# United States Patent [19]

**Imatt et al.**

[11] **3,756,599**

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[54] **MOVABLE COUNTERWEIGHTED DARTBOARD**


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[52] **U.S. Cl.273/102.1 C,** 273/102.1 E, 273/102 B, 273/100, 273/105 R

[51] **Int. Cl.** ..... **A63b 71/02**

[58] **Field of Search** ..... 273/102.1 R, 102.1 C, 273/102.1 E, 105.2; 46/201, 202



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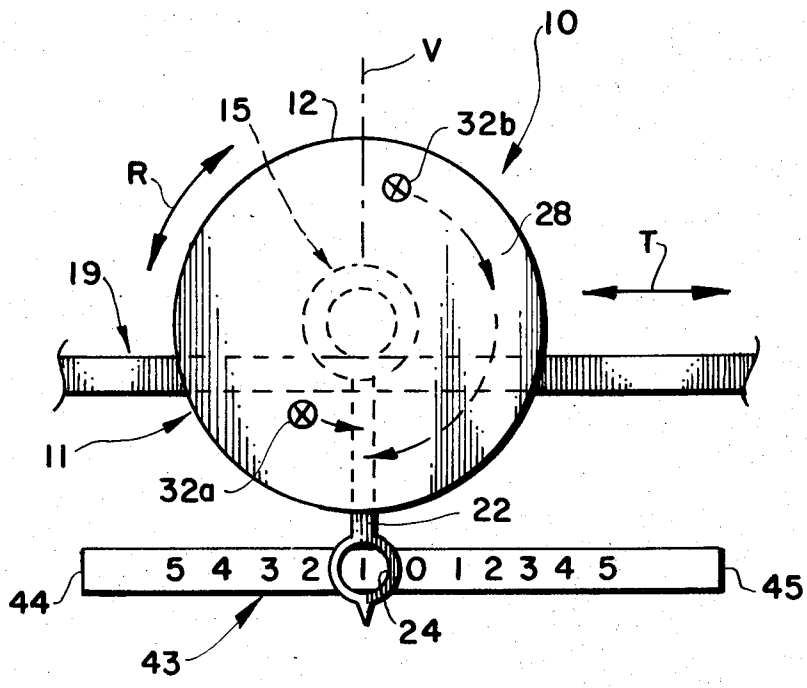
[57] **ABSTRACT**

A target is structured to shift to a new location in reaction to being struck by a missile. The target is mounted so as to simultaneously rotate and experience lateral displacement on a horizontal track when a missile such as a dart becomes affixed to the target at a point on either side of a vertical line extending through the target's center.


**8 Claims, 3 Drawing Figures**



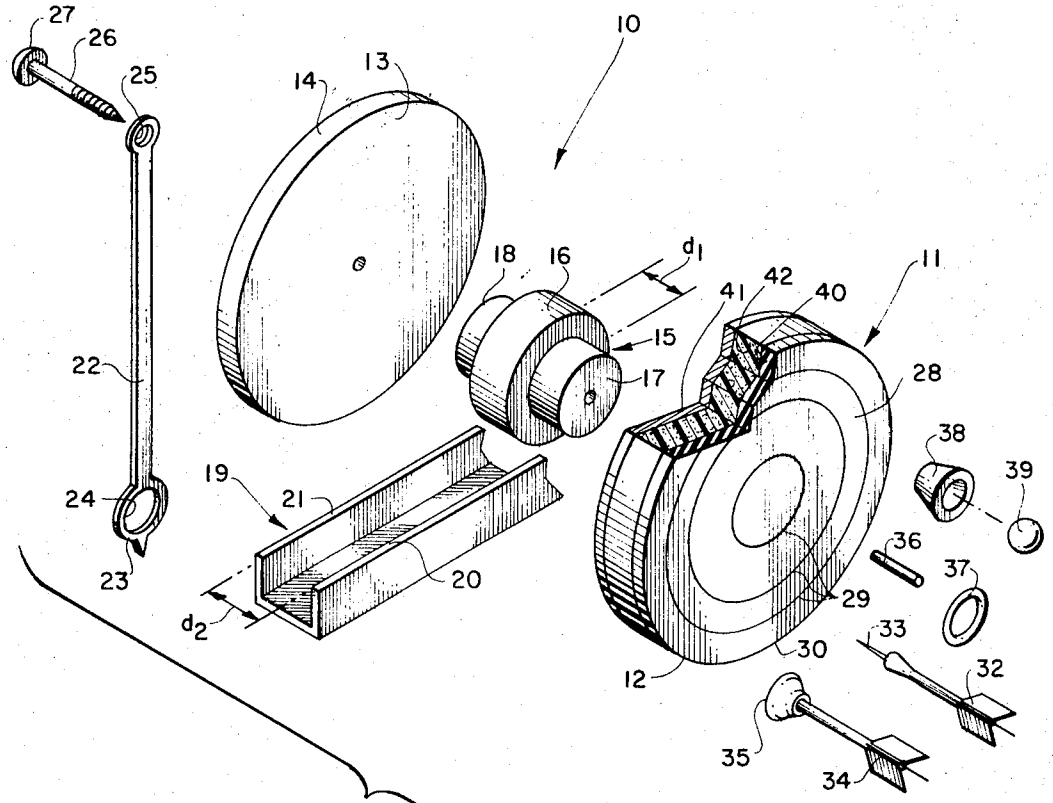



FIG. 1

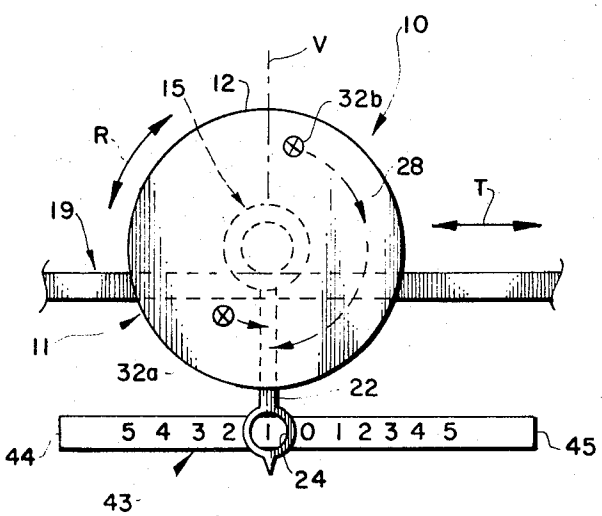



FIG. 3

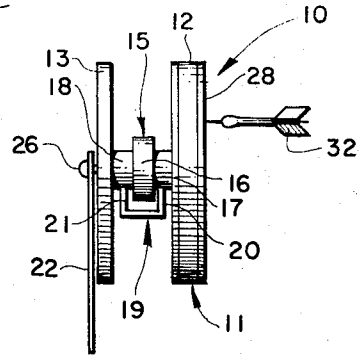



FIG. 2

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# MOVABLE COUNTERWEIGHTED DARTBOARD

## BACKGROUND OF THE INVENTION

This invention relates to games of skill and more specifically to a target capable of moving in response to being struck by a missile.

Different types of dart games with conventional stationary targets have been played for many years by people of all ages.

Variations of the basic dart game wherein the dart board or target revolves or spins on a stationary axis are disclosed in U.S. Pat. No. 1,076,002 to Clarke (1913), U.S. Pat. No. 2,056,095 to Cookson (1936) and U.S. Pat. No. 2,179,471 to Lee (1939).

## SUMMARY OF THE INVENTION

Briefly stated this invention is a challenging sport or game of skill, capable of amusing and being enjoyed by contestants and spectators.

In its broader aspects the movable target game incorporates a generally horizontally aligned track and a statically balanced target which is supported on the track for lateral movement and has an exposed strike zone for releasably holding missiles such as darts. When a missile is thrown by a contestant at the strike zone and it becomes attached to the target at a point on either side of a vertical line passing through the target center, the missile is automatically caused to gravitationally descend and thereby force the target to move laterally along the track until static balance of the target is restored.

The target is of circular cross section and rests in rolling engagement on the track so that the target is caused to roll over the track as the missile gravitationally descends through an arcuate path. The target includes a front plate that carries the strike zone, counterweight means, and an intermediate rotatable element arranged in rolling engagement with the track and rigidly interconnecting the front plate and counterweight means.

The track is preferably constituted by a pair of parallel rails and the rotatable element has a pair of oppositely extending wheels that rest upon corresponding rails while an enlarged hub portion is disposed between the rails for centering or guidance purposes.

In order to measure the extent of lateral displacement a stationary reference scale is provided along with indicating means coupled to the target and arranged to point at the reference scale. Different rules and scoring systems can be used and the strike zone can be marked with indicia to accommodate different versions of playing the movable target game.

## BRIEF DESCRIPTION OF THE DRAWINGS

The numerous benefits and unique aspects of the present invention will be fully understood when the following description is studied in conjunction with the drawings in which:

FIG. 1 is a schematic, exploded, partially sectional view showing the primary components of a movable target game constructed in accordance with this invention;

FIG. 2 is a side view showing components of FIG. 1 assembled for use by contestants in playing a game; and,

FIG. 3 is a front, partially schematic view of the movable target game.



## DETAILED DESCRIPTION OF THE PREFERRED EMBODIMENT

Referring now to FIG. 1 a movable target game **10** is shown which incorporates a target **11** that is normally statically balanced and supported for lateral displacement upon becoming statically imbalanced in a manner that shall be fully described.

Target **11** has a front plate **12** exposed to or facing the person or contestant preparing to play the game **10.** Arranged behind and generally concealed by front plate **12** is a generally disc shaped counterweight **13** with a periphery **14.** The weight of counterweight is substantially equivalent to or slightly greater than the weight of front plate **12** so that tendencies of front plate **12** to shift to one side or the other for reasons to be described are facilitated and not impeded.

Disposed between front plate **12** and counterweight **13** is a rotatable element **15** with a central enlarged hub **15** and a pair of oppositely extending wheels **17** and **18.** The wheels **17** and **18** are rigidly connected by conventional mechanical or adhesive means to both front plate **12** and counterweight **13** so that the front plate **12,** counterweight **13** and rotatable element **15,** which constitute the target **11,** are held together as a unit.

Positioned beneath rotatable element **15** and between front plate **12** and counterweight **13** is a substantially horizontally aligned track **19** of indefinite length, having a pair of parallel rails **20** and **21** which directly engage and support wheels **17** and **18.** The thickness $d_1$ of hub **16** is less than the distance $d_2$ between rails **20** and **21** so that the track **19** constitutes a centering device or guideway for the entire target **11** as wheels **17** and **18** make rolling contact over rails **20** and **21.**

An indicator arrow **22** has a lower end formed with a point **23** and a window **24** and an upper end formed with a mounting aperture **25.** When a pivot pin **26** is inserted through aperture **25** and is connected to the center of counterweight **13,** then indicator arrow **22** is mounted so as to hang freely and is prevented from slipping out of position by pin stop head **27.** Pin **26** may be of sufficient length to penetrate through counterweight **13** rotatable, element **15** and front plate **12** in order to assist in holding these three components together as a unit.

The exposed surface of plate **12** constitutes a strike zone **28** for projectiles or missiles and may, although it is not necessary, carry indicia to divide the strike zone **28** into sections. The sections may be annular as defined by a series of circles **29** and the edge **30.** The particular type of projectile or missile may vary and by way of example may be a dart **32** with a piercing tip **33** or a dart **34** with a suction cup tip **35.** As a variation the missile, rather than being releasably held by front plate **12** directly, may be releasably held by some intermediate element coupled to front plate **12.** In this regard the intermediate element may be a peg **36** and the missile may be a toss ring **37** or the intermediate element may be a retaining cup **38** shaped and oriented to accept and hold a ball **39** tossed into cup **38.**

When the missile is a dart **32** with a piercing tip **33** the front plate **12** is preferably constructed from three layers of material, i.e.; a rubber facing sheet **40** shown with exaggerated thickness for purposes of description, a backing plate **14** constructed from wood plastic or metal and an intermediate core **42** fabricated from plastic or rubber foam material that is sufficiently firm

to hold a penetrating dart **32**. Facing sheet **40** is a self-healing or self-sealing in the sense that when darts are removed from their puncture holes the resiliency of the rubber or equivalent material causes the torn edge to deflect and at least partially close the puncture hole.

Referring primarily to FIG. **2** the major components of the movable target game are shown assembled for game play use. Front plate **12**, counterweight **13** and rotatable element **15** are coaxially aligned. Wheels **17** and **18** of rotatable element **15** rest upon and make rolling engagement with rails **20** and **21** respectively. Indicator arrow **22** is vertically aligned and held by pivot pin **26** which is coupled to and coaxially aligned with at least counterweight **13**. A dart **32** is shown in strike zone **28** and releasably held by front plate **12**.

Referring primarily to FIG. **3** a schematically depicted dart **32***a* is shown releasably held in strike zone **28** to the lower left of a vertical line V passing through the center of front plate **12**. Another schematically depicted dart **32***b* is shown releasably held in strike zone **28** to the upper right of the vertical line V. The entire target **11** is structurally arranged for lateral or sideways movement in either direction, as represented by letter T and is capable of moving either clockwise or counterclockwise as represented by letter R.

At a point beneath target **11** there is a stationary reference scale **43** having a left side **44** and a right side **45**. The left side **44** carries indicia constituted by numerals **1** through **5** reading from right to left and the right side **45** also carries indicia in the form of numerals **1** through **5** reading from left to right. When a dart or other missile is thrown, shot or otherwise impelled towards the target **11** and becomes releasably held in the strike zone **28** then, unless the missile coincides with vertical line V, the combined weights of the target **11** and missile will result in a statically imbalanced condition.

When this event occurs the missile descends under gravitational force to a point on vertical line V during which time target **11** is caused to travel along track **19**. As each succeeding missile is likewise thrown at and held in the strike zone **28** a new center of gravity of the total mass constituted by the target **11** and all the missiles is created and the target **11** is caused to rotate and laterally shift to different positions as the changing center of gravities are brought into coincidence with the vertical line V.

Coaction between indicator arrow **22** and reference scale **43** permit the amount of horizontal displacement between a previous position or the center reference point and a new position to be measured. Scale **43** may be constructed from transparent plastic and positioned either forwardly or rearwardly of the depending indicator arrow **22**. Scale **43** may be independently mounted or connected to track **19** by mechanical links or webs (not shown).

## OPERATION

Keeping the above construction in mind it can be understood how the movable target game operates.

When a dart **32** is impelled towards target **11** and becomes affixed to the front plate **12** at position **32***b* then the combined mass of the target **11** and arrow **32** becomes statically unbalanced. As the dart **32***b* gravitationally descends along a relatively long arcuate path as indicated by the dotted line the target **11** rotates clockwise and shifts laterally to the right. When the arrow **32***b* comes to rest on the vertical line V beneath the center of front plate **12** then movement of the target **11** will cease and the amount of displacement can be measured by the coaction of arrow **22** and scale **43**.

If the first arrow strikes the target **11** at position **32a** then, by way of contrast, it can be seen that the arrow will gravitationally descend through a relatively small arcuate path and the target **11** will be caused to rotate counterclockwise and shift to the left through a correspondingly small displacement. As second and subsequent arrows are affixed to the target **12** the target will be forced to successively shift to new positions either in the same or opposite directions.

The movable dart game **10** can be played by one or more players following different sets of rules, procedures, formats and scoring systems. By way of example the game objective may be to move the target as far as possible or through a predetermined distance with a certain number of missiles, maintain the target at a central reference location while being required to throw a certain number of missiles etc. Again the particular game rules and objectives can be almost unlimited but the operation of the movable game itself will remain basically the same.

When a missile is thrown and causes a change in the center of gravity, the target **11** develops momentum in being displaced to a new position. In accordance with a variation of this movable target game, by strategically shooting additional missiles into the target **11** while it is rolling the target can be caused to either gain momentum and advance or lose momentum and reverse its path of travel.

In order to limit lateral travel by target **11**, stops or gates may be placed on the track **19** at equal or different distances from the center of scale **43**. The track may be slightly V-shaped with half sections diverging along gentle slopes from a central point above the center of scale **43**.

Because the overall target **11** is statically balanced it can be easily manually repositioned and, for example, placed over the center of scale **43** prior to beginning a new game or round.

From the foregoing it will be evident that the present invention has provided a movable target game in which all of the various advantages are fully realized.

We claim:

**1.** A movable target assembly comprising:

a. a generally horizontal track constituted by a pair of parallel rails;

b. a target in contact with the rails and including;

b.1. a front plate carrying an exposed strike zone for releasably holding missiles,

b.2. counter weight means,

b.3. a rotatable element positioned between and arranged to rigidly interconnect the front plate and counter weight means, the rotatable element having a pair of oppositely extending wheels that rest in rolling engagement on corresponding rails and an enlarged hub disposed between the rails.

c. wherein when a missile strikes the strike zone and becomes attached to the target on either side of a vertical line through the target center, the missile is caused to gravitationally descend and thereby force the target to move laterally with the rotatable element rolling along the track until static balance is restored.

2. The structure according to claim 1, wherein;
the front plate and counterweight means have the same cross sectional shape and are disposed on opposite sides of the track.

3. The structure according to claim 1, wherein;
the front plate includes a foam core and a facing sheet constructed from generally self-sealing material, and,
the missile is a dart.

4. The structure according to claim 1, including:
a stationary reference scale; and,
indicating means coupled to the target and arranged to point at the reference scale.

5. The structure according to claim 4, wherein;
the indicating means is an arrow coupled to freely hang from the target.

6. The structure according to claim 5, wherein;
the free end of the arrow is positioned beneath the lowest part of the target.

7. A movable target game comprising:
a. a substantially horizontal track;
b. a front plate having a strike zone for releasably holding missiles;
c. counterweight means axially spaced from the front plate;
d. a rotatable element positioned in rolling engagement on the track and positioned between and arranged to rigidly interconnect the face plate and counterweight means;
e. a stationary reference scale; and,
f. indicating means coupled to the counterweight means and arranged to point at the reference scale,
wherein when a missile strikes the strike zone and becomes attached to the front plate on either side of a vertical line through the front plate, the missile is caused to gravitationally descend and thereby force the rotatable element, counterweight means and frontal plate to move laterally along the track as a unit until static balance is restored.

8. The structure according to claim 7, wherein;
the track is constituted by a pair of parallel rails, and,
the rotatable element has a pair of oppositely extending wheels that rest upon corresponding rails and an enlarged hub disposed between the rails.

* * * * *