Disclosed is a pneumatically operated steel target system that incorporates a polymer-like mannequin molded to an AR500 abrasive resistant material with a 500 Brinell (460-540) rating, which can be clothed for any event, allowing users to practice on human-like targets as opposed to a target with no features where the user's real-life training would be reduced. The target system has a protective chest plate proportionately angled at approximately 12 degrees from center to deflect bullet fragmentations downward and away from the shooter.
PNEUMATIC STEEL TARGET SYSTEM

CROSS-REFERENCE TO RELATED APPLICATIONS

[0001] Not applicable.

STATEMENT REGARDING FEDERALLY SPONSORED RESEARCH OR DEVELOPMENT

[0002] Not applicable.

REFERENCE TO A COMPACT DISK APPENDIX

[0003] Not applicable.

BACKGROUND OF THE INVENTION

[0004] Conventional steel targets used in weapon training are typically round, square, triangle or bowling pin shaped. Such targets are unrealistic and monotonous over a long period of time for military and police shooters, denying the users of much needed realistic training and evaluation. Additionally, steel target systems are not impact protected, and therefore increases the chance for injury to the user should a fragment from the target be thrown back towards the shooter after impact. Some commercial steel target systems use a target at a 90 degree angle, which can allow a bullet shot at the target returning straight back to the shooter or observers. Additionally, if a target is static, again, the round will have the potential to do harm again, returning straight back to the shooter. Static targets also have the potential for pock marks caused by the kinetic energy and the heat produced by bullet.

[0005] Reactionary targets provide a more realistic firearm training for the shooter. The most common type of reactionary target used today is made of steel. In a reactionary target system, the target is engaged, a shot is fired, the bullet travels through a target mannequin, impacting the steel and causing the target mannequin to fall. When the course of fire is completed, the target is then raised, typically using a pneumatically supplied piston. The shooter receives no feedback, either sound or motion, if the shooter misses the reactionary target.

[0006] There is a need in the art for more human-like targets having designed safety improvements to improve training activities with a genuine shooting experience with a life-like target, which gives an immediate response to a hit, and having adequate safety features.

BRIEF SUMMARY OF THE INVENTION

[0007] Disclosed is a pneumatic steel target system having a human-like polymer mannequin featuring head, ears, hands, fingers, chest, midsection and a back which would allow the mannequin to be molded and formed to expose the steel plate and allow the lifting arm to contact the steel plate. The steel plate is formed from an AR500 abrasive resistant material with a 500 Brinell (460-540) rating which converts to roughly a 52 on the Rockwell scale and a mild carbon steel pipe formed from A36 standard steel alloy which allows attachment to the target carrier. Further, the target system may have a target carrier formed from an A36 standard steel alloy C-shaped channel positioned atop the protective shield which is used to attach the mannequin and to allow pivotal movement. A retainer pin formed from a A36 standard steel alloy solid bar is used to retain the mannequin on the target carrier and to also allow pivotal movement. Additionally provided is a lifting arm formed of A36 standard steel alloy solid bar which is used to lift the mannequin to the upright position. A pneumatic piston is attached to the lifting arm and piston bracket which performs the lifting motion of the lifting arm. Additionally, a steel post formed of an AR500 abrasive resistant material with a 500 Brinell (460-540) rating which converts to roughly a 52 on the Rockwell scale is positioned on the base. The base is formed from A36 standard steel alloy C-shaped channel designed in the “I” formation which allows the use of a forklift for easy placement of the pneumatic steel target system. A post and base support is formed of A36 standard steel plate which aids in supporting the weight of the pneumatic steel target system. The chest plate of the target is formed from an AR500 abrasive resistant material with a 500 Brinell (460-540) rating which converts to roughly a 52 on the Rockwell scale. The chest plate is positioned having about a 12 degree forward tilt to deflect the bullets downward to prevent the user from being injured from bullet fragmentation. The chest plate has a bracket formed from a A36 standard steel square tube attached to the chest plate that aids in support. Further, two chest plate mounts formed of A36 standard steel alloy C-shaped channel are designed to be the surface for attaching the chest plate bracket and chest plate. A target adjuster formed from A36 standard steel square tube includes a Grade 8 bolt and nut positioned at the top of the upper most horizontal steel shield allows the user to adjust the bolt in or out to adjust the difficulty of the training. Three shields formed from A36 standard steel plate are positioned on top of the post to protect the pneumatic and related assemblies.

BRIEF DESCRIPTION OF THE DRAWINGS

[0008] FIG. 1 is a cross sectional view of the pneumatic steel target system mannequin which is molded to a steel target;

[0009] FIG. 2 is a left front perspective view of the pneumatic steel target system mannequin;

[0010] FIG. 3 is a front view of the pneumatic steel target system;

[0011] FIG. 4 is a left view of the pneumatic steel target system;

[0012] FIG. 5 is a back view of the pneumatic steel target system.

[0013] FIG. 6 is an after action view of the pneumatic steel target system being struck by a bullet upon impact.

DETAILED DESCRIPTION OF THE INVENTION

[0014] Disclosed is a pneumatically operated target systems, specifically a steel target system that incorporates a polymer-like mannequin. The polymer-like mannequin is molded to an AR500 abrasive resistant material with a 500 Brinell (460-540) rating, which can be clothed for any event, allowing users to practice on human-like targets as opposed to a target with no features where the user’s real-life training would be reduced. The target system has a protective chest plate proportionately angled at approximately 12 degrees from center to deflect bullet fragmentations away from the shooter. All of the intended strike surfaces of the invention, with the exception of the base, are made from ⅛” Brinell AR500 abrasive resistant steel, which is heat treated by quenching and tempering and is also used when maximum hardness and strength must extend deep within a part. Most connections of the steel parts are welded, although
those skilled in the art would understand that other means of connecting parts can also be used. Those skilled in the art would understand that the thickness of the steel used can vary, as dictated by the likely ammunition that will be used. For example, the use of 0.50" steel would be acceptable for ammunition up to a 308 caliber, while the use of a 1" inch steel could be used for 50 caliber sniper rifles and machine guns with a single rate of fire. Those skilled in the art would understand that if the thickness of the steel is increased, then the pneumatic piston used to raise the steel target would need to have an increased PSI.

[0015] The pneumatic steel target system intended strike surfaces will withstand extremely heavy use from many powerful handgun and fragile rifle ammunition as well as shotguns shells without damage to it. The pneumatic steel target system allows users to shoot 1000's of rounds without little maintenance and repair needed. The pneumatic steel target system uses a moulded 3-D mannequin that encapsulates the fragmentation after the impact of the steel plate resulting in a safer training by reducing the risk of being injured. In addition, the pneumatic steel target system has a wide base which provides stability. The steel pneumatic target system can be moved by forklift for the ease of installation and removal. Protection has been built into the pneumatic steel target system to prevent projectiles or fragment from falling into the system, causing the air lines to splinter or pistons to puncture, therefore reducing the high cost of maintenance and repair.

[0016] FIG. 1 shows the mannequin portion of the pneumatic steel target system. The mannequin is shown in a sectional side view. The mannequin is in the form of a human torso having head 10, back 15, chest 20, midsection 25 and steel target 30 which allows the mannequin to be mounted on a target carrier and allow for pivotal movement.

[0017] FIG. 2 shows the mannequin portion of the pneumatic steel target system mannequin 5 in left perspective view. The mannequin 5 is in the form of a detailed human torso having ears, shoulders, arms, hands, face, neck, fingers and steel target 30. The steel target 30 is attached to a pipe 32 that allows for connection to a target carrier (not shown).

[0018] The mannequin 5 preferably incorporates human-like features including ears, shoulders, arms, hands, face, and neck which provide the user the ability to close the mannequin 5 in any fashion desired and may have any suitable color. Preferably, the hands, fingers and arms of the mannequin 5 can be adjusted so mannequin can incorporate a variety of props, such as a weapon or a grenade. Additionally, the mannequin 5 preferably incorporates the use of a steel plate 30, which is also preferably made of AR500 abrasive resistant steel, that when hit, the mannequin will fall showing that the adversary is down.

[0019] FIG. 3 shows the pneumatic steel target system 35 is shown in front perspective view. The steel target 30 is outlined inside the mannequin 5. A chest plate 40 is attached to a support post 45, which is connected to the base 50. The pneumatic steel target system preferably incorporates the use of a 2 x 2" chest plate, placed approximately at a 12 degree forward tilt from upright. With the chest plate at approximately 12 degrees, a bullet would strike the chest plate and deflect downwards into the ground, keeping the user safe in preventing fragmentation being thrown back. Preferably, the post of the pneumatic steel target system is made of AR500 abrasive resistant steel that will not allow bullets to penetrate. The pneumatic steel target system can therefore withstand extremely heavy use from many high-powered handgun and fragile rifle ammunition without sustaining damage. Additionally, other target systems allow target practice for direct frontal shots, but cannot be used to practice high angle shots from snipers in a helicopter or building. The pneumatic steel target system disclosed here, on the other hand, allows for training and target practice from virtually any elevated angle.

[0020] FIG. 4 shows the pneumatic steel target system 35 in side perspective view. Here, the pneumatic steel target system 35 is comprised of a base 50, attached to a post 45 having a post support 55 supporting the post. Attached to the post 45 is the chest plate 40. The chest plate 40 can be attached to the post 45 by at least one chest plate bracket 60. The chest plate 40 has an attachment bracket 65 which is inserted into the chest plate bracket 60. The chest plate 40 is positioned with an angle 70 of approximately 10 to 15 degrees, more preferably, 12 degrees, such that the chest plate 40 is position with a forward tilt from the post 45. A top shield 100 is optionally attached to the top of the post. A target adjuster 75, typically a nut and bolt arrangement, is optionally provided at the top of the post 40 to allow the target 30 to lean forward. The steel target 30 is connected to a target carrier 80, which is connected to a lifting arm 85. The lifting arm is connected to the pneumatic piston 90, typically by a single eye bracket. The piston 90 is attached to the post 45 by a piston bracket 95. The piston bracket 95 is typically a double eye mount connecting the piston 90 to the piston bracket 95 with a retainer pin (not shown). At least one side shield 100 is optionally attached to either side of the post 40 and the optional top shield 100.

[0021] The pneumatic steel target system 35 uses a three dimensional half human mannequin 5 that allows for many types of weapon training and recreational shooting. When the mannequin 5 is engaged, and a shot is fired, the bullet then travels through the mannequin, impacting the steel target 30 and the mannequin falls. When the course of fire is completed, the mannequin 5 is then raised using a pneumatically supplied piston 90 to force the lifting arm 85 and the steel target 30 into the upright position. If the shooter misses, there is no sound, and the visual response is no movement. The pneumatic steel target system 35 has a protective chest plate 40 proportionately angled at an angle 70 of approximately 12 degrees to deflect bullet fragmentation downward and away from the shooter(s). All of the intended strike surfaces of the pneumatic steel target system 35 are typically made with 3/8" AR500 abrasive resistance steel.

[0022] Preferably, the pneumatic steel target system incorporates a target carrier 80 that the mannequin 5 pivotally mounts too. The pneumatic steel target system 35 uses a lifting arm 85 to raise the mannequin 5 in the upright position by means of a pneumatic piston 90 attached to a piston bracket 95. The post support 55 is designed to help support the top-heavy weight of the pneumatic steel target system 35. Chest plate brackets 60 are approximately parallel in relation to the chest plate 40 thus making assembly easier for welding and also providing the chest plate 40 a angle 70 of approximately 12 degree forward tilt. The shields 100 are positioned for the protection of the pneumatic assemblies such as the pneumatic piston 90 and the chest plate 40 (not shown). The target adjuster 75 are useful for several purposes. The bolt of the target adjuster 75 can be threaded in towards the mannequin 5 to make it easier to knock the mannequin 5 backwards. Conversely, the bolt of the target adjuster 75 can be threaded out towards the user the make it more difficult to knock the mannequin 5 over.
[0023] FIG. 5 shows the pneumatic steel target system 35 in rear view. The lifting arm 85, is connected to the target carrier 80 and one end and the pneumatic piston 90 at the other. The piston 90 is connected to a piston bracket 95 attached to the post 45. The steel target 30, having a steel pipe 32 attached to the bottom, is connected to the target carrier 80 by a target retaining pin 105. The target retainer pin 105 connects mannequin 5 to the target carrier 80 and allows mannequin 5 to pivot when hit by a shot. Two side shields 100, are attached to the post 45 and the target carrier 80.

[0024] FIG. 6 shows the after action view of the reaction of the mannequin 5 in response to an impact. The steel plate 30 located within the mannequin 5, moves backwards and downwards around the steel pipe 32 in response to the impact.

[0025] Those skilled in the art would understand that although the present invention has been described with particular reference to specific embodiments thereof, the form of the invention shown and described in detail is to be acknowledged as the preferred embodiment of the same, and that various changes and modification may be resorted to without departing from the spirit and scope of the invention as defined by the applied claims.

What is claimed as new and desired to be protected by Letters Patent of the United States is:

1. A steel target system comprising:
   a post having a top end and a bottom end, wherein the bottom end is connected to a base and the top end is connected to a target carrier;
   a steel target in connection with the target carrier, wherein the target is configured to pivot backwards from an upright position;
   a polymer mannequin having a front and back molded around the target; and
   a chest plate attached to the front of the post, said chest plate positioned at an angle from about 10 to about 15 degrees from center.

2. The steel target system of claim 1 wherein said steel target is comprised of:
   a steel plate formed from an AR500 abrasive resistant material with a 500 Brinell, said plate having a top and a bottom edge; and
   a steel pipe attached to the bottom edge of the steel plate, said steel pipe formed from A36 standard steel alloy.

3. The steel target system of claim 1 wherein the angle is more preferably about 12 degrees from center.

4. The steel target system of claim 1 further comprising a lifting arm attached to said steel target, said lifting arm configured to lift the mannequin to the upright position.

5. The steel target system of claim 4 further comprising a pneumatic piston in connection with the lifting arm and the post.

6. The steel target system of claim 5 further comprising at least one shield positioned to protect said pneumatic piston.

7. The steel target system of claim 1 wherein the post is comprised of an AR500 abrasive resistant material having a 500 Brinell (460-540) rating.

8. The steel target system of claim 1 wherein the base is comprised of at least one A36 standard steel alloy C-shaped channel configured for use with a forklift.

9. The steel target system of claim 1 wherein said chest plate is comprised of an AR500 abrasive resistant material with a 500 Brinell rating.

10. The steel target system of claim 1 further comprising:
    a target adjuster comprised of a steel square tube, a steel bolt and a nut, wherein the target adjuster is located at the top of the post.