April 8, 1958 E. J. HENKEL 2,829,894

ARROWHEAD

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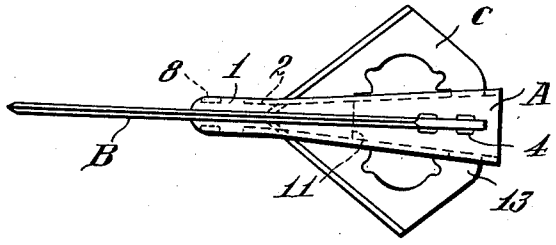

Fig. 1

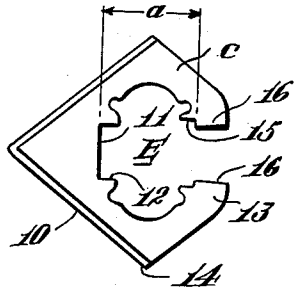

Fig. 4

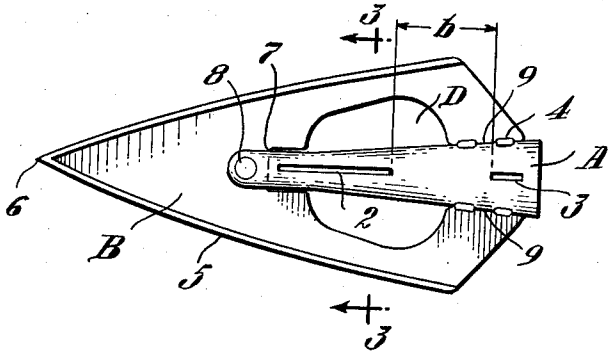

Fig. 2

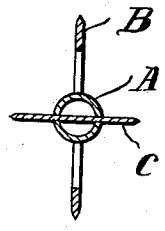

Fig. 3

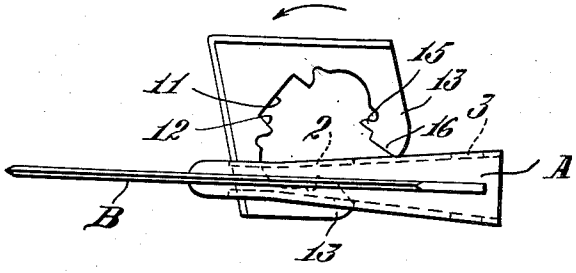

Fig. 5

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ARROWHEAD

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2 Claims. (Cl. 273—106.5)

This invention relates to an improvement in arrowheads and deals more particularly with arrowheads used for hunting and similar purposes.

In hunting arrows it is desirable that the cutting area of the arrowhead be as large as possible to inflict the greatest possible damage. However bows of the weights commonly lack somewhat in striking energy, and weight has been a limiting factor in increasing the size of conventional arrowheads. To increase the size of singe blade heads or to add additional blades of the usual type unduly sacrifices speed, accuracy, and penetration. A further difficulty has resulted from the practice of providing blades which are of sufficiently soft metal that they can be resharpened in the field by the archer with a file carried for the purpose. This practice has necessitated a relatively thick, heavy blade and has limited the sharpness of the edge that can be obtained.

One object of the present invention is to provide an improved arrowhead. Another object is to provide a greater cutting area and increased sharpness in an arrowhead which will be light in weight and which will not appreciably reduce velocity and penetration. Further objects are to provide an arrowhead having a blade which need not be sharpened and honed in the field and to provide an arrowhead wherein the blades are removable and replaceable so that new blades may be inserted easily and rapidly in the field.

In accordance with the present invention, the above objects are achieved by providing an arrowhead having a blade which is removable and replaceable by insertion of the blade edgewise through a slot in the side of the circular hollow center of the arrowhead, herein called a ferrule to include any hollow structure adapted to receive an arrow-shaft. The blade has a resilient arm and the blade and ferrule have interfitting portions which snap into interlocking relationship to detachably hold the blade in the head. The blade is preferably made of hard, extremely thin, razor-like steel so that it will be light and can be pre-honed at the factory to maximum razor sharpness. When the blade is damaged, for example by a shot that misses, the used blade is removed and discarded and a new one inserted.

In a particular aspect the present invention includes an arrowhead having a blade which is provided with an opening through its base to form, at the forward end of the opening, rearwardly projecting shoulders engaging opposite sides of the ferrule and, at the rearward end, C-shaped resilient arms having lugs on the extremity of the inturning ends. The blade is inserted edgewise in a slot extending through the ferrule, the projecting shoulders aligning the blade axially with the ferrule, and the lugs on the arms snapping into cooperating openings in the ferrule to detachably secure the blade to the head.

In the preferred embodiment of the invention, the removable blade is utilized as an auxiliary blade in an arrowhead also having a primary, relatively thick,

broadhead blade. When so utilized, the removable blade is mounted at a substantial angle, preferably ninety degrees, to the primary blade to provide a large cutting area without increasing the weight sufficiently to decrease penetration. In this embodiment the primary blade has an opening through its base to receive the ferrule and fits, at the forward terminus of the opening, into a bifurcated tip of the ferrule and is secured therein. The primary blade is further secured to the ferrule by grooved projections on the rearward surface of the ferrule which receive and retain the blade edges which bind the opening in this blade. As used herein, forward refers to the pointed end of the arrowhead.

For the purpose of illustration a specific embodiment of the invention is shown in the accompanying drawing in which

Fig. 1 is a plan view of the arrowhead showing the auxiliary blade in position;

Fig. 2 is a side view of the arrowhead;

Fig. 3 is a section on line 3—3 of Fig. 2;

Fig. 4 is a plan view of the auxiliary blade detached from the arrowhead; and

Fig. 5 is a plan view of the arrowhead illustrating the method of attaching the auxiliary blade.

The arrowhead illustrated in the accompanying drawing comprises three main parts, a truncated conically shaped ferrule A serving as a hub socket for the arrow-shaft, a primary broad-head blade B, and a replaceable auxiliary blade C.

The ferrule A has a bifurcated tip 1, a transverse slot 2, retaining openings 3, and grooved projections 4 in its rearward wall. The projections 4 are formed, for example, by striking the wall of the ferrule.

The blade B has sharpened edges 5 diverging from an acute angle point 6 and an opening D through its base to receive the ferrule. This opening is enlarged in its middle portion to reduce the weight of the blade. The blade B is secured to the ferrule by insertion, at the forward terminus 7 of the opening D, into the bifurcated tip 1 of the ferrule and by pinching the sides of the ferrule tip securely against the blade or riveting at 8. The blade is further secured to the ferrule by inserting the edges 9 of the blade into the ferrule projections 4. If desired, the edges 9 may be secured in the projections 4 by brazing or silver soldering.

The auxiliary blade C comprises diverging cutting edges 10 and an opening E through its base to form a transverse abutment edge 11 with rearwardly projecting shoulders 12, and C-shaped arms 13 turning inwardly from the rearward ends 14 of the cutting edges 10. The ends 15 of the projecting arms are provided with lugs 16.

To position the blade C in the ferrule A, one of the C-shaped arms 13 is inserted through the forward slots 2 in the ferrule. The blade is then rotated sufficiently to align it axially with the ferrule and the blade moved rearward of the ferrule to contact the edge 11 of the blade with the rear edge of the slot 2. To facilitate insertion and rotation of the blade C in the slot 2, the other C-shaped arm may be flexed over the ferrule A or the slot 2 may be extended forwardly sufficiently to make such flexing unnecessary. The shoulders 12 of the blade contact and align with the outside surface of the ferrule. The blade is retained in position by the lugs 16 on the blade arms which snap into the cooperating rear openings 3 in the ferrule. Further alignment of the blade is provided by the edges 15 of the arms which contact the surface of the ferrule rearward of the shoulders 12. To retain alignment of the blade with the ferrule, the length *a* of the blade C should be substantially the same as the length *b* between the slot 2 and the opening

3 on the ferrule. Alternatively, alignment can be maintained by providing the lugs 16 at substantially the same length as the openings 3. To remove the blade the above procedure is reversed. This attachment is illustrated in Fig. 5.

An arrowhead is thus provided with a blade which is extremely thin and pre-honed at the factory to an extreme degree of edge sharpness. This is not possible in conventional fixed blades. In addition to a greater cutting area made possible by this invention, the increased sharpness of the blade herein provided will cut through more arteries and veins, cause more hemorrhage, and thus kill game more surely.

In the embodiment illustrated, the ferrule A and the primary broadhead blade B, without the auxiliary blade C, have utility substantially similar to arrowheads used heretofore. This combination can thus be used and sold for non-critical purposes while the auxiliary blade can be inserted where maximum damage is desired.

It is evident that dovetail barbs can be provided, if desired, by extending the diverging cutting edges of the blades rearward. It is further evident that the ends 15 of the C-shaped arms of the auxiliary blade C may be secured to the ferrule A by grooved projections in the wall of the ferrule similar to those illustrated at 4. Such projections would replace the openings 3 and would make the lugs 16 unnecessary. It should be understood that such modifications are included within the scope of this invention.

It should be further understood that the present disclosure is for the purpose of illustration only and that the invention includes all modifications and equivalents which fall within the scope of the appended claims.

I claim:

1. An arrowhead comprising a ferrule, a main blade on the ferrule which projects beyond the forward end thereof, the arrowhead having a slot extending therethrough from side to side transversely of the main blade and closed at each end, and an arrow-shaped blade recessed at its rearward end, the length of said slot being greater than the length of the blade from its tip to the forward end of said recess so that, after the blade has been inserted into the slot, it has lengthwise movement to an operative position, the blade having abutment surfaces positioned to be brought into abutting relation to the ferrule by said movement and formed to restrain displacement of the blade transversely of the ferrule, and releasable means to hold the blade against lengthwise movement in said operative position.

2. An arrowhead comprising a ferrule, a main blade on the ferrule which projects beyond the forward end thereof, the arrowhead having a slot extending therethrough from side to side transversely of the main blade and closed at each end, and an arrow-shaped blade recessed at its rearward end to form two rearwardly extending legs, the length of said slot being greater than the length of the blade from its tip to the forward end of said recess so that, after the blade has been inserted into the slot by passing one of said legs through the slot, it has lengthwise movement to an operative position, the blade having transverse abutment surfaces positioned to be brought into abutting relation to the ferrule by said movement and formed to restrain displacement of the blade transversely of the ferrule, and releasable means to hold the blade against lengthwise movement in said operative position.

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