Nov. 26, 1968 R. A. STEARNS 3,413,005

ZONED LIQUID GOLFING TARGET

Filed July 14, 1966 2 Sheets-Sheet 1

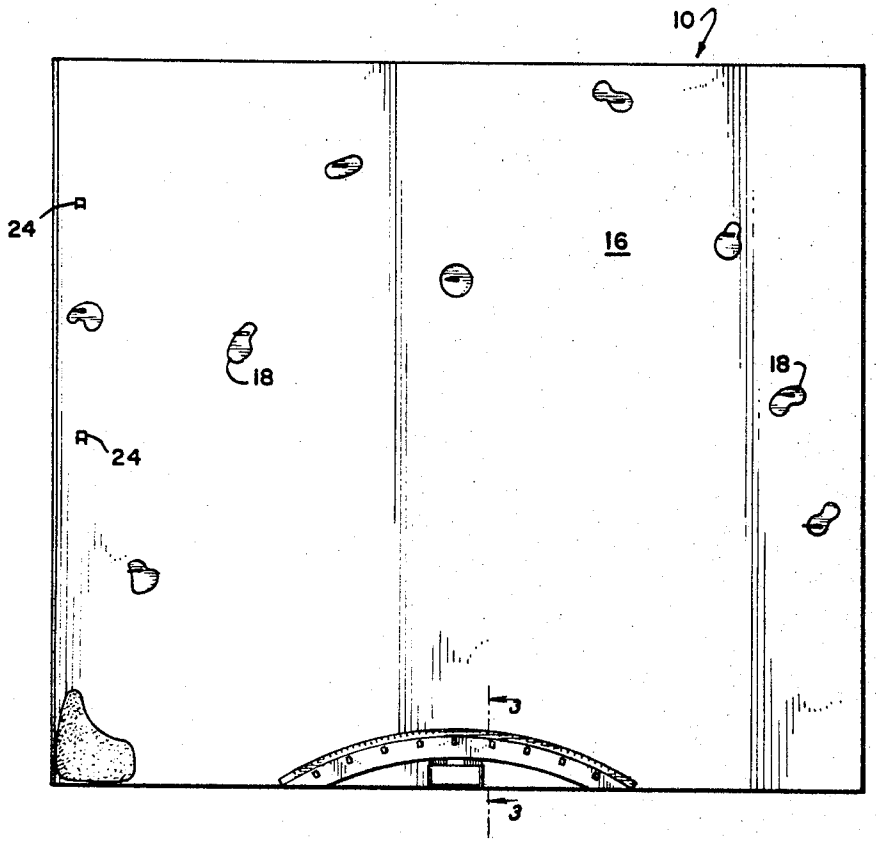

Fig. 1

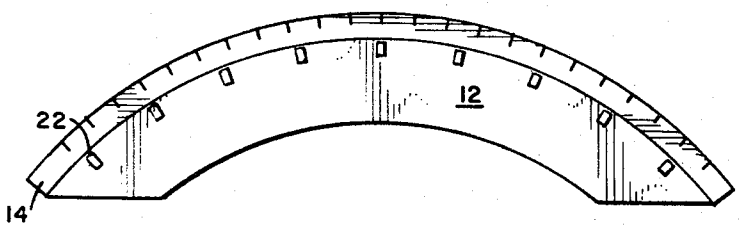

Fig. 2

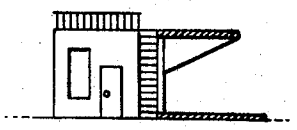

Fig. 3

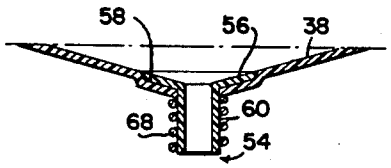

Fig. 10

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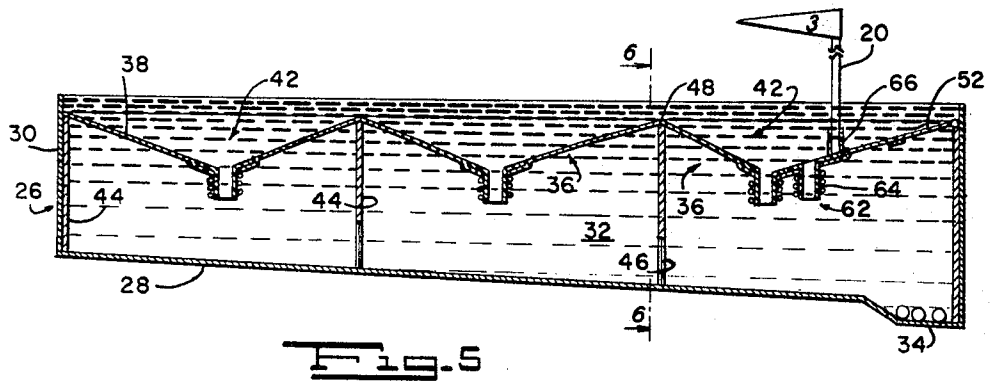

Fig. 5

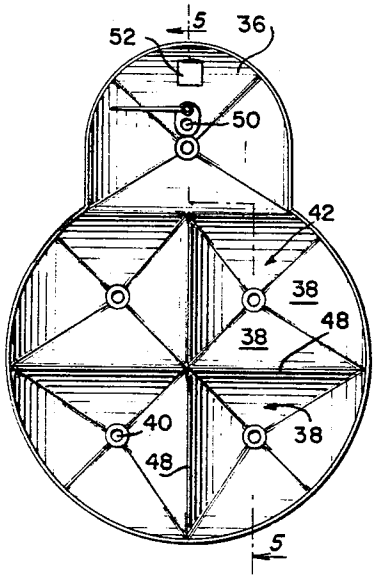

Fig. 4

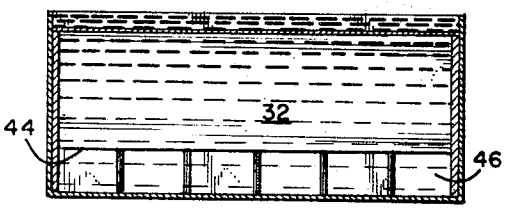

Fig. 6

Fig. 7

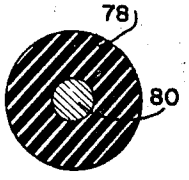

Fig. 8

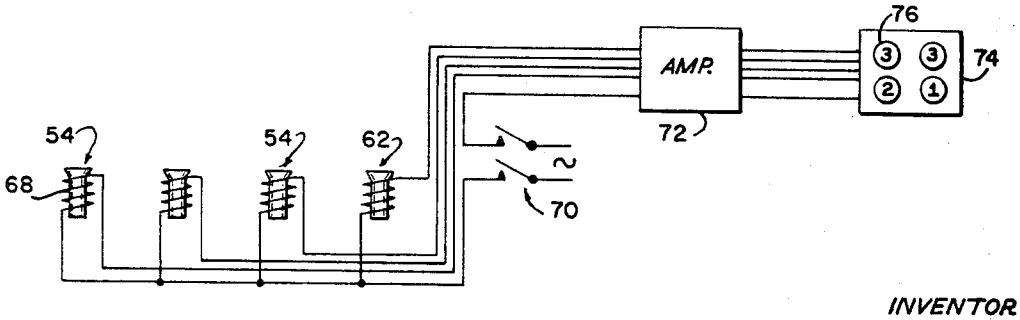

Fig. 9

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ZONED LIQUID GOLFING TARGET

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ABSTRACT OF THE DISCLOSURE

A liquid golf target simulating a conventional golf green and including a liquid containing receptacle associated with scoring means for indicating the proximity of a golf shot to the flag or pin position on the green.

Although some golf practice ranges in present use provide conventional greens as targets for a number of players driving, pitching or chipping from a tee area, the many disadvantages inherent in such practice ranges have precluded their widespread acceptance. Among the disadvantages of this type practice range from the standpoint of the range operator are the substantial cost of constructing and maintaining a conventional green, the necessity of periodically stopping play, accompanied by an obvious loss of income, to clear the green area of golf balls and the necessity for maintaining additional employees to perform these functions.

Although the use of conventional greens on practice ranges do provide a target area so that players may gauge the accuracy as well as the distance of their shots, they fall far short of providing player satisfaction equivalent to that present on a regulation golf course where a player is approaching a green which is relatively clear of other balls and where, by walking up to the green, the player may ascertain the precise lie of his ball relative to the pin.

The high cost of maintaining conventional practice greens and player dissatisfaction with shooting onto a green covered with golf balls which makes its virtually impossible to gauge the accuracy of a shot from the tee area has contributed greatly to the widespread usage of driving ranges which merely allow one to estimate the distance of a drive.

The primary purpose of the invention is to provide a liquid golf target, simulating a conventional green, for use in a full shot golf game which overcomes the foregoing disadvantages and provides the stimulus of a highly competitive game rather than a mere practice device.

Essentially the invention involves the substitution of a liquid filled receptacle for a conventional practice green, in which a plurality of sensing means are positioned below the liquid surface to activate a scoring device which will apprise a player of the precise lie of his ball relative to the pin. Additionally, the sensing means employed are sensitive to a particular type of golf ball and insensitive to another type ball thus permitting selective recording of desired ones of a plurality of golf balls driven onto the liquid green for a purpose which will subsequently become apparent.

One of the purposes in using a liquid green is to provide a golf target having characteristics approaching those of a conventional green. Thus, a fast rolling shot approaching the liquid green will continue to skim across the liquid surface in a manner analogous to a conventional green. Similarly, a golf ball approaching the liquid green at a low trajectory will have a tendency to skip across the surface while one approaching at a high trajectory will have more of a tendency to sink immediately, somewhat after the manner of a ball stopping quickly on a conventional green under the influence of back spin. Utilizing these known characteristics of a projectile approaching a liquid surface, it becomes possible to gauge a golf shot

to approach a pin positioned on the liquid green in a manner analogous to a conventional green. As soon as the ball's kinetic energy is dissipated sufficiently, the ball sinks below the liquid surface leaving a clear green.

Liquid greens, themselves, are not new having been suggested in U.S. Patents 2,455,806 and 2,482,210. These prior art devices merely rely upon the "splash" of a ball striking the liquid to indicate the accuracy of a shot and make no provision for taking advantage of the ability of a liquid surface to support a ball for movement thereacross or in indicating differing degrees of proximity to the pin. Thus, in the prior art games involving liquid greens, a "splash" within the pool whether it be at the edge of the green or at the pin, provides the same "splash" signal which two relative "splash" positions would normally be indistinguishable from the tee area. Additionally, even if the relative positions of the "splashes" could be accurately judged, such a device has relatively little value in competitive golf for it gives no indication of where the ball will ultimately come to lie. A low flying or rolling ball may well strike the liquid, give a "splash" signal, and skip or skim across the surface to continue far beyond the green while a ball making a rolling approach to the green may stop just short of the green but lie much closer to the pin than a ball which "splashed" and continued on across the green.

The present invention overcomes these deficiencies in known liquid greens and makes possible a competitive full shot golf game which may be accurately scored on the basis of where the ball ultimately comes to lie in the green area.

The attainment of the foregoing and other advantages are made possible by this invention which provides a plurality of bones beneath the surface of a liquid green at varying distances from the pin which zones have sensing means associated therewith to activate a scoring device. The zones and sensing means are so constructed that no score is registered until the ball has come to rest, or becomes trapped due to the dissipation of its kinetic energy in the direction of flight, within a particular zone.

The invention further provides a sensing means for the liquid green that will be selective to only one type of golf ball while permitting other balls to pass through the zones without activating the scoring device. This is particularly advantageous where the game made possible by this invention is to be laid out on a conventional driving range since it will permit simultaneous usage of the driving range.

Additional objects and advantages will become apparent from the ensuing description taken in conjunction with the drawings wherein:

FIG. 1 is a plan view of a golf driving area including liquid greens;

FIG. 2 is an enlarged plan view of the double deck tee line;

FIG. 3 is a sectional view taken on line 3—3 of FIG. 1, with the pro shop shown in elevation;

FIG. 4 is an enlarged plan view of a liquid green;

FIG. 5 is a sectional view taken on the line 5—5 of FIG. 4;

FIG. 6 is a sectional view taken on the line 6—6 of FIG. 5;

FIG. 7 is a cross sectional view of a golf ball having a rubber center;

FIG. 8 is a cross sectional view of a golf ball having a steel center;

FIG. 9 is a schematic diagram of the electrical circuitry involved in the sensing and scoring mechanism; and

FIG. 10 is an enlarged sectional view illustrating the lower portion of a catch basket.

An aqua golf course combined with a conventional driving range and practice putting green is illustrated generally at **10**. A double deck tee line including upper and lower decks **12**, **14** faces the range area **16**. A plurality of liquid greens **18**, in this instance nine, having flags or pins **20** supported thereon are variously positioned over range area **16**. Nine individual tee areas **22** are spaced along upper deck **12** forming the tee line for playing aqua golf simultaneously with the use of range area **16** as a conventional driving range by players teeing from tee positions along lower deck **14**. Range markers for use in connection with the lower tee line are indicated at **24**.

Each liquid green **18** includes an open topped liquid receptacle **26** having bottom and side walls **28** and **30**. Receptacles **26** are filled with a liquid **32**, such as water, to which has been added a bluish-green or aqua dye so that the color of the liquid surface will more nearly resemble a conventional green. Receptacles **26** are adapted to be positioned within excavations in range area **16** so that the uppermost edges of side walls **30** lie generally in a horizontal plane and are substantially flush with the surrounding range surface. Bottom wall **28** of each receptacle **26** is inclined downwardly to merge, at its lowermost portion, with a depressed ball retrieval area **34**.

An intermediate wall in receptacle **26** is formed by a plurality of catch baskets or compartments **36** having sloping surfaces **38**, merging at their lowermost portions with ball outlet openings **40**, defining ball receiving pockets or zones **42**. Catch baskets **36** are supported above bottom wall **28** by vertical supports **44**. Supports **44** which are spaced from side walls **30** have relatively large openings **46** in their lower portions to permit golf balls to gravitate past supports **44** toward ball retrieval area **34**. Adjacent catch baskets **36** are joined by the intersections of their adjacent upwardly convergent sloping surfaces **38**, as along transition surfaces **48**. Transition surfaces **48** define zonal separations between zones or pockets **42** which are incapable of stably supporting a golf ball to insure that any ball which sinks below the liquids surface will find its way into one of the catch baskets and gravitate to a ball outlet opening. Similarly, sloping surfaces **38** adjacent the sides of receptacles **26** are downwardly and inwardly inclined from the side walls.

One of the catch baskets in each liquid green is provided with one additional ball outlet opening **50** in one of its sloping surfaces **38** which may be substantially smaller than openings **40**. The catch basket immediately overlying ball retrieval area **34** may be provided with a hinged door **52** permitting access to the ball retrieval area.

Each ball outlet opening **40** receives a generally funnel shaped plastic cup member **54** whose flaring sides **56** are received in small depressions **58** in sloping surfaces **38** to provide a smooth continuation of the sloping surfaces to open ended cylindrical portion **60** of plastic member **54**. Ball outlet opening **50** is similarly fitted with a plastic member **62** having a cylindrical portion **64** whose internal diameter is equal to that of a regulation golf cup. Flag **20** has its flagstaff supported immediately adjacent ball outlet opening **50** in any desired manner, such as by a cup shaped element **66** provided on the flaring portion of plastic member **62**.

All of the cylindrical portions **60** and **64** are surrounded by sensing means in the form of coils **68** connected in circuit with a suitable voltage source, switch means **70**, amplifier **72** an annunciator or scoreboard **74**, all of conventional construction as illustrated schematically in FIG. 9. A scoreboard **74** for each of the liquid greens may be conveniently located on upper tee line **12** or adjacent the liquid green as desired.

With continued reference to FIG. 9, it will be apparent that when switch **70** is closed each of the sensing coils **68** is continuously connected with an individual one

of the scoreboard indicators **76**. Passage of a golf ball **78** having a steel center **80**, such as shown in FIG. 8, through a plastic member **54** or **62** will modify the field established by the respective coil **68** to produce a pulse which is amplified to energize an appropriate one of the indicators **76**.

Inasmuch as aqua golf will normally be played simultaneously with the use of range area **16** as a conventional driving range it is apparent that those golf balls driven into the liquid greens by persons not playing aqua golf must not be permitted to activate the sensing and scoring devices. For this purpose, those players using range area **16** as a driving range are provided with rubber centered golf balls, such as shown in FIG. 7, which produce no modification in the field established by coil **68** upon passage through plastic members **54**, **62**.

Although any desired system of scoring and rules of play may be established for aqua golf, the liquid green **18** herein illustrated includes four catch baskets **36** whose respective sensing coils are connected to indicators bearing the numeral **3** on scoreboard **74** which indicates a par for the particular hole being played. Sensing coil **68** associated with plastic member **54** in the catch basket supporting flag **20** is connected to the indicator bearing numeral **2** on the scoreboard to indicate a birdie and coil **68** associated with plastic member **62** is connected to score a hole-in-one. Failure to activate any of the sensing means results in a bogie for the hole being played. A player may hit one ball from each of the tees **22** to the respective liquid green to constitute a round of nine holes or two balls may be hit to each green for an eighteen hole round.

Although only four sensing coils and indicators have been shown schematically in FIG. **9** to correspond to those shown in FIG. 5, it will be apparent that there will be one sensing coil associated with the lowermost ball outlet opening in each catch basket and one additional coil associated with the ball outlet opening **50** which corresponds to a hole-in-one.

As will be apparent from the foregoing, a golf ball whose kinetic energy in the direction of flight is dissipated within the confines of receptacle **26** will sink below the liquid surface. Due to the fact that the transition surfaces between the sloping surfaces of adjacent catch baskets are incapable of stably supporting a golf ball, the ball which has sunk below the liquid surface will gravitate to one of the ball outlet openings and pass therethrough within the field established by the respective coil **68**. Passage of a golf ball containing structural components which will modify the field established by a coil **68**, such as the steel centered ball shown in FIG. 8, through a ball outlet opening will activate an appropriate one of scoring indicators **76** to apprise the player of his score for the hole which he may then record on a standard golf score card. In the event that the ball does not come to rest in the liquid green, the scoreboard will not be activated and the player records a bogie 4 on his score card. At the conclusion of a round of nine or eighteen holes, the score cards are tallied to determine the winner as in a conventional golf game.

From the foregoing it will be appreciated that the liquid golf target of this invention makes possible the playing of a highly competitive golf game which makes use of existing driving range facilities, involves a minimum of upkeep and provides a clear green at all times.

I claim:

1. A golf target simulating a golfing green comprising, an open topped receptacle, a plurality of separate compartments within said receptacle within which a golf ball may land, liquid means within each of said compartments for absorbing impact energy of a golf ball landing in said target after being struck by a golfer, means for sensing the movement of a golf ball through the liquid means in each of said compartments, and means responsive to said sensing means for indicating to a golfer re-

mote from said target the compartment within which the impact energy of a golf ball has become dissipated.

2. A golf target as defined in claim 1 wherein said compartments are submerged in the liquid means contained in said receptacle.

3. A golf target as defined in claim 1 wherein said compartments include ball outlet openings at their lowermost portions.

4. A golf target as defined in claim 3 wherein said sensing means include electrically conductive coils connected in circuit with a voltage source and said indicating means.

5. A golf target as defined in claim 1 wherein said sensing means are contained within said receptacle and include means for sensing said movement of said golf ball only if said golf ball contains metal.

6. A golf target simulating a golfing green comprising, an open topped liquid containing receptacle including a bottom wall, a generally horizontally disposed intermediate wall supported within said receptacle intermediate said bottom wall and the liquid level in said receptacle, said intermediate wall including a plurality of pockets defined by inclined surfaces merging with ball outlet openings at their lowermost portions and with the inclined surfaces of adjacent pockets at their uppermost portions along transition surfaces incapable of stably supporting a golf ball, means adjacent each of said openings for sensing the passage of a golf ball therethrough, and indicating means responsive to each of said sensing means for

indicating to a golfer remote from said receptacle the passage of a golf ball through one of said ball outlet openings.

A golf target as defined in claim 6 including electrically insulated sleeve portions extending downwardly from each of said ball outlet openings, said sensing means including an electrically conductive coil surrounding each of said sleeve portions and connected in circuit with a voltage source and said indicating means.

8. A golf target as defined in claim 6 wherein one of said pockets includes a second ball outlet opening formed in the inclined surface thereof above the level of said first mentioned ball outlet openings, means adjacent said second opening for sensing the passage of a golf ball therethrough, means responsive to said last named means for indicating to a golfer remote from said receptacle the passage of a golf ball through said second opening.

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