Impact-displaceable target (1) for sport shooting, comprising an assembly having two symmetrical parts (2) of polymeric material, which can be coupled together and with a perpendicular relationship of one part (2) with respect to the other, each one of the parts (2) presenting a main body having a pair of extremities (2a), the ends of which are equipped with impact areas (3a, 3b) and (3c, 3d), these two symmetrical parts (2) defining in a coupled condition a quadrupedal element, such that when the assembly is supported on a floor surface, three impact areas are in contact with the surface and the fourth impact area is on an elevated level with respect to the three preceding impact areas. Thus, with each impact on an impact area, the assembly rotates about its central axis moving and changing the impact area.
IMPACT-DISPLACEABLE TARGET FOR SPORT SHOOTING

OBJECT OF THE INVENTION

[0001] The present invention relates to a rotary moving target for shooting mechanical propulsion airguns or other pressurized gas guns, e.g. calibre 4.4 mm (0.177 inches), 4.5 mm (0.177 inches), 5 mm (0.20 inches), 5.5 mm (0.22 inch), 6 mm (0.24 inches) and 6.35 mm (0.250 inches) that moves by rotating on its axis with each impact received, so that the shooting distance varies with each shot, thus increasing the difficulty during the game, making it much more attractive and avoiding manual repositioning of targets hit by the shooter after each impact. This target is suitable for sports, leisure and competition shooting.

BACKGROUND OF THE INVENTION

[0002] In the field of shooting with mechanical propulsion airguns or other pressurized gas guns, there are several types of moving targets:

[0003] 1. Stationary targets, built with high strength metal, incorporating several targets with a pendulum system, within a frame, which, when hit, move upwards and remain hidden. When shooting on the central pendulum, the discs automatically come down again. There is also the reverse version wherein the targets fall and are subsequently raised. These targets are designed for shots with lead ammunition only; they do not allow the use of BB bullets (Ball Bearing, metal and plastic pellets). These targets are not suitable for PCP (Pre Charged Pneumatic) guns due to their excessive impact power.

[0004] 2. Stationary, folding, animal-shaped targets. Also made from metal and with a spring mechanism. Supplied with a roll of thread of limited length, usually 50 meters (160 feet), and metal pegs to anchor the target on ground and grass. When the target (impact area) is hit by a shot, the target falls. By slightly pulling on the cord, the target returns to its original position and is ready to be hit by a new shot. These targets are designed for lead ammunition only; they do not allow the use of BB bullets (Ball Bearing, metal and plastic pellets). These targets are suitable for PCP guns, but only from a distance greater than 23 meters (75 feet).

[0005] 3. Rotating targets on an axis, which when hit move both vertically and horizontally and in an oscillatory sense around a fixed axis, around which they rotate and hold their position. These targets are not suitable for PCP guns and do not allow BB ammunition (Ball Bearing, metal and plastic pellets).

[0006] 4. Moving targets dragged along a steel rail by an electric motor. Usually having the shape of animals, their movement is solely linear and perpendicular to the direction and trajectory of projectiles; they are lowered by the impact of the bullet or shot when the shooter hits the target. They regain their position mechanically moved by the electrical mechanism. Designed only for shooting airguns, with lead ammunition in calibre 4.5 mm (0.177 inches). These targets are not suitable for PCP guns and spring return weapons in excess of 305 m/s projectile output velocity.

[0007] However, the targets described above have a number of major drawbacks:

[0008] Unchangeable and pre-set shot distance;
[0009] Repetitive continuous movement;
[0010] The need for manual repositioning of the targets hit;
[0011] They only work on flat surfaces, and cannot be used on areas with slopes and obstacles;
[0012] The targets described are only suitable for shooting with lead ammunition;
[0013] Limitations on their use for PCP airguns because the excess power upon projectile impact compromises the integrity and strength thereof;
[0014] In most cases their weight exceeds 1.5 kg;
[0015] In the particular case of electronic mechanisms, comprehensive operation is compromised by the fragility of their components when exposed to the elements when used outdoors;
[0016] The complexity of their assembly and dismantling for use and transport.
[0017] Based on the foregoing, there is still the need to develop a target that solves the aforementioned drawbacks.

DESCRIPTION OF THE INVENTION

[0018] The present invention has been developed in order to provide a target which is configured as a novelty in the field of application and solves the aforementioned drawbacks, further providing other additional advantages that will be apparent from the description which follows. Thus a rotary moving target for shooting mechanical propulsion airguns or other pressurized gas guns is obtained, which advances, spinning on its axis with each of the impacts received, so that the shooting distance varies with each shot, thus increasing the difficulty during the game, making it much more attractive and avoiding manual repositioning of targets hit by the shooter after each impact.

[0019] It is therefore an object of the present invention to provide an impact-displaceable target for sport shooting, characterized by the fact that it comprises an assembly provided with two symmetrical and detachably coupled together parts and in a perpendicular relationship of one part relative to the other, each one of the parts presenting a main body having a pair of extremities, the ends of which are equipped with impact areas, these two parts defining in a coupled condition a quadrupedal element, such that when the assembly is supported on a floor surface three impact areas are in contact with the surface and the fourth impact area is on an elevated level with respect to the three preceding impact areas.

[0020] In a particularly preferred embodiment, the impact areas comprise a disc-shaped element made of steel material.

[0021] Preferably, the two symmetrical parts attachable to each other can be made of a polymeric material.

[0022] According to another aspect of the invention, the coupling of both parts is carried out by means of an elongated slot present in the main body of each of the two parts which runs along a perpendicular axis with respect to a coordinate axis joining the centres of the two impact areas of each part.

[0023] Preferably, each of the two parts forming the target of the invention has a main substantially “Y”-shaped body.

[0024] Advantageously, the above-mentioned elongated slot includes retention means, for example, recesses present in one of the inner walls of the elongated slot, which are complementary to a series of projections which are axially aligned with the longitudinal axis of the elongated slot.
By means of this invention, the following objectives are achieved:

a) avoiding invariable shot distance, whereby the complexity of hitting the target becomes greater in each new advance position (FIG. 5, movement 3);

b) avoiding the manual repositioning of the targets hit;

c) lighter weight and easy assembly and disassembly for better transportation and storage;

d) enabling use on terrains with gentle slopes and natural slopes and uneven textures;

e) avoiding the danger of bouncing projectiles;

f) enabling use with weapons of a wide range of calibres;

(1) allowing use with all type of lead ammunition; and

(2) preventing degradation by outdoor use and ensuring its integrity.

For this purpose the target has a dynamic nature, causing the target through impact to move away from the shooter, being more difficult to hit the target, having to calculate the distance at which the target is located, again after each movement.

Due to the morphology of the invention, the safety conditions in the shooting range that currently exist in the prior art are enhanced, in not causing ricocheting further than 5 meters from the target. The impact area (the disc of FIG. 3, 3a) located in the shooting position (the upper arm illustrated in FIG. 3, area 4) does not exert resistance to projectile impact, since on making contact with the disc surface (impact area) the structure absorbs the impact energy transforming it into a rotational torque (see FIG. 5, movements 1 and 2) and therefore accompanying the trajectory of the projectile, creating minimum resistance to impact and vertically altering the bounce angle. This feature allows shooting with all types of ammunition, up to the calibre 6.35 mm (0.25 inches) including BB types (Ball bearing, metal and plastic pellets).

The target has a highly resistant morphology and manufacturing materials, which make it suitable for use with high-powered weapons, such as PCP (Pre Charged Pneumatic), which can reach projectile output speeds of 1250 m/s, overcoming the limitations of the state of the art of 305 m/s.

Thus, the invention is characterized in that it achieves with a single element, a dynamic target that does not need manual replacement or repositioning during the sport shooting, enabling 100 target hits every 15 meters (50 feet) in the shooting space. In this manner it is possible to increase the complexity of shooting sports, increasing the fun in their practice and reducing the cost by using a single target element with a variety of shooting distances. Under the current state of the art, this is only possible with the simultaneous use of several targets, so the invention aims to cover the entertainment and/or complexity needs of the shooting competition, as the position and distance varies with each shot hitting the target.

Other characteristics and advantages of the target object of the present invention will become apparent from the description of a preferred but not exclusive embodiment, illustrated by way of example and not limiting the scope of the invention in the accompanying drawings wherein:

FIGS. 1a-1f—are front elevation, upper elevation, left elevation, rear elevation, upper elevation and rear elevation views respectively of the two parts forming the invention;

FIG. 2—is a front elevation view of a target according to the present invention;

FIG. 3—is a perspective view of the target assembly shown in FIG. 2;

FIGS. 4A to 4C—show a sequence of the assembly of the two parts forming a target according to the invention; and

FIGS. 5A-5D—show a sequence of the target movement when receiving various impacts.

DESCRIPTION OF A PREFERRED EMBODIMENT

In view of the aforementioned figures and, according to the numbering, a preferred embodiment of the invention is shown, which comprises the parts and elements illustrated and described in detail below.

Thus, as shown in the figures, an embodiment of the target, generally indicated by the reference (1), comprises two symmetrical parts (2) each composed of a main body of polymeric material and each having a pair of extremities (2a) with impact areas (3a, 3b) and (3c, 3d), forming a quadruplet element which rests on three of its four extremities in order to leave a fourth extremity elevated intended to receive the impact of the projectile at that time.

For the sake of clarity and for an easy understanding of the target, the impact areas are indicated by four different references (3a, 3b) and (3c, 3d).

With each impact on the disc, that is, on the impact area of the raised extremity, the target assembly formed by the two parts rotates around its central axis by moving the same to a subsequent position (FIG. 5b) and lifting one of the three extremities formerly situated at the base to the top position (FIG. 5c), this becoming a new impact area located 15 cm (6 inches) further ahead in space (FIG. 5d), regarding the previous one, and always on the same plane and axis of projectile trajectory. After a further impact, the target again rotates about its central axis, and moves, raising a new impact area. Thus the sequence of impact areas represented as shown in FIG. 3 would be 3a-3c-3b-3d, this sequence being successively repeated.

FIG. 4 shows various steps for assembly of the target described herein, wherein FIG. 4A shows a first step of aligning the two parts at 90 degrees with respect to each other. In the second step (FIG. 4B) the elongated slots (4) are inserted and coupled and lastly in FIG. 4C the two parts are already fixed with the aid of the retaining means. In particular, such retaining means consist of recesses (5) present on one of the inner walls of the elongated slot (4) forming a toothed region, which are complementary to a series of projections (6) which are axially aligned with the longitudinal axis of the elongated slot (4), as can be seen more clearly in FIGS. 1D and 1E.

The precise distribution of weight and morphology of the target allows a correct revolving and advance mechanism upon projectile impact having a kinetic energy greater than 14 joules power, provided that the projectile impacts on the upper disc (impact area indicated as 3a) in target position and when it fails to do so, the revolving mechanism does not operate.
To ensure proper operation of the target, it is designed with a weight distribution, which distributes 60% of the mass of the element between its four areas of impact, reserving 40% for its assembled structure, with a minimum area oriented to the direction and trajectory of projectiles. Also, the use of lightweight and impact-resistant materials such as polymer for the main body and heavier and more resistant materials such as steel for the impact areas allows correct target operation.

The final design of the target allows its simple and automated manufacturing, as the two symmetrical parts (2) that make up the assembly are exactly the same shape and material-wise. For the manufacture of the target (1) therefore, a single mould is used into which the steel discs are inserted, then injecting the polymeric material, whereby the disc and the main body merge together, forming a single piece.

In an alternative embodiment, suitable for mechanical propulsion air-guns or other pressurized gas guns with a kinetic power under 14 joules, the steel discs can be replaced by discs of polymeric material, reducing the weight and restructuring the distribution of masses to ensure proper operation with such guns.

It should be noted that for target checking, there may be a visual characteristic of confirming that the positioning of the parts (2) has changed by the advance of the target (1), by manufacturing each of the parts forming the target (1) with a polymer compound of a different colour.

The details, shapes, dimensions and other accessory elements, as well as the materials used in the manufacture of the target of the invention may be conveniently replaced by others that are technically equivalent and do not depart from the essence of the invention or the scope defined by the claims that are included below.

1. Impact-displaceable target (1) for sport shooting, characterized in that it comprises an assembly provided with two symmetrical parts (2) detachably coupled together and in a perpendicular relationship of one part (2) relative to the other complementary part (2), each one of the parts (2) presenting a main body having a pair of extremities (2a), the ends of which are equipped with impact areas (3a, 3b) and (3c, 3d), such two symmetrical parts (2) defining in a coupled condition a quadruped element, such that when the assembly is supported on a floor surface, three of the impact areas are in contact with the surface and the fourth impact area is on an elevated level with respect to the three preceding impact areas.

2. Impact-displaceable target (1) for sport shooting, according to claim 1, characterized by the fact that the impact areas (3a, 3b) and (3c, 3d) positioned on both extremities of the two symmetrical parts (2) have a discoid shape made of steel material.

3. Impact-displaceable target (1) for sport shooting, according to claim 1, characterized by the fact that the symmetrical parts (2) are made of a polymeric material.

4. Impact-displaceable target (1) for sport shooting, according to claim 1, characterized in that the attachment of both parts is carried out by means of an elongated slot (4) present in the main body of each of the two parts which runs along a perpendicular axis with respect to a coordinate axis connecting the centres of the two impact areas of each symmetrical part (2).

5. Impact-displaceable target (1) for sport shooting, according to claim 1, characterized by the fact that each of the symmetrical parts (2) has a substantially “Y”-shaped main body.

6. Impact-displaceable target (1) for sport shooting, according to claim 4, characterized in that the elongated slot (4) includes a retaining means.

7. Impact-displaceable target (1) for sport shooting, according to claim 6, characterized in that the retaining means consist of recesses (5) present on one of the inner walls of the elongated slot (4), which are complementary to a series of projections (6) which are axially aligned with the longitudinal axis of the elongated slot (4).

8. Impact-displaceable target (1) for sport shooting, according to claim 1, characterized by the fact that the impact areas (3a, 3b) and (3c, 3d) positioned on the extremities of both symmetrical parts (2) have a discoid shape made of polymeric material.