

[54] BALL PICK UP DEVICE

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[22] Filed: May 8, 1974

[21] Appl. No.: 467,949

[52] U.S. Cl. 294/19 A; 294/19 A

[51] Int. Cl.² A63B 57/00[58] Field of Search 294/1, 19 A, 50.6, 50.7,
294/50.8, 50.9, 55, 99; 273/32 R, 32 B, 32
D, 32 F, 162 E

[56] References Cited

UNITED STATES PATENTS

1,937,828	12/1933	MacDonald	294/19 A X
2,760,807	8/1956	Watson	294/19 A
2,962,321	11/1960	Fowler	294/19 A

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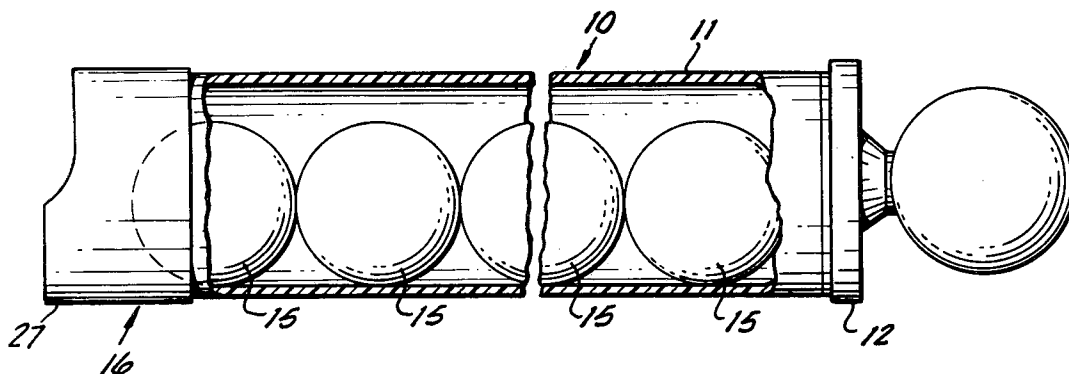
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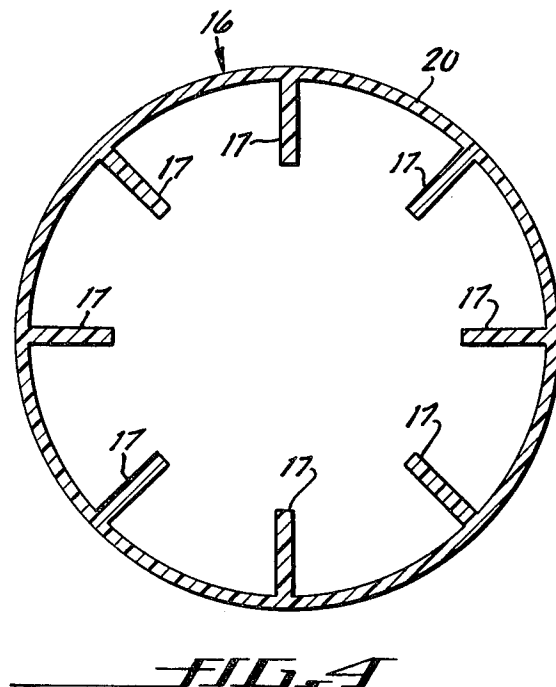
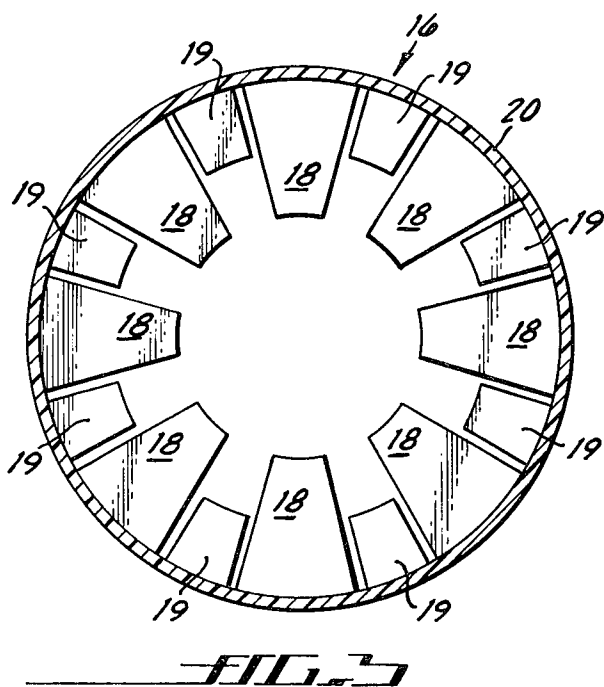
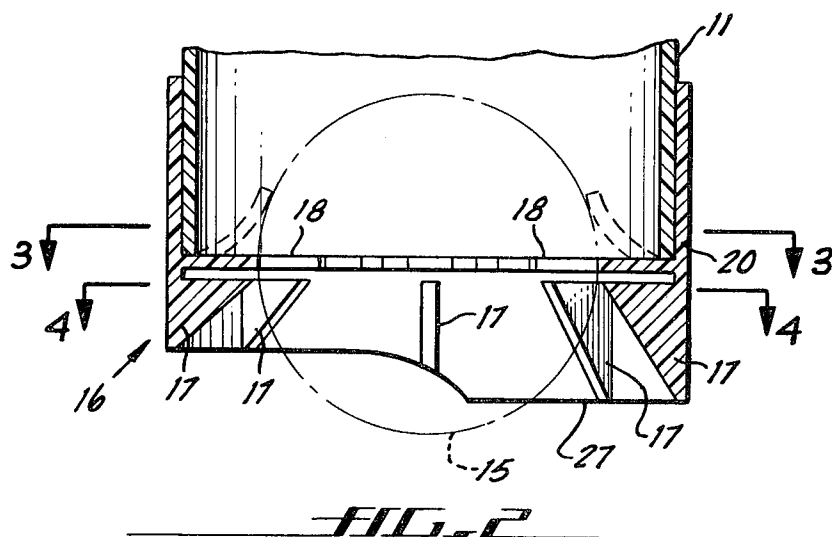
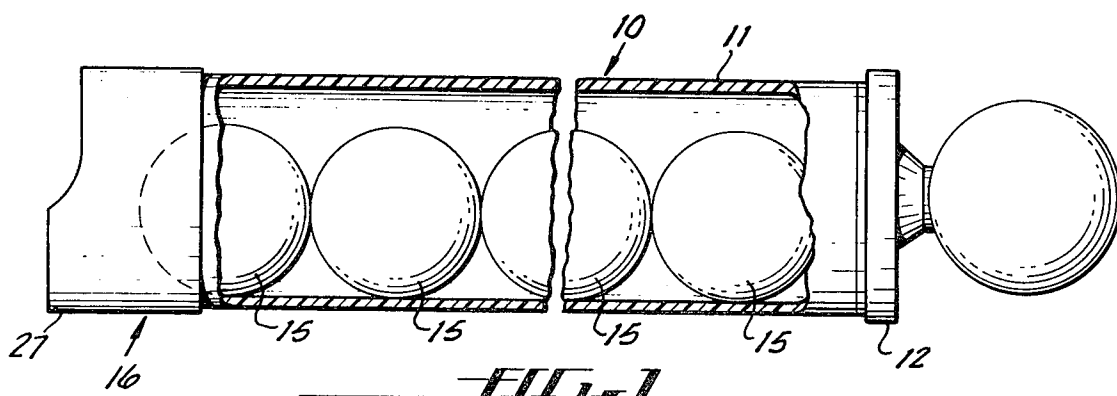
[57] ABSTRACT

A golf ball pick up device including a tubular cylinder conformed on the interior to receive the golf balls and dimensioned longitudinally to accommodate a stack of golf balls, such tubular cylinder terminating at the

upper end in a removable end cap for release of the balls and at the lower end in a pick up adaptor. The adaptor includes a cylindrical housing of a larger diameter than the interior of the tubular cylinder to allow for a concentric attachment of the cylinder within the interior thereof and to provide clearances for misalignment in the placing of the device over the ball. Formed on the interior of the cylindrical housing are a plurality of triangular guide webs having two vertices aligned along the walls thereof, the lower vertex being common with the free edges of the housing, and having a third or free vertex extending along a radius of the housing joining the upper vertex common to the wall. Thus the upper edges of the webs align along radii of the housing terminating at the free vertices to form an opening just larger than the dimensions of the ball. Attached immediately above the triangular guide webs are a corresponding number of leaf springs, planar in configuration and cantilevered from the inside of the housing also along radii thereof and terminating at the free ends at a dimension described a central opening substantially less than the circumference of the ball. Interspaced between the adjacent leaf springs are a plurality of tabs also planar in dimension and extending to define a radial opening just slightly less than the dimensions of the ball.

8 Claims, 4 Drawing Figures





BALL PICK UP DEVICE

BACKGROUND OF THE INVENTION

1. Field of the Invention

The present invention relates to ball retrieving devices and more particularly to tubular golf ball retrieving devices adapted to retrieve and store a plurality of golf balls.

2. Description of the Prior Art

Tubular golf ball retrieving devices terminating in a bottom opening which includes spring retainers have been known in the past and have been utilized for the particular application of picking up a plurality of balls as played out during practice. Such devices, typically, rely on the advantage in the extension they provide to the player. In this use, such pick up devices are manipulated proximate the upper end by the golf player to align the lower end over the golf ball and once the golf ball is within the dimensions of the lower end the pick up device is pressed downward to press the ball into the interior of the pick up device across spring retainers commonly included therein. In order to provide convenience in the pick up, such prior art devices typically included bottom openings which were over-sized relative the dimensions of the golf ball, relying on the spring retainers to center and to retain the golf ball within the device once inserted. This feature, although aiding in the convenience of alignment during pick up allowed the ball alignment to fall off center relative the spring devices and therefore would permit a misaligned ball to be pressed against elements of the spring device at positions where large root bending forces of the spring device would be applied.

SUMMARY OF THE INVENTION

Accordingly, it is the general purpose and object of the present invention to provide a ball pick up device including rigid ball centering means on the pick up opening thereof whereby the ball is aligned to a central position relative the spring retainer contained therein. Further objects of the invention are to provide centering devices which also act as a positive spring bias, opposing the reverse flexure of the leaf springs to prevent the release of the balls once received in the device.

These and other objects are accomplished within the present invention by providing a tubular cylinder conformed on the interior to the circumferential dimensions of the ball, such tubular cylinder terminating at the upper end in a removable cap and including at the lower end thereof a centering ball receiving adaptor. The adaptor includes a tubular in longitudinal cross section exterior housing being attached in concentric relationship to the exterior lower end of the tubular cylinder and including proximate the open interior end thereof a plurality of radially disposed guide webs aligned in radial planes including the longitudinal axis of said tubular housing and shaped in the manner of a triangle extending from the free end of the housing along a diagonal towards the interior thereof. The upper edges of the guide webs are further aligned in a plane normal to the central axis of the housing forming an opening thereat just larger than the ball. Immediately above and within the interior of the housing in associated alignment with the webs, there are included a plurality of radial planar leaf springs mounted in cantilever from the interior surface of the housing and pro-

jecting to a dimension forming an opening substantially less than the dimension of the ball over the projecting vertices of the webs. In this manner, the radial webs tend to center the ball toward the central axis of the pick up device to be pressed across the cantilevered leaf springs essentially central to the opening formed thereby. Furthermore, the adjacent relationship of the leaf springs relative the upper edge of the associated planar webs provides a support thereto such that the leaf spring has a much lower or shorter spring arm on the return or opening stroke as compared to the insertion or closing stroke.

BRIEF DESCRIPTION OF THE DRAWINGS

FIG. 1 is a side view, in partial cross section, of a pick up device constructed according to the present invention;

FIG. 2 is a cross sectional side view detail of the pick up adaptor disposed on the lower end of the device shown in FIG. 1;

FIG. 3 is a cross sectional plan view, taken along line 3—3 of FIG. 2; and

FIG. 4 is yet another plan view in cross section taken along line 4—4 of FIG. 2.

DESCRIPTION OF THE SPECIFIC EMBODIMENT

Generally, the present invention is directed at a golf ball pick up device terminating at the upper end in a removable cap and including at the lower end a pick up adaptor arranged in concentric alignment with a plurality of aligning webs whereby the pick up device can be placed over the ball centering the ball to a receiving alignment relative a plurality of leaf springs radially extending towards the longitudinal axis of the device and upon being pressed downward, the ball penetrates the opening formed by the springs to progress to the interior of the device.

As shown in FIG. 1, the ball pick up device, generally designated 10, includes a tubular cylinder 11 of a length conformed to the dimension between the hand of a player and ground, such cylinder 11 terminating at the upper end in a removable end cap 12 conformed in a press-fit relationship with the end of the tubular cylinder. The interior transverse dimensions of the cylinder 11 are conformed to the diameter of a ball 15 to be picked up, and a plurality of balls 15 may be received therein in a column over the length of the cylinder. At the lower end, cylinder 11 is received within the interior cavity of a pick up adaptor 16 comprising a tubular housing 20 attached in concentric arrangement to the exterior of the cylinder 11, housing 20 extending beyond the bottom end of the cylinder to define an enlarged central cavity for receiving the balls 15. This particular feature allows for relatively wide tolerances in alignment of the adaptor 16 over the ball 15 during ball pick up, such tolerances accommodating the typical lack of precision that is inherent in any manual operations coupled with extension devices of this kind. To further aid in the receipt of the balls within the interior of adaptor 16 the open edge of housing 20 is laterally shortened over a section of an arc greater than one half of the circumference to form an extending projection 27 on the remainder of the circumference which provides a herding surface by which the balls 15 can be herded toward a receiving alignment within the interior of the adaptor 16.

As shown in FIGS. 2, 3 and 4, to provide for centering of the balls 15 during insertion into the interior of adaptor 16, a plurality of triangular webs 17 are attached along the respective one edges thereof to the interior surface of the tubular housing 20 aligned along radial planes intersecting the longitudinal axis of cylinder 11. Webs 17 each substantially describe a right hand triangle having one vertex located adjacent the free edge of the housing 20 and the 90° vertex formed adjacent the upper interior surface of the housing. The third vertex of each web 17 joins an edge in a plane normal to the axis of cylinder 11 with the diagonal edge, the free vertices in combination forming an opening just greater than the diameter of ball 15. In this manner, a conical guide is formed by the diagonal edges of the respective webs 17 aligning the ball on insertion to a position substantially concentric with the interior of cylinder 11. Attached immediately above each web 17 is a corresponding leaf spring 18 mounted in cantilever from the interior surface of housing 20 along radial axes and in a common plane also normal to the central axis of the cylinder. The projecting radial dimensions of the leaf springs 18 are such that the interspace formed between the free edges thereof is substantially less than the diameter of the ball 15. This particular configuration allows the leaf springs 18 to be deformed by a centered insertion of the ball 15 to permit the passage of the ball 15 towards the interior of cylinder 11, while the reverse direction of bending of the leaf springs is opposed by the horizontal edge of the adjacent webs 17. Thus the balls 15, once inserted, are maintained within the interior of cylinder 11 by the leaf springs 18 and can only be retrieved therefrom by the removal of cap 12.

As shown in more detail in FIGS. 2, 3 and 4, the planar dimensions of the leaf springs 18 are such that the free ends thereof define arcs of a circle of a dimension smaller than the dimension of the ball 15. Interspaced between the adjacent leaf springs 18 are a plurality of tabs 19 also planar in dimension and extending along radii normal to the adaptor 16, such tabs 19 similarly forming leaf springs. Tabs 19 are dimensioned to define a central opening slightly less than the dimension of ball 15 and due to their forshortened dimensions provide a higher spring coefficient. This feature provides for a secondary retaining means while at the same time providing for an unstable interface between the free ends of the tabs and the periphery of the ball 15 thus urging the ball from an intermediate position between the leaf springs 18 and the free vertices of the webs 17. Tabs 19 further provide centering forces to the ball 15 to reduce the wear on the free vertices of the webs 17.

In operation, the pick up device 10 is generally aligned over the ball 15 which is then herded by the projection 27 to align the ball against the diagonal edges of the webs 17. Once in position, the ball is then pressed into the interior of the device 10 by a downward manual pressure which through the aligning features of webs 17 drives the ball towards the center of the cylindrical tube 11 deforming the leaf springs 18 and tabs 19 to allow passage thereof. Tabs 19 deform at much higher spring coefficients either passing or ejecting the ball. It is to be noted that the longitudinal dimension from the engagement plane of springs 18 and the free end of projection 27 is substantially less than the radius of ball 15, such being necessary in order to effect a complete insertion of the ball 15 before

contact with ground is made. Should the player observe that the ball has not been completely received and is therefore ejected, he will repeat the insertion procedure, exerting more force, until the ball is inserted beyond the retention of the tabs 19 to be received within the interior of cylinder 11.

Some of the many advantages of the present invention should now be readily apparent. As disclosed, the invention provides aligning features heretofore not available in the prior art whereby the spring devices receiving the ball within the interior of the pick up device are deformed by a ball aligned in a central position. Furthermore, the tabs incorporated in this invention which are just slightly less in their radial opening than the dimensions of the ball assure an unstable condition whereby the ball is either within the interior of the cylinder 11 or is ejected out.

Obviously, many modifications and variations of the present invention may be made with regard to the foregoing detailed description without departing from the spirit of the invention.

We claim:

1. A ball pick up device comprising, in combination: a tubular cylinder conformed to receive on the interior thereof a plurality of balls; an end cap removably secured to one end of said tubular cylinder; and a pick up adaptor connected to the other end of said cylinder including a tubular housing attached in surrounding relationship about the other end of said cylinder received in the upper end of the central cavity thereof, a plurality of triangular guide webs formed in radial planes on the interior of said housing having a first vertex adjacent the lower end of the central cavity thereof, a second vertex common to the interior surface of said housing intermediate the upper and lower ends of the central cavity, and a third vertex joining a radial edge from said second vertex and a diagonal edge from said first vertex, the respective third vertices of said webs extending towards the interior of said housing to form a central opening therebetween just greater than the dimensions of the ball, and a plurality of associated leaf springs mounted in cantilever from the interior of said housing immediately adjacent the radial edge of each said web, said leaf springs extending towards the interior of said housing to form a central opening therebetween substantially less than the dimensions of the ball.
2. A ball pick up device according to claim 1 wherein:
- said tubular cylinder and said housing are attached in concentric relationship.
3. A ball pick up device according to claim 1 further comprising: a plurality of tabs mounted in cantilever from the interior of said housing and interspaced between said leaf springs, terminating at free ends dimensioned to form a central opening just less than the dimensions of the ball.
4. A ball pick up device according to claim 3 wherein: said tabs and said leaf springs form planar structures aligned in a plane normal to the central axis of said housing.
5. A ball pick up device according to claim 1 wherein:

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the lower end of said housing includes a longitudinal arcuate projection extending over less than one half the circumference thereof.

6. A ball pick up device according to claim 1 wherein:

said leaf springs are abutting the radial edges of said webs on a flexure of the free ends thereof directed towards the lower end of the central cavity in said housing.

7. A ball pick up device according to claim 1

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wherein:

the longitudinal dimension of said cylinder is greater than the distance between the hand of an erect player and the ground.

8. A ball pick up device according to claim 1 wherein:

the central openings formed by said cylinder, said webs, said leaf springs and said tabs are conformed to the dimensions of a golf ball.

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