

United States Patent

[11] 3,539,187

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[56]

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[54] **LIKE FINS FOR GUIDANCE OF AN ARCHERY ARROW**

3 Claims, 7 Drawing Figs.

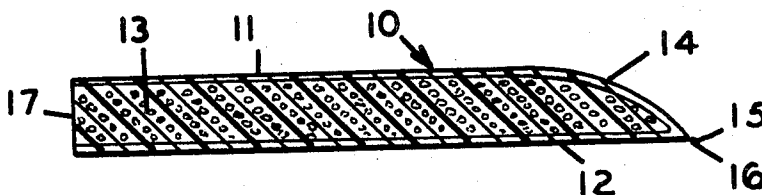
[52] U.S. Cl..... 273/106.5

[51] Int. Cl. F41b 5/02

[50] **Field of Search**..... 273/106.5,

106.5(C)
(Archery Digest)

ABSTRACT: A synthetic expanded plastic fin being extremely light in weight, tough, very flexible, and a waterproof smooth skin over all exposable surfaces of a fin. One surface of a fin has arcuate edge portions curved toward and intersecting with and secured to the edge of the skin surface on the opposite side of a fin; with the exception of one mounting edge of the fin.



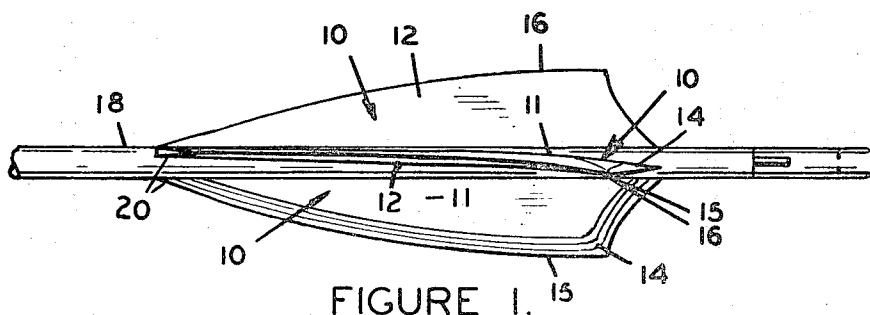


FIGURE 1.

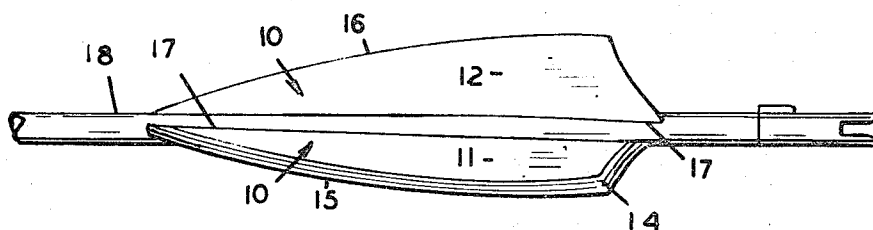


FIGURE 2.

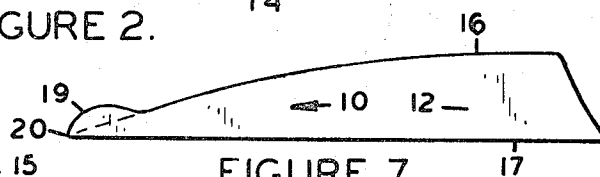


FIGURE 7.

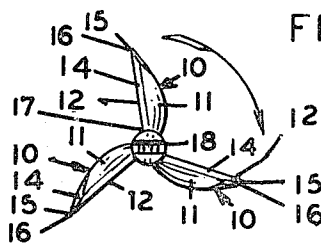


FIGURE 3.

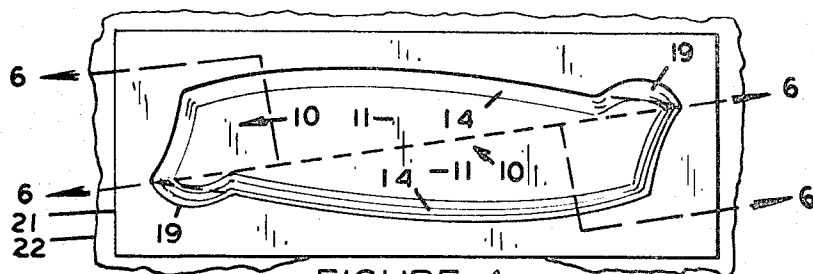


FIGURE 4.



FIGURE 5.

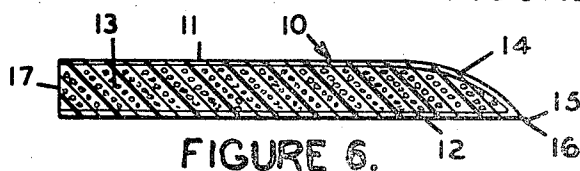


FIGURE 6.

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LIKE FINS FOR GUIDANCE OF AN ARCHERY ARROW

SPECIFICATION

This invention relates to the structural improvement of a fin for guidance of an archery arrow.

My improved fin is made of expanded flexible plastic of such types as expanded vinyl plastisol or expanded polyurathane; and has a waterproof skin. The fins are expanded with gas cells generated in the synthetic plastic. One surface of a fin has arcuate edge portions curved toward and intersecting with and secured to the edge of the skin surface on the opposite side of a fin; with the exception of one mounting edge of a fin.

Heretofore some fins for archery arrows have been made of solid plastic that are stiff; and relatively heavy compared with my invention. Square or blunt edges of the solid plastic fin tend to create air resistance and turbulence when secured to an arrow shaft and shot from a bow. Solid plastic fins result in more rear end weight on the arrow shaft than is desired.

A better form of fin has been made from turkey feathers. The turkey feathers are split longitudinally on the quill thereof. Each feather is trimmed to a heretofore preferred shape and size. The trimmed rough edges of the feathers are thick and blunt which tend to create a resistance and some turbulence. Feathers vary considerably and it is difficult to find sufficient feathers that are suitable for the archery trade. There are not enough archery-type feathers on a turkey which are usually restricted to several.

Archery is a great sport with arrows shot at targets for competitive records.

My improved fins are all like fins in extremely light weight and shape and are waterproof with a smooth skin surface on each face. One smooth skin surface has arcuate edge portions that curve toward and are secured to the edge of the opposite skin surface. The juncture of the two skin edges produce a featherlike edge to prevent air turbulence and resistance. The expanded synthetic plastic between the side skin surfaces is of extremely light weight and is secured thereto to produce a tough, flexible and pliable fin for easy mounting on an arrow. The arrows with my improved fins can be used over and over again without damage to the shape or surfaces thereof.

My fins are all alike and can be easily mounted on an arrow shaft in a helix like manner in parallelism to rotate and guide an arrow on a set course for increased accuracy similar to a projectile or bullet that rotates through the air from the effect of rifling in a gun. My fins on an arrow will travel farther with less resistance on a given force than other types of fins.

My fins may be furnished in kits with or without arrow shafts to archery sportsmen for assembling and use. Assembled arrows with the fins mounted thereon may also be furnished to the trade.

This invention may be more fully understood with reference to the accompanying drawing:

FIG. 1 is a plan view illustrating an arrow shaft with a set of my improved fins mounted thereon. The forward portion of the arrow is broken away;

FIG. 2 is a view illustrating a longitudinal side elevation of FIG. 1;

FIG. 3 is a view illustrating the leeward or rear end of FIG. 2. A directional arrow is shown to indicate the rotation of the fins with the arcuate edge portions of the surfaces shown on the air pressure side, and forming a featherlike edge on the leeward edge to reduce air friction and turbulence;

FIG. 4 is a view illustrating one form of a mold plate resting on a platen. Semiliquid plastic is screened into the mold to form two like fins. The plastic is then expanded with an internally generated gas to thicken and give the arcuate curved edges of one surface curved toward and secured to the edge of the opposite skin surface. The dash lines shown separating the like fins indicates a shear line for the separation thereof;

FIG. 5 is a view illustrating the longitudinal elevation of the

raised or expanded fins as shown in FIG. 4. The mold plate is broken away for illustration and is resting on the platen;

FIG. 6 is a view illustrating an enlarged section of each fin, taken on broken lines 6-6 of FIG. 4; and

FIG. 7 is a view illustrating the opposite face of a fin from that shown in FIG. 4.

The improvement in this invention relates to the structure of a fin 10. One form of making the improved like fins is given in FIG. 4 of the accompanying drawing. Other forms and methods may be used for producing the described structure of my improved fin 10.

My improved fin 10 is made of elongated triangularlike shape to conform with favorable aerodynamics.

The skin surfaces 11 and 12 on the opposite sides of the fin 10 are spaced with expanded synthetic plastic material 13 and are secured thereto.

The synthetic plastic materials most favorable for making the fin are plastisol and polyurathane expanded with an internally generated gas.

The skin surfaces 11 and 12 are smooth and impervious to water. Skin surface 11 is provided with arcuate edge portions 14 curved toward the edges 15 thereof which are secured to the edges 16 of skin surface 12 to produce featherlike edges on the leeward edges of the fin 10.

A mounting edge 17 on the fin 10 is provided for mounting plurallike fins 10 on an arrow shaft 18 spaced around the shaft in parallelism and helix form.

A lug 19 can be provided on the windward end 20 of the fin 10 for mounting the fin 10 on a shaft 18 of an arrow. After the mounting edge 17 is secured to the shaft 18, the lug 19 may be removed along the dash line indicated with a cutting tool not shown.

Referring to FIG. 4 of the drawing; the mold 21 rests on the plate 22.

I claim:

1. A fin of synthetic plastic being extremely light in weight, tough, very flexible, having featherlike leeward edges, and being impervious to water on all exposable surfaces with the exception of a mounting edge; the fin comprising in combination:

- a. a fin of elongated triangular shape;
- b. a mounting edge being on said fin;
- c. a smooth skin surface being on each side of said fin and over all exposable surfaces of said fin, with the exception of said mounting edge;
- d. expanded plastic material being secured to and spacing the smooth skin surfaces of each side of said fin; and
- e. one side skin surface of said fin having arcuate edge portions curved toward, and having the edge thereof, intersecting with and being secured to the edge of the skin surface of the opposite side of said fin to form a featherlike edge.

2. A fin a synthetic plastic being light in weight, tough, very flexible, having featherlike edges with the exception of a mounting edge, impervious to water on all exposable surfaces with the exception of the mounting edge; the fin comprising in combination:

- a. a fin of triangular shape;
- b. a mounting edge being on said fin;
- c. each side of said fin being a smooth skin;
- d. expanded plastic material spacing said sides of smooth skin surfaces; and
- e. One side skin surface of said fin having arcuate edge portions curved toward and being secured to the edge of the opposite side of smooth skin surface to form a featherlike edge.

3. A fin as claimed in claim 2;

- a. a plurality of said fins;
- b. an arrow shaft; and
- c. and said plurality of said fins being mounted on said arrow shaft in parallelism and helix form, for rotation of the arrow when shot from an archery bow.