United States Patent

Hohman

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[54] **REVOLVING TARGET HAVING HORIZONTALLY ALIGNED HOOPS**

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[51] **Int. Cl.** **F41j 9/00**

[58] **Field of Search** .....273/55 R, 105.2

[56] **References Cited**

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Primary Examiner—Anton O. Oechsle

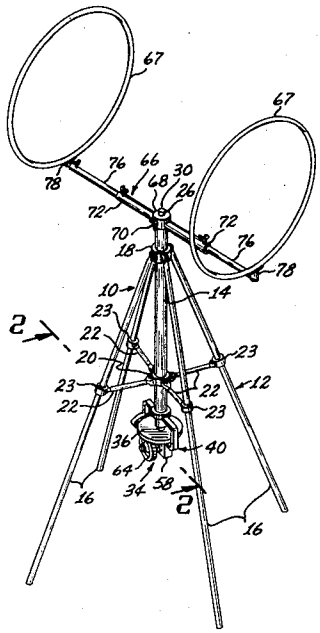
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[57] **ABSTRACT**

A revolving target is disclosed which may be used for training or amusement purposes and is provided with a pair of hoops mounted on a rotating member. The hoops are spaced apart and driven at various speeds to develop or test the skill of a user by requiring not only accuracy of projection, but also requiring precise timing so that a projectile will pass through both hoops.

9 Claims, 3 Drawing Figures



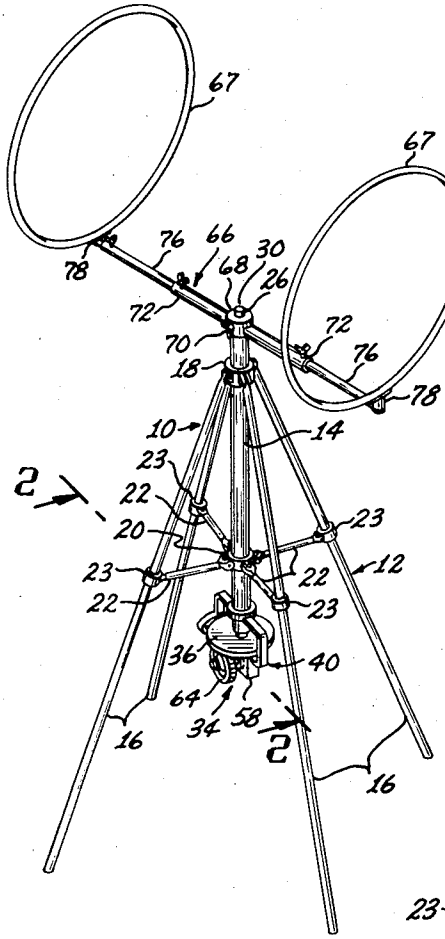


Fig-1

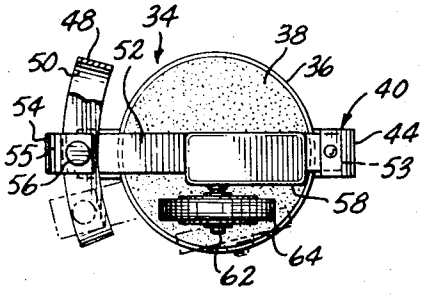


Fig-3

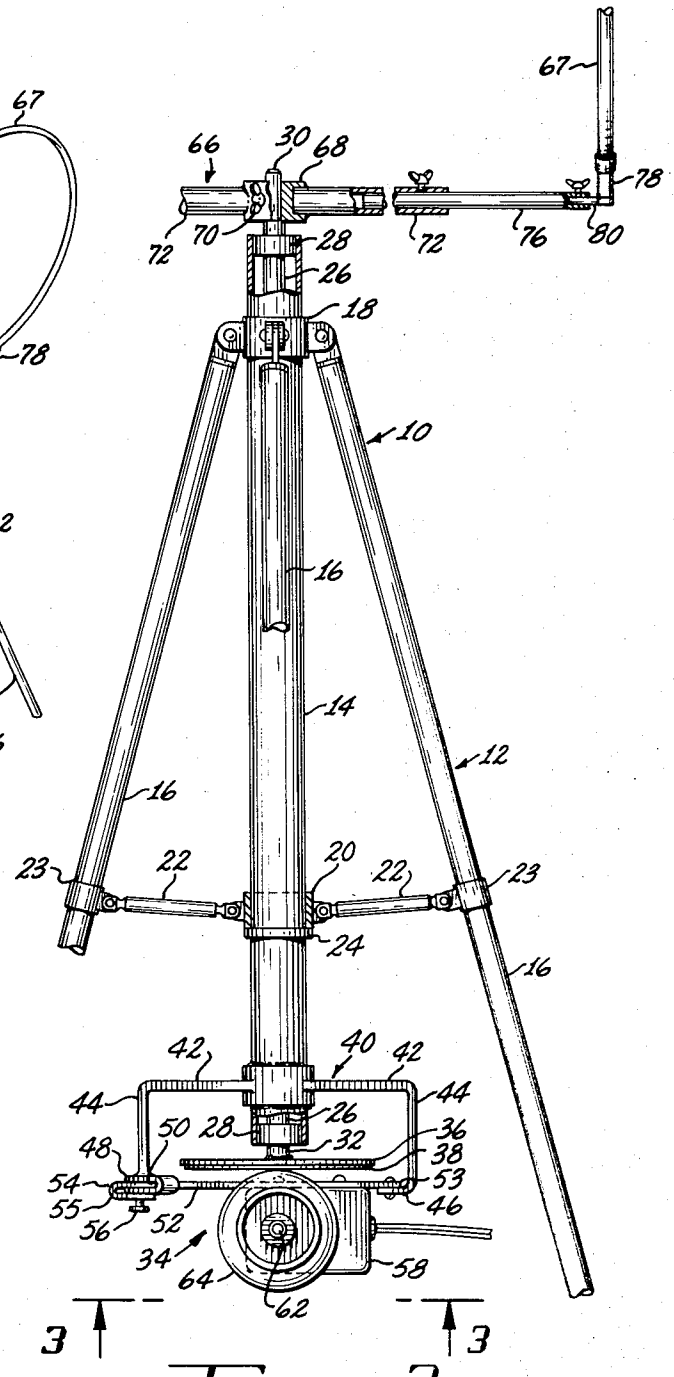


Fig-2

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REVOLVING TARGET HAVING HORIZONTALLY ALIGNED HOOPS

BACKGROUND OF THE INVENTION

1. Field of the Invention

This invention relates to targets and more particularly to a revolving target.

2. Description of the Prior Art

Many moving target devices have been devised for developing particular skills and for amusement purposes. These devices generally comprise a drive mechanism attached to a target for producing reciprocal, oscillatory, or other desired types of motion. These motions are employed to simulate various conditions which may be used to train shooters, develop athletic skills, and the like.

Moving targets are employed to develop the skill of throwing or otherwise propelling a projectile at a target and to develop a sense of timing.

Although moving targets may be employed for a variety of training or amusement purposes, devices of this nature are particularly adapted to develop the passing skill of a football player.

One particular prior art moving target mechanism devised for developing football passing skills, comprises a vertical standard having a swinging mast mounted thereon. The mast is pivotably mounted intermediate its ends to the standard and is provided with a single hoop on one end and a cam-track driving device on its other end. The mast is designed to oscillate in a to-and-fro motion so that the cam-track device will be drivingly engaged by a continuously operating roller mechanism during a portion of its oscillating cycle. This prior art device propels the hoop mechanism through an arcuate path at a predetermined speed. This device is substantially a single speed mechanism that makes no provision to compensate for the skill of the user.

Another prior art moving target mechanism for developing the passing skills of a football player comprises a simulated player having a hole formed through the central body portion thereof. The simulated player is a motor driven device which propels the target along a track. This device is an expensive semipermanent installation and requires extensive set-up time and a large playing area.

In view of the foregoing, a need exists for a new and useful moving target mechanism which is adapted to operate in accordance with the skill of the user, is inexpensive, portable, and requires a minimum amount of playing area.

SUMMARY OF THE INVENTION

In accordance with the invention, a new and useful revolving target mechanism is disclosed. The target mechanism of the present invention comprises a stand means having a substantially vertical drive shaft mounted thereon. Rotary motion of the drive shaft is provided by a drive means and power coupling mechanism mounted adjacent to the lower end of the drive shaft.

A transverse arm is attached intermediate its ends to the other end of the drive shaft and will rotate therewith. The arm is provided on each of its free ends with a target member resiliently demountably attached thereto.

The target device of the present invention is adapted to be adjusted for users having various degrees of skill. To adjust the revolving target mechanism, the drive means is adapted to provide various rotational speeds and the target carrying arm may be a telescoping member to provide a various space relationship between the target members.

Accordingly, it is an object of the present invention to provide a new and useful moving target mechanism.

Another object of the present invention is to provide a new and useful target mechanism which is inexpensive to fabricate and simple to operate.

Another object of the present invention is to provide a new and useful moving target mechanism which is adapted to test or develop the skills of a user.

Another object of the present invention is to provide a new and useful moving target mechanism which may be adjusted to operate in accordance with the skills of the user.

The foregoing and other objects of this invention, the various features thereof, as well as the invention itself, may be more fully understood from the following description when read in conjunction with the accompanying drawings.

BRIEF DESCRIPTION OF THE DRAWINGS

FIG. 1 is a perspective view of the revolving target mechanism of the present invention;

FIG. 2 is an enlarged fragmentary view taken on the line 2 — 2 of FIG. 1, and is partially broken away to illustrate the various features of the present invention; and

FIG. 3 is a view taken on the line 3 — 3 of FIG. 2 and shows the adjustable drive means of the present invention.

DESCRIPTION OF THE PREFERRED EMBODIMENT

Referring more particularly to the drawings, FIG. 1 shows the revolving target device of the present invention indicated generally by the reference numeral **10**. As seen best in FIG. 1 the revolving target mechanism **10** is provided with a stand **12** which is shown as a folding structure.

It should be noted that any suitable stand or support structure may be substituted for the stand **12** and its configuration may be determined by the particular environment in which the target device is to be employed.

The stand **12** is connected to an elongated tubular member **14** or torque tube, the function of which will hereinafter be described in detail. The stand **12** is provided with a plurality of downwardly diverging legs **16** having their upper ends pivotably connected to a fixed collar **18**. A movable collar **20** is adapted for sliding movement along the length of the elongated tubular member **14**. The movable collar **20** is provided with a plurality of radially extending arms **22**, there being one arm **22** for each of the legs **16**. The arms **22** are pivotably connected at their inner ends to the movable collar **20** and are pivotably connected at their outer ends to a fixed collar **23** provided on each of the legs **16**.

To fold the stand mechanism **12**, the movable collar **20** is moved towards the fixed collar **18**, thus pulling the legs toward the elongated tubular member **14**. To

erect the stand **12** the moving collar **20** is moved away from the fixed collar **18** and is allowed to travel to an overcenter position where further movement is halted by an annular stop **24** affixed to the elongated tubular member **14**.

A drive shaft **26** is rotatably journaled in a pair of bearings **28** which are carried in the ends of the elongated tubular member **14**. The drive shaft **26** is provided with an upwardly extending end **30** and a downwardly extending end **32**.

A drive means **34** is mounted adjacent to the lower end **32** of the drive shaft **26** to provide rotary motion thereto. The drive means **34** comprises a disk **36** or driven member, suitably attached to the lower end **32** of the drive shaft. The disk **36** may be provided with a suitable facing material **38** to allow friction drive thereof as will be hereinafter described in detail. A bracket **40**, or motor mounting means, is affixed to the lower end of the elongated tubular member **14**. The bracket **40** is provided with two diametrically opposed radially extending arms **42** which are formed along their length to provide a pair of downwardly extending portions **44** which are parallel to each other and to the longitudinal axis of the drive shaft **26**. One of the downwardly extending portions **44** is formed with an inwardly facing lip **46** and the other downwardly depending portion **44** has an arcuate member **48** suitably attached thereto. The arcuate member **48** has a slot **50** formed therein which is disposed in substantially the same plane as the lip **46**. An elongated adjustment plate **52** is pivotably connected on one end **53** thereof to the lip **46** and its other end **54** is slidably positionable within the slot **50** of the arcuate member **48**. The end **54** of the plate **52** is formed in a U-shape to provide a folded-back portion **55** which engages the underneath portion of the arcuate member **48**. A thumb screw **56** or locking means is provided on the folded back portion **55** to secure the adjustment plate **52** in the desired position.

A suitable low speed motor **58** is attached to the adjustment plate **52** in an appropriate manner. The motor may be connected to a battery (not shown) or any other appropriate power source.

The motor **58** is provided with the usual output shaft **62** to which a wheel **64** or coupling means is attached. The wheel **64** is positioned to frictionally engage and thus drivingly rotate the disk **36**. With the motor mounted on the adjusting plate **52** as described and shown, the point of contact between the disk and the wheel may be radially changed to vary the speed of the disk and thus the drive shaft.

It should be noted that the method of changing the speed of the drive shaft may take other forms such as a rheostat (not shown) connected to the motor for varying the current thereto and thus altering the RPM of the motor.

An arm **66** is demountably attached intermediate its ends to the upper end **30** of the drive shaft **26** and is positioned transverse with respect to the longitudinal axis thereof. The arm **66** is adapted to carry a hoop **67** or other suitable target member on each of its free ends. The type of target member may be determined by the projectile used and the manner in which the revolving target device of the present invention is employed.

The arm **66** comprises a sleeve **68** which is adapted to slidably engage the upper end **30** of the drive shaft **26**. The sleeve **68** has a thumb screw **70** for securing the sleeve to the drive shaft **26** and cause the arm **66** to revolve therewith. A pair of diametrically opposed radially extending telescoping members **72** are attached to the sleeve **68** by such methods as welding or the like. The telescoping members **72** include extensible ends **76** to which the hoops **67** are demountably attached. The telescoping members **72** allow adjustments to be made in the spacing between the hoops **67** to vary the degree of accuracy required to throw or otherwise project a missile through both of the target members.

As seen in FIG. **2**, the hoops **67** are demountably attached to the extensible ends **76** to provide interchangeability as well as to facilitate storage and shipping of the revolving target device **10**. The hoops **67** are mounted to the free ends of the arm **66** in such a manner that they are disposed in substantially parallel planes with respect to each other to provide alignment between the hoops. The planes of the hoops are substantially perpendicular to the longitudinal axis of the arm **66**. Each of the hoops **67** is provided with a radially extending resilient mounting member **78** which is vulcanized or otherwise attached to the periphery thereof. The resilient mounting members **78** of each of the hoops **67** is provided with a mounting pin **80** for demountably attaching the hoops **67** to the extensible ends **76**. Resilient mounting of the hoops **67** in the hereinbefore described manner will absorb some of the shock of a missile striking the hoop **67**. In the even that a misdirected missile strikes the hoops **67** or the revolving arm **66** so that the rotary motion of the arm and target is interrupted, the drive means **34** will allow slippage between the disk **36** and the wheel **64** to prevent damage to the operating mechanism.

It should be noted that other types of drive means such as a pulley-belt arrangement (not shown) may also be employed to drive the target mechanism. It may further be seen that it is not necessary to mount the tubular member **14** in a vertical position as it would operate equally as well if mounted horizontally or at various angles.

While the principles of the invention have now been made clear in an illustrated embodiment, there will be immediately obvious to those skilled in the art many modifications of structure, arrangement, proportions, the elements, materials and components, used in the practice of the invention, and otherwise which are particularly adapted for specific environments and operating requirements without departing from those principles. By way of example the target members may be provided with sensing devices which would produce audio or other types of signals when the projectile passes through one or both of the revolving targets. The appended claims are therefore intended to cover and embrace any such modifications, within the limits only of the true spirit and scope of the invention.

What I claim is:

1. A revolving target device comprising:

a. a stand;

b. an elongated tubular member affixed to said stand;

c. a drive shaft rotatably journaled in said tubular member;

d. drive means positioned adjacent to one end of said drive shaft and adapted to impart rotary motion thereto;

e. an arm attached intermediate its end on the other end of said drive shaft and positioned transverse thereto, said arm adapted to rotate with said drive shaft; and

f. a target member mounted on each end of said arm, each target member having an opening formed therethrough, said target member positioned on said arm so that the openings formed in said target members are substantially aligned.

2. A revolving target device as claimed in claim 1 wherein said drive means comprises:

a. a driven member on said drive shaft;

b. a motor;

c. coupling means between said motor and said driven member for driving the latter, said coupling means adapted to allow slippage between said driven member and said motor when a projectile strikes said revolving target device causing interruption of the rotary motion thereof.

3. A revolving target device as claimed in claim 1 wherein said drive means comprises:

a. a disc attached to said drive shaft;

b. a motor;

c. a driving member attached to the output shaft of said motor and positioned to drivingly engage said disc, said driving member and said disc adapted to allow slippage therebetween when a projectile strikes said revolving target and interrupts the rotary motion thereof; and

d. mounting means on said tubular member upon which said motor is mounted, said mounting means adapted to adjustably position said motor and said driving member for radially positioning the latter with respect to said disc to adjust the rotational speed of said revolving target device.

4. A revolving target device as claimed in claim 3 wherein said driving member comprises a wheel.

5. A revolving target device as claimed in claim 3 wherein said mounting means comprises:

a a bracket attached to said tubular member and having diametrically opposed radially extending arms, each of said arms formed along the length thereof to provide extended portions which are parallel to the longitudinal axis of said drive shaft, one of the extended portions having a lip formed on the free end thereof, the other extended portion having an arcuate member on its free end;

b an elongated plate pivotably mounted on one end thereof to the lip with its other end slidably engaging the arcuate member, said plate having said motor mounted thereon; and

c locking means cooperating between said plate and the arcuate member for releasably holding said plate in a desired position.

6. A revolving target device as claimed in claim 1 wherein said arm is provided with extensible ends for adjusting the spacing between said target members mounted thereon.

7. A revolving target device as claimed in claim 1 wherein said targets each comprise a hoop.

8. A revolving target device as claimed in claim 1 wherein each of said targets is resiliently mounted on said arm.

9. A revolving target device as claimed in claim 1 wherein said target members are hoops demountably resiliently mounted on the free ends of said arm, said hoops disposed in substantially parallel planes which are perpendicular to the longitudinal axis of said arm.

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