United States Patent [19]

Thomas

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[54] **BOWFISHING ARROWHEAD**

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[51] **Int. Cl.**[4] **A01K 81/04**

[52] **U.S. Cl.** **43/6**

[58] **Field of Search** 43/5, 6; 291/61, 126, 291/127; 273/419, 921

[56] **References Cited**

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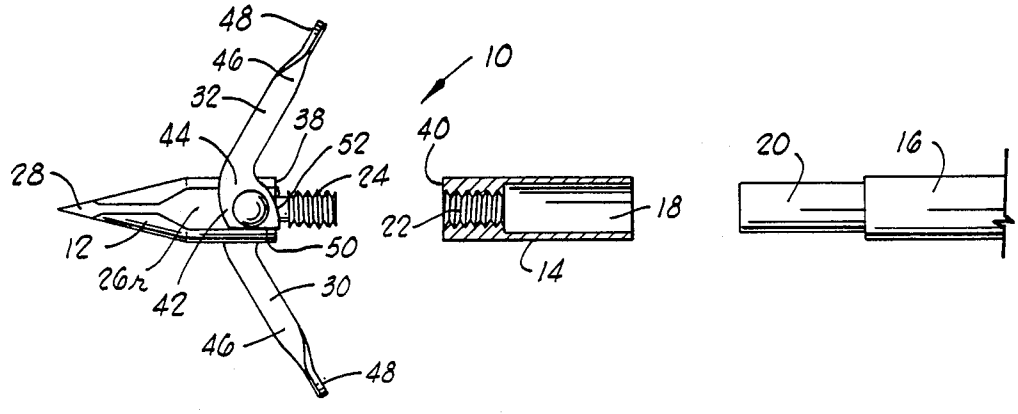
Primary Examiner—Kurt Rowan

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[57] **ABSTRACT**

An arrowhead for attachment on an arrow shaft for use in bowfishing. The arrowhead includes a collar portion attachable to the shaft end and a point end that is threadedly received in the collar portion. The point end includes oppositely disposed, pivotally affixed barb vanes that include cam and flat edges for positioning the barb vanes in respective attack and quiver positions, and the barb vanes include a twisted wing tip end portion that functions to provide rotational motion to the arrow during flight.

7 Claims, 1 Drawing Sheet



Bowmar, Ex. 1028
Bowmar v. Matthew Futtere
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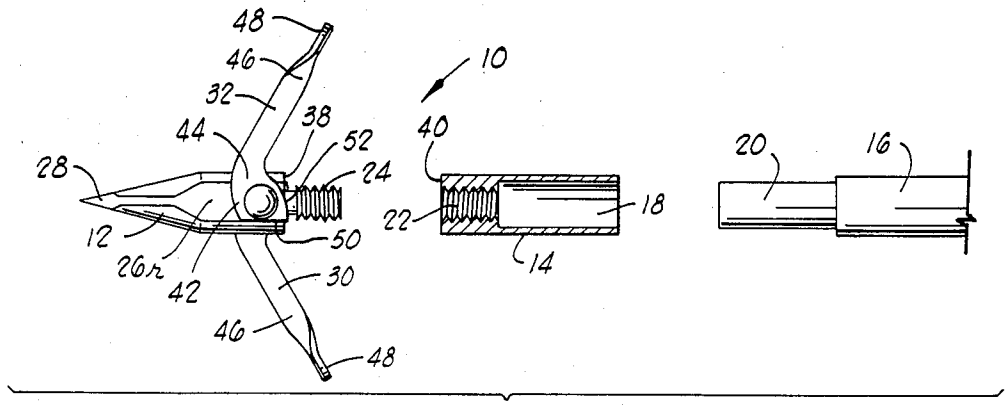


FIG. 1

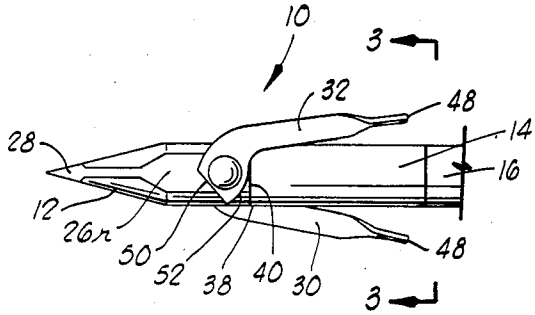


FIG. 2

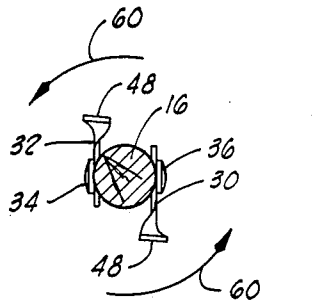


FIG. 3

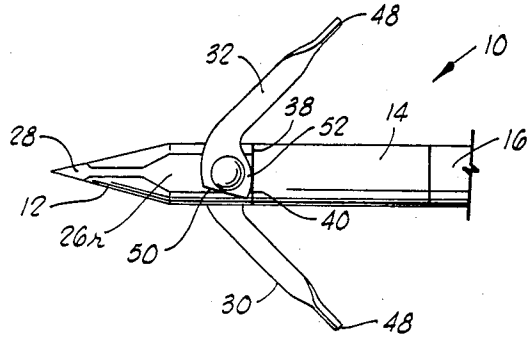


FIG. 4

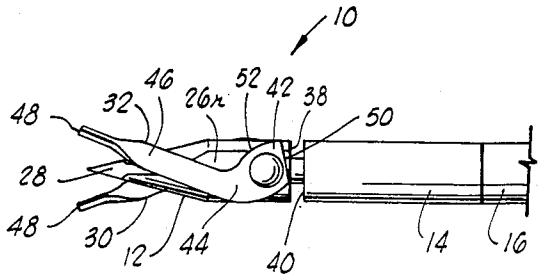


FIG. 5

BOWFISHING ARROWHEAD

BACKGROUND OF THE INVENTION

1. Field of the Invention

The present invention relates to an improved type of arrowhead for bowfishing and, more particularly, but not by way of limitation, it relates to a bowfishing arrowhead having releasable catch blades which function variously to rotate the arrow in flight and to secure the affixure of the arrowhead and shaft in operational attitude.

2. Description of the Prior Art

The prior art includes a number of different types of arrowhead that have been employed for bowfishing. Such arrowheads are primarily concerned with the adjustable presentment of barbs or blades which prevent escape of the fish or other prey after piercing of the flesh, but which may also be readily controlled for easy withdrawal of the arrow shaft or shaft plus arrowhead from the prey. A number of patents of general interest have been discovered and these will be cited upon filing in the Information Disclosure Statement. Among patents of more direct interest are U.S. Pat. No. 3,036,395 which teaches a collapsible barb type of releasing fish point that is controllable in response to rotation of the arrow shaft relative to the arrow point. In this design, the barb extensions are flat blades extending outward from the arrowhead in alar configuration.

Another prior teaching of interest relative to the present invention is U.S. Pat. No. 3,164,385 in the name of Shure which teaches yet another form of arrowhead that includes releasable barbs or vanes. In this case, the vanes are active in their swept back attitude as when the arrow is in flight or has struck; thereafter, the shaft can be twisted to unscrew a locking device within the arrowhead to allow total reversal of the vane device to a forward attitude thereby allowing withdrawal of the arrowhead from the prey. There are a number of different types of arrowhead that provide a barb assembly in one form or another that is controlled as to orientation or spread thereby to allow reverse motion removal of the arrowhead from a target object or prey; however, none of the prior art contemplates the further attribute of in-water arrow revolution to sharpen accuracy.

SUMMARY OF THE INVENTION

The present invention relates to an improved type of arrowhead having releasable barb vanes that also serve to impart rotation to the arrow while maintaining the barb vanes in a locked attack position. More particularly, the arrowhead consists of a point member including an axially aligned threaded post which is engageable in a threaded bore of a collar portion which, in turn, is secured on the forward end of an arrow shaft. Opposite sides of the point each include a pivotally positioned barb vane which is lockable in attack position by full engagement of the collar section, and which barb vanes is each shaped with a quarter turn twist at the outer end to provide aerodynamic reaction to rotate the arrow in water to achieve near perfect accuracy at considerable depths.

Therefore, it is an object of the present invention to provide a bowfishing arrowhead that is true in flight direction and more efficient in retaining the prey.

It is also an object of the invention to provide an arrowhead that is more rugged yet easier to handle in the field.

It is still further an object of the present invention to provide a bowfishing arrowhead including contollable barb vanes that impart a plurality of useful operational functions.

Finally, it is an object of the invention to provide a bow fishing arrowhead wherein the revolutional attitude of the arrow shaft relative to the arrowhead is effective in releasing the barb vanes for removal of the arrow, in locking the barb vanes in attack position, and in locking the barb vanes in reverse position as for quiver storage.

Other objects and advantages of the invention will be evident from the following detailed description when read in conjunction with the accompanying drawings which illustrate the invention.

BRIEF DESCRIPTION OF THE DRAWINGS

FIG. **1** is an exploded view in side elevation with parts shown in section of an arrowhead constructed in accordance with the present invention;

FIG. **2** is a view in side elevation of the arrowhead in attack configuration;

FIG. **3** is a sectional view taken along lines **3**—**3** of FIG. **2**;

FIG. **4** is a view in side elevation of the arrowhead with barb vanes in retaining position; and

FIG. **5** is a view in side elevation of the arrowhead with barb vanes released to the withdrawal attitude.

DETAILED DESCRIPTION OF THE INVENTION

Referring to FIG. **1**, a barbed arrowhead **10** consists of a point **12** that is threadedly engageable with a collar **14** which, in turn, is secured on the tip end of an arrow shaft **16**. The collar **14** includes a rearward bore **18** of a size to receive an insert portion **20** of arrow **16** tightly therein to be secured by such as bonding. The collar **14** includes a forward axial threaded bore **22** which contributes to operative control of the arrowhead, and it is important that the arrow insert **20** be securely held within bore **18** without relative rotation therebetween.

The point **12** includes an axial threaded post **24** extending rearward and engageable within threaded bore **22** to fully assemble the arrowhead **10**. The opposite side of point **12** is a mirror image of the FIG. **1** view, and opposite sides are formed with opposite flat portions **26-1**,r which provide pivotal seating for the barb vanes, as will be described. The forward portion of point **12** is ground to a four corner base pyramid point **28** which when heat treated provides a very sharp and long lasting arrow point, highly effective in piercing scaled surface.

A pair of identically shaped barb vanes **30** and **32** are pivotally mounted on opposite flat sides **26-1**,r of point **12** by means of respective pivot pins **34** and **36** (FIG. **3**) which are secured as by force or press fitting into the opposite flat portions **26** of point **12** adjacent a rear shoulder **38**. Rear shoulder **38** abuts a forward shoulder **40** of collar **14** when the arrowhead is threadedly engaged all the way into the attack position as in FIG. **2**. Each of the barb vanes **30** and **32** is shaped identically in what may be termed a crank shape having a foot portion **42** extending through a bend portion **44** to an elongated flat vane portion **46**. The respective barb vanes **30** and **32** are pivotally attached through the foot portion **42**

whereupon the vane portions **46** sweep rearward and terminate in slightly less than a one-quarter turn twist as a wing tip **48**.

Each of the barb vane foot portions **42** includes a lower flat edge **50** which functions to maintain the barb vanes **30, 32** in the quiver or release position as shown in FIG. **5**. Thus, after a quarry has been struck and reeled in, the arrow shaft **16** can be rotated about two turns counterclockwise and barb vanes **30** and **32** are released to be drawn all the way forward as the arrow is removed from the prey. Referring again to FIG. **5**, if arrow shaft **16** is tightened up or rotated full clockwise, the collar shoulder **40** will abut point shoulder **38** as well as barb vane flat edge **50** thereby to lock against the flat edge **50** and maintain the barb vanes **30** and **32** in what is termed the quiver attitude. That is, arrows can be stored, shuffled and/or withdrawn without damage or danger of entanglement.

Each barb vane **30, 32** also includes a cam edge **52**, an arcuate portion formed on the rear edge of each foot portion **42**. The cam edge **52** functions to lock against the shoulder **40** of collar **14** when in the attack position with arrow **16** rotated fully clockwise, as shown in FIGS. **2** and **4**. FIG. **2** illustrates the attack position when in flight with the barb vanes **30, 32** laid back rearward; however, upon striking the quarry, and with any attempt at withdrawal of the arrow **16**, the barb vanes **30** and **32** lock outward into the position of FIG. **4** with arcuate cam edge **52** firmly abutted against shoulder **40** of section **14**. Only upon counterclockwise revolutions of arrow **16** will the barb vanes **30** and **32** be released to the forward or withdrawal attitude as shown in FIG. **5**.

Finally, and a most important function of the barb vanes **30** and **32**, is the counterclockwise rotation in the water as illustrated by the forward viewing section of FIG. **3**. Each of barb vanes **30** and **32** is formed with a twisted wing tip **48** that is twisted slightly less than 90° to provide a predetermined air foil effect. Thus, as the arrow **16** and arrowhead **12** proceed at great speeds through the air or water, passage of fluid material along the sides of the respective barb vanes **30** and **32** causes deflection of wing tip portions **48**, as shown by arrows **60**, such that arrow **16** sets up a counterclockwise rotation in flight. This has the advantage of not only increasing arrow accuracy and wind resistance but also to maintain a continual tightening tension of arrow point **12** relative to collar **14**.

In operation, the arrowhead **10** and arrow **16** may be stored in a conventional quiver with collar **14** unscrewed sufficiently to allow the position as shown in FIG. **5**, and then having the collar **14** screwed clockwise to lock collar shoulder **40** against the barb vane flat surfaces **50**. As the arrow **16** is withdrawn for use, the collar **14** is screwed counterclockwise and the barb vanes **30** and **32** are moved rearward to the position shown in FIG. **2** whereupon the arrow is secured by rotating collar **14** clockwise until collar shoulder **40** tightly abutts point shoulder **38**. The arrow is then ready for firing.

In flight, the arrowhead assembly **10** is maintained in the attitude shown in FIGS. **2** and **3** and the air flow effect of barb vane wing tips **48** tends to set up a counterclockwise rotation of the arrow which also tends to maintain collar **14** in tight abutment to point **12**. In traveling through water a strong rotation is imparted and this maintains accurate travel prior to strike. When the arrow strikes the prey, any escape motion of the prey or arrow retracking motion will expand the barbs to the FIG. **4** attitude, wing tips **48** flat to the axial direction, and prevent removal of the arrow. After reeling in or otherwise getting control of the prey, the arrow shaft **16** (and collar **14**) can be twisted counterclockwise about two turns, and the arrowhead assembly **10** can be withdrawn as it generally assumes the attitude of FIG. **5**. With any pulling motion of barb vanes **30** and **32**, the locking cam edges **52** will tend to lock against collar shoulder **40** to prevent the point **12** from loosening.

The foregoing discloses a novel bowfishing arrowhead that exihibits improved characteristics as to accuracy, ruggedness and length of reliable usage. The device includes multi-function barb vanes that serve not only as barbs but also as vanes for imparting desired rotation and as locking devices for maintaining rigid assembly during operation. While the barb vanes function to provide a counterclockwise rotation through air or water when in flight, withdrawal or retraction of the arrow alone will tend to impart a clockwise rotation that serves to untwist any attached line.

Changes may be made in combination and arrangement of elements as heretofore set forth in the specification and shown in the drawings; it being understood that changes may be made in the embodiments disclosed without departing from the spirit and scope of the invention as defined in the following claims.

The embodiments of the invention in which an exclusive property or privilege is claimed are as follows:

1. An arrow device for bowfishing, comprising:
an arrow shaft having a front end;
a collar means secured on said shaft front end and having an axial threaded bore formed therein;
an arrow point formed as a generally round rear base tapering to a front point and having an axial threaded shaft extending rearward from said rear base to be threadedly received in said threaded bore; and
first and second barb vanes each having first and second ends with the first ends pivotally affixed on opposite sides of said point section adjacent the rear base, and with the respective second ends similarly formed as a wing tip at a preselected angle relative to the remainder of the barb vane to impart fluid responsive axial rotation to the arrow device during flight;
whereby said arrow point may be firmly affixed in threaded engagement in said collar means to place the barb vanes in a selected one of the attack position and the quiver position.

2. A device as set forth in claim **1** wherein said arrow point comprises a body of revolution of selected circumfery having two flat surfaces formed on opposite sides of said rear base and lying within the circumfery.

3. A device as set forth in claim **2** wherein said collar means comprises a cylindrical body forming a forward shoulder around said threaded bore for engagement in locking contact with the first ends of said first and second barb vanes when said collar means and arrow point are in firm threaded connection.

4. A device as set forth in claim **3** wherein each of said first ends of said first and second barb vanes includes a cam edge which bears against the collar means forward shoulder tending to prevent relative rotation between said collar means and arrow point when in attack position.

5. A device as set forth in claim 3 wherein each of said first ends of said first and second barb vanes includes a flat edge adjacent said cam edge which bears against the collar means forward shoulder to maintain said barb vanes in a forward direction for storage in the quiver position.

6. A device as set forth in claim 1 wherein each of the second ends is twisted approximately 90° to provide maximum resistance to the point being axially reversed out of the target prey.

7. A device as set forth in claim 1 wherein said front point is formed as a four-corner base pyramid to achieve greater penetration through scale surface.

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