A composite archery target 10 includes a first member 12 fabricated from a tear resistant material, a second member 14 fabricated from a healing material, the second member 14 is disposed about the first member 12, and a glue 16 for securing the second member 14 to the first member 12; such that a composite archery target 10 is fabricated that prevents an arrow from traveling through the target 10, that minimizes damage to the target 10 when the arrow is removed from the target 10, and that allows an archer to withdraw an arrow from the target 10 with a relatively small extraction force. A third member 52 may be included when preselected arrows require a modified composite archery target 50 with added resistance to the penetrating capability of the preselected arrows.
COMPOSITE ARCHERY TARGET

[0001] This application is based on U.S. Provisional Application No. 60/998,774, filed on Oct. 13, 2007.

BACKGROUND OF THE INVENTION

[0002] 1. Field of the Invention

[0003] This invention relates to archery targets, and more particularly, to composite archery targets utilizing at least two different materials with different densities to configure the archery target.

[0004] 2. Background of the Prior Art

[0005] Archery targets are still in use today even after centuries of use. The problem with today's targets as it has been throughout history is that archery targets are relatively heavy, difficult to carry, and expensive to transport and ship. Further, archery targets have a relatively short "life span"; are permanently damaged after being partially or completely penetrated by an arrow, the target being further damaged when an arrow that partially penetrates a target is manually removed; archery targets have a tendency to "grasp" an arrow when the arrow penetrates the target, thereby making it difficult for an archer to remove the arrow from the target; and archery targets cannot be "shot at" by archers from every angle or position relative to the target, including shooting at all sides or at top and bottom surfaces of the target.

[0006] A need exists for an archery target that is relatively light weight, that prevents an arrow from traveling through the target, that minimizes damage to the target when an arrow is extracted therefrom, that reduces the extraction force required from an archer when the archer removes the arrow from the target, and that allows an archer from any position to shoot at any side or surface of the target.

SUMMARY OF THE INVENTION

[0007] It is an object of the present invention to overcome many of the disadvantages associated with prior art archery targets.

[0008] A principal object of the present invention is to provide a composite archery target. A feature of the archery target is an inner core or first member fabricated from a tear resistant material. Another feature of the archery target is an outer second member fabricated from a "healing" type material that returns to its original configuration after an arrow is removed therefrom. Yet another feature of the archery target is an adhesive that secures the second member to the first member. An advantage of the archery target is that it is light weight, easy to transport and ship. Another advantage of the archery target is that it reduces damage from arrows and has a relatively "long life." Yet another advantage of the archery target is that it reduces the amount of force required from an archer to extract an arrow from the target. Still another object of the archery target is that it allows an archer to shoot arrows into the target from all directions including all sides, top and bottom.

[0009] Another object of the present invention is to provide a modified composite archery target. A feature of the modified archery target is a third member fabricated from a relatively dense material capable of preventing "broad head" arrows from piercing the target, then continuing flight until engaging another object or person. An advantage of the modified composite archery target is safety maintained irrespective of the type of arrow being shot, or the type of bow shooting the arrow.

[0010] Briefly, the invention provides a composite archery target comprising a first member fabricated from a tear resistant material; a second member fabricated from a healing material, said second member being disposed about said first member; and means for securing said second member to said first member, whereby a composite archery target is fabricated that prevents an arrow from traveling through the archery target and that minimizes damage to the archery target when the arrow is forcibly removed from the archery target.

[0011] Further, the invention provides a target device comprising a tear resistant core material; a memory material surrounding and secured to said core material; a safety material secured to at least one portion of said memory material; and means for securing said core, memory and safety materials to a stand.

[0012] Also, the invention provides a method for fabricating an archery target, said method including the steps of providing a tear resistant first member; securing a second member about said first member, said second member being fabricated from a material that returns to its original configuration after an arrow is removed therefrom; and securing a third member about said second member, said third member being fabricated from a safety material that prevents preselected arrows from piercing said archery target and continuing flight.

BRIEF DESCRIPTION OF THE DRAWINGS

[0013] These and other objects, advantages and novel features of the present invention, as well as details of an illustrative embodiment thereof, will be more fully understood from the following detailed description and attached drawings, wherein:

[0014] FIG. 1 is a perspective view of a composite archery target in accordance with the present invention.

[0015] FIG. 2 is a perspective, exploded view of a composite archery target in accordance with the present invention.

[0016] FIG. 3 is a perspective, exploded view of a modified composite archery target in accordance with the present invention.

DESCRIPTION OF THE PREFERRED EMBODIMENT

[0017] Referring now to FIGS. 1 and 2, a composite archery target in accordance with the present invention is denoted as numeral 10. The archery target includes a first member 12 fabricated from a tear resistant material, a second member 14 fabricated from a "healing" material, the second member 14 being disposed about the first member 12, and an adhesive material 16 for securing the second member 14 to the first member 12, whereby a composite archery target 10 is fabricated that prevents an arrow (not depicted) from traveling through the archery target 10 and that minimizes damage to the archery target 10 when the arrows are forcibly removed from the archery target 10.

[0018] The first member 12 or inner core material is fabricated from a relatively "light weight," tear resistant material having sufficient density to prevent an arrow from passing or traveling completely through the tear resistant material. The first member 12 is substantially a cube having a square or
rectangle configuration when taking front or top views of the first member 12. The dimensions of the first member 12 will correspond to the type of arrow being shot at the target 10 and the type of bow (not depicted) shooting the arrow. More specifically, the greater the force generated by the bow and the more penetrating the design of the arrow head, the larger the first member 12 required to prevent the arrow from traveling through the target 10. The preferred tear resistant, light weight material is polystyrene or a polystyrene braid with a presel ected rating in pounds, however a myriad of alternative materials may be utilized including but not limited to ethafoam (manufactured by EAR Speciality Composites, and having an address of 79112 Lovesville Rd., Indianapolis, Ind. 46268), polyester batting (manufactured by Fairfield Processing, and having an address of Rose Hill Ave. Danbury, Conn. 06810), delcron, kevlar, and combinations of polystyrene, polystyrene braid, ethafoam, polyester batting, delcron, and kevlar may be used to fabricate the first member 12.

[0019] The second member 14 or outer “healing” material is fabricated from a relatively light weight material that has a “memory,” that causes the material to assume its original configuration after removing an arrow which has penetrated the second member 14, thereby giving the target 10 a clean appearance even after being penetrated by multiple arrows. The preferred outer material is polyethylene, however polyurethane, polypropylene, delcron, kevlar, and combinations of ethafoam, polyurethane, polypropylene, delcron, and kevlar may be used to fabricate the second member 14. The second member 14 includes six rectangular configured “bricks” 18 that attach to each face 15 of the first member 12 via an adhesive, thereby allowing one or more archers to shoot at the target 10 from a myriad of positions. The dimensions of the bricks 18 promote the complete covering of the faces 15 of the first member 12 by the bricks 18. Further, the “thickness” of each brick 18 corresponds to the force generated by the bow and the design of the arrow head. As with the first member 12, the greater the force generated by the bow and the more penetrating the design of the arrow head, the thicker the bricks 18 of the second member 14.

[0020] The first and second members 12 and 14 are secured together by an adhesive 16 such as a glue (manufactured by 3M, and having an address of 3M Center, St. Paul, Minn. 55144). Alternatively, staples or similar mechanical elements may be used to secure the second member 14 about the first member 12, thereby fabricating a composite archery target 10 that prevents an arrow from traveling through the archery target 10 and minimizes damage to the target 10 when the arrow is removed, irrespective of design of the arrow or the bow force urging the arrow into the target 10. To further challenge an archer, a plurality of “mini-targets” 20 are removably secured or otherwise attached to the surface of the bricks 18 of the second member 14. The configuration of the mini-targets may vary pursuant to the archer’s requirements.

[0021] In operation, an archery target 10 is fabricated from two dissimilar materials with different densities that form first and second members 12 and 14, the material of fabrication corresponding to arrow head design and the force urging the arrow into the target 10. Further, the first and second members 12 and 14 are configured and dimensioned to resist penetration from an arrow impacting the target 10, the distance of penetration of the arrow into the target 10 being dependent upon the force generated by the bow shooting the arrow, the design of the arrow head, and the distance of the archer from the target 10. The second member 14 is secured about the first member 12 via an adhesive 16 such that the first member 12 has no exposed portion that might be struck by an arrow. The target 10 may be set upon a ground surface, or elevated above ground by a stand or wire secured to one or more bricks 18 of the second member 14. When an arrow shot from a bow impacts one side of the target 10, the material of the second member 14 begins to slow the arrow until the arrow engages the first member 12, whereupon the arrow is ultimately stopped and retained, thereby preventing the arrow from exiting an opposite side of the target 10. The archer then grasps the arrow and with a relatively small amount of force, removes the arrow from the target 10 without damaging the target 10, resulting in target with a “clean” appearance.

[0022] Referring now to FIG. 3, a modified composite archery target in accordance with the present invention is denoted as numeral 50. The modified target 50 includes the first and second members 12 and 14 of the composite archery target 10, and a third member 52 disposed between the first member 12 and one brick 18 of the second member 14. The third member 52 is fabricated from a relatively dense, “safety” material such as polyethylene cross linked foam or a polyethylene of similar density, manufactured by Wisconsin Foam located in Milwaukee, Wis. The function of the third member 52 is to prevent presel ected arrows (not depicted) with high penetrating features, such as “broad head” arrows, from piercing the modified target 50, then continuing flight until engaging another object or person.

[0023] The modified target 50 maintains safety by keeping projected arrows in the modified target 50, irrespective of the type of arrow being shot or the power of the bow shooting the arrow. The modified target 50 may vary in dimension and configuration pursuant to the requirements of the user, the requirements being based on the distance between the user and the modified target 50, and the size of hunted animal being represented by the modified target 50. Further, the modified target 50 may be structured such that multiple third members 52 are disposed between the first member 12 and selected bricks 18 of the second member 14, thereby maintaining safety for arrows projected from a plurality of directions by stopping broad head arrows or substantially similar arrows from going completely through the modified target 50. Also, when a plethora of arrow designs are being shot at one modified target 50, the material of fabrication of the first and second members 12 and 52 may be interchanged to promote the penetration of the modified target 50 by all the different arrows, thereby preventing an arrow with marginal penetration from “bouncing off” or ricocheting from the modified target 50 and striking other objects or persons. Should the arrow designs require further target changes to achieve optimum performance; the first, second and third members 12, 14 and 52 may be interchanged and the respective densities of each material may be varied as required to prevent some arrows from ricocheting off the target, and other arrows from traveling completely through the target.

[0024] The modified target 50 utilizes the glue 16 of the composite archery target 10 to secure the first, second and third members 12, 14 and 52 together. The modified target 50 includes a plurality of nylon straps 54 secured about the target 50, via velcro or similar securing means, to provide a means for securing either target 10 and 50 to a ground stand (not depicted), thereby enabling a user to quickly and inexpensively position a target 10 and 50 for archery practice.

[0025] The foregoing description is for purposes of illustration only and is not intended to limit the scope of protection
accorded this invention. The scope of protection is to be measured by the following claims, which should be interpreted as broadly as the inventive contribution permits.

1. A composite archery target comprising:
   a first member fabricated from a tear resistant material;
   a second member fabricated from a healing material, said second member being disposed about said first member; and
   means for securing said second member to said first member, whereby a composite archery target is fabricated that prevents an arrow from traveling through the archery target and that minimizes damage to the archery target when the arrow is forcibly removed from the archery target.

2. The archery target of claim 1 wherein said first member includes polystyrene.

3. The archery target of claim 1 wherein said first member includes the group consisting of polystyrene, ethafoam, polyurethane, polypropylene, polyester batting, delcron, kevlar, and combinations thereof.

4. The archery target of claim 1 wherein said second member includes polyethylene, polyurethane, polypropylene, and combinations thereof.

5. The archery target of claim 1 wherein said second member includes ethafoam, delcron, kevlar, and combinations thereof.

6. The archery target of claim 1 wherein said securing means includes an adhesive material.

7. The archery target of claim 1 wherein said securing means includes a glue.

8. A target device comprising:
   a tear resistant core material;
   a memory material surrounding and secured to said core material;
   a safety material secured to at least one portion of said memory material; and
   means for securing said core, memory and safety materials to a stand.

9. The target device of claim 8 wherein said core material includes polystyrene.

10. The target device of claim 8 wherein said core material includes polystyrene, ethafoam, polyester batting, delcron, kevlar, and combinations thereof.

11. The target device of claim 8 wherein said memory material includes polyethylene.

12. The target device of claim 8 wherein said memory material includes Delcron.

13. The target device of claim 8 wherein said memory material includes ethafoam, delcron, kevlar, and combinations thereof.

14. The target device of claim 8 wherein said securing means includes glue.

15. The target device of claim 8 wherein said safety material includes polyethylene cross linked foam.

16. The target device of claim 8 wherein the disposition of said core material and said safety material are interchanged.

17. A method for fabricating an archery target, said method including the steps of:
   providing a tear resistant first member,
   securing a second member about said first member, said second member being fabricated from a material that returns to its original configuration after an arrow is removed therefrom; and
   securing a third member between said first and second members, said third member being fabricated from a safety material that prevents preselected arrows from piercing said archery target and continuing flight.

18. The method of claim 17 wherein said step of providing a tear resistant material includes the step of providing polystyrene.

19. The method of claim 17 wherein said step of providing a tear resistant material includes the step of providing polyurethane, kevlar, delcron, ethafoam, polyester batting, and combinations thereof.

20. The method of claim 17 wherein said step of securing a second member about said first member includes the step of providing ethafoam for said second member.

21. The method of claim 17 wherein said step of securing a second member about said first member includes the step of providing ethafoam, delcron, and combinations thereof for said second member.

22. The method of claim 17 wherein said step of securing a third member between said first and second members includes the step of providing polyethylene cross linked foam for said third member.

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