March 5, 1968 J. STAP 3,371,950

TENNIS BALL RETRIEVER AND STORAGE UNIT

Filed Aug. 3, 1966

FIG. 1

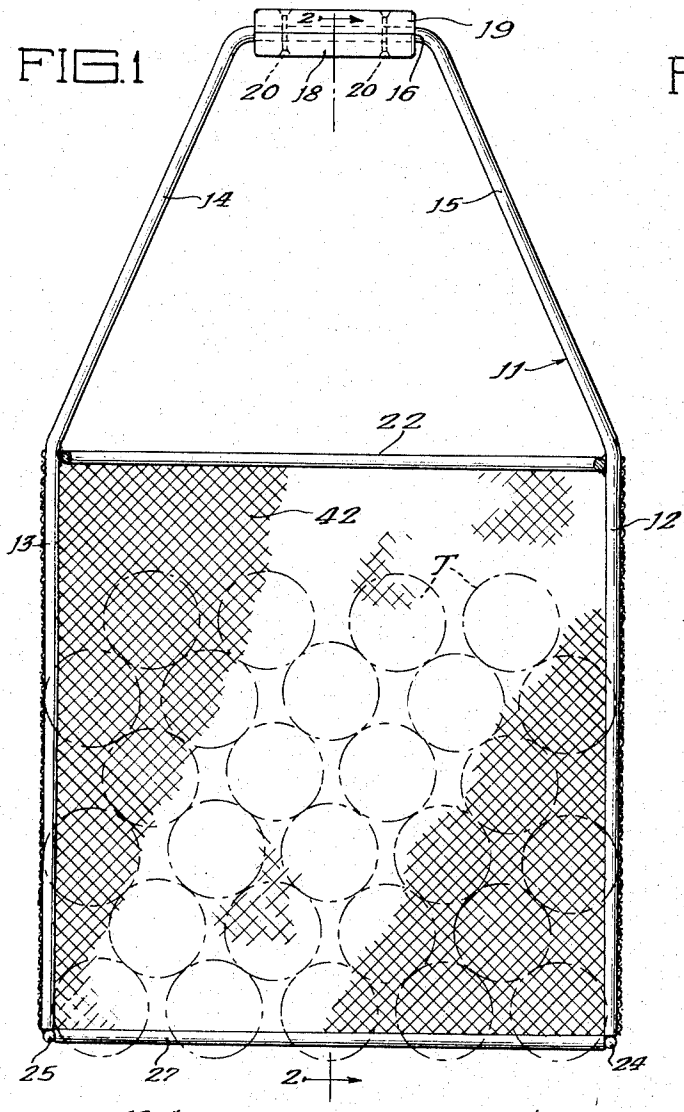


FIG. 2

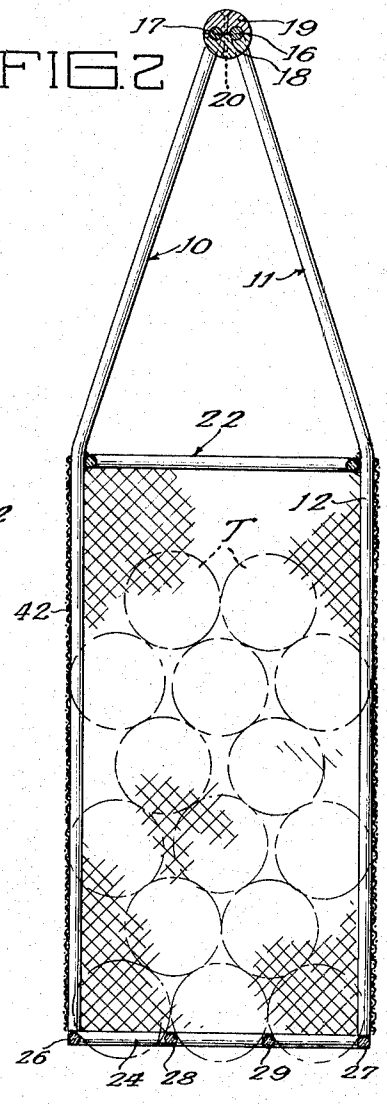


FIG. 3

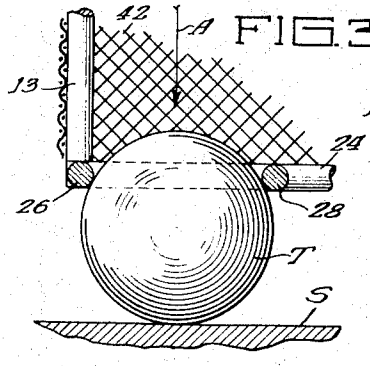


FIG. 4

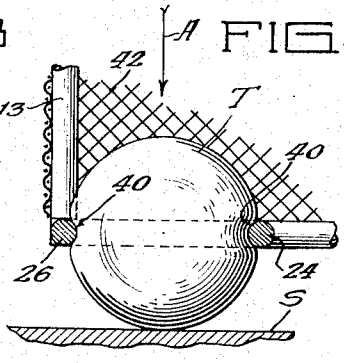
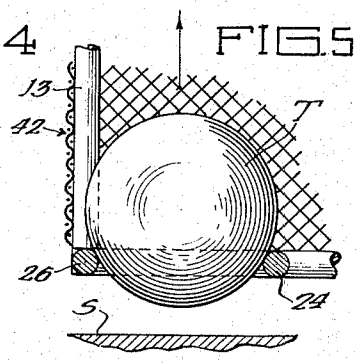


FIG. 5



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TENNIS BALL RETRIEVER AND STORAGE UNIT

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ABSTRACT OF THE DISCLOSURE

A device for retrieving a multiplicity or a single tennis ball from a tennis court playing surface, which device automatically stores a multiplicity of tennis balls, characterized by a receptacle having a grate in its bottom of relatively rigid bars spaced apart slightly less than the diameter of a used tennis ball so that the receptacle may be placed over the balls resting on a court and pushed downwardly on the court surface automatically squeezing the balls into the receptacle, raising balls already in the receptacle thereabove and retaining all of the retrieved balls in the receptacle until manually poured or removed from the open upper end of the receptacle; in preferred form, there being a handle above the receptacle for manipulation by a person standing upright on the playing surface.

This invention relates to a combined unit for storing a multiplicity of tennis balls which unit is also conveniently usable as a means for retrieving tennis balls from any surface similar to that of a tennis court.

The teaching of the game of tennis is usually accomplished by the repetitive hitting of tennis balls delivered by a tennis teacher to the student upon a tennis court playing surface. Some machines are commercially available for throwing or pitching balls to the student. Hundreds of tennis balls may be loaded into such machines so that the student may practice repeatedly a particular stroke. The result of teaching the game of tennis under presently accepted procedures use a great number of balls which eventually must be retrieved from the court playing surface.

Used tennis balls form the nucleus of a teaching instructor's ball supply used for teaching. Baskets of various kinds generally made for other purposes have been pressed into use as a means for carrying a supply of balls from storage place to practice-teaching court and back. The task of retrieving balls spread over a court has generally been manual much akin to retrieving an individual tennis ball during play of a game. The retrieving of fifty or several hundred tennis balls used during instruction periods has been a time consuming endeavor.

The present invention has for its principal object the provision of a novel, useful tennis ball retrieving and storage unit.

Another object is to provide a receptacle for tennis balls with a means for retrieving and automatically moving tennis balls from a position of rest upon a tennis court surface into a captured position within the receptacle upon simple manipulation of the receptacle.

Another object is to provide such a unit capable of retrieving a plurality of tennis balls from a court surface simultaneously.

A further object is to provide such a unit of economical construction without moving parts and easily and conveniently usable for retrieving tennis balls and easily manually carried for transporting the retrieved balls to and from a storage area when not in use. At the same time, such unit has a structure permitting ready removal of the balls from storage when desired.

Other objects, features and advantages of the present invention will be apparent from the following description of an embodiment thereof illustrated in the accompanying drawings in which:

FIGURE 1 is a side elevational view partially broken away of the tennis ball retrieving and storage unit showing in phantom a multiplicity of tennis balls in the receptacle;

FIGURE 2 is a central upright sectional view through the unit substantially along the line 2—2 in FIGURE 1; and

FIGURES 3, 4 and 5 are each a fragmentary view of one bottom corner portion of the unit illustrating progressively stages of retrieving and storing a tennis ball in the receptacle of the unit.

When a great number of tennis balls are used upon a teaching court, the student or instructor can easily roll the balls into the net or against the retaining fence about the court in order to make the retrieving of the balls occur in a limited area on the court surface. It is common practice for a person to roll the balls across the court to a common pick-up area by use of the tennis racket used somewhat like a croquet mallet to direct the balls across the court to such pick-up area. Picking up the balls used during an instruction period is a tiresome job due to the requirement for a person to bend or squat in order to reach the balls lying on the tennis court. Many players have developed a knack of causing a tennis ball to bounce high enough to be caught either with a racket alone or by use of a racket and his foot. In this way the player avoids bending over or squatting to pick up the tennis ball. The present invention has a structure which obviates any necessity to move the ball from its resting position on the court surface in order to retrieve it. The person handling the unit of this invention can retrieve a large number of tennis balls quite quickly and easily without any appreciable physical effort and with no bending over or squatting to allow his hands to reach the playing surface. Retrieving the tennis balls with the present invention is accomplished by setting the unit down on top of the balls resting on the court surface and pressing the unit downward until it rests upon the court surface. When this manipulation has occurred, tennis balls under the unit will have automatically moved into the receptacle and will equally automatically be retained therein when the unit is again picked up to be carried from the spot it occupies upon the court surface.

Referring to FIGURES 1 and 2 of the drawings accompanying this application, the unit is made relatively lightweight yet sturdy enough to permit handling and to avoid denting of the unit by a tennis ball which might hit it during practice upon the court. A pair of upright frame members made of wire stock are formed to provide four corner posts and an upwardly extending handle. Two such wires **10** and **11** are utilized and are similar. The unit **11** provides a corner post **12** at one corner of a rectangular receptacle and a corner post **13** at an adjacent corner as well as upright inwardly slanting portions **14** and **15** and an integral horizontal handle portion **16**. The wire frame comprising the part **10** is complementary to the wire frame **11**. Its horizontal handle portion **17** is oriented so that a pair of handle blocks **18** and **19** can be secured by rivets **20** or other appropriate fasteners over the two handle portions **16** and **17** uniting the frame portions **10** and **11** at the handle.

Four upright corner posts are provided forming the corners of the rectangular receptacle. A one-piece rectangular wire frame **22** is joined to the upright posts at the top of the receptacle, this frame being a continuous end butt welded wire form. It in turn is welded or mechanically secured to the top of the upright corner posts.

The bottom of the receptacle is similarly braced as is the top by the wire frame **22**. In the preferred embodi-

ment the entire bottom of the receptacle forms a grate through which tennis balls are expected to be pushed in order to retrieve the same. In the present invention there are a pair of wire bars **24** and **25** across the narrow width of the rectangular receptacle and a pair of wire bars **26** and **27** across the length or larger dimension of the rectangular receptacle. These bars **24–27** form a rectangle which joins the lower ends of the four corner posts. The joining may be mechanical or by welding of the wire frame. Steel may be employed for the wire material and later appropriately plated or otherwise treated to avoid corrosion under atmospheric conditions. The material of the wire stock need not be steel, but can be aluminum or other metals. Also, the rods mentioned may be made of stock not ordinarily designated "wire."

The grate in the bottom of the receptacle in addition to the wire frame members mentioned may employ a pair of rods **28** and **29** respectively spaced from each other and from the rods **26** and **27** a distance slightly less than the diameter of a used tennis ball. In the present receptacle the four rods **26–29** are parallel and of round wire stock of about ⅛ to ⅜ inch nominal diameter appropriately plated or otherwise treated. The smaller size wire stock is preferred for lightness of weight. The openings between the rods provide an avenue for the ingress of tennis balls into the receptacle. The manner of causing balls to enter the receptacle is simply to place the receptacle over the balls on the court handling the unit only by the handle at the top and then pushing downward slightly to cause the receptacle to settle onto the playing surface.

FIGURES 3 to 5 illustrate the retrieving of a single tennis ball under the conditions just mentioned. In FIGURE 3 a tennis ball T is resting upon a playing surface S. The unit has been picked up by a player and set down on top of a tennis ball so that the rods **26** and **28** engage the tennis ball above its mid portion. Downward movement of the receptacle forces the tennis ball to squeeze between the rods **26** and **24** as illustrated in FIGURE 4, the direction of movement being indicated by the arrow A. Tennis balls are readily compressible by the force of one's handgrip or equal force and therefore readily distorted as indicated in the areas **40** to squeeze past the rods **24** and **26**. Very little force is required to cause the tennis ball to squeeze past the rods. The rods are relatively rigid and do not give, bend or yield under the force of a single tennis ball or several tennis balls squeezed into the receptacle at one time. As noted in FIGURE 4, the receptacle can continue downward until it rests upon the playing surface S. In such position the bottom of a receptacle will be below the center plane of the tennis balls. Once the ball has passed the rods, it again expands due to its own construction into a spherical ball and thus is automatically captured inside the receptacle.

Tennis balls are retained in the receptacle by providing a barrier against escape between the corner posts. In the present illustration the barrier comprises a mesh **42** or any other suitable covering for the receptacle which may include materials of various natures including canvas, expanded metals, wire in the nature of a screen, or a plurality of appropriately spaced rods. As illustrated in FIGURE 5, once the tennis ball is inside the receptacle, a lifting of the receptacle will carry the tennis ball along because the ball has expanded to its original spherical shape and gravity alone is not sufficient to cause it to squeeze out from between the rods. The spacing between rods has been found adequate for the purpose if it is in the order of 2¼ to 2⅜ inches; a new tennis ball, by U.S. Lawn Tennis Association specifications, should be between 2½" to 2⅝" in diameter. Use reduces diameter slightly. New balls, as well as used, will squeeze between the rods quite readily, there being considerable latitude permissible in the spacing of the rods to perform the function of retrieving tennis balls from the playing surface.

A great number of balls may be retrieved and stored in the receptacle at one time. As illustrated in FIGURES 1 and 2 a considerable number of balls are shown in phantom within the receptacle. It has been found that the balls being retrieved simply raise the mass of balls already in the receptacle so as to squeeze in at the bottom of the receptacle. The top bracing wire frame **22** forms a rectangular opening at the top of the wire mesh **42** through which the balls may be poured out to remove them from the receptacle. The instructor may either set the supply on the court reaching into the receptacle for balls as needed, or the entire supply may be poured into the hopper of a ball throwing machine by handling the receptacle much like any other basket.

It is preferred to make the entire bottom wall of the receptacle as described in order that the round rods forming the grate through which the balls pass will be as large as possible. In this manner as many balls as can fill the spaces between the rods at one time can be picked up simultaneously. The number of balls picked up depends therefore upon the location of the balls on the court, it being understood that a single ball can be picked up as readily as a larger number depending only upon the location of the balls on the court. A person manipulating the unit can quite as easily pick up a number of balls while in a standing position by simply repetitively placing the receptacle over the balls and pushing downward until the receptacle rests upon the playing surface of the court.

While the specific structure of the unit described employs what amounts to a combination of corner posts for the receptacle unitarily extending upwardly to form parts of the handle, the handle may be made quite separately and merely attached to parts of the upper frame member **22**.

When the handle is so made separately for attachment by the purchaser of the unit, a smaller box or carton can be used for shipping in that the handle attachment generally approximates the height of the receptacle and can be placed in the receptacle for shipping purposes. A package of appropriate fasteners such as bolts can be supplied by which the handle can be readily attached to the top frame of the receptacle.

The foregoing detailed description is given for clearness of understanding only and no unnecessary limitations are to be understood therefrom, as modifications will be obvious to those skilled in the art.

I claim:

1. A tennis ball retriever and storage unit comprising:
an upright receptacle of a size to contain and store at one time a substantial number of tennis balls,
said receptacle having means forming an exit opening above the level of stored tennis balls therein for gravity flow of balls out of the receptacle upon tipping of the receptacle out of such upright position,
a grate in the receptacle forming at least part of a bottom wall for the receptacle, said grate having a plurality of relatively unyielding, fixed position bars spaced apart laterally of the receptacle across such part of the bottom wall a distance slightly less than the width of a used tennis ball so that such a ball may be squeezed between the bars to gain entry into the receptacle, said bars being immovable by weight of stored tennis balls filling the receptacle,
said grate being located in the lowermost part of said receptacle permitting tennis balls on a tennis court to be retrieved by sequential repetitive manipulation of the unit forcing the grate downwardly over a multiplicity of balls resting upon the tennis court, said receptacle having upright walls for unobstructed upward movement of retrieved balls by balls incoming through the grate.

2. A tennis ball retriever and storage unit as specified

in claim 1 wherein the grate comprises spaced parallel round bars extending across the bottom of the receptacle.

3. A tennis ball retriever and storage unit as specified in claim 1 wherein the grate bars are relatively rigid metal rods substantially unbendable by force supplied thereto by one or more tennis balls being squeezed between the bars into or out of the receptacle.

4. A tennis ball retriever and storage unit as specified in claim 1 wherein the grate comprises substantially the entire bottom wall of the receptacle.

5. A tennis ball retriever and storage unit as specified in claim 1 wherein the the grate comprises the bottom wall of the receptacle and the bars are substantially round metal rods.

6. A tennis ball retriever and storage unit as specified in claim 1 wherein the receptacle has an upwardly extending handle spaced from the bottom wall a distance permitting a standing person to raise and lower the receptacle from and against a tennis court playing surface by its handle without substantial bending at his waist.

7. A tennis ball retriever and storage unit as specified in claim 1 wherein the receptacle is a wire frame member joined to the grate with means secured to the wire frame forming the receptacle walls for retaining the tennis balls from gravity flow from the receptacle through such walls.

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