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AERIAL TORPEDO OR MINE.

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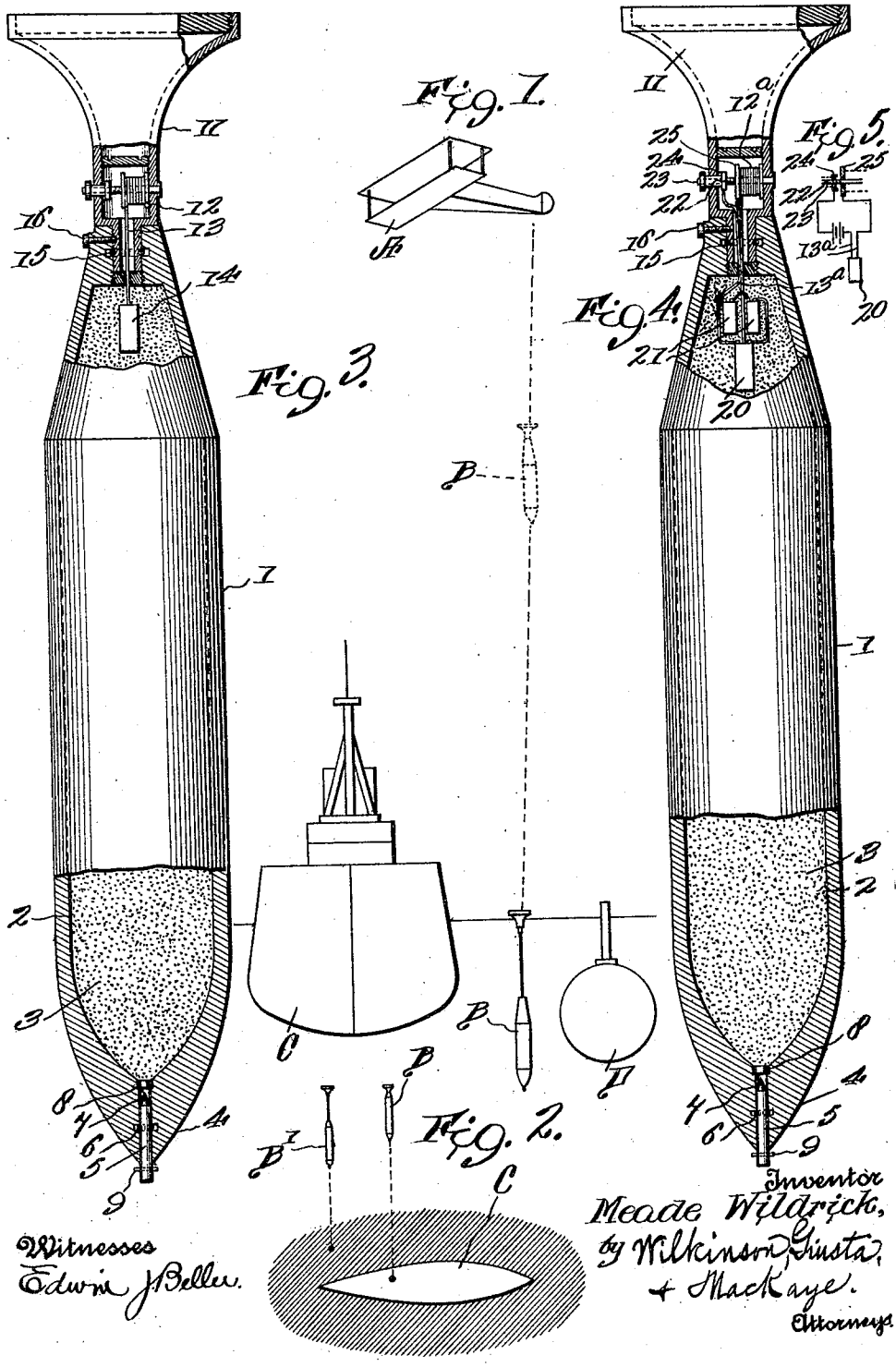
1,398,290. Patented Nov. 29, 1921.



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UNITED STATES PATENT OFFICE.

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AERIAL TORPEDO OR MINE.

1,398,290. Specification of Letters Patent. Patented Nov. 29, 1921.

Application filed January 27, 1917. Serial No. 144,969.

To all whom it may concern:

Be it known that I, MEADE WILDRICK, of the United States Army, a citizen of the United States, stationed at Fort Monroe, in the county of Elizabeth City, and State of Virginia, have invented certain new and useful Improvements in Aerial Torpedoes or Mines, (Case C;) 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 invention relates to improvements in projectiles adapted to be dropped from aircraft whether aeroplanes or dirigibles, and it consists in providing an aerial torpedo or mine, which is capable of carrying a comparatively large charge of high explosive, and which may be safely transported either by rail, boat or aircraft, and in which safety in handling, or more especially in launching, is secured.

According to my invention the projectile is intended to be exploded by impact when it strikes the deck of a ship or any solid target aimed at, and which is also exploded, after striking the water, at a predetermined depth below the surface of the water.

It is well known that the danger zone of a torpedo or mine of the character described varies within certain limits with the depth of the explosion below the surface of the water and the volume of and nature of the explosive used; and that for heavy plated ships, such as battle-ships, this danger zone may be extended twenty yards more or less from the skin of the ship, while for lighter craft, such as torpedo boat destroyers or submarines, the danger zone under similar conditions may extend as much as fifty yards more or less from the skin of the ship, therefore having a sufficient charge of high explosive and detonating same at a proper distance below the surface of the water, any great accuracy in dropping a torpedo may be dispensed with, and the torpedo will be efficacious if it strikes either the vessel aimed at or within a reasonable distance of the same.

My invention will be more fully understood after reference to the accompanying drawings, in which similar parts are indicated by similar reference symbols throughout the several views, and in which:

Figure 1 shows diagrammatically the torpedo being dropped from an aeroplane, and falling in the water between a battle-ship and a submarine.

Fig. 2 is a diagram showing a plan view of the deck of a vessel and the surrounding danger zone.

Fig. 3 shows, on a larger scale, the complete aerial torpedo, parts being shown in section.

Fig. 4 is a similar view to Fig. 3, but shows a modified form of torpedo; and

Fig. 5 is a diagram showing the electric circuit for exploding the torpedo shown in Fig. 4.

Referring first to Figs. 1 and 2, A represents the aeroplane from which the torpedo B is dropped. This torpedo is shown in Fig. 1 as falling down into the water between the battle-ship C and the submarine D, the torpedo, as shown, being on a larger scale than the aeroplane, battle-ship and submarine.

If the torpedo B, shown in Fig. 2, strikes the deck of the battle-ship, it will be exploded, as will be hereinafter described; but if the torpedo B′, shown in Fig. 2, is exploded at the desired depth beneath the water and in the danger zone, it will also insure the destruction of the ship, as will be hereinafter described.

Referring now to the details of construction of the torpedo, and the means for detonating the high explosive contained therein, and with especial reference to Fig. 3, 1 represents the shell of the torpedo having a large chamber 2 therein for the high explosive 3. This shell is preferably provided with a point 4, adapted to penetrate the deck plates of a vessel, or even the light deck armor of a vessel.

In the nose of the projectile I provide a plunger 5, normally held in place by the split ring 6, which plunger is provided with a firing point 7 adapted to strike the primer 8 when the shell impacts with the target. The safety pin 9 is provided, which would normally prevent the plunger from striking the primer, and which safety pin is withdrawn before the torpedo is launched, the split ring then serving to hold the plunger 5 in the safety position.

The rear end of the shell is provided with a hollow detachable tail piece 11, in which is mounted the drum 12, on which is wound the lanyard 13 connected to the friction

primer of ordinary type 14, which is embedded in the high explosive. This tail piece is detachably connected to the end of the torpedo by the split ring 15, and a safety pin 16 may also be used, if desired, which safety pin should be removed before the torpedo is launched.

The operation of the device is as follows:

Before launching the torpedo, remove the safety pins 9 and 16, and then when the torpedo is launched, it will fall nose downward until it strikes the target, in which case the torpedo would be exploded by the plunger 5 and primer 8; or if it strikes the water, as soon as the tail piece 11 becomes submerged, the split ring 15 will be pressed upon with sufficient force to release the hollow tail piece 11 and the latter will float to the surface, unwinding the lanyard 13 from the drum 12. The end of the lanyard is made fast to the drum, and when the lanyard is entirely unwound from the drum, it will ignite the friction primer 14 and detonate the high explosive in the projectile.

In the modification shown in Figs. 4 and 5 instead of a friction primer an electric primer 20 is shown, ignited by the dry cells 21.

The drum 12 carries an insulated cable 13^a electrically connected to the electric primer 20, and this drum is mounted on screw threads 22 on the shaft 23. The said shaft carries a contact piece 24 so that when the cable 13^a has unwound to the desired distance, the head 25 of the drum will bring up against the contact piece 24, and will close the circuit through the cable 13^a, thus igniting the primer and detonating the high explosive in the torpedo.

Thus it will be seen that the paying out of the cable 13^a, of Fig. 4, to the desired length, will have the same function as the paying out of the lanyard, shown in Fig. 3, and with the result in either case that if the torpedo strikes the water it will move down to the prescribed depth, which depth is limited by the length of the lanyard or cable, as the case may be, and is then exploded. In either case, if the torpedo strikes the deck of a vessel or other solid target, it will be exploded on impact by means of the plunger 5 and primer 8. In both cases the plunger 5 should preferably be provided with a safety pin 9, and the detachable tail piece 11 should preferably be locked in place by the safety pin 16, which safety pins should both be removed just before it is desired to launch the torpedo.

It will thus be seen that I provide a torpedo which can be safely handled and transported, and yet which will operate on impact with a solid target, or will descend down through the water to a prescribed depth and then will be exploded.

While I have shown two forms of primer controlled by a cable or lanyard for exploding the torpedo at a predetermined depth below the water, it will be obvious that various other forms to accomplish a similar result might be used without departing from the spirit of my invention, I do not mean to limit myself to any details of construction, or to any combination and arrangement of parts, except as set out in the claims.

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

1. In a projectile adapted to be dropped from aircraft, the combination with a body portion containing high explosive, of a tail piece in the form of a float connected to said body portion, a detachable connection between said float and said body portion adapted to be severed when the projectile becomes submerged in the water, a drum and cable carried by said tail piece, and a primer mounted in said body portion and connected to said cable, with means for exploding said primer when said cable has unwound through a predetermined length from said drum, substantially as described.

2. In a projectile adapted to be dropped from aircraft, the combination with a body portion containing high explosive, of a tail piece in the form of a float connected to said body portion, a split ring forming a detachable connection between said float and said body portion adapted to be released when the projectile becomes submerged in the water, a drum and cable carried by said tail piece, and a primer mounted in said body portion and connected to said cable, with means for exploding said primer when said cable has unwound through a predetermined length from said drum, substantially as described.

3. In a projectile adapted to be dropped from aircraft, the combination with a body portion containing high explosive, of a tail piece in the form of a float connected to said body portion, a detachable connection between said float and said body portion adapted to be severed when the projectile becomes submerged in the water, a drum and cable carried by said tail piece, and a primer mounted in said body portion and connected to said cable, with means for exploding said primer when said cable has unwound through a predetermined length from said drum, with independent means for exploding said high explosive when the movement of said projectile is suddenly arrested, substantially as described.

4. In a projectile adapted to be dropped from aircraft, the combination with a body portion containing high explosive, of a tail piece in the form of a float connected to said body portion, a split ring forming a detachable connection between said float and said body portion adapted to be released when the projectile becomes submerged in

the water, a drum and cable carried by said tail piece, and a primer mounted in said body portion and connected to said cable, with means for exploding said primer when said cable has unwound through a predetermined length from said drum, with independent means for exploding said high explosive when the movement of said projectile is suddenly arrested, substantially as described.

5. In a projectile adapted to be dropped from aircraft, the combination with a body portion containing high explosive, of a tail piece in the form of a float connected to said body portion, a detachable connection between said float and said body portion adapted to be severed when the projectile becomes submerged in the water, a drum and cable carried by said tail piece, and a primer mounted in said body portion and connected to said cable, with means for exploding said primer when said cable has unwound through a predetermined length from said drum, with a plunger and percussion primer mounted in the nose of the projectile and adapted to explode said high explosive when said projectile strikes the target, substantially as described.

6. In a projectile adapted to be dropped from aircraft, the combination with a body portion containing high explosive, of a tail piece in the form of a float connected to said body portion, a split ring forming a detachable connection between said float and said body portion adapted to be released when the projectile becomes submerged in the water, a drum and cable carried by said tail piece, and a primer mounted in said body portion and connected to said cable, with means for exploding said primer when said cable has unwound through a predetermined length from said drum, with a plunger and percussion primer mounted in the nose of the projectile and adapted to explode said high explosive when said projectile strikes the target, substantially as described.

7. In a projectile adapted to be dropped from aircraft, the combination with a body portion containing high explosive, of a tail piece in the form of a float connected to said body portion, a detachable connection between said float and said body portion adapted to be severed when the projectile becomes submerged in the water, a drum and cable carried by said tail piece, and a primer mounted in said body portion and connected to said cable, with means for exploding said primer when said cable has unwound through a predetermined length from said drum, with a plunger and percussion primer mounted in said body portion and connected to said cable, with means for exploding said high explosive when said projectile strikes the target, said plunger being provided with a removable safety pin to prevent premature firing, substantially as described.

8. In a projectile adapted to be dropped from aircraft, the combination with a body portion containing high explosive, of a tail piece in the form of a float connected to said body portion, a split ring forming a detachable connection between said float and said body portion adapted to be released when the projectile becomes submerged in the water, a drum and cable carried by said tail piece, and a primer mounted in said body portion and connected to said cable, with means for exploding said primer when said cable has unwound through a predetermined length from said drum, with a plunger and percussion primer mounted in the nose of the projectile and adapted to explode said high explosive when said projectile strikes the target, said plunger being provided with a removable safety pin to prevent premature firing, substantially as described.

9. The combination of an explosive shell which automatically sinks when dropped in the water, a buoy, a flexible connection from the buoy to the shell, a reel with which the flexible connection coöperates and which is rotated by the flexible connection as the shell sinks in the water, and automatic firing mechanism for the shell whose operation is controlled by the reel, substantially as described.

In testimony whereof, I affix my signature.

MEADE WILDRICK.