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Wetzler et al.(10) **Pub. No.: US 2018/0142996 A1**(43) **Pub. Date: May 24, 2018**(54) **TRACKING ARROW**(71) Applicants: **Daniel Wetzler**, Perry, NY (US);
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Jeremiah Vosburgh, Perry, NY (US)(21) Appl. No.: **15/807,818**(22) Filed: **Nov. 9, 2017****Related U.S. Application Data**

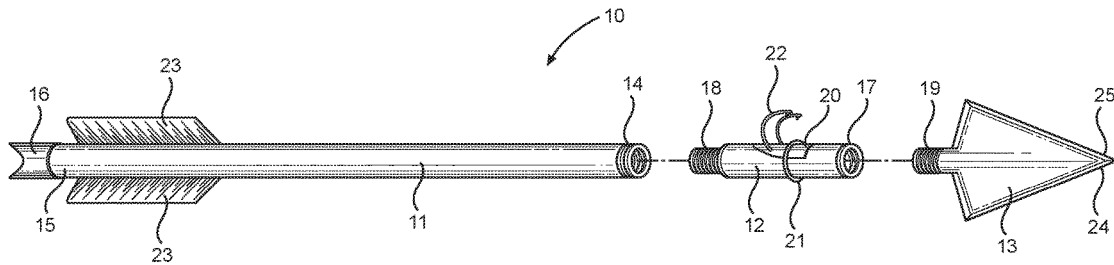
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(57)

ABSTRACT

A tracking arrow. The tracking arrow includes a shaft, a tracker bracket, and an arrowhead. A nock is disposed on a second end of the shaft. A second end of the tracker bracket is removably secured to a first end of the shaft. A second end of the arrowhead is removably secured to the first end of the tracker bracket. A tracker unit is removably secured to the tracker bracket via a fastener such as an elastic band. The tracker unit includes a housing having a power supply, a GPS unit, and a transmitter therein, and further includes one or more barbs extending from the housing. When the tracking arrow penetrates a target, the tracker is configured to detach from the tracker bracket and embed itself in the target. The tracker is further configured to transmit its geographic location via the transmitter, allowing a hunter to locate the wounded animal.



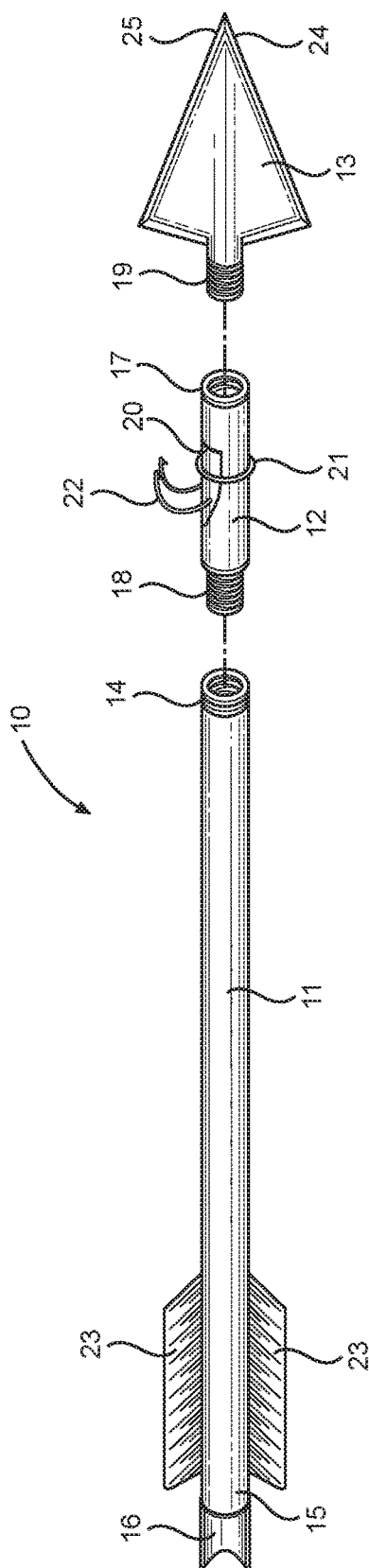


FIG. 1

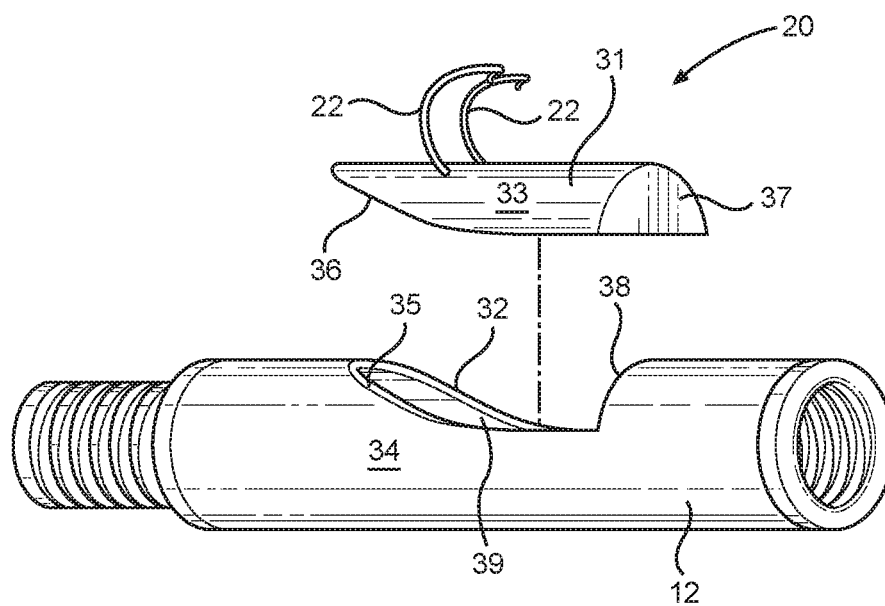


FIG. 2

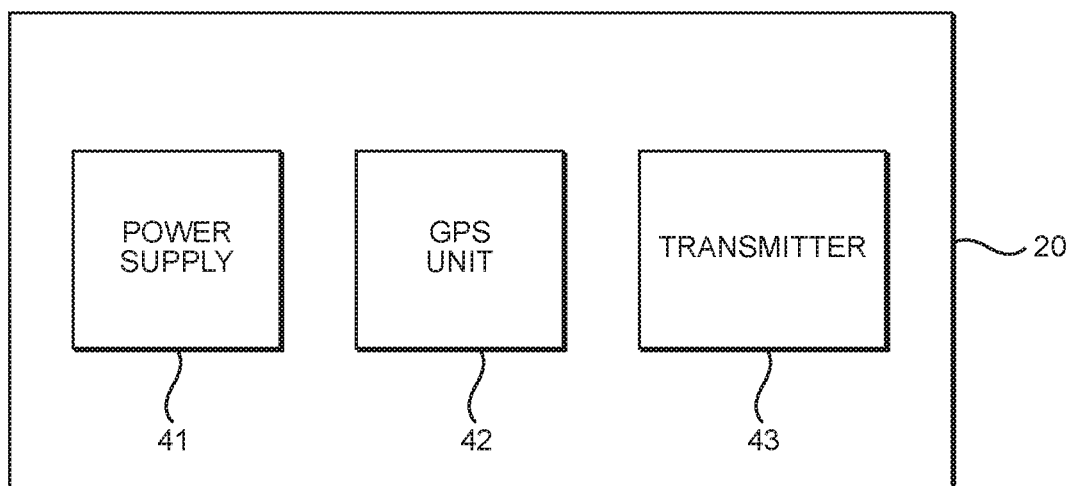


FIG. 3

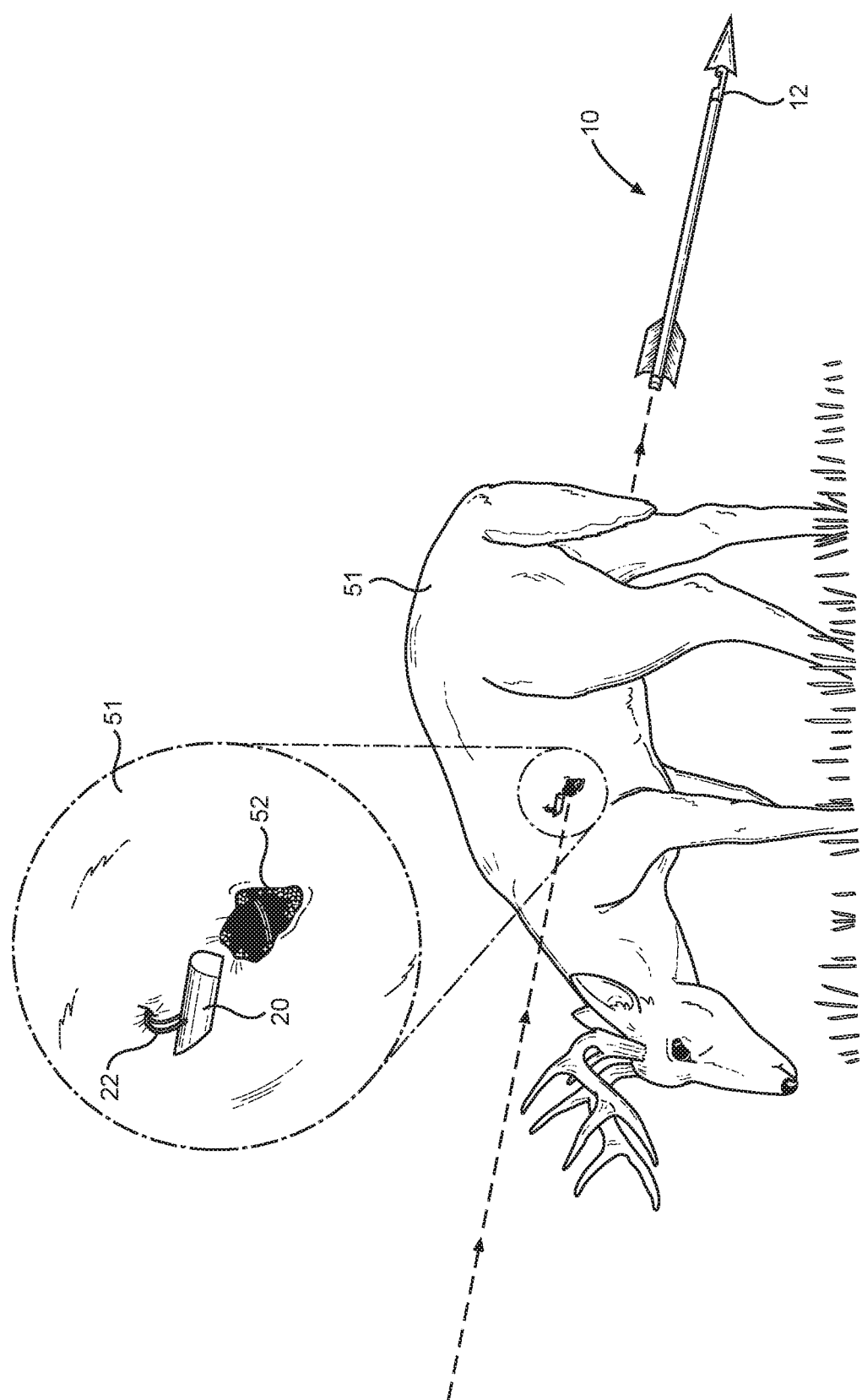


FIG. 4

TRACKING ARROW

CROSS REFERENCE TO RELATED APPLICATIONS

[0001] This application claims the benefit of U.S. Provisional Application No. 62/426,051 filed on Nov. 23, 2016. The above identified patent application is herein incorporated by reference in its entirety to provide continuity of disclosure.

FIELD OF THE INVENTION

[0002] The present invention relates to animal tracking. More particularly, the present invention provides a tracking arrow having a tracker that detaches from the arrow and embeds itself in a target when the target is struck by the arrow, wherein the tracker wirelessly transmits its geographic position as determined by a GPS unit, allowing the location of the target to be monitored.

BACKGROUND OF THE INVENTION

[0003] Many individuals enjoy hunting for recreational or survival purposes. One of the oldest and most popular weapons used for hunting is the bow and arrow. A bow and arrow can be used to silently and effectively neutralize even larger game animals, such as deer. However, using a bow and arrow has some drawbacks. While smaller game animals are killed instantly upon being struck with an arrow, larger game animals such as deer are often only wounded. Sometimes when the arrow wounds a target animal, the animal can travel a long distance before it succumbs to its wound. It can be difficult and time consuming to track and locate the wounded animal. If the animal cannot be located, it results in disappointment to the hunter, as well as a waste of natural resources. In view of the above, it is desirable to provide a tracking arrow that can be utilized to determine the location of a target animal after the animal is struck with the tracking arrow.

[0004] Devices have been disclosed in the known art that relate to tracking arrows. These include devices that have been patented and published in patent application publications. These devices generally relate to attachments for regular arrows or arrows having embedded GPS systems. However, the devices in the known art have several drawbacks. These devices typically include a GPS unit permanently embedded within the arrow, requiring the entire arrow to remain in the wounded animal in order to effectively track the animal, which is unreliable since the arrow itself often falls to the ground while the animal runs away. Other devices utilize pins that hold a GPS tracker in place that breaks off when the arrow impacts an animal, so the arrow cannot be reused, which contradicts one of the main reasons to use a bow and arrow to hunt.

[0005] In light of the devices disclosed in the known art, it is submitted that the present invention substantially diverges in design elements from the known art and consequently it is clear that there is a need in the art for an improvement to existing animal tracking arrows. In this regard, the present invention substantially fulfills these needs.

SUMMARY OF THE INVENTION

[0006] In view of the foregoing disadvantages inherent in the known types of tracking arrows now present in the prior

art, the present invention provides a tracking arrow wherein the same can be utilized for providing convenience for the user when determining the location of a wounded target animal. The tracking arrow includes a shaft, a tracker bracket, and an arrowhead. A nock is disposed on a second end of the shaft. A second end of the tracker bracket is removably secured to a first end of the shaft. A second end of the arrowhead is removably secured to the first end of the tracker bracket. A tracker unit is removably secured to the tracker bracket via a fastener such as an elastic band. The tracker unit includes a housing having a power supply, a GPS unit, and a transmitter therein, and further includes one or more barbs extending from the housing. When the tracking arrow penetrates a target, the tracker is configured to detach from the tracker bracket and embed itself in the target. The tracker is further configured to transmit its geographic location via the transmitter, allowing a hunter to locate the wounded animal.

[0007] Other objects, features, and advantages of the present invention will become apparent from the following detailed description taken in connection with the accompanying drawings wherein like numeral annotations are provided throughout.

BRIEF DESCRIPTION OF THE DRAWINGS

[0008] Although the characteristic features of this invention will be particularly pointed out in the claims, the invention itself and manner in which it may be made and used may be better understood after a review of the following description, taken in connection with the accompanying drawings wherein like numeral annotations are provided throughout.

[0009] FIG. 1 shows an exploded view of the tracking arrow.

[0010] FIG. 2 shows an exploded view of the tracker and the tracker bracket components of the tracking arrow.

[0011] FIG. 3 shows a diagram of the components of the tracker of the tracking arrow.

[0012] FIG. 4 shows a perspective view of the tracking arrow and a target animal.

DETAILED DESCRIPTION OF THE INVENTION

[0013] Reference is made herein to the attached drawings. Like reference numerals are used throughout the drawings to depict like or similar elements of the tracking arrow. For the purposes of presenting a brief and clear description of the present invention, the preferred embodiment will be discussed as used for determining the location of a wounded target animal. The figures are intended for representative purposes only and should not be considered to be limiting in any respect.

[0014] Referring now to FIG. 1, there is shown an exploded view of the tracking arrow. The tracking arrow 10 comprises a shaft 11, a tracking bracket 12, and an arrowhead 13. The tracking arrow 10 includes a nock 16 disposed on a second end 15 of the shaft 11 and fletching 23 disposed between the second end 15 of the shaft 11 and a first end 14 thereof, as well as a pointed tip 19 disposed on a first end 24 of the arrowhead 13. In this way, the tracking arrow 10 can be utilized the same way as a typical arrow and may be effectively launched from any conventional bow.

[0015] A second end 18 of the tracker bracket 12 is connected to the first end 14 of the shaft 11, and a second end 25 of the arrowhead 13 is connected to a first end 17 of the tracker bracket. In the illustrated embodiment, the shaft 11 and the arrowhead 13 are each removably securable to the tracker bracket 12. More particularly, the second end 19 of the arrowhead 13 is configured to be removably secured to the first end 17 of the tracker bracket 12 via a threaded connection, and the second end 18 of the tracker bracket 12 is configured to be removably secured to the first end 14 of the shaft 11 via a threaded connection. In this way, the tracking arrow 10 can be disassembled or assembled as needed, and components can be switched out if they wear overtime or become damaged, allowing the tracking arrow 10 to continue functioning.

[0016] A tracker 20 is removably coupled to the tracker bracket 12 via a fastener 21. The tracker 20 includes a power supply, a GPS unit, and a transmitter, and is configured to wirelessly transmit its geographic location as determined by the GPS unit to an external device. In the illustrated embodiment, the fastener 21 is an elastic band. The elastic band can be placed annularly around the tracker bracket 12, such that tension from the elastic band secures the tracker bracket 12 to the fastener 21. In other embodiments, alternate fasteners 21 may be utilized, such as a magnetic fastener or a quick-release clip. The tracker 20 further includes one or more barbs 22 thereon. The fastener 21 is configured to detach when the tracking arrow 10 strikes a target animal, and the one or more barbs 22 embed themselves in the flesh of the animal, securing the tracker 20 thereto, allowing the location of the wounded animal to be determined.

[0017] Referring now to FIG. 2, there is shown an exploded view of the tracker and the tracker bracket components of the tracking arrow. The tracker bracket 12 is configured to receive the tracker 20 in order to secure the tracker 20 to the tracking arrow during the flight of the arrow. The tracker 20 includes one or more barbs 22 thereon that embed in an animal struck by the tracking arrow 20, which causes the tracker 20 to detach from the tracker bracket 12 and stick to the animal. In the shown embodiment, the tracker 20 includes a pair of barbs 22 disposed adjacent to one another. Each barb 22 curves upward and forward such that a distal end of each barb is oriented toward the arrowhead, enabling the pointed distal end of the barb 22 to contact the animal when the arrow strikes.

[0018] The tracker bracket 12 includes a recession 39 sized to receive the tracker 20 therein. When the tracker 20 is positioned within the recession 39, an outer wall 33 of the tracker housing 31 is flush with an outer wall 34 of the tracker bracket 12. In this way, the tracking arrow maintains an aerodynamic shape such that the tracker 20 does not interfere with the flight path of the tracking arrow.

[0019] In the shown embodiment, the tracker 20 includes a housing 31 comprising a vertically oriented front face 37 and a sloped rear face 36. The recession 39 includes a sloped rear edge 32 toward the rear end 35 thereof and a vertically oriented forward surface 38. When the tracker 20 is positioned within the recession 32, the sloped rear face 36 fits flush within the rear end 35 of the recession 39, and the vertically oriented front face 37 makes continuous contact with the vertically oriented forward surface 38 of the recession 39. When the tracking arrow strikes a target, momentum is transferred along the tracking arrow from the arrowhead to the vertically oriented forward surface 38 of the

recession 39, and then to the vertically oriented front face 37 of the tracker 20. The downward slope of the sloped rear face 36 of the tracker 20 and the sloped rear edges 32 of the rear end 35 of the recession 39 enables the tracker 20 to slide out of the tracker bracket 12 when the tracking arrow impacts the target animal and momentum is transferred to the tracker 20, while the pair of barbs 22 cause the tracker 20 to embed itself in the target animal.

[0020] Referring now to FIG. 3, there is shown a diagram of the components of the tracker of the tracking arrow. The tracker 20 comprises a power supply 41 operably connected to each of a GPS unit 42 and a transmitter 43. The power supply 41 may be a battery, rechargeable battery, or other suitable power source for powering the GPS unit 42 and the transmitter 43. The GPS unit is configured to determine the geographic position of the tracker 20 via communication with GPS satellites. The transmitter 43 is configured to transmit the geographic position of the tracker 20 wirelessly. The transmitter 43 may use any known means of wireless communication such as radio waves, and may or may not utilize a network such as a cellular network to transfer the location of the tracker 20. The transmitted geographic position of the tracker 20 can be received by any electronic device capable of receiving wireless transmissions such as a cell phone, laptop, or the like. In one embodiment, the tracker 20 is configured to continuously transmit its location. In an alternate embodiment, the tracker 20 is configured to being transmitting its location when the arrow strikes its target. In this embodiment, the tracker 20 includes a sensor configured to detect impact, such as an accelerometer, which in turn causes the transmitter 43 to transmit the location of the tracker 20 if a threshold deceleration is detected, which would occur when the arrow strikes the target.

[0021] Referring now to FIG. 4, there is shown a perspective view of the tracking arrow and a target animal. When the tracking arrow 10 strikes a target such as a deer 51, The tracker 20 is configured to separate from the tracker bracket 12. Even if the tracking arrow 10 passes through the deer, or falls from the entry wound 52, the tracker 20 remains attached to the deer 51 because the barbs 22 embed themselves in the deer 51 upon impact of the tracking arrow 10. In one embodiment, the tracker 20 includes a phosphorescent material such that the tracker 20 glows in the dark, allowing the hunter to visually detect the tracker 20 in low-light conditions. The tracker 20 transmits its location as determined by the GPS unit via the transmitter, so the hunter can locate the deer 51. In this way, the hunter is able to determine the location of the deer 51 even if the tracking arrow 10 does not stay attached to the deer 51.

[0022] It is therefore submitted that the instant invention has been shown and described in what is considered to be the most practical and preferred embodiments. It is recognized, however, that departures may be made within the scope of the invention and that obvious modifications will occur to a person skilled in the art. With respect to the above description then, it is to be realized that the optimum dimensional relationships for the parts of the invention, to include variations in size, materials, shape, form, function and manner of operation, assembly and use, are deemed readily apparent and obvious to one skilled in the art, and all equivalent relationships to those illustrated in the drawings and described in the specification are intended to be encompassed by the present invention.

[0023] Therefore, the foregoing is considered as illustrative only of the principles of the invention. Further, since numerous modifications and changes will readily occur to those skilled in the art, it is not desired to limit the invention to the exact construction and operation shown and described, and accordingly, all suitable modifications and equivalents may be resorted to, falling within the scope of the invention.

I claim:

- 1) A tracking arrow, comprising:
 - a shaft having a first end and a second end;
 - a tracker bracket having a first end and a second end, wherein the second end of the tracker bracket is connected to the first end of the shaft;
 - an arrowhead having a first end and a second end, wherein the second end of the arrowhead is connected to the first end of the tracker bracket, the first end of the arrowhead comprising a point thereon;
 - a tracker comprising a housing having a power supply, a GPS unit, and a transmitter therein, and further comprising one or more barbs extending from the housing; wherein the tracker is configured to be removably secured to the tracker bracket via a fastener.
- 2) The tracking arrow of claim 1, further comprising a nock disposed on the second end of the shaft.
- 3) The tracking arrow of claim 1, further comprising fletching disposed on the shaft between the first end and the second end thereof.
- 4) The tracking arrow of claim 1, wherein the second end of the arrowhead is configured to be removably secured to the first end of the tracker bracket via a threaded connection.

5) The tracking arrow of claim 1, wherein the second end of the tracker bracket is configured to be removably secured to the first end of the shaft via a threaded connection.

6) The tracking arrow of claim 1, wherein the tracker bracket comprises a recession configured to receive the tracker therein, wherein an outer surface of the housing of the tracker is configured to be flush with an outer surface of the tracker bracket when the tracker is positioned within the recession of the tracker bracket.

7) The tracking arrow of claim 6, wherein the tracker housing comprises a sloped rear face and a vertical front face, wherein the recession comprises a sloped rear portion and a vertical front wall, wherein the sloped rear face is configured to make continuous contact with the sloped rear portion and the vertical front face is configured to make continuous contact with the vertical front wall when the tracker housing is received by the recession.

8) The tracking arrow of claim 1, wherein the fastener is an elastic band.

9) The tracking arrow of claim 1, wherein the one or more barbs comprises a pair of barbs, wherein each barb of the pair of barbs curves such that a distal end of each barb is oriented toward the arrowhead.

10) The tracking arrow of claim 1, wherein the tracker is configured to be unfastened and embed itself in an animal when the tracking arrow penetrates the animal.

11) The tracking arrow of claim 1, wherein the tracker is configured to determine a geographic position via the GPS unit and wirelessly transmit the geographic position via the transmitter.

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