F. J. ROHLING.

EXPLOSIVE PROJECTILE.

APPLICATION FILED NOV. 5, 1917.

1,320,495.

Patented Nov. 4, 1919.

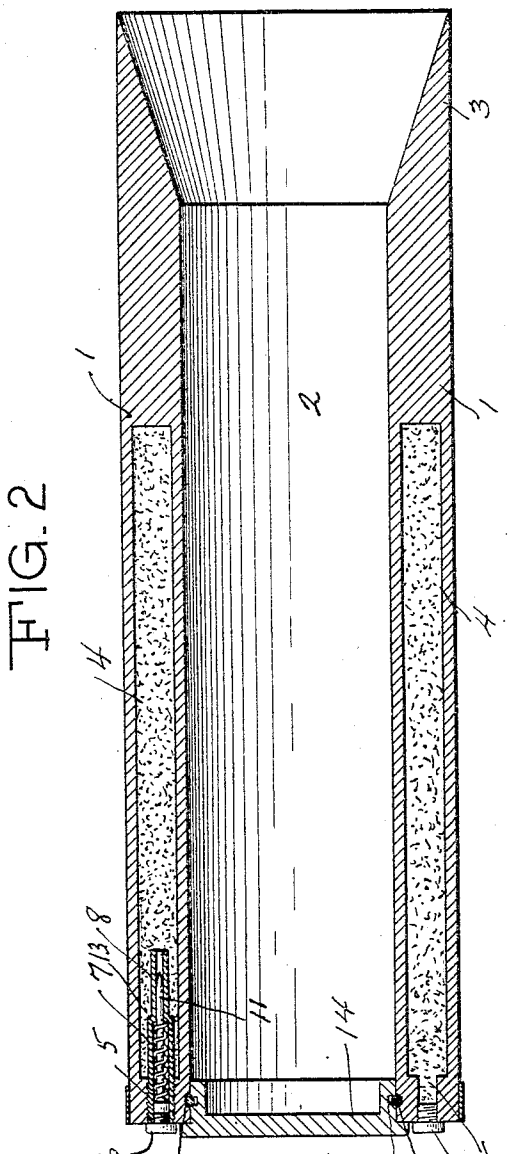


FIG. 2

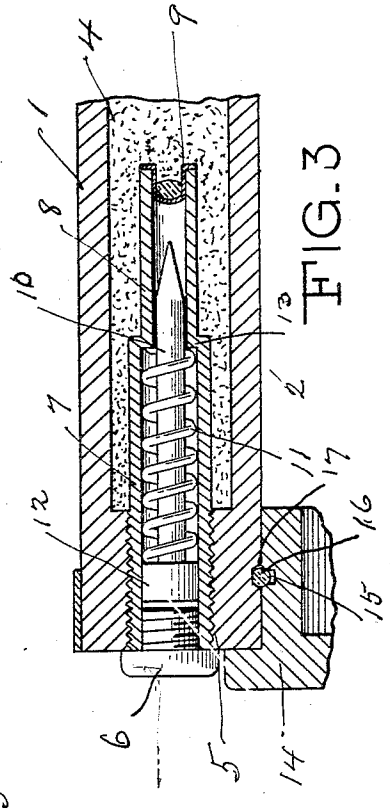


FIG. 3

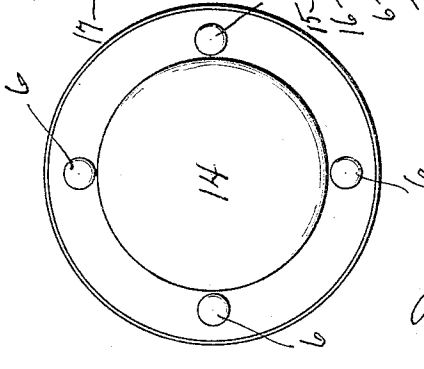


FIG. 1

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EXPLOSIVE PROJECTILE.

1,320,495. Specification of Letters Patent. Patented Nov. 4, 1919.

Application filed November 5, 1917. Serial No. 200,263.

To all whom it may concern:

Be it known that I, FRANK J. ROHLING, a citizen of the United States, residing at Dallas, in the county of Dallas and State of Texas, have invented certain new and useful Improvements in Explosive Projectiles, of which the following is a specification.

My invention has relation to an improvement in explosive projectiles and in such connection it relates more particularly to the construction and arrangement of such projectiles.

Devices of this class as heretofore constructed were usually of cigar shape and have been well fitted for warfare on land. They could not be accurately used on sea for the reason that when the projectile missed its mark and impacted upon the water, the projectile ricochetted and traveled quite some distance before it finally sank into the water.

In submarine warfare as carried on at the present day it is essential that the explosive projectile, when fired from the gun, shall travel to the mark and shall enter the water without deflection or skipping. Thus if the submarine to be struck is, say, two hundred yards distant and submerged, the projectile when fired must travel two hundred yards above the water and then descend in an undeflected straight path through the water to the mark.

While the art shows that some attempts have been made to provide a non-ricochetting and non-explosive projectile all such attempts have been more or less failures by reason of the fact that no provision was made to insure the projectile nose entering first into the water. In fact such non-ricochetting projectiles as exemplified for instance in Letters Patent #517,560 of April 3, 1894, were lighter in weight at the nose or impacting end than at the base or rear end.

In the carrying out of my invention I provide a tubular shell having a central passageway of relatively large diameter extending from end to end of the shell and in the rear portion of this shell is formed an annular chamber for the reception of the exploding charge. The chambering of the rear or base of the tubular shell is for two purposes, namely, to provide space for the charge which will explode the shell after impact with the mark and to make the rear portion of the projectile, including the charge of explosives, appreciably lighter than the nose or impacting end of the explosive.

In addition to the tubular shell thus constructed I also provide a means of novel construction for detonating the explosive charge upon the impact of the projectile against the mark and I further provide a closure for the central passageway at the rear end of the projectile which shall remain in position on the projectile while the same travels through the gun but will be automatically released from the projectile by the air rushing into the central passageway as the projectile travels from the gun.

The nature and scope of my invention will be more fully understood from the following description, taken in connection with the accompanying drawings forming part hereof, in which—

Figure 1 is a rear end elevational view of a projectile embodying the main features of my invention.

Fig. 2 is a longitudinal sectional view of the same, and

Fig. 3 is an enlarged detail of the mechanism for firing the charge of explosives upon the impact of the projectile.

Referring to the drawings, 1 represents the body of the projectile. This body is tubular with a central opening or passageway 2 of relatively large diameter. This passageway at the forward end or nose 3 of the projectile is flared outward or gradually increased in diameter to inwardly taper the tubular body at that point. This tapering gives to the projectile a sharp annular cutting edge at its point of impact. The rear end or base of the body is annularly chambered or cored out as at 4 for the reception of a charge of suitable explosive material. In order that this annular chamber 4 may be made in an otherwise integral body, it is suggested that in the process of casting the body, the space 4 be packed with a sand core, which may afterward be removed through suitable screw-threaded openings 5 in the solid rim of the base. These openings 5 may be closed by suitable permanent closures or by screw caps 6 after the explosive charge has been introduced into chamber 4.

Through one or more of the openings 5 a detonating mechanism may be introduced. In its simplest and preferred form as illustrated in the drawings, this mechanism

consists of a tubular casing 7 having a reduced end 8 on which may be fitted a detonating cap 9. A firing pin 10 works more or less freely in the casing 7 with its end sliding in the reduced end 8. A spring 11 coiled about the pin 10 and interposed between the head 12 of the pin and the shoulder 13 formed at the junction of the casing 7 and its reduced end serves normally to retract the pin 10 away from the detonator 9. When however the projectile strikes a mark the impact causes the pin 10 to move forward in the casing and to strike against the detonating cap 9 to thereby explode the charge in chamber 4. As a result of this explosion the chambered portion of the projectile is shattered and at the same time the nose of the projectile is driven farther or deeper into the mark.

The rear end of the central passageway 2 is closed while the projectile is in the gun by means of a cap 14. This cap has its body grooved as at 15 to receive a spring gasket 16, the gasket 16 slipping into a groove 17 in the interior of the central passageway when the cap 14 is forced into place. When the projectile leaves the gun the air rushing through the central passageway will force the cap 14 from its engagement with the shell leaving the central pasageway free and unobstructed.

To permit of the projectile taking the interior rifling of the gun, its base is bound with the usual copper or soft metal rifling strip 18.

From the foregoing description it is plain that the projectile with its solid nose and chambered base is heaviest at its impact end and that when fired the projectile will travel through the air point forward like an arrow or dart and will when its trajectory is completed strike the water nose first and penetrate without ricochetting and without material deflection.

Having thus described the nature and objects of my invention, what I claim as new and desire to secure by Letters Patent, is—

1. An explosive projectile comprising a tubular body having its rear end annularly chambered for the reception of the exploding charge, said body having a central passageway of relatively large diameter, a cap forming a rear closure for said central passageway and a gasket arranged on the cap and adapted to detachably lock said cap in the interior of the passageway.

2. An explosive projectile comprising a tubular body having its rear end annularly chambered and filled with an exploding charge, said body having a central passageway extending entirely through the body and of relatively large diameter, a cap forming a rear closure for said central passageway, a gasket on the cap to detachably lock the cap in the passageway, the nose of said body being relatively heavier than the rear chambered end, and a means for detonating said charge in said chamber upon the impact of the projectile.

3. In an explosive projectile, a tubular body having its rear end annularly chambered for the reception of the exploding charge, said body having a central passageway extending entirely through the body, a cap forming a rear closure for said central passageway, a gasket on the cap to detachably lock the cap in said passageway, a tubular casing having a reduced end entering said annular chamber, a detonator arranged on the reduced end of said tubular casing, a firing pin having a range of movement in said tubular casing, and a spring arranged to retract said firing pin from the detonator, all arranged so that upon impact of the projectile, said pin will be forced, against the tension of said spring, upon the detonator.

In testimony whereof I have signed my name to this specification.

FRANK J. ROHLING.

Copies of this patent may be obtained for five cents each, by addressing the "Commissioner of Patents, Washington, D. C."