NONPENETRATING ARCHERY TARGET AND ARROW TIP

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ABSTRACT
An arrow tip and target system, including a tip having a removable marking material integral with an end surface of the tip, and a target. An arrow for marking a target, including a shaft and a tip fixedly mounted thereon, the tip including a removable marking material integral with an end surface of the tip. A tip for attachment to an arrow, including a removable marking material integral with an end surface of the tip. A kit including a target, arrow tips, marking material, games, and rules for the games. A method of playing a game with an arrow tip and target system by attaching a tip including removable marking material to an arrow, launching the arrow towards a target according to the game being played, contacting the tip with the target, and removably marking the target.
NONPENETRATING ARCHERY TARGET AND ARROW TIP

CROSS-REFERENCE TO RELATED APPLICATIONS

[0001] This application claims the benefit of priority under 35 U.S.C. Section 119(g) of U.S. Provisional Patent Application No. 61/147,177, filed Jan. 26, 2009, which is incorporated herein by reference.

BACKGROUND OF THE INVENTION

[0002] (1) Field of the Invention
[0003] The present invention relates to archery. In particular, the present invention relates to an arrow tip and target system.

[0004] (2) Description of Related Art
[0005] Research has shown that the number one reason why people interested in archery do not practice year round with their bows is boredom and inconvenience. The number of archers and hunters is declining steadily on a yearly basis. A revival of the sport of archery is needed. One way to accomplish this is by creating methods of playing games with bow and arrows when hunting is not in season. Such games can be created by including a marking device on the arrow to determine where the arrow has hit a target.

[0006] U.S. Pat. No. 5,669,836 to Hill discloses two embodiments of an arrow with a marking head. In the first embodiment, the head delivers a spot of paint to the target. The head is formed of a truncated cone of elastomeric material having a narrow end attached to the shaft and having a marker receptacle formed in the wide end as shown in FIG. 1. The marker receptacle includes a cavity formed in the head opposite the shaft. The cavity opens to the end surface of the head. It holds a paste-like paint. A plurality of slots extend radially outward from the cavity through the head. The slots define leaves of elastomeric material. These leaves deform outwardly upon contact with a target. When the arrow strikes a target, the leaves deform outwardly and the paint in the marker receptacle and the paint therein come into contact with the target. The paint must be of appropriate viscosity to adhere to the target. In a second embodiment, the head delivers an adhesive marker rather than paint (FIG. 5). The head has a flat surface in a plane which is transverse to a longitudinal axis of the shaft. A marker is affixed to the flat surface. It is adhesive on one side and adhesive on the other side. The coefficients of adhesion are such that upon striking the target, the marker loses adhesion to the arrow head and adheres to the target.

[0007] U.S. Pat. No. 6,142,895 to Jason discloses an arrow with a marking head which contains a paint ball which bursts on impact with a target (FIGS. 1 and 2). The head includes a cylindrical plug formed of hard rubber or plastic. The plug has a concavity in its front end within which a paint ball is sealed and affixed by means of a suitable adhesive. The paint ball has a spherical shell formed of a resilient plastic material. It contains a quantity of liquid paint which is preferably water soluble and of a color easily seen at a distance. Upon impact with a target, the shell ruptures, marking the target with paint.

[0008] These arrows provide markings that are not easily removed for multiple use of the arrows on a target. Furthermore, these arrows must be purchased separately and cannot be attached simply to a conventional arrow. Therefore, there is a need for a bow and arrow system that can be reused multiple times.

BRIEF SUMMARY OF THE INVENTION

[0009] The present invention provides a target system, including an arrow tip with removable marking material integral with an end surface of the tip, and a target.
[0010] The present invention also provides for an arrow for marking a target, including a shaft and a tip fixedly mounted thereon, the tip including a removable marking material integral with an end surface of the tip.

[0011] The present invention further provides for a tip for attachment to an arrow, including a removable marking material integral with an end surface of the tip.

[0012] The present invention provides for a kit, including a target, arrow tips, marking material, games/rules, and a stand.

[0013] The present invention also provides for a method of playing a game with the arrow tip and target system, by attaching a tip including marking material to an arrow, launching the arrow towards a target according to the game being played, contacting the tip with the target, and removably marking the target.

BRIEF DESCRIPTION OF THE SEVERAL VIEWS OF THE DRAWINGS

[0014] Other advantages of the present invention will be readily appreciated as the same becomes better understood by reference to the following detailed description when considered in connection with the accompanying drawings wherein:
[0015] FIG. 1 is a representation of the arrow and target system;
[0016] FIG. 2A is a side view of the arrow and tip, and FIG. 2B is a cross-sectional view of the arrow and tip;
[0017] FIGS. 3A-3D are views of the target and stand;
[0018] FIGS. 4A-4D are views of the stand;
[0019] FIG. 5 is a front view of the target;
[0020] FIGS. 6A-6G are various views of the tip;
[0021] FIG. 7 is a view of a side of the target with a game face; and
[0022] FIG. 8 is a view of an opposite side of the target with a different game face.

DETAILED DESCRIPTION OF THE INVENTION

[0023] The present invention provides an arrow tip and target system, as shown generally in FIG. 1, that allows an archer to shoot a nonpenetrating arrow 12 at a target 14 and leave a mark 16 on the target 14, preferably removable, i.e. erasable, to show the accuracy of the archer's shot.

[0024] As shown in FIG. 2A, the arrow 12 includes a shaft 18 and a tip 20 fixedly mounted thereon. The shaft 18 is a conventional shaft. Preferable, the tip 20 can be mounted on conventional arrows 12 by the user, or alternatively, the tip 20 can be integrally formed on an arrow 12 that the user can purchase. As shown in the cross-sectional view in FIG. 2B, the tip can include a substantially tubular portion 22 for frictionally gripping an end 24 of the shaft 18 thereinside and the tip 20 can slide onto the end 24. Other methods of affixing the tip 20 onto the shaft 18 can be accomplished by means known in the art, for example by adhesive or glue. The tip 20 can also screw onto the end 24 with corresponding threaded tubular portion 22 and end 24. Preferably, the tip 20 is made from a rubber-like material, having a frusto-conical body.
portion 26 and an end surface 28. The tip 20 can also be made of any suitable material, such as felt, and have any suitable shape to contact and mark the target 14. The tips 20 of the present invention are safer than firing field points.

The tip 20 includes a marking material 30 integral with the end surface 28. The marking material 30 can be applied in various ways by the user or can be integrated into the end surface 28 of the tip 20 during manufacture. For example, the user can dip the end surface 28 in the marking material 30, such as chalk. Alternatively, there can be an ink feed to the end surface 28 or any other means of dressing the tip 20 with the marking material 30. Also, the marking material 30 can be any suitable material that leaves a mark on the target 14 that can be removed easily by the user. Various views of the tip 20 and marking material 30 are shown in FIGS. 6A-6G.

The target 14 is essentially a flat surface having various game faces, for example, a tic-tac-toe board (as in FIG. 7) or an around-the-world board, that can be hung on a stand 32, as shown in FIGS. 3A-3D and FIG. 5. Various pieces of stand 32 are shown in FIGS. 4A-4O that can be configured and attached together to form a stand. The target 14 can be configured in an infinite number of ways to display the game. The target 14 can also include different game faces on a front side and a back side of the flat surface (such as in FIGS. 7 and 8), so that the target 14 can be reversed when a different game is desired to be played. The target 14 is preferably a tarp, but it can be made of other materials known in the art. The target 14 lasts much longer than traditional 3-D targets and has more variety of play options than a 3-D target. Furthermore, the target 14 of the present invention is less expensive than a 3-D target. The target 14 can be of any suitable size to suit the game played as well as the age and skill level of the user.

Games that can be configured with the target 14 include, but are not limited to, around the world, billiards, darts, tic tac toe, horse/pig, baseball, black jack, sink 'em, fishing, speed round (hourglass), hold tict, bingo, and dice games. Each of these games can be at various skill levels. The target 14 can also include standard bulls eye targets, five spot, and 3-D image animal targets (such as in FIG. 8). The animal targets can be photographs of animals to create a life-like target. Animal targets can be arranged in different positions to practice shot placement (e.g., quartering away, broadside, etc.). Exotic animal targets can include lions, alligators, or dinosaurs. Such targets help peak the interests of younger shooters and are an inexpensive option to the very expensive 3-D exotic animal targets currently available.

The present invention also includes a kit for playing games that preferably include the target 14, arrow tips 20, marking material 30, and various games/rules as described above. Preferably, the kit includes the arrow tips 20 for attachment to a user’s own arrows. However, the kit can also include arrows 12 with the tips 20 attached if the user does not want to attach the tips 20 to their own arrows. The kit can be tailored especially for an organization such as, but not limited to, Boy Scouts, Girl Scouts, 4H, NASP, NRA, Indian Guides, Indian Princess, Youth Guides, and include a recurve bow. The kit can also be tailored to younger users and include a smaller target and youth bow. Kits can be specially designed for physical education departments in schools.

The system of the present invention can also be digitized. A hard digitally sensitive target can be placed in front of the target 14. Using a system of sensors and lights, marks can show on the hard target and score can be kept digitally. The game shown on the target can also be changed remotely and automatically by a remote control. In this manner, a variety of skins can be provided that display the games. In other words, the game face can be digitally projected on the flat surface of the target 14 and this can be changed to various games by the user.

In order to use the system to play a game, the user attaches the tip 20 with the marking material 30 to an arrow 12 by inserting the end 24 of the shaft 18 inside the tubular portion 22 of the tip 20. Alternatively, the user can use a ready-made arrow 12. The user can also dip the tip 20 in a marking material as described above. The user then launches the arrow 12 with a bow towards the target 14 according to the game being played. The arrow can be launched from a conventional bow, such as, but not limited to, a compound bow, recurve bow, cross bow, or youth bow. The arrow acts quite similarly to a conventional penetrating tip arrow. Upon contact with the target surface, the marking material, such as the chalk, leaves an erasable mark on the target that can be removed between games, and the arrow drops to the ground. Importantly, the tip of the arrow does not penetrate the target, allowing reuse of the target screen and arrow tip.

There are several advantages to the system of the present invention. It allows archers of all ages to enjoy games, regardless of skill level. The present invention allows archers to hone their skills and keep their attention year round because of the variety of games and skill challenges offered with the system. This is especially important for recurve enthusiasts who must shoot year round. The system can be used inside or outside and due to the easy assembly, it can be assembled anywhere, anytime, any place within minutes. The system can be a fixture in the home, garage, or outdoors. It can be used with the custom stand or suspended from above. The system allows the entire family to participate together and builds confidence in archery through fun and challenging games.

Throughout this application, various publications, including United States patents, are referenced by author and year and patents by number. Full citations for the publications are listed below. The disclosures of these publications and patents in their entirety are hereby incorporated by reference into this application in order to more fully describe the state of the art to which this invention pertains.

The invention has been described in an illustrative manner, and it is to be understood that the terminology which has been used is intended to be in the nature of words of description rather than of limitation.

Obviously, many modifications and variations of the present invention are possible in light of the above teachings. It is, therefore, to be understood that within the scope of the appended claims, the invention may be practiced otherwise than as specifically described.

What is claimed is:
1. An arrow tip and target system, comprising a tip having a removable marking material integral with an end surface of said tip, and a target.
2. The arrow tip and target system of claim 1, wherein said tip is fixed to an arrow with fixing means chosen from the group consisting of frictionally gripping, adhesive, glue, and threading.
3. The arrow tip and target system of claim 1, wherein said tip is made of a material chosen from the group consisting of rubber-like material and felt.
4. The arrow tip and target system of claim 1, wherein said tip is frusto-conical in shape.

5. The arrow tip and target system of claim 1, wherein said marking material is integrated during manufacture with said end surface of said tip.

6. The arrow tip and target system of claim 1, wherein said marking material is applied by a user before use of said arrow.

7. The arrow tip and target system of claim 1, wherein said marking material is chosen from the group consisting of chalk and ink.

8. The arrow tip and target system of claim 1, wherein said target is further defined as a flat surface hung on a stand.

9. The arrow tip and target system of claim 8, wherein said target is a tarp.

10. The arrow tip and target system of claim 8, wherein said flat surface includes a game face.

11. The arrow tip and target system of claim 10, wherein said flat surface includes a game face on a front side and a back side.

12. The arrow tip and target system of claim 10, wherein said game face is chosen from the group consisting of around the world, billiards, darts, tic tac toe, horse/pig, baseball, black jack, sink `em, fishing, speed round (hourglass), hold tite, bingo, dice games, standard bull’s eye targets, five spot, and 3-D image animal targets.

13. The arrow tip and target system of claim 10, further including digital projection means such that said game face is digitally projected on said flat surface.

14. The arrow tip and target system of claim 10, further including means for digitally changing said game face.

15. An arrow for marking a target, comprising a shaft and a tip fixedly mounted thereon, said tip including a removable marking material integral with an end surface of said tip.

16. The arrow of claim 15, wherein said tip is fixed to said arrow with fixing means chosen from the group consisting of frictional gripping, adhesive, glue, and threading.

17. The arrow of claim 15, wherein said marking material is chosen from the group consisting of chalk and ink.

18. A tip for attachment to an arrow, comprising a removable marking material integral with an end surface of said tip.

19. The tip of claim 18, wherein said marking material is chosen from the group consisting of chalk and ink.

20. A kit comprising a target, arrow tips, marking material, games, rules for said games, and a stand.

21. The kit of claim 20, wherein said arrow tips are fixedly attached to arrows.

22. The kit of claim 20, further including a recurve bow.

23. The kit of claim 20, wherein said games are chosen from the group consisting of around the world, billiards, darts, tic tac toe, horse/pig, baseball, black jack, sink `em, fishing, speed round (hourglass), hold tite, bingo, dice games, standard bull’s eye targets, five spot, and 3-D image animal targets.

24. The kit of claim 20, further including digital projection means such that a game face is digitally projected on said target.

25. The kit of claim 24, further including means for digitally changing said game face.

26. A method of playing a game with an arrow tip and target system, including the steps of:
   attaching a tip including removable marking material to an arrow;
   launching the arrow towards a target according to the game being played;
   contacting the tip with the target; and
   removably marking the target.

27. The method of claim 26, wherein said attaching step is further defined as using a ready-made arrow that includes a tip having removable marking material.

28. The method of claim 26, wherein said attaching step further includes the step of dipping the tip in marking material.

29. The method of claim 26, wherein said launching step includes launching the arrow with a bow chosen from the group consisting of a compound bow, recurve bow, cross bow, and youth bow.

30. The method of claim 26, further including repeating said attaching, launching, contacting, and removably marking steps.

31. The method of claim 26, after said removably marking step, further including the step of erasing the mark when the game is ended.

32. The method of claim 31, further including the step of digitally changing the game projected on the target.

33. The method of claim 26, wherein the game is chosen from the group consisting of around the world, billiards, darts, tic tac toe, horse/pig, baseball, black jack, sink `em, fishing, speed round (hourglass), hold tite, bingo, dice games, standard bull’s eye targets, five spot, and 3-D image animal targets.

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