ADJUSTABLE BASKETBALL DEVICE

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ABSTRACT

An adjustable basketball device includes a support, a backboard coupled to the support, a mounting structure coupled to the backboard, an adjustment mechanism movably coupled to the mounting structure, and an adjustable rim supported by the mounting structure and engaged with the adjustment mechanism. The adjustable rim is adjustable between a first configuration in which the rim defines an opening with a first diameter, and a second configuration in which the opening of the rim defines an opening with a second diameter different than the first diameter.
ADJUSTABLE BASKETBALL DEVICE

CROSS-REFERENCE TO RELATED APPLICATION

[0001] This application claims the benefit of and priority under 35 U.S.C. 119(e) to U.S. Provisional Application No. 61/308,386, entitled “Adjustable Basketball Device,” filed Feb. 26, 2010, the disclosure of which is incorporated herein by reference in its entirety.

FIELD OF THE INVENTION

[0002] The present invention relates to a basketball device, and in particular, a basketball device having an adjustable rim.

BACKGROUND OF THE INVENTION

[0003] Various basketball devices are known in the art. Conventional basketball devices include a rim mounted to a backboard, which defines an opening that has a fixed diameter. It would be desirable to provide a basketball device having an adjustable diameter rim, so that the skill level required to ‘make a basket’ may be selectively adjusted. It would also be desirable to provide a basketball device that is suitable for use by small children.

SUMMARY OF THE INVENTION

[0004] The present invention relates to an adjustable basketball assembly. The assembly includes a support, a backboard coupled to the support, a mounting structure coupled to the backboard and an adjustment mechanism movably coupled to the mounting structure. In addition, an adjustable rim is supported by the mounting structure and engaged with the adjustment mechanism. The adjustable rim includes a body portion with a first end portion and a second end portion. Each of the first end portion and the second end portion are inserted into the mounting structure and engaged with the adjustment mechanism. The adjustable rim is adjustable between a first configuration in which the rim defines an opening with a first diameter, and a second configuration in which the opening of the rim has a second diameter different than the first diameter.

[0005] In one embodiment, the adjustment mechanism includes a knob that is rotatably supported by the mounting structure. The knob extends outwardly from the mounting structure and includes a gripping area configured to be gripped by the hand of a user.

[0006] In one embodiment, the adjustment mechanism includes an actuator with an engagement surface. The engagement surface is configured to engage the first end portion of the rim to move the first end portion relative to the mounting structure. In some implementations, the actuator includes a substantially cylindrical body. The engagement surface extends around the cylindrical body and has a first projection and a second projection, at least one of the projections being engageable with the first end portion of the rim to move the first end portion. In some embodiments, an axis of rotation of the actuator is substantially aligned with a longitudinal axis of the support.

[0007] In one embodiment, the mounting structure includes a first guide defining an opening and a second guide defining an opening. The first end portion of the rim is inserted into the opening of the first guide. The second end portion of the rim is inserted into the opening of the second guide. In some embodiments, each of the guides is pivotally mounted to the mounting structure.

[0008] The present invention is also directed to an adjustable rim for a basketball device including a mounting structure defining a first opening and a second opening, a rim body having a first end and a second end, and an adjustment mechanism. The first end of the rim body is inserted into the first opening of the mounting structure, and the second end of the rim body is inserted into the second opening of the mounting structure. The rim body defines an opening having a diameter. The adjustment mechanism is coupled to the mounting structure, and is configured to move the rim body relative to the mounting structure to change the diameter of the opening of the rim body.

[0009] In one embodiment, the adjustment mechanism engages the first end of the rim body and the second end of the rim body. The adjustment mechanism may include a rotatably mounted actuator that engages the first end of the rim body and the second end of the rim body. In one embodiment, rotation of the actuator in a first direction causes the diameter of the rim body opening to decrease, and rotation of the actuator in a second direction opposite to the first direction causes the diameter of the rim body opening to increase.

[0010] The present invention is also directed to an adjustable basketball device including a backboard, a mounting structure coupled to the backboard, a rim body, and a rotatable actuator. The mounting structure includes a first receiving portion and a second receiving portion. The rim body includes a first end portion and a second end portion, the first end portion being inserted into the first receiving portion and the second end portion being inserted into the second receiving portion. The rotatable actuator includes an engagement portion that contacts the first end portion and the second end portion of the rim body. The actuator is configured to move the first end portion and the second end portion relative to each other.

[0011] In one embodiment, the engagement portion includes at least two projections, and each of the end portions includes at least one projection. The at least two projections of the engagement portion are engaged with the at least one projection of each end portion of the rim during adjustment of the rim body.

[0012] In one embodiment, the mounting structure includes a body and first and second receiving portions of the rim. The first receiving portion includes a first guide member pivotally coupled to the body of the mounting structure. The second receiving portion includes a second guide member pivotally coupled to the body. In one embodiment, each of the guide members defines an opening into which one of the end portions is inserted.

BRIEF DESCRIPTION OF THE DRAWINGS

[0013] FIG. 1 illustrates a front perspective view of an adjustable basketball device according to an embodiment of the present invention;

[0014] FIG. 2 illustrates another perspective view of the adjustable basketball device of FIG. 1 as viewed from above;

[0015] FIG. 3 illustrates a fragmentary perspective view of portions of the adjustable basketball device of FIG. 2;

[0016] FIG. 4 illustrates a fragmentary bottom plan view of portions of the adjustable basketball device of FIG. 1.
FIG. 5 illustrates a fragmentary perspective view of portions of the adjustable basketball device of FIG. 1, and showing the rim having a first configuration;

FIG. 6 illustrates a fragmentary perspective view of portions of the adjustable basketball device of FIG. 1, and showing the rim having a second configuration;

FIG. 7 illustrates a fragmentary exploded perspective view of portions of the adjustable basketball device of FIG. 1;

FIG. 8 illustrates a fragmentary exploded bottom plan view of portions of the adjustable basketball device of FIG. 1;

FIG. 9 illustrates a front perspective view of an adjustable basketball device according to another embodiment of the present invention, and showing a backboard in a first configuration;

FIG. 10 illustrates a front perspective view of the adjustable basketball device of FIG. 9, and showing the backboard in a second configuration; and

FIG. 11 illustrates a fragmentary perspective view of portions of the adjustable basketball device of FIG. 9.

Like reference numerals have been used to identify like elements throughout this disclosure.

DETAILED DESCRIPTION OF THE INVENTION

It is to be understood that terms such as “left,” “right,” “top,” “bottom,” “front,” “rear,” “side,” “height,” “length,” “width,” “inner,” “outer” and the like as may be used herein, merely describe points or portions of reference and do not limit the present invention to any particular orientation or configuration. Further, terms such as “first,” “second,” “third,” etc., merely identify one of a number of portions, components and/or points of reference as disclosed herein, and do not limit the present invention to any particular configuration or orientation.

An adjustable basketball device D1 according to an embodiment of the present invention is illustrated in FIGS. 1 and 2. The device D1 includes a support 100, a backboard 200 coupled to the support 100, a mounting structure 300 coupled to the backboard 200, an adjustment mechanism 400 (described in detail below) movably coupled to the mounting structure 300, and an adjustable rim 500 supported by the mounting structure 300 and engaged with the adjustment mechanism 400.

The support 100 includes a base 102 and a post 104 extending upwardly therefrom. The base 102 includes a bottom surface 106 configured for engaging a support surface S and a top surface 108. The post 104 includes an end portion 110 coupled to the top surface 108 of the base 102 and an opposite end portion 112 coupled to the backboard 200. In one embodiment, the post 104 includes two or more sections movably coupled together to allow for adjustment of the height of the backboard 200 relative to the base 102. For example, the post 104 may include two or more telescopically connected sections that extend and retract relative to each other to allow for height adjustment.

Referring to FIGS. 3 and 4 the mounting structure 300 includes a body 302 having a central portion 304, and opposing end portions 306, 308. A guide or receiving portion 310 is coupled to end portion 306 and defines an opening 312. Another guide or receiving portion 314 is coupled to end portion 308 and defines another opening 316. In one embodiment, receiving portion 310 is pivotally coupled to the end portion 306 of the body 302, and rotatable about an axis A1 so that the opening 312 is movable toward along an arcuate path toward and away from the plane on which the backboard 200 lies. Similarly, receiving portion 314 may be pivotally mounted to the end portion 308 of the body 302, and rotatable about an axis A2 and along an arcuate path toward and away from the plane on which the backboard 200 lies.

Referring to FIGS. 4, 5 and 6, the adjustable rim 500 includes a body portion 502, and opposing end portions 504, 506. End portion 504 is received in opening 312 of receiving portion 310 and extends inwardly toward the central portion 304 of the body 302. End portion 506 is received in opening 316 of receiving portion 314 and also extends inwardly toward the central portion 304. The rim 500 defines an opening 508 through which an object may pass, such as a basketball B (shown in FIG. 1). A net 509 is coupled to the body portion 502 of the rim 500. Distal sections of the end portions 504, 506 engage the adjustment mechanism 400 and are movable relative thereto. The rim 500 is adjustable between a first configuration C1 in which the body portion 502 of the rim 500 defines an opening 508a with a first diameter D1, shown in FIG. 5, and a second configuration C2 in which the opening 508b of the body portion 502 of the rim 500 has a second diameter D2 different than the first diameter D1, shown in FIG. 6.

The adjustment mechanism 400 is coupled to the mounting structure 300, and configured to move the end portions 504, 506 of the rim 500 relative to the mounting structure 300 to change the diameter of the opening 508 of the body 502 of the rim 500, for example between opening 508a with diameter D1 and opening 508b with diameter D2.

Referring to FIGS. 7 and 8, the adjustment mechanism 400 includes an actuator 402 disposed within a cavity 318 defined by the body 302 of the mounting structure 300. The actuator 402 may be connected to and axially aligned with an axle 404. The axle 404 is rotatably mounted to the body 302 of the mounting structure 300, so that the actuator 402 is rotatable relative to the body 302.

The actuator 402 includes an engagement surface 406 disposed between and engaging end portion 504 and end portion 506 of the rim 500. In one embodiment, the actuator 402 includes a substantially cylindrical body 408. The engagement surface 406 extends around the body 408 and includes a plurality of outwardly extending projections 410. The end portion 504 of the rim 500 includes a plurality of projections 510 extending outwardly from a surface 512 of the end portion 504 adjacent and facing the actuator 402. Similarly, the end portion 506 of the rim 500 includes a plurality of projections 514 extending outwardly from a surface 516 of the end portion 506 adjacent and facing the actuator 402.

At least one of the projections 410 of the engagement surface 406 of the actuator 402 is received between and intermeshes with correspondingly aligned projections 510 on the end portion 504 of the rim 500, while another one of the projections 410 of the engagement surface 406 is received between and intermeshes with correspondingly aligned projections 514 on the end portion 506 of the rim 500. Alternatively, two projections 410 of the engagement surface 406 intermesh with a correspondingly aligned one of the projections 510 on the end portion 504, while another two projections 410 of the engagement surface 406 intermesh with another correspondingly aligned one of the projections 514 on the end portion 506 of the rim 500.
Thus, one or more of the projections 410 of the engagement surface 406 engage one or more correspondingly aligned projections 510 of the end portion 504 while another one or more projections 410 of the engagement surface 406 engage one or more correspondingly aligned projections 514 of the end portion 506 during adjustment of the diameter of the opening 508 of the body 502 of the rim 500.

Referring to FIGS. 4 and 7, upon rotation of the actuator 402 about an axis A3 and in a direction R1, the first end portion 504 moves relative to the mounting structure 300 in a direction D1, and the second end portion 506 moves relative to the mounting structure 300 in a direction D2. In one embodiment, direction D1 is opposite direction D2. Upon rotation of the actuator 402 about axis A3 in a direction R2 opposite direction R1, the first end portion 504 moves relative to the mounting structure 300 in direction D2, and the second end portion 506 moves relative to the mounting structure 300 in direction D1.

In one embodiment, the axis of rotation A3 of the actuator 402 is substantially aligned with and/or parallel to a longitudinal axis of the post 104 of the support 100. Alternatively or in addition, the axis of rotation A3 may be substantially parallel to the axis of rotation A1 of the receiving portion 310 and/or the axis of rotation A2 of the receiving portion 314.

Rotation of the actuator 402 about axis A3 in direction R1 causes a distal end 504a of end portion 504 and a distal end 506a of end portion 506 to simultaneously move away from the actuator 402. In this way, rotation of the actuator 402 about axis A3 in direction R1 causes the diameter of the opening 508 of the body 502 of the rim 500 to decrease. Conversely, rotation of the actuator 402 about axis A3 in direction R2 causes the distal end 504a of end portion 504 and the distal end 506a of end portion 506 to simultaneously move toward the actuator 402, thereby causing the diameter of the opening 508 of the body 502 of the rim 500 to increase.

In one embodiment, the mounting structure 300 includes guide walls 320, 322 disposed within the cavity 318 of the body 302 and configured to maintain the end portions 504, 506 of the rim 500 against the actuator 402, so that the projections 410 of the engagement surface 406 are maintained in engagement with the projections 510 of end portion 504 as well as with projections 514 of end portion 506. Additional guide surfaces may be provided within the cavity 318 of the body 302. Further, one or more guide surfaces 324 may be disposed within a cavity 326 defined by the receiving portion 310, and/or one or more guide surfaces 328 may be disposed within a cavity 330 defined by the receiving portion 314.

In one embodiment, a retaining ring 412 is coupled to an end 414 of the axle 404, as shown in FIG. 7. The retaining ring 412 has a diameter L3, which is greater than a spacing distance L4 of aligned sections of the end portions 504, 506 adjacent the actuator 402. The retaining ring 412 ensures that the end portions 504, 506 do not slide downwardly and/or away from the actuator 402. In this way, the projections 510 of end portion 504 and the projections 514 of end portion 506 remain in meshed engagement with the projections 410 of the engagement surface 406. Further, the guide walls 320, 322 and guide surfaces 324, 328 ensure that the end portions 504, 506 of the rim 500 are maintained in a controlled position and in engagement with the actuator 402.

Referring again to FIGS. 3, 5 and 6, the adjustment mechanism 400 may include a knob 416 rotatably supported by an exterior surface 332 of the mounting structure 300. The knob 416 is coupled to the actuator 402, for example via the axle 404, so that rotation of the knob 416 in a selected direction R1 or R2 causes rotation of the actuator 402 in a corresponding direction R1 or R2. The knob 416 extends outwardly from the exterior surface 332 of the mounting structure 300, and may include a gripping area configured to be gripped by a user. For example, the knob 416 may include a plurality of circumferentially spaced and outwardly extending knurls easily grippable by the user.

An adjustable basketball device D2 according to another embodiment of the present invention is illustrated in FIGS. 9 and 10. The device D2 includes a support 600, a backboard 700 coupled to the support 600, a mounting structure 800 coupled to the backboard 700, an adjustment mechanism coupled to the mounting structure 800, and an adjustable rim 1000 supported by the mounting structure 800 and engaged with the adjustment mechanism.

The support 600 includes a base 602 and a post 604 coupled thereto and extending upwardly therefrom. The post 604 may include two or more sections movably coupled together to allow for adjustment of the height of the backboard 700 relative to the base 602, such as described above.

The backboard 700 may include a central portion 702 having opposing sides 704, 706. A side section 708 is pivotally coupled to side 704, and another side section 710 is pivotally coupled to side 706. Side section 708 includes a planar front surface 712 and side section 710 includes a planar front surface 714. Front surfaces 712, 714 of side sections 708, 710 are movable between a position P1 substantially coplanar with a front surface 716 of central portion 702 (shown in FIG. 9), and another position P2 angularly disposed relative to front surface 716 (shown in FIG. 10). The angled or inwardly disposed position P2 of side sections 708, 710 increases the likelihood that a ball is deflected inwardly and toward the rim 1000, thereby increasing the ease of ‘making a basket,’ thereby enhancing enjoyment for younger players.

Referring to FIG. 11, the mounting structure 800 includes a side portion 802 defining an opening 804. The adjustable rim 1000 includes a body portion 1002 and a distal end (not shown) received within the opening 804. The body portion 1002 defines an opening 1003 through which a ball or other toy may pass. The body portion 1002 also includes a plurality of apertures 1004. A section of the body portion 1002 is inserted into the opening 804 so that one of the apertures 1004 is aligned with and engaged by the adjustment mechanism. The adjustment mechanism may include a rotatable actuator having an engagement surface, such as one or more projections as described above, which are received in an aligned with one of the apertures 1004. For example, as the actuator rotates about an axis A4 in direction R3, the projections on the actuator engage the apertures 1004, drawing the body portion 1002 of the rim 1000 inwardly, thereby decreasing the diameter of the opening 1003. As the actuator rotates about the axis A4 in an opposite direction R4, the projections on the actuator engage the apertures 1004, and push the body portion 1002 of the rim 1000 outwardly, thereby increasing the diameter of the opening 1003.

Thus, similar to device D1, the adjustment mechanism of device D2 is configured to move an end of the rim 1000 relative to the mounting structure 800 to change the diameter of the opening 1003 of the body portion 1002 of the
rim 1000. The axis of rotation A4 of the actuator is substantially perpendicular to a longitudinal axis of the post 604 of the support 600.

[0046] The adjustment mechanism may include a knob 90° rotatably supported by an exteriorly disposed surface of the mounting structure 800, so that rotation of the knob 900 in a selected direction R3 or R4 causes rotation of the actuator in a corresponding direction, thereby increasing or decreasing the diameter of the opening 1003.

[0047] Although the disclosed inventions are illustrated and described herein as embodied in one or more specific examples, it is nevertheless not intended to be limited to the details shown, since various modifications and structural changes may be made therein without departing from the scope of the inventions and within the scope and range of equivalents of the claims. In addition, various features from one of the embodiments may be incorporated into another of the embodiments. Accordingly, it is appropriate that the appended claims be construed broadly and in a manner consistent with the scope of the disclosure as set forth in the following claims.

What is claimed is:

1. An adjustable basketball assembly, comprising:
   - a support;
   - a backboard coupled to the support;
   - a mounting structure coupled to the backboard;
   - an adjustment mechanism movably coupled to the mounting structure; and
   - an adjustable rim supported by the mounting structure and engaged with the adjustment mechanism, the adjustable rim includes a body portion with a first end portion and a second end portion, each of the first end portion and the second end portion being inserted into the mounting structure and engaged with the adjustment mechanism, the adjustable rim being adjustable between a first configuration in which the rim defines an opening with a first diameter and a second configuration in which the opening of the rim has a second diameter different than the first diameter.

2. The adjustable basketball assembly of claim 1, wherein the adjustment mechanism includes a knob that is rotatably supported by the mounting structure.

3. The adjustable basketball assembly of claim 2, wherein the knob extends outwardly from the mounting structure and includes a gripping area configured to be gripped by a user.

4. The adjustable basketball assembly of claim 1, wherein the adjustment mechanism includes an actuator with an engagement surface, the engagement surface being configured to engage the first end portion to move the first end portion relative to the mounting structure.

5. The adjustable basketball assembly of claim 4, wherein the actuator includes a substantially cylindrical body, the engagement surface extends around the body and has a first projection and a second projection, at least one of the projections being engageable with the first end portion to move the first end portion.

6. The adjustable basketball assembly of claim 4, wherein an axis of rotation of the actuator is substantially aligned with a longitudinal axis of the support.

7. The adjustable basketball assembly of claim 1, wherein the mounting structure includes a first guide defining an opening and a second guide defining an opening, the first end portion of the rim being inserted into the opening of the first guide, and the second end portion of the rim being inserted into the opening of the second guide.

8. The adjustable basketball assembly of claim 7, wherein each of the guides is pivotally mounted to the mounting structure.

9. An adjustable rim for a basketball device, comprising:
   - a mounting structure defining a first opening and a second opening;
   - a rim body having a first end and a second end, the first end of the rim body being inserted into the first opening of the mounting structure, and the second end of the rim body having a diameter; and
   - an adjustment mechanism coupled to the mounting structure, the adjustment mechanism being configured to move the rim body relative to the mounting structure to change the diameter of the opening of the rim body.

10. The adjustable rim of claim 9, wherein the adjustment mechanism engages the first end of the rim body and the second end of the rim body.

11. The adjustable rim of claim 9, wherein the adjustment mechanism includes a rotatably mounted actuator, the actuator being engaged with the first end of the rim body and the second end of the rim body.

12. The adjustable rim of claim 11, wherein rotation of the actuator in a first direction causes the diameter of the rim body opening to decrease, and rotation of the actuator in a second direction opposite to the first direction causes the diameter of the rim body opening to increase.

13. An adjustable basketball device, comprising:
   - a backboard;
   - a mounting structure coupled to the backboard, the mounting structure including a first receiving portion and a second receiving portion;
   - a rim body including a first end portion and a second end portion, the first end portion being inserted into the first receiving portion, and the second end portion being inserted into the second receiving portion; and
   - a rotatable actuator engaged with the first end portion and the second end portion, the rotatable actuator including an engagement portion, the engagement portion contacting the first end portion and the second end portion configured to move the first end portion and the second end portion relative to each other.

14. The adjustable basketball device of claim 13, wherein the engagement portion includes at least two projections and each of the end portions includes at least one projection, the at least two projections of the engagement portion being engaged with the at least one projection of each end portion during adjustment of the rim body.

15. The adjustable basketball device of claim 13, wherein the mounting structure includes a body, the first receiving portion includes a first guide member pivotally coupled to the body of the mounting structure, and the second receiving portion includes a second guide member pivotally coupled to the body.

16. The adjustable basketball device of claim 15, wherein each of the guide members defines an opening into which one of the end portions is inserted.
17. The adjustable basketball device of claim 13, wherein the rotatable actuator includes a knob.

18. The adjustable basketball device of claim 17, wherein the knob extends outwardly from the mounting structure and includes a gripping area configured to be gripped by a user.

19. The adjustable basketball device of claim 13, wherein the actuator includes a substantially cylindrical body, the engagement portion extends around the body and has a first projection and a second projection, at least one of the projections being engageable with the first end portion to move the first end portion.

20. The adjustable basketball device of claim 13, wherein an axis of rotation of the actuator is substantially aligned with a longitudinal axis of a support to which the backboard is coupled.

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