FOOT OPERATED HEIGHT ADJUSTMENT MECHANISM FOR A BASKETBALL SYSTEM

In one example, a basketball system includes a basketball goal, a support structure, a connecting structure connected to the basketball goal and the support structure, and a height adjustment mechanism. The height adjustment mechanism includes a biasing mechanism operably connected to the connecting structure and the basketball goal, and also includes a locking member. An adjustment member of the height adjustment mechanism is engaged with the locking member and is movable relative to the locking member. The adjustment member is also connected to the connecting structure so that the adjustment member and connecting structure are operable to move in unison with each other. Finally, a foot actuator of the height adjustment mechanism is connected to the adjustment member and is operable to releasably engage the locking member.
FIG. 3
FOOT OPERATED HEIGHT ADJUSTMENT MECHANISM FOR A BASKETBALL SYSTEM

RELATED APPLICATIONS


FIELD OF THE INVENTION

[0002] The present disclosure is generally directed towards sporting equipment and, in particular, to a foot based height adjustment mechanism for a basketball system.

BACKGROUND

[0003] The game of basketball is played by many people throughout the United States and the world. Briefly, the game of basketball typically includes a flat and level playing surface with a basketball goal at each end of the court. The basketball goal, which may include a backboard and a rim or hoop, is typically attached to the top of a support pole. The rim or hoop is normally located ten feet above the playing surface and the backboard may be constructed from materials such as wood, metal, plastic or tempered glass.

[0004] Conventional basketball goals typically include a backboard that is perpendicular to the playing surface and a rim that is parallel to the playing surface. The rim is often rigidly mounted to the basketball backboard, but the rim may also be pivotally mounted to the basketball backboard to create a movable or “break-away” type rim.

[0005] Known basketball systems may be permanently secured in a fixed location. For example, the end of the support pole may be inserted into the ground and secured in a set position. Portable basketball systems, in which the system may be selectively moved from one location to another, are also known. Conventional portable basketball systems may include a base with a hollow interior portion that is sized and configured to be filled with ballast such as sand or water. These known portable basketball systems may include one or more wheels to facilitate movement of the basketball system. These known portable basketball systems may also include a handle to facilitate movement of the basketball system.

[0006] Basketball systems that allow the height of the basketball goal to be adjusted relative to the playing surface are also known. These known adjustable height basketball systems may allow basketball to be played and/or practiced by a wide variety of persons. For instance, adjustable height basketball systems may be used by relatively tall players for some games and by shorter players during other games. Adjustable height basketball systems may also be used by players of different strengths or skill levels. In addition, adjustable height basketball systems may be used by adults and children. Further, adjustable height basketball systems may be used to play a regulation game of basketball or for practicing skills such as dunking the basketball.

[0007] Many conventional adjustable height basketball systems are difficult and/or time consuming to adjust. In addition, many conventional adjustable height basketball systems have complicated designs with numerous parts and connections, which may undesirably increase the cost of the system and make the system time consuming and difficult to assemble. Further, many known adjustable height basketball systems are constructed with large and bulky components. Disadvantageously, these large and bulky components may require a large amount of space, interfere with playing basketball and can make the basketball system more difficult to ship, store and/or assemble. The large and bulky components may also create an unpleasing appearance or design of the basketball system.

[0008] It may also be difficult and time consuming to adjust the height of many conventional adjustable height basketball systems. For example, some known adjustable height basketball systems require two people and/or two hands to adjust the height of the basketball system. For example, one hand or person may need to operate a release mechanism so that the height of the basketball goal may be adjusted and the other hand or person may then adjust the height of the basketball goal. Additionally, some known adjustable height basketball systems may require the user to perform multiple functions in order to adjust the height of the basketball system. Thus, it may be difficult and awkward to adjust the height on these known basketball systems if two people or hands are required, and/or if multiple functions have to be performed.

[0009] In view of problems such as those noted, what is needed is a mechanism that enables a user to quickly and easily adjust the height of a basketball goal.

BRIEF SUMMARY OF ASPECTS OF SOME EXAMPLE EMBODIMENTS

[0010] Various disclosed embodiments are concerned with basketball systems, which can be fixed or portable, that include a height adjustment mechanism that enables a user to change the height of a basketball goal relative to a playing surface.

[0011] The embodiments disclosed herein do not constitute an exhaustive summary of all possible embodiments, nor does this summary constitute an exhaustive list of all aspects of any particular embodiment(s). Rather, this summary simply presents selected aspects of some example embodiments. It should be noted that nothing herein should be construed as constituting an essential or indispensable element of any invention or embodiment. Rather, and as the person of ordinary skill in the art will readily appreciate, various aspects of the disclosed embodiments may be combined in a variety of ways so as to define yet further embodiments. Such further embodiments are considered as being within the scope of this disclosure. As well, none of the embodiments embraced within the scope of this disclosure should be construed as resolving, or being limited to the resolution of, any particular problem(s). Nor should such embodiments be construed to implement, or be limited to implementation of, any particular effect(s).

[0012] In particular, example embodiments within the scope of this disclosure may include one or more of the following elements, in any combination: fixed basketball systems; portable basketball systems; a foot-operated height adjustment mechanism for a basketball goal; an adjustment member connectable to a connecting structure for a basketball goal and movable relative to a locking member; a locking member configured to be attached to a support structure of a basketball system; a pedal that can be operated by a foot of a user to change a position of an adjustment member relative to a locking member; a pedal that is releasably engageable with
a locking member at a plurality of different positions; a pedal that is biased into an engaged position with respect to a locking member; a biasing mechanism that biases a basketball goal into one or more positions relative to a playing surface; a biasing mechanism that biases a basketball goal into one or more positions relative to a playing surface, and the biasing mechanism is free to act with respect to the basketball goal when a pedal of a height adjustment mechanism is unengaged with a locking member, and the biasing mechanism is constrained from acting with respect to the basketball goal when the pedal is engaged with the locking member; one or more pins that limit a range of motion of a pedal of a foot-operated height adjustment mechanism; and, one or more pins upon which one or more springs are able to act so as to bias a pedal of a foot-operated height adjustment mechanism into a desired position.

[0013] In one particular example embodiment, a basketball system includes a basketball goal, a support structure, a connecting structure connecting the basketball goal and the support structure, and a foot-operated height adjustment mechanism operable to change a height of the basketball goal relative to a playing surface. In this particular example, the foot-operated height adjustment mechanism includes an adjustment member that is connected by a connecting structure to a basketball goal and is movable relative to a locking member. A pedal attached to the adjustment member is releasably engageable at various positions relative to the locking member so that a position of the basketball goal can be changed by a user operating the pedal and moving the adjustment member. The pedal is biased into a locking engagement with the locking member, and the bias can be overcome, and the pedal disengaged from the locking member, when a user operates the pedal.

[0014] In a second example embodiment, a foot-operated height adjustment mechanism for a basketball goal includes an adjustment member connectable to a connecting structure of a basketball system and movable relative to a locking member. A pedal attached to the adjustment member is releasably engageable at various positions relative to the locking member and is operable by a user to change a position of the adjustment member relative to the locking member. The pedal is biased into a locking engagement with the locking member, and the bias can be overcome, and the pedal disengaged from the locking member, when a user operates the pedal.

[0015] In a third example embodiment, a foot-operated height adjustment mechanism such as the aforementioned second embodiment, for example, operates in association with a biasing mechanism that is operable to bias a basketball goal into one or more desired positions relative to a playing surface. The biasing mechanism can be included as an element of the foot-operated height adjustment mechanism, or may be separate from the foot-operated height adjustment mechanism. In either instance, operation of the biasing mechanism may be controlled, constrained, or otherwise influenced or affected, by elements of the foot-operated height adjustment mechanism.

[0016] In a fourth example embodiment, a basketball system includes a goal, a support structure, a connecting structure connected to the goal and the support structure, and a height adjustment mechanism. The height adjustment mechanism includes an adjustment member connected to the connecting structure so that the adjustment member and the connecting structure are operable to move in unison with each other. The basketball system also includes a foot actuator connected to the adjustment member and operable by a foot of a user to move the adjustment member so as to change a height of the goal above a reference surface.

BRIEF DESCRIPTION OF THE DRAWINGS

[0017] The appended drawings contain figures of example embodiments to further illustrate and clarify various aspects of the present invention. It will be appreciated that these drawings depict only example embodiments of the invention and are not intended to limit its scope. Aspects of the invention will be described and explained with additional specificity and detail through the use of the accompanying drawings in which:

[0018] FIG. 1 is a rear perspective view of an embodiment of a basketball system with a foot operated height adjustment mechanism, and a goal in a lowered position;

[0019] FIG. 2 is a rear perspective view of an embodiment of a basketball system with a foot operated height adjustment mechanism, and a goal in a raised position;

[0020] FIG. 3 is a side view disclosing elements of a height adjustment mechanism, and a goal in a lowered position;

[0021] FIG. 4 is a side view disclosing elements of a height adjustment mechanism, and a goal in a raised position;

[0022] FIG. 5 is a detail view of an example embodiment of a foot operated actuator;

[0023] FIG. 6 is an enlarged cutaway side view of an embodiment of a foot actuator where the foot actuator is disengaged from a locking member;

[0024] FIG. 7 is an enlarged cutaway side view of an embodiment of a foot actuator where the foot actuator is engaged with a locking member; and

[0025] FIG. 8 is a partial exploded view of an example height adjustment mechanism.

DETAILED DESCRIPTION OF SOME EXAMPLE EMBODIMENTS

[0026] The present disclosure is directed towards a height adjustment mechanism for a basketball system and, particularly, to a foot-operated height adjustment mechanism. The principles of the present disclosure, however, are not limited to height adjustment mechanisms for a basketball system. It will be understood that, in light of the present disclosure, the height adjustment mechanism disclosed herein can be successfully used in connection with other types of sports equipment and/or support structures.

[0027] A. General Aspects of Some Example Embodiments

[0028] In general, basketball systems and associated components disclosed herein, including support structures, connecting structures, goals, backboards, height adjustment mechanisms, bases, and other components disclosed herein, may be constructed with a variety of components and materials including, but not limited to, plastic (including injection-molded, blow-molded, rotomolded, and twin sheet plastic structures and elements) including polycarbonates, plastics such as high-density polyethylene (HDPE), composites, fiberglass, wood, rubber, metals, and combinations of any of the foregoing. Blow-molded or other plastic may be used, for example, in the construction of the base of a basketball system and/or in the construction of a backboard of a basketball system.

[0029] Suitable metals may include steel, aluminum, and aluminum alloys, although the skilled person will understand
that a variety of other metals may be employed as well and the scope of the invention is not limited to the foregoing examples. Where metal is employed in the construction of a basketball system or basketball system component, the metal elements may take one or more forms including, but not limited to, square tube, rectangular tube, oval tube, round tube, pipe, angles, flat bar, I-shapes, T-shapes, L-shapes, and combinations and portions of any of the foregoing.

[0030] Depending upon the material(s) employed in the construction of the basketball systems, a variety of methods and components may be used to connect, releasably or permanently, various elements of the basketball systems. For example, the various elements of basketball systems within the scope of this disclosure may be attached to each other by any one or more of processes such as welding or brazing, and/or mechanically by way of fasteners such as bolts, screws, pins, and rivets, for example.

[0031] Some, none, or all of portions of a one or more of the basketball systems and their components may be coated with paint or other materials. At least some of such materials may serve to help prevent, or reduce, rust and corrosion.

[0032] Surface treatments and textures may also be applied to portions of the basketball systems. For example, the pedal of a height adjustment mechanism can include a texture or pattern, which can be created with a blow-molding or other process.

[0033] B. General Aspects of an Example Basketball System

[0034] With reference now to FIGS. 1 and 2, an example basketball system 10 may include a support structure 12, such as a support pole, that is sized and configured to support a basketball goal 14 above a playing surface. The support structure 12 may include one or more segments 12a that are interconnected, which may facilitate shipping and transportation of the basketball system 10, and the segments 12a may or may not be movable relative to each other. Alternatively, the support structure 12 can take the form of a single pole.

[0035] The basketball goal 14 includes a backboard 16 and a rim 18, and the basketball goal 14 may also include a net connected to the rim 18. The backboard 16 may be constructed, for example, from materials such as glass, metal, plastic, or combinations of the foregoing. In addition, the backboard 16 may be a unitary, one-piece structure such as a blow-molded plastic structure. Further, the rim 18 may be secured in a fixed position relative to the backboard 16, or the rim 18 may have a breakaway configuration that allows for temporary movement in the position of the rim 18 relative to the backboard 16.

[0036] The basketball system 10 may be a portable basketball system, as indicated in FIG. 1 and discussed in more detail elsewhere herein, that is capable of being moved from one location to another. For example, the support structure 12 may be connected to a base 17 to form part of a portable basketball system. The base 17 can be a hollow structure that can be filled with ballast, such as sand or water, to aid in the stability of the basketball system 10 when in use. For example, the base 17 can be a unitary one-piece structure made of plastic and formed by a blow-molding process. In some alternative embodiments, the base is a substantially solid structure. The attachment of the support structure 12 to the base 17 can be strengthened with the use of one or more struts 19.

[0037] In an alternative embodiment, the basketball system can be a permanent system that is intended to remain in a fixed location. For example, the support structure 12 may be connected to the ground or other foundation to form an in-ground or permanent basketball system 10.

[0038] With continued reference to FIGS. 1 and 2, the basketball goal 14 is connected to the support structure 12 by a connecting structure 20. In general, the connecting structure 20 is sized and configured to position the backboard 16 in a generally vertical position and the rim 18 in a generally horizontal position relative to a playing surface. The connecting structure 20 is configured to allow adjustments to the height of the basketball goal 14 relative to the playing surface.

[0039] In particular, the connecting structure 20 may allow the rim 18 to be positioned at the standard, regulation height of ten (10) feet for playing the game of basketball. The connecting structure 20 may also allow the rim 18 to be positioned at higher and/or lower heights. For example, the connecting structure 20 may allow the rim 18 to be positioned below the standard height to accommodate children that may lack the ability to shoot at a regulation height rim. In addition, the connecting structure 20 may allow the rim 18 to be positioned above the standard height, if desired.

[0040] As shown in FIGS. 1 and 2, the connecting structure 20 may include one or more connecting members that connect the support structure 12 and the basketball goal 14 to each other. For example, the connecting structure 20 may include a pair of upper connecting members 22, 24 and a pair of lower connecting members 26, 28. The connecting members can be made of metal and/or any other suitable materials. For example, as shown in FIGS. 1 and 2, the lower connecting members 26, 28 may be shorter than the upper connecting members 22, 24. In particular, the lower connecting members 26, 28 may extend beyond the support structure 12 and away from the basketball goal 14.

[0041] In order to permit the height of the basketball goal 14 to be adjustable, the connecting members 22, 24, 26, 28 are movable. For example, the upper connecting members 22, 24 are pivotably connected to the support structure 12 and pivotally connected to one or more brackets 29 which, in turn, are attached to the backboard 16. Thus configured and arranged, the upper connecting members 22 and 24 move in unison with each other. Similarly, the lower connecting members 26, 28 are pivotably connected to the support structure 12 by way of one or more pins 21, studs or bolts, and to the bracket(s) 29.

[0042] Thus configured and arranged, the lower connecting members 26 and 28 move in unison with each other, and also move in unison with the upper connecting members 22 and 24. In addition, the connecting members 22, 24, 26, 28 are disposed in a generally parallelogram-shaped configuration. The connecting members 22, 24, 26, 28 are also connected to the basketball goal 14 and the support structure 12 to form part of a four-bar and/or four-pivot linkage. Advantageously, this may allow the height of the basketball goal 14 to be adjusted relative to the playing surface, while maintaining the backboard 16 and rim 18 in a generally vertical orientation relative to the playing surface, as shown in FIGS. 1 and 2.

[0043] With reference now as well to FIGS. 3 and 4, some embodiments of the basketball system 10 include one or more biasing mechanisms 27 operable to bias the basketball goal 14 into a desired position, to help maintain the basketball goal 14 in a desired position and/or to facilitate movement of the basketball goal 14. In particular, the biasing mechanism 27 may help facilitate movement of the basketball goal 14 and/or help prevent unintended movement of the basketball goal 14.
In the illustrated example, a biasing mechanism 27 is provided that is connected to the lower connecting member 26 and the bracket 29, and another biasing mechanism 27 is provided that is connected to the lower connecting member 28 and the bracket 29. Different arrangements of the biasing mechanisms 27 can alternatively be employed however. For example, one or more biasing mechanisms may be connected to an upper connecting member 22, 24 and to the bracket 29.

[0044] The biasing mechanism 27 may simply provide a counterbalance or serve as a counterweight. For instance, as discussed in more detail below, the biasing mechanism 27 may provide a counterbalance or counterweight to the basketball goal 14 and/or connecting structure 20. The biasing mechanism 27 is sized and configured to apply sufficient force to allow the height of the basketball goal 14 to be easily adjusted, but the biasing mechanism could provide any desired force. The force applied by a biasing mechanism 27 may be a function of the extent to which the biasing mechanism 27 is displaced or deformed. For example, a force ‘F’ exerted by a spring is a function of a spring constant ‘k’ and a displacement ‘X’, namely, F=kX.

[0045] More specifically, in at least some embodiments, the biasing mechanism 27 is sized and configured to exert a force that at least partially counters the weight of the basketball goal 14. In particular, the biasing mechanism 27 may help provide a counterbalance force that at least partially counters the force of gravity against the basketball goal 14. Advantageously, this may make the height of the basketball goal 14 relatively easier to adjust than if the biasing mechanism 27 were not present. The biasing mechanism 27 may thus assist in raising and/or lowering of the basketball goal 14. In the illustrated embodiment, the biasing mechanism 27 assists in raising the basketball goal 14. However, the effects achieved by use of the biasing mechanism 27 can be varied by connecting the biasing mechanism 27 to other elements of the basketball system.

[0046] Although shown as a spring in the illustrated embodiment, it will be appreciated that the biasing mechanism 27 may include one or more shocks, dampers, springs, and any combination of these. In one particular example, the biasing mechanism 27 may include a gas shock, such as a pneumatic shock. The biasing mechanism 27 may also include other types of shocks, such as fluid shocks and the like, including, for example, springs, such as gas springs, compression springs, coil springs, cantilever springs, tension springs, torsion springs, and any combination of these.

[0047] C. Aspects of an Example Height Adjustment Mechanism

[0048] With continued attention to FIGS. 1-4, and directing attention to FIGS. 5-7 as well, details are provided concerning aspects of some example height adjustment mechanisms, one example of which is a foot-operated height adjustment mechanism denoted generally at 30, which may be referred to herein as simply the height adjustment mechanism 30. In general, the height adjustment mechanism 30 enables a user to adjust the height of the basketball goal 14 relative to a playing surface. In more detail, and discussed further below, the height adjustment mechanism 30 is operably connected to the connecting structure 20, and thus enables a user to use the height adjustment mechanism 30 to manipulate the connecting structure 20, and thereby change a height of the basketball goal 14 to which the connecting structure 20 is connected.

[0049] As shown in the example of FIGS. 1-4, the height adjustment mechanism 30 is positioned behind the support structure 12 so that it does not interfere with use of the basketball system 10. It will be appreciated, however, that the height adjustment mechanism 30 may be disposed in other suitable locations relative to one or more elements of the basketball system 10. In another embodiment, the height adjustment mechanism 30 may be located on a side (i.e. left or right) or even on the front of the support structure 12.

[0050] As shown in FIG. 1, the height adjustment mechanism 30 includes an adjustment member 32, which could be a metal bar or metal tube, for example, that is connected to the support structure 12. The upper end of the adjustment member 32 is pivotally connected, such as by way of one or more pins 33, bolts or studs for example, to the lower connecting members 26, 28 near the terminal ends of the lower connecting members 26, 28.

[0051] The connection of the adjustment member 32 to the terminal portions of the lower connecting members 26 and 28 can provide a useful mechanical advantage that aids the user in raising and/or lowering the basketball goal 14. For example, a moment arm ‘M’ associated with such a connection is the upward/downward force ‘F’ exerted on the lower connecting members 26, 28 multiplied by the distance ‘D’ between pin 33 and pin 21. The size of the moment arm ‘M’ and, thus, the relative mechanical advantage, can be increased by lengthening the lower connecting members 26 and 28, thereby increasing the distance ‘D’ between pin 33 and pin 21.

[0052] It will further be appreciated that the height adjustment mechanism 30 may be connected to other portions of the basketball system 10 such as the upper connecting members 22, 24. For instance, the upper connecting members 22, 24 may have a longer length that the lower connecting members 26, 28 and/or may extend beyond the support structure 12 and away from the basketball goal 14. The adjustment member 32 may then be connected to the upper connecting members 22, 24. Thus, it will be understood that the basketball system 10 and the accompanying parts and components may have various suitable shapes, sizes, configurations and arrangements depending, for example, upon the intended use of the basketball system.

[0053] With continued reference to the adjustment member 32, the lower end of the adjustment member 32 can slidingly engage a locking member 34, which could be a metal bar or metal tube, for example, that is connected to the support structure 12. The locking member 34 may be connected to the support structure 12, such as by way of a bracket 36 that is bolted or otherwise attached to the support structure 12. The sliding engagement of the adjustment member 32 and the locking member 34 is such that one of the adjustment member 32 and the locking member 34 is able to move relative to the other of the adjustment member 32 and the locking member 34. In the example disclosed in FIGS. 1-4, the locking member 34 may be slidable relative to the adjustment member 32. In particular, the locking member 34 may be at least partly received inside the adjustment member 32 such that the adjustment member 32 slides along a longitudinal axis of the adjustment member 32 and a longitudinal axis of the locking member 34. In an alternative embodiment, the adjustment member 32 may be inserted inside the locking member 34 and can slide along the longitudinal axes.

[0054] As best seen in FIGS. 5-8, the height adjustment mechanism 30 includes a foot operated actuator 40, which may be referred to herein as simply an actuator 40, that may be used to adjust the height of the basketball goal 14. The actuator 40 may include a foot pedal 42, which can be plastic
or metal for example, attached to a bracket 44 having a pair of arms 44a and 44b. The bracket 44 in turn, can be connected to an actuator mount 46 by way of a bolt 48, pin, or stud for example. As best shown in FIG. 5, a bar 50, bolt or stud is also provided that is mounted in the arms 44a and 44b. Although the bracket 44 is rotatable about the bolt 48, the downward motion of the bracket 44 is limited by a pair of stops 46a and 46b of the actuator mount 46. In particular, and as best shown in FIG. 5, as the bracket 44 rotates downward, such as in response to exertion of a force on the foot pedal 42 by a user, the bar 50 eventually contacts the stops 46a and 46b, and further downward motion of the bracket 44 is thus prevented.

With continued reference to FIGS. 5-8, the actuator 40 further includes one or more biasing elements, such as springs 52 for example, that serve to bias the bracket 44 into a desired position relative to the locking member 34. In the illustrated example, the springs 52 are torsion springs, but any other suitable spring or biasing element could alternatively be employed. More specifically, the springs 52 each include a pair of legs 52a, one of which is generally positioned flat against a wall 44c of the bracket 44, and the other of which is positioned below, and exerts a force on, the bar 50. This positioning and configuration of the springs 52 results in the imposition of a pre-load on the springs 52. Because the bar 50 is received in the bracket 44, the springs 52 thereby exert a biasing force on the bar 50, which then transfers the biasing force to the bracket 44. As a result of the exertion of the biasing force, the bracket 44 is moved into engagement with the locking member 34, as discussed in more detail below.

With particular reference now to FIGS. 6-8, the locking member 34 may include one or more locking stops 34a. In the example of FIG. 8, there are five locking stops 34a. However, more or fewer locking stops 34a may be used. The five locking stops 34a may be spaced, for example, two inches apart. Based on the length of the lower connecting arms 26 and 28 to which the adjustment member 32 is connected, two inches of travel of the adjustment member 32 relative to the locking member 34 may correspond to about six inches of vertical travel for the basketball goal 14. By way of illustration, the topmost locking stop 34a may correlate to a vertical position of the basketball goal 14 that is about eight feet above a playing surface. The next topmost locking stop 34a may correlate to an eight foot six inch vertical position. The middle locking stop 34a may correlate to a nine foot vertical position. The bottommost locking stop 34a may correlate to a ten foot vertical position. The next bottommost locking stop 34a may correlate to a nine foot six inches vertical position. Thus, for a foot pedal 42 travel distance of about ten inches, the basketball goal 14 may move from an eight foot vertical position to a ten foot vertical position. Such travel would not ordinarily be possible when adjusting the height by hand.

In the illustrated embodiment, the locking stops 34a take the form of a slot, groove, or other female engagement element in an outer surface of the locking member 34. In other embodiments, the locking stops 34a may take the form of a male engagement element connected to an outer surface of the locking member 34. In general however, and as discussed in more detail below, the locking stops 34a and an engagement element 45 of the foot actuator 40 are implemented as, or comprise, complementary structures configured to releasably engage each other. The engagement element 45 in the illustrated embodiment is shown as a tab configured and arranged to be removably received in the locking stops 34a.

As collectively disclosed in FIGS. 6 and 7, the foot pedal 42 is operable to move the engagement element 45 into, and out of, engagement with a locking stop 34a of the locking member 34. When the engagement element 45 is engaged with the locking stop 34a, as shown in FIG. 7, movement of the height adjustment member 32 relative to the locking member 34 is prevented, and when the engagement element 45 is disengaged from the locking stop 34a, as shown in FIG. 6, movement of the height adjustment member 32 relative to the locking member 34 is enabled.

In connection with the foregoing, it is noted elsewhere herein that one or more springs 52 bias the bracket 44 and, thus, the engagement element 45, into engagement with a locking stop 34a. This biasing effect can be overcome when a user depresses the foot pedal 42, which then results in disengagement of the engagement element 45 from the locking stop 34a. In general then, to effect a change in position of the adjustment member 32, to which the foot pedal 42 is connected, relative to the locking member 34, a user can depress the foot pedal 42, which retracts the engagement element 45 from a locking stop 34a, thereby enabling movement of the adjustment member 32 relative to the locking member 34. When the adjustment member 32 is in a desired position relative to the locking member 34, the user can simply release the foot pedal 42, which enables the biasing force exerted by the spring 52 to come into effect and move the engagement element 45 into engagement with a locking stop 34a. Because the adjustment member 32 is connected to the connecting structure 20 which, in turn, is connected to the basketball goal 14, the aforementioned operations enable changes to a vertical position of the basketball goal 14 relative to a playing surface.

In more detail, a user can initially push the foot pedal 42 down, thereby disengaging the engagement element 45 and locking stop 34a from each other. The user can continue to push down on the foot pedal 42 until the adjustment member 32 moves downward, relative to the locking member 34, to a position that corresponds to a desired height of the basketball goal 14. In so doing, the force exerted by the user overcomes the bias imposed on the basketball goal 14 by the biasing mechanism 27. It should be noted that the two operations performed by the user to adjust the position of the basketball goal 14 can be performed at discrete times, or can be performed as a single operation or motion. In any case, once the adjustment member 32 has been moved to a position that corresponds to the desired height of the basketball goal 14, the user can then release the foot pedal 42 and thereby enable the spring(s) 52 to move the engagement element 45 into engagement with the locking stop 34a that corresponds to the desired height of the basketball goal 14. In this way, the vertical position of the basketball goal 14 is locked.

To move the basketball goal 14 upward, a user can initially push the foot pedal 42 down, thereby disengaging the engagement element 45 and locking stop 34a from each other. The user can maintain enough force on the foot pedal 42 to keep the engagement element 45 and locking stop 34a from each other, while at the same time allowing the adjustment member 32 to move upward relative to the locking member 34, under the influence of a biasing force exerted by the biasing mechanism 27, to a position that corresponds to a desired height of the basketball goal 14. Depending upon the force exerted by the biasing mechanism 27, there may be little or no effort required on the part of the user to move the basketball goal 14 upward to the desired position once the
engagement element 45 and the locking stop 34a have been disengaged from each other. Once the adjustment member 32 has been moved to a position that corresponds to the desired height of the basketball goal 14, the user can then release the foot pedal 42 and thereby enable the spring(s) 52 to move the engagement element 45 into engagement with the locking stop 34a so that corresponds to the desired height of the basketball goal 14. In this way, the vertical position of the basketball goal 14 is locked.

[0062] As will be apparent from the foregoing discussion, at least, the movement of the foot actuator 40 locks and/or unlocks the adjustment member 32 and allows the height of the basketball goal 14 to be adjusted, which may happen almost simultaneously and without any other actions being required. This may allow a person to adjust the height of the basketball goal 14 either up or down, as desired, using only one foot. Thus, no other mechanisms need to be released and/or other functions performed other than employing the foot pedal 42, as described above. This one-footed operation of the height adjustment mechanism 30 may allow the height of the basketball goal 14 to be quickly and easily adjusted with little effort on the part of the user. Furthermore, because the foot actuator 40 is actuated with a foot rather than a hand, users of varying heights or strengths may be able to make adjustments to a basketball goal 14 height that would not be possible, or that would at least be difficult, with a hand actuated system.

[0063] As disclosed herein, the biasing mechanism 27, in the illustrated embodiment, is connected to the upper connecting members 22, 24 and to the support structure 12. This connection enables the application of a downward force to the upper connecting members 22, 24 to move the basketball goal 14 toward a lower (i.e., below regulation height) position. In one alternative embodiment, a biasing mechanism, such as the biasing mechanism 27 for example, biases a goal, such as the basketball goal 14 for example, toward a lower position, rather than a higher position as in the case of the illustrated embodiment. This approach may provide the advantage that a foot actuator, such as the foot actuator 40 for example, need only have force applied by the user in the downward direction.

[0064] In particular, if the user wants to transition the basketball goal toward a lower position from a higher position, the user need only activate the foot actuator to disengage from a locking member, such as the locking member 34 for example, and then maintain the foot actuator in a disengaged state while the biasing mechanism will, acting through connecting members, such as upper connecting members 22, 24 for example, move the goal downward. The foot of the user can then maintain the foot actuator in a disengaged state until the basketball goal reaches its desired position, at which time the foot actuator can be allowed by the user to return to an engaged state with the locking member.

[0065] The present invention may be embodied in other specific forms without departing from its spirit or essential characteristics. The described embodiments are to be considered in all respects only as illustrative and not restrictive. All changes which come within the meaning and range of equivalency of the claims are to be embraced within their scope.

What is claimed is:
1. A basketball system comprising:
a goal;
a support structure;
a connecting structure connected to the goal and the support structure; and
a height adjustment mechanism comprising:
a locking member;
an adjustment member engaged with the locking member and movable relative to the locking member, and the adjustment member connected to the connecting structure so that the adjustment member and the connecting structure are operable to move in unison with each other; and
a foot actuator connected to the adjustment member and operable to releasably engage the locking member.
2. The basketball system as recited in claim 1, wherein an upward movement of the adjustment member corresponds to a downward movement of the goal, and a downward movement of the adjustment member corresponds to an upward movement of the goal.
3. The basketball system as recited in claim 1, wherein the foot actuator is located proximate a lower end of the support structure.
4. The basketball system as recited in claim 1, wherein the foot actuator includes a foot pedal which, when subjected to a downward force, disengages an engagement element from the locking member.
5. The basketball system as recited in claim 1, wherein an engagement element of the foot actuator is biased into engagement with the locking member by one or more springs.
6. The basketball system as recited in claim 1, wherein when an engagement element of the foot actuator is disengaged from the locking member, the adjustment member is movable relative to the locking member.
7. The basketball system as recited in claim 1, wherein when an engagement element of the foot actuator is engaged with the locking member, the adjustment member is fixed relative to the locking member.
8. The basketball system as recited in claim 1, wherein when an engagement element of the foot actuator is disengaged from the locking member, the goal is movable in a vertical direction under the influence of a biasing mechanism that is operably connected to the connecting structure and to the goal.
9. The basketball system as recited in claim 1, wherein the adjustment member is slidingly engaged with the locking member.
10. The basketball system as recited in claim 1, wherein the height adjustment mechanism is operable such that a single movement of the foot actuator effects both release of the adjustment member from a fixed position relative to the locking member, and a change to a height of the goal relative to a playing surface.
11. A basketball system comprising:
a goal;
a support structure;
a connecting structure including a pair of arms connected to the goal and the support structure; and
a height adjustment mechanism comprising:
a biasing mechanism connected to one of the arms and to the goal;
a locking member;
an adjustment member engaged with the locking member and movable relative to the locking member, and the adjustment member connected to the pair of arms so that the adjustment member and the arms are operable to move in unison with each other; and
a foot actuator connected to the adjustment member and operable to releasably engage the locking member.

12. The basketball system as recited in claim 11, wherein an engagement element of the foot actuator is biased into engagement with the locking member by one or more springs.

13. The basketball system as recited in claim 11, wherein a downward movement of a foot pedal of the foot actuator frees the adjustment member to move relative to the locking member.

14. The basketball system as recited in claim 13, wherein the downward movement of the foot pedal causes a change in a height of the goal relative to a playing surface.

15. The basketball system as recited in claim 11, wherein the height adjustment mechanism is operable such that a downward movement of the foot actuator effects both release of the adjustment member from a fixed position relative to the locking member, and a downward movement of the adjustment member that increases a height of the goal relative to a playing surface.

16. The basketball system as recited in claim 11, wherein when the biasing mechanism is free to act, the biasing mechanism biases the goal in an upward direction.

17. The basketball system as recited in claim 11, wherein the height adjustment mechanism is operable to adjust a height of the goal solely by a foot of a user.

18. The basketball system as recited in claim 11, wherein in operation, the height adjustment mechanism lowers the goal without requiring a user to do more than disengage the foot actuator from the locking member.

19. The basketball system as recited in claim 11, wherein the foot actuator is engageable with the locking member at multiple different locations on the locking member.

20. The basketball system as recited in claim 11, wherein the locking member is partly received within the adjustment member.

21. A basketball system comprising:
  a goal;
  a support structure;
  a connecting structure connected to the goal and the support structure; and
  a height adjustment mechanism comprising:
  an adjustment member connected to the connecting structure so that the adjustment member and the connecting structure are operable to move in unison with each other; and
  a foot actuator connected to the adjustment member and operable by a foot of a user to move the adjustment member so as to change a height of the goal above a reference surface.

22. The basketball system as recited in claim 21, wherein the foot actuator includes a foot pedal, and a downward movement of the foot pedal corresponds to an upward movement of the goal.

23. The basketball system as recited in claim 21, wherein an upward movement of the adjustment member corresponds to a downward movement of the goal, and a downward movement of the adjustment member corresponds to an upward movement of the goal.

24. The basketball system as recited in claim 21, further comprising:
  a biasing mechanism connected to the support structure and to the goal; and
  a locking member engaged with the adjustment member, the adjustment member being movable relative to the locking member, and the adjustment member connected to the connecting structure so that the adjustment member and the connecting structure are operable to move in unison with each other,
  wherein the foot actuator is connected to the adjustment member and is operable to releasably engage the locking member to permit a change to a height of the goal relative to a reference surface.

25. The basketball system as recited in claim 24, wherein when an engagement element of the foot actuator is disengaged from the locking member, the goal is movable in a vertical direction under the influence of a biasing mechanism that is operably connected to the connecting structure and to the goal.

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