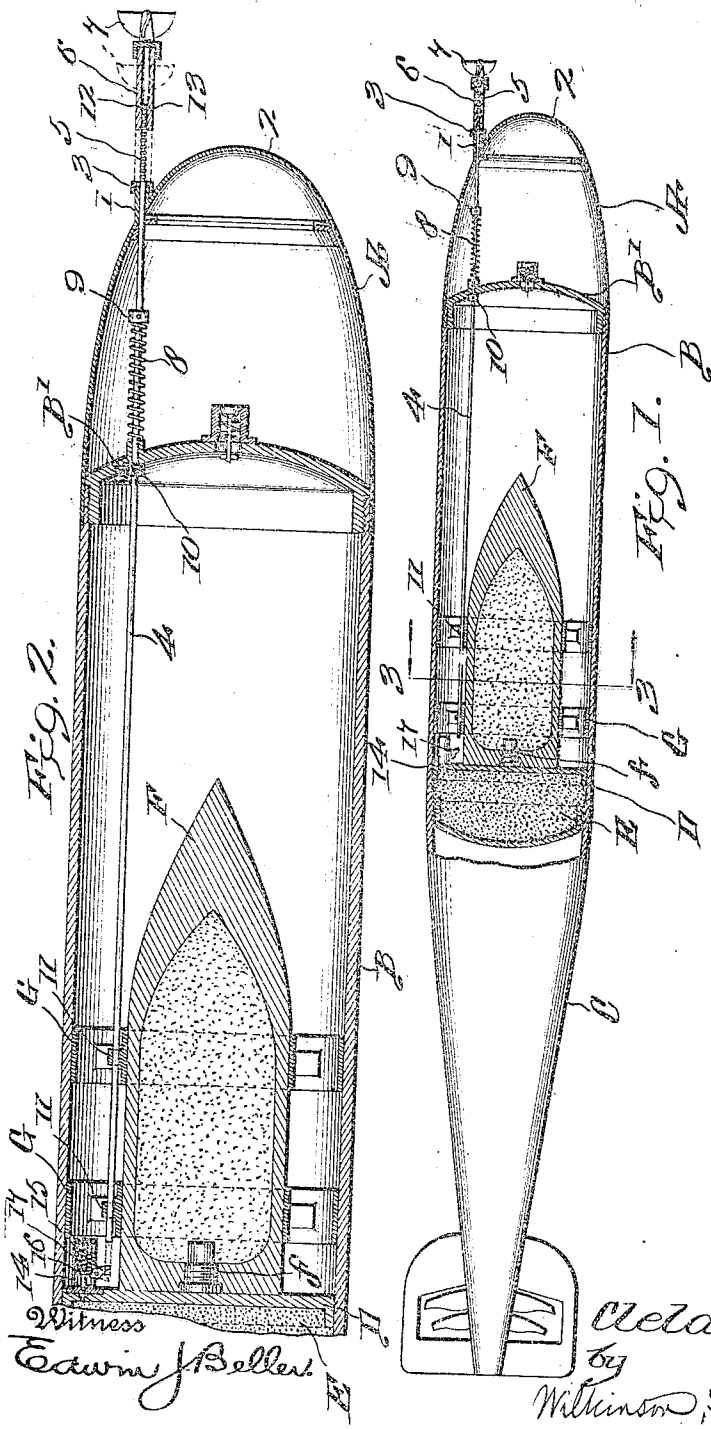


Fig. 1.

Fig. 2.

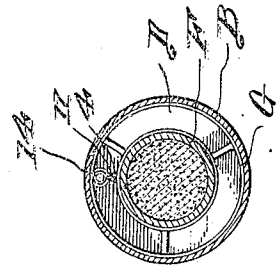


Fig. 3.

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UNITED STATES PATENT OFFICE.

CLELAND DAVIS, OF THE UNITED STATES NAVY, ASSIGNOR TO THE NATIONAL TORPEDO COMPANY, OF PORTLAND, MAINE, A CORPORATION OF MAINE.

AUTOMOBILE TORPEDO.

1,234,737. Specification of Letters Patent. Patented July 31, 1917.

Application filed November 2, 1915. Serial No. 59,259.

To all whom it may concern:

Be it known that I, CLELAND DAVIS, of the United States Navy, a citizen of the United States, residing at San Diego, in the county of San Diego and State of California, have invented certain new and useful Improvements in Automobile Torpedoes; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same.

My present invention relates to improvements in automobile torpedoes, and is intended to provide a torpedo that will be effective against the armored bottoms of war ships.

Recognizing that the type of torpedoes generally in use would not be effective against the armored bottoms of vessels, I applied for and secured a U. S. Patent, No. 964,147, granted July 12, 1910 and entitled Improvements in torpedoes, which showed a gun mounted in the head of a torpedo; and later I also applied for and secured U. S. Patents Nos. 914371 and 964148, granted March 2, 1909 and July 12, 1910, and entitled, respectively, Firing means for torpedoes and Improvements in torpedoes.

The present European war has demonstrated the fact that under water protection is required against torpedo attack, and the tendency is to cover the sides and bilges of vessels with armor plate which must necessarily be of more or less reduced thickness so as to avoid excessive weight. Against such armor plate the ordinary war head torpedo is more or less ineffective, but according to my patents aforesaid I provide a torpedo gun which discharges a projectile with sufficient force to penetrate such reduced armor protection on the under water portions of vessels.

My present invention is intended to provide an improvement on the patents aforesaid, in which I use the air flask of the torpedo for the barrel of the gun, providing a buffer plate or piston in said air flask adapted to drive the projectile in front of the same, and to cause the projectile, when the propelling charge is fired, to pass through the front end of the air flask, through the nose of the torpedo and through the armor plate of the vessel being attacked.

My invention will be understood by reference to the accompanying drawings, in which:—

Figure 1 shows a side elevation of a torpedo, partly in central longitudinal section, with the firing mechanism in the safety position;

Fig. 2 is a similar view, on a larger scale, of the front end of the torpedo showing the firing mechanism in the operative or "cocked" position ready to ignite the propelling charge when the torpedo strikes the target; and

Fig. 3 shows a section along the line 3—3 of Fig. 1, and looking in the direction of the arrows.

A represents the nose of the torpedo commonly called the "war head", and ordinarily filled with high explosive such as gun cotton, but in the present instance this may be left empty and be a mere shell, adapted to provide stream lines for the nose of the torpedo.

In rear of the war head just referred to is the air flask B, constructed in the usual way, but preferably somewhat elongated, if desired, and in the rear portion C of the torpedo the propelling and steering mechanism, not shown, are mounted. As these form no part of my present invention, they will not be further described herein.

Near the base of the air flask I provide a cup-shaped piston D, which forms the forward end of a chamber at the rear end of the air flask, in which the propelling charge E of suitable gun powder is placed. In front of the piston D is the projectile F, having the usual charge of high explosive, and any suitable fuse *f*. The projectile is preferably centered in the air flask by one or more suitable spiders G, and the propelling charge E is ignited in any suitable way, as by means of the firing apparatus shown in my Patent No. 964,184, aforesaid slightly modified to suit altered conditions.

In order to fire the shell at the proper moment, and in order to insure against its being fired accidentally, or at any other time than the proper moment, I provide the firing apparatus hereinafter described.

1 represents a suitable perforated lug or projection attached to or integral with the shell of the torpedo. This lug is provided with a suitable stuffing box 3, and through this lug and stuffing box passes the firing rod 4 provided with a screw-thread 5, over which fits the screw-threaded sleeve 6 pro-

vided at its outer end with a propeller 7. Said rod 4 reciprocates under the control of the outer spring 8, which rests against the head B′ of the air flask and engages a set collar 9 on the rod 4. This rod 4 is provided with a collar 10 on the inside of said flask and passes through the air flask and through one or more guides 11 attached to the spiders G.

When the sleeve 6 is screwed down to the end of the screw-thread 5, as shown in full lines in Fig. 1 and in dotted lines in Fig. 2, the collar 10 is jammed against the inner surface of the head B′, and the sleeve 6 is jammed against the outer surface of the stuffing box 3, and the rod 4 is firmly locked so that it cannot be moved in either direction. When, however, the torpedo is projected or propelled through the water, the propeller 7 will cause the sleeve 6 to turn in such a direction as to advance along the screw-thread 5 and occupy the position shown in full lines in Fig. 2, when the shoulder 12, on the interior of said sleeve, rests against the collar 13 on the outer end of said screw-thread 5, in which position the propeller 7 and spring 8 will tend to move the rod 4 forward and the collar 10 will prevent its further forward movement.

Thus, when the parts are in the position shown in full lines in Fig. 2, the firing rod 4 is in such position that it cannot be moved farther forward, but can be pressed backward against the action of the spring 8.

Secured to the piston D is the firing pin support 14, in which is mounted the firing pin 15 normally pressed forward by the spring 16, but held backward by the trigger 17. When the rod is pushed back, as when the torpedo strikes the torpedo net or target, this trigger is tripped, the firing pin is released and the propelling charge E is ignited, causing the piston D to fly forward in the cylindrical bore of the air flask, and, of course, propelling with it the projectile F, which projectile will pass through the front end B′ of the air flask and through the forward portion of the shell of the torpedo and will penetrate the target.

Any suitable delayed action fuse, such as *f*, used in the shell will explode same after it has passed through the shell of the ship or target. It will thus be seen that I use the cylindrical portion of the air flask as the barrel of the gun, and the front head of the air flask will be readily penetrated by the projectile as it is propelled forward.

The rear head and the rear end of the air flask may be, if desired, increased in strength so as to withstand the pressure of the propelling charge. It will obviously be immaterial whether the air flask bursts or not, after the projectile has attained the proper velocity and direction, as it is a necessary factor of the invention that the torpedo shall be wrecked when the propelling charge is fired.

The inertia of the rapidly moving mass of torpedo, and the pressure of the water on the propeller blades, will in a large measure compensate for the backward kick of the propelling charge on the rear end of the torpedo and will facilitate the forward movement of the piston D and the projectile in front of same.

I have shown the projectile centered in the body of the torpedo by means of suitable spiders which would not only serve to insure the balance of weight and the symmetrical arrangement of the parts, but would also serve to hold the axis of the shell in the proper direction until sufficient velocity had been imparted to the same to keep it going in the proper direction.

In practice, I prefer to have the shell pass through the spiders, but if desired the spiders may be fast to the shell and move therewith until forced off by engagement with the head B′ of the air flask. The base of the shell may also be temporarily attached to the piston D if desired.

Under certain conditions it might be feasible to have the projectile of the same diameter as the interior shell of the air flask, in which case no piston D would be necessary, but in view of the great weight in such a projectile it would ordinarily be preferable to have the projectile of materially less diameter than the air flask, in which case it would be necessary to have a piston of some kind interposed between the projectile and the propelling charge.

By the herein described arrangement the weight of the explosive material ordinarily carried in the war-head is dispensed with, and the center of weight is brought more nearly to the center of the torpedo, improving the balance of the torpedo. By using the air flask as a gun barrel the weight of the metal barrel shown in my prior patents referred to is mainly dispensed with and the torpedo is able to carry a larger projectile, and, secondly, is able to deliver a greater mass of explosive into the vitals of the enemy's ship.

It will be obvious that various modifications may be made in the herein described construction, and in the combination and arrangement of parts which could be used without departing from the spirit of my invention.

Having thus described my invention what I claim and desire to secure by Letters Patent of the United States is:—

1. In an automobile torpedo, the combination with an air flask, of a projectile mounted entirely within said air flask, and a propelling charge also mounted in said air flask and in rear of said projectile, with means for igniting said propelling charge.

2. In an automobile torpedo, the combination with an air flask provided with a cylindrical central portion, of a piston mounted in said air flask near the rear end thereof, a propelling charge mounted between said piston and the rear head of the air flask, a projectile mounted in front of said piston, and means operated by the movement of the torpedo for igniting said propelling charge.

3. In an automobile torpedo, the combination with an air flask provided with a cylindrical central portion, of a piston mounted in said air flask near the rear end thereof, a propelling charge mounted between said piston and the rear head of the air flask, a projectile mounted in front of said piston, means for centering the projectile in said air flask, and means operated by the movement of the torpedo for igniting said propelling charge.

4. In an automobile torpedo, the combination with closed air flask, of a projectile mounted inside said air flask, and a propelling charge mounted in said air flask in rear of said projectile and adapted to propel same through the head of the air flask, and means operated by the movement of the torpedo for igniting said propelling charge.

5. In an automobile torpedo, the combination with an air flask provided with a cylindrical central portion, of a piston mounted in said air flask near the rear end thereof, a propelling charge mounted between said piston and the rear head of the air flask, a projectile mounted in front of said piston, and means operated by the movement of the torpedo for igniting said propelling charge, said means comprising a spring-impressed firing pin, a trigger normally holding said firing pin in the safety position, and a spring-impressed rod projecting through the nose of the torpedo and adapted to be forced back to engage said trigger and release said firing pin when the torpedo reaches the target.

6. In an automobile torpedo, the combination with an air flask provided with a cylindrical central portion, of a piston mounted in said air flask near the rear end thereof, a propelling charge mounted between said piston and the rear head of the air flask, a projectile mounted in front of said piston, spiders for centering the projectile in said air flask, and means operated by the movement of the torpedo for igniting said propelling charge, said means comprising a spring-impressed firing pin, a trigger normally holding said firing pin in the safety position, and a spring-impressed rod projecting through the nose of the torpedo and adapted to be forced back to engage said trigger and release said firing pin when the torpedo reaches the target.

In testimony whereof, I affix my signature.

CLELAND DAVIS.