

[54] **RADIO TRANSMITTING HUNTING ARROW
WITH FINDING MEANS**

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325/102, 325/115, 325/118**

[51] Int. Cl. **G01s 3/14**

[58] Field of Search **325/66, 102, 115, 116, 118;
343/113 R, 113 PT, 718; 273/106.5 R**

[56] **References Cited**

UNITED STATES PATENTS

3,150,875	9/1964	Searles	273/106.5 R
2,939,130	5/1960	Robinson, Jr.	325/115

3,651,405 3/1972 Whitney et al. 325/105

OTHER PUBLICATIONS

Radio Electronics, June, 1956, p. 79

Radio News, April, 1939, p. 42

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[57]

ABSTRACT

A battery-powered radio transmitter is carried in the tip of a hunting arrow to aid in locating wounded game. The antenna for the transmitter is carried in the hollow shank of the arrow so that breakage of the shaft will not be detrimental to transmission of radio signals from the transmitter.

8 Claims, 4 Drawing Figures

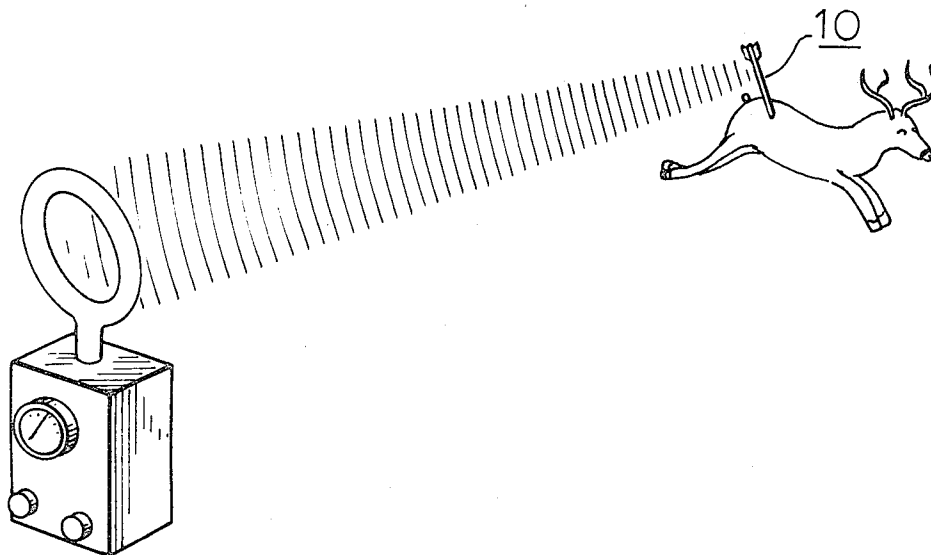


FIG. 1

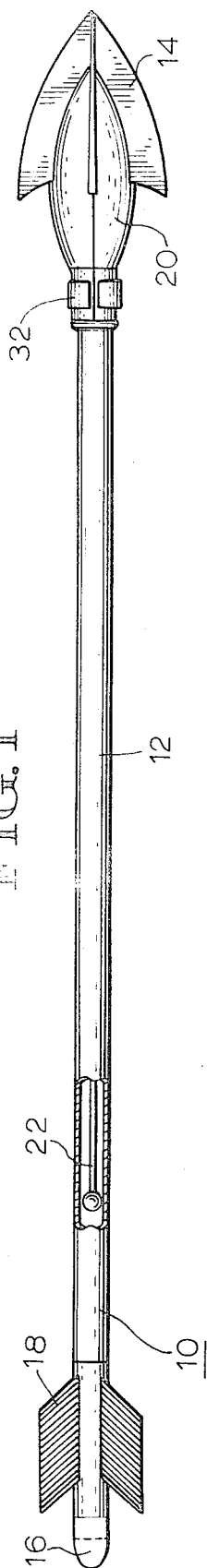


FIG. 2

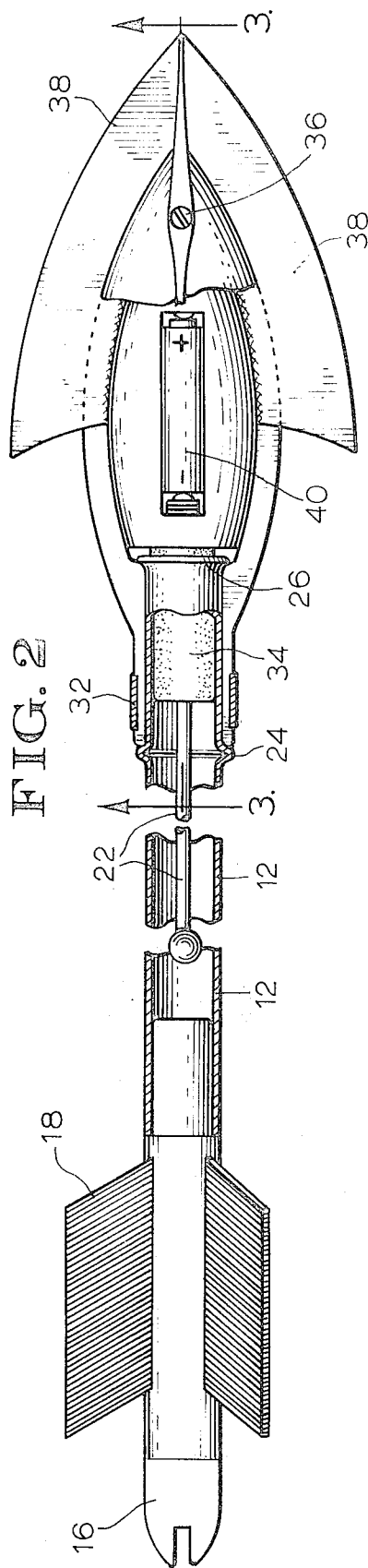


FIG. 3

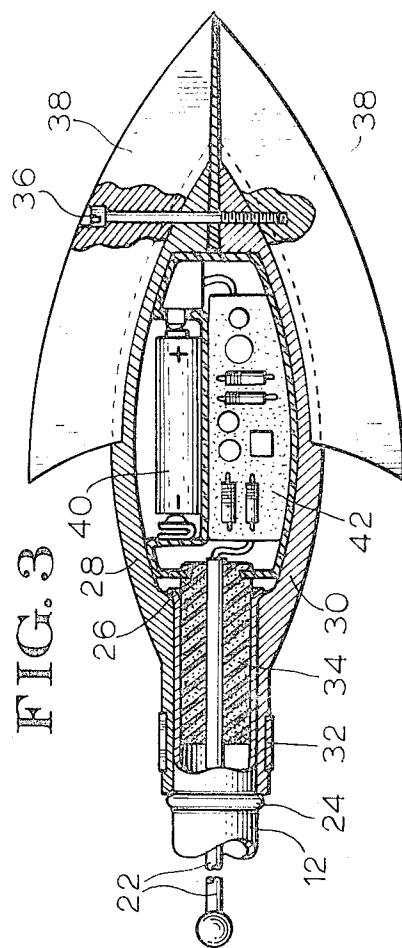
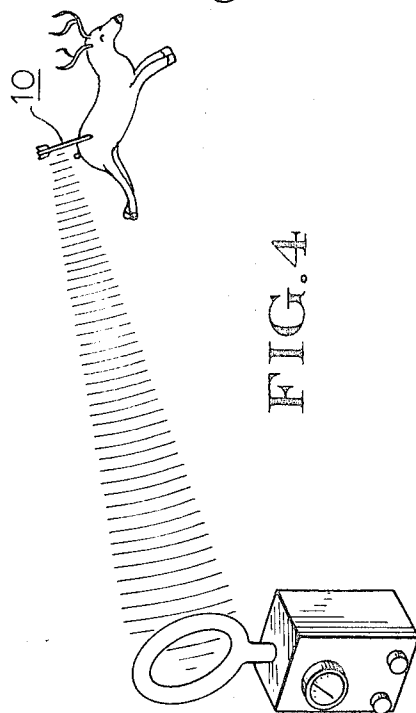


FIG. 4



RADIO TRANSMITTING HUNTING ARROW WITH FINDING MEANS

BACKGROUND OF THE INVENTION

This invention relates to a hunting arrow, and more particularly to a hunting arrow which is trackable by means of radio signals sent therefrom.

During the hunting of animal game using bow and arrows, on many occasions the arrow will imbed itself in the game and the wounded game will immediately flee. In areas of dense foliage it is often difficult to track the wounded game, and on many occasions the wounded game may completely escape with the arrow.

Prior art solutions to this problem have been invented. For example, in the U.S. Pat. No. to Searles, 3,150,875, a hunting arrow is provided which contains means for releasing smoke so as to provide a trail of smoke when the arrow is shot. In the U.S. Pat. No. to Rohrbach, Jr., 3,417,944, a hunting arrow is provided which discharges a continuous line of marking yarn, purportedly making it possible to follow the path of the wounded game by following the yarn trail.

The smoke-producing arrow of the Searles patent is disadvantageous in that the wounded animal may flee to a point so distant or so thickly wooded that the smoke can no longer be seen. The Rohrbach development is disadvantageous in that the yarn may become entangled in a tree and break or may not be long enough to permit tracking of an animal which has fled a great distance.

In sharp contrast, in the hunting arrow of the present invention the problem of smoke not being seen or yarn breaking is obviated. It is an object of the present invention to provide a hunting arrow which can be tracked without the need to view a mechanical or chemical device.

It is a further object of the present invention to provide a hunting arrow which carries a radio transmitter that transmits signals to a direction-finding receiver carried by the hunter.

On some occasions a wounded animal having a hunting arrow lodged in it will break off the shaft of the arrow. The hunting arrow of the present invention is constructed so that breakage of the shaft by the wounded animal will not be detrimental to transmission of the radio signals from the arrow.

Other objects of the present invention will become apparent as the description proceeds.

DESCRIPTION OF THE INVENTION

In general, the hunting arrow of the present invention includes a shaft of fiberglass or wood having a pointed material cap or arrowhead at its forward end and having on its rearward end a noc or transverse groove by which the end of the arrow can be held in position by the string of a bow. The hunting arrow is provided with the usual fletching or feathering near the rear end of its shaft to aid in holding the arrow on a steady course during flight.

In accordance with the present invention, the arrowhead carries a battery-powered radio transmitter. In further accordance with the invention, the shaft of the arrow is hollow and contains, in coaxial relationship therewith, a semi-rigid antenna. Means are provided for rigidly coupling the antenna to the radio transmitter.

In the illustrative embodiment of the invention, the radio transmitter is located adjacent to the arrowhead and is generally symmetrical about the axis of the shaft. In the illustrative embodiment, a radio receiver, remote from the transmitter, is provided so as to be carried by the hunter. The radio is tuned to the signal frequency of the transmitter and has a directional antenna and means for finding the direction of the transmitter.

A more detailed explanation of the present invention is found in the following description and claims, and is illustrated in the accompanying drawings.

DESCRIPTION OF THE DRAWINGS

The features of the present invention which are believed to be novel are set forth with particularity in the appended claims. The invention, together with further objects and advantages thereof, may best be understood by reference to the following description taken in connection with the accompanying drawing, in the several figures of which like reference numerals identify like elements, and in which:

FIG. 1 is a plan view, in partial cross-section, of a hunting arrow embodying the present invention;

FIG. 2 is an enlarged broken view, in partial cross-section, of a hunting arrow embodying the present invention;

FIG. 3 is a longitudinal sectional view of the arrowhead in FIG. 2 embodying a battery-powered radio transmitter and antenna; and

FIG. 4 is a pictorial view depicting the application of the invention to the sport of hunting.

DESCRIPTION OF PREFERRED EMBODIMENTS

Referring to FIG. 1, a hunting arrow 10 is shown which comprises a hollow shaft 12 having an arrowhead 14 at its front end and a noc 16 at its rear end. A trio of fletchings 18 are symmetrically fastened about the shaft adjacent its rear end as is conventional with hunting arrows.

The hunting arrow 10 carries a miniature battery-powered radio transmitter 20 at the immediate rear of arrowhead 14. Transmitter 20 is generally cylindrical in shape and symmetrical about the axis of shaft 12. A metal whip antenna 22 is fastened to transmitter 20 by suitable fastening means (not shown) and antenna 22 extends inside hollow shaft 12 in coaxial relationship therewith. Antenna 22 is preferably formed of spring steel, which is very rigid as contrasted to a thin wire antenna. This is desirable, since if the wounded animal should break the arrow shaft, as happens on many occasions, the antenna will remain extended and continue to operate in conjunction with the transmitter.

Referring now to FIGS. 2 and 3, the radio transmitter portion 20 of arrowhead 14 is seen to be enclosed within a two-section housing of resilient high-impact plastic or other suitable material. The shaft 12 of the illustrated arrow is fastened to the housing by means of an annular abutment 24 and a flare 26 on the end of the shaft, the upper half 28 and lower half 30 of the housing being clamped therebetween by a resilient clamp ring 32. A non-metallic plug 34 is provided as an anchor for the antenna 22.

The two halves of the transmitter housing are fastened together near the point of the arrowhead by a machine screw 36, which is threaded into lower half 30. Four knife-edged blade surfaces 38 are attached to the housing for hunting purposes.

A battery 40 is contained within the transmitter in a compartment above the transmitter. The transmitter itself is constructed on a printed wiring board 42, and aside from its extreme miniaturization, is conventional in design. The transmitter is preferably crystal controlled on a frequency appropriate to the desired homing range and available antenna length, and may be frequency or amplitude modulated to aid in reception.

As shown in FIG. 4, the hunter carries a direction-finding receiver fitted with a directional antenna. The receiver is tuned to the signal frequency of the transmitter so that the direction of the transmitter can be found, as is well known in the art of radio direction finding. An example of the general type of prior art transmitter and receiver which could be used in the present invention is shown and described in the U.S. Pat. No. to Sloan et al, 3,336,530.

In utilizing the hunting arrow of the present invention, prior to shooting the arrow, the transmitter is energized by a manual switch or by other means such as insertion of the battery. Thus, when the arrow is shot from the bow, if it misses its mark, it can be readily found by the hunter by merely tracking the transmitted signals. And if the arrow hits an animal, the animal can be tracked by the hunter by following the direction of the transmitted signals.

Although an illustrative embodiment of the present invention has been shown and described, it is to be understood that various substitutions and modifications may be made by those skilled in the art without departing from the novel spirit and scope of the present invention.

What is claimed is:

1. In a hunting arrow of the type comprising a shaft carrying an arrowhead at one end thereof including a housing and a noc at the other end thereof for driving the arrow, the improvement comprising, in combination:
 said shaft being hollow and carrying a battery-powered radio transmitter and its weight at the arrowhead end for embedment;
 a rigid antenna connected to the transmitter at one end and at the other end extending removably into said shaft in coaxial relationship therewith;
 and means rigidly securing said antenna to said radio transmitter so that breakage and loss of the shaft will not be detrimental to the transmission of radio signals.

2. A hunting arrow as described in claim 1, wherein said radio transmitter is located adjacent said arrowhead and is generally symmetrical about the axis of said shaft.

3. A hunting arrow as described in claim 1, wherein said antenna is formed of spring steel freely supported in said shaft for withdrawal therefrom so that breakage of the shaft formed of an electrically nonconductive frangible material exposes the antennae.

4. A hunting arrow as described in claim 1, including a radio receiver remote from said transmitter and tuned to the signal frequency of said transmitter, said receiver having a directional antenna and means for finding the direction of said transmitter.

5. A method for tracking game hunted with bow and arrow, which comprises the steps of:

connecting a battery-powered radio transmitter to the head of an arrow as a weighting part of the arrowhead;

embedding the transmitter within the body of a game animal along with the head of the arrow and exposing a signal radiating antenna outside of the body in supported position; and

tracking said signal by a radio receiver tuned to the signal frequency of said transmitter, with the receiver having a directional antenna to permit the direction of the transmitted signals to be detected and observed.

6. A method for tracking game as described in claim 5, including the step of carrying the receiver and finding the direction of the transmitted signals after the arrow is shot into the game.

7. In a hunting arrow of the type comprising a hollow shaft carrying an arrowhead at one end thereof and a noc at the other end thereof, the improvement comprising, in combination;

a battery and a radio transmitter operable from said battery forming an integral weight component of the arrowhead, and an antenna axially withdrawable from the shaft for radiating the radio-frequency signals generated by said transmitter to aid in locating said arrow by radio direction finding means.

8. A hunting arrow as described in claim 7, wherein said arrowhead includes a housing, said transmitter and battery are contained within said housing, and said antenna is contained within said shaft.

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