United States Patent [19]

Heffley, Jr.

[11] **3,897,947**

[45] **Aug. 5, 1975**

[54] **GAME APPARATUS**

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[22] Filed: **Oct. 11, 1973**

[21] Appl. No.: **405,575**

[52] **U.S. Cl.** ..... **273/35 B**; 273/176 A; 273/182 R; 273/185 R; 273/195 R; 273/102.2 S

[51] **Int. Cl.** **A63b 69/36**

[58] **Field of Search** 273/176, 184, 185, 182, 273/35, 195

[56] **References Cited**

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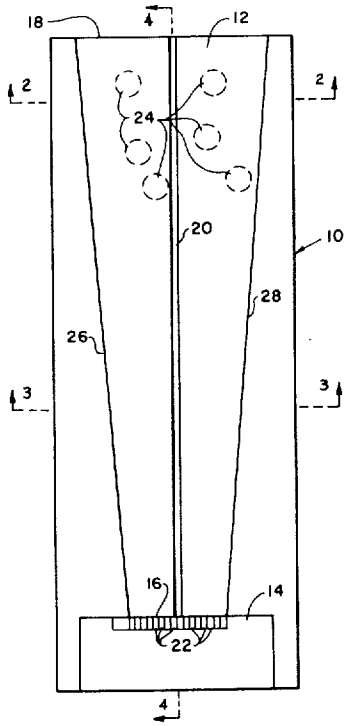
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Primary Examiner—George J. Marlo

[57] **ABSTRACT**

A game apparatus comprising a target with a plurality of target zones each of which is operatively connected to an impact responsive signal generator, a signal selecting circuit and a scoreboard by which objects impacting upon the target produce signals above an adjustable level that will register on the scoreboard. In a specific embodiment, the target may take the form of a simulated golf green and is combined with an all-weather golf driving range including a driving booth in which the environment is controlled, a fairway designed such that snow removal and ball retrieval are enhanced, and means for registering the longer drives.

15 Claims, 16 Drawing Figures



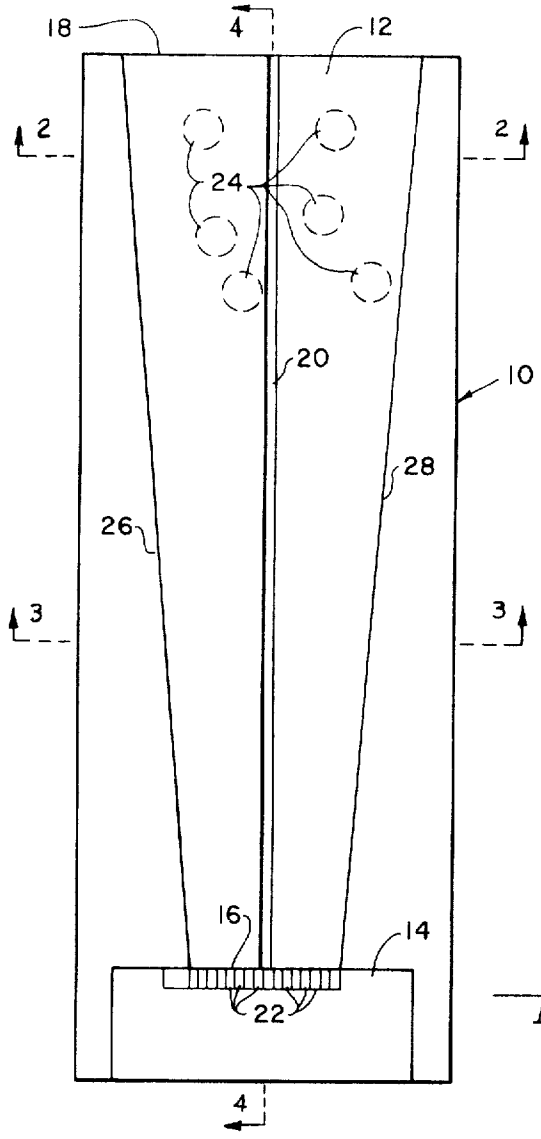


FIG-1

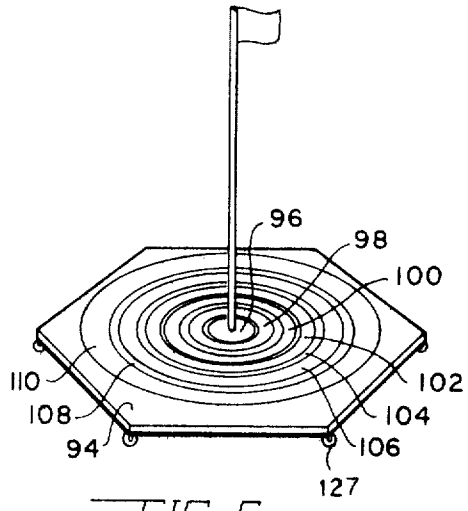


FIG-6

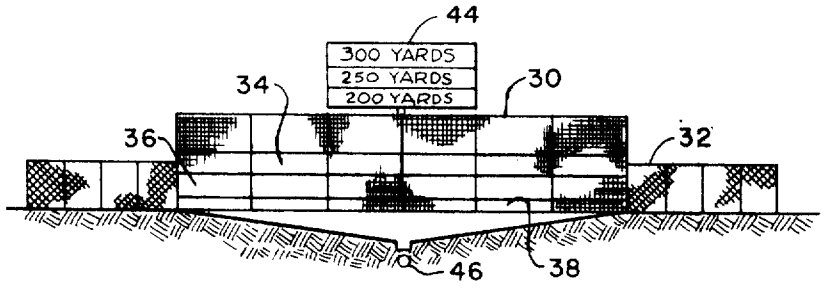


FIG-2

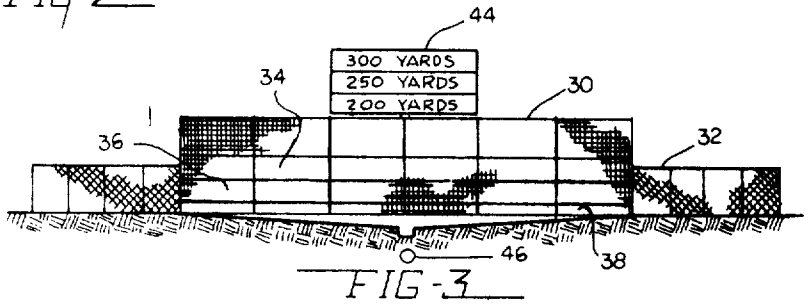


FIG-3

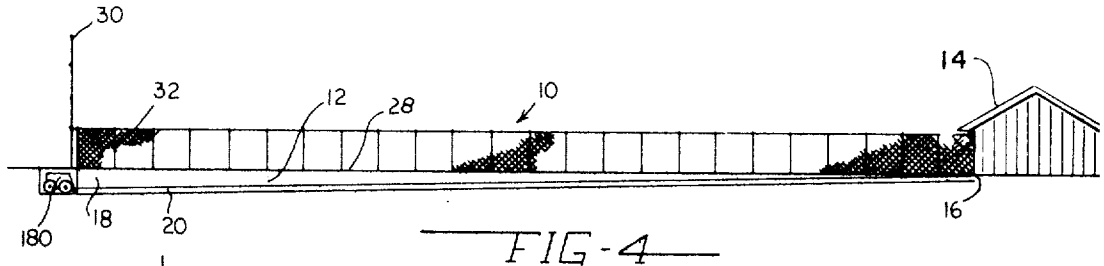


FIG-4

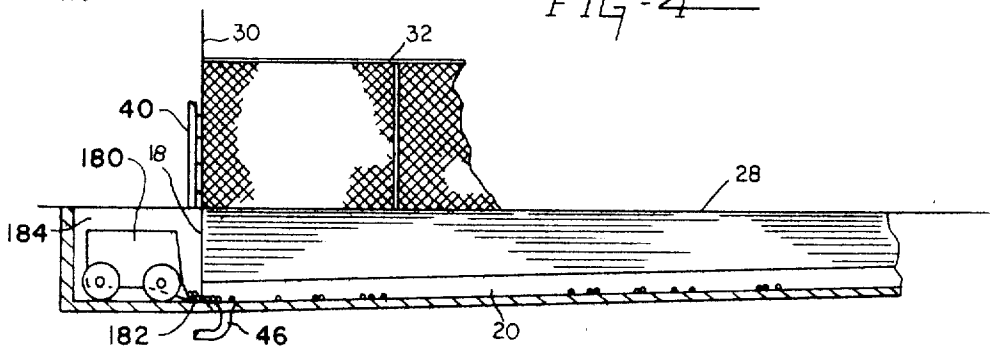


FIG-5

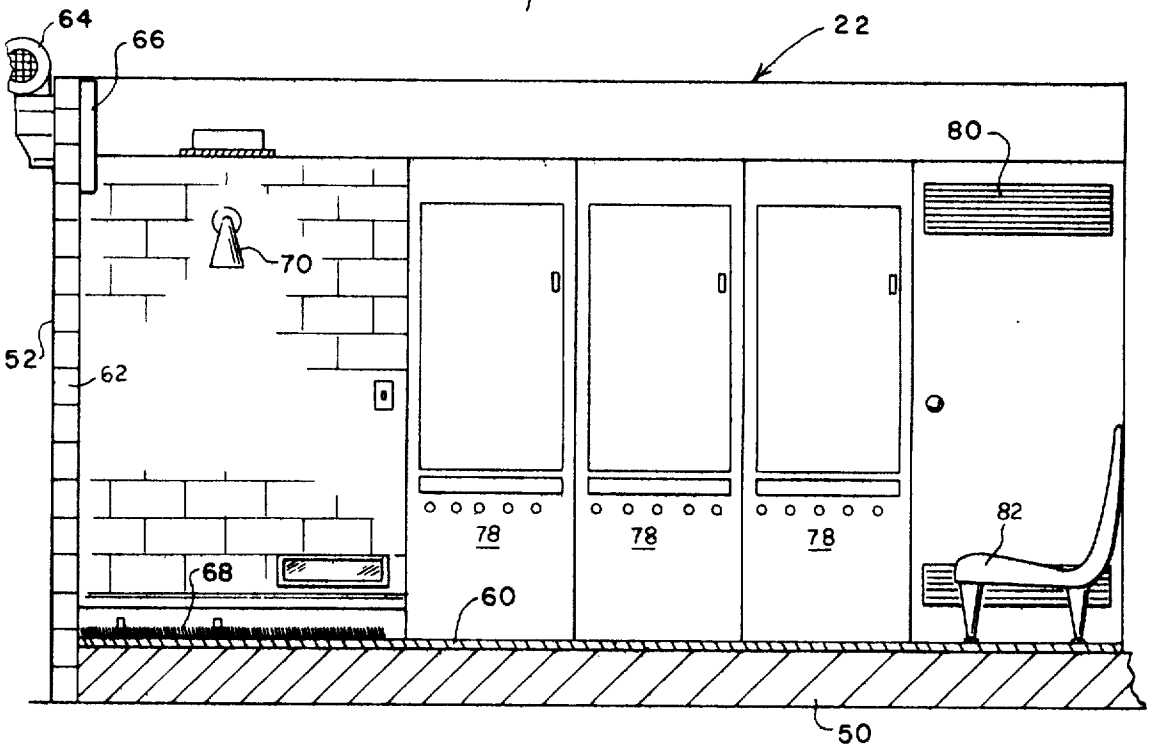


FIG-10

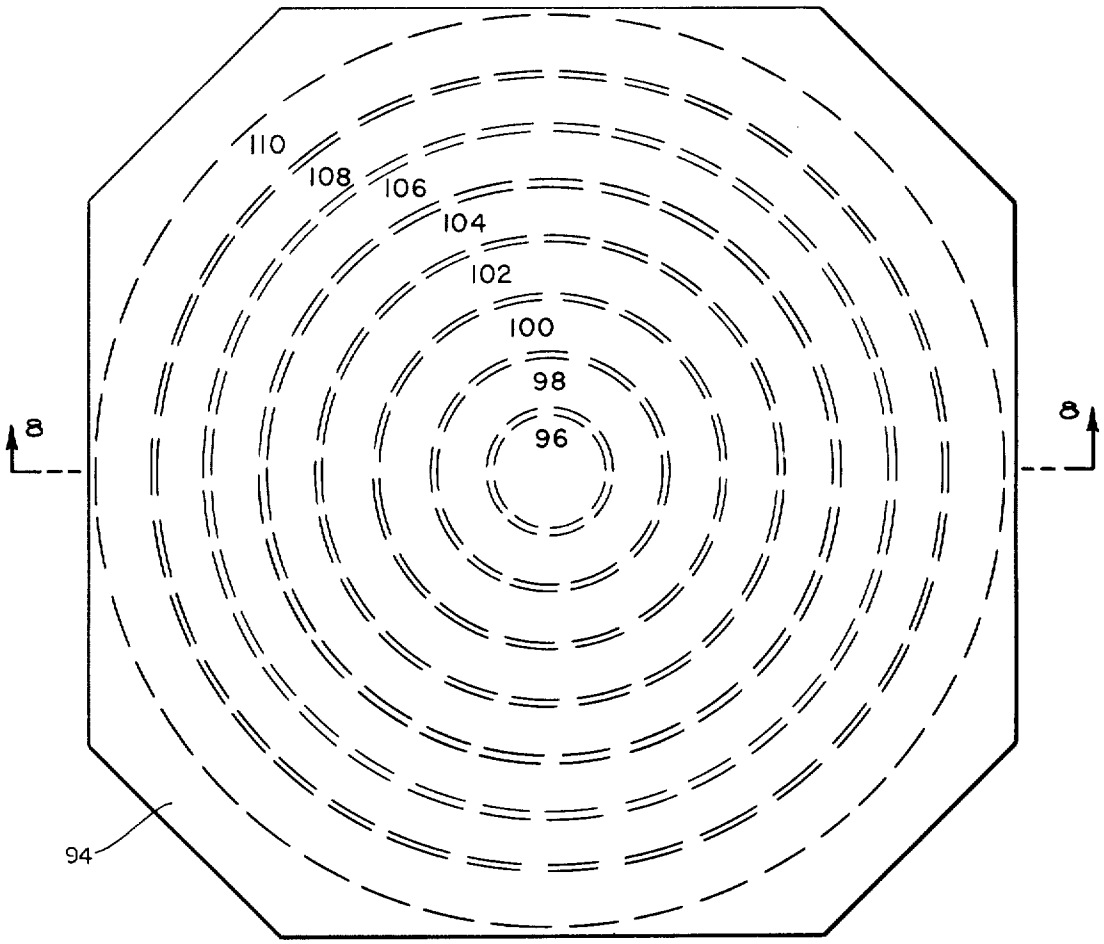


FIG-7

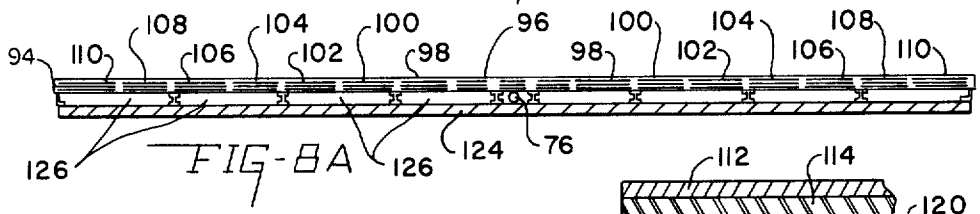


FIG-8A

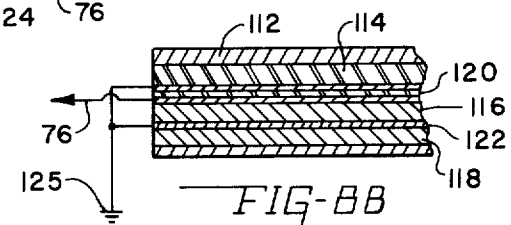


FIG-8B

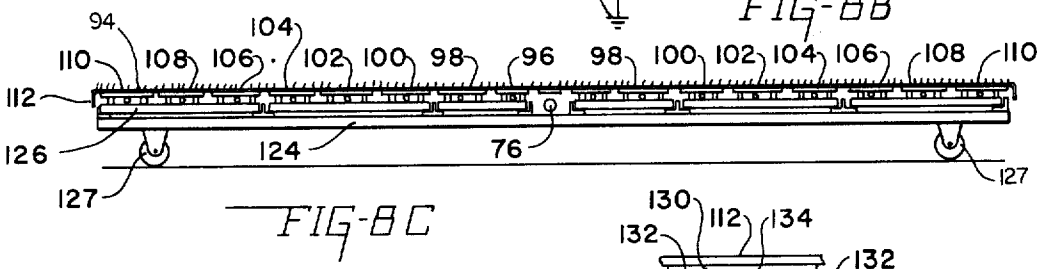


FIG-8C

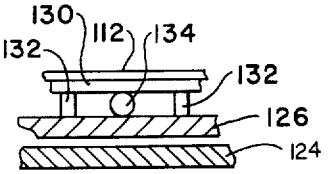


FIG-8D

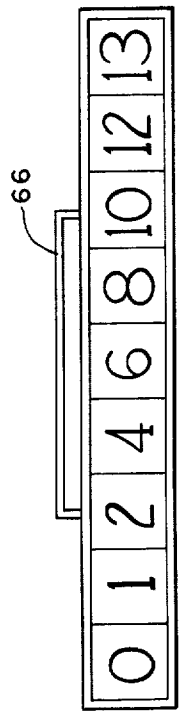

0
1
2
4
6
8
10
12
13
66

FIG-11

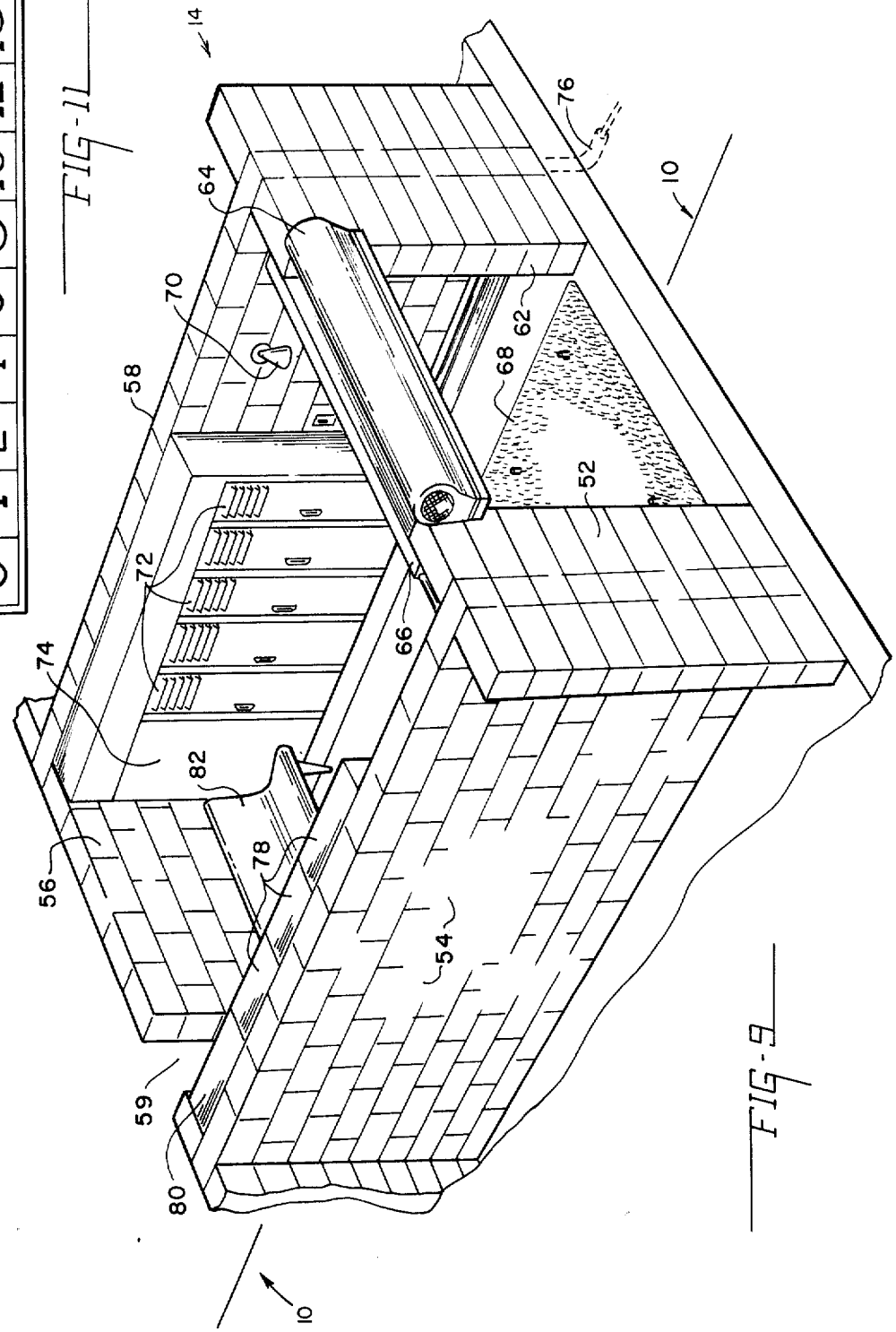

14
76
10
64
70
62
68
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52
72
66
74
82
56
78
54
59
80
10

FIG-9

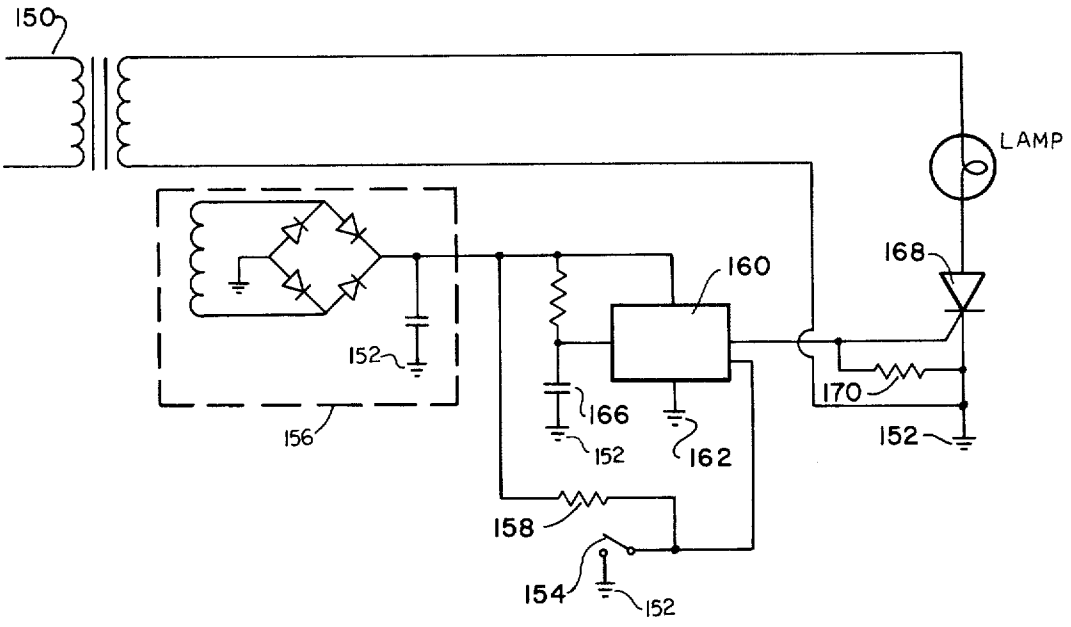

150
LAMP
168
160
152
166
152
162
170
152
156
158
154
152

FIG-12

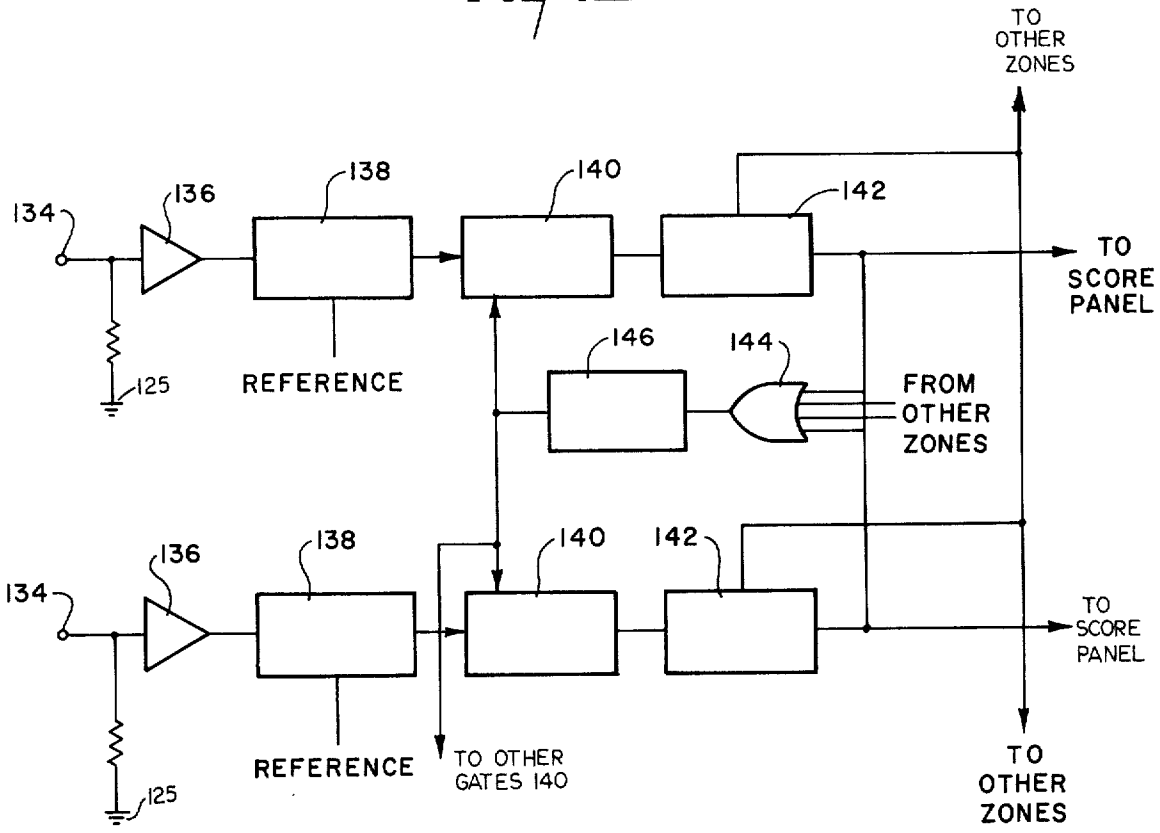

TO OTHER ZONES
134
136
138
140
142
TO SCORE PANEL
125
REFERENCE
146
144
FROM OTHER ZONES
134
136
138
140
142
TO SCORE PANEL
125
REFERENCE
TO OTHER GATES 140
TO OTHER ZONES

FIG-13

GAME APPARATUS

BACKGROUND OF THE INVENTION

1. Field of the Invention

The present invention relates generally to game apparatus and targets, and more particularly, to targets in combination with electronic circuitry and a scoreboard by which impacts on the target will register on the scoreboards, and still more particularly, to such targets, circuitry, and scoreboards in combination with an all-weather golf driving range, a fairway enhancing snow removal and ball retrieval, driving booths in which the environment is controlled, and means for registering the longer drives.

2. Description of the Prior Art

Several driving range structures have heretofore been proposed which have devices for the collection of the golf balls and/or the return thereof to the tee area. These structures have included nets, sloping surfaces, and the like. Additionally, enclosed tee areas provided with heaters have been used in conjunction with driving ranges. Still, it is desirable to provide an all-weather driving range construction having improved means by which the balls are collected and returned to the tee area, means for removing from the fairway surface snow, ice and the like, and an improved driving booth in which the environment can be controlled in both summer and winter. It is highly desirable such a structure be relatively simple in construction and economical to build.

There have also been a variety of targets proposed. Some of these targets are useful as driving range golf greens. However, none of these targets are combined with a scoreboard and impact responsive devices by which the scoreboard registers a score in response to an impact on the target. Such targets when used as golf greens are susceptible to a plurality of impacts by a single ball resulting from the ball bouncing on the green. It is therefore highly desirable to provide not only a target having impact responsive devices and means for driving a scoreboard, but such a target equipped with signal selecting circuitry whereby only one signal is generated by any one ball impacting on the target and the remaining bounces of the ball on the green are not recorded on the scoreboard.

It is further highly desirable to provide a driving range structure incorporating the greens above-described and an electronic golf game by which competing players may accumulate a score. Such would enhance the interest in golf.

SUMMARY OF THE INVENTION

It is therefore a primary object of the invention to provide an improved driving range structure.

It is another primary object of the invention to provide an improved target and scoreboard combination.

Another primary object of this invention is to provide an improved driving range structure having tees in a controlled environment.

It is another object to provide an improved scoreboard and target combination, the target of which is provided with impact-responsive signal generators and a signal selector circuit whereby only the signal in response to impacts of a predetermined magnitude are registered on the scoreboard.

Another object is to provide an improved target which is especially desirable as a golf green.

It is yet another object of this invention to provide an improved driving range structure which includes means by which snow and ice removal from the fairway thereof and ball collection and return thereof to the tee area are enhanced.

It is another object of this invention to provide registration of the distance a ball is driven from the tee.

It is still further an object of the invention to provide an improved driving range having one or more target greens connected to a scoreboard which registers golf balls impacting upon the green and accumulates the score of a person using the driving range.

BRIEF DESCRIPTION OF THE DRAWINGS

The above-mentioned and other features and objects of this invention and the manner of attaining them will become more apparent and the invention itself will be best understood by reference to the following description of an embodiment of the invention taken in conjunction with the accompanying drawings, wherein:

FIG. 1 is a top plan view of a driving range complex incorporating the invention;

FIG. 2 is a sectional view of the driving range complex illustrated in FIG. 1 taken substantially along the section line 2—2 of FIG. 1;

FIG. 3 is a sectional view of the driving range complex illustrated in FIGS. 1 and 2 taken substantially along the section line 3—3 of FIG. 1;

FIG. 4 is a sectional view of the driving range complex illustrated in FIGS. 1 through 3 taken substantially along section line 4—4 of FIG. 1;

FIG. 5 is a fragmentary and enlarged sectional view of a portion of the driving range complex of the invention as illustrated in FIG. 4 particularly showing the mechanism by which the golf balls are returned to the tee area;

FIG. 6 is a perspective view of the target green of the invention;

FIG. 7 is a top plan view of the target green of the invention;

FIG. 8A is a sectional view of the target green illustrated in FIGS. 6 and 7 taken substantially along the section line 8—8 of FIG. 7 and showing the structure of the target green illustrated in FIGS. 6 and 7;

FIG. 8B is an enlarged fragmentary sectional view of the structure shown in FIG. 8A suggesting an alternate construction of the target of the invention;

FIG. 8C is a sectional view like FIG. 8A showing another alternate construction of the target green of the invention;

FIG. 8D is a fragmentary enlarged view of the structure shown in FIG. 8C;

FIG. 9 is a perspective view showing one of the driving booths and the tee area of the driving range of the invention;

FIG. 10 is a fragmentary and sectional view of the driving booth illustrated in FIG. 9 taken substantially along the section line 10—10 of FIG. 9;

FIG. 11 is a plan view of the scoreboard which is mounted over the tee in the driving booth illustrated in FIGS. 9 and 10;

FIG. 12 is a schematic diagram of the electronics associated with the yardage indicator of the driving range of the invention; and

FIG. 13 is a schematic of the electronics associated with the target greens of the invention.

DESCRIPTION OF A SPECIFIC EMBODIMENT

Referring now to the drawings and more specifically to FIGS. 1 through 5 there is shown the improved driving range structure of the invention. The driving range structure 10 includes an elongated fairway 12 and a clubhouse 14. The fairway 12 is shown to have opposite ends 16 and 18 and a centrally located alley 20 extending between the opposite ends 16, 18 of the fairway 12. A plurality of individual driving booths 22 are positioned side by side so as to extend across the fairway 12 at end 16. In each of these booths there is positioned a golf tee; both the booths 22 and the tee will be described in more detail hereinafter.

Adjacent end 18 of the fairway 12 at various positions 24 (only some of the positions 24 are shown) is at least one target green. The target greens of the invention will also be described in more detail hereinafter.

The fairway 12 extends from the driving booths 22 between the opposite ends 16, 18 and between spaced apart opposite longitudinal fairway boundaries 26 and 28. As shown in FIG. 1 the fairway 12 is wider at end 18 than at end 16 such that the fairway 12 tapers outwardly from the driving booths 22 linearly between the opposite straight longitudinal boundaries 26 and 28.

As is shown in FIGS. 2, 3, 4 and 5, end 18 is provided with a screen 30 and longitudinal boundaries 26, 28 are provided with screens 32. Screen 30 is approximately twice the height of screen 32 and has three independent sections 34, 36 and 38. Each of the sections 34, 36 and 38 extends horizontally across the end 18 and while supported one over the other by posts 40 as shown in FIG. 5, they are not connected to the adjacent sections. Each of the sections 34, 36 and 38 is connected to the posts 40 by a series of microswitches 154 (shown only in FIG. 12) which are normally open. Over screen 30 is mounted an electrically lighted yardage indicator 44. Each of the sections 34, 36 and 38 of the screen 30 is connected to the electronics shown in FIG. 12 and to the yardage indicator 44 in a manner so that a golf ball impacting on any one of the sections 34, 36 and 38 will appropriately light the yardage indicator 44. Impacts on section 38 will indicate 200 yards; impacts on section 36 will indicate 250 yards; and impacts on section 34 will indicate 300 yards. See FIGS. 2 and 3. The electronics shown in FIG. 12 will be described in detail hereinafter.

Also shown in FIGS. 2 and 3 is the configuration of fairway 12. Fairway 12 slopes downwardly from the opposite longitudinal boundaries 26, 28 toward the alley 20. In addition, the fairway 12 also slopes downwardly from end 16 toward end 18. The slope in both directions is sufficient to cause balls landing on the surface of the fairway 12 to roll toward the alley 20 and collect in the alley 20 adjacent end 18, as shown in FIG. 5. Adjacent end 18 at the low point of the alley 20 there is provided a drain through which moisture as from rain, melting of snow and ice on the fairway 12 is discharged.

Now referring to FIGS. 9 and 10, the tee areas and booths 22 of the invention will now be described in detail. It should be understood, however, that the driving range structure above-described is fully operable with conventional tees aligned in side by side fashion across the end 16 of the fairway 12.

Each of the booths 22 may be identical, thus, the description of one will suffice for all. Further, the booths 22 may be a part of a larger building such as the clubhouse 14 as shown in FIG. 1 or may be individual booths. Further, the booths may be temporary buildings such as a booth constructed on a mobile home or truck chassis or the like. By illustrating the booths in FIG. 9 as a fragmentary perspective view, it is to be understood that a plurality of booths in any event will be aligned in a side by side relationship so as to extend over the entire length of end 16 of the fairway 12 or over a portion thereof.

Booth 22 has a frame 50, upstanding walls 52, 54, 56 and 58, a roof (not shown) is supported by the walls of the booth so as to form an enclosure. Wall 56 has a doorway 59 therein to provide access to and from the booth. A suitable floor 60 is laid over the frame 50 and extends between the walls 52, 54, 56 and 58.

Wall 52 has an opening 62 therein. Opening 62 extends substantially between walls 54 and 58 and between the floor 60 and the roof. However, over the opening 62 on the exterior of wall 52 is mounted an air curtain 64. Air curtain 64 extends over the entire opening 62 and beyond the peripheral boundaries of opening 62 on the opposite sides thereof a small distance. Similarly positioned on the interior of wall 52 is a scoreboard 66. This scoreboard is illustrated in FIG. 11 and will be described hereinafter in more detail.

Adjacent to opening 62, an artificial tee 68 is positioned on the floor 60. Tee 68 again extends substantially across the entire opening 62 and rearwardly thereof a distance suitable to allow both right-handed golfers and left-handed golfers to properly address a golf ball positioned on the tee at a variety of locations. Lamps 70 are positioned on each of the walls 54 and 58 so as to illuminate the tee 68 at all times.

Rearwardly of the tee area adjacent wall 58 are positioned a plurality of lockers 72 and a storage area 74 in which is located the electronics associated with the scoreboard 66, the yardage indicator 44 previously described and illustrated in FIGS. 2 and 3, and the target greens of the invention. A fragment of the cable 76 is shown by which the electronics enclosed in the storage area 74 are connected to the target greens of the invention and the yardage indicator 44.

Adjacent wall 54 and directly opposite the lockers and the storage areas 72 and 74 are a plurality of vending machines 78. These vending machines are selected from conventional vending machines to vend beverages, foods, tobacco and the like such that persons using the driving range are provided with light snacks, lunches, and the like. Directly opposite the storage area 74 is positioned a second storage area 80 containing the environmental control equipment. Both air conditioning, heating facilities and water and electrical utilities are located in storage area 80. Adjacent the rear wall 56 is provided a spectator's bench 82 which extends from the storage cabinet 74 to the door opening 59.

Referring now to FIG. 11, there is shown the scoreboard 66 mentioned hereinabove. This scoreboard is connected to the target green of the invention by means of the cable 76. The target green of the invention will be described in detail hereinafter. The scoreboard allows golfers to compete and to play a novel golf game. In playing this game, each player drives golf balls toward the target green of the invention. A score is indicated on the scoreboard 66 for each ball driven. The total of each of a player's balls will be added.

Now referring to FIGS. 6, 7, 8A, 8B, 8C, and 8D the target green 94 of the invention will now be described. As mentioned hereinabove relative to FIG. 1, one or more target greens of the invention are provided and positioned in one or more of the positions 24 illustrated in FIG. 1. However, it is to be understood that while the target green now to be described incorporates the invention, conventional artificial greens can be used with the driving range structure, if desired.

The target green 94 of the invention has a plurality of target zones including a bull's eye 96 and concentric annular target zones 98, 100, 102, 104, 106, 108 and 110. The target greens 94 may be positioned on a platform equipped with casters, 127 as illustrated in FIGS. 6 and 8C or may be supported on a platform without casters as illustrated in FIG. 8A or the target green of FIGS. 8A and 8B may be used without any platform at all; in this latter construction the target green is in the form of a carpet which may be rolled up and stored when not in use. As can be seen most clearly in FIG. 7, each of the target zones are independent of each other and radially spaced apart.

As shown in FIG. 8A and in the enlarged view thereof in FIG. 8B, each of the target zones may comprise a multi-layer construction having uppermost an all-weather covering 112. In a specific embodiment, this weather covering may be "ASTRO TURF" as manufactured and distributed by Monsanto Corp. Still referring to FIGS. 8A and 8B, each of the target zones foredescribed comprises an uppermost metallized rubber layer 114, an intermediate metallized rubber layer 116, and a bottommost metallized rubber layer 118. Metallized rubber layers 114 and 116 are separated and insulated from each other by insulating layer 120. Similarly, metallized rubber layers 116 and 118 are separated and insulated from each other by insulating layer 122. As shown in FIG. 8B, the uppermost metallized rubber layer 114 and the bottommost metallized rubber layer 118 are connected to ground 125. The middle metallized rubber layer 116 is connected by means of cable 76 to the electronics housed in storage cabinet 74 of the booths 22. The specific electronics are schematically illustrated in FIG. 13, and will be discussed hereinafter.

In the embodiment illustrated in FIG. 8A, each of the laminated target zones are supported on a frame 124. The laminates and the frame 124 are spaced apart by means of an insulating layer which in the specific embodiment illustrated takes the form of a plurality of blocks 126 of STYROFOAM. Shown also in FIG. 8A is cable 76 aforementioned. As mentioned above, frame 124 can be provided with casters. Also, as mentioned above, each of the laminate target zones can be completely encapsulated in molded rubber and the frame 124 eliminated. In this form, the target green appears like a large circular and rubberized carpet which can be rolled up and stored when desired. This carpet also can be placed upon a frame 124, with or without casters.

Referring now to FIGS. 8C and 8D, a similar construction of target green 94 is illustrated. This form of target green is to be positioned on a frame 124, but the frame 124 can be with or without casters 127 as desired. In this embodiment, the target green 94 is also covered with a weather covering 112 and the various target zones are also separated from the frame 124 by insulating material 126. Each of the target zones comprise, as is more clearly shown in FIG. 8D, metallic plates 130 supported in a spaced apart relationship with insulating members 126 by means of supporting blocks 132. Affixed to each of the plates 130 is a pressure transducer 134 which may take the form of a microphone, strain gauge or the like.

Referring now to FIG. 13, the electronics connected with the target greens of the invention will now be described in detail. As shown, each of the transducers 134 or in the alternative the middle metallized rubber layer 116 of each target zone is connected to an amplifier 136. Each of the amplifiers are connected to a signal level detector 138, each level detector having an adjustable reference point, as indicated, such that the level detector 138 will pass only signals from the target zones of a predetermined magnitude. All other signals are blocked. The level detectors are in turn connected to gates 140. Gates 140 are primarily electronic switches which are normally conductive. Gates 140 are connected to scoreboard drivers 142 which in turn are connected to the appropriate lighting devices of the scoreboard 66. Also, as shown, each of the scoreboard drivers 142 is connected to a gate 144 and a delay circuit 146. The delay circuit 146 is connected to each of the gates 140. In a specific embodiment, each of the scoreboard drivers 142 may include a one shot multivibrator, or the like for a purpose to be explained below.

Now referring to FIG. 12 the electronics connected between the screen portion 34, 36 and 38 and the yard indicator 44 will now be described in detail. In general, an alternating current power supply 150 is connected to ground 152 and to one side of a lamp in the yardage indicator 44. The microswitches 154 of each screen section 34, 36 and 38 are connected to a direct current power supply 156 by means of an appropriately sized resistor 158 and an integrated circuit in the form of a monostable multivibrator 160 similar to that above-described. The multivibrator 160 is connected between the power supply and ground 162 and between the power supply 156 and ground 152 by an appropriately sized resistor 164 and a capacitor 166. The multivibrator 160 in turn is connected to a switch 168 which is connected to ground 152. A resistor 170 is connected between the multivibrator 160 and ground 152, respectively.

In a specific embodiment the fairway 12 is 200 yards in length, the width of the fairway 12 at end 18 is about 200 yards, and the width of the fairway 12 at end 16 is about 100 yards. The slope of the fairway 12 both towards end 18 and towards the alley 20 is about 10 feet in 100 feet. The dimensions of the driving booths are about 10 feet by 9 feet by 11 feet and are equipped with either forced air heating or radient heating and air conditioning. The air curtain mounted over the opening 62 can be of the type manufactured by the King Company of Owatonna, Minn. or Miniveil Company of New Castle, Pa. Such air curtains not only provide a means for controlling environmental factors within booths such as heat and humidity, but also prevent insects and the like from entering the tee area via openings 62. The screens 30 and 32 may be of epoxy mesh material such as that sold by E. I. duPont deNemours Company of Wilmington, Del. Screen 32 is approximately 12 feet in height and screen 30 is approximately 35 feet in height. The three sections 34, 36 and 38 are respectively 8 feet, 8 feet, and 4 feet in height. The entire surface of the fair-

way is finely graded, compacted and overlaid with ASTRO TURF as sold by Monsanto Company.

The target greens **94**, in a specific embodiment, are about 25 feet in diameter. Each of the annular target zones from **98** through **110** are substantially equal in thickness measured in a radial direction. In the construction illustrated in FIGS. **8C** and **8D**, the middle plates **130** are of 1/16 inch aluminum sheet, the insulating material **126** is a 2 inch styrofoam sheet, and the supporting bars **132** are aluminum and measure ½-inch square in cross-section. In the construction shown in FIGS. **8A** and **8B**, the insulating areas measure 1/32 of an inch and the conductive layers measure 1/16 of an inch, and the entire green structure as shown in FIG. **8B** measures one-fourth inch.

In a specific embodiment, a radio controlled cart **180** is provided to push the golf balls collecting in the alley **20** back toward the tee. This cart **180** may be a conventional four wheel or three wheel cart having a single speed and the capability of going both forward and backward. The cart is provided with a plow **182** made of silicone rubber backed with aluminum and fixed at its leading edge. Plow **182** is generally complimentary with the shape of the alley **20**. A compartment **184** is provided in which the cart **180** can be stored when not in use. Compartment **184** is located behind the screen **30** and underground. The bottom, the sides and the top of compartment **184** can be of concrete as can be the alley **20**.

In operation the target of the invention can be used as a target green as disclosed above. Alternatively, with obvious modifications, the target can be used as an archery target, a firearm target, or the like. In each case, an impact upon any of the target zones of the target will produce a signal. Said signal will either be produced by the resonance of the plates **130** having the transducers **132** operably connected thereto or by the flexing of the layers **114** through **122**. As this signal will be small, the signal is first amplified by amplifiers **136**. The signal can then either be passed by the level detectors **138** or rejected. In the specific embodiment where the target is a target green, the level detectors are adjusted such that the impact of a golf ball initially on the green will be passed by the level detector but subsequent bounces of the golf ball on the green will generate signals of a magnitude that will not be passed by the level detector **138**. If passed by the level detector **138**, the signal is passed by the gate **140** so as to actuate the driver **142**. The driver **142** remains actuated for a period of time determined by its internal circuitry. The signal from driver **142** is also applied via gate **144** to delay **146**. The delay in turn applies, after a brief delay period, a signal to gates **140** rendering them non-conductive. This prevents further signals from passing through the system until driver **142** automatically turns off. After this preadjusted period of time has passed, the driver **142** turns off and the gate **140** becomes conductive such that the gate **140** will pass a subsequent signal. The scoreboard **66** to which the drivers **142** are connected, has a digital readout display. The display may, in a specific embodiment remain lighted until the scoreboard drivers change the display.

As mentioned above, the target structure is also useful as an archery target, a firearm target or the like. In such applications, the inhibitory circuitry may be eliminated in the level detector **138**. Otherwise the structure will remain the same.

In operation, the target green of the invention and the remaining structure disclosed above is fully operable as an all-weather driving range. The booths **22** are equipped with lockers where golfers may store their personal belongings. Golfers may practice their golf shots or compete in the manner above-described both in winter and summer inasmuch as each of the booths are heated and air conditioned. Additionally, the air curtain **64** allows the opening **62** to remain open when the booth is in operation and to maintain the environment in the booth **22** in a heated or air conditioned state. Both right-handed and left-handed golfers may drive balls from the tee **68** through the opening **62** and onto the fairway **12**. Balls which land anywhere on the fairway surface **12** will roll toward the alley **20** and be collected therein. Balls collected in the alley **20** will roll toward end **18**. Once enough balls are collected in the alley **20**, in the specific embodiment including the cart **180**, cart **180** can be actuated to remove the balls from adjacent end **18** to adjacent end **16** where they can be collected and distributed once again to the booths **22**.

The slope of the fairway **12** also allows rain and other moisture to collect in the alley **20** and to be discharged through the drain **46**. When snow and ice collect on the fairway **12**, the same can be removed by merely spreading salt on the fairway or spreading the same with salt water.

The screens **30** and **32** will prevent most balls driven from the various tees **68** to stay within the confines of the fairway **12**. Calculations indicate that a drive must be well over 300 yards to clear a screen 20 feet high at end **18**. As above-mentioned, screen **30** is 35 feet high. Thus, it would appear that balls could clear screen **32** at lesser distances when the ball is sliced or hooked, otherwise the ball would remain within the confines of the screens **30** and **32**. When a ball strikes any of the screen sections **34**, **36** and **38** the yardage indicator **44** will indicate, in the specific embodiment illustrated, either 300 yards, 250 yards, or 200 yards. This is accomplished by connecting the microswitches of the screen sections to the yard indicator **44** by the electronics illustrated in FIG. **12**. When the ball impacts any one of the screen sections, the microswitches supporting that screen will be closed. The closing of the switch will trigger the integrated circuit **160** which will produce a pulse. The duration of this pulse will be adjusted for the desired display time. The pulse will actuate the silicone controlled rectifier **168** to turn on the yardage indicator **44**. After the pulse has lapsed, switch **168** will turn off the yardage indicator and the switch **168** will be reset for subsequent operation.

The game apparatus of the invention provides an entirely new concept in combination target-scoreboards and driving range structures meeting all of the objects of the invention. By the use of the invention, increased competition and thereby increased interest will be gained in all activities which heretofore have used targets. Additionally by the driving range structure of the invention, golfers may practice their golf shots and compete year round and in all weather, winter or summer.

While there have been described above the principles of this invention in connection with specific apparatus, it is to be clearly understood that this description is made only by way of example and not as a limitation to the scope of the invention.

What is claimed is:

1. A game apparatus comprising a green-like target having a plurality of target zones, a plurality of impact responsive signal generators, each of said target zones having at least one said signal generators operatively connected to said zone, whereby an object impacting on each of said target zones will create a signal, a signal selector circuit including level detector, gate and delay circuits operatively connected to said signal generators, a plurality of scoreboard drivers operatively connected to said selector circuit and each of said target zones, each of said target zones having one of said level detector circuits connected to each of said signal generators, each of said target zones having one of said gates connected to each of said level detector circuits at least one of said drivers being connected to said gates of each of said target zones, said delay circuit connected to each of said gates and drivers, a golf tee and a scoreboard, said scoreboard having a plurality of means for visually registering impacts on said target zones, said registering means being connected to said drivers, said scoreboard being positioned adjacent to said tee, said scoreboard being viewable by both left-handed and right-handed golfers addressing a ball on said tee, said registering means of said scoreboard being arranged in groups, one of said groups being connected to at least one of said target zones.

2. The apparatus of claim 1 wherein said tee and scoreboard structures are mounted within a booth, said booth having a floor and ceiling, said booth having a wall connecting said floor and ceiling, said wall having an opening therein, said tee being positioned on said floor adjacent said opening, said target being spaced from said booth, a line between said tee and the center of said target passing through said opening, the distance between said line and the peripheral boundaries of said opening being sufficient to allow a golf ball to be driven from said tee within said booth toward said target.

3. The apparatus of claim 2 wherein said scoreboard is mounted over said opening and facing said tee, a plurality of the group consisting of lockers, vending machines and seating facilities positioned adjacent said wall within said booth.

4. The apparatus of claim 2 wherein said booth opening is provided with means for blowing air across said opening to maintain a controlled environment in said booth and to generally prevent ingress and egress of insects.

5. The apparatus of claim 1 wherein a plurality of said booths are located side by side, each of said booth openings being generally in a common plane, a fairway extending from said booth openings to a position beyond said target, said fairway adjacent said openings having a dimension measured transversely thereof at least as long as the cumulative dimension of said openings in the direction of said common plane.

6. The apparatus of claim 5 further including a target fence extending transversely of the fairway adjacent said distal end thereof in a generally perpendicular plane, said target fence including a plurality of target sections, said target sections being serially disposed in vertical relationship.

7. The apparatus of claim 6 wherein each of said target sections corresponds to a different driven yardage of a ball, and further including a plurality of electrical sensing means individually coupled to different ones of said target sections for generating electrical signals in response to an object impacting thereon, and scoreboard means for visibly registering the impact of said objects on different ones of said sections.

8. The apparatus of claim 6 wherein said fairway slopes downwardly from said booths to said target fence and is concavely sloped towards its longitudinal center line, said fairway further including a ball receiving trough extending longitudinally of said fairway adjacent the center line thereof, whereby balls landing in said fairway are caused to roll into said trough and toward the distal end of said fairway, and further including means for collecting the balls in said trough and returning the same to said booths.

9. A game apparatus of the driving range type comprising an elongated fairway, one end of said fairway being narrower than the other of said ends, said fairway sloping downwardly from said one to said other end thereof, said fairway having a longitudinal axis and being sloped downwardly from the lateral edges thereof toward said axis, a recess extending longitudinally of said fairway and downwardly therefrom, said recess being sloped downwardly from said one end to said other end of said fairway and at least one target having a plurality of target zones, said target being movably positioned on said fairway and including means for generating an electrical signal in response to an object initially but not subsequently striking individual ones of said target zones.

10. The apparatus of claim 9 wherein each of said target zones comprises a flexible laminate having three vertically spaced-apart layers of flexible, electrically conductive material, there being a layer of flexible, electrically insulating material disposed between each of said electrically conductive layers, at least one of said layers being grounded, said electrical signal generating means including another of said layers.

11. The apparatus of claim 9 wherein each of said target zones comprises a rigid resonant plate, said signal generating means comprising at least one resonant detector rigidly secured to each of said plates.

12. The apparatus of claim 9 further including at least one booth disposed adjacent said narrow end of said fairway, said booth having walls, a floor, and a ceiling, one of said walls having an opening therein facing said fairway, a tee positioned on said floor adjacent said opening, the dimensions of said booth and said opening being sufficient to allow a golf ball to be driven from within said booth through said opening.

13. The apparatus of claim 12 wherein said booth further includes a scoreboard mounted over said opening and facing said tee, said scoreboard including means operatively coupled to said signal generating means to indicate the impact of an object on individual ones of said target zones.

14. The apparatus of claim 13 further including a target fence extending transversely of said fairway adjacent said wider end thereof and in a generally perpendicular plane, said target fence including a plurality of target sections, said target sections being serially disposed in vertical relationship, each of said target sections corresponding to different driven yardage of an object, and further including a plurality of electrical impact sensing means individually coupled to different ones of said target sections for generating electrical signals in response to an object impacting thereon, and means for visibly registering the impact of said object on different ones of said sections.

15. A game apparatus of the type which includes an outdoor target comprising a booth having a floor, ceiling, and walls, one of said walls having an opening therein, there being a golf tee mounted within said booth adjacent said opening, the dimensions of said booth and said opening being sufficient to allow a golf ball to be driven from said tee and within said booth, a fairway extending outwardly of said opening, at least one target movably positioned on said fairway, said target including a plurality of target zones, and electronic sensing means coupled to said target zones for generating electrical signals in response to the impact of an object on individual ones thereof, bounce-signal gate means connected to said signal generating means, and scoreboard means connected to said gate means and mounted within said booth in a position viewable from said tee for indicating the initial impact of an object on individual ones of said target zones, but not subsequent impacts.

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UNITED STATES PATENT OFFICE
CERTIFICATE OF CORRECTION

Patent No. 3,897,947 Dated August 5, 1975

Inventor(s) Russell H. Heffley, Jr.

It is certified that error appears in the above-identified patent and that said Letters Patent are hereby corrected as shown below:

Column 9, line 5 after "one" insert --of--.

Signed and Sealed this

Fifth Day of October 1976

[SEAL]

Attest:

RUTH C. MASON
Attesting Officer

C. MARSHALL DANN
Commissioner of Patents and Trademarks