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(54) **ATHLETIC TRAINING SYSTEM**

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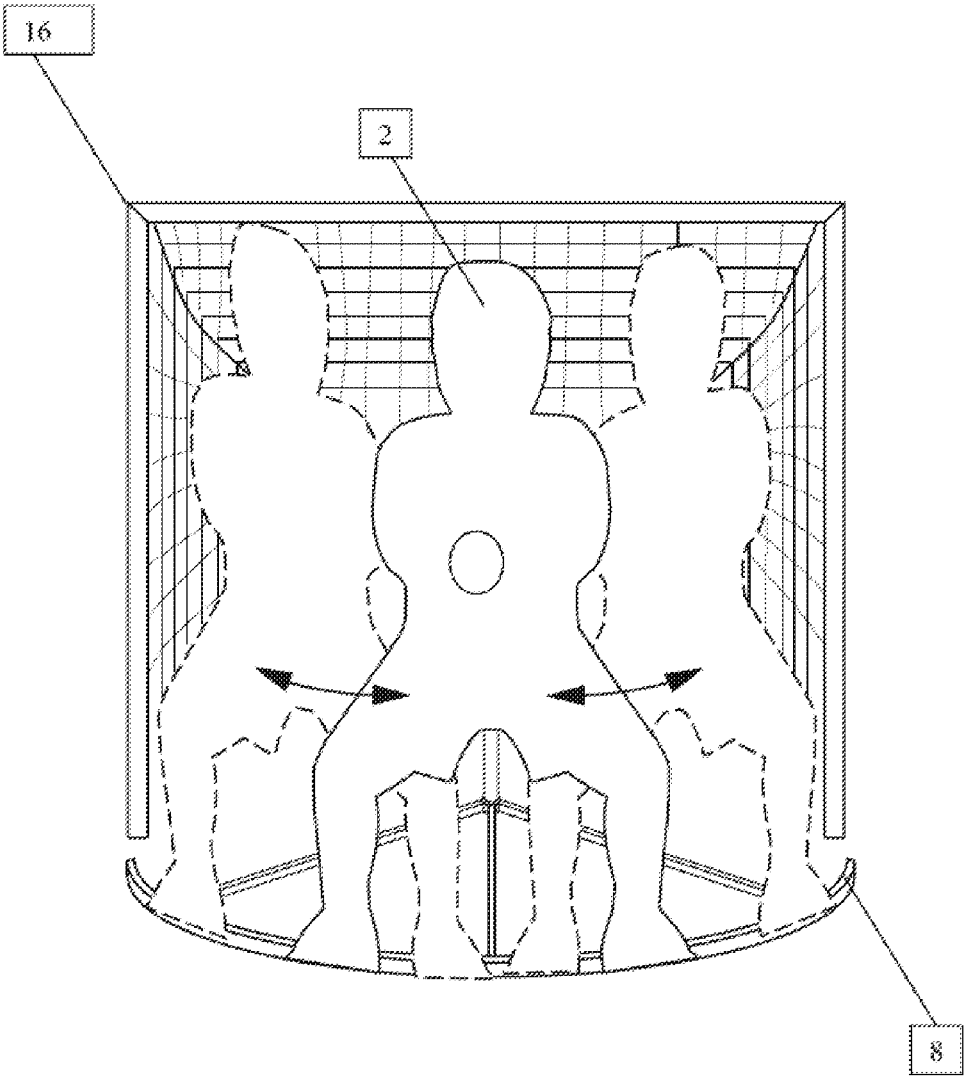
(57) **ABSTRACT**

A training system which includes a simulated goalkeeper device that is easily assembled and is free standing from the sport goal. The system may be operated via a remote control system, via radio frequency or an automated control system including a sensing loop in line with an activation system, or any other state of the art control system. The system also includes a unique backstop mechanism to further enhance the training process by keeping game pieces in play.



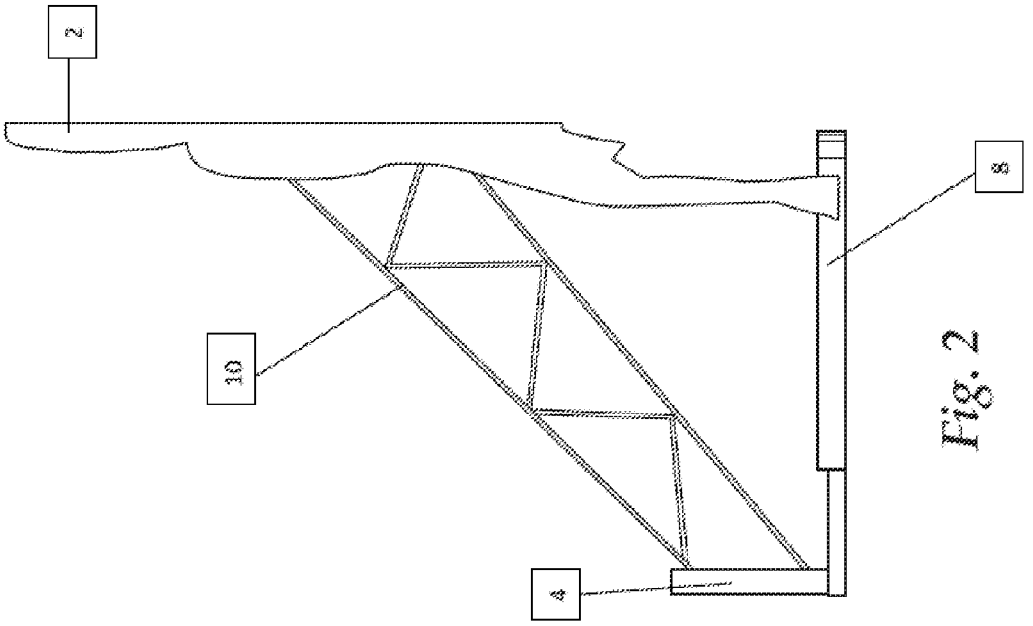


Fig. 2

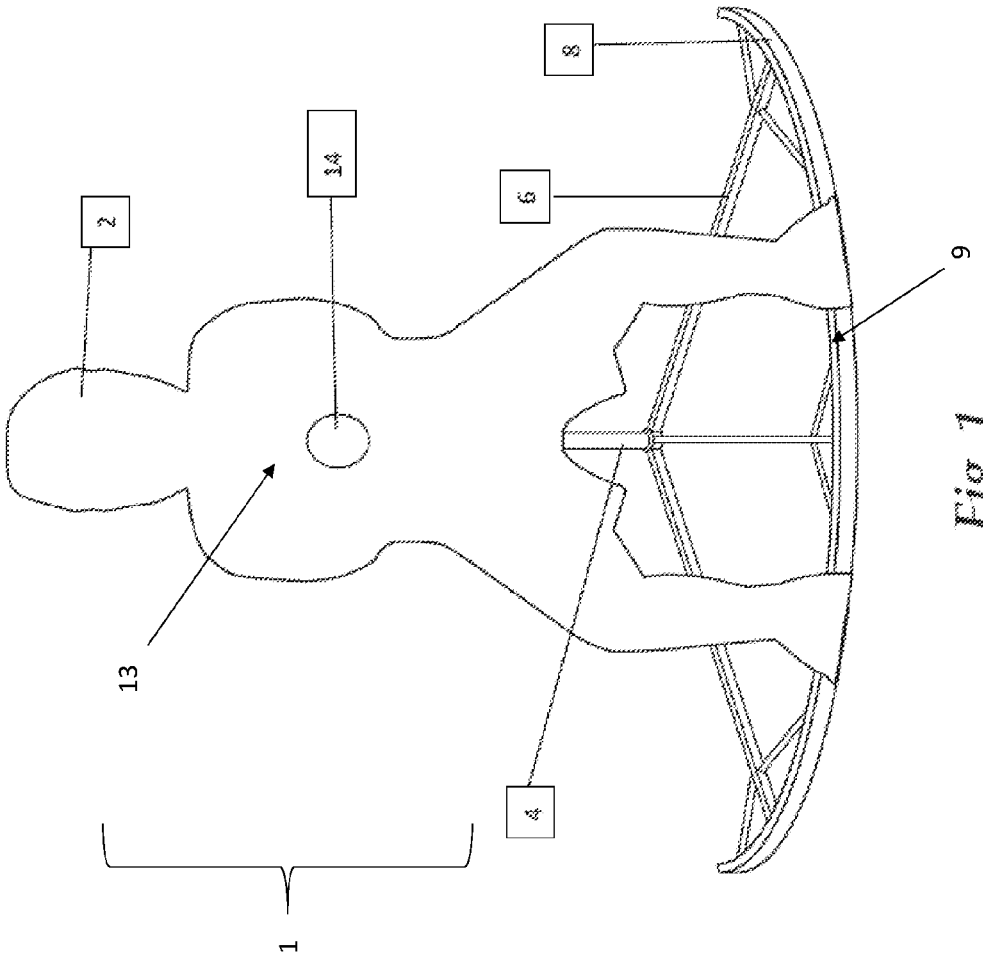


Fig. 1

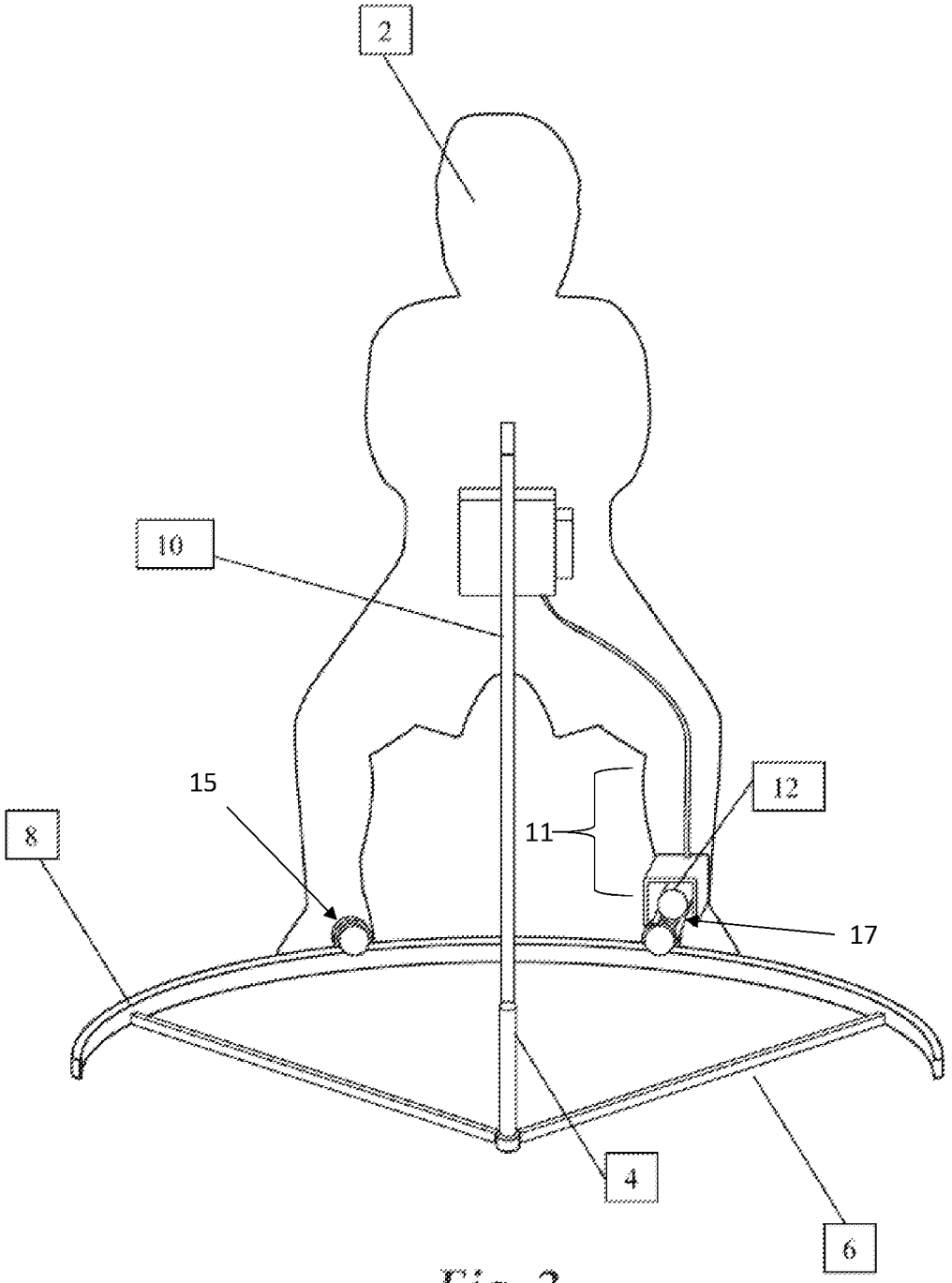


Fig. 3

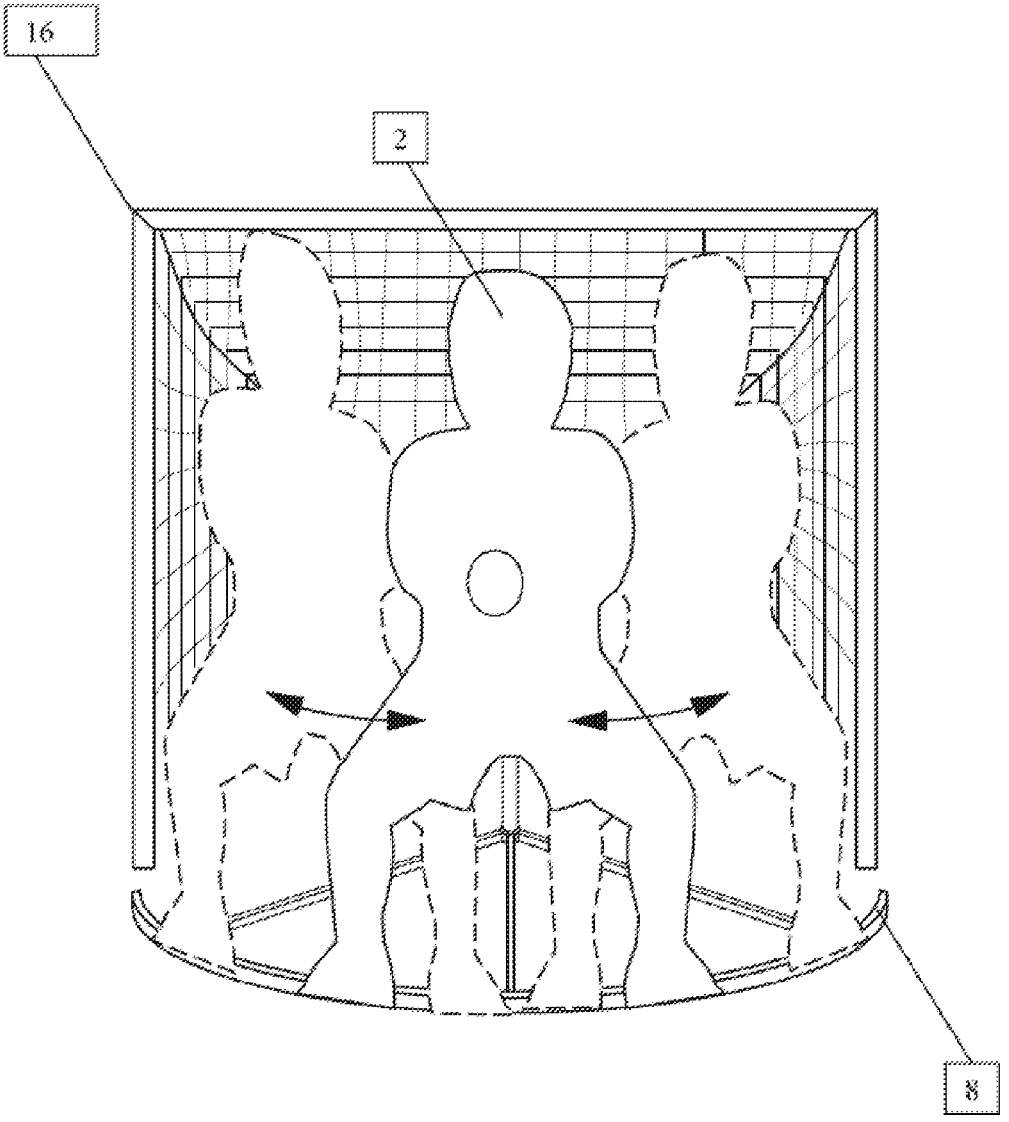


Fig. 4

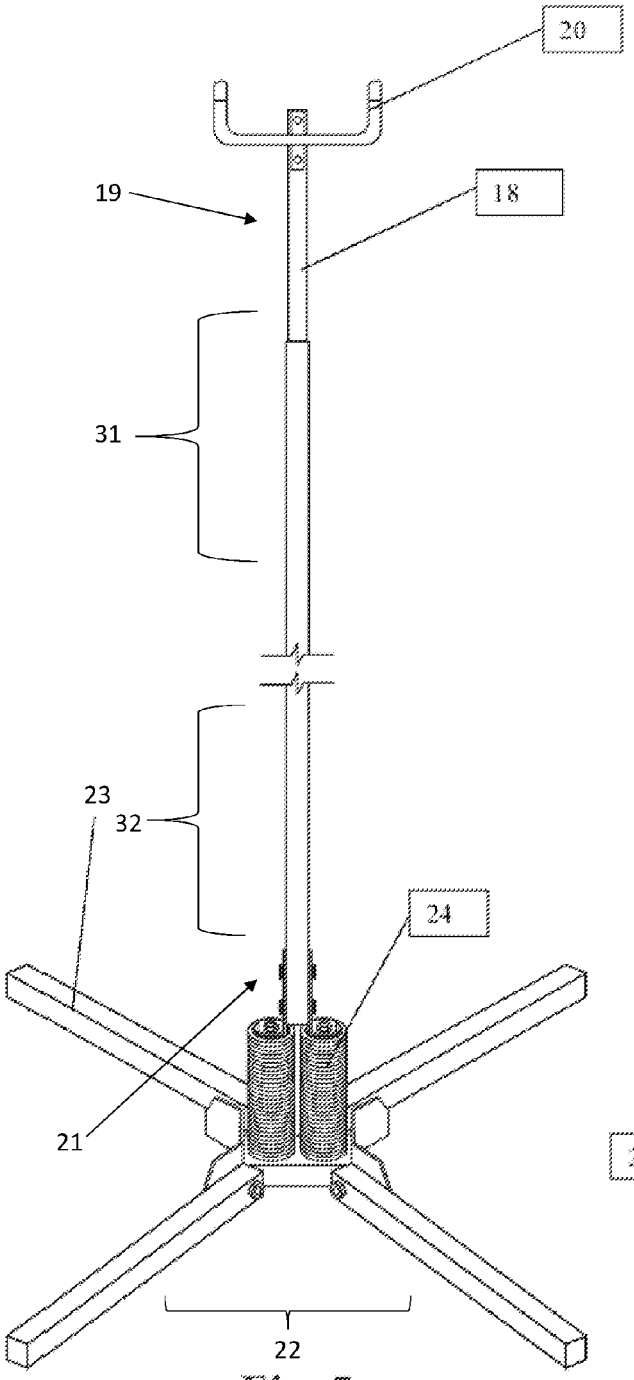


Fig. 5

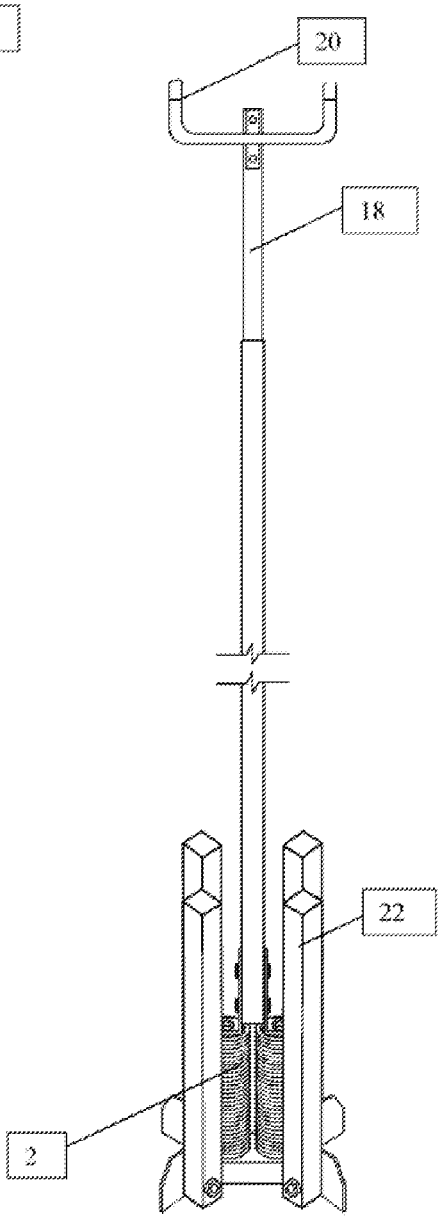


Fig. 6

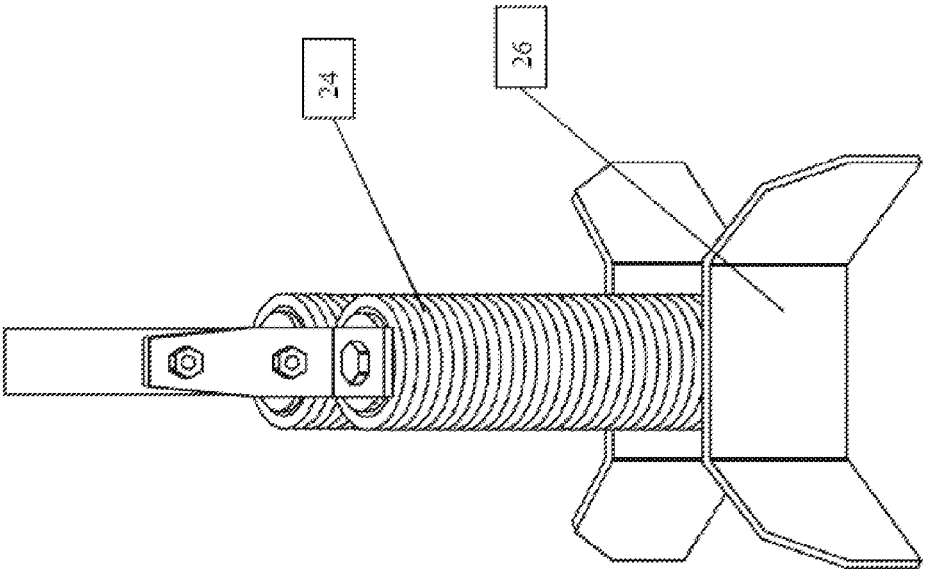


Fig. 8

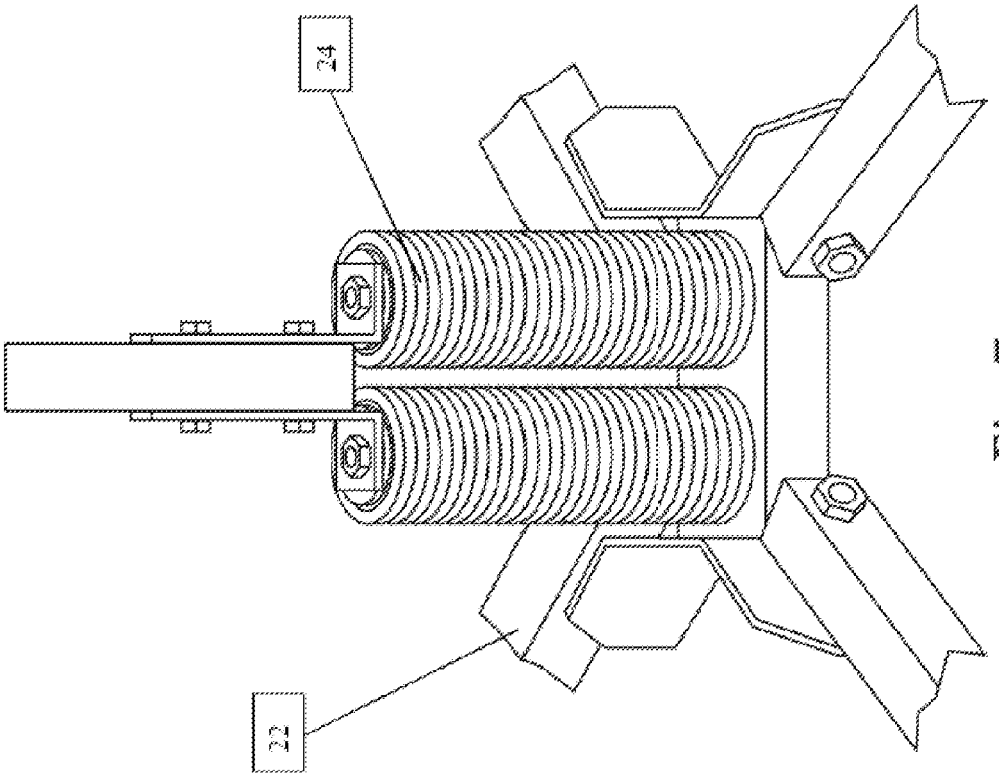


Fig. 7

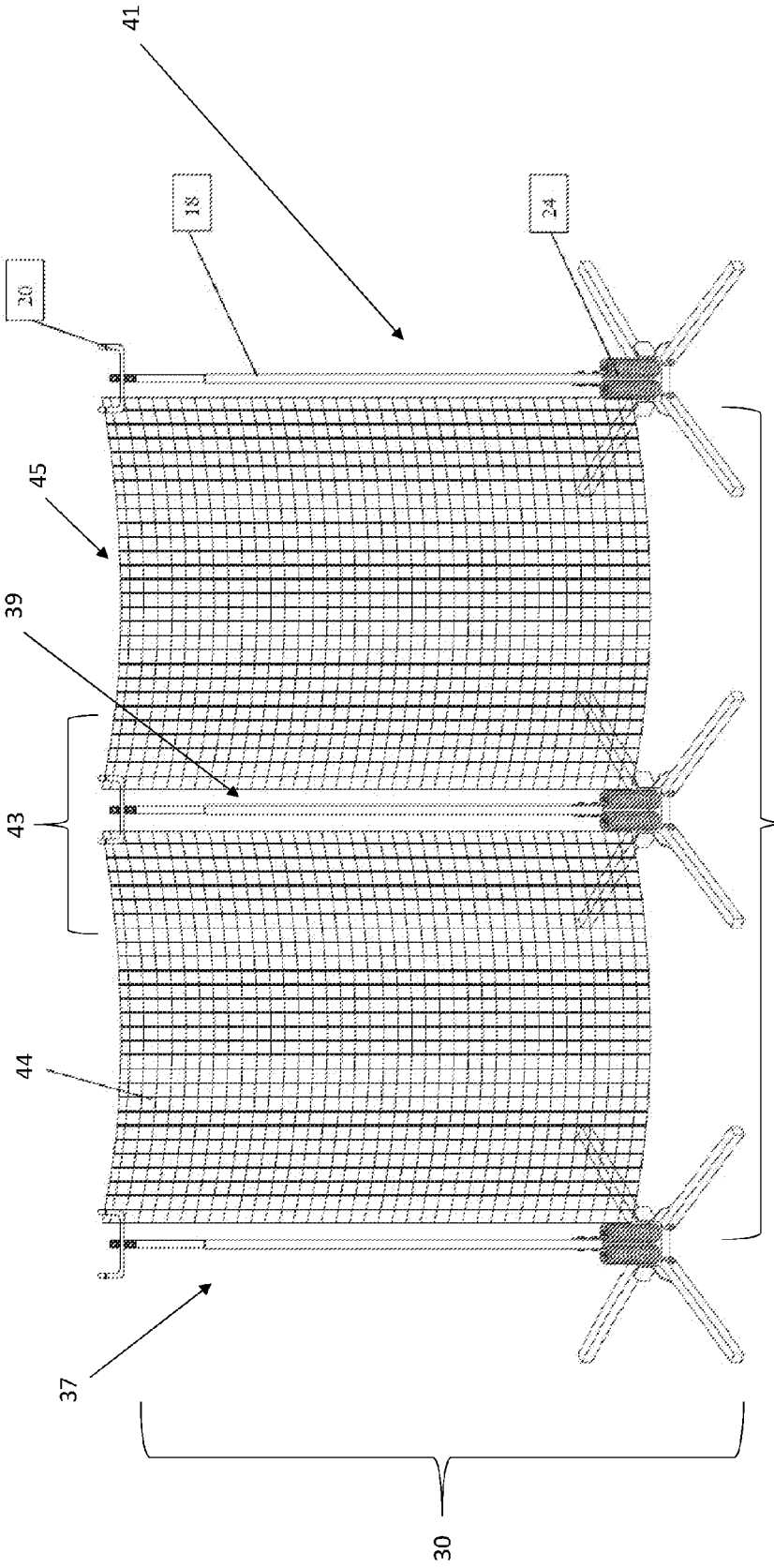


Fig. 9

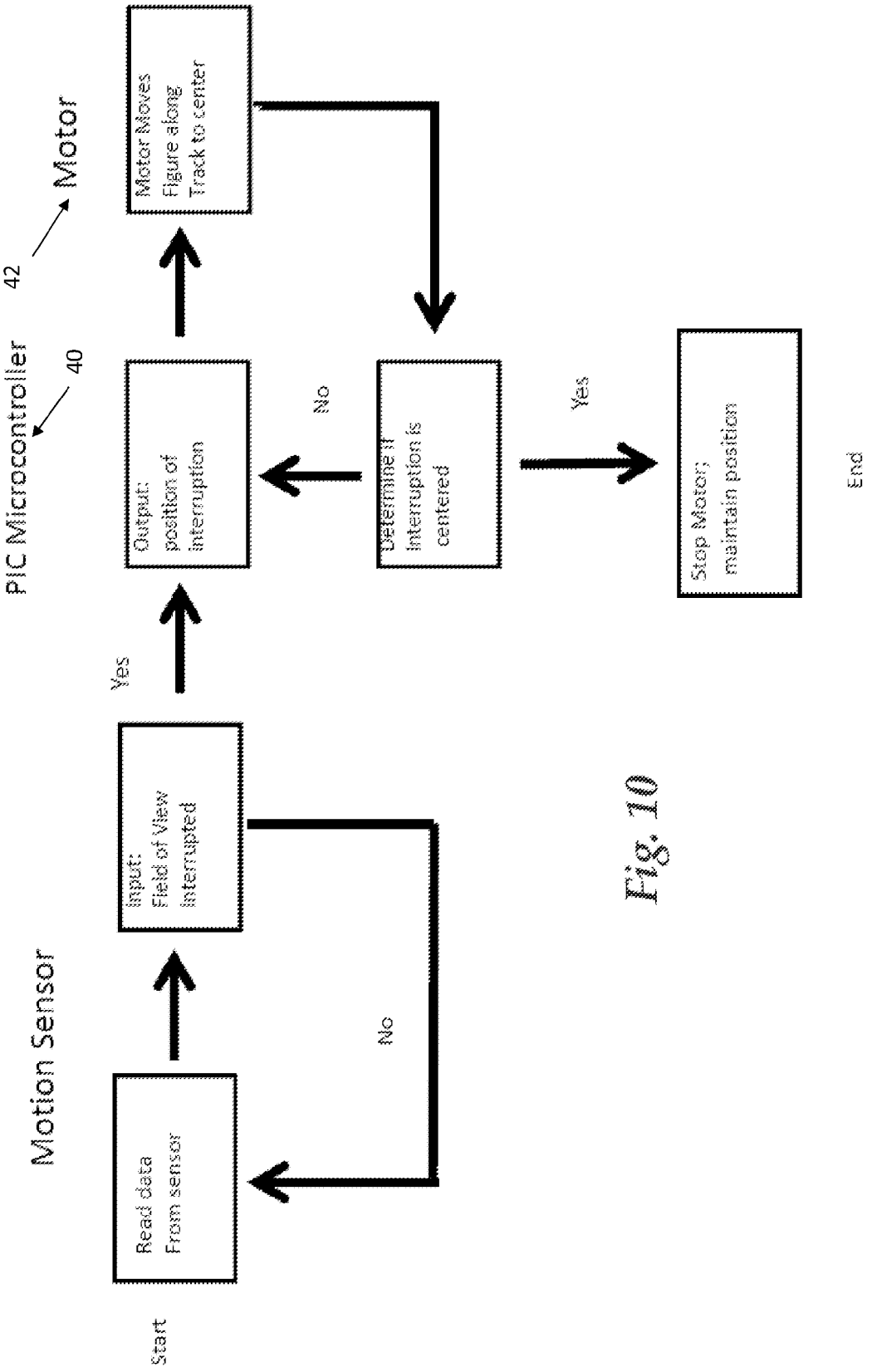

Motor
42
Motor Moves Figure along Track to center
PIC Microcontroller
40
Output: position of interruption
No
Determine if interruption is centered
Yes
Stop Motor; maintain position
End
Yes
Motion Sensor
Input: Field of View Interrupted
No
Read data From sensor
Start

Fig. 10

ATHLETIC TRAINING SYSTEM

CROSS REFERENCE TO RELATED APPLICATION

[0001] This application is a continuation-in-part and claims the benefit of and takes priority from U.S. patent application Ser. No. 13/936,541, filed on Jul. 8, 2013, which in turn claims the benefit of and takes priority from U.S. Patent Application Ser. No. 61/668,593, filed on Jul. 6, 2012, the contents of which are herein incorporated by reference.

FIELD OF THE INVENTION

[0002] The present invention relates to a training system for all sports to train offensive players in scoring.

BACKGROUND OF THE INVENTION

[0003] A variety of devices are known for training athletes and may include a simulated goalkeeper movable in different positions.

[0004] The concurrent training systems are not adaptable to a wide variety of sports and are difficult to install. The concurrent systems require the simulated goalkeeper to either be suspended from a ceiling or buried into the ground. In addition the simulated goalkeeper in the concurrent systems travels along the front of the goal through a guide integrated into the goal frame.

SUMMARY OF THE INVENTION

[0005] The instant apparatus and system, as illustrated herein, is clearly not anticipated, rendered obvious, or even present in any of the prior art mechanisms, either alone or in any combination thereof. The versatile system, method and series of apparatuses for creating and utilizing an athletic training apparatus are illustrated. Thus the several embodiments of the instant apparatus are illustrated herein.

[0006] It is therefore an object of this system to provide a training system with a simulated goalkeeper and backstop net mechanism that is adaptable to a variety of sport goals and an adjustable ball containment system.

[0007] It is a further object of this system to provide a training system with a simulated goalkeeper that is easily assembled and is free standing from the sport goal.

[0008] The subject system results from the realization that the difficulties in training athletes in offensive shooting skills are addressed in a training system with a simulated goalkeeper creating targets for athletes and an accompanying collapsible, adjustable net system.

[0009] The device features a training system for athletes with a simulated goalkeeper in conjunction with a ball containment system. The device can be used for sports in which an object is shot into a goal. These sports include, but are not limited to soccer, lacrosse, field hockey, ice hockey, and hurling.

[0010] The simulated goalkeeper is attached to an arcuate frame by a second frame having a plurality of members. The goalkeeper moves along the arcuate frame via a plurality of guides attached to the bottom back end of the goalkeeper figure. The goalkeeper figure can be interchanged to adapt to the changes in goal net size that are present in the various types of sports. Various sizes of goalkeeper figures can be used to simulate a goalkeeper with pads and a stick, such as in ice hockey, or a goalkeeper without any accessories, such as in soccer.

[0011] The device may incorporate a primary battery operated motor, which moves the goalkeeper figure laterally and secondary battery operated motor, which moves the goalkeeper figure vertically.

[0012] The training system may be free standing and can be adapted to a variety of sport nets. The goalkeeper figure may be controlled remotely via a remote control and powered by the primary motor attached to the figure. Stepper motors may be used for the lateral and vertical movement however the device is not limited to a stepper motor, other motors such as a servo motor may also be used. Furthermore, the device can be adapted to include a motion sensor coupled to the motor to detect the position of the shooter and move the goalie so that the goalie is positioned in front of the shooter. The motion sensor can be coupled to a PIC microcontroller in conjunction with a motor. The PIC can be programmed to respond to changes in the field of view and relay this information to the motor controlling the goalkeeper figure.

[0013] The system also features a ball containment system that may be height adjustable and collapsible. The main pole may possess two parts with one pole fitting into a second pole, allowing for height adjustments. The height of the pole may be adjusted by a push-pin system along the poles. At the top of the pole may be a steer horn net hanging hook. At the bottom of the pole may be a spring system. The spring system may attach to the pole by L-brackets bolted onto the pole and springs. The bottom end of the spring system may be fastened to a beam. The beam may be welded to two C-brackets housing the support system. The support system may comprise a plurality of arms fastened to the C-brackets. The arms may pivotally attach to the C-brackets, allowing for the arms to fold towards the top of the main pole.

[0014] There has thus been outlined, rather broadly, the more important features of the sports goal apparatus and the several embodiments in order that the detailed description thereof that follows may be better understood, and in order that the present contribution to the art may be better appreciated. There are additional features of the invention that will be described hereinafter and which will form the subject matter of the claims appended hereto.

[0015] In this respect, before explaining at least one embodiment of the invention in detail, it is to be understood that the invention is not limited in its application to the details of construction and to the arrangements of the components set forth in the following description or illustrated in the drawings. The invention is capable of other embodiments and of being practiced and carried out in various ways. Also, it is to be understood that the phraseology and terminology employed herein are for the purpose of description and should not be regarded as limiting.

[0016] These together with other objects of the invention, along with the various features of novelty, which characterize the invention, are pointed out with particularity in the claims annexed to and forming a part of this disclosure. For a better understanding of the invention, its operating advantages and the specific objects attained by its uses, reference should be made to the accompanying drawings and descriptive matter in which there are illustrated preferred embodiments of the invention.

BRIEF DESCRIPTION OF THE DRAWINGS

[0017] FIG. **1** is a front view of the simulated goalkeeper attached to the arcuate frame.

[0018] FIG. **2** is a side profile of the simulated goalkeeper attached to the arcuate frame.

[0019] FIG. **3** is a back view of the simulated goalkeeper attached to the arcuate frame.

[0020] FIG. **4** is a diagrammatic perspective view illustrating one embodiment of the simulated goalkeeper contained within a preferred environment.

[0021] FIG. **5** is a plan view of the ball containment system.

[0022] FIG. **6** is a plan view of the ball containment system illustrating the system in a collapsible form.

[0023] FIG. **7** is a plan view of the spring system of the ball containment system.

[0024] FIG. **8** is a side view of the spring system of the ball containment system.

[0025] FIG. **9** is a plan view of an assembled ball containment system.

[0026] FIG. **10** is a flow chart of the motion sensor coupled with a PIC microcontroller and a motor.

DETAILED DESCRIPTION OF THE SEVERAL EMBODIMENTS

[0027] The detailed description set forth below is intended as a description of presently preferred embodiments of the invention and does not represent the only forms in which the present invention may be construed and/or utilized. The description sets forth the functions and the sequence of the steps for producing the system and accompanying apparatus. However, it is to be understood that the same or equivalent functions and sequences may be accomplished by different embodiments also intended to be encompassed within the scope of the invention.

[0028] One of the unique characteristics of the subject system and accompanying apparatus is the ability to train athletes in offensive skills in a variety of sports without the use of a living human goalkeeper.

[0029] FIGS. **1-3** illustrates various viewpoints of one embodiment of an athletic training system **1**, wherein the athletic training system **1** includes a goalkeeper FIG. **2**. In one embodiment, the goalkeeper FIG. **2** is preferably attached to a first frame **8**, which may include a linear or substantially arcuate construction. Additionally, the first frame **8** may also encompass a plurality of members **6** extending inwardly towards a sport goal **16** situated preferably behind the athletic training system **1**. Further, in one embodiment, the linear construction of the first frame **8** would encompass a single linear track **9** where the goalkeeper FIG. **2** only moves laterally. In a further embodiment, a second frame **10** comprising a plurality of members **4** is pivotally attached to the inwardly extending members of the arcuate first frame **8**. In this embodiment, the goalkeeper FIG. **2**, or likeness thereof is may be attached to the members **4** of the second frame **10** by fasteners. Moveover, a lower portion **11** of the second frame **10** comprises a guide system **12**, moving the goalkeeper FIG. **2** around the arcuate first frame **2** either in an arc or in a linear manner.

[0030] In a preferred embodiment a remote control and a corresponding radio frequency receiver system may be used to control the movement of the goalkeeper FIG. **2**. In another embodiment a motion sensor **14** may be attached to a center **13** of the goalkeeper FIG. **2** to sense a location of a shooter. In this embodiment, the motion sensor **14** would be connected to the guide system **12** to position the goalkeeper FIG. **2** in front of the shooter. This enables the goalkeeper FIG. **2** to always be in position with regard to the shooter to ensure adequate training of the athlete's offensive skills. The motion sensor **14** outputs a set of data to a microcontroller (see FIG. **10**) representing the position of interruptions in the field of view. The microcontroller **40** processes the set of data and outputs position coordinates to a motor **42** to center the interruption. The motor **42** moves the goalkeeper FIG. **2** along the track **9** until the interruption is centered. The process is repeated to ensure that the interruption (shooter) is always centered.

[0031] In another embodiment, the guide system **12** may possess a plurality of wheels and a cable running from the wheels up to an electronic system used to control the movement of the figure in an arc or laterally. A prime mover such as a stepper motor coupled battery, AC, DC, or other conventional means may power the electronic system.

[0032] In another embodiment, the second frame **10** may possess a prime mover such as a stepper motor to move the goalkeeper FIG. **2** along a vertical track attached to the back of the goalkeeper FIG. **2**. This movement may also be controlled remotely using a remote control.

[0033] In one embodiment, an athletic training system **1** comprising a first frame **8** and a plurality of members **6** extending inwardly towards a sports goal **16**, a second frame **10** comprising a plurality of members **4**, pivotally attached to the plurality of members of the first frame **8**. Additionally, a goalkeeper FIG. **2** is attached to the members of the second frame **10**, and a guide system **12** attached to a bottom back of the goalkeeper FIG. **2**.

[0034] Thus the instant system may further comprise an athletic training system with a guide system **12** comprising, a plurality **15** of wheels disposed to roll along the first frame **8** and a loop cable **17** in communication with the plurality of wheels **15** and a prime mover system disposed to control the motion of the goalkeeper FIG. **2**.

[0035] FIGS. **5-8** illustrates various views of an adjustable pole mechanism **18** with a support system **22** at the bottom of the adjustable pole mechanism **18** that forms part of one embodiment of a ball containment system **30**. The adjustable pole mechanism preferably includes a top end **19** and a bottom end **21**. In one embodiment, the ball containment system **30** may utilized in conjunction with the athletic training system **1**. Preferably the athletic object containment system **30** allows athletes to easily retain or secure an object or a ball after shooting it at the goalkeeper FIG. **2**. Additionally, a spring system **24** may be positioned between the support system **22** and the adjustable pole mechanism **18**, wherein the spring system **24** is in translational communication with the bottom portion **21** of the pole mechanism **18**. At the top end **19** of the pole mechanism **18** includes a hook system **20** to hold a plurality of nets **43** (see FIG. **9**).

[0036] In a preferred embodiment the adjustable pole mechanism **18** may have a first member **31** and a second member **32**, wherein the first member **31** fits inside the second member **32** thereby creating adjustable heights for the adjustable pole mechanism **18**. In one embodiment, the height may be adjusted by a push-pin system where one pole may have a push-pin and the other pole may comprise a plurality of holes for receiving the push-pin.

[0037] In a further embodiment, the support system **22** may comprise a plurality of arms **23** that pivotally attach to the spring system **24** by a plurality of C-brackets **26** held together with fasteners. The fasteners may be a bolt or a similar fastener. The arms **23** may fold up towards the pole

mechanism **18** for storage of the pole mechanism **18**. The C-brackets **26** may be welded to a beam housing the spring system **24**. The spring system **24** may be fastened to the pole by L-brackets. Finally, the adjustable pole mechanism **18** may be fixed or portable, depending on the structure and configuration required by the user.

[0038] FIG. **9** illustrates one embodiment of a ball containment system **30**, preferably for use with the athletic training system **1**. In this embodiment, the ball containment system **30** comprises a set of adjustable pole mechanisms **35**, wherein the set of adjustable pole mechanisms **35** includes a first adjustable pole mechanism **37**, a second adjustable pole mechanism **39**, and a third adjustable pole mechanism **41**. In this embodiment, each individual pole mechanism of the set further comprises the top end **19** which includes the first member **31**, the bottom portion **21** comprising the second member **32**, wherein the first member **31** is secured inside the second member **32** to vary the height of the pole mechanism.

[0039] In this embodiment, each spring system **24** is in translational communication with the bottom portion **21** of the corresponding adjustable pole mechanism **18**, and the support system **22** comprises four equidistantly positioned arms **23** pivotally attached to a pair of u-shaped brackets, wherein the support system **22** is attached to an end of the spring system **24**.

[0040] Additionally, the hook apparatus **20** is provided, wherein the hook apparatus **20** is attached to the top end **19** of each adjustable pole mechanism **18**. Moreover, in this embodiment a pair of net apparatuses **43**, comprising a first net apparatus **44** and a second net apparatus **45**, wherein, the first net apparatus **44** is connected to the hook apparatus **20** of the first adjustable pole mechanism **37** and the hook apparatus of the second adjustable pole mechanism **39**, and wherein the second net apparatus **45** is connected to the hook apparatus of the second adjustable pole mechanism **39** and the hook apparatus of the third adjustable pole mechanism **41** to create the ball containment system **30**.

[0041] There has thus been outlined, rather broadly, the more important features of the versatile athletic training system and ball containment system in order that the detailed description thereof that follows may be better understood, and in order that the present contribution to the art may be better appreciated. There are additional features of the system that will be described hereinafter and which will form the subject matter of the claims appended hereto.

[0042] In this respect, before explaining at least one embodiment of the system in detail, it is to be understood that the system is not limited in its application to the details of construction and to the arrangements of the components set forth in the following description or illustrated in the drawings. The system is capable of other embodiments and of being practiced and carried out in various ways. Also, it is to be understood that the phraseology and terminology employed herein are for the purpose of description and should not be regarded as limiting.

[0043] These together with other objects of the system, along with the various features of novelty, which characterize the system, are pointed out with particularity in the claims annexed to and forming a part of this disclosure. For a better understanding of the system, its operating advantages and the specific objects attained by its uses, reference should be made to the accompanying drawings and descriptive matter in which there are illustrated preferred embodiments of the system.

What is claimed is:

1. An athletic object containment system comprising:

a set of adjustable pole mechanisms, wherein the set of adjustable pole mechanisms comprises:

a first adjustable pole mechanism;

a second adjustable pole mechanism; and

a third adjustable pole mechanism;

wherein each individual pole mechanism of the set further comprises:

a top portion comprising a first member;

a bottom portion comprising a second member, wherein the first member is secured inside the second member to vary the height of the pole mechanism and further comprising:

a spring system, wherein the spring system is in translational communication with the bottom portion of the adjustable pole mechanism;

a support system comprising of four equidistantly positioned arms pivotally attached to a pair of u-shaped brackets, wherein the support system is attached to an end of the spring system;

a hook apparatus, wherein the hook apparatus is attached to the top portion of the adjustable pole mechanism;

a pair of net apparatuses, comprising:

a first net apparatus; and

a second net apparatus;

wherein, the first net apparatus is connected to the hook apparatus of the first adjustable pole mechanism and the hook apparatus of the second adjustable pole mechanism, and wherein the second net apparatus is connected to the hook apparatus of the second adjustable pole mechanism and the hook apparatus of the third adjustable pole mechanism to create an athletic containment field.

2. The athletic object containment system of claim **1**, wherein the first member comprises a plurality of circular push pins fitting into a plurality of circular holes on the second member.

3. The athletic object containment system of claim **1**, wherein the four arms fold upwards towards the top end of the substantially adjustable pole.

4. The athletic object containment system of claim **1**, further comprising a plurality of L-shaped brackets attached to the bottom end of the substantially adjustable pole wherein the spring system is fastened to the L-shaped brackets.

5. The athletic object containment system of claim **1**, further comprising:

an athletic training system comprising:

a first frame comprising a plurality of members extending inwardly towards a sports goal;

a second frame comprising a plurality of members, pivotally attached to the plurality of members of the arcuate frame;

a goalkeeper figure attached to the members of the second frame; and

a guide system attached to a bottom back of the figure.

6. The athletic object containment system of claim **5**, wherein the first frame comprises a substantially arcuate or linear construction to allow for lateral movement.

7. The athletic object containment system of claim 5, further comprising a remote control and a corresponding radio frequency receiver system disposed to control the position of the goalkeeper figure.

8. The athletic object containment system of claim 5, further comprising a motion sensor attached to the goalkeeper figure and connected to a programmable chip and a prime mover.

9. The athletic object containment system of claim 5, wherein the goalkeeper figure moves and adapts to the location of the shooter.

10. The athletic object containment system of claim 5, wherein the goalkeeper figure can be interchanged to adapt to the variety of sports.

* * * * *