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3,427,026

PROJECTILE RETURN APPARATUS

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FIG. 1

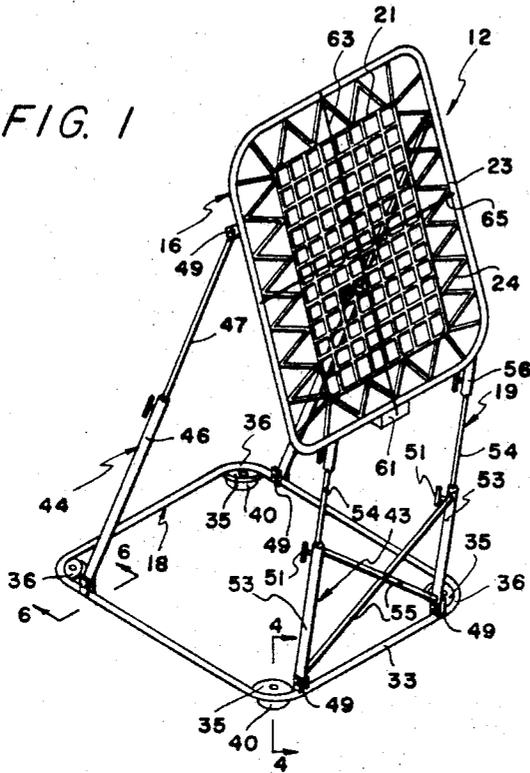


FIG. 3

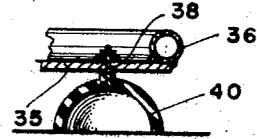
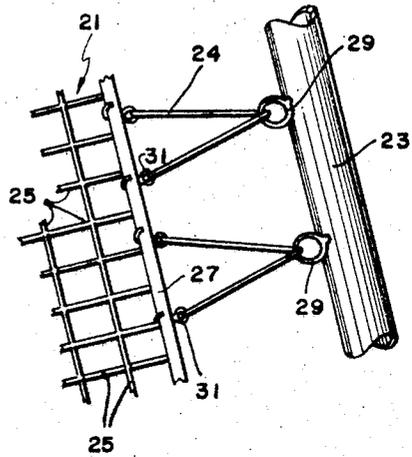


FIG. 4

FIG. 2

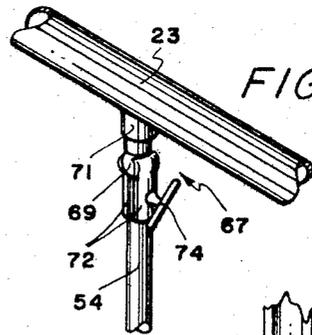
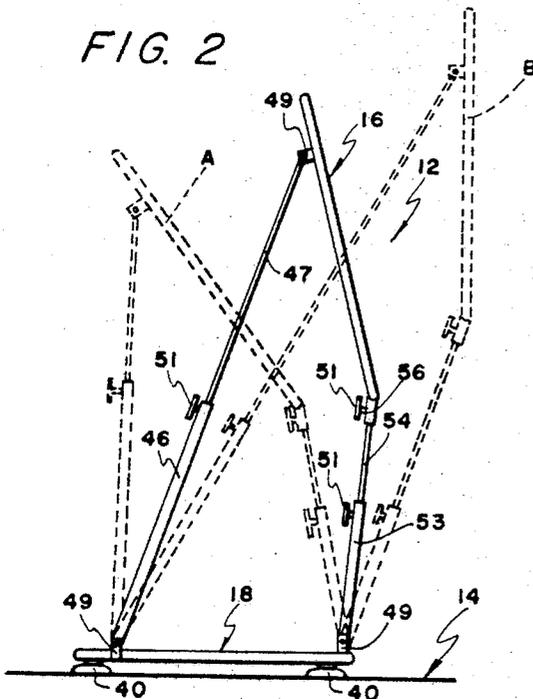
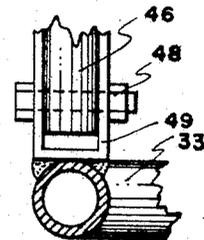


FIG. 5

FIG. 6



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8 Claims 5

This invention relates to a return apparatus, in other words, to an apparatus operable to rebound a projectile thrown thereagainst. More particularly, this invention relates to a projectile return apparatus used by ball players and the like to resiliently rebound a ball thrown thereagainst at a given direction and angle depending on the adjusted position of the return apparatus. Still, more specifically, this invention relates to an adjustable return apparatus having an adjustable backstop means usable by ball players to return, for example, basketballs thrown thereagainst to practice passing ability, play-making, basketball goal-making, etc.

Various types of backstops are known to the prior art having such as a rigid tennis practice wall or resilient net structures. Additionally, structures are known to the prior art operable to retrieve basketballs after dropping through the goal, but such devices are limited in use and complicated in structure. None of the prior art structures disclose ball return apparatus that are readily portable, simple to use, and easily adjustable for a plurality of purposes.

In accordance with the present invention, a new projectile return apparatus normally used as a practice means for sports is provided which includes a backstop means, a base frame assembly, and means for adjustably connecting backstop means to the base frame assembly. The backstop means includes a return panel connected by resilient means to a support frame whereby the panel is operable to resiliently absorb the impact of a projectile thrown thereagainst and return the same according to the angle at which it was initially impacted. The backstop means is readily adjustable to achieve the desired rebounding results.

In preferred specific embodiments of the invention, a projectile return apparatus is provided including a base frame assembly and a backstop means connected thereto as by a plurality of spaced leg assemblies. The base frame assembly has a rectangularly shaped, horizontally extended tubular frame having a gusset plate secured to each corner which, in turn, are mounted individual suction cup members. The leg assemblies are constructed of telescoping first and second elements having the lower ends of the first element pivotally connected to the frame. A pair of the upper ends of the leg assemblies are pivotally connected to the backstop means and the other upper ends thereof of the other leg assemblies are mounted within sleeves rigidly secured to the backstop support means. The leg assemblies further include rotatable lock members operable to secure the telescoping elements in a given axially related position. The backstop means includes a central, rectangular return panel connected as by a resilient cord member to a support frame which, in turn, is connected to the leg assemblies. It is seen, therefore, that the lock members are releasable in order to move the return panel to a given position and lockable to hold the same against movement on impact by the projectiles.

In another preferred specific embodiment of the invention, the projectile return apparatus similarly includes a backstop means connected as by leg assemblies to a base frame assembly. However, the upper and lower ends of the leg assemblies are secured to the backstop means and the base frame assembly, respectively, as by ball and socket members whereby the backstop means is readily adjustable whereby the ball return apparatus of

this embodiment is readily adjustable to substantially any given position.

Accordingly, it is an object of this invention to provide a new and novel projectile return apparatus overcoming the above-mentioned disadvantages of the prior art devices.

Another object of this invention is to provide a projectile return apparatus having a resilient backstop means adjustably supported above a given ground surface whereby the backstop means is positionable at a given angle to return a projectile thrown thereagainst as desired.

A further object of this invention is to provide a projectile return apparatus having a backstop means supported on a base frame assembly whereby the frame assembly is readily removable relative to a supporting ground surface while providing a rigid support in a stationary position so as to maintain the backstop means rigid when a projectile is thrown thereagainst.

One further object of this invention is to provide a projectile return apparatus that is economical to manufacture, simple to operate, durable in construction, and readily adaptable to a plurality of uses.

Another one of the objects of this invention is to provide a projectile return apparatus having a backstop means, a base frame assembly, and means connecting said backstop means to said base frame assembly whereby the backstop means is pivotally connected thereto and movable in any desired vertical and horizontal direction within the limits of the connecting means so as to provide a backstop means usable to resiliently rebound a projectile thrown thereagainst to any desired height, direction, and angle.

Various other objects, advantages and features of the invention will become apparent to those skilled in the art from the following discussion, taken in conjunction with the accompanying drawings, in which:

FIG. 1 is a perspective view of the return apparatus of this invention;

FIG. 2 is a side elevational view of the return apparatus of this invention illustrating in dotted lines various adjustable positions thereof;

FIG. 3 is an enlarged fragmentary perspective view of means for attaching a projectile return panel to a support frame structure of this invention;

FIG. 4 is an enlarged fragmentary sectional view taken along line 4-4 in FIG. 1;

FIG. 5 is an enlarged fragmentary perspective view illustrating another embodiment of the connecting means for supporting a backstop means and leg assemblies of the return apparatus of this invention; and

FIG. 6 is an enlarged fragmentary sectional view taken along line 6-6 in FIG. 1.

The following is a discussion and description of preferred specific embodiments of the new projectile return apparatus of this invention, such being made with reference to the drawings, whereupon the same reference numerals are used to indicate the same or similar parts and/or structure. It is to be understood that such discussion and description is not to unduly limit the scope of the invention.

Referring to the drawings in detail and in particular to FIG. 1, the projectile return apparatus of this invention, indicated generally at 12, is adapted for support on a surface 14. The return apparatus 12 includes a backstop means 16 adjustably connected to a base frame assembly 18 by a connecting means 19.

More particularly as shown in FIGS. 1 and 3, the backstop means 16 includes a return panel 21 connected to a similarly shaped support frame 23 by a plurality of resilient straps or a continuous resilient cord 24. The panel 21 and the frame 23 are of a generally rectangular shape with the panel 21 constructed of a knitting fabric simi-

lar to that found on the working surface of a conventional trampoline. The panel 21 has a plurality of crossed strips 25 joined at the outer edges by a sturdy edging 27. The support frame 23 is preferably constructed of a heavy tubular material bent into a generally rectangular shape so as to be evenly spaced about its inner periphery from the panel 21. A plurality of spaced rings 29 are secured to the support frame 23 receiving the straps 24 with a corresponding plurality of hook members 31 usable to attach the straps 24 to the edging 27 (FIG. 3). It is seen that the backstop means 16 presents a solidly built structure having a resiliently mounted central panel 21 operable to reversely propel any projectile thrown thereagainst. Preferably, the return panel 21 is of a size to substantially duplicate a person's limit of reach for reasons to become obvious.

As shown in FIGS. 1 and 2, the base frame assembly 18 includes a base frame 33 of tubular construction similar to the support frame 23 and extended in a horizontal plane. The base frame 33 is of a square or rectangular shape having gusset plates 35 secured to the inner sides of the corners 36 thereof for added rigidity. The plates 35 are of a generally semi-circular shape having a central hole 38 therethrough in which is mounted a suction cup member 40. As shown in FIG. 4, the cup members 40 are all opened downwardly so as to be mountable against the support surface 14 to restrict the lateral movement of the base frame assembly 18.

The vertical support to the backstop means 16 is provided by the connecting means 19 which comprises front and back leg assemblies 43 and 44, respectively. The back leg assemblies 44 each consist of first and second tubular telescoping elements 46 and 47. The larger sized first element 46 is pivotally connected as by bolts 48 to U-shaped clamps 49 secured as by welding to the upper rearward surface of the base frame 33 (FIG. 6). The telescoped second elements 47 have their upper ends pivotally connected to clamps 49 similarly welded to the rearward underside of the support frame 23.

In order to secure the first and second telescoping elements 46 and 47 in a given relative axial position of adjustment, lock members 51 are threaded through the first elements 46 engageable with the second elements 47. It is seen that the lock members 51 are rotatable to engage the second elements 47 so as to lock the same in an adjusted position.

The front leg assemblies 43 are substantially identical except for relatively longitudinal size to the back leg assemblies 44 having first and second telescoping members 53 and 54. The first members 53 are pivotally connected to the forward upper portion of the base frame 33 as by the U-shaped clamps 49 and are interconnected by brace members 55 for added rigidity. The upper ends of the second members 54 are mounted within sleeve members 56 welded to the forward end and downwardly extended from the support frame 23. The opposite ends of the second members 54 are releasably held within the sleeve members 56 and the first members 53, respectively, by lock members 51 similarly as described for the back leg assemblies 44. It is seen that all of the clamps 49 open downwardly and forwardly thereby permitting free movement of the connecting means 19 as shown in dotted lines of FIG. 2. It is obvious that the sleeve members 56 can be provided with the interlocking notches so as to be adjustable relative to the support frame 23.

In the use and operation of the projectile return apparatus 12 of this invention, the backstop means 16 can be used, for example, to return a basketball thrown thereagainst. The base frame assembly 18 is placed in a desired location on a basketball court surface with the downwardly open suction cup member 40 acting to restrict lateral movement thereof without any danger of damage to the court surface. The backstop means 16 can be readily adjusted vertically and horizontally on use of the lock member 51 to achieve the desired angular position

relative to a player planning to use the same. It is obvious that the angular adjustment of the return panel 21 results in the variation of the angular direction of the return of a basketball thrown thereagainst whereby a single player can use the same to practice throwing and receiving the basketball and to run pass plays.

Additionally, the return apparatus 12 can be placed under a basketball goal (not shown) and adapted to the position as shown at A in FIG. 2. In this position, a player can practice, for example, free throws with the return apparatus 12 acting to efficiently and effectively return the basketball to the player thereby actually shagging the ball and resulting in more efficient and effective practice time for the entire team.

It is also seen that the return apparatus 12 can be adjusted upwardly as shown at B in FIG. 2 thereby permitting the players to practice overhead passes normally used in throwing the basketball to the pivot or center post player. Also, a plurality of return apparatus 12 can be spaced on a basketball court so that a single player can practice numerous play combination without the necessity of other players to do so. The return apparatus 12 provides a means for developing a player's reflexes and finger control as a player can stand close to the backstop means 16 and rapidly throw a ball thereagainst and receive the same therefrom to develop flexibility and control the hands.

As shown in FIG. 1, a counter mechanism 61 can be mounted on one side of the support frame 23 having a trigger wire 63 connected thereto and extended across the center of the support frame 23. An additional actuator wire 65 secured to the support frame 23 extends perpendicular to the first wire 63 and is connected thereto. The counter mechanism 61 operates on an impulse against the return panel 21 to count the same whereby a coach can measure a player's endurance and ability on recording the number of impulses indicating the number of passes against the return panel in a given period of time.

In another preferred embodiment of the return apparatus 12 of this invention as shown in FIG. 5, the U-shaped clamps 49 are replaced by ball and socket assemblies 67. Each ball and socket assembly 67 has a ball member 69 mounted on shaft 71 which, in turn, is secured as by welding to the upper and lower surfaces of the base frame 33 and the support frame 23, respectively. The upper and lower ends of the front and back leg assemblies 43 and 44 have socket plates 72 secured thereto mounted about respective ones of the ball members 69 and releasably connected thereto by lock handles 74. It is obvious that the lock handles 74 are operable to selectively clamp the socket plates 72 against the outer surface of the respective ones of the ball members 69 thereby securely holding the backstop means 16 in a given adjusted position relative to the base frame assembly 18.

In the use and operation of the return apparatus 12 with the ball and socket assemblies 67, the backstop means 16 is movable to any desired angular position within the lateral movement of the telescoping leg assemblies 43 and 44. This results in the maximum flexibility and adjustment of the return panel 21.

Although the return apparatus of this invention has been described as preferably used by basketball players, it is noted that the same can be used by baseball players, soccer players, etc. to practice fielding, throwing, reflexes, endurance, and the like.

As will be apparent from the foregoing description of preferred embodiments of applicant's projectile return apparatus, relatively simple and inexpensive means have been provided which is easily attachable to a given court surface so as to provide an economical and effective means of developing and testing a player's relative skill. Applicant's construction eliminates a great deal of time-consuming tedious work involved in practicing the various game plays which results in the ability of a single player to practice by himself thereby resulting in a savings of

manpower and wasted time. Additionally, the return apparatus of this invention provides a means for repeatedly practicing a given maneuver by, for example, a basketball player whereby it is a proven fact that repeated practice thereby results in a tremendous increase in the player's relative skill whereby such maneuver becomes substantially automatic to him.

While the invention has been described in connection with preferred specific embodiments thereof, it is to be understood that this description is intended to illustrate and not to limit the scope of the invention, which is defined by the following claims.

I claim:

1. A projectile return apparatus comprising:
 - (a) a backstop means having a return panel connected to a support frame, said support frame being of tubular construction and rectangular in shape, and said return panel having a central rebound netting secured to said support frame by a resilient strap member,
 - (b) a base frame assembly adapted to be releasably attached to a support surface and held against substantial lateral movement, and
 - (c) means adjustably connecting said backstop means to said frame assembly whereby said return panel may be adjusted horizontally and vertically to return a projectile thrown against said panel at a desired angle and direction.
2. A return apparatus as described in claim 1, wherein:
 - (a) said base frame assembly comprises a horizontally extended tubular frame having gusset plates at each corner thereof, and suction cup members secured to each of said gusset plates to releasably attach said apparatus to the support surface.
3. A return apparatus as described in claim 1, wherein:
 - (a) said connecting means comprises a plurality of spaced leg assemblies pivotally connected to said base frame assembly and connected to said support frame whereby said backstop means is adjustable about said base frame assembly.
4. A return apparatus as described in claim 3, wherein:
 - (a) said leg assemblies comprise first elements pivotally connected to said support frame, second elements telescopingly mounted within said first elements, and lock members secured to said first elements engageable with said second elements to secure said backstop means in a given adjusted position.
5. A return apparatus as described in claim 3, wherein:
 - (a) said leg assemblies comprise one pair pivotally connected to said support frame and said base frame assembly, and
 - (b) a second pair of leg assemblies having one end pivotally connected to said base frame assembly and the other ends secured to sleeve members rigidly secured to said support frame thereby providing

rigidity to said backstop means so as to remain in the adjusted position against the force of projectiles thrown thereagainst.

6. A return apparatus as described in claim 1, including:
 - (a) means for counting the number of projectile impulses against said return apparatus mounted on said support frame and operably connected to said return panel.
7. A return apparatus as described in claim 1, wherein:
 - (a) said connecting means comprises a plurality of elongated, telescoping leg assemblies pivotally connected to said support frame and said base frame assembly by ball and socket members whereby said backstop means adjusts to any given position above said base frame assembly and within the lateral limits of said telescoping leg assemblies.
8. A return apparatus as described in claim 1:
 - (a) said netting being constructed of an interwoven strip material,
 - (b) said base frame assembly having a plurality of suction cup members secured to a horizontally extended tubular base frame to support the same above the support surface whereby the apparatus is readily portable to various locations but held against lateral movement in a given location by said cup members,
 - (c) said connecting means including a plurality of telescoping leg assemblies having the lower ends pivotally connected to said base frame and the upper ends connected to said support frame permitting movement of said backstop means to any given position, and lock members connected to respective ones of said leg assemblies to secure the same in given positions of adjustment whereby said backstop means is operable to return projectiles thrown thereagainst at any preselected direction and angle.

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273—26, 29, 102.2