

May 30, 1961

H. SHEFTEL

2,986,395

ADJUSTABLE BASKETBALL GOAL

Filed Feb. 4, 1957

3 Sheets-Sheet 1

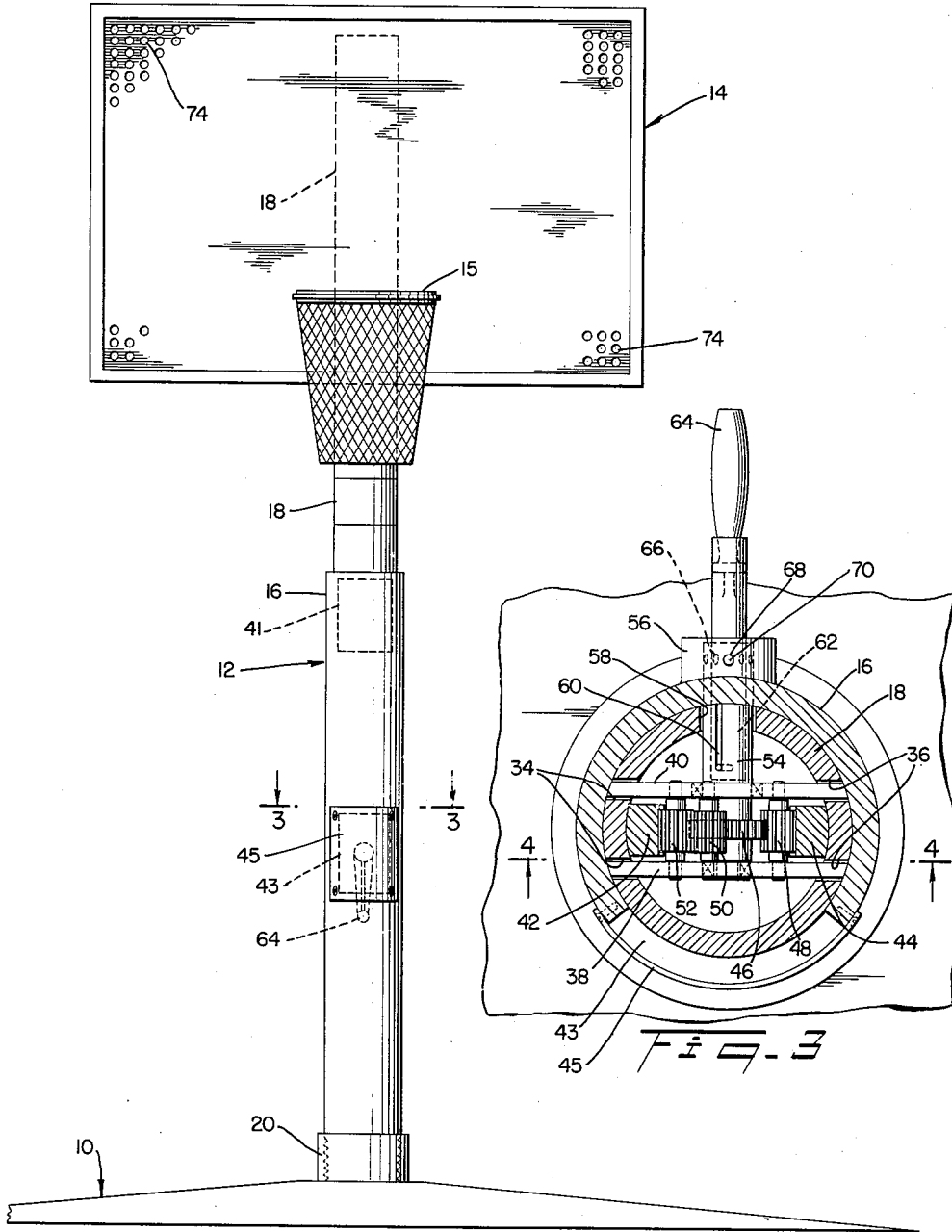


Fig. 1

INVENTOR.
HARRY SHEFTEL
BY *P. E. Dominguez*
ATTORNEY

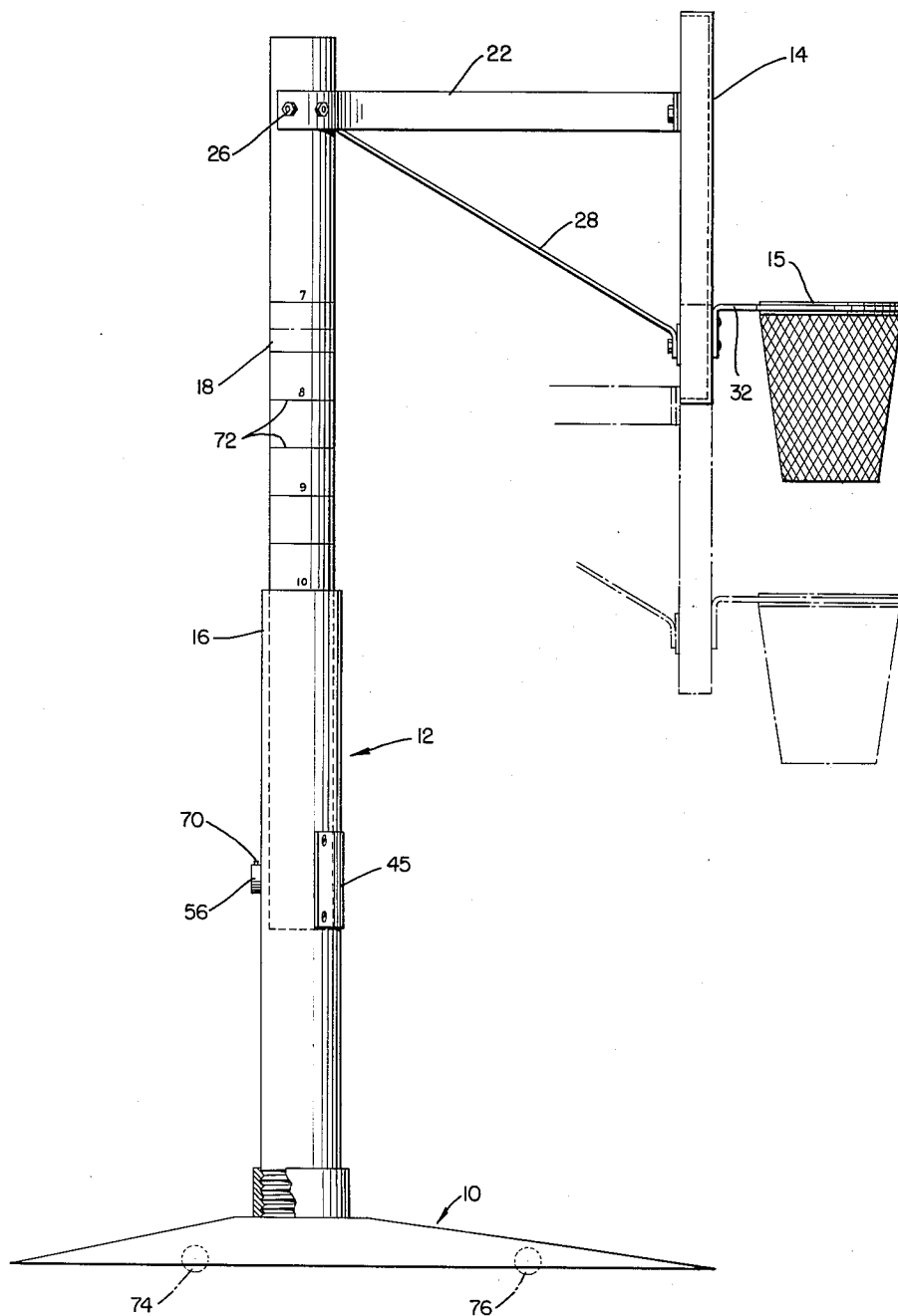
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INVENTOR.

HARRY SHEFTEL

BY

P. E. Henningsen

ATTORNEY

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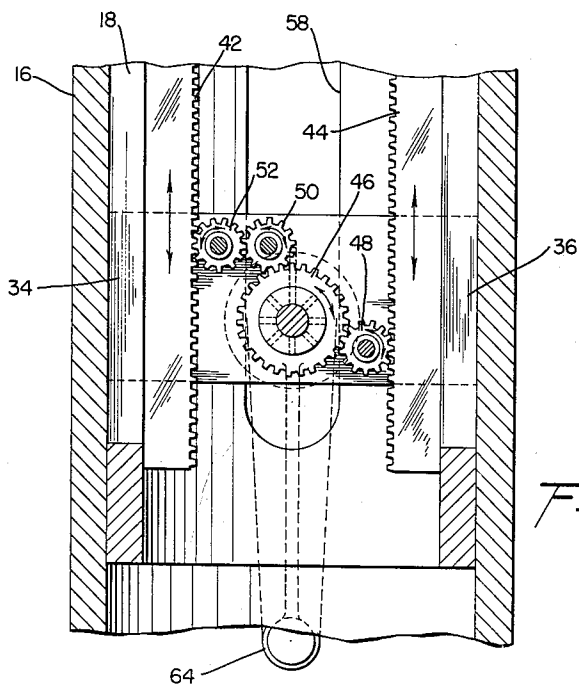
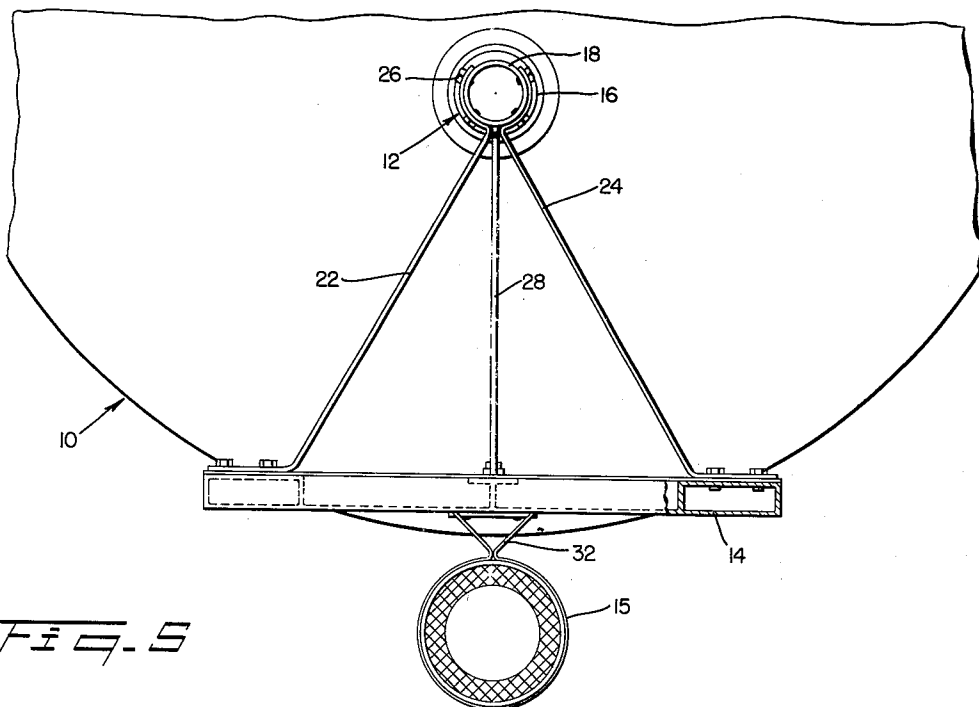
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INVENTOR.

HARRY SHEFTEL

BY

P. H. Henningsen

ATTORNEY

1

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ADJUSTABLE BASKETBALL GOAL

Harry Sheftel, 350 Clocks Blvd., Amityville, N.Y.

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2 Claims. (Cl. 273—1.5)

This invention relates to basketball goals. More particularly, the invention relates to a basketball goal which is mechanically adjustable as to height.

Basketball is a universally popular game to which mature players are attracted, but by reason of the height of the goal from the playing surface, the game has little satisfaction for immature players who have not yet attained their full stature and, as a result, such players do not play the game with sustained enthusiasm. It is the purpose of this invention to provide a basketball goal that can be quickly raised and lowered by mechanical means so that the height thereof can be adjusted to accommodate players of various age groups. By lowering the goal in proportion to the height of a playing group, the game can be made just as attractive to the young player as it now is to the mature player.

It is, therefore, an object of the invention to provide an adjustable support for a basketball backboard and goal.

It is another object of the invention to provide an adjustable support for a basketball backboard and basket which is telescopic and has associated therewith a simple gear train by which the height of the telescopic support can be adjusted with ease.

It is still another object of the invention to provide a basketball goal which is light in weight so that it may be moved readily from one location to another; yet one which is sufficiently sturdy to withstand all the impact thereon common to the game.

It is a further object of the invention to provide a basketball goal that is capable of infinite adjustment in height within a given range of adjustability, and one which can be locked in any position of adjustment.

These and other objects of the invention will appear from the following specification when read in light of the drawings, wherein:

Fig. 1 is an elevational view of a basketball goal of standard size and height, constructed in accordance with this invention;

Fig. 2 is a side elevational view of the basketball goal of Fig. 1, the dot-dash lines of the backboard and basket showing the same in lowered position;

Fig. 3 is a cross-sectional view on line 3—3 of Fig. 1, showing an internally located operating mechanism;

Fig. 4 is a sectional view on line 4—4 of Fig. 3, showing the essentials of the mechanical operating mechanism; and

Fig. 5 is a top plane view of the goal of Fig. 1.

The basketball goal of the invention consists generally of a base 10, a standard 12, a backboard 14, and a basket 15 attached to the backboard. Herein the base 10 is sufficiently large to afford a stable support for the standard 12 and the backboard 14, making allowance for the impact of the basketball against the backboard, as is common during the course of a game. Preferably, the base 10 is so shaped that the front perimeter does not extend forwardly beyond the vertical plane of the basket.

The standard 12 consists essentially of a lower tubular

2

member 16 and an upper tubular member 18 which has an external diameter sufficiently smaller than the internal diameter of the lower tubular member 16 to permit telescopic movement of the two members in respect to each other. The base 10 has an internally threaded collar 20 extending upwardly therefrom and the lower tubular member 16 may be threaded at its lower end for engagement of its threads with the threads of the tubular collar 20.

The backboard 14 is attached to the upper end of the upper tubular member 18 by means of forwardly extending braces which support the backboard in spaced relation to the standard 12. These braces are best shown in Figs. 2 and 5. A pair of horizontal braces 22 and 24 are bolted to the backboard at opposite edges and near the top edge of the backboard. These braces converge in a rearward direction to the upper tubular member 18 where they are curved in an arc corresponding to the curvature of the upper tubular member 18 to provide a substantial supporting surface. Suitable fastening means, such as bolts 26 firmly connect the curved rear ends of the braces 22 and 24, to the upper tubular member 18. A third brace 28 is connected between the backboard and the upper tubular member 18 such that the brace 28 affords support to the backboard at a point directly behind the basket 15. The basket 15 has a bracket 32 by which the same is bolted to the face of the backboard.

The screw threaded connection between the base 10 and the standard 12, and the bolt and nut connection of the braces 22, 24, 28 and 32 makes it possible to gather the elements into a conveniently compact package for transportation and delivery, the erection of the goal at the ultimate point of use being a simple operation.

A standard basketball goal disposes the rim of the basket at a 10 foot elevation from the playing surface. This is the position of the goal shown in Fig. 1. This invention contemplates an arrangement by which the upper tubular member 18 can be telescoped into the lower tubular member 16 a distance of at least 3 feet whereby the rim of the basket 15 can be lowered to an elevation of 7 feet above the playing surface. It is contemplated that this range of adjustment will be sufficient to accommodate the height of the basket to all possible playing groups.

Quick and easy adjustment of the basket height is accomplished herein by a simple mechanical arrangement which can be safely operated by players of any age. To this end, all of the operating mechanism is disposed within the standard 12, as shown in Figs. 3 and 4.

The upper tubular standard 18 has pairs of diametrically opposite slots 34 and 36. The slots are parallel and extend through the wall of the upper tubular member 18 in an axial direction for a distance of 3 feet measured near the lower end of the upper tubular member 18. The slots 34 and 36 accommodate opposite ends of spider plates 38 and 40 which extend through the slots 34 and 36 and are fixed at their ends to the inner face of the lower tubular member 16. The spider plates 38 and 40 provide a mounting for a gear train by which the upper tubular member 18 can be raised or lowered. An axial rack 42 is fixed to the inner face of the upper tubular member 18 in the area between the first pair of slots 34 and a second axial rack 44 is fixed to the inner face of the tubular member 18 in the area between the slots 36. The racks 42 and 44 are preferably somewhat longer than the pairs of slots 34 and 36 and the teeth thereof extend inwardly toward the axis of the standard.

A pair of apertures 41 and 43 are preferably formed in the members 16 and 18 to facilitate insertion and location of the spider plates 38 and 40. Accordingly, an aperture 41 is formed in the wall of the upper tubular

member 18 which is adapted to register with a similar aperture 43 in the lower tubular member 16. The apertures 41 and 43 are so located along the length of the members 16 and 18 that they register with each other when the upper member 18 is telescoped into the lower member 16. With the apertures 41 and 43 in registration the spider plates 38 and 40 can be inserted into their ultimate position within the standard and fixed in such position by any suitable means. The aperture 43 in the lower tubular member is preferably covered by a closure plate 45 after the parts have been assembled as described.

Journalled for rotation in the spider plates 38 and 40 is a gear train adapted to operate the racks 42 and 44 to either extend or retract the standard. Manual power is applied to rotate a gear 46 in either direction. Such rotation is transmitted to a pinion 48 which operates in contact with the teeth of the rack 44. Motion of the gear 46 is also transmitted to an idler pinion 50 which drives a pinion 52 that operates in contact with the teeth of the rack 42. Thus, if the gear 46 is rotated in a clockwise direction, as viewed in Fig. 4, the pinion 48 will be driven in a counterclockwise direction to drive the rack 44 upwardly. At the same time, the pinion 52 will be driven in a clockwise direction to drive the rack 42 in the same direction, i.e., upwardly. The reverse is true when the gear 46 is rotated in a counterclockwise direction.

The gear 46 is mounted on an elongated hub 54 which passes through the spider plate 40 and extends outwardly into a hollow hub 56 formed in the wall of the lower tubular member 16. The presence of the hub 54 necessitates slotting the wall of the upper tubular member 18 in an axial direction to provide a clearance space 58 for the hub 54. The clearance space 58 extends axially along the upper tubular member 18 for a distance corresponding to the length of the slots 34 and 36.

The gear hub 54 has a pin-receiving slot 60 for receiving a pin 62 at the inner end of a crank 64 which can be inserted through the hollow hub 56 and into the hub 54 for rotating the gear 46. To avoid dangerous protuberances, the crank 64 is made removable such that when the standard has been adjusted to a desired height, the crank 64 can be removed to leave a substantially smooth surface at the rear of the standard.

If the gear train is composed of a combination of spur gears, the standard will maintain any given adjusted position despite vibration resulting from impact of the ball against the backboard and basket. However, to insure maintenance of an adjusted position of the standard, the gear hub 54 has a plurality of radial sockets 66 formed therein at circumferentially spaced points. The sockets 66 are adapted to register with an aperture 68 formed through the upper wall of the hollow hub 56 such that a pin 70, as shown in Fig. 2, may be passed through the aperture 68 and into one of the sockets 66 to prevent the gear hub 58 from rotation after an adjusted position of the standard has been attained.

In order to facilitate adjusting the height of the basket 15, the outer face of the upper tubular member is preferably marked with graduations 72 which may be at 6 inch intervals throughout the permissible range of adjustment.

To render the goal portable, it is contemplated that the base, standard and backboard be made of light material, such as aluminum. Furthermore, the backboard may be rendered wind resistant by perforating the same throughout its face area such as by perforations 74.

In order to render the goal more portable, it is contemplated that a set of rollers 74 and a caster wheel 76 of a well known retractable type may be provided in the base 10. The form of the invention shown herein is

adapted for both outdoor and indoor use. If it is desired to make a more or less permanent installation, as for example, by locating the standard 12 in a holding socket extending below a playing surface or by fixing it in concrete in an outdoor installation, for example, the base 10 will not be employed but the lower tubular member 16 will be made longer to permit such installation without altering the standard elevation of the basket above the playing surface.

Having thus described my invention, what I claim as new therein and desire to secure by Letters Patent is:

1. In a basketball goal, a telescopic standard consisting of a lower tubular section and an upper tubular section telescopically contained in said lower tubular section, a first pair of spaced axial slots in the wall of said upper tubular section, a second pair of spaced axial slots in the wall of said upper tubular section at points in the diameter thereof which are respectively opposite the slots of said first pair, a backboard and basket fixed to the outer end of said upper tubular section, a plate extending through the oppositely disposed slots of each of said pair of slots, the opposite ends of said plates being fixed to said lower tubular section whereby said tubular sections are maintained against relative rotation, means for adjusting the height of said backboard and basket by telescopically adjusting the length of said standard comprising a gear train mounted on said plates, a rack fixed to the inner face of said upper tubular section between each of said pair of slots, said gear train having a drive pinion in engagement with each of said racks and a gear for rotating said drive pinions, a hub for rotating said gear located wholly within said standard, and an aperture in a face of said lower tubular section whereby a removable operating crank may be engaged with said hub for turning said gear to telescope said sections in respect to each other.

2. In a basketball goal, a telescopic standard consisting of a lower tubular section and an upper tubular section telescopically contained in said lower tubular section, a first pair of spaced axial slots in the walls of said tubular section, a second pair of spaced axial slots in the wall of said upper tubular section at points in the diameter thereof which are respectively opposite the slots of said first pair, a backboard and basket fixed to the outer end of said upper tubular section, a plate extending through the oppositely disposed slots of each of said pair of slots, the opposite ends of said plates being fixed to said lower tubular section whereby said tubular sections are maintained against relative rotation, means for adjusting the height of said backboard and basket by telescopically adjusting the length of said standard comprising a gear train mounted on said plates, a rack fixed to the inner face of said upper tubular section between each of said pair of slots, said gear train having a drive pinion in engagement with each of said racks and a gear for rotating said drive pinions, a hub for rotating said gear located wholly within said standard, an aperture in a face of said lower tubular section whereby a removable operating crank may be engaged with said hub for turning said gear to telescope said sections in respect to each other, and means for locking said hub to said lower tubular section to maintain said gear against rotation.

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UNITED STATES PATENT OFFICE
CERTIFICATE OF CORRECTION

Patent No. 2,986,395

May 30, 1961

Harry Sheftel

It is hereby certified that error appears in the above numbered patent requiring correction and that the said Letters Patent should read as corrected below.

Column 4, line 39, for "walls of said tubular" read
-- wall of said upper tubular --.

Signed and sealed this 24th day of October 1961.

(SEAL)

Attest:

ERNEST W. SWIDER

Attesting Officer

DAVID L. LADD

Commissioner of Patents

USCOMM-DC