July 27, 1954 W. S. ROMEKA 2,684,852

STREAMLINED ARROW HEAD

Filed July 28, 1953



Fig. 1.

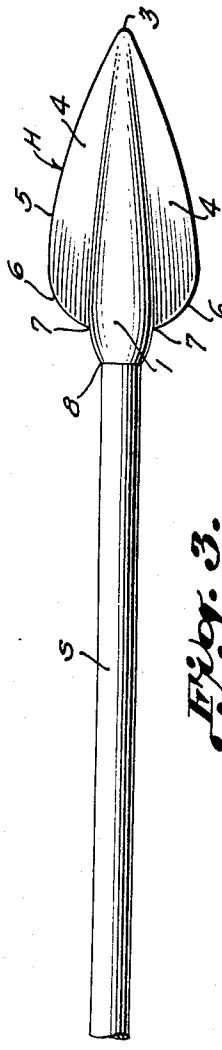


Fig. 2.

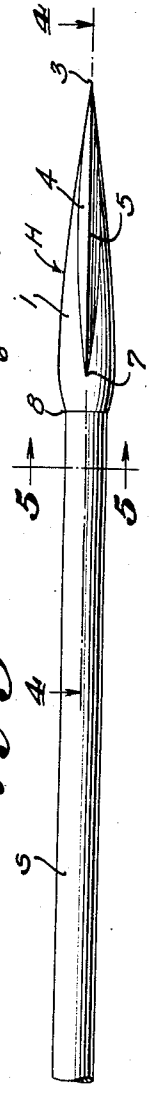


Fig. 3.

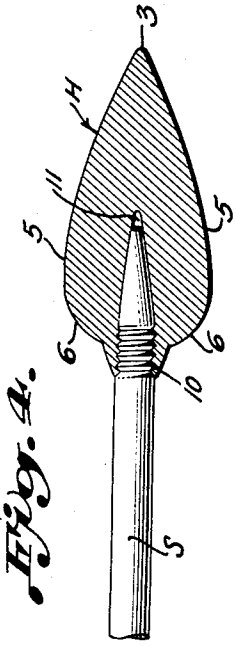


Fig. 4.

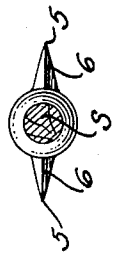


Fig. 5.

INVENTOR

WILLIAM S. ROMEKA

BY

ATTORNEY

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STREAMLINED ARROWHEAD

William S. Romeka, Cockeysville, Md.

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6 Claims. (Cl. 273—106.5)

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This invention relates to arrowheads and more particularly to cast arrowheads which may be applied to arrow shafts and used for both target, roving and hunting purposes.

It is the object of the present invention to provide a light metal or plastic arrowhead which is adapted for either target practice or hunting and roving purposes.

It is a further object of the invention to provide a cast arrowhead having streamlined surfaces, which render the arrow accurate in flight and impart thereto improved penetration characteristics.

The arrowhead in accordance with the invention is so designed that it will not penetrate too deeply into hard materials such as trees and stumps, while having desired penetrating powers against wild game. In such cases when the arrowhead is impaled tightly upon an object, the same may be withdrawn easily therefrom without damage to the shaft or arrowhead.

It is a further object of the invention to provide an arrowhead which is self-threading upon the end of an arrow shaft, the end of which fits closely within the bore of the arrowhead. The connection between the shaft and head is a tight one while the same are in integrated condition, but the same may be readily separated from each other when separation is desirable. The arrowhead fits tightly in the end of the shaft straight and true and cannot be knocked out of position by heavy use.

The invention proceeds upon the principal of providing an arrowhead which is preferably cast from a light metal such as aluminum or similar light metal alloy, having a streamlined body of air foil surfaces without abrupt breaks in order to render the flight of the arrow true and accurate. The core of the body of the arrowhead is in the form of a longitudinal medial rib which terminates in a point at the forward end thereof and in an internally threaded ferrule at the rear end thereof. The medial rib of the arrowhead tapers gradually from its maximum diameter to the pointed end and abruptly towards the ferrule end. A pair of fins project symmetrically from the opposite sides of the rib and diminish in thickness from the junction line of the fins with the rib to their outermost boundaries whereat they terminate in knife edges. These knife edges, in conjunction with the pointed end, impart desirable penetrating properties to the arrowhead. The trailing edges of the fins are rounded and join with the medial rib at the maximum diameter of the latter. The thickness of the medial rib is greater than the maximum thickness of the fins in order to impart transverse stability to the arrowhead in the course of its flight. Preferably the internal rib is formed with a bore on the interior thereof extending approximately midway of the length of the arrowhead. This bore is tapped with a threading tool at the outermost end and is of circular section, while the innermost part of the bore is of conical outline in conformity with the tapering external dimensions of the medial rib as well as those of the end of the arrow shaft. These outlines of the arrowhead impart thereto the critical airfoil surfaces, giving it the characteristics of a precision instrument, resulting in accuracy of flight of the arrow, and therefore imparting greater pleasure and thrills to the sport of archery and hunting with bow and arrows.

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Other objects and purposes will appear from the detailed description of the invention following hereinafter, taken in counjunction with the accompanying drawing, wherein

Fig. 1 is a plan view of an arrow embodying the arrowhead in accordance with the present invention;

Fig. 2 is an enlarged plan view of the arrow shaft with the arrowhead mounted thereon;

Fig. 3 is a front elevation of Fig. 2;

Fig. 4 is a horizontal sectional view along line 4—4 of Fig. 3; and

Fig. 5 is a vertical sectional view along line 5—5 of Fig. 3.

In the drawing is shown a wooden arrow shaft S which is feathered at one end and which has mounted on its opposite end the arrowhead H in accordance with the present invention. The arrowhead H is preferably formed of a cast metal such as aluminum or aluminum alloy and consists of a streamlined body of smooth airfoil surfaces. These include the longitudinal medial rib 1 terminating in a ferrule at the rear portion thereof and a point 3 at the forward portion therof. This medial rib tapers gradually to the point 3 and relatively abruptly to the end 8 from the point of its maximum diameter 7. A pair of fins 4 project symmetrically from the opposite sides of the rib and taper gradually from their maximum thickness at the junction lines with the rib to the outermost boundaries thereof whereat they terminate in knife edges 5. Not only do the fins decrease in thickness in lateral directions, but they also diminish in thickness towards the front and rear of the arrowhead so that these fins merge into the sharpened point 3 as well as converge to a knife edge at the trailing edges 6 thereof whereat they join with the medial rib at the line of its maximum diameter at 7.

Preferably, the medial rib is formed of circular section with an external diameter greater than the maximum thickness of the fins so that portions of the medial rib extend beyond the surfaces of the fins at all points other than the pointed end 3, thereby to impart transverse stability to the arrowhead in flight.

The arrowhead is formed with a bore on the interior of the medial rib for approximately midway of the length thereof. The outermost part 10 of the bore is tapped with a threading tool in order to enable the arrowhead to be self-threaded onto the end of the arrow shaft. The inner portion of the bore 11 is formed of conical outline conforming substantially to the tapered exterior of the front end of the arrow shaft.

While the following dimensions are not to be considered limitative of the invention, an arrowhead having a length of two and five-eighth inches, with a bore of the length of one and one-quarter inches, has been found very effective in practice. With an arrowhead of such size, the maximum width across the fins may be one and one-quarter inches, with the length of the ferrule beyond the trailing edges of the fins approximately one-fourth inch to one-half inch, with an outside diameter at end 6 of one-half inch. This ferrule may be bored with a three-eighth inch standard tap for threading the end of the arrow shaft thereinto. The standard tap may be altered so that the edge of thread cutting the shaft will be sharp rather than flat to facilitate ease of threading and prevent threads on the shaft from breaking off. The maximum thickness of the fins may approximate three-sixteenths inch.

An arrowhead having the structural features and the smooth airfoil surfaces described above results in a more accurate flight of the arrows without possibility of veering to the sides. The rounded trailing edges of the fins serve to prevent the head from catching onto vines and twigs while one is walking through brush and forests. There are no blunt surfaces upon the arrowhead to impair the penetration thereof into a target or animal, and the killing power of the arrowhead is enhanced by the arrangement of the sharp edges and airfoil surfaces thereof.

In such cases where the arrowhead has penetrated into objects which render it difficult to extract, such as in trees or stumps, the arrow shaft may be removed easily from the arrowhead by an unthreading movement, and a long bolt may be substituted for the shaft in order to dislodge the arrowhead effectively without breakage of the arrow shaft or damage to the arrowhead. Also, the arrowhead may be extracted easily from straw targets due to the streamlined surfaces of the rear portions. No other hunting arrowhead can be used on straw targets because the arrowhead pulls off when the shaft is retracted.

While I have described my invention as embodied in a specific form and as operating in a specific manner for purpose of illustration, it should be understood that I do not limit my invention thereto, since various modifications will suggest themselves to those skilled in the art without departing from the spirit of my invention, the scope of which is set forth in the annexed claims.

I claim:

1. An arrowhead comprising a streamlined body of smooth airfoil surfaces comprising a longitudinal medial rib terminating in a point at the forward end of the body and in a ferrule at the rear of the body, said rib converging in a smooth curvature from the ferrule end to the pointed end, a pair of fins projecting symmetrically from opposite sides of said rib and diminishing in thickness therefrom to their outermost boundaries whereat they terminate in knife edges, each of said fins widening from a point at the forward end of the body to a maximum width a short distance in advance of the rearmost point of said ferrule, said medial rib projecting beyond the opposed surfaces of said fins to impart transverse stability to said arrowhead.

2. An arrowhead as set forth in claim 1 wherein the trailing edges of the fins are rounded as they merge from their outermost boundaries to the medial rib and ferrule.

3. An arrowhead comprising a streamlined body of smooth airfoil surfaces comprising a longitudinal medial rib terminating in a point at the forward end of the body and in an internally threaded ferrule at the rear of the body, said rib converging in a smooth curvature from the ferrule end to the pointed end, a pair of fins projecting symmetrically from opposite sides of said rib and diminishing in thickness therefrom to their outermost boundaries whereat they terminate in knife edges, each of said fins widening from a point at the forward end of the body to a maximum width a short distance in advance of the rearmost point of said ferrule, said medial rib being of circular section and projecting beyond the opposed surfaces of said fins to impart transverse stability to said arrowhead.

4. An arrowhead as set forth in claim 3 wherein the trailing edges of the fins are rounded as they merge from their outermost boundaries to the medial rib and ferrule, said rounded edges terminating at the ends of the junction lines of said medial rib with said fins, forwardly of the rearmost end of the ferrule.

5. An arrowhead as set forth in claim 3 wherein said medial rib is of maximum external diameter at the point of junction therewith of the rounded ends of said fins remote from the pointed end of said body, decreasing gradually in diameter towards said point and more abruptly towards the end of said ferrule, and a hollow bore within said medial rib of circular section at the outermost end whereat is formed the internal threads of the ferrule and of conical outline inwardly thereof extending partly within said medial rib.

6. A wooden arrow shaft in self-threading engagement with a cast metal arrowhead having a streamlined body of smooth airfoil surfaces comprising a longitudinal medial rib terminating in a point at the forward end of the body and in an internally threaded ferrule at the rear of the body for threaded engagement with the end of the arrow shaft, said rib converging in a smooth curvature from the ferrule end to the pointed end, a pair of fins projecting symmetrically from opposite sides of said rib and diminishing in thickness therefrom to its lateral boundaries whereat they terminate in knife edges, each of said fins widening from a point at the forward end of the body to a maximum width a short distance in advance of the rearmost point of said ferrule, said medial rib being of circular section and projecting beyond the opposed surfaces of said fins to impart lateral stability to said arrowhead.

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