SPEAR GUN WITH RETRACTABLE STRING MECHANISM

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ABSTRACT

The spear fishing gun with a reliable and effective retractable mechanism is provided. The spear gun consists of the gun shaft, firing device, handle (including grip) and gripped trigger, retractable spear mechanism, and the stopper of string to prevent the spear, from ramming into the retractable string device during retraction. As soon as the spear is shot and the diver sees that he misses, he presses on the spring trigger retracting string mechanism and the spear comes back to the gun. If the spear pierces the fish, the diver can now press the retractable string device to either release the string or retracts it to collect the fish. The retractable string mechanism is equipped with a large spool which allows the diver to shoot at long along with short distances. The spool does not allow the string to unwind completely and waste time to rewind. This is regulated by a controlling button. There is also a screw which adjusts spring power and regulates the speed and looseness of the string during retraction while the stopper prevents the spear from ramming into the retractable string device during retraction. The stopper is a plastic, metal, or glass ball, or it may have other shape. Diameter or section of the stopper is larger than that of the string guide of the retractable mechanism. The same screw which is used for regulating spring power also functions as the on and off button for the retractable string mechanism. The invention is suitable for both general types of the spear fishing guns: (a) the rubber-powered, or sling-type spear gun, and (b) the pneumatic spear gun, which utilizes an air-driven piston to drive the spear shaft down a rifle-like barrel.
FIG. 1 OVERVIEW

FIG. 2 SCALE UP DETAIL

1. SPEAR GUN
2. AUTOMATIC RETRACTABLE STRING MECHANISM
3. WATER-RESISTANT STRING
4. PORTABLE HOLDER
5. SPEAR
6. SPRING ADJUSTER
7. STRING STOPPER
FIG. 3
OVERVIEW

1. SPEAR GUN
2. AUTOMATIC RETRACTABLE STRING MECHANISM
3. WATER-RESISTANT STRING
4. PORTABLE HOLDER
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FIG. 4
SCALE UP DETAIL

1. SPEAR GUN
2. AUTOMATIC RETRACTABLE STRING MECHANISM
3. WATER-RESISTANT STRING
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5. SPRING ADJUSTER
6. STRING STOPPER
7. STRING CONTROL BUTTON
8. SPOOL ON THE SPRING
SPEAR GUN WITH RETRACTABLE STRING MECHANISM

FIELD OF INVENTION

[0001] The present invention relates to both general types of underwater spear guns: pneumatic and rubber-powered spear guns, especially to spear guns equipped by additional devices assist the diver and improve his skills in fishing.

BACKGROUND OF THE INVENTION

[0002] Since ancient times, the underwater divers use spear guns that propel a spear or an arrow toward a fish. When the spear hits the fish, the fish usually flips and tries to free itself of the spear. Sometimes the fish can free itself and because of this the diver loses the spear. Other times the diver misses the fish completely and also loses the spear. If there is string attached to the spear then the diver can retrieve the spear, but it takes time to wind up the string so they can shoot the spear again. If there is no string then the spear is completely lost. But, the time it takes to wind up a string is completely unacceptable due to that the diver ends up spending more time on the winding then the actual hunting.

[0003] There exist devices to bring the spear back. For example, the U.S. Pat. No. 4,505,179 granted to S. Nelson, et al. discloses a removable canister attached to the gun and comprising a string coil. This device has at least two drawbacks: (a) it is suitable only for one shot, after which the canister should be changed for another one, so the diver must bear many of them to change them under water, and (b) it deteriorates the hydrodynamic shape of the spear gun that substantially slow the diver movements.

[0004] There is another spear gun with retractable line which has a spring-like helical configuration, see the U.S. Pat. No. 5,145,740 granted to M. A. Boykin. This device is better in hydrodynamic consideration but it works only on short distance, and besides, it is unreliable. This light spring will lose primary elasticity after several shots.

[0005] There are several other simpler devices disclosed by the U.S. Pat. Nos. 4,895,128; 4,896,450; and 4,839,979. All of these devices have various problems, safety concerns, and limitations of use. They are often too large and heavy, or have limited firing power range. Ordinarily, they are also unsafe to use because after firing the string connecting arrow to the gun in previous models often tangles around the hunter. This invention has a mechanism which automatically creates a tension in the string connecting arrow to the gun, which in turn prevents tangling of the string around the body of the hunter. Additionally, now existing spear guns are too weak, break easily, or simply just too slow to be even worth using. It is better to have a device on the spear gun that maximizes the speed of retrieval without any problems, safety concerns, or limitations and allowing for the longest possible time dedicated to the actual fishing.

OBJECTS OF THE INVENTION

[0006] It is a primary object of the present invention to provide a strong and reliable device for the quick retrieval of the spear to the diver.

[0007] Another objective is to show the diver whether he hit the target or not.

[0008] Yet another objective is so that the device is simple to make/fix, and easy to attach the retractable device to any type of spear gun.

[0009] Finally, another one objective is that device does not limit the speed of the spear in motion nor affect the hydrodynamics of the projectile in the water.

SUMMARY OF THE PRESENT INVENTION

[0010] In accordance with the present invention, spear fishing gun with a reliable and effective retractable mechanism is provided. The spear gun consists of the gun shaft, firing device, handle (including grip) and gripped trigger, retractable spear mechanism, and the stopper of string to prevent the spear, from ramming into the retractable string device during retraction. All of these devices and parts work as separate parts of a whole for proper working of the spear gun.

[0011] As soon as the spear is shot and the diver sees that he misses, he presses on the spring trigger retracting string mechanism and the spear comes back to the gun. If the spear pierces the fish, the diver can now press the retractable string device to either release the string or retracts it to collect the fish. The retractable string mechanism is equipped with a large spool which allows the diver to shoot at long along with short distances. The spool does not allow the string to unwind completely and waste time to rewind. This is regulated by a controlling button.

[0012] There is also a screw which adjusts spring power and regulates the speed and looseness of the string during retraction while the stopper prevents the spear from ramming into the retractable string device during retraction. The stopper is a plastic, metal, or glass ball, or it may have other shape. Diameter or section of the stopper is larger than that of the string guide of the retractable mechanism. The same screw which is used for regulating spring power also functions as the on and off button for the retractable string mechanism.

[0013] The invention is suitable for both general types of the spear fishing guns: (a) the rubber-powered, or sling-type spear gun, and (b) the pneumatic spear gun, which utilizes an air-driven piston to drive the spear shaft down a rifle-like barrel.

BRIEF DESCRIPTION OF THE DRAWINGS

[0014] FIG. 1 is an overview of the rubber-powered spear gun with the spear, the retractable mechanism fixed on the gun by portable holder, and with the string stopper.

[0015] FIG. 2 is a plan view of the retractable mechanism fixed on the gun with the screw, which turns the spring on/off and adjusts the spring power, and with a string stopper.

[0016] FIG. 3 is an overview of the pneumatic spear gun with the retractable mechanism, the screw adjusting spring power, and a string stopper.

[0017] FIG. 4 is a plan view of open retractable mechanism with the string coiled by the spring, the spring adjusting screw, the string guide, and with the button to hold string when the diver wants to stop winding off.

DETAILED DESCRIPTIONS OF THE PREFERRED EMBODIMENT

[0018] Referring to the drawings of FIG. 1, the rubber-powered spear gun and all devices consist of a shaft, grips,
handle, trigger, and firing mechanism (the basic spear gun) 1, a retractable string mechanism 2, a string 3, a portable holder 4 that connects the retractable string device 2 to the shaft 1, and a spear 5. The screw of spring power 6 regulates the speed and looseness of the string during retraction while the stopper 7, a plastic, metal, or glass ball fixed on the string stops the spear 5, from ramming into the retractable string device 2 during retraction. The same screw of spring power 6, also functions as the On and Off button for the retractable string mechanism. In the Off position, the string 3 can unwind with ease. In On position, the spring 9 pulls back on the string 3 and winds it back up. Without the stopper 7, the diver must waste time to pull the string forward to insert the spear 5 back into the gun 1. The position of stopper 7 can be changed to adjust the length of non-retracted string.

Referring to the drawings of FIG 2, the retractable string device 2, connects to the spear gun 1, by the portable holder 4, and winds up the string 3. The screw of spring power 6 is also incorporated into the retractable string device 2. The stopper 7 is showed in the position before the shot.

Referring to the drawings of FIG 3, the pneumatic spear gun 1, connects to the retractable string mechanism 2, by the portable holder 4, controls the retraction of the spear 5, and enables the use of the screw of spring power 6 to regulate the speed and looseness of the string during retraction, through the string 3 if fish stretches it. The screw of spring power 6 is also incorporated into the retractable string device. The stopper 7, stops the spear 5, from ramming into the retractable string device 2 during retraction.

Referring to the drawings of FIG 4, the spear gun 1, holds up the attached retractable string device 2, and the string 3 is pulled in the chance of a hit. The string 3, is retraced by the spring 9 which is controlled by the pressing of the button 8 to stop or release the unwinding and winding of the water resistant spool on a spring 9, and by the screw of spring tension 6, which regulates the speed and looseness of retraction. Parts 3, 8, 6, and 7 make up the automatic retractable string device 2, which is held to the spear gun 1, by the portable holder 4.

I claim:

1. The spear gun with a retractable string mechanism consisting of:
   (a) a spear gun,
   (b) an automatic retractable string mechanism fixed at the spear gun,
   (c) a projectile, and
   (d) a string which has an end captive in the retractable mechanism and another end fixed at the projectile.

2. The spear gun with the retractable string mechanism according to claim 1, wherein said automatic retractable string mechanism comprises:
   (a) a water-resistant housing,
   (b) a spool,
   (c) a spring inside the spool for automatical retracting the string,
   (d) a string guide,
   (e) a fixture for adjusting the length of string,
   (f) a screw of adjusting spring power,
   (g) a portable holder for manual retracting the string, and
   (h) a stopper to prevent ramming the spear into the retractable string mechanism.

3. The spear gun with the retractable string mechanism according to claims 1 and 2, wherein the screw of adjusting spring power is also turn on/off switch of the spring to release the spool before the spear shot.

4. The spear gun with the retractable string mechanism according to claim 2, wherein said string guide has a regulator of the gap to adjust the guide gap to a diameter of the string.

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