Feb. 2, 1937. M. J. RYAN 2,069,276

LIFE LINE PROJECTILE

Filed May 13, 1935

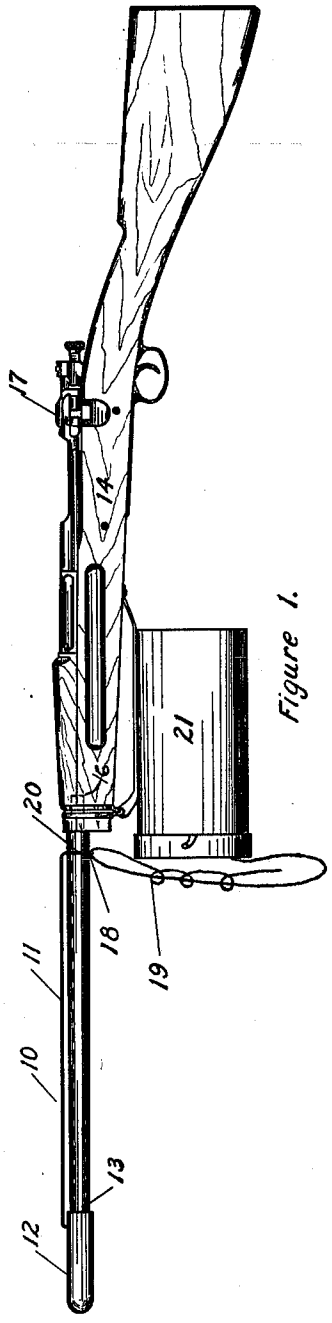


Figure 1.

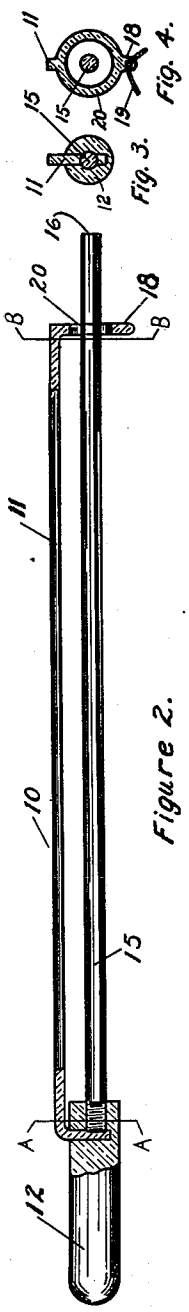


Figure 2.

Fig. 3.

Fig. 4.

M. J. Ryan INVENTOR

BY J. F. Mothershead

ATTORNEY

Patented Feb. 2, 1937

2,069,276

UNITED STATES PATENT OFFICE

2,069,276

LIFE LINE PROJECTILE

Michael J. Ryan, Denver, Colo., assignor to the Government of the United States, as represented by the Secretary of the Treasury

Application May 13, 1935, Serial No. 21,108

3 Claims. (Cl. 102—34)

(Granted under the act of March 3, 1883, as amended April 30, 1928; 370 O. G. 757)

The invention described herein may be manufactured and used by or for the Government of the United States for governmental purposes without the payment to me of any royalty thereon.

My invention relates to line throwing means and more particularly to a line carrying projectile, and means from and by which the projectile is propelled.

The invention has various uses and purposes. Its principal purpose is its use as a messenger, for example, for towing a running line or towing hauser from one point to another.

Projectiles of the type previously known and used are inaccurate and short-distanced because of the tumbling of the projectile in flight. This is due to the fact that the previously known projectiles are either too short to afford stability or, if long enough to afford stability, the line is improperly mounted thereon with relation to the center of gravity.

An object of my invention is the provision of a projectile so designed and balanced as to minimize flight tumbling effects and inclinations. By this accomplishment greater accuracy and greater distance is attained.

My invention consists of an elongated projectile adapted to be propelled by an explosive, adapted to be discharged from a gun or rifle, and adapted to carry a line from the rear of its center of gravity to insure accuracy in flight and greater range.

Other objects, purposes, and functions of the invention will be set forth in the following description, it being understood that the above general statements are intended to generally explain the same without limiting it in any manner.

In the illustrated application of the invention—

Fig. 1 is a perspective view in side elevation of a gun illustrating the application of a line carrying projectile and a line canister having the characteristics of my invention and by which the invention may be practiced.

Fig. 2 illustrates a projectile, partially in section of the type herein described.

Figs. 3 and 4 illustrate cross-sections A—A and B—B respectively, of Fig. 2.

Various modifications within the scope of my invention are known to me, but according to that by which I have illustrated my invention I provide a projectile 10 of substantial length having means 11 for carrying a line from a point rearward of its center of gravity. More specifically, according to the illustrations shown in the drawing, I provide a projectile comprising a nose or head piece 12 of such design and contour as to have a mimimum air resistance and a maximum stability. This nose piece 12 is of material of such weight, as compared to the rest of the projectile, as to travel foremost when in flight. Its rearward portion is of such diameter as to abut the muzzle 13 of the gun 14 from which it is to be propelled. Projecting rearward from the nose piece 12 is a push rod 15. The diameter of the push rod 15, of course, must be such as to permit it to be inserted into the muzzle end 13 of the gun barrel. This rod may be integral with or attached to the nose piece 12 by any suitable method such as threads thereon as shown in the drawing. These means may also serve for adjusting the length of the push rod. The length of the push rod is to be determined first by the length of the gun barrel and secondly by the compressional chamber-space desired or necessary in the barrel of the gun between the end 16 of the rod and the shell or explosive charge in the breech 17 of the gun. The length of this barrel chamber-space must necessarily be determined by its cross-sectional area, compressional force of explosive, weight of the projectile, etc. The distance of flight is governed, primarily, by such calculations.

The line carrying element 11 of the projectile consists of a rod or other means attached to the nose piece 12 and adapted to extend back along the outside of the gun barrel, and preferably parallel thereto, to a point beyond the center of gravity of the entire projectile. At a predetermined point beyond the center of gravity the member 11 is provided with means 18 and 20 for engaging a line 19. The line carrying member 11 may be integral with or attached to the nose piece 12 by any suitable means such as the provision of a transverse aperture (adapted to receive the end of the member 11) so positioned as to effect a clamping of the end of the member 11 within the nose piece by screwing the push rod 15 tightly into the nose piece 12.

The means 18 on the ring 20, for engaging the line 19 to be carried by the projectile, is preferably positioned on the opposite side of the gun barrel from that of the member portion 11 in order that the weight and pull of the line may aid in balancing the projectile in flight. This arrangement is accomplished by the provision of a ring portion 20 on the end of the member 11 upon which the means 18, such as an eyelet, for engaging the line may be provided. The ring member 20 is, of course, large enough to pass

over the gun barrel. This ring member functions as a guiding means or stabilizer for the projectile in its flight from the barrel in addition to functioning as a means for carrying the eyelet 18 to the side of the barrel opposite the member portion 11.

A canister 21 is provided for the line, to be carried by the projectile, and may be mounted on or attached to the gun in such a way as to readily hold the shot-line in such a position as to afford the least amount of friction and retardation when paying out. Accordingly, the line should be carefully wound and placed in the canister. The line is preferably attached to the projectile by loose half hitches in order that some give or elasticity may be provided when the projectile has traveled a sufficient distance to pick up the line and cause it to pay out from the canister.

The line 19 may be of any suitable material, and that may be a matter of choice as to strength, weight, paying resistance, etc.

The gun barrel is preferably smooth bored or unrifled to prevent a spiral direction to the propectile and thereby prevent a twisting of the shot-line in transit. The member 11 may serve as a sight on the gun barrel.

The propelling charge or explosive may be in the form of ordinary cartridges from which the projectiles have been removed.

The invention herein described has great utility particularly on board vessels. It is frequently difficult or inadvisable to launch life boats to render aid to vessels in distress in bad weather. By the use of the invention a line may be shot to a disabled vessel and when the line once spans the space between the vessels it may be employed to haul, from one vessel to the other, a towing hawser or the like. Similarly the invention may be employed to shoot lines to shore or life lines to imperiled boats or persons. The invention may have various other uses such, for example, as line-spanning mountainous territories or cliffs, line-spanning limbs or branches of trees in lumbering, timbering, or tree pruning.

While I have described certain embodiments of my invention it is neither to be restricted to the particular embodiments described nor to be limited by the descriptions thereof except as defined by the scope of the claims appended hereto.

I claim as my invention:

1. A projectile adapted to be discharged from the barrel of a gun comprising a nose piece adapted to extend from the muzzle of a gun barrel, a push rod attached axially to said nose piece and adapted to fit within and be discharged from a gun barrel, a line towing rod spaced parallel along one side of the axial push rod and having its forward end attached to the base portion of said nose piece, means extending from the rear end of said towing rod to a point on the opposite side of the push rod from that of the towing rod for attaching a line, whereby the weight of the towed line is counterbalanced in flight by the towing rod.

2. A projectile having a nose piece adapted to be positioned exteriorly of a gun barrel, a push rod axially carried by the nose piece and adapted to fit within the barrel of a gun and be propelled by the discharging forces of a gun, a line towing rod-like member substantially parallel to the push rod adapted to be clamped at one end to the base portion of the nose piece by the push rod, said line towing member having a transverse portion at its rear end which extends to a point on the opposite side of the push rod from which point the members are adapted to tow a line which is counterbalanced by the weight of the opposed towing rod, said transverse portion being rearward of the longitudinal center of gravity of the projectile.

3. A line carrying projectile comprising a nose piece, a stem attached axially to said nose piece, a rod like member extending from the base portion of said nose piece parallel to said stem at one side thereof and having transverse means at the rear end thereof for attaching a towing line at a point opposite said stem, whereby the force of the offset mass of the rod-like member opposes the counter-force of the towed line and maintains a normal trajectory of the projectile during flight.

MICHAEL J. RYAN.