Gaming net

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(56) Documents Cited:
EP 1040853 A1 **US 6319145 B1**
US 5573240 A **US 5269527 A**
US 3989250 A **US 3430958 A**
US 20090062078 A1 **US 20030032493 A1**

(58) Field of Search:
INT CL **A63B**
Other: **EPODOC, WPI, Internet**

(54) Title of the Invention: **Gaming net**
Abstract Title: **Arch or semi-circle shaped net for sporting or other game such as badminton**

(57) Gaming apparatus comprises an elongate pole 101 formed from individual rod segments 102 connected end-to-end with the pole 101 retained in an arched configuration by a net 104 and a brace 105 extending between the pole ends 114. A net or webbing 104 is mounted in the same plane as the arch and extends immediately below an apex (203, fig 2) of the pole 101. The net 104 comprises at least one gap region towards the arch base to allow the passage of air so as to stabilise the apparatus against wind. Support feet (103, fig 6) are provided. The apparatus may comprise tethers 106 to extend between the net or pole and each support foot. The brace 105 may be a tensioning cord with a buckle (113, fig 6) to allow length adjustment. The apparatus may provide a barrier net for use with projectile based sports and leisure activities.

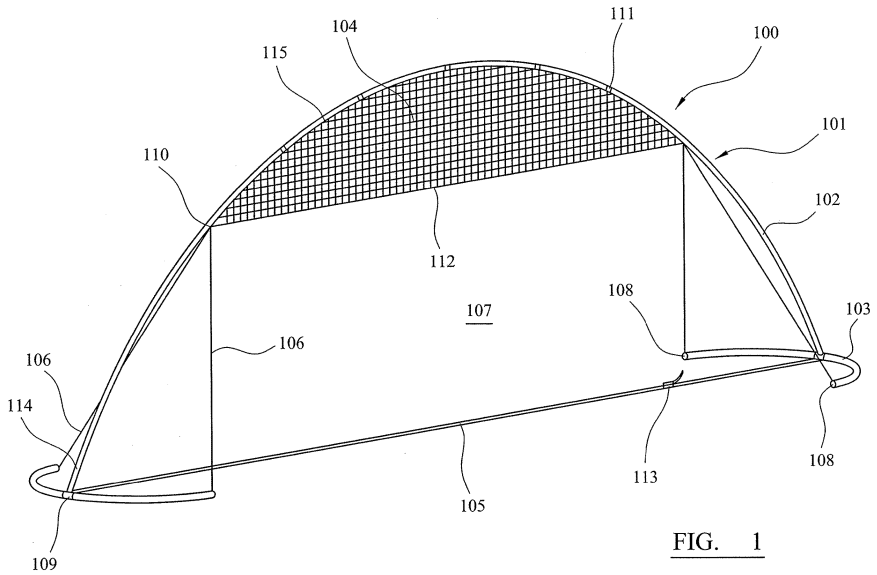

FIG. 1

GB 2510193 A

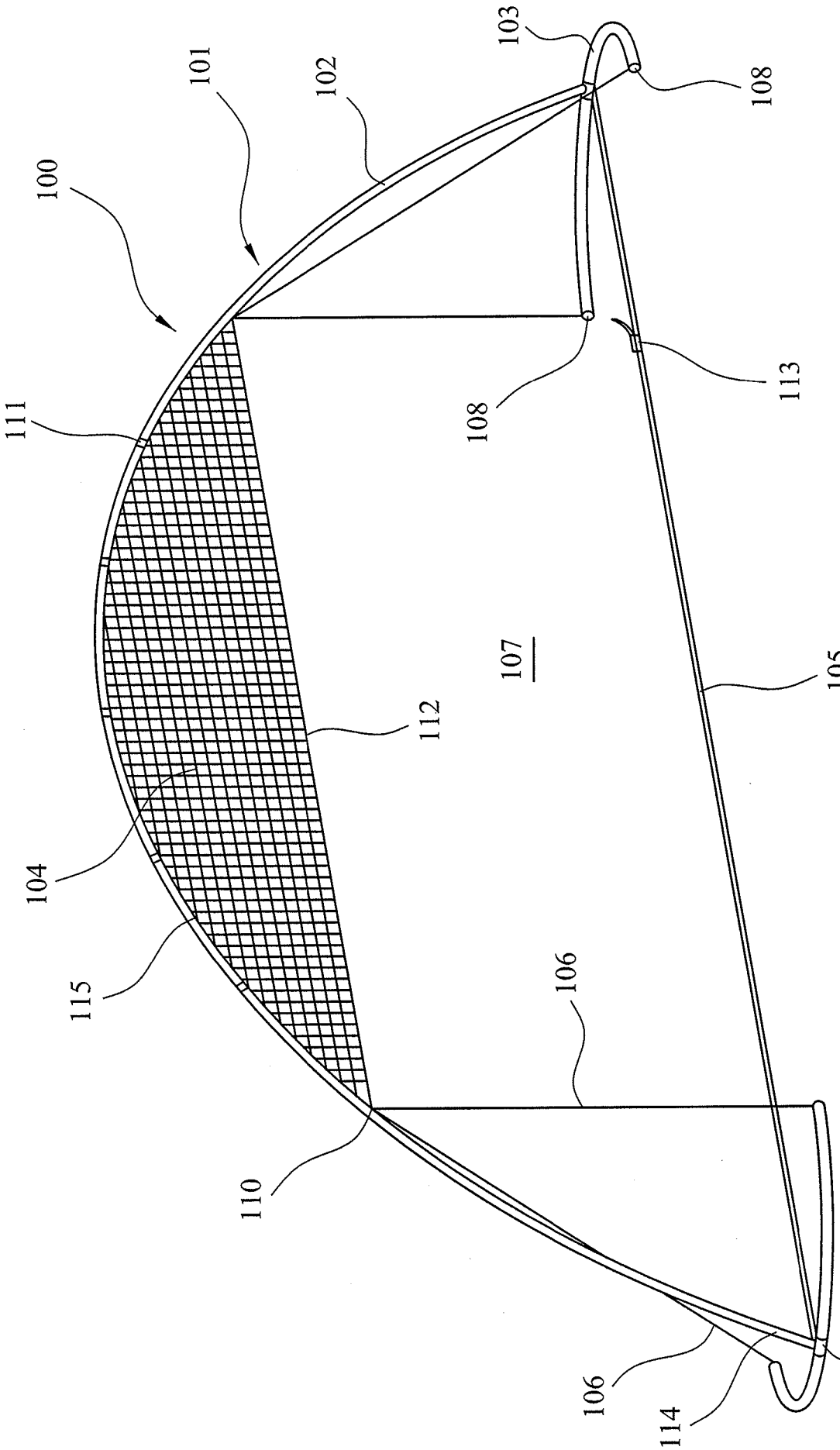
100
101
102
103
108
108
111
113
104
115
107
105
112
106
110
106
114
109

FIG. 1

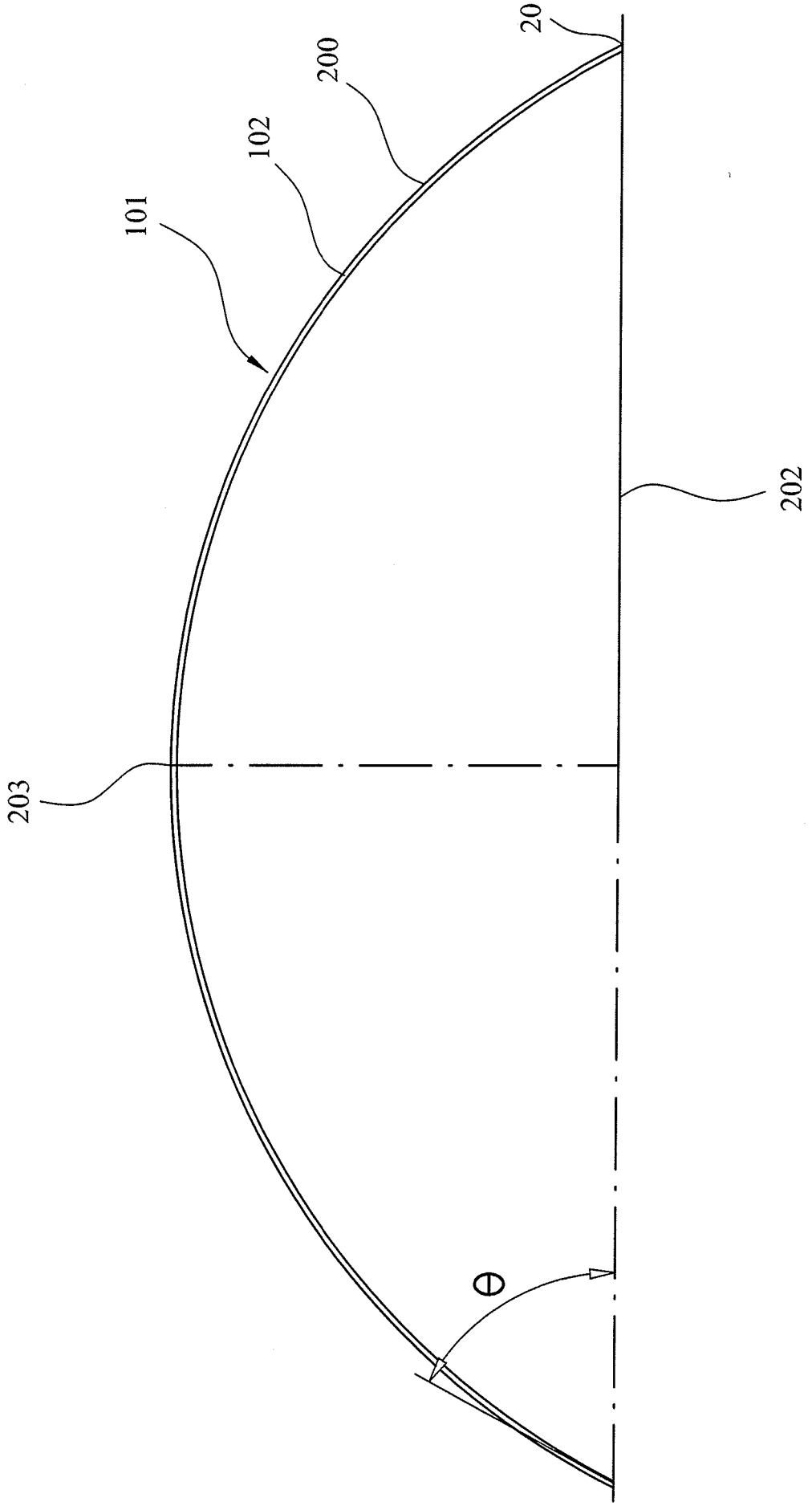

FIG. 2

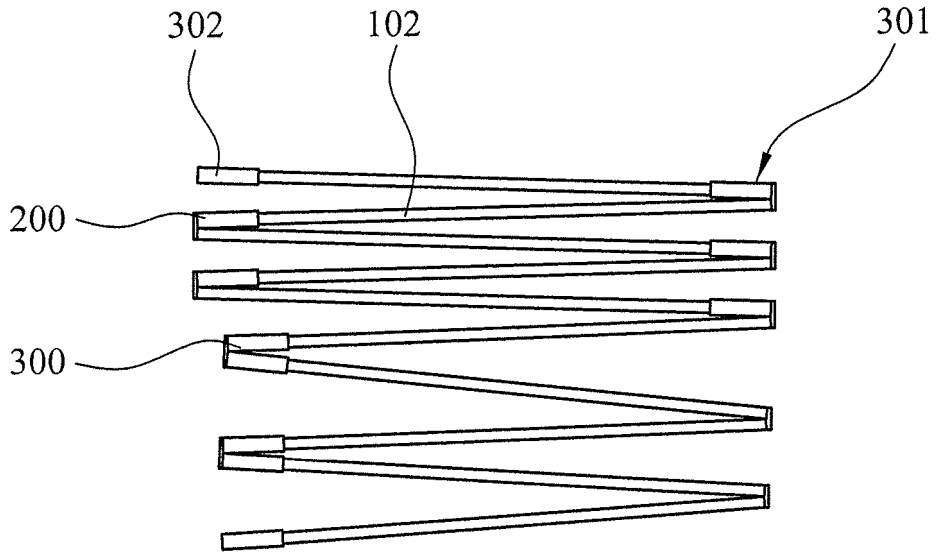

FIG. 3

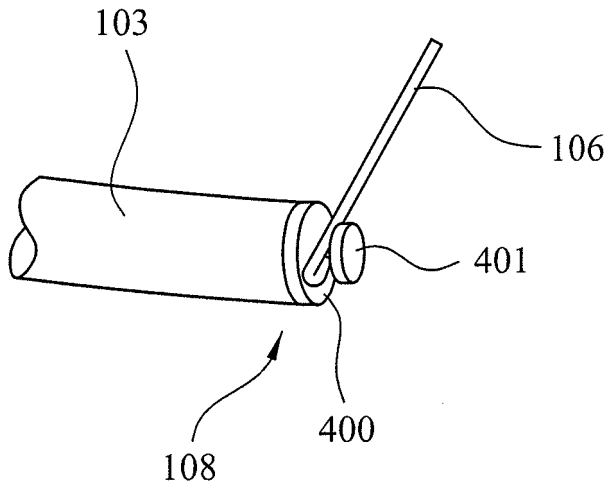

FIG. 4

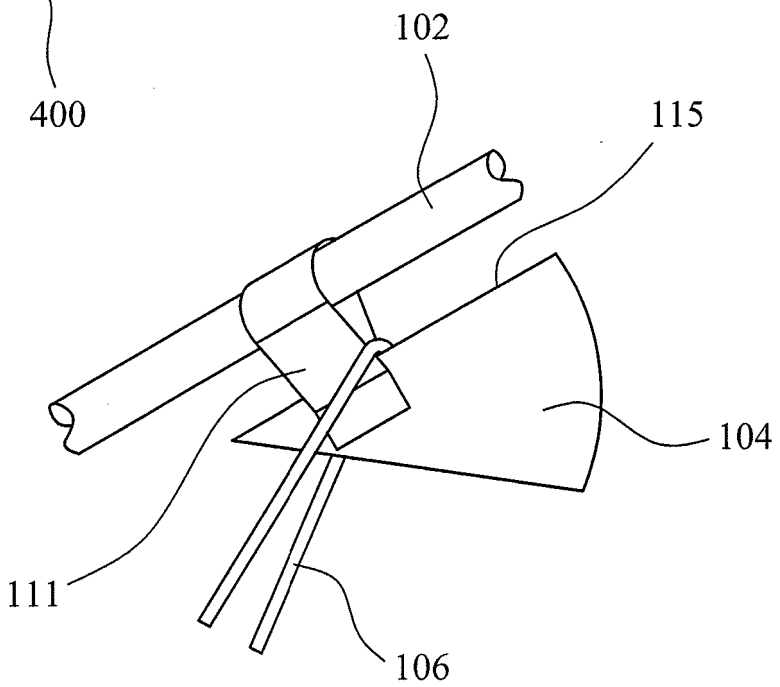

FIG. 5

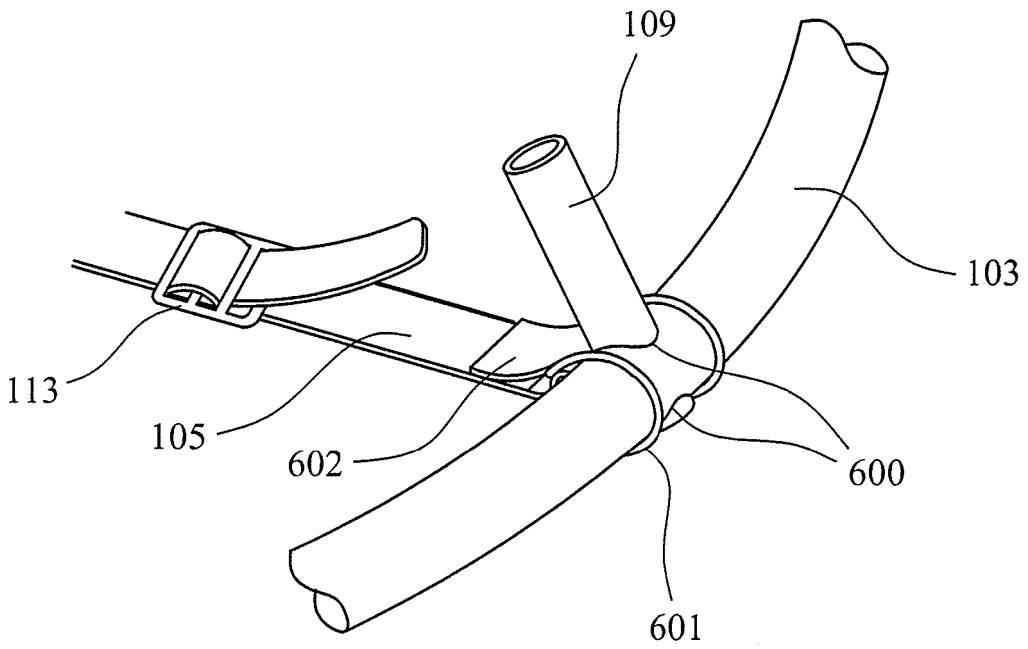
109
103
113
105
602
600
601

FIG. 6

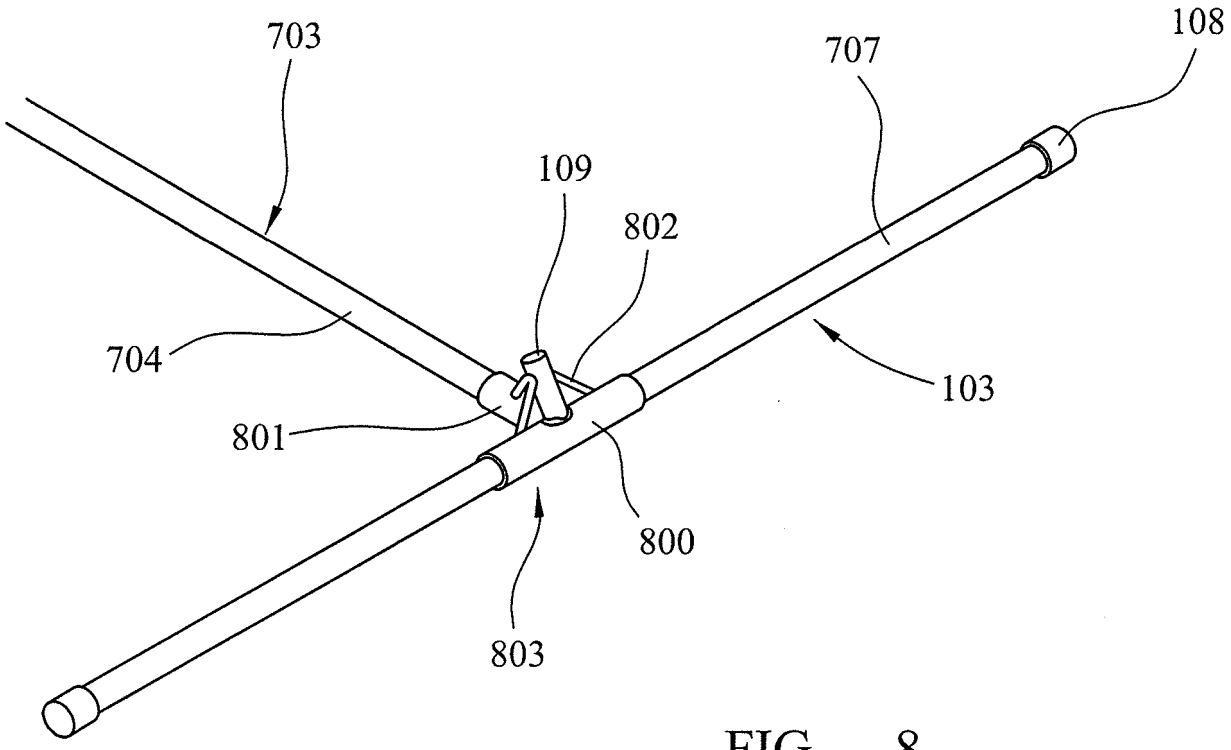
703
707
108
109
802
704
103
801
800
803

FIG. 8

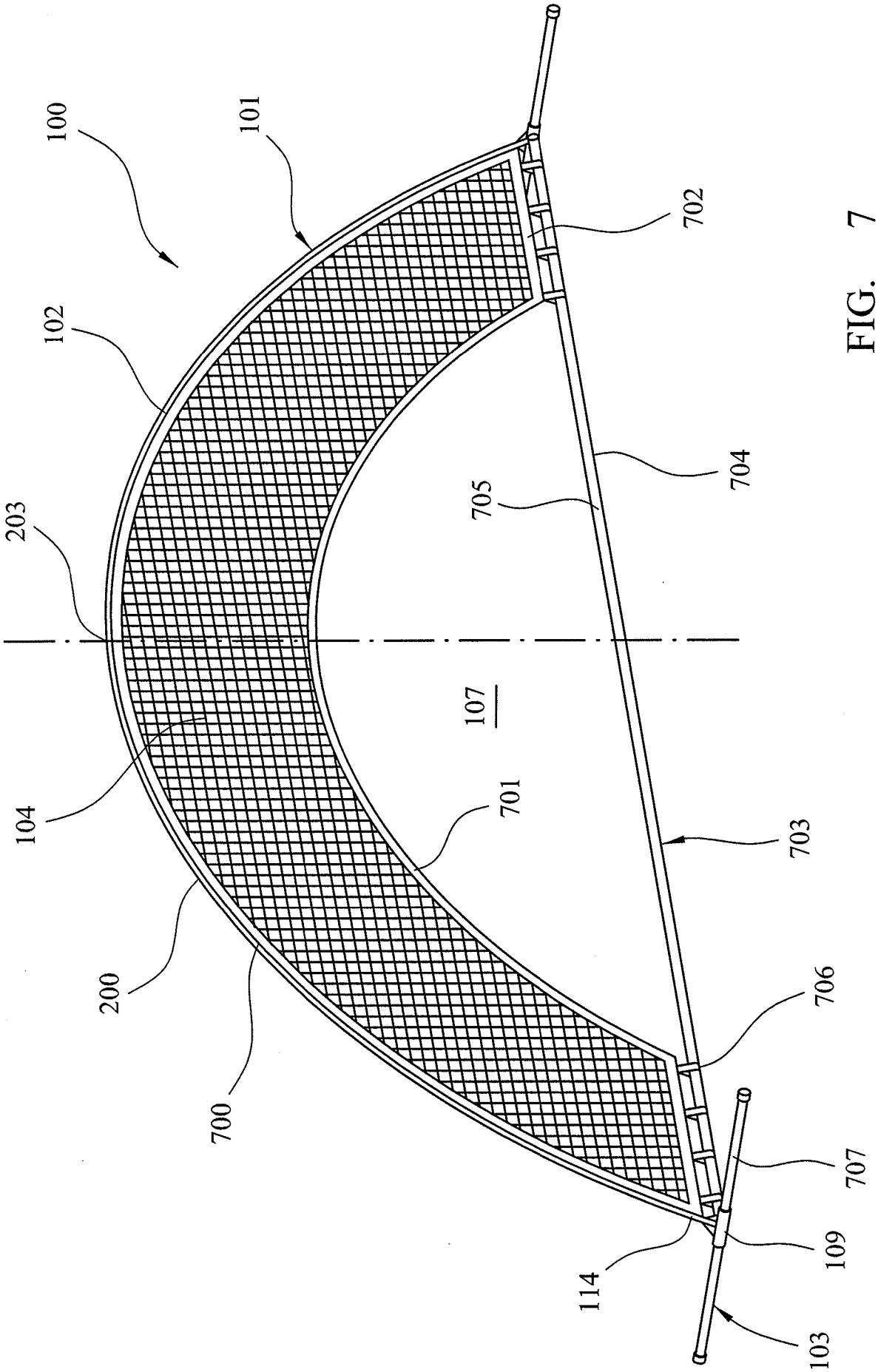
100
101
102
203
104
200
700
701
107
705
704
702
703
706
707
109
114
103

FIG. 7

Gaming Net

Field of invention

The present invention relates to gaming apparatus and in particular, although not exclusively, to a sports net to provide a temporary barrier for use by individuals playing a projectile based sport.

Background art

Sports that use a projectile such as a ball or shuttlecock typically involve a barrier or goal with which individuals playing the game interact. For example, football (soccer), hockey etc., use a structure having parallel upstanding posts and an intermediate cross bar to define a goal with a net extending rearwardly from the goal to capture the ball. Example apparatus is described in WO 2008/139230.

The goal concept has been adapted for use with other sports where projectile capture is required. For example, golf, cricket or baseball practice is facilitated by a sports practice net that acts to catch the ball to prevent it traveling long distances to maximise practice time. Example practice nets are described in US 6,793,594; US 6,319,145 and US D649,208.

Sports like badminton and volleyball use a net arrangement to act as a barrier over which the shuttlecock or ball is hit as part of the game. At a high or professional level, the nets are very robust and substantial structures that take time to erect to very precise dimensions as required by the rules of the respective game. However, at an amateur or recreational level, these nets are typically required to be assembled and disassembled with some ease and to be transportable. Example game barrier devices are disclosed in US 4,822,053; US 5,269,527 and US 6,511,390.

Generally, conventional barrier net assemblies are limited to a particular playing surface such as grass or turf such that the net may be secured in an upright position using ropes and

pegs anchored to the ground. Also, existing assemblies are typically difficult to assemble and disassemble quickly and/or are susceptible to collapse or significant distortion when erected in environments with modest or even small wind speeds. What is required is a barrier net assembly that addresses the above problems.

Summary of the Invention

It is an objective of the present invention to provide a barrier net assembly that is configured principally to minimise the effect of incident wind onto the apparatus that would otherwise cause flexing, distortion and collapse of the erected structure. It is a further objective to provide a lightweight and robust construction that can be erected and disassembled conveniently and quickly on any substantially level playing surface.

The objectives are achieved by providing a game apparatus in which a barrier net is retained in position by a collapsible pole, formed from a plurality of rod segments, that is retained in an arch configuration by virtue of its construction, the net and an intermediate brace. Importantly, the net is configured to span the area within the arch, substantially in a single plane, but to leave an appreciable region of the area within the arch devoid of net material to allow the passage of air. This is advantageous to allow the through-flow of air in environments with low to modest wind velocities. Accordingly, the present apparatus is configured to minimise flex, distortion and the likelihood of collapse due to incident wind forces.

Additionally, the construction via hollow elongate rods (rod segments) provides a lightweight apparatus and a robust device. Via the use of braces and tethers *inter alia*, the present barrier assembly is held in a substantially single plane as a rigid construction. Additionally, the net extends immediately below the apex of the arch and this has been found to be advantageous to stabilise the elongate pole and as-formed arch against '*snaking*', flex and distortion. As will be appreciated, the present configuration provides an optimised compromise of weight saving versus robust construction where flexing and distortion would otherwise be problematic. In particular, the net at the apex region acts to

stabilise the pole at the region furthest from the braced pole end regions where is it most susceptible to lateral (sideways) distortion.

According to a first aspect of the present invention there is provided gaming apparatus comprising: a plurality of elongate rods being connectable end-to-end to form a flexible elongate pole, each rod being hollow to accommodate an elasticated cord to provide a flexible linkage connecting each rod; a brace to extend between at least two spatially separated parts of the pole and retain the pole in an arch, the arch having an apex and base ends corresponding substantially to each end of the pole, the region between the ends representing a base of the arch; a net mountable at the pole substantially in the same plane as the arch; support feet to extend from the pole at or towards the base ends, the feet extending laterally from both sides of the plane of the arch substantially at each base end; wherein the net extends substantially from the apex within the arch towards the arch base to span a region under the arch but to be discontinuous towards the arch base to form at least one gap region devoid of the net to allow air to pass within the arch through the gap region.

Preferably, the apparatus further comprises a plurality of tethers, each tether to extend between the net or pole and each support foot. Optionally, each tether is attached to an end region of each foot and comprises a cord.

Optionally, the brace comprises a tensioning cord having a buckle to allow adjustment of a length of the tensioning cord between the spatially separated parts of the pole. Alternatively, the base comprises a plurality of elongate rods being connectable end-to-end to form a flexible elongate shaft to extend substantially between each end of the pole.

Preferably, the support feet comprise at least one hollow tube extending substantially from each end of the pole.

Preferably, the net spans an area under the arch of less than 80% of the total area in the plane of the arch as defined by the pole, the base and the base ends. Optionally, the net

extends over 40 to 70%, 30 to 60%, 20 to 50%, 10 to 40% or 5 to 30% of the area in the plane of the arch.

Preferably, a perimeter of the net comprises a hem and connection elements formed at the hem and/or the net material to connect the net to the pole, the brace and/or the feet. Preferably, a lower region of the net furthest from the apex is attached to the feet via connection elements. Optionally, a lower region of the net furthest from the apex is releasably attached to the brace via connection elements.

Optionally, the connection elements comprise eyelets formed from a fabric material. Optionally, the eyelets may be formed from the same fabric material as the net and/or hem. Optionally, the eyelets are formed from separate material and are permanently or releasably attached to the net and/or hem. Optionally, the eyelets may comprise a flexible or a rigid material. Optionally, the eyelets are closed or open loop structures such that the loop extends only partially around the pole or alternatively completely around the pole such that one or both ends of the loop are attached to the hem and/or net.

Optionally, the feet and/or brace comprise: a metal; a steel; aluminium and/or a plastic material. Optionally, each of the rods comprise glass fibre. Optionally, the rods comprise connection members to enable the rods to be connectable end-to-end to form the pole.

Brief description of drawings

A specific implementation of the present invention will now be described, by way of example only, and with reference to the accompanying drawings in which:

Figure 1 is a perspective view of a gaming apparatus formed from a pole curved into an arch and comprising a net extending in a single place according to a specific implementation of the present invention;

Figure 2 is a side view of the arched pole of figure 1 formed from a plurality of rod segments;

Figure 3 is a plan view of the disassembled rod segments of figure 2;

Figure 4 is a perspective view of an end region of one foot of the gaming apparatus of figure 1 according to a specific implementation of the present invention;

Figure 5 is a perspective view of a region of the pole and net of figure 1 according to a specific implementation of the present invention;

Figure 6 is a perspective view of a base end region of the arch and pole of figure 1 according to a specific implementation of the present invention;

Figure 7 is a perspective view of a further embodiment of the gaming apparatus formed from an elongate pole curved into an arch and supporting a net;

Figure 8 is a perspective view of a base end region of the arch of figure 7 comprising stabilising feet according to a specific implementation.

Detailed description of preferred embodiment of the invention

Referring to figure 1, the gaming apparatus 100 comprises an elongate pole 101 formed from a plurality of individual rods 102 connected end-to-end. Pole 101 is bent and maintained in an arch configuration by a brace 105 that extends between and connects the two pole ends 114. Brace 105 is formed from a tape-like cord and is threaded through buckle 113 that allows lengthwise adjustment of brace 105 between ends 114 and in turn variation of the tension and curvature of arched pole 101. The apparatus further comprises a pair of feet 103 positioned at each pole end 114. A net or webbing 104 is secured to an apex region of the arch by a plurality of tabs 111 that are attached to net 104 and wrap around respective regions of pole 101.

Referring to figures 1 and 2, the arched pole 101 comprises base ends 201 corresponding substantially to each end 114 of pole 101. A base region of the arch is defined by an arch base 202 extending transverse between each base end 201. Pole 101 extends from arch base 202 at angle Θ where Θ is approximately 60°. Pole 101, base ends 201 and arch base 202 define the arch that extends substantially in a single plane having an apex 203 positioned furthest from the ground when orientated in use. The arch is retained in upstanding position from the ground by feet 103 that extends laterally to each side of the arch plane and the brace 105. Each foot 102 comprises a connection element 109 to receive pole end 114. To further stabilise the arch, a tether 106 extend from respective end regions 108 of each foot 103 and loops over respective lowermost end regions 110 of net 104 to brace the pole downwardly at each end region 110. The two tethers 106 are formed from cord and extend laterally to each side of the plane of the arch and net 104 to connect each respective pair of feet ends 108.

Net 104 comprises an upper curved hem 115 for positioning immediately below the apex region 203. A lower region of net 112 also comprises a lower hem that is substantially straight and extends between end regions 110 to define a net shape corresponding substantially to a segment of a circle.

The lower hem 112 is positioned vertically above arch base 202 (and brace 105) to create a gap region 107 devoid of net material 104. According to the specific embodiment, net 104 spans a region immediately below apex 203 representing substantially 15% of the total area within the arch. The inventors have observed that attaching net 104 to the apex region of the arch via the plurality of tabs 111 is advantageous to prevent '*snaking*' of the pole 101 when assembled as shown in figure 1. According to the configuration of figure 1, net 104 extends under a central region of pole 101 representing approximately one half of the pole length with respective end regions of the pole 101 being devoid of net 104. When assembled as shown in figure 1, base hem 112 is aligned substantially parallel with brace 105 and is positioned in an upper half of the arch being closer to the apex 203 than brace 105.

Referring to figure 3, pole 101 is constructed from a plurality of separate rods 102 with rod

having a first end 301 and a second end 302. A connection element 200 is positioned at each second end 301 and is formed as a hollow ferrule friction fitted over end 301. According to the specific implementation, each rod 102 is formed from glass fibre and each ferrule 200 is formed from steel. Each rod 102 is hollow to accommodate an elongate elasticated cord 300 threaded through each rod 102 so as to form an interconnected assembly. Pole 101 is assembled by positioning each rod second end 302 within one half of the hollow ferrule 200 of the neighbouring rod 102.

Referring to figure 4, each foot 103 comprises a single piece of hollow metal tubing that is curved along its length to represent approximately one half of a perimeter of a circle. Foot 103 terminates at each end 108 with a base plug 400 that is accommodated within the hollow body and retained in position by friction. A relatively short barb 401 extends axially from plug 400 to provide an anchorage for the looped end of each tether 106.

Referring to figure 5, the net 104 is secured to the apex region of pole 101 via looped tabs 111. Tabs 111 comprise a fabric material that is permanently attached to each side of net 104 via stitching. Alternatively, tabs 111 may be formed from conventional hook and eye type fastenings so as to be releasably attachable and looped around respective rod segments 102 at the apex region. The pair of tabs 111 positioned furthest from apex 203 also function as anchorage for each cord tether 106 that is looped around these lowermost tabs 111 and extends between each pair of foot ends 108 as illustrated in figure 1. Figure 6 illustrates the middle region of each foot 103 that attaches to pole end 114 via connection element 109. In particular, element 109 is formed as a hollow ferrule received within apertures 600 formed within the tubular rod 103. The majority of the length of elongated ferrule 109 extends upwardly from foot 103 at an angle approximately equal to 60° in order to maintain pole 101 in the arched configuration as shown in figures 1 and 2. According to the specific implementation, the angle of orientation of ferrule 109 relative to foot 103 is fixed. However, according to further embodiments, aperture 600 may be elongate to enable ferrule 109 to be adjustably positioned at a variety of different angles Θ to enable adjustment of the arch shape profile.

Brace 105 comprises a belt like cord comprising loops 602 at each end. A looped piece of cord 601 is threaded through belt loop 602 and passes over foot 103 about element 109 so as to secure each brace end 602 to each respective foot 103. As indicated, buckle 113 allows lengthwise adjustment of brace 105 to apply tension to pole 101 during assembly.

Figure 7 illustrates a further embodiment of the gaming apparatus. The elongate pole 101 is identical to that described referring to figures 1 to 6. Net 104 comprises a generally rainbow shaped profile having upper and lower curving arches connected at their respective lower ends by straight edges. The main body of the net 104 as with the first embodiment of figure 1, comprises a webbed structure, optionally in a form of a fabric weave being open to allow the passage of air. As will be appreciated, the density of the webbing is selectable to optimise the apparatus 100 to be resistant to the effect of incident wind whilst providing a robust barrier for a game projectile. According to the embodiment of figure 7, a hem extends over the entire upper curve 700 and a corresponding hem 701 extends the entire length of the lower curve of the rainbow. Two respective connecting hems 702 extend across the base of the rainbow shape to connect the upper and lower curved hems 700, 701. Collectively, hems 700, 701, 702 define a perimeter of the net 104.

Additionally, hem 700 is created to form a loop through which elongate pole 101 may be threaded so as to attach net 104 to the pole 101. Net 104 is further anchored in position at a brace 703 extending between pole ends 114. According to the specific implementation, brace 703 comprises an elongate pole 704 formed from a plurality of separate rod segments 705. Segments 705 correspond in construction, material and physical dimensions to rod segments 102. The base hems 702 are attached to pole 704 via attachment loops 706. Loops 706 may comprise the same material as hem 702 formed into a loop. According to further embodiments, elements 706 may be formed from conventional hook and eye type materials to allow releasable connection and looping about pole 704.

As illustrated in figure 7, the lower curved region of net 701 curves upwardly from brace 703 and follows the same curved path to that of pole 101. Accordingly, lower hem 701, upper hem 700 and pole 101 are substantially parallel along their length between respective ends 702 and 114. This shape profile creates a corresponding gap region 107

below the barrier net 104 that is devoid of the webbing material to allow the free flow of air as described referring to figure 1. According to the embodiment of figure 7 the net 104 extends in a single plane as the arch and represents approximately half of the area of the arch underneath pole 101, with the remaining area 107 being devoid of the webbing material 104. To allow sufficient passage of appreciable volumes of air under net 104, the distance between lower hem 701 and brace 703 at the region vertically below apex 203 is greater than half of the height by which apex 203 extends above brace 703. That is, the lower region of net 701 vertically below apex 203 is positioned in the upper half of the area under the arch. As shown in figure 7, net 104 extends immediately below rod 101 over the entire length of rod 101 between ends 114.

Referring to figure 8, the feet component 103 of apparatus 100 according to the embodiment of figure 7 comprises a pair of elongate metal tubes 707 extending laterally from a central T-shaped boss 803 having a first receiving tube 800 and a second receiving tube 801 aligned perpendicular to each other. A first tube 707 is accommodated partially within one end of tube 800 whilst a second corresponding tube 707 is inserted and partially accommodated within the second end of tube 800. Each end of the brace pole 704 is received and partially accommodated within tube 801 to effectively extend the length of the three arms of the T-shaped boss 803. A base plug 108 is attached at the end of each tubular foot 707 as described with reference to figure 4. Similarly each plug 108 comprises the same short barb 401. Accordingly, the embodiment of figures 7 and 8 may also comprise the corresponding cord tethers 106 extending between feet 103 and the pole 101 and/or net 104. As described previously, a ferrule 109 is anchored at each foot 103 via connection to boss 803. The angled orientation of ferrule 109 relative to tubes 800, 801 is stabilised and supported by additional support struts 802 that extend from an outer surface of ferrule 109 and respective regions of tubes 800, 801. As with the embodiment of figure 1, hollow tubing 707 extends laterally each side of the plane of net 104 to prevent the entire arch structure from falling laterally to either side of its vertical plane.

As will be appreciated, all embodiments of the present apparatus 100 may further comprise additional anchorage cord and spiked pegs to allow the arched structure to be secured to soft ground such as turf, sand and the like. In particular, the additional anchorage cord

may extend from pole 101 and/or regions of net 104 with the second end being tethered to the ground via ground engaging spikes. Alternatively or in addition, anchorage pegs may be attachable to brace 703 and/or feet 103 with or without the need for additional anchorage cord.

5

Claims

1. Gaming apparatus comprising:

a plurality of elongate rods being connectable end-to-end to form a flexible elongate pole, each rod being hollow to accommodate an elasticated cord to provide a flexible linkage connecting each rod;

a brace to extend between at least two spatially separated parts of the pole and retain the pole in an arch, the arch having an apex and base ends corresponding substantially to each end of the pole, the region between the ends representing a base of the arch;

a net mountable at the pole substantially in the same plane as the arch;

support feet to extend from the pole at or towards the base ends, the feet extending laterally from both sides of the plane of the arch substantially at each base end;

wherein the net extends substantially from the apex within the arch towards the arch base to span a region under the arch but to be discontinuous towards the arch base to form at least one gap region devoid of the net to allow air to pass within the arch through the gap region.

2. The gaming apparatus as claimed in claim 1 comprising a plurality of tethers, each tether to extend between the net or pole and each support foot.

3. The gaming apparatus as claimed in claim 2 wherein each tether is attached to an end region of each foot and comprises a cord.

4. The gaming apparatus as claimed in any preceding claim wherein the brace comprises a tensioning cord having a buckle to allow adjustment of a length of the tensioning cord between the spatially separated parts of the pole.

5. The gaming apparatus as claimed in any one of claims 1 to 3 wherein the base comprises a plurality of elongate rods being connectable end-to-end to form a flexible elongate shaft to extend substantially between each end of the pole.

6. The gaming apparatus as claimed in any preceding claim wherein the support feet comprise at least one hollow tube extending substantially from each end of the pole.

7. The gaming apparatus as claimed in any preceding claim wherein the net spans an area under the arch of not more than 80% of the total area in the plane of the arch as defined by the pole, the base and the base ends.

8. The gaming apparatus as claimed in claim 7 wherein the net extends over 40 to 70% of the area in the plane of the arch.

9. The gaming apparatus as claimed in claim 7 wherein the net extends over 20 to 50% of the area in the plane of the arch.

10. The gaming apparatus as claimed in claim 7 wherein the net extends over 10 to 40% of the area in the plane of the arch.

11. The gaming apparatus as claimed in any preceding claim wherein a lower region of the net furthest from the apex is attached to the feet and or the brace.

12. The gaming apparatus as claimed in any preceding claim wherein a lower region of the net furthest from the apex is releasably attached to the brace via connection elements.

13. The gaming apparatus as claimed in any preceding claim wherein a perimeter of the net comprises a hem and connection elements formed at the hem to connect the net to the pole, the brace and/or the feet.

14. The gaming apparatus as claimed in claim 13 wherein the connection elements comprise eyelets formed from a fabric material.

15. The gaming apparatus as claimed in any preceding claim wherein the feet and/or brace comprise:

- a metal;
- a steel;
- aluminium; and/or
- a plastic material.

16. The gaming apparatus as claimed in any preceding claim wherein each of the rods comprise glass fibre.

17. The gaming apparatus as claimed in any preceding claim wherein the rods comprise connection members to enable the rods to be connectable end-to-end to form the pole.

Application No:	GB1301570.6	**Examiner:**	Dr Joanna Lee
Claims searched:	1-17	**Date of search:**	2 April 2013

Patents Act 1977: Search Report under Section 17

Documents considered to be relevant:

Category	Relevant to claims	Identity of document and passage or figure of particular relevance
X	1-17	US5269527 A (NOVAL) See whole document, especially column 1 lines 50-64, column 2 line 15-21, column 3 lines 57-60, column 4 lines 32-47 and lines 59-65 and figures 5 and 7
X	1 at least	US2003/032493 A1 (LIN) See especially paragraphs 0022, 0025 and figure 7
X	1 at least	US2009/062078 A1 (VANELVERDINGHE) See especially paragraphs 0011, 0013 and figure 1
X	1 at least	US3989250 A (LAKEMAN 1) See especially figure 1
X	1 at least	US3430958 A (LAKEMAN 2) See especially figures 1 and 10
X	1 at least	EP1040853 A1 (MERCIER) See especially figures 7 and 8
X	1 at least	US5573240 A (HUMBOLDT) See especially figures 1 and 2
X	1 at least	US6319145 B1 (COUGHLAN) See especially figure 1

Categories:

X	Document indicating lack of novelty or inventive step	A	Document indicating technological background and/or state of the art.
Y	Document indicating lack of inventive step if combined with one or more other documents of same category.	P	Document published on or after the declared priority date but before the filing date of this invention.
&	Member of the same patent family	E	Patent document published on or after, but with priority date earlier than, the filing date of this application.

Field of Search:

Search of GB, EP, WO & US patent documents classified in the following areas of the UKC^{X} :

Worldwide search of patent documents classified in the following areas of the IPC
A63B
The following online and other databases have been used in the preparation of this search report
EPODOC, WPI, Internet

International Classification:

Subclass	Subgroup	Valid From
A63B	0061/00	01/01/2006
A63B	0063/00	01/01/2006
A63B	0067/18	01/01/2006
A63B	0071/02	01/01/2006