

[54] **TARGET FOR USE IN ARCHERY**

[75] Inventor: **Carlo Piccini**, Brescia, Italy

[73] Assignee: **Luigi Franchi S.p.A.**, Brescia, Italy

[22] Filed: **Oct. 11, 1974**

[21] Appl. No.: **514,048**

[30] **Foreign Application Priority Data**

Oct. 11, 1973 Italy..... 30002/73

[52] U.S. Cl. 273/102.4; 273/102 B

[51] Int. Cl.² F41J 3/00

[58] Field of Search..... 273/95 R, 102 R, 102 S,
273/102.4, 102 B

[56] **References Cited**

UNITED STATES PATENTS

1,602,441	10/1926	Mallery	273/102 B
3,227,449	1/1966	Schwab	273/102.4
3,477,724	11/1969	Wilcox	273/102.4
3,720,411	3/1973	DeVogelaere	273/102.4

Primary Examiner—Richard C. Pinkham

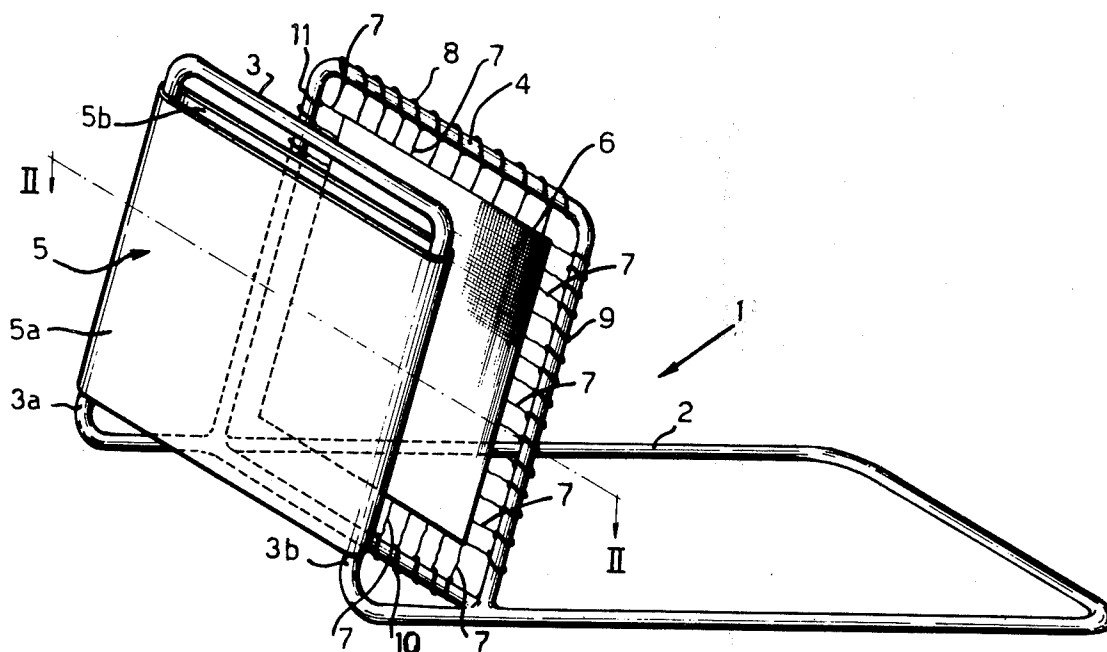
Assistant Examiner—Marvin Siskind

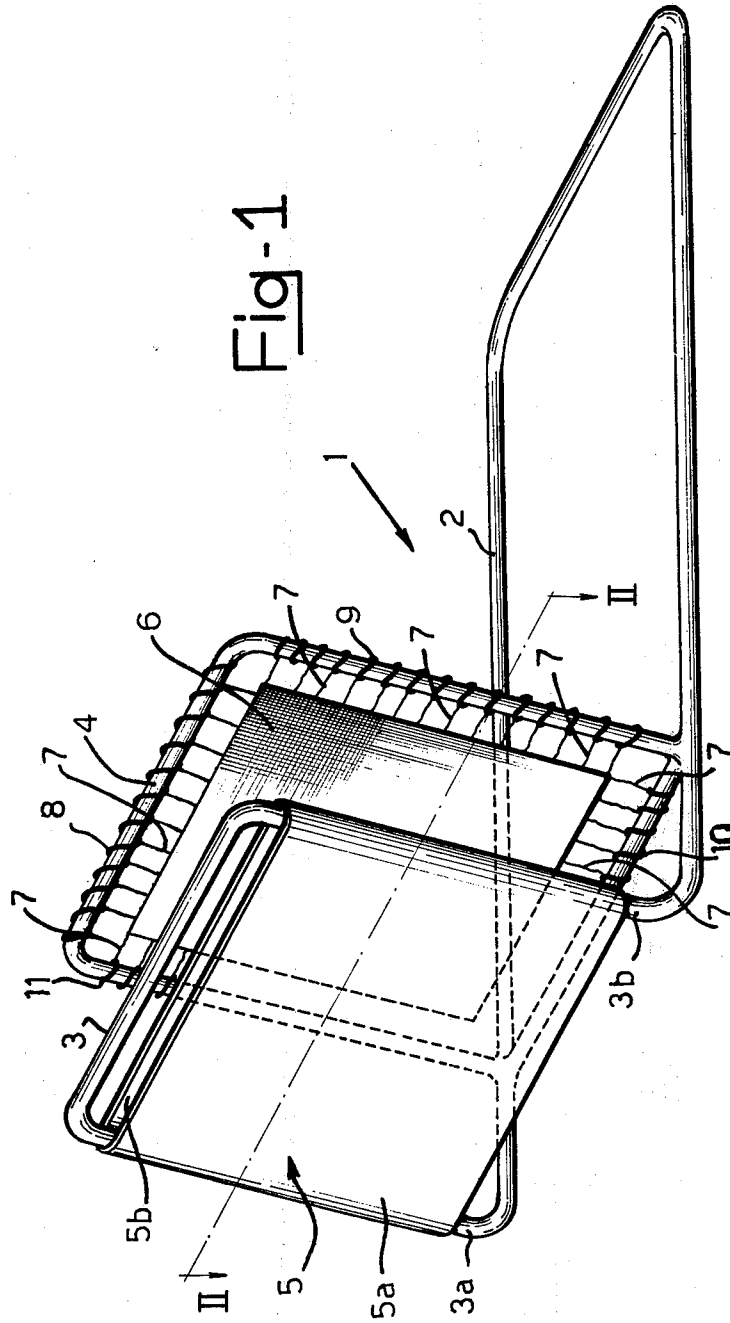
Attorney, Agent, or Firm—Sughrue, Rothwell, Mion, Zinn and Macpeak

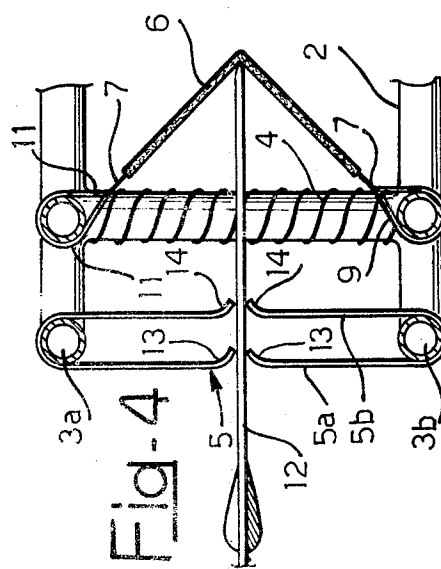
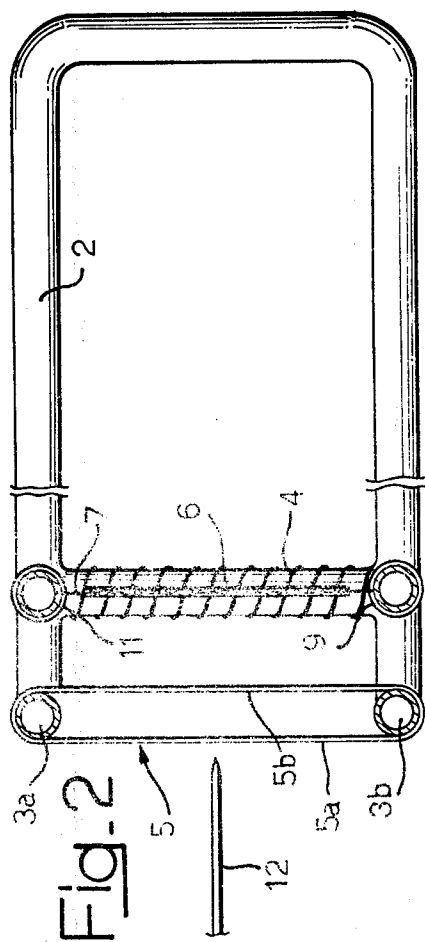
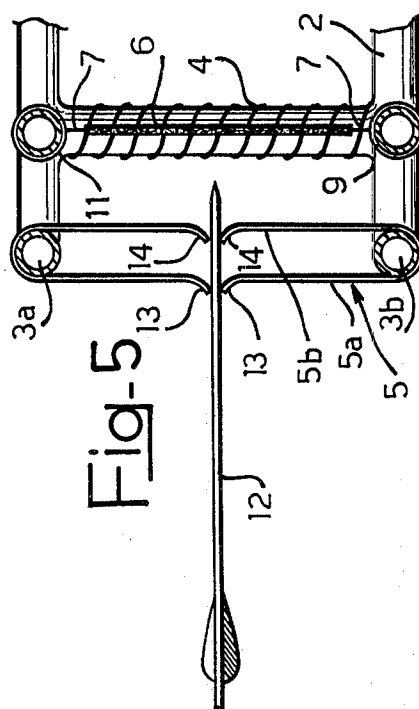
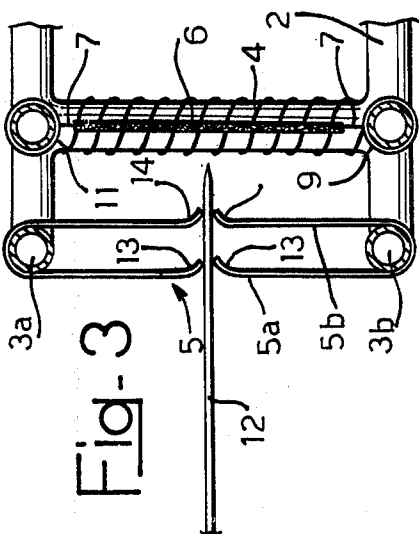
[57] **ABSTRACT**

A target for use in archery comprising a base frame carrying two transverse subframes is disclosed. The base frame rests flat on the ground with the two transverse subframes, which are inclined at a small acute angle to the perpendicular to the base frame projecting upwardly therefrom. The front subframe carries a sheet of material easily penetrated by an arrow, such as cardboard or plastics, on which the target is marked, and the rear subframe carries a resilient knotted mesh material the mesh size of which cannot expand to a size greater than the cross section of the arrows to be used. The mesh is elastically supported at its periphery so that it absorbs the energy of an arrow thereby bringing it to rest. Because the material of the target face is easily penetrated the arrow can be easily removed without strain to the arrow shaft.

2 Claims, 5 Drawing Figures







TARGET FOR USE IN ARCHERY

BACKGROUND OF THE INVENTION

The present invention relates to a target for use in archery.

The most commonly used targets at present in use for archery are formed as bodies of compressed straw having a covering of jute fabric; this covering is needed in order to prevent pieces or flakes of straw from scattering each time the target is hit by an arrow or an arrow is withdrawn from the straw.

Targets of this known type have a serious disadvantage, which is the difficulty of withdrawing arrows driven into them, which difficulty is due partly to the fact that the target is made of compressed straw, and partly to the fact that the arrow, upon penetrating into the straw, causes the formation of a number of burrs pointing in the direction of penetration; these burrs strongly resist the disengagement of the arrow by virtue of the wedging effect of their shape which presses them firmly against the arrow when an attempt is made to withdraw it in the direction opposite the direction of penetration.

These burrs exert a drawing effect on the shaft of an arrow as it is being withdrawn: if the arrow is of wood such drawing effect, together with the wedging effect of the individual burrs, causes the formation of notches and incisions in the shaft, which can be of a considerable size, and which diminish the physical strength of the arrow. In addition, this wedging effect of the burrs can cause the formation on the arrow of incrustations of straw which, even though of limited thickness, may give rise to perceptible deviations in the trajectories of subsequent shots of the arrow. In the case of metal shafted arrows, the resistance which the chipped edges offer to the removal of the arrow from the target frequently entails the risk of bending the metal shaft, consequently rendering the arrow useless and having to be discarded.

Another disadvantage of the known compressed straw targets is their weight and bulky dimensions which make handling, storage and transport, difficult and expensive.

OBJECT OF THE INVENTION

The object of this invention is to provide a target for use in archery, which possesses structural characteristics which are such that all the above mentioned disadvantages of a compressed straw target are avoided.

SUMMARY AND ADVANTAGES OF THE INVENTION

According to the present invention, a target for use in archery comprises a base frame, a first subframe carried on said base frame and extending transversely with respect thereto, a second subframe carried on said base frame, said second subframe extending substantially parallel to, and spaced from said first subframe, a target face comprising at least one sheet of a material readily penetrated by an arrow shot from a bow, said target face being carried by said first subframe, a mesh fabric of resiliently deformable yarn so woven that the mesh size can be increased by resilient deformation of the yarn up to a predetermined maximum mesh size, and means resiliently mounting the periphery of said mesh material to said second subframe.

Preferably said target face sheet is in the form of an endless band stretched over two parallel arms of said first base frame to form two parallel layers of said target face material. In a preferred embodiment said base frame, said first subframe, and said second subframe, are all made of tubular metal.

The advantages of such a construction are its inherently light weight, which makes transport and handling very easy, and the ease with which arrows which have penetrated the target face can be removed without causing any damage to the shaft of the arrow and without having to apply a force such as might bend the shaft accidentally.

Various other features and advantages of the invention will become apparent from a consideration of the following description, with reference to the accompanying drawings, which is provided purely by way of non-restrictive example.

BRIEF DESCRIPTION OF THE DRAWINGS

FIG. 1 is a perspective view of an archery target formed as an embodiment of the present invention;

FIG. 2 shows a sectional view taken on the line II—II of FIG. 1;

FIGS. 3, 4 and 5 are sectional views similar to FIG. 2, showing the behaviour of the target of FIGS. 1 and 2 as an arrow penetrates and is withdrawn from the target face.

DESCRIPTION OF THE PREFERRED EMBODIMENT

Referring to the drawings there is shown a framework generally indicated 1, made from metal tubing, and consisting of a base frame 2 in the form of a metal tube formed into a rectangle the longer arms of which are bent at right angles at one end and form a first transverse subframe having two side arms 3a, 3b. A second transverse subframe 4 is attached to the base frame 2 a short distance from and parallel to the first subframe 3. The second subframe 4 is attached to the base frame 2 by known means, such as welding.

The subframes 3 and 4 are not perpendicular to the base frame 2 but form a small acute angle to the plane perpendicular to the plane of the base frame 2.

The subframe 3 supports a target face sheet 5 of a material which is easily perforated by an arrow shot from a bow, for example the material may be a single-layer packing cardboard, card or the like, or a plastics material, for example, expanded polyvinyl chloride of a thickness in the region of 5 mm. In the example illustrated, the target face sheet 5 is in the form of an endless belt which is fitted over the subframe 3 from one end and is supported and stretched by the uprights 3a and 3b of the subframe 3. The front face 5a of the said sheet 5 is marked with, or otherwise carries, a number of concentric rings (not shown) which make a target.

The second subframe 4 supports, as will be described later, a mesh fabric 6 of known type in which each stitch is locked to form a closed loop. The mesh is woven of triple nylon threads, of 840 denier, of high tenacity, and densely woven (12 loops per square inch). The said mesh fabric 6 is of a commercially available type in which each loop is resiliently deformable to a given size which it cannot exceed without breaking the yarn. In the example illustrated, the maximum size of the loops of the mesh is less than the area of the cross-section of the shaft of an arrow 12 normally used in the

sport of archery and the tensile strength of the threads is such that the force applied by the impact of an arrow is less than the breaking strain of the threads. Around the second subframe 4 is wound, helically, a thick elastic thread the loops of which are indicated 8, 9, 10, 11. Into these loops 8, 9, 10, 11 are engaged the hooked ends of a plurality of tie rods 7 the other ends of which are attached evenly spaced around the rim of the panel 6 of resilient netting material.

Referring to FIGS. 2 to 5, should an arrow 12 strike the target it passes through the double wall 5a and 5b of the sheet 5, meeting very limited resistance in view of the nature of the sheet and its small thickness. As the arrow passes through the sheets 5a and 5b there is no strain on the shaft of the arrow due to the limited resistance of the sheets 5a and 5b. Where the arrow 12 passes through the sheets 5a, 5b it forms burrs 13, 14 (FIG. 3) turned towards the direction of movement of the arrow. Having passed through the sheet 5, the arrow next encounters the mesh fabric 6 which, under the violent impact, distorts as shown in FIG. 4, stretching the elastic loops 8, 9, 10 and 11 by which it is peripherally supported and bringing the arrow 12 to rest by absorbing its energy. Immediately afterwards (FIG. 5) the mesh fabric 6 is returned by the elastic loops 8, 9, 10 and 11 to its initial position, pushing the arrow 12 backwards and partly out of the double wall 5a, 5b of the said target sheet 5. This partial disengagement of the arrow 12 causes the burrs 13 and 14 of the sheet 5 to be reversed with respect to their original position illustrated in FIG. 3, as a result of which the manual removal of the arrow from the double walls 5a and 5b of the sheet 5 is greatly facilitated. Because of its construction the mesh fabric 6 cannot be penetrated by the arrow 12 even if the arrow strikes the target at very high speed.

The advantages of the target of this invention lie essentially in the almost complete absence of strain on

the shaft of the arrow as it passes through the target face, and by the ease with which the arrow can be extracted from the target. Moreover as an alternative to welding the frame as described in relation to the embodiment herein described, the tubes may be formed as individual component parts, which can be connected together, for example by fitting into each other, perhaps with the assistance of bolts or clamps or other known locking means to hold them in place. In this way the framework, when it is not in use, can be dismantled into its component parts, and packed flat. This provides considerable advantages for storage and transport.

I claim:

1. A target for use in archery comprising:

a base frame,

a first subframe carried on said base frame and extending transversely with respect thereto, said subframe being comprised of two parallel spaced apart arms,

a second subframe carried on said base frame, said second subframe extending substantially parallel to, and spaced from said first subframe,

a target face sheet comprised of a material readily penetrated by an arrow shot from a bow, said target face sheet being in the form of an endless band stretched over said arms of said first subframe to form two parallel layers of said target face material, a mesh fabric of resiliently deformable yarn so woven that the mesh size can be increased by resilient deformation of the yarn up to a predetermined maximum mesh size, and

means resiliently mounting the periphery of said mesh material to said second subframe.

2. The target of claim 1 wherein said base frame, said first subframe, and said second subframe, are all made of tubular metal.

* * * * *

40

45

50

55

60

65