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Sprandel

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[54] **SWIVEL-MOUNTED HUNTING ARROWHEAD**

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[51] **Int. Cl.²** **F41B 5/02**

[58] **Field of Search** ..... 273/106.5 B

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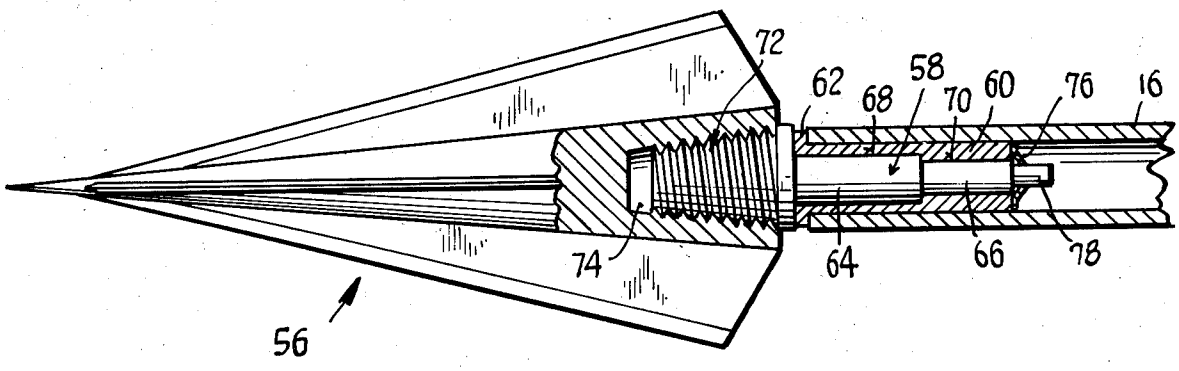
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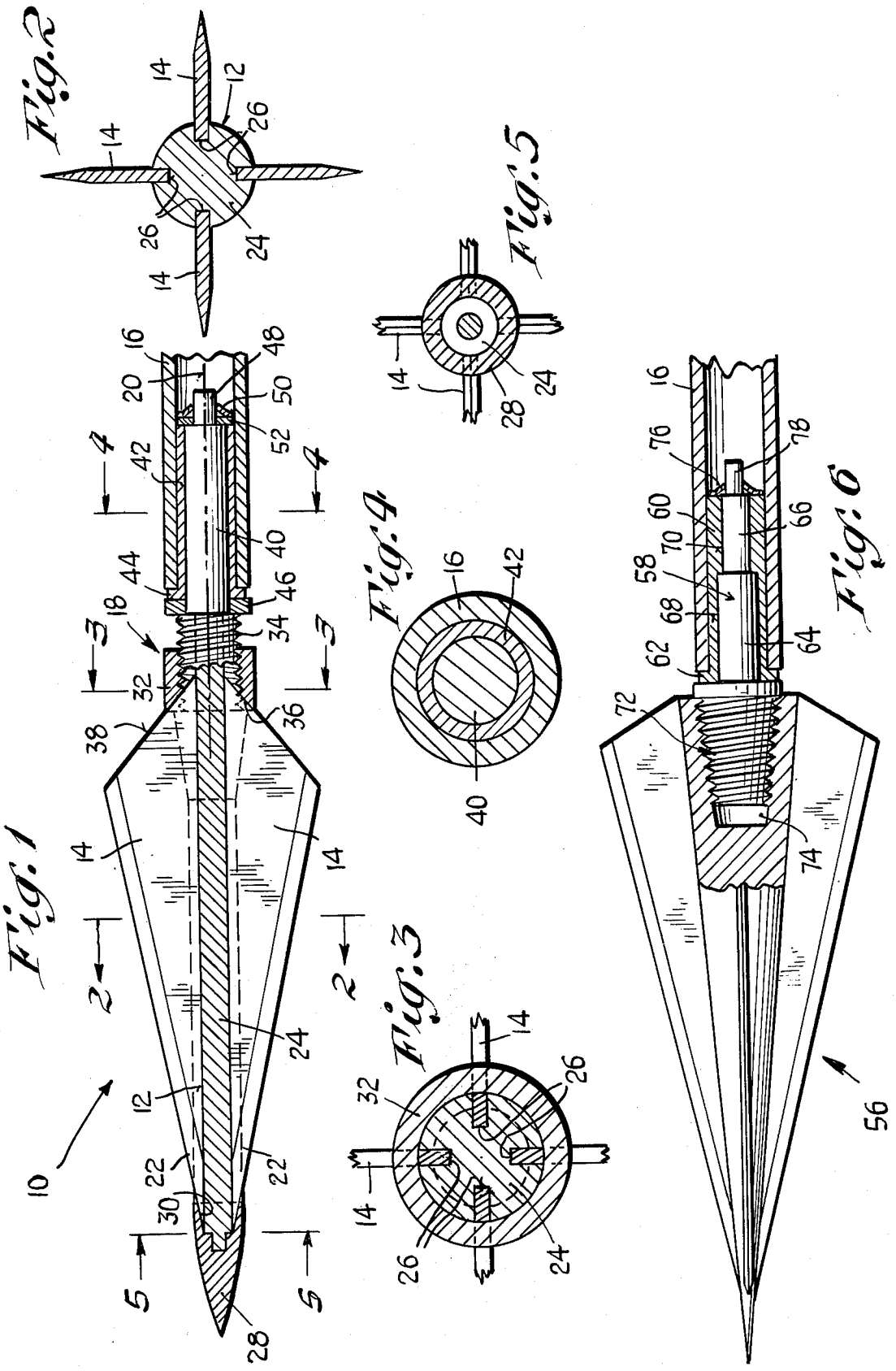
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[57] **ABSTRACT**

A swivel-mounted hunting arrowhead adapted to be secured to the front end of an arrow shaft to be rotatable with respect thereto. Also disclosed is a swivel-action adaptor for securement to the front end of an arrow shaft, the adaptor being constructed to have fastened to it a conventional-type head whereby the latter is rotatably mounted with respect to the shaft. In the case of the adaptor there is provided a short bushing of small diameter, arranged to be cemented in the forward end of the arrow shaft. Turnably carried by the bushing is a spindle which has at its foremost end a tapered head provided with protuberances by which the spindle head can be securely cemented in the socket of an arrowhead of conventional design, thereby to enable the conventional arrowhead to turn freely with respect to the shaft. In another embodiment, the arrowhead is made up of a straight shank and a plurality of tapered blades secured thereto, as well as manually operable means on the shank for releasably clamping the blades with their pointed ends foremost. The construction includes a mounting means in the form of a swivel structure by which the shank of the arrowhead is turnably mounted on the forward end of the shaft, so as to be freely rotatable about the axis of the arrow.

3 Claims, 6 Drawing Figures




Fig. 1
Fig. 2
Fig. 3
Fig. 4
Fig. 5
Fig. 6
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SWIVEL-MOUNTED HUNTING ARROWHEAD

BACKGROUND

This invention relates to arrow constructions, and more particularly to arrowheads of the type intended to be used for hunting purposes. Heretofore, various types of arrowheads have been proposed and produced, some including replaceable blades which are detachably mounted on a tapered shank or body portion to enable their replacement, sharpening, etc. So far as I am aware, there has never been proposed or produced an arrow consisting of a blade-type arrowhead which is turnably mounted on the foremost end of the arrow shaft. Prior arrows all consisted of arrowheads which were fixed on their shafts and which turned with the shafts as the latter rotated during flight. These prior arrows had several disadvantages and drawbacks. The broadhead, since it was turning at the time that it struck the animal, tended to tear the flesh and cause torqueing of the head which reduced the penetration. Additionally, the broadhead in many instances adversely effected the accuracy of the flight pattern.

SUMMARY

The above drawbacks and disadvantages of prior gaming or hunting arrows are obviated by the present invention, which has for an object the provision of an improved arrowhead construction wherein the broadhead is turnably mounted with respect to the shaft and need not turn or spin at the same rate as the latter during flight, and wherein the arrowhead does not turn at all at the time that the arrow penetrates the flesh of the animal.

Another object of the invention is to provide an improved arrowhead construction as above set forth, which results in an arrow that has a truer flight and that penetrates more deeply into the flesh with less tearing, at the time it strikes the target game. Still another object of the invention is to provide an improved arrowhead adaptor construction characterized by a swivel structure, whereby conventional arrowheads or broadheads can be mounted on conventional arrow shafts in a manner to be turnable with respect thereto, thereby to achieve a truer flight and a greater penetration of flesh, all without torqueing or binding of the head or excessive tearing.

The above objects are accomplished by a unique arrow construction comprising a broadhead or arrowhead which has a body portion and blade portions, in conjunction with means attached to the body portion for mounting the same on the front end of an arrow shaft to constitute an extension thereof, said mounting means comprising a swivel structure enabling the body and blade portions to have turning movement with respect to, and about the axis of, the arrow shaft. The swivel structure may be constituted as an adaptor attachable to the arrow shaft, or it may be part of an arrowhead consisting of a shank and removable and replaceable blade portions. In the latter case, manually operable means are provided for releasably clamping the blade portions to the shank with their pointed ends foremost.

Features of the invention include the provision of an improved arrowhead construction as above characterized, which is especially simple, economical to fabricate and at the same time effective and reliable in its operation.

Still other features and advantages will hereinafter appear.

In the accompanying drawings:

FIG. **1** is a view partly in side elevation and partly in axial section of an arrowhead construction constituting one embodiment of the invention.

FIG. **2** is a transverse sectional view taken on line **2—2** of FIG. **1.**

FIG. **3** is a transverse sectional view taken on line **3—3** of FIG. **1.**

FIG. **4** is a transverse section taken on the line **4—4** of FIG. **1.**

FIG. **5** is a transverse section taken on the line **5—5** of FIG. **1.**

FIG. **6** is a view partly in side elevation and partly in axial section of an adaptor fitting constituting another embodiment of the invention.

Referring first to FIGS. **1–5,** the improved arrowhead construction as illustrated therein comprises an arrowhead proper designated generally by the numeral **10,** comprising a body portion **12** and blade portions **14.** The arrowhead **10** is mounted on an arrow shaft **16** by means attached to the body portion **12,** said means being designated **18** and locating the arrowhead so as to constitute a forward extension of the shaft **16.**

In accordance with the present invention, the mounting means **18** comprises a swivel structure which enables the body and blade portions **12, 14** to have turning movement with respect to, and about the axis **20** of, the arrow shaft **16.**

The blade portions **14** of the arrowhead **10** are seen to have a triangular shape, with pointed forward ends **22.** As shown in FIGS. **2** and **3,** the blade portions are disposed symmetrically around the body portion **12;** in FIG. **1** the blade portions **14** are seen to be coextensive with the body portion **12.** As provided by the invention, the body portion **12** is constituted as a shank or rod **24** of uniform diameter, provided with a plurality of longitudinally extending, diametrically opposed grooves **26** in which the hypotenuse portions of the blades **14** are fitted.

At its foremost end the shank **12** is secured in a pointed tip member **28** which has a socket **30** at its rear to receive not only the foremost end of the shank, but also the front tip portions of the blades **14,** thereby to confine and secure the blades to the shank. A suitable cement can be employed to attach the pointed tip **28** to the assemblage of shank and blades, as will be understood.

In accordance with the invention, the mounting means **18** includes a manually operable nut **32** which is carried on a threaded portion **34** of the shank **12.** The foremost end of the nut **32** has a conical socket or mouth **36** which can be screwed over the rear sloping edges **38** of the blades **14,** thereby to simultaneously securely clamp all of the blades to the shank **12** against dislodgement. Tightening the nut **32,** that is, screwing it forward or to the left as viewed in FIG. **1,** results in the foremost tip portions of the blades being forced into the socket **30** of the tip member **28.** The nut **32** at the rear ends of the blades securely holds these in place as it is tightened.

As provided by the invention, the shank **12** has a smooth bearing portion **40** which is turnably carried in a bearing sleeve or bushing **42** that is secured in the foremost end of the arrow shaft **16,** as by the use of a suitable cement. The bushing **42** has at its forward end

an outturned flange **44** adapted to engage the front end of the shank **16** to position the bushing, and also adapted to engage a thrust washer **46** carried on the bearing portion **40** of the shank **12** against the end of the thread portion **34** thereof. At its rear **48** the shank **12** is of reduced diameter, and carries a clincher washer **50** bearing against a flat washer **52** which latter engages the inner end of the bearing bushing **42** and holds the shank **12** captive in the bushing.

With the above arrangement, the shank **12** is freely turnable in the bearing bushing **42** and thus with respect to the arrow shaft **16** whereby it need not turn during turning movements of the shaft, as during the flight of the arrow. Further, when the arrow strikes the game, the head **10** will not turn, but instead will penetrate the flesh deeply and with much less tendency to tear the same, even though the shaft **16** continues its own rotation.

The embodiment of the invention illustrated in FIG. **6** comprises an adaptor for mounting broadheads **56** of conventional construction on the conventional shafts **16** of arrows. The adaptor comprises a spindle member **58** which is carried in a bearing bushing **60** that is cemented in the front end of the arrow shaft **16,** the bushing being positioned by a foremost outturned flange **62** thereof. The spindle **58** is of stepped construction with a large diameter portion **64** and a small diameter portion **66,** these portions being received respectively in large and small bores **68, 70** of the bearing bushing.

The adaptor spindle **58** has an enlarged forward or head portion **72** provided with external threads or circular ribs adapted to be received in a socket **74** of the broadhead and to be cemented therein. A retainer washer **76** carried on the innermost tip portion **78** of the spindle retains the latter in the bearing bushing **66.**

With the above described adaptor it is possible to mount various types of arrowheads or broadheads on an arrow shaft in such a manner that the arrowhead is freely turnable with respect to the shaft. Accordingly, the adaptor provides the same advantages as those set forth above in connection with the construction of FIGS. **1–5.**

It will now be understood from the foregoing that I have provided a novel and improved arrowhead construction wherein the turnable arrowhead improves the penetration of the arrow into the flesh of the game, without any tendency to tear the flesh. Moreover, by virtue of the arrowhead being turnable independently of the arrow shaft, there is had a truer flight due to less tendency for the arrowhead to adversely influence the path of travel. The blade portions **14** are easily and quickly removed and replaced by merely loosening and again tightening the manually operable nut **32,** in the embodiment of FIGS. **1–5.** The shank **12** is of uniform diameter along the blades **14,** thereby enabling the fullest penetration of the arrowhead without hindrance, into the flesh of the game. Either two, three, four or more of the blades **14** can be utilized, depending on the number of grooves provided in the shank **12,** as will be understood.

Variations and modifications are possible without departing from the spirit of the invention.

I claim:

1. An arrowhead construction having, in combination:

a. an arrowhead comprising a body portion and tapered blade portions,

b. means attached to said body portion, for mounting the same on the front end of an arrow shaft to constitute an extension thereof,

c. said mounting means comprising a swivel structure enabling the body and blade portions to have turning movement with respect to, and about the axis of, the arrow shaft,

d. the blade portions of the arrowhead having pointed ends and being disposed around and in coextensive relation to said body portion, and

e. manually operable means on said body portion for releasably clamping said blade portions thereto with their pointed ends foremost,

f. said body portion of the arrowhead comprising a shank coextensive with the blade portions thereof,

g. said clamping means comprising a nut carried by said shank,

h. said shank and nut having cooperable screw threads enabling the nut to be advanced against the blade portions,

i. said nut having a recess at one end, constituting a mouth portion adapted to receive the rear ends of said blade portions to lock the same to the shank,

j. said swivel structure comprising a smooth end portion of the shank and a bushing in which the smooth end portion is turnable,

k. said bushing being adapted for securement in the front end of the arrow shaft.

2. An arrowhead construction as in claim **1,** and further including:

a. a thrust washer carried on the smooth portion of the shank and engaged with one end of said bushing to take up thrust forces between the shank and bushing.

3. An arrowhead construction having, in combination:

a. an arrowhead comprising a body portion and tapered blade portions,

b. means attached to said body portion, for mounting the same on the front end of an arrow shaft to constitute an extension thereof,

c. said mounting means comprising a swivel structure enabling the body and blade portions to have turning movement with respect to, and about the axis of, the arrow shaft,

d. a bushing adapted to be received in the shaft of the arrow, and

e. a spindle extending into said bushing and constructed to rotate with respect thereto,

f. said spindle having means for attachment to said arrowhead body portion,

g. said bushing having a stepped bore,

h. said spindle having a stepped exterior bearing surface receivable and turnable in the bore of the bushing.

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