A reactive target system may include a base and a target which rotates when struck by a bullet. The target may be removable from the base without tools and inverted to change the location of the target areas which are presented to a shooter. The reactive target system may also include a second target which rotates when struck by a bullet.
REACTIVE TARGET SYSTEM

BACKGROUND

[0001] The present invention relates to a reactive target system for use with firearms. More specifically the present invention relates to a system including a target which can spin in response to being struck by a projectile.

FIELD OF THE INVENTION

[0002] In order to maintain proficiency with use of a firearm, it is common for some individuals to engage in various forms of target practice. One common form of target practice is to shoot at a stationary target made of paper or cardboard. In other situations a shooter may shoot at a target which reacts to being hit, such as a “bobber.”

[0003] One problem associated with many forms of target shooting is that it can become somewhat monotonous and does not continually challenge the shooter. Additionally, shooters can become conditioned to a target and lose the ability to make split second decisions which are important in real life conditions. For example, a police officer needs to be able to quickly assess a situation and determine both 1) whether the use of deadly force is appropriate and 2) who is the appropriate target. If an officer is not comfortable with his or her ability to quickly assess the situation and make a decision, it is possible either that the officer gets stressed and makes the wrong decision, or the officer becomes indecisive and waits too long to make a decision.

[0004] Although shooting at a stationary target will help an officer’s accuracy in shooting at stationary perpetrators, it does little to hone the officer’s decision making skills or ability to react when presented with a variety of situations. Another problem with many forms of target shooting is that it can become boring and monotonous. To overcome monotony, a variety of different reactive targets have been developed. One example is a dueling tree. Duelling trees include a plurality of targets mounted on a support structure which are pivoting so as to be disposed on either side of the support structure and visible to a shooter. When a bullet strikes the target, the impact causes the target to flip to the opposing side of the support member, thereby demonstrating that a target has been hit. Duelling trees are popular because they can be used by a pair of individuals in a game format. Each individual attempts to hit all of the targets and knock them to the opposing side before the other shooter can hit the targets to cause them to come back. Such a game playing environment creates a competitive atmosphere and subjects the shooter to adrenaline which more realistically replicates both hunting, situations encountered by police officers, and the like.

[0005] While duelling trees are popular at shooting ranges, they are relatively expensive and not easily transportable to less conventional shooting locations such as camp sites, etc. Additionally, duelling trees typically only present one kind of target to the shooter. In order to prevent conditioning, it is advantageous to present different target types to cause the shooter to make judgments about which targets to shoot.

[0006] There is thus a need for a reactive target which makes shooting more interesting and which can be easily transported.

SUMMARY OF THE INVENTION

[0007] The present invention provides an improved reactive target system. The above and other aspects of the invention may include a reactive target system which includes a reactive target and a base. In accordance with one aspect of the invention, the reactive target may be rotateably mounted or disposed in the base such that impacting a target area on the target causes the target to spin relative to the base. This demonstrates that the target has been hit. Unlike many reactive targets, however, it may not be required to reset the target for continued use.

[0008] In accordance with one aspect, the first reactive target may have a plurality of arms, each having a target area. In accordance with one aspect of the invention, the reactive target has a plurality of different shaped target areas so as to provide a limitation as to the structure to be hit by a shooter.

[0009] In accordance with another aspect of the invention, the reactive target can be colored on various surfaces to change the target presented to a shooter. Thus, for example, one side of the target may have a target area painted red and the opposing side colored green. This may cause the green target area to be displayed on the left side as the target spins and the red target area to be disposed on the right side. A shooter may be told to hit only red target areas. Thus, the shooter is forced to differentiate by color.

[0010] In accordance with another aspect of the present invention, the reactive target may have different shaped target areas. For example, the target may have octagonal target areas and circular target areas. Thus, a shooter may be told to shoot only a particular shaped target area or a particular combination of shape and color.

[0011] In accordance with another aspect of the invention, the reactive target may include a first arm and a second arm disposed generally opposite one another so as to enable the target to be inverted. Inverting the target may change the location of the target areas. Thus, for example, a green circular target area may be disposed on the upper right part of the target when disposed in one orientation and then in the lower left if the target is inverted.

[0012] In accordance with another aspect of the invention, the target can be made of two pieces, each of which has a slot for receiving a portion of the other piece so as to nest together and form the target.

[0013] In accordance with another aspect of the invention, the target can be made from a variety of materials. For example, the target may be made from plastic or a thin sheet of steel for use with airsoft guns and the like. It may also be made from AR 500 steel for use with all subsonic center fire ammunitions.

[0014] In accordance with yet another aspect of the invention, the target may be stackable so as to allow multiple different targets to be presented to a shooter simultaneously.

[0015] In accordance with another aspect of the invention, the height of the base may be adjusted.

[0016] In accordance with another aspect of the invention, the base of the reactive target system may be removably secured in the ground to enable the target to be held at a particular height and to accommodate uneven terrain.

[0017] In accordance with yet another aspect of the invention, a removable driving implement may be provided with the base to enable driving the base partially into the ground.

BRIEF DESCRIPTIONS OF THE DRAWINGS

[0018] Various embodiments of the present invention are shown and described in reference to the numbered drawings wherein:
FIG. 1 shows a perspective view of a reactive target system in accordance with one aspect of the present invention;

FIG. 2 shows a perspective view of the target removed from the base unit;

FIG. 3 shows a pair of plate pieces which can be nested together and attached so as to form the target;

FIGS. 4A through 4C show a number of alternate plate configurations which may be used to form a target in accordance with principles of the present invention;

FIG. 5 shows a stacked configuration in which a plurality of targets is presented to a shooter;

FIG. 6A shows an exploded perspective view of a reactive target system made in accordance with the principles of another aspect of the present invention; and

FIG. 6B shows a perspective view of the reactive target system of FIG. 6A assembled.

It will be appreciated that the drawings are illustrative and not limiting of the scope of the invention which is defined by the appended claims. The reactive target system shown may accomplish various aspects and objects of the invention. It is appreciated that it is often not possible to clearly show each element and aspect of the invention in a single figure, and as such, multiple figures may be presented to separately illustrate the various details of the invention in greater clarity. Similarly, not every embodiment need accomplish all objects or advantages of the present invention.

DETAILED DESCRIPTION

The invention and accompanying drawings will now be discussed in reference to the numerals provided therein so as to enable one skilled in the art to practice the present invention. The drawings and descriptions are exemplary of various aspects of the invention and are not intended to narrow the scope of the appended claims.

Turning now to FIG. 1, there is shown a reactive target system, generally indicated at 10, made in accordance with the principles of the present invention. The target system 10 includes a base, generally indicated at 14, and a reactive target, generally indicated at 18, which may rotate with respect to the base 14.

The base 14 may include a footing 22 so as to provide lateral support to the reactive target system 10. A shaft or other support 26 may extend upwardly from the footing 22. The shaft 26 may be removably or adjustably attached to the footing 22. For example, the footing 22 may have a threaded mount 28, such as a bolt, attached thereto. The shaft 26 may include a threaded receptacle 30, such as a nut, which allows the shaft to be adjusted relative to, or removed from, the footing 10. Thus, the shaft 26 may be adjusted to change the distance between the reactive target 18 and the footing 22, or may be removed to allow the use of a shaft 26′ of a different length.

The shaft 26 (or 26′) may include a recess 32 for receiving a projection or pin 34 of the reactive target 18 which forms a fulcrum or swivel about which the reactive target can rotate. Thus, the pin 34 and the recess in the shaft form a hinge.

The reactive target 18 may include a second projection or pin 36 which may be placed in the recess 32 to form a fulcrum, swivel or hinge. Thus, the target 18 can be placed in the shaft 26 so that the first projection or pin 34 is in the shaft and then taken out and turned so that the second projection or pin 36 is disposed in the shaft. This results in the target 18 being presented to the shooter in an alternate configuration. As will be explained in additional detail below, this enables different shooting scenarios to be presented to the shooter.

The reactive target 18 includes a plurality of arms or panels 40 which extend outwardly from a central portion 44. A portion of each arm or panel may include a target area 48 at which a shooter would aim when shooting. Impacting any of the target areas 48 will cause the target 18 to rotate relative to the base 14.

The arms or panels 40 of the target 18 may be disposed so as to alternate the target areas 48 between lower and higher positions. Thus, if striking the target 18 causes a one quarter rotation of the target relative to the base 14, the next target to be shot will be in a different position. This forces a shooter to re-focus each shot rather than simply repeating a number of shots at a given location.

It will be appreciated that the target can rotate in either direction. Thus the reactive target system 10 can be used similar to a dueling tree. One target area 48 is generally visible on each side of the base 14 at any given time. Thus two shooters may shoot at the target and attempt to keep the target turning in opposite directions. For example, a shooter to the right of the base would shoot the target area 48 in front of him or her and attempt to rotate the target 18 in a counter clockwise direction. At the same time, a shooter standing to the left of the base may attempt to hit the target areas 48 so as to cause the target 18 to rotate in a clockwise orientation. By watching the rotation of the target 18, observers can determine who is more accurately shooting the target, thereby placing pressure on the other shooter to improve his or her aim while not taking too much time so as to enable the competitor to continue to turn the target with accurate shots against the target areas on their side of the target.

The target can also be used to improve judgment of the shooter. It is advantageous to train law enforcement personnel and the like in situations in which the shooter must make quick decisions. This can readily be accomplished with the reactive target 18. One side of a target area may be painted with a color and the opposing side painted with a different color. The target may then be told to shoot only a particular color and/or shape. Thus, for example, one side of each shooting area 48 may be painted red and the other green. In the embodiment shown in FIG. 1, this would result in two red octagons, two red circles, two green octagons and two green circles. A shooter may then be told only to shoot at red octagons. The red octagons may present, for example, on opposing sides, with one positioned low and one positioned high. In the alternative, they may present on the same side with one low and one high. Of course, more than two colors could be used and the shooter given a plurality of viable target areas, e.g. only red octagons and blue circles. Thus, the shooter is forced to make quick judgment calls while shooting accurately.

It will be appreciated that the base 14 and target 18 may be made in a wide variety of sizes. For example a small combination a foot or less in height may be used to provide a very portable device for relatively close range shooting, while a much larger version could be used in a more stationary environment for shooting at long distances. Additionally, the target 18 can be made from a variety of materials, such as plastic for play firearms such as airsoft guns, to soft steel or other metals for pistols or rim-fire ammunition and hardened metals, such as AR 500 steel for use with center-fire rifles.
One advantage of the present invention is that the reactive target does not need to be reset. Reactive targets are beneficial because they help the shooter see instantly whether or not the target has been hit. Many reactive targets, however, require that the target be reset before it can be hit again. With the configuration shown in FIG. 1, the target 18 does not need to be reset and continually provides instant verification when it has been hit. Additionally, it can be advanced in either direction, thereby allowing a variety of different shooting scenarios.

Turning now to FIGS. 2 and 3, there is shown, respectively, an assembled and unassembled reactive target 18. The target 18 may be formed from a pair of substantially identical plate pieces 50. As mentioned previously, the plate pieces 50 can be formed from plastic, other materials, soft metals or hardened metals depending on the desired use of the target. When made of plastic, the plate pieces 50 are likely to be injection molded or cut from a larger sheet. When formed from hardened steel, they will typically be cut with a plasma torch or some other cutting instrument used with hardened steel.

The plate pieces 50 may include a slot 54, opposite the extending pin or hinge 36, which allows two pieces to be nested together with the slot of each piece receiving the slot 54 and the central section 44 of the other piece in the manner shown in FIG. 2. In some embodiments, the width of slot 54 of a first plate piece is substantially the same width as the thickness of the second plate piece with which it nests, with the width of slot 54 having a tolerance sufficient to allow the plate pieces to be easily nested together and removed by hand. Thus, the slot and central section of the first plate piece is substantially identical to the slot and central section of the second plate piece, such that the first plate piece and second plate piece are configured to removably mate. Having two substantially identical pieces may be beneficial because an automated cutting machine can cut a large number from a sheet of steel etc. It will be appreciated, however, that two dissimilar plate pieces 50 can be put together to, for example, give the shooter a greater number of shapes from which he or she may be forced to select while shooting. Thus, FIGS. 4A through 4C show a variety of different plate pieces 50. Plate piece 50a shows target areas 48 which include a generally triangular shape and a generally square or rectangular shape. Plate piece 50b shows target areas 48 which are shaped like animals and may be more enjoyable for hunters. Plate piece 50c shows target areas which represent a man and a woman. This may be used to force the shooter to rapidly choose between a simulated potential perpetrator and a potential hostage, etc.

Turning now to FIG. 5, there is shown a reactive target system 10 which includes a plurality of targets 18. This can be accomplished by adding a second shaft 26a which is disposed on the second or upper projection or pin 36 of the lower target 18a and receives the lower or first projection or pin 34 of the upper target 18b. If desired, another shaft could be added to the second or upper projection or pin 36 on the upper target 18b to add a third target. Depending on the tolerances and the availability of any support structure, a number of targets could be so stacked.

As shown in FIG. 5, the lower target 18a has been turned so that two of the panels 40 are parallel to the line of fire so that the other two target areas 48 are generally perpendicular to the line of fire. In contrast, the upper target 18b has each target area 48 about 45 degrees from the line of fire.

Hitting a target area 48 of the lower target 18a will cause the lower target to rotate and, depending on tolerances, may cause the shaft 26a and the upper target to rotate in the same direction. However, hitting the upper target 18b on the opposing side of the axis extending through the pins or projections 34, 36 and the shafts 26, 26a may cause the upper target to turn in the opposite direction. Thus, a shooter may be required to turn one target in one direction and the other in the opposite direction. The shooter may also be given assignments on which target areas to hit in a particular order. For example, instructions may be to hit an octagon, then a triangle, then a circle then a square.

The targets 18a, 18b may each be inverted to thereby changes the location at which a target area 48 of a particular color, shape, etc., is presented and a number of different targets having different shapes and sizes can be exchanged for one another to continually change the scenario which the shooter encounters, thereby preventing the shooter from being conditioned in a particular routine.

FIG. 5 also shows a series of dashed lines which represent a shield 60 which may be attached to the base 10 (or may be separate) which can be placed in front of the central portions 44 of the targets 18 and the shafts 26, 26a so as to reduce the risk of bullets hitting the center portions and the shaft(s) rather than the target areas. The shield may have, for example, a generally v-shaped cross-section, and may be welded to one end of the footing 22 so that in use it is disposed between the shooter and the central portions 44 of the targets 18 and the shafts 26. (While not shown in FIG. 1, it will be appreciated that a shield similar to shield 60 may be used to protect the shaft 26 and the central portion of the target.

While discussed herein as projections going into shafts having receptacles, it will be appreciated in light of the present disclosure that the rotational mechanism could be reversed, which a receptacle being formed on the targets and a solid shaft or similar member being nestable in the receptacle.

FIG. 6A shows an exploded view of a reactive target system, generally indicated at 10, made in accordance with principles of the present invention. The target system 10 includes a base 14 and a target 18. The base 14 includes a support 26 having a lower end 26c and an upper end 26d. The lower end 26c may include a bevel or other structure to facilitate driving the support into the ground. The upper end 26d may include a tube, o-rings or other structure which forms a recess 32 for receiving a projection or pin 34 or 36 of the target 18 so as to form a fulcrum or hinge to allow the target to rotate when struck. The tube, o-rings or other structure which defines the recess may be formed with or attached to the support 26 by welding, adhesives, etc.

The support 26 may be formed from a variety of materials and be formed in a variety of shapes. However, it is believed that for applications involving the shooting of center-fire ammunition, angle iron or hardened steel bent or formed into a v-shaped cross-section is advantageous as it will allow bullets to deflect off and provide minimal damage to the support. Such material is also relatively easy to obtain.

As shown in FIG. 6B, the reactive target 18 has been placed so that the pin or projection 34 is disposed in the receptacle 32 at the upper end 26d of the support. The target 18 will spin when struck by a bullet. If the target areas 48 on the target 18 are colored, the sequence and/or location of the presentment of different target areas can be changed by sim-
ply lifting the target to pull out the pin or projection 34, turning it over, and inserting the pin or projection 36.  

It will be appreciated that the configuration shown in FIGS. 6A and 6B can be used with the structures shown in the previous figures. For example, an additional shaft or support (such as 26a) could be added and a second reactive target added as shown in FIG. 5. Likewise, the support 26 could include a footing 22 for resting on, rather than being driven into the ground.  

Also shown in FIGS. 6A and 6B is a driving device 70 which is configured for use in driving the support 26 into the ground. It is preferred that a person not use a hammer to drive the support into the ground to avoid damaging the structure forming the receptacle 32 or the upper end 26a of the support. This is accomplished by mounting the driving device 70 on the support. The driving device 70 includes one or more arms 74 and a collar 78. The collar is designed to slide along the support 26 and to make contact with a flange or brace 80 disposed along the support 26. A user can advance the collar 78 into contact with the flange or brace 80 and then step on the arm(s) 74 to drive the lower end 26c of the support 26 into the ground. This allows the target 18 to be held at a particular height and in a generally upright position relative to the terrain on which the shooting is to occur. The driving device 70 may be removed once the support is secured in the ground, or may be left in place depending on the preference of the user.  

The reactive target system 10 is advantageous because it can be made for relatively little cost and provides numerous different shooting scenarios. Additionally it is readily transportable and can be used in a wide variety of environments which make some other targets difficult, such as the lack of electricity or pneumatic systems for resetting the target as is required with many reactive targets.  

Thus there is disclosed an improved reactive target system. The target system may provide a number of advantages including, being able to be used as a judgmental target because of different shapes and/or different colors. The target system can also be used continuously as there is no need to reset the target after each hit. Additionally, the target system does not move away from the shooter when hit and the target is provided with 360 degrees of motion in either direction. While lubrication may be used, it is not required. Additionally, the targets can be configured to handle anything from air-soft pellets to center fire subsonic caliber ammunition. Finally, the reactive target system can be made so that no tools are required for assembly and so that the height is adjustable.  

In light of the present disclosure, it will be appreciated that numerous modifications can be made. The appended claims are intended to cover such modifications.

What is claimed is:  

1. A reactive target system comprising a base and a first reactive target having a plurality of arms, each having a target area, wherein the first reactive target is rotateably mountable on the base such that impacting the target with a bullet causes the target to rotate.  

2. The reactive target system according to claim 1, wherein the base comprises a shaft and a footing wherein a distance between the upper end of the shaft and the footing is adjustable.  

3. The reactive target system according to claim 1, wherein the base comprises a footing and a plurality of shafts of different lengths each of the shafts being attachable to the footing.  

4. The reactive target system according to claim 1, wherein the base comprises a support and wherein the target and the support form a hinge and wherein the target may be inverted and is configured to form a hinge with the support when inverted.  

5. The reactive target system according to claim 1, wherein the first reactive target is formed by a first plate piece and a second plate piece disposed generally perpendicular to one another.  

6. The reactive target system according to claim 5, wherein each of the first plate piece and the second plate piece have a target area formed in a first shape and a target area formed in a second shape.  

7. The reactive target system of claim 5, wherein the first reactive target has target areas having at least two different shapes.  

8. The reactive target system of claim 5, wherein each plate piece includes a projection for forming part of a hinge and a slot for receiving part of another plate piece.  

9. The reactive target system of claim 1, further comprising a second reactive target and a second shaft disposed between the target and the second target.  

10. The reactive target system of claim 9, wherein the first reactive target has an upwardly extending projection for receiving the second shaft, and wherein the second reactive target has a downwardly extending projection for nesting in the second shaft.  

11. The reactive target system of claim 1, further comprising a shield attached to the base for deflecting bullets away from a central axis of the target when the target is mounted on the base.  

12. The reactive target system of claim 1, wherein the base comprises an elongate support having a lower end and an upper end, the lower end having a bevel and being configured for driving into the ground and wherein the upper end includes a structure forming a receptacle for receiving a portion of the target.  

13. The reactive target of claim 12, further comprising a driving device for driving the support into the ground.  

14. The reactive target of claim 13, wherein the support comprises a brace and wherein the driving device comprises a collar for engaging the brace to drive the support into the ground.  

15. The reactive target of claim 14, wherein the driving device further comprises a pair of arms extending from the collar.  

16. A method for engaging in target practice, the method comprising:  

selecting a base; and  

selecting a target having a plurality of target areas, wherein the target is mountable on the base so as to form a hinge and which may be inverted and mounted on the base to form a hinge so that the target can rotate to the right and to the left.  

17. The method according to claim 16, wherein the method comprises disposing a shaft on top of the target and disposing a second target on top of the shaft so that the second target can rotate to the right and to the left.  

18. The method according to claim 16, wherein the method comprises driving the base at least partially into a ground surface to support the base and then mounting the target partially within the base.
19. The method according to claim 16, wherein the method comprises disposing a driving device along the base and standing on the driving device.

20. The method according to claim 16, wherein the method comprises selecting a base having a removably attachable shaft.

21. A reactive target system, comprising:
   (i) a first plate piece comprising
      a pin;
      a central section;
      a slot opposite the pin; and
      a pair of arms, each having a target area, extending outwardly from the central section; and
   (ii) a second plate piece comprising
      a pin;
      a central section;
      a slot opposite the pin; and
      a pair of arms, each having a target area, extending outwardly from the central section;
   wherein the slot and central section of the first plate piece is substantially identical to the slot and central section of the second plate piece, and wherein the first plate piece and second plate piece are configured to removably mate.

22. The reactive target system according to claim 21, wherein each of the first plate piece and the second plate piece have a target area formed in a first shape and a target area formed in a second shape.

23. The reactive target system of claim 21, wherein the first reactive target has target areas having at least two different shapes.

24. A reactive target plate piece, comprising:
   a pin;
   a central section;
   a slot opposite the pin, wherein the slot is configured to removably mate with a slot and central section of second reactive target plate having a substantially identical central section and slot; and
   a pair of arms, each having a target area, extending outwardly from the central section.

25. The reactive target system of claim 21, wherein the reactive target plate piece has a plurality of target areas having at least two different shapes.