Abstract

This application describes the use and construction of a lightweight, portable target for use in the game of Disc Golf. The purpose of the invention is to provide lightweight, compact, durable Disc Golf Target exhibiting features that improve over those already in existence and which also meets the requirements for officially sanctioned targets as published by the PDGA (Professional Disc Golf Association). The target is suitable for use anywhere and anytime a disc golfer may wish to play the game of disc golf; it can easily be used inside or outside a house or other structure. The target is just as suitable for play in completely dark nighttime conditions as it is during the day.
PORTABLE INDOOR AND OUTDOOR DISC GOLF TARGET FOR DAYTIME AND NIGHTTIME USE

CROSS REFERENCE TO RELATED APPLICATION

[0001] Not applicable

FEDERALLY SPONSORED RESEARCH

[0002] Not applicable

SEQUENCE LISTING OR PROGRAM

[0003] Not applicable

BACKGROUND

Disc Golf, the Sport

[0004] Disc Golf is a sport conceptually similar to regular golf. Rather than hitting a small composite ball with a golf club with the intent to cause the ball to come to rest in a designated hole in the ground, Disc Golf involves throwing a disc (similar to a Frisbee®) at a designated target with the intention of either striking the target or causing the disc to come to rest in a basket portion of the target. When modern Disc Golf came into existence in the 1960's, many courses were simple “object” courses where the stated goal of each successive “hole” was simply to hit an object (tree, lamp post, fire hydrant, etc) with a thrown disc.

[0005] Disc Golf is a relatively quickly growing sport with annual increases in participation in the United States of over 10% per year during decade leading up to the year 2012. The current sanctioning body for the sport of Disc Golf in the United States is the Professional Disc Golf Association (PDGA). Specifications set by the PDGA for official targets allowed in sanctioned league and tournament play allow for both “basket style” and “object style” targets. Both styles of target consist of a “Target Zone” and a “Support Structure”.

Comparison of Target Styles

[0008] Both main styles of target, basket and object, are commonly known to disc golfers as distinct types, both styles are described in the Technical Standards of the Professional Disc Golf Association as separate types, and both styles are acceptable to use in playing the game of disc golf. One large difference is the attitude of the players, with most expressing a strong preference for basket type targets for several reasons, among them 1) that is what they are used to playing on, 2) the target area of a basket type target offers a larger area from which to pick out an “aiming spot”, and 3) there is less chance of an argument between players when all can easily tell what constitutes a hole out. With most object targets it is too difficult to tell with certainty when a player holes out unless you are watching the target very closely at all times.

PRIOR ART

Basket Style Targets

[0009] Basket style targets are the more well known in the sport of disc golf, a far majority of public disc golf courses use this style of target.

[0010] The first target of what is now considered the traditional design is described in U.S. Pat. No. 4,039,189, 1977, by Headrick et. al. This basic design has been improved upon many times, including as described in additional patents by Headrick, for example U.S. Pat. No. 4,461,484 in 1984 and U.S. Pat. No. 4,792,143 in 1987, as well as by others for example Dunipace in 1999 as described in U.S. Pat. No. 5,921,551.

[0011] Many of these improvements involve different arrangements and pluralities of chains, for example adding an additional set of chains interior to the first set, arranging them so that they intersect each other, and modifying in some way the method in which the chains interact with each other or with other parts of the structure. The intent is to improve how the target accepts and retains discs so that discs of a variety of sizes and weights being thrown from any angle at any speed that wind up hitting the chains also wind up in the basket.

Portable Targets

[0012] Targets of a portable variety such as those described by Chittenden in U.S. Pat. No. 6,554,285 of 2003 include a stand that does not rely on a pole being anchored into the
ground but rather a broad circular base. This is meant to match, in form and function, the permanent basket style targets existing on disc golf courses where the game is commonly played. The intent is twofold: One, the use of portable targets allow a temporary disc golf course to be set up in any area having sufficient space where a permanent course is not economical, practical, legal, or where one wishes to "try out" how a course would play in a particular area. The second main intent of portable disc golf targets is so players can practice the sport wherever they please. Some portable targets are set up in back yards, some are taken to public parks for temporary practice, and some are even hauled around in the back of pickup trucks everywhere an owner goes so that they may practice at a moment's notice anywhere.

There has also been a trend to make these baskets as light as possible to increase portability and ease of use. Further improvements claimed by others to increase portability in addition to catching discs better; one such target by Holgate in 2004 is described in U.S. Pat. No. 6,776,417. This target intends to catch discs better than previous targets while also allowing the target to be folded for easier transport and storage. The mechanical devices used by Holgate in this example resemble in function a combination of umbrellas; one such device opens at the top of the pole and is used to hang the chain assembly; another opens "upside down" and is used as a basket assembly to catch discs, and the base of the example folds not unlike a common music stand with three folding legs acting as a tripod. An inherent flaw in this concept is the effort to reduce weight for portability, while at the same time retaining weight so that the chain assembly does an adequate job of catching discs; this balancing act is unlikely to meet the needs of the diverse population of disc golfers.

Object Style Targets

As mentioned above, PDGA specifications require only that an object target have an area of a certain height that is also a specified distance off the ground. Previous examples of object style targets include Brown's U.S. Pat. No. 5,397,130 effective 1995 which is simply a collapsible pole of several sections containing a flag on top where the object is simply to hit the pole with the disc. They require visual confirmation.

U.S. Pat. No. 5,452,903 by Larraby in 1995 is described as an "audible flying disc target assembly" and consists of a tubular structure at the center that is impacted by members hanging horizontally around the tube when the hanging members are struck by a disc.

Most varieties of pole style targets (audible and visual) can create confusion and disagreement between players about the validity of some hits, specifically "blows" that some players may see or hear that other players don't.

Portable Targets, Basket vs. Object

When comparing portable targets, the main advantage a basket style target has over an object style target is the similarity in size and shape to the permanent targets at public courses. Those who play disc golf on a regular basis, and particularly those who enter and play tournaments for sport or for prizes, recognize the importance of practicing on equipment as similar as possible to the standard equipment used during tournament events. For those unfamiliar with the sport and to stress the competitiveness of disc golf, according to the PDGA website the 2011 PDGA World Championship Tournament saw over 400 professional players competing for over $100,000.00 in prize money. Throughout the year of 2011 the PDGA had over 16,000 registered players and over $2 million dollars was won during 1338 events. To give players the best possible practice environment it is important to match the equipment one practices on. Therefore most players use portable targets of the basket variety. When setting up and getting ready to "putt" (what intends to be the final throw, usually from a relatively close distance to the target) and aiming at the target one of the most common tips an instructor of the sport will give is to find a spot on the chains at which to aim. This spot depends on ambient conditions (wind, slope, precipitation) and also on the type of disc being used and the type of throw (forehand, backhand, right or left handed) planned. It should be obvious at this point that a player cannot aim at a chain that isn't there, and most object targets do not contain chains, therefore using an object style target is not agreeable to most players as a form of serious practice. One object target that does contain a chain in an embodiment shown in a patent drawing is Larraby's audible target mentioned in the above section. However, the chains contained on this target are of an ancillary purpose. They are there simply to make a noise; when a thrown disc hits the target the chain will impact the major component of the target, a wind-chime type gong designed to give a noise to confirm a target strike.

Alternate Targets

There are many commercially available games that involve throwing a disc at some type of target, net, or object, including for example U.S. Pat. No. 6,834,858 by Reineke in 2004. These games, while certainly fun to play for many users, do not resemble in any way a traditional disc golf target. These will be dismissed as inappropriate for serious practice by many disc golfers.

I conclude that prior art in the field of portable disc golf targets fall short in manufacturing or envisioning a portable target offering some of the advantages of basket style targets. I have found through experience that no existing available targets meet the combined goal of being extremely portable and also being similar in visual appeal and "practicability" of a full size basket style target. My experience shows that I was unable to locate in design or in commercial availability a disc golf target for the use of local Cub Scout and Boy Scout groups. The "portable" basket style targets on offer were far too bulky and heavy to envision taking on a camping trip and were too heavy for most of the children to utilize. The available object style targets neither look nor act like a regular target having a set of chains.

ADVANTAGES

Accordingly several advantages of one or more aspect of the embodiments described below are as follows:

Size and Weight

Most current disc golf targets that are called "portable" are called such simply because they are not permanently anchored to the ground. The embodiment described in this application folds to a relatively small size, making it more convenient for storage and transport than existing designs. It is also lighter in weight than other targets, allowing for transport in a manner that current designs do not allow. The ultralight construction creates a target that is portable enough for most all players to transport and use. In general, it is not practical to transport (for any appreciable distance) and use
basket style portable disc golf targets of current design without the assistance of a car or truck. Most common and popular current designs weigh in the range of 15 to 25 pounds, and fold to a size that do not allow transport unaided by a car or truck of more than two or maybe three at a time for all but the strongest adults, and then for only short distances. Some current target designs include dollies, carts, or wheels, which may increase the mobility of the targets while they are on the ground, but these features do not help at all, and may actually hinder, if it is desired to transport the targets over considerable distance. The embodiment of my target described here allows for anyone to transport multiple targets at the same time over longer distances without aid. For example, using targets as described in this application (weighing under three pounds each), it is possible even for children to transport in a backpack, on a bicycle, or just carrying in the hand, several targets at a time over any distance without appreciable additional effort over which would be required to bike or walk the same distance without the targets. Utilizing Targets constructed in the manner described in this application, a complete 9-hole Disc Golf Target set is, when folded for storage or transport, roughly equal in weight and cubic space to a single target of existing common design.

Feasibility for Inside Use

Using existing disc golf targets inside is usually not considered by most players simply due to the size and weight of most disc golf targets. Those small and light enough to be easily manipulated through doorways and inside a structure have additional impediments to interior use such as causing damage to floor structures. The embodiment of my target is easily utilized indoors due to extreme light weight and collapsible size. It is also less likely that this target will cause damage to floors or other interior structures due again to its light weight and also because all parts of the target base include protective caps.

Glow Disc Golf

Outdoor daytime use is the most common for all disc golf targets, including this embodiment. However, common in some localities and among certain subsets of disc golfers are those who enjoy playing at night, some players even have “glow leagues” in which the games are played only in the dark. There are products that are available commercially specifically for playing disc golf at night. These include special LED lights for attaching to flying discs, special flying discs incorporating a light and battery into the structure, and flying discs having small “chirping” or “whistling” noises so that they can be physically located under low light conditions. There is not a good way to light up a current disc golf course so that targets are effectively lit using efficient and economical means. Some players rig a combination of household or battery operated lights so that they can light up the baskets on a disc golf course.

Night time use of the embodiment of my target is appropriate because the materials of construction of the target zone have the quality of luminosity when viewed with the assistance of a portable ultra-violet flood light.

Constructing an embodiment shown in FIGS. 1–9 of this application, using materials specially constructed of UV-reactive material, with the addition of a small battery operated UV flashlight it is possible to make the targets of a disc golf course appear to visibly glow in a very obvious manner. Lit up in this manner it is easier to spot the targets on a disc golf course than if they were only lit with traditional lighting. Many disc golf courses are located in public parks, and because there may be many small sources of light in a public park (street lights, sidewalk markings, lit signs, etc) it would be easy to misidentify a disc golf target if one assumed that any spot of light in the distance contains a disc golf target. When a target contains UV reactive materials and is lit up with UV lighting it is very obvious where the target is located, and it is much harder to misidentify a day-glow set of chains as a park bench or other item commonly lit by traditional lighting. Using UV lighting and materials also requires less electricity than traditional lights. A portable battery operated UV flashlight containing about a dozen LED bulbs will run for many hours on two or three “AAA” sized batteries, the UV light from which will cause a target to profusely glow and be obviously visible from several hundred feet. A traditional flashlight of the same size does not have enough power to cause a standard disc golf target to be lit well enough to be as visible from the same distance.

Durability and Reparability

The embodiment of my target lacks mechanical hinges, locks, and other devices prone to breakage found on current folding or collapsing style targets. The Mast Assembly, similarly, lacks the locks or twisting devises that are prone to breakage on existing telescoping poles. The parts of the invention that may break are easily repaired using common materials without special tools; a broken section of a Target built by the methods described here is not “ruined”, nor would it be expensive to repair or replace as may be the case with other existing targets.

Ease of Use and Safety

No tools are required to assemble the embodiment of my target. It does not require instructions to assemble, as all pieces are, when in the folded position, restrained in the correct place and remain ready for deployment in an intuitive manner. It would be difficult to arrange the pieces of the target in a manner that would lend itself to incorrect assembly.

Children as young as 7 or 8 are able to assemble and use the embodiment described here, simply by observing the construction and intuitively seeing where the parts fit and seat themselves due to the way the invention holds itself together with elastic cords. There is also less risk of injury, especially to children, as compared to other portable targets because of the relatively light weight of the embodiments shown below. The embodiment of my target also lacks metal structures and heavy chains that can cause injury. Other targets, containing heavy chains or metal poles, pose a risk of injury that is not present with the embodiment of my target.

Use and Scoring

As mentioned above, the use of an object style target in a game of disc golf creates a potential that the outcome of a scoring attempt is not clear to all players. The embodiment of my target can decrease the instances of disagreement between players. Due to the design of the embodiment of my target, visual evidence of a hit is magnified in a way not possible with traditional or existing pole style targets. When a thrown disc physically connects with this Target, the kinetic energy of the disc will substantially disrupt the at-rest state of the target portion of the invention, making clear to all players
the validity of a score, regardless of viewing angle, noise pollution, vision clarity, or other conditions which may contribute to unclear outcomes of a disc thrown at other targets. The relative weight of the embodiment of my target, being so much lighter when compared to others allows it to move more than heavier targets when it is struck by a flying disc. Unlike other targets the chains on the embodiment of my targets are not required to arrest a thrown disc. Therefore, when using an embodiment of my target compared to existing pole style target there will be fewer argument about a holed out disc.

Visual and Functional Appeal

Another distinguishing characteristic of embodiment of my target is its visual and functional appeal when compared to currently available object style targets. Many currently available portable targets that are light enough in weight to be transported easily (for arguments sake those under five pounds) do not resemble, in form or function, traditional PDGA approved targets. Many are plastic or composite loops, hoops, or fishnet-style baskets. While these may be adequate for practice and for games similar to disc golf, none meet PDGA requirements for official targets and therefore cannot be used for sanctioned league play or tournaments. Many lightweight targets also leave the agreement of a valid score dependent on viewing angle. As for visual appeal, many of the existing lightweight targets simply don’t look anything at all like standard PDGA approved targets. The embodiment of my target, while it does not have a basket, still resembles targets at which most players throw discs in that it has a set of chains that look similar to the chains that hang in a typical basket type target. Aiming at a basket style target and aiming at an embodiment of my target offer enough visual similarities that practicing on the embodiment of my target offers benefits not conveyed by practicing on dissimilar looking targets.

SUMMARY

In accordance with one embodiment a portable disc golf target compromising a target zone and a support structure that is suitable for use indoors and outdoors during daylight or low ambient light (dark) conditions. Portability of this embodiment is much greater than that of previous designs due to its weight and folded size being a fraction of other available targets. This design is a hybrid of a simple “object style” target with the addition of a set of chains designed to have similar size and visual appeal as the chains of a traditional “basket style” target. The advantages of such a hybrid include, but are not limited do, that it contains the benefits of portability and light weight of a minimal object target while maintaining the “playability”, including that a player can “aim” at the familiar chains of a basket style target. As such this embodiment is an improvement over the suitability of existing object targets as well as an improvement in portability, variety, and ease of use over existing portable basket style targets.

REFERENCES NUMERALS FOR FIGS. 1-10

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DETAILED DESCRIPTIONS

First Embodiment

The Professional Disc Golf Association specifies that PDGA Approved Disc Golf Targets will be radially symmetrical. As such, any description of a part called out below will have the same attributes for each of the plurality of times
it occurs (example being that where one leg of the embodiment is described below so will be the other legs).

[0047] FIG. 2 and FIG. 3 show the same embodiment, FIG. 3 in the extended state ready for play; FIG. 2 in a partially folded state. These two figures show that the first embodiment has three main structures; a target zone/chain assembly 29, a mast assembly 27, and a base/leg assembly 11. When combined, the base/leg assembly and the target zone/chain assembly create to form the support structure.

Base Hub

[0048] The base assembly of the embodiment has a plurality of legs 16 situated around a Base Hub 10 which is held firmly to the ground via a Ground Stake 44 and a Tether 46. The base hub in this embodiment is a short cylindrical structure with faces pointing up and down.

[0049] Each leg hole of the base hub starts at the end of the base closest to the ground and is located around the perimeter of the cylindrical base. FIG. 3 each hole is 120° around the perimeter of the base hub from the other legs. The leg holes are drilled at an angle from horizontal, towards the top end of the cylinder, so that the base sits on the ground once the legs are installed (a basic tripod design in this example). Section C-C of FIG. 7c shows that each hole is drilled not towards the center of the cylindrical base but towards the outside perimeter of the leg hole of the neighboring leg.

[0050] The proximal end of each leg is inserted into a hole drilled in the base hub. The inside diameter of the hole is only slightly larger than the outside diameter of the legs to allow a snug interference fit that is easily assembled and disassembled.

[0051] FIG. 7c also shows that the base hub may contain a hole smaller than the leg hole and slightly larger than the Elastic Cord. This smaller hole allows the elastic cord of each leg to be fastened permanently inside the base hub so that each leg is permanently retained in the general area required for assembly. The elastic nature of the cord also serves to maintain the leg in position once installed for use. The embodiment of FIG. 7c shows that the method for attaching the leg cord inside the base hub is a knot 52 in the cord once the cord is run thru the base hub.

Legs

[0052] Each of the legs (they are all the same in this example of one embodiment) is constructed of a hollow cylindrical structure with its distal end covered by an End Cap 42. Caps may serve to protect the leg ends from damage and to protect the floor when the target is used inside. Interior to each leg is an elastic Leg Cord 32 running from the distal end thru the length of the leg, continuing thru the base hub. The cord is knotted or otherwise attached at each of its extremities in such a way that the cord cannot be removed or pulled through the hollow leg. The cord will therefore cause the leg to remain attached to the base hub when the target is folded for storage or transport so that it is apparent where the leg is to be installed for use once desired. The elastic nature of the cord also assists in forcibly retaining the legs in position with the base hub when the target is in use. The method for attaching the cord at the distal end of the leg is concealed by the end cap.

[0053] The example embodiment of FIG. 3 shows three legs, but any plurality could be used. One advantage of three legs over a larger plurality is that the target is more easily installed in a stable and vertical manner on uneven ground when only three are used.

[0054] In addition to holes for the legs, the base hub has a hole to support a Lower Mast Section 22. This hole is drilled axially into the cylinder, starting from the top of the base and stopping just short of the bottom of the cylinder. This hole in the base hub is only slightly larger in diameter than the lowermost mast section so that a snug interference fit is made. A smaller diameter hole continues axially through the base hub past the termination of the mast hole to receive an elastic Mast Cord 38.

Mast

[0055] The mast assembly in this embodiment is further constructed of a Middle Mast Section 24 and a Top Mast Section 26. Each mast section is of a hollow cylindrical construction. The mast sections fit together such that they are additive in length. A detail of the mast assembly joint of this embodiment is shown in FIG. 7a. Mast sections may assemble in different ways; the method used by this embodiment is to size the middle mast section of a larger diameter and with a recess in each end so that it mates securely with adjoining sections. Mast sections are retained and enjoined to each other by the mast cord running continuously through the inside of each mast section. The elastic cord running through the mast serves to keep all the mast sections in the correct order for assembly and to forcibly retain the mast sections once assembled. The cord stretches when the mast sections are taken apart and therefore acts to maintain the sections in order for easy assembly. This mast assembly method is similar to the method commonly used on poles for camping tents.

[0056] On its lower end the mast cord serves to attach the base hub to the bottom mast section. The mast can be secured to the base hub by running the elastic cord of the mast assembly thru to the lower side of the base hub, where it permanently attached.

[0057] In the embodiment shown in FIG. 2 the attachment method at the lower extremity of the mast cord is a knot 52. After running thru the length of the mast the cord continues thru the small axial hole of the base hub. This hole is large enough in diameter to allow a single diameter of cord but small enough not to allow the knot tied in the end of the cord once it is passed thru the base hub. The opposite (upper) end of the mast cord acts in a similar fashion to attach a Top Hub 14 to the top mast section. FIG. 2 shows that the top extreme of the cord is tied to a Split Ring 40, which is the same construction of a common key ring. This split ring is then used to attach and contain a Number Sign 30. The number sign has the purpose to communicate to the user which "hole" they are playing during a round of disc golf.

Target Zone, Hubs

[0058] The top hub is the anchor point for a Target Assembly 29. The target assembly consists of the upper hub, a Middle Hub 12; each of these two hubs has a set of extensions to hold the chains 26, in the upper hub these extensions are a set of Upper Spurs 20 and in the middle hub are a set of Lower Spurs 18. The top hub sits atop the mast assembly and contains a hole for each upper spar. Each spar is of a hollow cylindrical design. The proximal end of each spar is inserted into the hub, the distal end of each spar covered by an End Cap
42. When all spars and chains are attached as described below the result is that the chains hang from upper spar spar/top hub assembly and the lower spar/middle hub assembly then hangs from the chains. The chains comprise the actual target zone at which a person playing disc golf will aim and attempt to hit. The top hub and middle hub are similar to the base hub in that they are of a short cylindrical design with faces pointing up and down.

[0059] The top hub has a hole to receive the top mast section. This hole starts on the bottom face of the hub and extends axially up almost thru the top hub. This is similar to the hole in the base hub that serves the bottom mast section but is drilled slightly larger so that the top hub is free to rotate around the mast. A smaller hole continues axially thru to the topmost face of the top hub and serves to allow the mast cord to be run thru the top hub so that when the mast cord is attached to the split ring the result is that the top hub is constrained from moving axially along the mast or from being removed from the mast.

Target Zone, Spars

[0060] The top hub also has a set of holes to accept the upper spars. These holes are arranged around the perimeter of the hub and are drilled at an angle from horizontal towards the center of the hub. This results in each upper spar, when inserted into the top hub, extending up and away from the center of the hub. The size of the spar hole allows a snug interference fit of the spars. A smaller hole continues thru to the center of each hub to accept a Top Cord 36. The top cord acts like the leg cord to retain the spar to the correct hole in the hub for assembly and also to assist in maintaining the spar in place once assembled. The top cord is attached in the center of the hub by a knot 52 that is larger than the hole. At the distal end of the spar the top cord runs thru an End Cap 42 and is then attached to one end of a chain so that when assembled each chain hangs from its respective upper spar.

[0061] The same general assembly is used for a Middle Hub 12 and a set of Lower Spars 18. The main difference in this hub/spar assembly is that the axial hole running through the hub is large enough so that the hub moves freely around and along the mast; also the spar holes in the middle hub are angled opposite the holes in the top hub so that the set of lower spars points away and down from the hub. There is also a Middle Cord 34 acting the same as the top cord; it is attached by a knot 52 on the inside of the middle hub, runs thru a small hole in the middle hub prior to entering the length of the hollow spar, exits the distal end of the spar, runs thru the protective end cap and is attached to the end of the chain that is hanging from an upper spar.

Target Zone, Summary

[0062] In the example of this embodiment shown in FIG. 1 there are twelve total spars, six each on the top and middle hubs, arranged in pairs, each pair consisting of an upper spar and a lower spar. Between each pair of spars a single target chain is attached. This allows the chains to be held in place in a circular arrangement parallel to the mast assembly, thereby creating a target area of significantly larger diameter than the Hub itself. This arrangement assists in allowing a target of object style weight and size to have a target diameter similar to that of basket style targets.

Glow

[0063] A UV Light 54 can be used to cause a glow in the dark effect to be visible from the target zone. In FIG. 1 of this embodiment the UV light shown is a battery operated portable flash light. This is to be used when playing at night or in other low ambient light conditions. An embodiment having plastic chains constructed of a composite which includes a dye which is reactive to the ultraviolet spectrum (commonly called "day glow" or "black light colors"), or if the chains are painted or otherwise coated of a UV reactive substance, the chains will therefore appear to glow brightly when the UV light is pointed at the target.

Storage & Transport

[0064] The description above includes features used in the described embodiment to allow the target to be used in the game of disc golf. Each of three hubs described above as part of one embodiment also have features which assist in the storage and folding of the target. One of these features, shown in section D-D of FIG. 6A, is that each of the hubs has "scallops", or grooves, machined along the outside length of the cylinders sized in such a manner to allow the legs and hubs to fit into the grooves. Additionally, sizing the grooves to match the outside diameter of the legs and spars allow them to be "snapped in" so the hubs retain the spars and legs when the target is in a folded state. Sizing the grooves only slightly larger than the outside diameter of the spars and legs allows the tubular structure of the spars and legs to have a "resting place", all of the pieces may then be held together by a Containment Tie 50 shown in place in FIG. 6 around the folded legs. Placing the legs and spars in this manner allows the folded diameter of the target to be smaller than it would be had the hubs not have these grooves. The grooves also allow for a neater packaging job and help retain the parts of the target in the necessary place for installment.

Example of Materials

[0065] The embodiment described above is one example of many possible ways to construct the envisioned Disc Golf Target. The embodiment as described above, when built with lightweight plastic chain having 11/2" link size, fiberglass tubing 3/4" outside diameter for spars, fiberglass tubing 1/2" outside diameter for legs, mast sections of 1/2" outside diameter fiberglass tubing for the top and middle sections, 3/8" outside diameter extruded aluminum for the center section, and hubs machined from 1" long sections of 2" outside diameter UHMW polyethylene, all sized so that the resulting 20" long sections of chain form a portable PDGA Regulation Size Disc Golf Target having a total weight under three pounds and a folded size which fits a carry bag 3' diameter x 24" long. This brief description of materials of construction and physical size is mentioned only as an example of one of many embodiments and should not be construed to limit materials or sizes of what may be used to construct a target of the described embodiment.

Operation

FIGS. 1-10

Support Structure

[0066] One of the distinguishing features of the embodiment explained above is the ease of use and assembly. FIGS.
1-6 show one example of the many ways this might be accomplished. For the particular example shown here, unfolding the embodiment of my target as it is shown in FIG. 6 and placing it ready for use as shown in FIG. 1 is relatively quick and simple and should take no more than a minute or two.

[0067] Beginning with FIG. 6b, the first step is to remove the embodiment from the storage bag 48, at which the embodiment looks as it does in FIG. 6. Containment ties 50 are removed, if they are present, and the legs 16 are ready for installation into the base hub 10. This is accomplished by simply pulling the top of each leg down and away from the mast assembly 2. Each leg easily removes from its groove in the base hub when pulled in this direction. Once the leg is removed from its holding groove, it is automatically directed into and aligned with the appropriate hole in the base hub due to the elastic cord 32 which runs from the distal end of the leg, through the leg, and into the interior of the base hub. A slight twisting push will firmly seat the legs into position. The embodiment now should look like FIG. 5.

Target Zone

[0068] At this point the spars 18 and 20 are ready to be inserted into the top and middle hubs. The spars are pulled slightly to remove them from the grooves arranged peripherally around the hubs. Once the spars are out of the grooves, they align themselves automatically with their respective hub holes via an action of elastic cord 34 and 36. A slight twisting push will seat them in place for use and the embodiment of my target now looks like FIG. 4.

[0069] When folded the legs and spars were parallel to the mast assembly 2, with the legs and spars having a tendency to retain the mast assembly in place in the retracted position.

[0070] Now that the legs and spars are out of the way of the mast assembly, the mast sections 22, 24, and 26 will, when slightly separated from each other, automatically want to unfold and arrange themselves in the correct order (similar to a standard tent pole) due to the elastic cord 38 which runs from under the base hub, through all sections of the mast assembly, and through the far end of the top hub 14. The mast sections then must only be “helped” to seat themselves into the assembled position. Once the mast is assembled, the cord acts to forcibly retain the mast in the correct position for use and the target now resembles FIG. 3.

[0071] While the mast sections were folded they prevented the middle hub 12 from falling into its natural position at the end of the chains. Now that the mast is out of the way the middle hub is free to travel axially up and down the mast assembly.

[0072] Assembly is now complete. The remaining step is to place the embodiment of my target where it is desired for use and to cause it to remain there while play is taking place. If being used outside one easy way to accomplish this is to stake the target in place using a ground stake 44 and tether 46. The stake can be placed directly at the spot the target will be placed. The stake is inserted at a slight angle from vertical for best effect. The tether 46 is either adjustable or of strong elastic and runs through the top of the stake and also around the base assembly in some manner. The embodiment is light enough and has enough natural flexibility that a single cord and stake will be sufficient to hold it in place while discs are thrown at it.

[0073] If it is desired to use the target indoors the stake is not used. Instead a common household item is placed around the leg assembly, such as a large towel or a pair of jeans. The end caps 42 on the legs will protect flooring from damage.

[0074] The Target is now ready for use. One example of how the embodiment can be used in the game of Disc Golf is that when it is used as a Target, the intention of the player is to throw a disc in such a manner that the disc contacts the chains. Doing so will result in the chains moving in an obvious manner, possibly rotating around the axis of the mast if the disc hits only one side of the chain assembly. The chain may also “pop up”, which involves the nose hub raising sharply towards the top hub, which may happen with a direct hit. It is visually obvious when the disc hits the target in any manner except for the slightest of glancing blows, and by any measure it is more visually obvious than in most other object targets.

CONCLUSIONS, RAMIFICATIONS, AND SCOPE

[0075] One embodiment of a Portable Disc Golf Target is much smaller, lighter, and easier to transport than existing PDGA approved targets. When compared specifically to other portable targets, it is less prone to damage, easier to fix, offers better scoring clarity, and is functionally more appealing and plays more similar to full sized basket style targets than other object targets on the market.

[0076] An additional embodiment of my target has the advantage that is easily be placed in a vertical position on hills or other uneven ground due to its lighter weight. One possible way to do this would be to arrange two additional sections of tube, similar to the Legs or Spars, in an “X” pattern with a single Leg of embodiment (usually the downhill leg) supported in the crook of the “X”. A single band or cord will easily hold the “hill spars” and the now-raised Leg in position. In this way the embodiment can be placed in a completely vertical position on any terrain. With most existing targets this arrangement is not possible to their excess weight and base designs.

[0077] The embodiment of my target could also be easily deployed in non-traditional, more creative ways; it is not required to use the tripod type base in the main illustrations included here as a means of support. An embodiment could be deployed in conjunction with, on, or about any number of physical items commonly found where one would typically play disc golf. It could be attached to a fence or light post, hung in a tree, or placed at an angle sticking out from an existing structure. As an example, a small bungee cord would be sufficient to attach the embodiment to a sign post. A leg assembly is therefore not a requirement of my embodiment. Setting up a target of existing or traditional construction in this manner has the potential to be difficult, unattractive, dangerous, or not possible at all.

[0078] Another embodiment could have a different arrangement of the target zone and chains. The inclusion of hubs, spars, and chains offered above is one example of many that could be used to create a target zone suitable for use. The above mentioned parts, as a matter of example, can be used to create target zones of many different shapes and sized if alternate instructions are used to unfold the target zone. I can easily envision a similar embodiment with, for example, only the top spars extended, leaving the lower spars in a folded vertical position. Doing so would create a different and more varied target zone.

[0079] Other light sources could be used as well. The description above of UV reactive chain and a UV emitting light source is merely one of many ways to light the embodiment. UV is a common and electrically efficient source to
create luminescence, but other ways or alternate light sources could be used. Solar energy is used to create an electrical charge to operate the lights on some existing targets and could be used here as well.

[0080] A UV light and UV reactive chain elements are not a requirement. “Regular” glow in the dark material could be used, whereby the target would give off luminescence for only a period of time after sundown rather than relying on electricity to create the glow effect.

[0081] The mast assembly could also be built in many different ways, telescoping, hinged, or otherwise. Although the description above outlines several specificities, these should not be construed as limiting the scope of the embodiments but merely as illustrations of several embodiments. For example, one embodiment can have a different number of chains and spars, a different target zone consisting of material other than chains, a different base assembly consisting of a singular base or a different number of legs, the support structure could be telescoping instead of folding, etc.

I claim:

1. A portable disc golf target having
   a) a support structure,
   b) a target zone assembly containing hanging plastic chains having a glow in the dark quality,
   c) a means to attach said target zone assembly to said support structure.

2. The portable disc golf target of claim 1 wherein said glow in the dark quality is dependent on an outside source of ultraviolet light.

3. A portable disc golf target consisting of
   a) a collapsible support structure and
   b) an extendable target zone assembly having an extended diameter appreciably larger than the non-extended diameter and
   c) a means for said support structure to maintain said target zone assembly a predetermined distance from the ground,

wherein the improvement is combining the positive features of two types of disc golf targets into a single new type, namely,

d) the advantage of portability that typical object type targets have over typical basket type targets due to the relative smaller size and lighter weight of typical object type targets,

e) the advantage of playability that typical basket type targets have over typical object type targets due to the target zone structure of typical basket type targets,

f) the advantage of increased practice efficiency that typical basket type targets have over typical object type targets that allow a player to practice on equipment that is more similar to the equipment on which one in likely to compete,

g) the increased visual appeal that typical basket type targets have over typical object type targets due to the target zone structure of typical basket type targets,

whereby the resulting disc golf target is a new hybrid style disc golf target combining the comparatively small size and comparatively light weight of object style targets with a target zone visually similar to the chain assembly on a basket style target so that a user maintains the advantage of portability existing in object targets while also maintaining the advantage of basket style targets, generally that a player is able to aim at a target zone that is visually similar to a set of hanging chains as found on a typical basket style target.

4. The portable disc golf target of claim 3 wherein said resulting portable disc golf target, when said collapsible support structure is collapsed and said extendable target zone assembly is in a non-extended state, may be constrained inside a single container or bag of a size and weight which would allow said single container to be safely stowed and transported on bicycle handlebars by users of any age.

5. The portable disc golf target of claim 3 wherein materials of construction of said extendable target zone assembly have the quality of luminosity whereby said extendable target zone assembly will glow in the dark and cause said resulting disc golf target to be appropriate for use in the dark or for playing at night.

6. The portable disc golf target of claim 3 wherein said extendable target zone assembly contains plastic chain commercially available in a range of colors both of the visual spectrum and of the ultraviolet reactive spectrum whereby said extendable target zone assembly can be made visually appealing to a range of users and may also be highly visible at night viewed while lit with an ultraviolet light source.

7. The portable disc golf target of claim 3 wherein said extendable target zone assembly is of light enough weight so that a tossed disc of approximately 150 grams will substantially disrupt said extendable target zone assembly’s at rest state and result in a visually obvious movement of said extendable target zone assembly, thereby confirming a strike when viewing from a considerable distance and from any angle.

8. The portable disc golf target of claim 3 wherein materials of construction of said collapsible support structure and said extendable target zone assembly may be commonly found in retail hardware or hobby stores in order to facilitate easy repair or replacement if parts are broken.

9. An object style disc golf target consisting of
   a) a base hub,
   b) a plurality of legs,
   c) a first means for said base hub to removeably hold said plurality of legs in an appropriate position for supporting said base hub above the ground in a stable manner,
   d) a second means for said base hub to removeably hold said legs in a compacted position for storage,
   e) a collapsible mast assembly,
   f) a third means for extending and removeably attaching individual sections of said mast assembly wherein the length of said mast assembly is increased for play,
   g) a fourth means for contracting and removeably holding individual sections of said mast assembly in a shortened manner for storage,
   h) a collapsible target zone assembly containing chains,
   i) a fifth means to appreciably increase and removeably maintain the diameter of said collapsible target zone assembly, whereby said target zone assembly, when extended, visually resembles the target zone chains on a typical basket style disc golf target,
   j) a sixth means to decrease and constrain said target zone assembly size for storage,
   k) a seventh means to removeably attach said target zone assembly to said mast assembly wherein said collapsible target zone assembly is maintained at a predetermined vertical position from the ground,
   l) a ground stake or peg,
n) an eighth means causing said object style disc golf target to be removeably attached and firmly held to the ground with said ground stake,

m) a ninth means to contain and constrain said base hub, said plurality of legs, said mast assembly, said target zone assembly, and said ground stake in a condition so they may all be stowed for storage or transport in a single container or bag,

whereby said object style disc golf target will present to the user at a predetermined height said target zone assembly which when extended more closely resembles the structure of a typical basket style disc golf target than a typical object style disc golf target.

10. The object style disc golf target of claim 9 wherein said plurality of legs include protective end caps whereby the resulting disc golf target is appropriate for indoor use without marring or otherwise damaging floor structure.

11. The object style disc golf target of claim 9 wherein materials of construction of said legs, said mast assembly, and said target zone assembly are sourced from commonly available items at retail locations whereby the resulting disc golf target is easy to repair if new parts are needed.

12. The object style disc golf target of claim 9 wherein said target zone assembly is light enough in weight so that said target zone will be visually distorted by glancing blows of thrown discs as light as 120 gram, whereby visual confirmation a disc hitting its mark is easily obtained regardless of viewing angle.

13. The object style disc golf target of claim 9 wherein chosen materials of construction of said legs, said mast assembly, and said target assembly zone are of weight whereby the completely assembled article will be light enough so that children as young as 7 or 8 years of age and of normal physical and mental development are able to safely and easily transport and use said target without worry of strain or injury caused by the weight or structure of said target.

14. The object style disc golf target of claim 9 wherein said target zone assembly contains plastic chains constructed of a composition to cause said chains to glow in the dark.

15. The object style disc golf target of claim 9 wherein said target zone assembly contains chains of a composition which include ultraviolet reactive material whereby said target zone assembly appears to luminesce bright colors when viewed in the dark while being lit with an ultraviolet light source.

16. The object style disc golf target of claim 9 wherein said target zone assembly contains plastic chains commercially available in a variety of colors whereby users can choose a visually appealing color or custom color mix for construction of said object style disc golf target.

17. A method of constructing a portable disc golf target compromising:

a) providing a folding support structure and

b) providing a folding target zone assembly and

c) providing a means for attaching said target zone assembly to said support structure and

d) providing a means for attaching said attached target zone assembly/support structure combination to the ground

e) giving the user the option of placing the target in its folded state for storage or alternately placing the target in the extended state for play,

whereby the resulting disc golf target is of a new hybrid type of disc golf target which combines advantages of object type and basket type targets in such a way as to include the portable qualities of common object style targets with the visual appeal and playability of basket style targets.

18. The method of claim 17 wherein

a) said folding target zone assembly contains a set of vertically hung chains

b) said resulting disc golf target is of materials of construction and means of assembly such that said resulting disc golf target is able to be folded, stowed, and transported while completely contained in a bag no larger than 4" diameter and 24" in length while not exceeding three pounds.

19. The method of claim 17 wherein

a) materials of construction are such that said folding target zone has the quality of luminosity whereby the target is appropriate for playing at night when illuminated by an external source of ultraviolet light.

20. The method of claim 17 wherein

a) the overall construction of said resulting disc golf target meets specifications for obtaining PDGA approval.

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