March 21, 1967 M. E. PEEPLES 3,310,311

GOLF PUTTING CUP WITH RANDOM-DIRECTION BALL EJECTION MEANS

Filed March 6, 1964 3 Sheets-Sheet 1

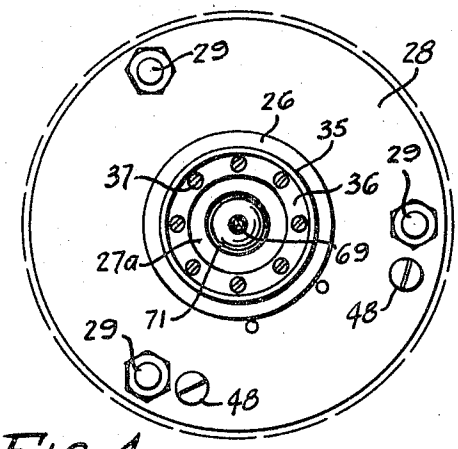


FIG. 4

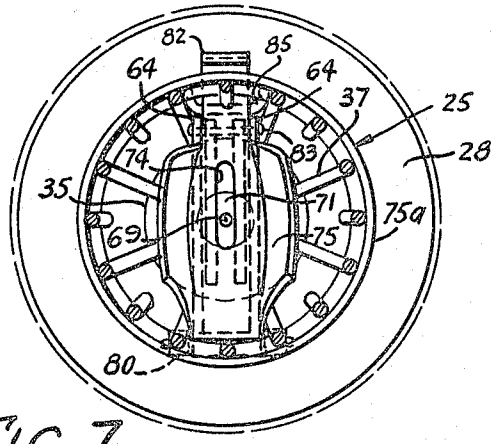


FIG. 7

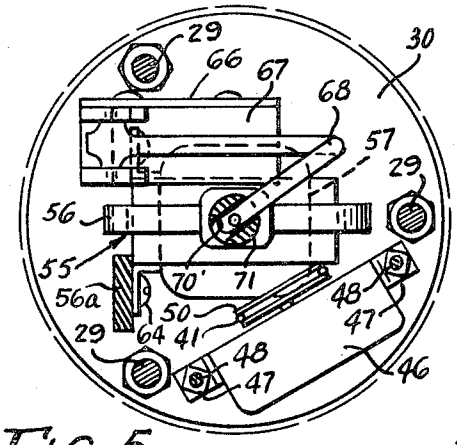


FIG. 5

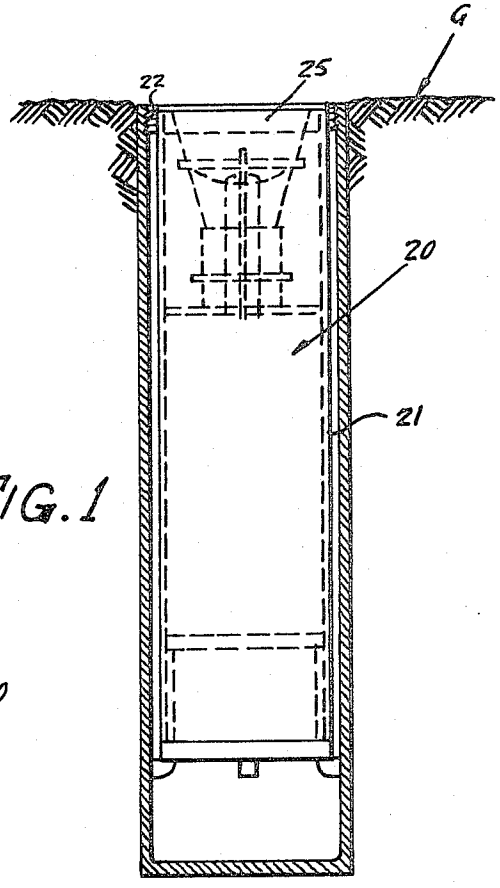


FIG. 1

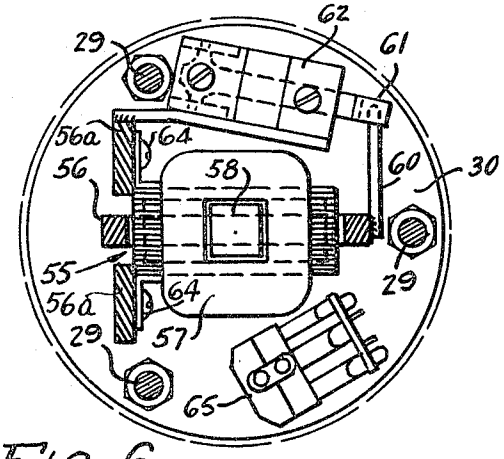


FIG. 6

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GOLF PUTTING CUP WITH RANDOM-DIRECTION BALL EJECTION MEANS

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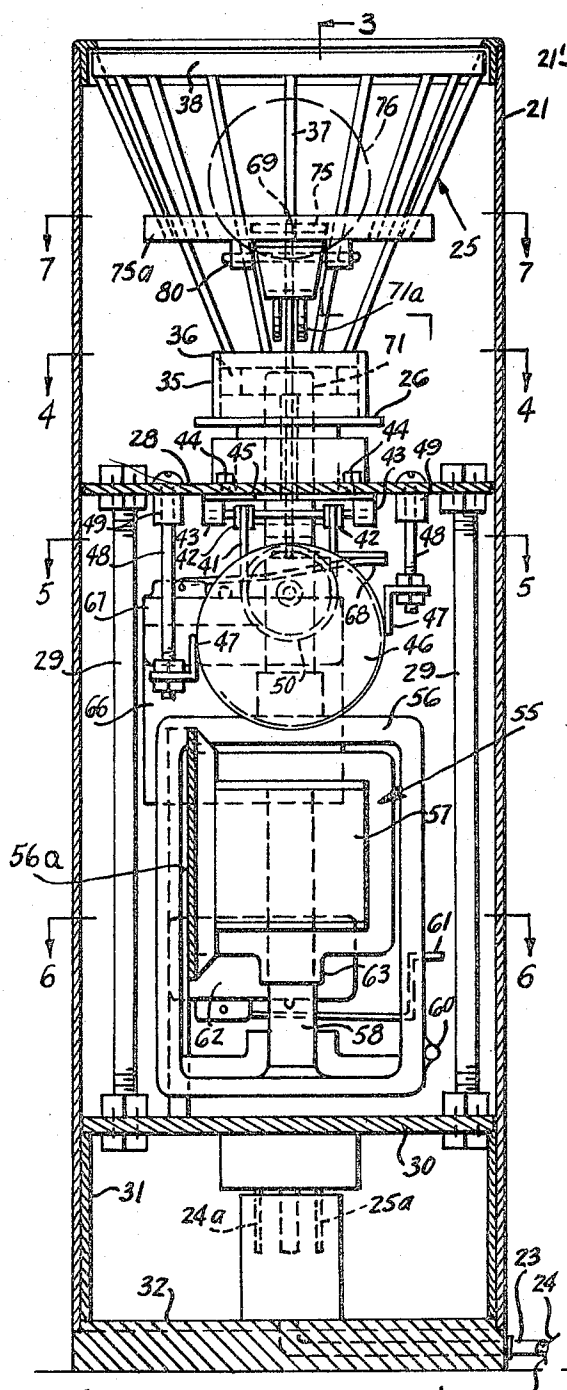


FIG. 2

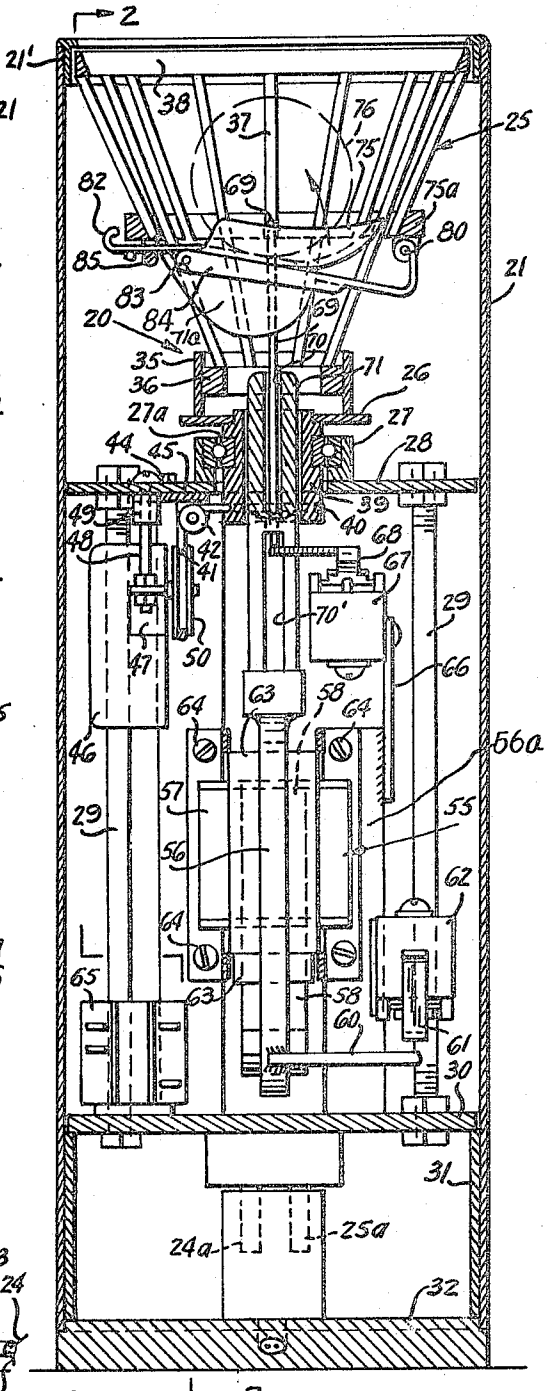


FIG. 3

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GOLF PUTTING CUP WITH RANDOM-DIRECTION BALL EJECTION MEANS

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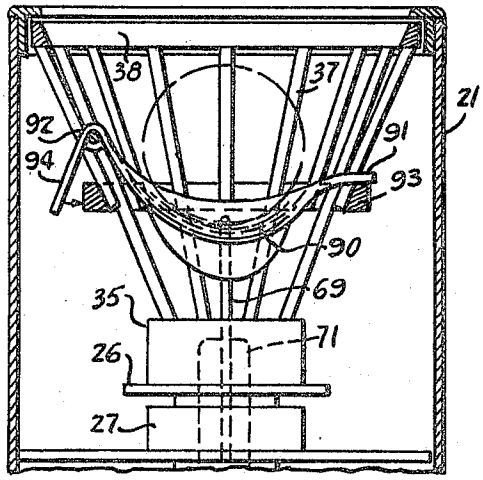


FIG. 9

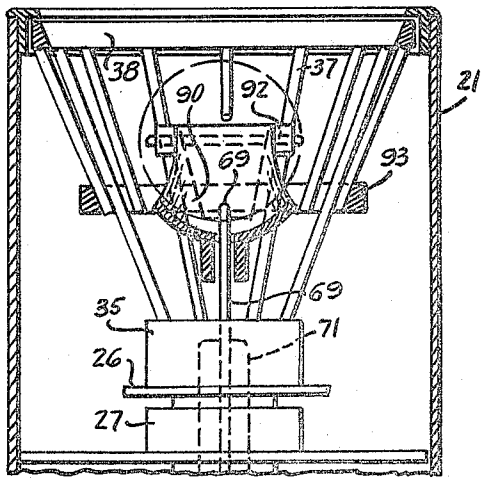


FIG. 10

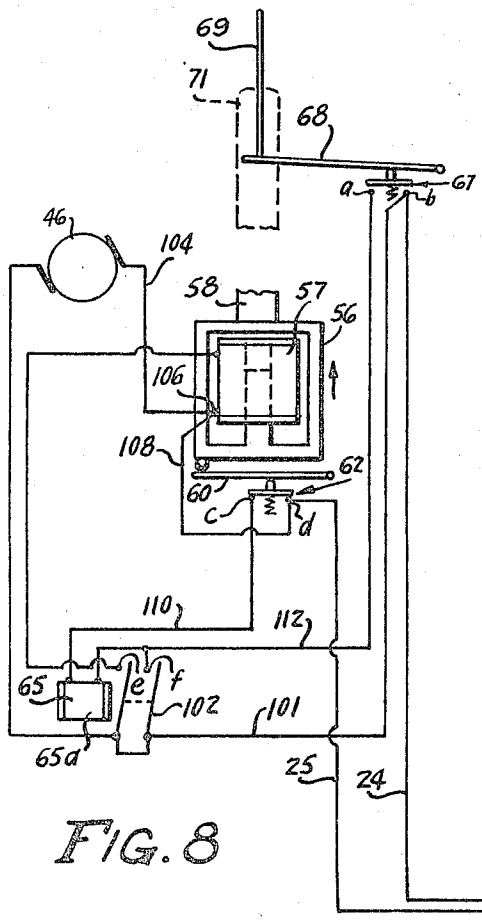


FIG. 8

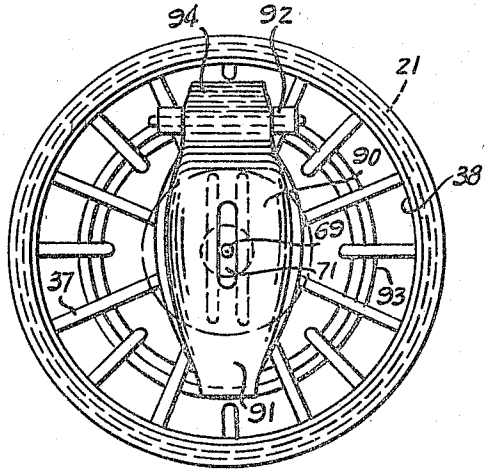


FIG. 11

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3,310,311

GOLF PUTTING CUP WITH RANDOM-DIRECTION BALL EJECTION MEANS

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Filed Mar. 6, 1964, Ser. No. 349,934
6 Claims. (Cl. 273—179)

This invention relates to improvements in a golf practice putting device and more particularly to a practice cup of the class described.

Reference is made to my copending application, Ser. No. 293,622, entitled, "Golf Practice Putting Device," filed July 9, 1963, now abandoned.

A primary object of this invention is the provision of an improved practice cup which is provided with actuated means for automatically ejecting a golf ball when dropped into the cup varying radial distances in random positions about the cup.

A further object of this invention is the provision of a device of this character provided with a rotating funnel-shaped depression and ejection so that the ball is ejected randomly in accordance with the rotary position of the ejection means to provide a variety of ground positions from which the balls may be reputted into a cup.

A still further object of this invention is the provision of a device of this character wherein the ball ejection means comprises a rotary basket means and solenoid actuated trip cradle means to arcuately eject the ball from the basket means.

Another object of the invention is the provision of such a device which is operated electrically, and which may be powered either by batteries or by a remote source of continuous electrical power.

Yet a further object of this invention is the provision of such a practice device adaptable to be used as a ball dispensing device for purposes of putting the balls into separate putting holes.

Another object of this invention is the provision of such a practice device which is adaptable and positioned to be used to eject balls randomly in accordance with the position of the golf ball cradle eccentric to provide a variety of positions from which the ball may be reputted into a cup.

Yet another object of the invention is the provision of means for capping the cup when the device is not positioned for use.

Still another object of the invention is the provision of a device of this character which is durable in construction, reliable and efficient in operation and inexpensive to manufacture, assemble, and utilize.

Other objects will be obvious and understood as the description of the invention proceeds and as shown in the accompanying drawings wherein there is disclosed preferred forms of this inventive concept.

In the drawings:

FIGURE 1 is a vertical sectional view through a practice hole showing one installed position of the device of this invention when used both for ball rejection and as a putt receiving means;

FIGURE 2 is a vertical sectional view of FIGURE 3 taken on lines 2—2 in the direction of the arrows;

FIGURE 3 is a vertical sectional view taken on lines 3—3 of FIGURE 2 in the direction of the arrows;

FIGURE 4 is a transverse sectional view of FIGURE 2 taken substantially on lines 4—4 in the direction of the arrows;

FIGURE 5 is a transverse cross-sectional view of the invention taken on lines 5—5 of FIGURE 2 in the direction of the arrows;

FIGURE 6 is a transverse cross-sectional view of FIGURE 2 taken substantially on lines 6—6 in the direction of the arrows;

FIGURE 7 is a transverse cross-sectional view of FIGURE 2 taken substantially along lines 7—7 in the direction of the arrows;

FIGURE 8 is a schematic electrical circuit diagram illustrating the electrical circuitry of the invention;

FIGURE 9 is an enlarged fragmentary vertical cross-sectional view through a modified form of the invention;

FIGURE 10 is a fragmentary vertical cross-sectional view taken at substantially 90 degrees with respect to FIGURE 9; and

FIGURE 11 is a plan view of FIGURE 10.

Similar reference characters refer to similar parts throughout the several views of the drawing.

Having reference now to the drawings in detail, the device of the instant invention is generally indicated at 20 and when in operating position serves to act as an explusion and putter means when inserted into a tubular receptacle 21 which may be positioned in a hole in the ground G, in substantially flush relation as in the normal cup on a conventional green of a golf course. The receptacle 21 is preferably of a waterproof material, such as metal or plastic, and is provided at its top with internal threads 22 which is adapted to receive a closure cap when the device 20 is removed therefrom. Of course, the invention alternatively may not be placed in the ground but used on the surface thereof as desired.

An electrical conduit means 23 containing wires 24 and 25 extends through bottom 32 of receptacle 21, and is sealed by gasket or other suitable means therein.

The device of FIGURE 2 is self contained and supporting and may be used on the top of the ground as a support during random ejection of golf balls, if desired.

FIGURES 1, 2, 3, 4, 5, 6, and 7 show that container means 21 structurally supports therein invention 20 comprising basket means 25, turntable means 26 mounted in bearing means 27 on a first support plate 28 supported by anchor bolts 29 connected to a second support plate means 30 supportably secured by upstanding tubular support means 31 secured to base means 32.

Turntable 26 has an upstanding apertured collar means 35 inside of which is affixed thereto support ring means 36 welded to radial basket support members 37 terminating in a top support ring means 38.

Turntable means 26 is welded or fixed in turn to an apertured support collar means 39 carrying the inner race 27*a* of bearing means 27.

Collar means 39 carries at its lower end belt pulley groove means 40 which contacts belt means 41 over idle pulley means 42 secured by bearing means 43 to support plate means 28 by screw means 44 and mount means 45.

Motor means 46 is supported by bracket means 47 secured to adjustable screw bolt means 48 which is secured in collar means 49 affixed to support plate means 28.

Pulley means 50 of motor means 46 is aligned with pulley means 42 and carries belt means 41 to energize turntable means 26 as motor means 46 turns turntable means 35 by collar and pulley means 39.

A solenoid assembly 55 is comprised of yoke 56, a solenoid 57 and a piston 58. The piston 58 is connected to yoke 56 which carries a push rod 71 together defining a plunger means which forms part of an article ejecting means, the piston 58 forming the core of the solenoid 57. The yoke 56 carries an offset arm 60 which contacts normally closed contact means *c* and *d* (see FIG. 8) of a microswitch 62. The piston 58 reciprocates in guide means 63 attached by bolts 64 to a support 56*a*, to move the plunger means between an inoperative position when the solenoid coil 57 is not energized and an

article ejecting position when the solenoid coil 57 is energized.

Support plate means 30 supports a relay means 65 as shown in conventional manner.

Yoke 56 supports by bracket 66 a second microswitch 67 having normally open contacts *a* and *b* (FIG. 8) which carries an extending resilient spring contact arm 68 which contacts an actuating member in the form of a pin rod 69 when extends through a slotted aperture 70 in the upper end portion of the push rod 71. Pin rod 69 extends upwardly through basket means 25 and an aperture 74 in an article supporting means defined by a cradle 75 secured to basket means 25, the pin rod contacting an article such as a golf ball 76 when the article is received by the cradle 75.

When solenoid 57 is energized the upper end of push rod 71 connected to piston 58 moves upwardly to strike a pair of depending ears 71*a* on the bottom portion of cradle 75. The cradle 75 includes an extending rod 82 which is pivoted at 83 to a lever 84. Lever 84 is in turn pivoted at 80 to a fixed ring 75*a* secured to the radial basket member 25, thus forming a dual pivot to provide a double pivotal action. The impact of push rod 71 against ears 71*a* thus tosses the ball 76 in cradle 75 radially outwardly at random upon the ground depending on the position of the same when solenoid 57 is energized. Push rod 71 may be of rubber or other suitable material, as desired.

For purposes of clarity, the wiring hook up to the motor 46, solenoid 55, microswitches 62 and 67 and relay means 65 of FIGURE 8 has been omitted in FIGURES 1, 2, and 3.

Energizing wires 24 and 25 are connected to terminal means 24*a* and 25*a* secured in an appropriate manner to support plate means 30, as best shown in FIGURES 2 and 3.

Lever means 82 before being actuated by extending solenoid plunger push rod means 71 rests on stop means 85 secured to ring means 75*a* conventionally secured by welding to radial basket members 37.

FIGURES 9, 10, and 11 show another modification of the invention in which the ball cradle means 90 is of a limited single pivotal action and is hinged by pin means 92 to a pair of basket members 37. Cradle means 90 extends in a downwardly extending lip portion 94 which contacts ring means 93 and limits the swing of cradle means 90 about pivot means 92. Cradle means 90 also terminates in an end means 91 which contacts ring means 93 before being actuated by push rod means 71 as best shown in FIGURES 9 and 10.

The modification of FIGURES 9, 10, and 11 gives the ball cradle a new and different mode of radial rejection operation for a golf ball as distinguished from the novel double action mode of radial operation of cradle 75 of FIGURES 1 through 7.

In FIGURE 8 terminal plug means 100 energizes lead 24 connected to contact *b* of microswitch means 67 which is further connected by lead 101 across switch 102 of relay means 65 to one side of motor means 46. The other side of motor means 46 is connected by lead means 104 to contact 106 of solenoid means 57 and further connected by lead means 108 to contact *d* of microswitch 62. Contact *d* is connected to lead 25. Terminal *c* of microswitch 62 is connected by lead 110 across the winding 65*a* of relay means 65 to lead means 112 to contact *a* of microswitch 67. The contacts *a* and *b* of microswitch 67 are normally open, and the contacts *c* and *d* of microswitch 62 are normally closed when there is no ball in basket 25. This being so, relay means 65 is not energized until microswitch 67 is closed. In other words, microswitch means 67 energizes solenoid means 55 through relay means 65 and microswitch means 62 de-energizes solenoid means through relay means 65.

Operation

FIGURE 8 discloses a wiring diagram showing how the different electrical components for operating this device are interconnected. This circuit is energized by a suitable source of electricity (not shown) interconnected to terminal plug means 100. The circuit of FIGURE 8 performs like functions for both modifications of the invention for FIGURES 1–7 and FIGURES 9, 10, and 11, respectively.

When a ball is putted or placed into basket means 25, ball means 76 strikes pin rod means 69 which through a spring arm means 68 closes the contacts *a* and *b* of microswitch means 67 to energize relay means 65 which in turn closes contacts *e* and *f* and energizes solenoid 55 which energizes push rod means 71 to move upwardly by solenoid piston means 58. When push rod means 71 strikes ball cradle means 75 it moves as a double action hinge means in the direction indicated by the arrow means of FIGURE 3 to eject golf ball means 76 out onto a ground position for a return practice putt. Relay means 65 energizes through its contacts *e* and *f* solenoid coil 57 which remains energized until plunger 58 connected to push rod means 71 reaches its top position at which time spring arm means 60 on plunger 58 opens the contacts *c* and *d* of microswitch means 62 which turns current off of solenoid means 55 to prevent further operation of solenoid means 55 without having a ball 76 in basket means 25 during which time the motor remains energized. In other words, microswitch 67 selectively actuates relay means 65 to energize solenoid means 55 and at the maximum height of travel of push rod means 71 arm 60 on plunger 58 of solenoid means 55 opens the contacts *c* and *d* of microswitch means 62 de-energizing solenoid means 55 until another golf ball 76 is putted into basket means 25 to strike pin rod means 69 and close contacts *a* and *b* of microswitch 67 to start the solenoid cycle all over for another rejected of golf ball means 76.

From the foregoing it will now be seen that there is herein provided an improved golf practice putting device which accomplishes all the objects of this invention, and others, including many advantages of great practical utility and commercial importance.

As many embodiments may be made of this inventive concept, and as many modifications may be made of the embodiments hereinbefore shown and described, it is to be understood that all matter herein is to be interpreted merely as illustrative, and not in a limiting sense.

I claim:

1. A golf practice cup comprising an open-topped tubular receptacle, a conical cup having a bottom opening disposed in said receptacle, a cylinder plunger movable into said opening, said plunger having a central bore, a pin rod extending through said bore into said cup, a normally open microswitch in said receptacle having a spring actuated contact arm, the lower end of said pin rod normally resting on said arm, an electric motor in said receptacle, a source of electric current for said motor, turntable means supporting said conical cup, means drivingly connecting said motor to said turntable means, a solenoid means in said receptacle connected to said source through means including said microswitch, a movable core for said solenoid means, a push rod connected to said movable core to move said plunger into said cup, and means permitting the impact of a ball falling into said cup to force said pin rod downwardly, actuate said microswitch means, energize said solenoid means, and move said plunger into said cup, and means responsive to the rotation of said turntable means and cup, and the movements of said plunger, whereby successive balls are ejected at angles which vary in a random manner.

2. The structure of claim 1 wherein said receptacle contains a relay means included in said means including a microswitch to selectively energize said solenoid means in response to movement of said pin rod.

3. The structure of claim 2 wherein said receptacle further contains a frame for said motor and said solenoid means, and a second microswitch adapted by travel of said push rod to de-energize said relay means and de-energize said solenoid means.

4. The structure of claim 3 wherein said normally open microswitch is offset relative to the longitudinal axis of said solenoid means, said push rod being vertically slotted to receive said contact arm and adapted to reciprocably receive said pin rod, said pin rod engaging said arm to close said normally open microswitch means to selectively energize said relay means when a ball falls into said cup.

5. The structure of claim 4 wherein said responsive means comprises a hinged cradle means in said conical cup for receipt of a golf ball therein, said cradle means being operated by the impact of said plunger to expel a golf ball in an arcuate trajectory from said receptacle.

6. The structure of claim 5 wherein said second microswitch means has normally closed contacts broken by the upward travel of said push rod to open said relay means to de-energize said solenoid means.

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