

Nov. 30, 1943.

W. J. MURRAY

2,335,527

MARINE TORPEDO

Filed Jan. 6, 1943

Fig. 1

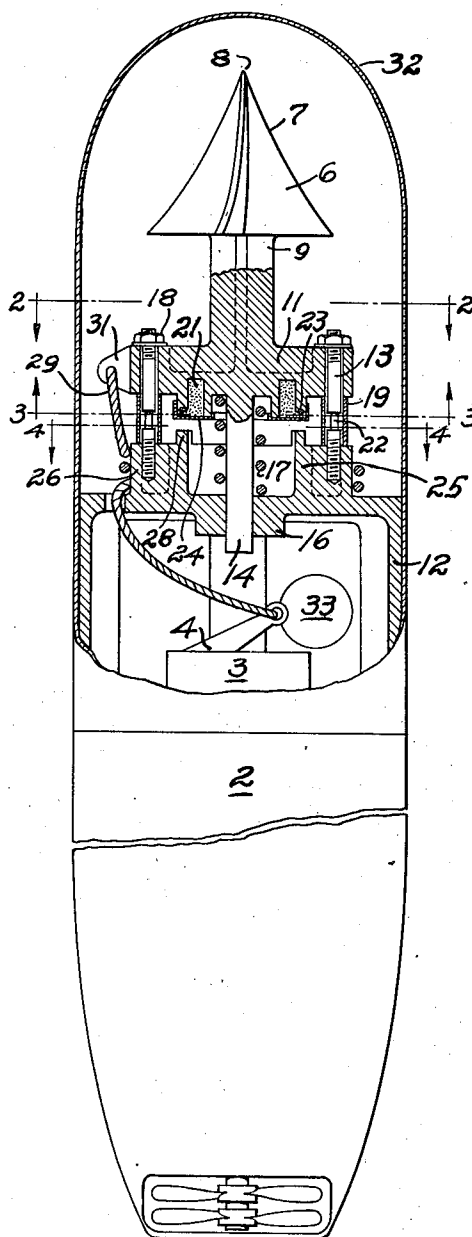
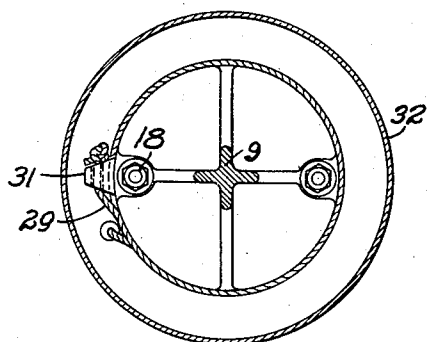


Fig. 2

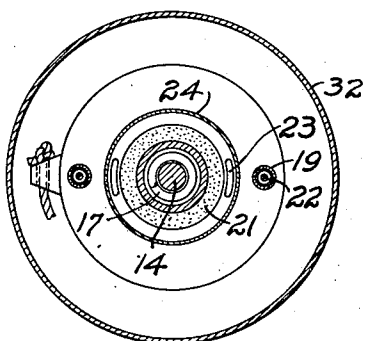


Fig. 3

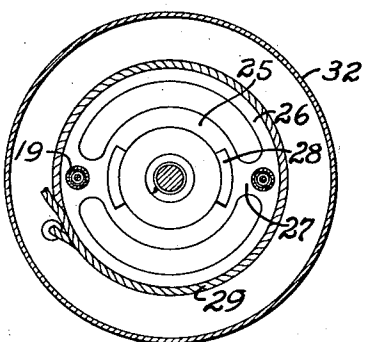


Fig. 4

INVENTOR
WILLIAM J. MURRAY
BY *Charles S. Evans*
HIS ATTORNEY

UNITED STATES PATENT OFFICE

2,335,527

MARINE TORPEDO

William J. Murray, San Francisco, Calif.

Application January 6, 1943, Serial No. 471,468

6 Claims. (Cl. 114—20)

My invention relates to torpedoes for use in war and particularly to torpedoes for the destruction of enemy shipping.

An object of the invention is the provision of means for placing an explosive charge deep down along the side, or close to the bottom of a vessel.

Another object is the provision of a torpedo which is fired in the usual way, but instead of exploding on contact, drops down along the side of the vessel a predetermined distance, and after a predetermined interval which may be short or long explodes.

My invention possesses other objects and features of advantage, some of which with the foregoing, will be set forth in the following description of the invention. It is to be understood that I do not limit myself to the showing made by the said description and the drawing, as I may adopt variant forms of the invention within the scope of the appended claims.

In the drawing Figure 1 is an elevation of the forward part of a torpedo including my invention. The head or leading end of the torpedo in which my invention is embodied is shown in vertical section. Figures 2, 3 and 4 are cross sections taken in various planes at right angles to the long axis of the torpedo, the planes of section being indicated respectively by the lines 2—2, 3—3, and 4—4 of Figure 1.

The torpedo of my invention includes a main body 2, enclosing the main bursting charge, and the timing, detonating and propulsion mechanism in accordance with common practice. The firing mechanism of known construction for timing and detonating the main explosive charge is contained in the housing 3; and is controlled by the trigger 4. These features exist in a variety of mechanisms; and their details form no part of the present invention.

In terms of broad inclusion, my torpedo includes a grappling head designed to penetrate and be retained in the hull wall of a vessel struck by the torpedo. Instead of the explosion on contact of the destructive charge of explosive carried in the body of the torpedo, a relatively light charge of explosive is set off by such contact, which separates the embedded head from the main body, allowing the main body carrying the destructive charge to sink along side of the vessel wall to a predetermined depth controlled by a cable connecting the head to the trigger of the firing mechanism. When the falling heavy main body reaches the predetermined depth below the head the then taut cable releases the trigger, and the heavy charge of explosive is set

off at the most advantageous location to cause the greatest possible destruction and damage.

In greater detail my invention comprises a harpoon head 6, the function of which is to embed itself in the hull wall of the vessel under attack. The head is preferably shaped with cutting edges 7, flaring out from the point 8, and having a small amount of helical twist to aid in retention of the head, as indicated in Figure 1. The head is arranged on a stub shaft 9, rising out of a base 11, which is fixed on the frame 12, forming the front or leading end of the main body of the torpedo, by means of stud bolts 13. Preferably two of these bolts are used, one on each side of the stem 14, extending centrally from the base and slidably disposed in a bearing 16, in the end wall of the frame 12. The stem maintains a central alignment of the head and base; and is surrounded with a heavy spring 17 which presses the base firmly against the head nuts 18 of the stud bolts 13. This spacing is additionally assured by soft metal sleeves 19 interposed, like the spring, between the base 11 and frame 12. In assembling, the nuts 18 are tightened down against the push of the spring 17, until the base 11 seats firmly on the sleeves.

It will be observed that if sufficient force is exerted on the frame 12 to drive it toward the head 11, the sleeves 19 will be crumpled or collapsed, the stud bolts pushed up through the holes in the base, and the spring 17 compressed. This is exactly what happens when the torpedo strikes a hull. The head, ripping into the hull wall, is brought to a sudden halt; and the momentum of the heavy main body drives the two parts together.

Means are provided for utilizing this crashing together of the parts to separate them, so that the main body carrying the heavy explosive charge may sink to a predetermined depth and there be exploded as it dangles against the hull with a blanketing layer of water above it to concentrate its force most destructively. Arranged in the underside of the base 11 is an annular recess adapted to hold a small charge 21 of explosive sufficient to rupture the stud bolts 13 at their reduced sections 22, calculated with that end in view. Arranged on the edge of the explosive charge 21 preferably on opposite sides are the detonating caps or charges 23, they and the rupturing charge 21 being housed in by the annular cap or cover 24 frictionally held on the flanged formation of the base as shown in Figure 1.

Arranged on the wall of the frame 12, are a pair

of concentric flanges 25 and 26, connected at intervals with webs 27 in which the stud bolts 13 are threaded to a seat. The inner flange is formed with a boss firing pin 28 on each side. These project a small amount beyond the edge of the flange so as to strike over the caps 23 and explode them when the torpedo strikes.

The outer flange 26 provides a cylindrical drum surface about which is coiled a steel cable 29, one end of which is secured in the eye 31 on the base 11, and the other end connected to the end of the trigger arm 4. When the parts are separated by the rupture of the stud bolts, the coils of cable are freed from the flange 26, and its length determines when the trigger is jerked to explode the main charge, or initiate the operation of timing mechanism if the explosion is to be delayed.

Enclosing the parts described is a thin shell or housing 32, which provides the desired streamlined contour at the head end of the torpedo, merging into the body of the torpedo near the foot of the frame 12. This housing, of course, crumples up when the torpedo strikes, the harpoon point of the head penetrating it first on its way into the hull. A hand hole normally closed by the cover 33 provides access to the interior of the housing and frame 12 for the purpose of setting the trigger and timing mechanism, this being done immediately before loading the torpedo into the firing tube.

I claim:

1. A torpedo comprising a main body containing a heavy explosive charge, a head connected to the body and including means for attaching itself to the hull of a vessel, an explosive interposed between the head and body for disconnecting them, means for exploding the interposed explosive upon impact of the torpedo on a target, a firing device for exploding the heavy explosive charge, and a cable operatively connecting the firing device with the head.

2. A torpedo comprising a main body containing a heavy explosive charge, a head including means for attaching the head to the hull of a vessel, means having a calculated resistance to rupture for holding the head to the body, an explosive charge sufficient to insure such rupture interposed between the head and the body, means for exploding the interposed explosive upon impact of the torpedo on a target, a firing device for exploding the heavy explosive charge, and a cable operatively connecting the firing device with the head.

3. A torpedo comprising a main body containing a heavy explosive charge, a head including a cutting point for penetrating the hull wall of a ves-

sel and attaching the head thereto, means having a calculated resistance to rupture for holding the head to the body, an explosive charge sufficient to insure such rupture interposed between the head and the body, means for exploding the interposed explosive upon impact of the torpedo on a target, a firing device for exploding the heavy explosive charge, and a cable operatively connecting the firing device with the head.

4. A torpedo comprising a main body containing a heavy explosive charge, a head including a cutting point for penetrating the hull wall of a vessel and attaching the head thereto, weakened bolts for connecting the head to the body, an explosive charge sufficient to rupture the bolts interposed between the head and the body, means for exploding the interposed explosive upon impact of the torpedo on a target, a firing device for exploding the heavy explosive charge, and a cable operatively connecting the firing device with the head.

5. A torpedo comprising a main body containing a heavy explosive charge and terminating at its leading end in a frame, a head including a cutting point for penetrating the hull wall of a vessel and attaching the head thereto, said head being slidably mounted on said frame, collapsible means for holding the head spaced from the frame, means for holding the head and frame firmly upon the collapsible means, an explosive charge sufficient to rupture the holding means interposed between the head and frame and arranged to explode upon collapse of the collapsible means and impact of the frame on the head when the torpedo strikes a target, a firing device for exploding the heavy explosive charge, and a cable operatively connecting the firing device with the head.

6. A torpedo comprising a main body containing a heavy explosive charge and terminating at its leading end in a frame, a head including a cutting point for penetrating the hull wall of a vessel and attaching the head thereto, said head being slidably mounted on said frame, weakened bolts for holding the head and frame together, collapsible sleeves around the bolts for holding the head and frame in spaced relation, an explosive charge sufficient to rupture the bolts interposed between the head and frame and arranged to explode upon collapse of the sleeves and impact of the frame on the head when the torpedo strikes a target, a firing device for exploding the heavy explosive charge after a predetermined interval, and a cable connecting the firing device with the head to initiate the operation of the firing device.

WILLIAM J. MURRAY.