March 27, 1962 J. W. GRAY 3,026,864

SPEAR GUN

Filed July 18, 1958

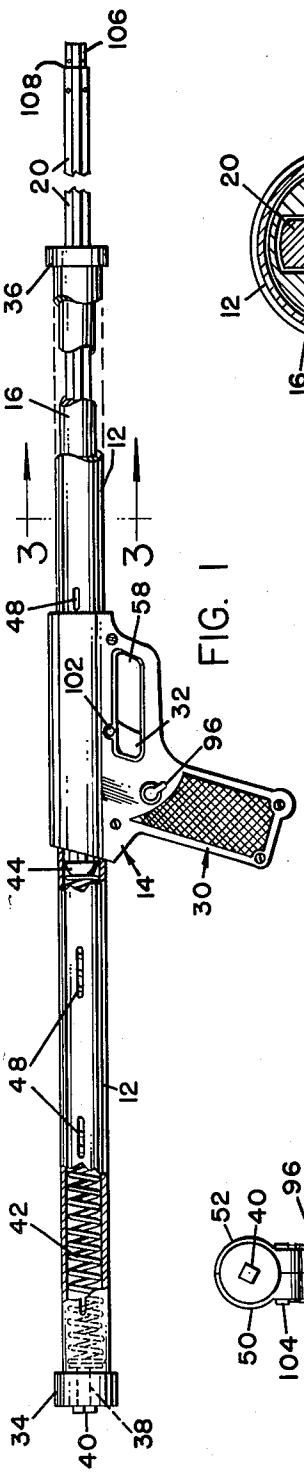


FIG. 1

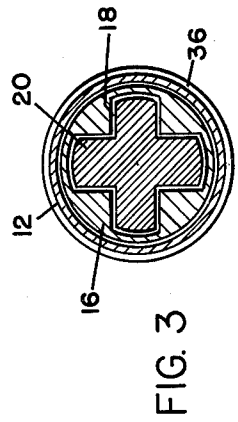


FIG. 3

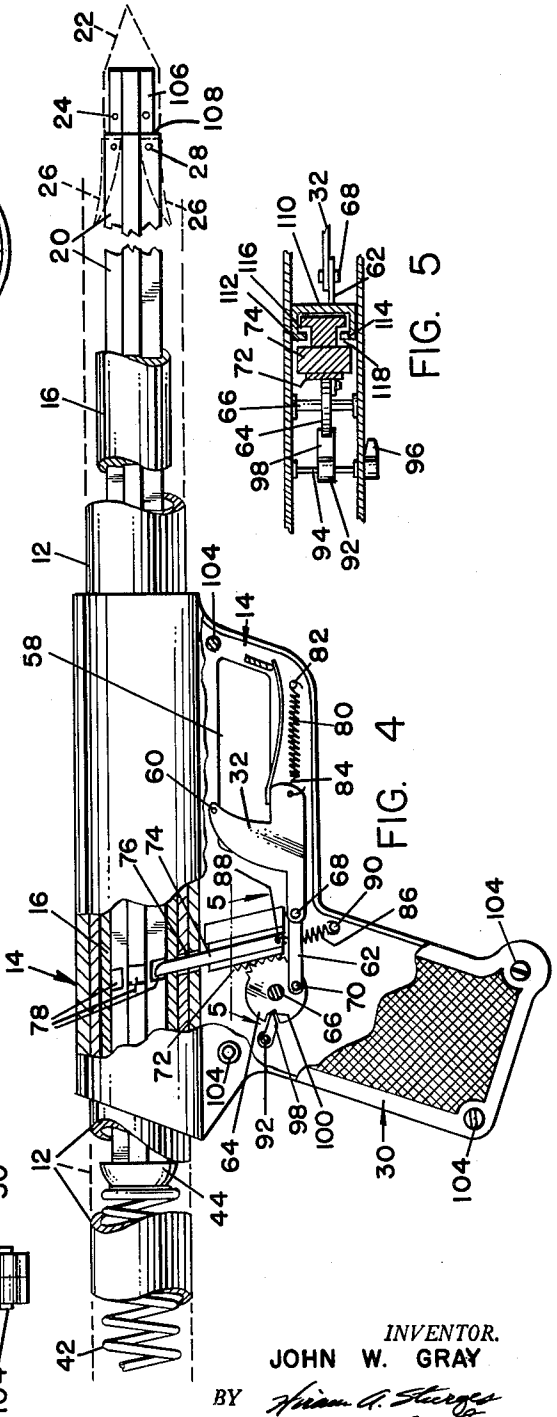


FIG. 4

FIG. 5

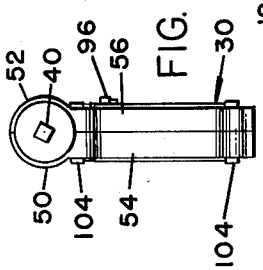


FIG. 2

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SPEAR GUN

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This invention relates to spear guns such as used for underwater spear fishing, and in particular a gun having a barrel mounted in a stock having a grip and trigger assembly in which the barrel is provided with a lining having a cross-shaped opening extended therethrough, and a spear, also cross-shaped in cross section, designed to be inserted in the opening of the barrel whereby by releasing a spring, rubber band, or other resilient device by the trigger the spear is projected toward an object and is held by the fins or vanes thereof on a true course.

The purpose of this invention is to provide means for increasing the rigidity and accuracy of spears particularly of the type used under water.

Spears are usually formed of round bar stock and upon impact with water they flex or bend, and even a slight bend or deformation results in deviation in tracking with the result that the spear misses the target or mark. Round spears are also readily bent in storage and transportation, and such spears are influenced by water currents, so that accuracy is impaired.

With these thoughts in mind this invention contemplates a spear, cross-shaped in cross section, slidably mounted in a cross-shaped opening in a lining of a gun barrel whereby the spear is provided with both horizontal and vertically disposed fins which form guides that assist the projectile in traveling in a straight line.

The object of this invention is, therefore, to provide a projectile or spear having longitudinally disposed fins extended from the sides, and also from the top and bottom and means for projecting the spear from a similarly shaped track in a gun barrel.

Another object of the invention is to provide a spear for underwater use that is designed to be projected by a spring, rubber band, gas under pressure, or other projecting means.

Another important object of the invention is to provide a spear and a gun for projecting the same in which the sides, top, and bottom of the spear are provided with longitudinally positioned fins, and the barrel of the gun is provided with similarly shaped tracks whereby the spear is retained on a true course as it leaves the muzzle of a gun barrel.

A further object of the invention is to provide a spear particularly designed for underwater use in which the rigidity of the spear is increased by the structural shape of the spear.

A still further object of the invention is to provide a spear having longitudinally disposed fins thereon and a liner with a similarly shaped opening therein in which the spear and liner therefor may be used in guns of different types and sizes.

And a still further object is to provide an improved spear and a gun for projecting the same in which the spear is used under water in which the gun and spear are of simple and economical construction.

With these and other objects and advantages in view the invention embodies a gun having a barrel extended through a stock with a lining having an opening cross-shaped in cross section positioned in the barrel and a projectile or spear, also cross-shaped in cross section, positioned in the lining, the barrel being provided with resilient projecting means and the projecting means being released by a trigger in a grip extended from the stock.

Other features and advantages of the invention will appear from the following description taken in connection with the dawings, wherein:

FIGURE 1 is a side elevational view of the improved spear projecting gun showing a spear in the barrel thereof, and with parts broken away showing a spring in one end of the barrel and the lining in the opposite end.

FIGURE 2 is an end elevational view of the gun looking from the rear thereof.

FIGURE 3 is a cross section through the gun barrel, liner, and spear, taken on line 3—3 of FIGURE 1, with the parts shown on an enlarged scale.

FIGURE 4 is a side elevational view, similar to that shown in FIGURE 1, with the parts shown on an enlarged scale, and with parts broken away, showing, in particular, the trigger assembly.

FIGURE 5 is a sectional plan, taken on line 5—5 of FIGURE 4, showing the trigger actuated spear releasing mechanism.

While one embodiment of the invention is illustrated in the above-referred-to-drawings, it is to be understood that they are merely for the purpose of illustration and that various changes in construction may be resorted to in the course of manufacture in order that the invention may be utilized to the best advantage according to circumstances which may arise, without in any manner departing from the spirit and intention of the device, which is to be limited only in accordance with the appended claim. And while there is stated the primary field of utility of the invention, it remains obvious that it may be employed in any other capacity wherein it may be found applicable.

In the accompanying drawings, and in the following specification, the same reference characters are used to designate the same parts and elements throughout, and in which the numeral **10** refers to the invention in its entirety, numeral **12** indicating an elongated barrel fixedly mounted in a stock **14**, numeral **16** a liner having a longitudinally disposed slot **18** extended inwardly from the muzzle or outer end, numeral **20** a spear, cross-shaped in cross section and having a point **22** secured by cotter pins **24** on the outer end and also having barbs **26** also secured to the outer end by pins **28**, numeral **30** a grip extended from the stock, and numeral **32** a trigger for actuating a sear for releasing the spear. The barrel is provided with caps **34** and **36** which are threaded on inner and outer ends thereof, and the cap **34** which is threaded on the inner end of the barrel is provided with a stud **38** having a head **40** on the outer end. The inner end of the stud is secured, to a spring **42** in the barrel and the opposite end of the spring is provided with a cup washer **44** into which the end of the spear is inserted, as shown in FIGURE 4. The sides of the barrel are provided with slots **48** through which water passes into the barrel for lubricating the parts and primarily to provide barrel vents for overcoming water resistance and pressure which would otherwise be present in a closed barrel.

The stock is formed of two semi-circular parts **50** and **52** from which sections **54** and **56** of the grip extend, and the sections of the grip are provided with finger receiving slots **58** in the inner ends of which the trigger **32** is positioned. The trigger is pivotally mounted on a pin **60** above the finger receiving opening or slot, and the trigger is connected by a link **62** to a gear **64** which is rotatably mounted in the grip by a shaft **66**. The link is pivotally connected to the trigger by a pin **68**, and similarly connected to the gear by a pin **70**. The gear meshes with a rack **72** on the sear **74** which extends upwardly through an opening **76** in the stock and into one of several notches **78** in edges of the fins or vanes of the spear.

The trigger is urged outwardly by a spring **80**, one end of which is attached to the stock by a fastener **82** and

the opposite end to the trigger by a fastener **84**; and the sear is urged upwardly by a compression spring **86**, one end of which is secured to the sear by a pin **88** and the opposite end to the grip by a pin **90**.

The stock is provided with a safety latch **92** that is mounted on a shaft **94** having a handle **96** on the outer end, and the pawl **98** of the latch is positioned to extend into a notch **100** in the gear **64**. By this means a spear may be retained in the cocked position in the gun until the safety latch is relieved by the handle **96**.

With the parts assembled as illustrated and described a spear or other projectile may be inserted into the barrel of the gun until the sear snaps into one of the notches **78** in the edges of the fins of the spear. The spear is locked in the barrel by the safety latch **92**, until the latch is manually released, and, when desired, the gun is aimed at an object and the spear released by drawing the trigger rearwardly. A conventional line may be attached to the spear at one end, and the opposite end secured in an eye **102** on the side of the stock.

Although the spear is illustrated as being formed of solid stock, the spear or other projectile may be formed of tubing with longitudinally disposed grooves inpressed in the walls to form substantially the same shape, as that shown in FIGURE 3.

The sections of the stock and grip are clamped together and around the barrel by bolts **104** or by other suitable means.

Points of different designs and sizes are secured by the cotter pins **24** on the section **106** of reduced size and against the shoulder **108**, and the barbs are secured by similar means on the opposite side of the shoulder.

The sear **74** is slidably mounted on a channel bar **110** with flanges **112** and **114** extended into slots **116** and **118** of the sear, as shown in FIGURE 5.

As indicated in the objects hereinabove set forth, and as best seen in FIGURES 1, 3 and 4, the spear **20** has an elongated shaft preferably cross shaped in cross section for providing a plurality and preferably four laterally projecting stabilizing fins which are elongated and which extend longitudinally of the shaft along the major portion of its length and preferably along substantially the entire length of the shaft.

Operation

In use the spear or other projectile is carried in the barrel or liner therein, and, when desired, the trigger is pulled and the projectile discharged, and after discharging the projectile, the projectile, with game or the like therewith, is retrieved by the line. The fins or vanes extended longitudinally of the projectile guide the projectile through the water holding it on a true or straight course. The liner may be slightly smaller than the barrel, thereby making it possible to use the liner and spear in several different sizes of guns.

It will be seen that the rack **72** on the sear **74** and the gear or pinion **64** and the particular position of the trigger **32** all make possible a conventional pistol grip and pistol trigger motion even though the sear moves transversely to the barrel, thus accomplishing a very desirable conventional action.

Although a spring is shown as the projecting means it is understood that other resilient means may be used for discharging the projectile, and the projectile may also be discharged with fluid under pressure, such as CO_2 gas.

From the foregoing specification it will become apparent that the invention disclosed will adequately accomplish the functions for which it has been designed and in an economical manner, and that its simplicity, accuracy, and ease of operation are such as to provide a relatively inexpensive device, considering what it will accomplish, and that it will find an important place in the art to which it appertains when once placed on the market.

It is thought that persons skilled in the art to which the invention relates will be able to obtain a clear understanding of the invention after considering the description in connection with the drawings. Therefore, a more lengthy description is regarded as unnecessary.

Changes in shape, size, and arrangement of details and parts such as come within the purview of the invention claimed may be resorted to in actual practice, if desired.

Having now described the invention that which is claimed to be new and desired to be procured by Letters Patent is:

A spear gun comprising an elongated barrel, a liner having a cross-shaped opening therein positioned in the barrel, a spear, cross-shaped in cross section, positioned in the opening of the liner, a spring in the barrel positioned to discharge the spear from the liner, the spear having notches in edges thereof, a stock in which the barrel is mounted, a grip extended from the stock, a trigger in the grip, a sear slidably mounted in the stock for linear movement toward and away from said spear and positioned to engage the notches of the spear for retaining the spear in cocked position, and means operatively connecting the trigger to the sear for actuating the sear to release the spear, said means comprising a rack connected to and extending longitudinally of the line of linear movement of said sear, a pinion rotatably mounted on said gun grip and operably engaged with said rack, said trigger having a finger-receiving portion disposed in a conventional gun-trigger position generally transverse to the length of said gun barrel and said trigger being mounted on said gun in such a way that it is movable rearwardly for firing, and means operably connecting said trigger and said pinion to cause said pinion to move with a rearward firing motion of said trigger and whereby said pinion is rotated for moving said sear out of said barrel to release said spear, said spear being specifically a fishing spear and having a sharp tip, said liner being of such a length as to effectively support and direct the initial travel of said fishing spear.

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