L. J. BARTHELEMY.

PROJECTILE.

APPLICATION FILED FEB. 16, 1918.

1,333,199. Patented Mar. 9, 1920.

FIG. 1.

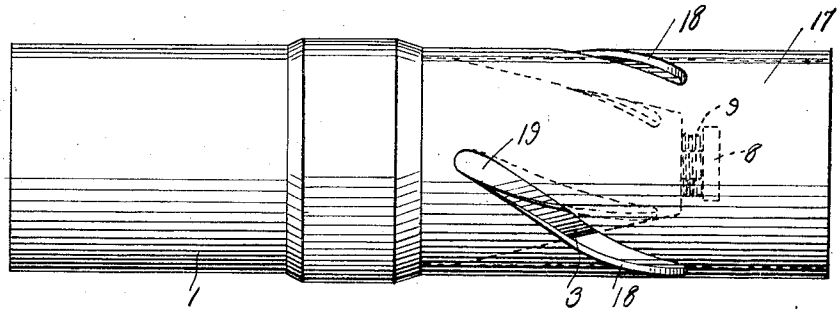


FIG. 2.

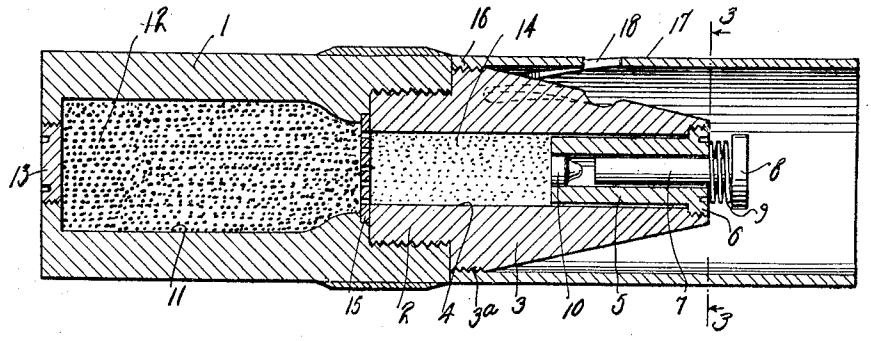
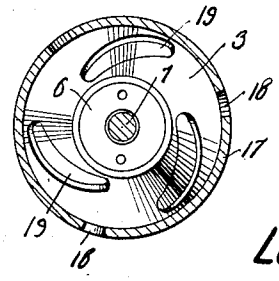


FIG. 3.



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PROJECTILE.

1,333,199. Specification of Letters Patent. Patented Mar. 9, 1920.

Application filed February 16, 1918. Serial No. 217,591.

To all whom it may concern:

Be it known that I, LOUIS J. BARTHELEMY, a citizen of the United States, residing at San Juan, Porto Rico, have invented certain new and useful Improvements in Projectiles, of which the following is a specification.

This invention relates to projectiles, and more particularly to a projectile specially adapted for attacking submarine vessels, and other objects beneath the surface of water.

One of the main objects of the invention is to provide a projectile of simple construction and operation which will not have its direction of travel materially altered by striking the surface of the water. A further object is to provide a projectile having a guide casing extending about and in front of the projectile adapted to engage the water, this casing being hollow so as to permit water to enter it thus preventing deflection or glancing of the projectile due to its striking the water. Further objects will appear from the detailed description.

In the drawings:

Figure 1 is a side view of a projectile constructed in accordance with my invention.

Fig. 2 is a central longitudinal section.

Fig. 3 is a section taken substantially on line 3—3 of Fig. 2.

The projectile is provided with the cylindrical body 1 the forward end of which is recessed and interiorly threaded to receive the threaded neck 2 of the forwardly tapering head 3 secured therein. Head 3 is provided with an axial bore 4 in the outer portion of which is mounted a tube 5. This tube is provided at its outer end with an outer annular shoulder 6 which is exteriorly threaded and is threaded into the outer end of head 3, the head being provided with a threaded recess concentric with bore 4 for this purpose. Tube 5 is adapted to receive a plunger 7 provided with a disk-like head 8 at its outer end, this plunger being normally held outward by a coil expansion spring 9 mounted about the same and confined between head 8 and the outer end of tube 5. When the plunger is forced inwardly, it engages a primer 10 which is secured in the inner end of tube 5.

Body 1 is provided with a central cavity 11 which is adapted to contain the explosive charge 12. A screw plug 13 is secured in the base of body 1 so as to permit the explosive charge to be inserted into the same. The portion of bore 4 of head 3 provides a chamber which is adapted to contain a charge 14 of any comparatively slowly burning explosive, this charge acting as a fuse to ignite the main charge. To prevent mixture of the main charge and the fuse charge, a perforated disk 15 is mounted intermediate the inner end of neck 2 and the forward end of the explosive chamber 11, an annular shoulder being formed adjacent the inner end of chamber 11 by forming an annular recess at the inner end of this chamber, this shoulder and the inner end of neck 2 acting to secure the disk in position.

The head 3 adjacent the body 1 is shaped to provide a straight portion 3^a which is threaded to receive a threaded shoulder 16 provided at the inner end of a cylindrical guard and guide casing 17. This casing is disposed concentric with head 3 and projects forwardly of the same. The guide casing 17 is provided with a plurality of openings or slots 18 which are of spiral or helical curvature. These slots are positioned in alinement with grooves 19 formed in the face of head 3, these grooves being also of helical curvature.

In using this projectile, the plunger 7 is not inserted into sleeve 5 until it is desired to fire the projectile from a gun. When the projectile leaves the gun, the pressure of the air on disk 8 will be sufficient to prevent the plunger from falling out of the tube 5, it being understood that this plunger fits snugly in the tube so as to be held therein frictionally in the event that the gun is tilted downwardly, this friction grip between the plunger and the tube not being sufficient to prevent or in any way interfere with proper operation of the plunger in the manner to be described. While the projectile is traveling through the air, the expansion spring 9 counter-acts the atmospheric

pressure, or more correctly stated, the pressure of the air on the disk 8 due to the high speed at which the projectile passes through the air, thus preventing premature explosion of the projectile.

When the projectile strikes the water, the forward end of the guide casing 17 will enter the water in advance of the head 3. As this casing is open at its forward end the water will flow into the casing and about the head 3, escaping through the slots 18. This cylinder of water within the casing will, to a great extent, counter-act the tendency of the projectile to glance or be deflected by the water such as occurs in projectiles of ordinary construction. Also, the helical grooves 19 formed in the head will grip the water as the projectile passes through the same, due to the fact that the projectile is rotated at high speed during its advancement. These grooves act to materially reduce the resistance of the water to the passage of the projectile, and also serve to maintain the projectile in substantially its original direction of travel. When the head 8 of the plunger 7 strikes the water, the plunger will be forced inwardly against the resistance of spring 9 sufficiently to engage the primer 10 thus igniting the fuse charge 14. This results in exploding the main charge in the body of the shell. When the projectile is thus exploded, very great pressure will be exerted by the force of the explosion on the submarine boat, or a torpedo, if the projectile is fired at the latter. As is well known, the result of this sudden pressure will be to cause explosion of the torpedo, or probable destruction of the submarine boat, in the same manner as the depth bombs now commonly used. This projectile renders it possible to fire directly at a submarine boat the periscope of which may be visible in the same manner as if the boat were on the surface of the water, the guide casing serving to prevent any material deviation of the projectile from its original direction of travel.

While I have shown the head 3 as being provided with the helical grooves 19, it may not be necessary under all conditions to have these grooves, as the casing 17 serves to prevent deflection of the projectile, the main object of the grooves being to reduce the resistance offered by the water to the passage of the projectile through the same, these grooves also acting to a certain extent to hold the projectile to its original path or direction of travel. It will also be evident that any suitable fuse can be used in place of the fuse charge shown and described. If desired, a time fuse of standard construction for igniting the main explosive charge may be provided thus permitting the projectile to be timed to explode at a given distance or depth. It will be evident that there may be slight changes made in the construction and arrangement of the different parts of my invention without departing from the field and scope of the same, and I intend to include all such variations, as fall within the scope of the appended claims in this application in which a preferred form only of my invention is disclosed.

What I claim is:

1. The combination with a projectile having a body and a forwardly tapering head secured therein, said head being provided with radially disposed helical grooves, of a cylindrical casing secured to the head in concentric spaced relation therewith and projecting forwardly of the same, said casing being provided with radially disposed slots for permitting the escapement of water through the same when the projectile is passing through water.

2. The combination with a projectile having a body and a forwardly tapering head secured therein, said head being provided with radially disposed helical grooves, of a casing secured to the head in concentric spaced relation therewith and projecting forwardly of the same, said casing being provided with radially disposed slots positioned in alinement with said grooves.

3. A projectile having firing means and a recess leading thereto, a plunger movable in said recess against said firing means upon impact, and said plunger normally engaging the wall of the recess friction tight to prevent accidental detachment of the plunger in case the projectile travels downward.

4. A projectile having firing means and a recess leading thereto, a plunger movable in said recess against said firing means upon impact, said plunger normally engaging the wall of the recess friction tight to prevent accidental detachment of the plunger in case the projectile travels downward, said plunger having a head to provide a relatively large water-engaging surface, and a spring intermediate the two heads to resist accidental inward movement.

5. A projectile having a body, a head extending from the body, one of said parts having a neck screw threaded into the other, each part having an explosive chamber, a separator between said chambers clamped in place by said neck, and firing means in communication with one of said chambers.

6. A projectile having a body member, a head member, one of said members having a neck screw threaded into the other, said members having communicating explosive chambers, a separator for said chambers, said separator being clamped against the body by said neck, a casing screw threaded to the exterior of said head and at its inner end abutting said body, said head tapering for-

wardly, a sleeve screw threaded into the explosive chamber of the head, said sleeve having firing means therein, a plunger movable in the recess of said sleeve against the firing means upon impact, said plunger normally engaging the wall of the sleeve friction tight to prevent accidental displacement of the plunger in case the projectile travels downwardly, said plunger having a relatively large water engaging head, and a spring intermediate both heads to resist accidental inward movement of the plunger.

In testimony whereof I affix my signature in presence of two witnesses.

LOUIS J. BARTHELEMY.

Witnesses:

H. BITHAM,

V. DIAZ COLLAZE.