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[54] **GOLF GAME**

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[52] **U.S. Cl.... 273/176 A,** 273/176 FA, 273/185 R, 273/181 H, 324/189, 340/16 R, 73/13, 273/105 A

[51] **Int. Cl.** **A63b 67/02,** A63b 69/36

[58] **Field of Search** 273/181, 182, 184, 273/185, 176, 177, 178, 179, 180

[56] **References Cited**

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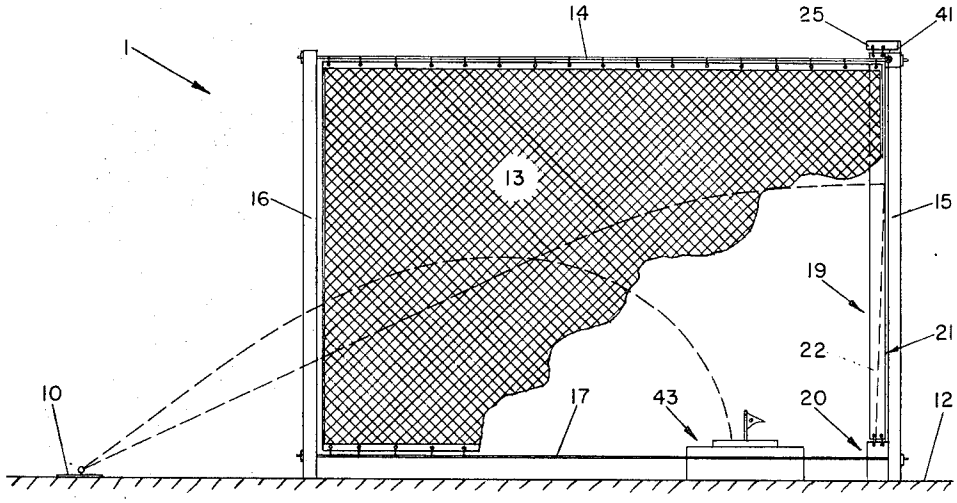
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Primary Examiner—George J. Marlo

[57] **ABSTRACT**

Golfing lanes constructed and equipped for the playing of a golf game which lends itself to a handicap system whereby players of varying abilities can compete on a handicap adjusted scoring basis. Each lane has a golf tee disposed at one end, an upright target disposed at the opposite end for segregating balls on a directional accuracy basis, a ball receiver for receiving and classifying balls gravitating from the upright target, and ball confining members disposed with respect to the golfing lanes for preventing ball cross-fire into adjacent targets. The upright target has ball-to-target impact sensing devices functionally associated with control apparatus for providing ball momentum classification. Since the mass of a golf ball is constant, ball momentum is representative of ball velocity or the time required for the ball to travel the fixed distance between the tee and target. The apparatus for determining ball momentum may include such components as an acoustic sensing unit, one or more inertia switches, a time sequence programmer, an operatively associated pulser, relays and a counter. Scoring of each ball hit is provided by combining numerical representations of a directional accuracy factor and a ball momentum factor. For playing the game, each player hits a predetermined number of balls with both wood and iron clubs in a prearranged sequence into the vertical target. This game can be extended to include also floor targets which can be disposed forward of each vertical target. For scoring purposes, these floor targets with associated controls have apparatus for classifying and providing a numerical representation of all balls hit therein with short range irons. Game scoring is devised to place a premium on directional accuracy with the ball momentum factor associated with balls hit to said vertical target included merely to more thoroughly scruntinize each golf shot and add a challenging distinctive quality to the game. Scores of each shot taken are displayed on a counter situated on a score table located at each golf tee area.

17 Claims, 7 Drawing Figures



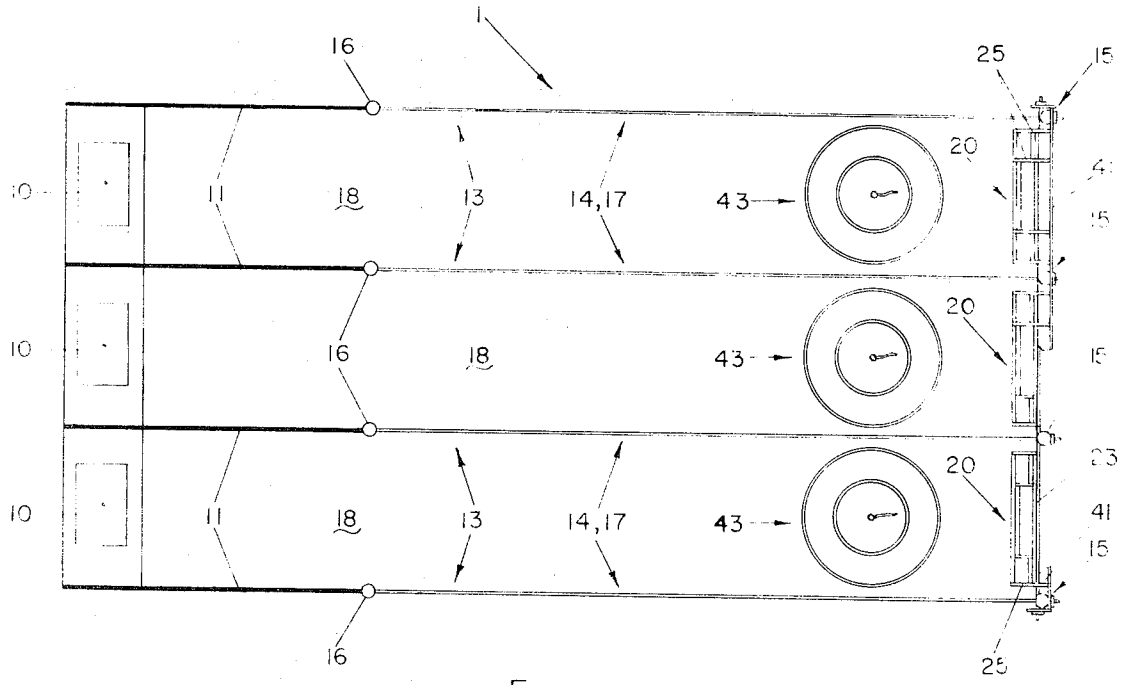


FIG. 1

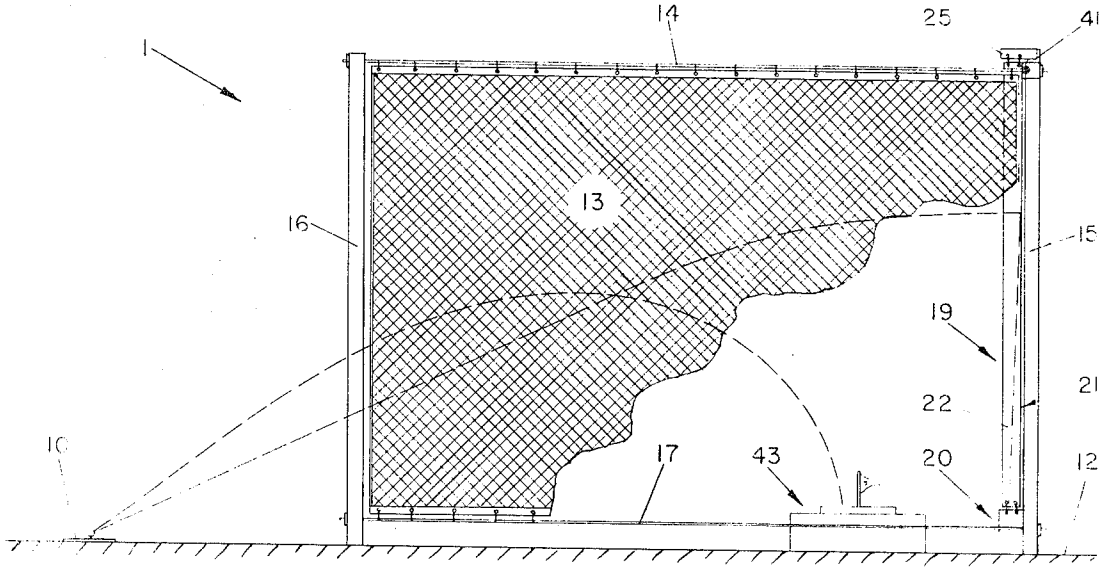


FIG. 2

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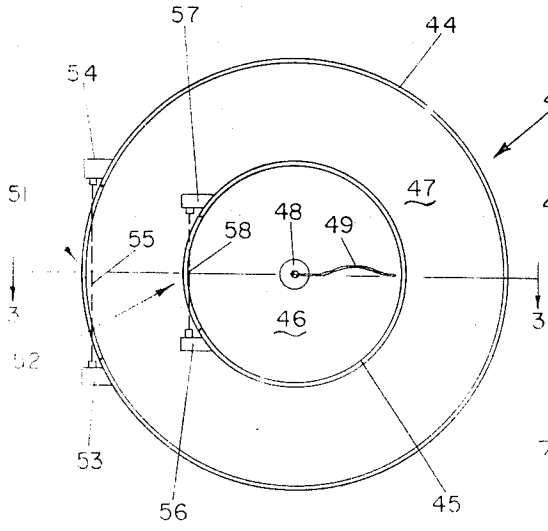


FIG. 3

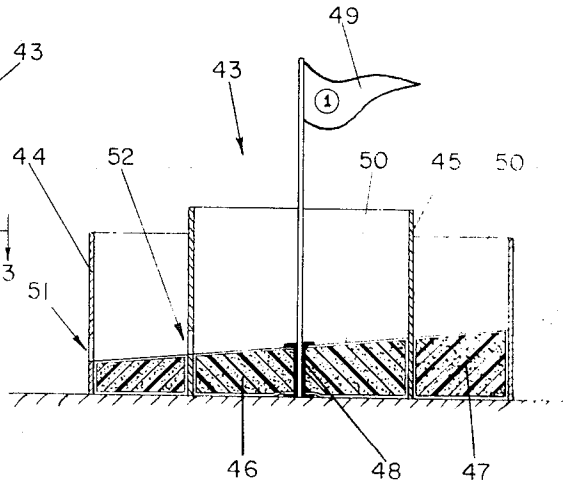


FIG. 4

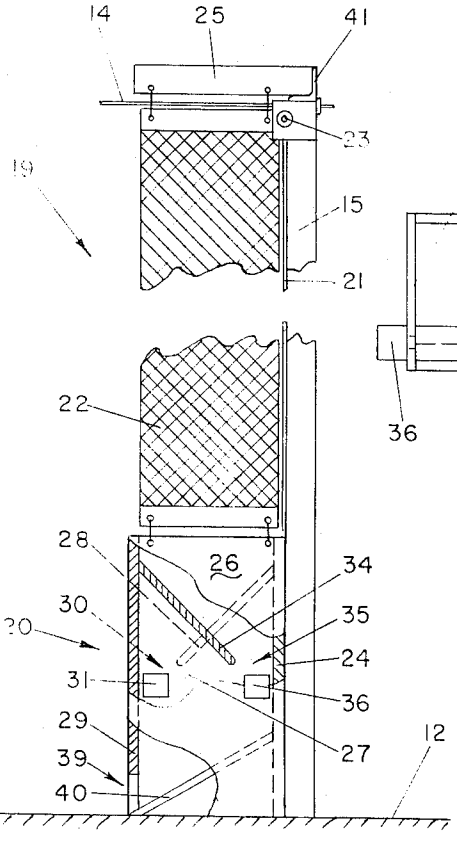


FIG. 5

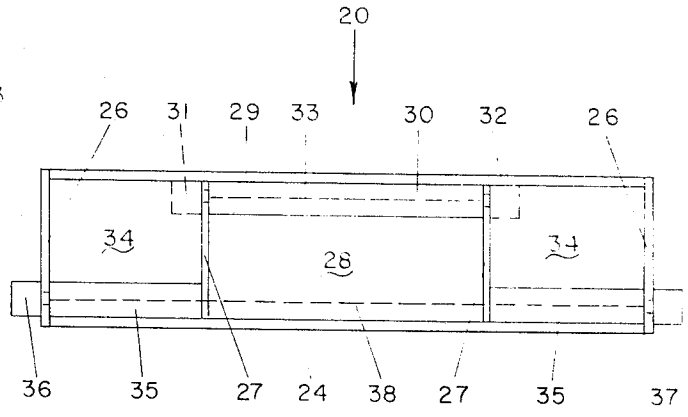


FIG. 6

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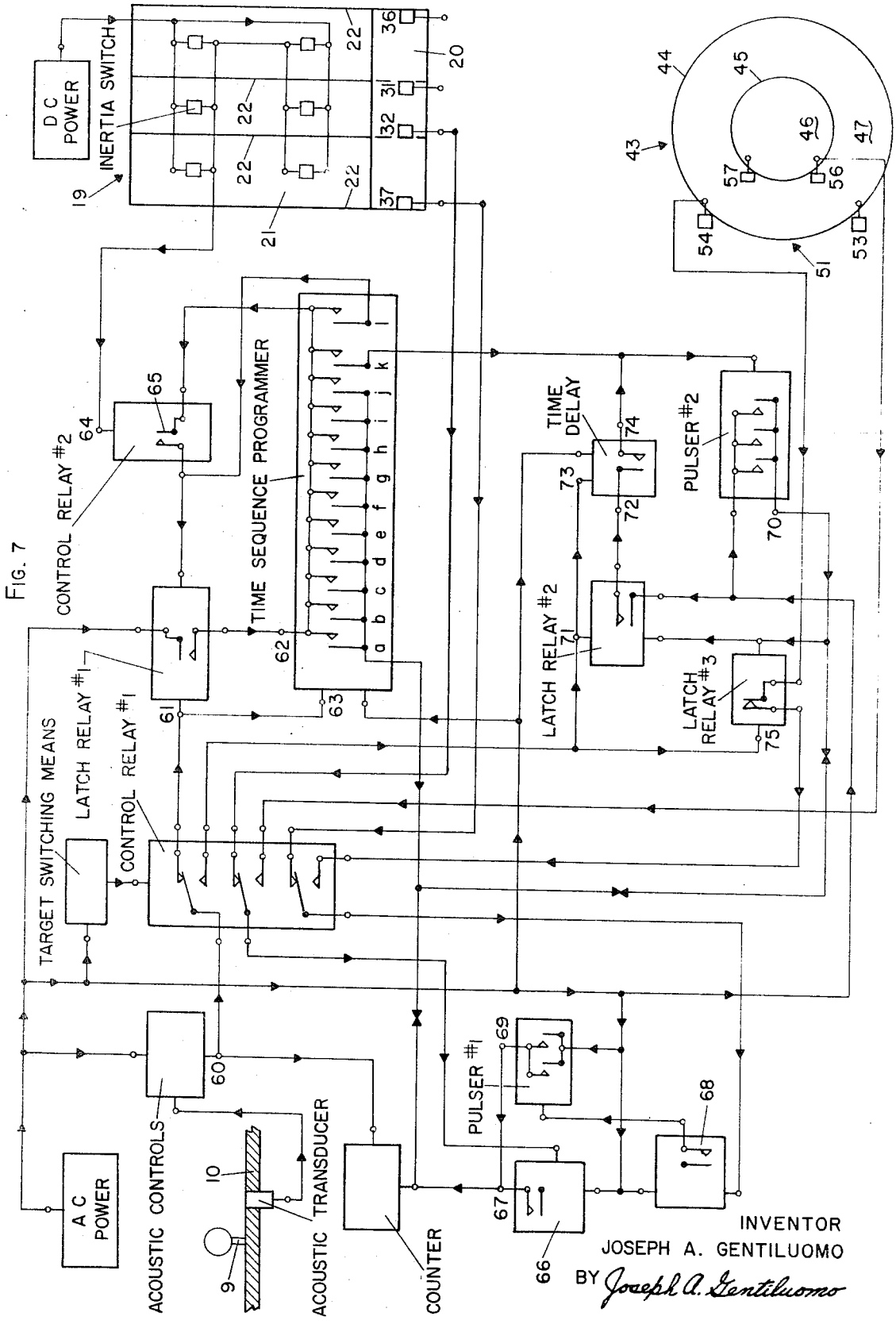


FIG. 7

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GOLF GAME

Presently lacking are golfing facilities which place emphasis on golfing accuracy. Therefore, the aim of this invention is to provide golfers with a golf facility that will aid in developing golfing accuracy.

Accordingly, other objects of this invention are as follows:

To provide a golf game facility adaptable for use either indoors or outdoors.

To provide a golf game facility which can be installed in a building to provide year-round recreation.

To provide a golf game facility which lends itself to the playing of a variety of competitive type golf games.

To provide a golf game facility that can be used also as a golf range.

To provide means for competitive type golf games which utilize wood, long iron, medium iron, and short iron clubs.

To provide means for competitive type golf games adaptable to a game rating such as men's and women's par, so that golfer handicaps can be established.

To provide means for competitive type golf games adaptable to league and tournament play.

To provide means for competitive type golf games which can be scored on the basis of directional accuracy, ball momentum, or both directional accuracy and ball momentum.

To provide a golf game facility having means for providing the score of every shot hit from the golf ball tee.

To provide a game scoring system that can be adapted with a score projection unit to display player scoring for spectator viewing.

These objects and other objects of this invention should be discerned and appreciated from the description and claims taken in conjunction with the accompanying drawings in which:

FIG. 1 shows the plan view of a typical golfing facility.

FIG. 2 shows an elevation view of FIG. 1 with nets partly cut away.

FIG. 3 shows an enlarged plan view of a typical floor target.

FIG. 4 shows an enlarged elevation view, in section, taken on line 3—3 of FIG. 3.

FIG. 5 shows an enlarged side elevation view of a typical vertical target and ball receiver arrangement with side of said ball receiver partly cut away.

FIG. 6 shows an enlarged plan view of the ball receiver.

FIG. 7 depicts a functional schematic block diagram of the control circuitry utilized in the invention.

In explaining the invention in detail, it can be discerned that this invention is capable of many embodiments of which the preferred is herein described and illustrated in the associated drawings.

In order to utilize the disclosed golf game facility, it is apparent that a supply of golf balls and standard commercially available golf clubs are required.

FIG. 1 shows a multiple set-up featuring a plurality of individual game facilities, adjacently placed, for the playing of golf games. Each facility consists essentially of a golf tee, ball confining means, and target means.

There are many variations of competitive type games that can be played within the said facilities. The preferred game arrangement, called Golf-O, allows the payer to perform by hitting a plurality of balls toward a vertical target with both wood and iron clubs. Also,

if required, the player can hit a plurality of pitch or chip shots toward a floor target with a short range iron club. Competing players can hit said balls in a variety of predetermined sequence arrangements, according to preference, to favor either medal or match play.

The vertical and floor targets will have both center and off-center areas. For accuracy scoring, balls hit into the center zone can be accorded a score of one, balls hit into the off-center zones can be accorded a score of two, and all other stroked balls can be accorded a score of three. In essence, balls hit into the center of the vertical target represents a ball hit straight down the fairway. Balls hit either to the right or left in the off-center portions of said target will represent balls that have been either sliced, hooked, pushed, or pulled. The floor target represents a green toward which players can pitch or chip balls with the intent of coming as close to the flagstick as possible. Balls hit into the center portion will indicate a very good shot to the green. Balls hit into the off-center portion will indicate that the player has hit within the perimeter of the green. Balls not hitting into either of said target areas indicate that the player has missed the green and has hit an undesirable shot which will usually lead to trouble on most golf courses.

In order to make the game more challenging, a ball momentum factor can be applied to all balls hitting the vertical target, and therefore, scoring can be extended to include also said momentum factor in conjunction with the directional accuracy factor. Each ball hit into said vertical target can be more thoroughly scrutinized to justly reward the player capable of hitting the ball with the directional accuracy and momentum prevalent in properly executed shots. For example, a ball hit with more impact or momentum into a certain zone of said target should be scored as a better shot than a ball that is meekly hit into said zone. Directional accuracy is based on which discrete zone of a plurality of target zones was hit by a ball propelled from the golf ball tee by a player.

Since ball momentum is dependent on the velocity at which the ball leaves the golf club head or the average velocity of said ball in flight, such trajectory parameters as distance from the golf ball tee to said target and the time required for said ball to travel said distance could be utilized for numerical classification exemplifying said ball momentum representation. As can be discerned, said ball momentum designation can therefore be represented by the time required for the ball to travel from said tee to said target. For a tee-to-target distance of 50 feet, the following typical scoring system could be utilized to represent ball momentum.

Momentum Factor Score	Momentum Parameters	
	Average Vel.(ft/sec)	Time (sec)
1	∞ to 200	0 to 0.250
2	200⁻to 180	0.250⁺to 0.278
3	180⁻to 160	0.278⁺to 0.312
4	160⁻to 140	0.312⁺to 0.357
5	140⁻to 120	0.357⁺to 0.417
6	120⁻to 100	0.417⁺to 0.500
7	100⁻to 80	0.500⁺to 0.625
8	80⁻to 60	0.625⁺to 0.833
9	60⁻to 40	0.833⁺to 1.250
10	40⁻to 0	1.250' to ∞

Ball momentum is defined as the product of ball mass and its velocity. Since ball mass is constant, said momentum can be represented by velocity or the time re-

quired for said ball to travel the fixed distance between said tee and target.

The score accorded each shot to the vertical target will consist of a momentum factor score plus a directional accuracy factor score. The follwoing examples will demonstrate the scoring procedure.

A ball hit by an average male golfer with a driver into the center portion of the target will probably hit said target at an average velocity of 200 feet per second or within a time of 0.250 seconds, and therefore said shot will be scored as 1 + 1 or 2. When hit in the same zone with an average velocity of 120 feet per second or within a time of 0.417 seconds, the score will be 5 + 1 or 6. When hit in either of the off-center zones with an average velocity of 140 feet per second or within a time of 0.357 seconds, the score will be 4 + 2 or 6.

A ball hit by an average male golfer with a five-iron into the center of the target will probably hit said target at an average velocity of 150 feet per second or within a time of 0.333 seconds, and therefore said shot will be scored as 4 + 1 or 5.

A ball hit by an average male golfer with a seven-iron into the off-center portion of the target will probably hit said target at an average velocity of 140 feet per second or within a time of 0.357 seconds, and therefore said shot will be scored as 4 + 2 or 6.

A ball hit by an average male golfer with a nine-iron into the off-center portion of the target will probably hit said target at an average velocity of 130 feet per second or within a time of 0.385 seconds, and therefore said shot will be scored as 5 + 2 or 7.

All balls not hitting said vertical target will be scored as 10 + 3 or 13, therefore, definitely placing a premium on directional accuracy. By completely missing said target, the golfer is penalized for poor performance by an assessment of zero velocity or infinitely great tee-to-target time for the shot, thereby, subject to an automatic imposition of a momentum factor score of 10 plus a directional accuracy factor score of 3 for a composite score of 13.

It is to be discerned that the above cited composite scores can be displayed on a counter situated at a score table located adjacent to each golf tee. Said scores can in turn be recorded by players onto a score sheet positioned on said score table. A score projector unit attached to said table can then be used to project said scores from said score sheet onto a screen for spectator viewing.

The invention referred to as **1** in FIGS. **1** and **2**, comprises a plurality of conventional type golf tees **10, 10** with either manual or automatic teeing. Each golf tee **10** is fixedly positioned intermediate boundary lines **11, 11** and to surface of ground floor **12**. The ball confining means such as caged golf lanes consist of nets **13, 13** suspended from cables **14, 14** which are fixedly mounted between tops of substantially vertical posts **15, 15** and **16, 16**. Said posts **15, 15** and **16, 16** are fixedly anchored with respect to ground floor **12** and in line with substantially parallel boundary lines **11, 11**. Also, bottoms of said nets **13, 13** are fastened to cables **17, 17** which are fixedly suspended between said posts **15, 15** and **16, 16**.

At a fixed distance from golf tees **10, 10** between nets **13, 13** of plurality of golf lanes **18, 18**, are substantially vertical targets **19, 19** and ball receivers **20, 20**. The upright targets **19, 19** consist of target backstops **21, 21** and upright baffles **22, 22**. Said baffles are disposed vertically with their planes oriented substantially perpendicular with respect to said target backstops **21, 21** to establish center and off-center target areas. Therefore, adjacent to all center target areas, both to the right and to the left, will be what is known as the off-center target areas. Center and off-center areas of said discrete vertical targets **19, 19** are coextensive with center and off-center sections of said in-line discrete ball receivers **20, 20**. The plurality of vertically suspended baffles **22, 22** are tautly and fixedly mounted between overhang supports **25, 25** and top edges of side pieces **26, 26** and partitions **27, 27** of said ball receiver as shown in FIGS. **5** and **6**. The said baffles **22, 22** are fabricated from a material such as reinforced plastic sheet. Said overhang supports **25, 25** are disposed in sets of four directly over and in vertical alingment with the side pieces **26, 26** and partitions **27, 27** of all ball receivers **20, 20**. All overhang supports **25, 25** are fixedly mounted to structural tie means **41** which is fixedly mounted with respect to the tops of posts **15, 15**. The target backstops **21, 21** are fabricated from a material such as reinforced plastic sheet and are securely fastened by conventional means between cable **23** and the top of rear pieces **24, 24** of said ball receivers **20, 20**. Cable **23** is fixedly mounted between tops of posts **15, 15** transverse to the direction of cables **14, 14** and substantially perpendicular. There are four baffles per vertical targets **19, 19** and all are suspended and properly secured in close proximity with respect to backstops **21, 21**. Said backstops **21, 21** contain a plurality of ball-to-target impact sensing means such as inertia switches strategically and properly mounted thereupon for detecting ball impact regardless of where balls hit said targets. Said inertia switches will be electrically interconnected in parallel so that actuation of any one or any number of them will operate to convey a signal for control purposes. The term inertia switch, acceleration switch, and G-switch are used synonymously in the art to refer to an acceleration sensitive device.

Ball receivers **20, 20** are fixedly mounted to ground floor **12** between posts **15, 15** of golf lanes **18, 18** as shown in FIGS. **1** and **2**. By referring to FIGS. **5** and **6** it can be discerned that said ball receivers **20, 20** resemble rectangular structures with open tops to serve as ball entrances. Internally, each ball receiver **20** is divided into three sections by partitions **27, 27** which are fixedly mounted in a substantially vertical manner and extending from top of said rectangular like structure to inclined ramp **40**. The center section lies between partitions **27, 27** and the off-center sections lie between said partitions and side piece **26**. Center chute **28** is fixedly mounted between partitions **27, 27** and inclined downwardly toward front mask **29**. Also, said chute **28** is of such size as to provide opening **30** for passage of golf balls. Fixedly mounted to sides of partitions **27, 27** is a ball detection means such as photoelectric components **31** and **32** which are disposed to detect the passage of balls through said opening **30** by use of light rays **33**. The off center ball receiver sections contain chutes **34, 34** which slope downwardly toward rear piece **24** of said ball receiver **20**. Said chutes **34, 34** are of such size as to allow passage of golf balls through openings **35, 35**. Fixedly mounted to side pieces **26, 26** is a ball detection means such as photoelectric unit components **36** and **37** which utilizes light rays **38** underneath openings **35, 35** to detect balls passing

through said openings. Undereneath chutes **28** and **34** is an inclined ramp **40** which compels balls to discharge out from within the ball receiver **20** through opening **39** located at the bottom of front mask **29.**

Floor targets **43, 43** are fixedly mounted with respect to ground floor **12** within lanes **18, 18** and disposed in front of said ball receivers **20, 20.** Said floor targets are constructed of two upright annulus ring walls **44** and **45** and made of a material such as plastic. The cited annulus rings are maintained in place with respect to each other by the annulus cushion **47** which is tightly fitted between said annulus walls as shown in FIGS. **3** and **4.** Within the center annulus ring **45** is a tightly inserted disc type cushion **46** containing a centrally positioned insert **48** fixedly associated with respect to said cushion for the purpose of supporting flagstick **49** in a substantially vertical manner. Cushions **46** and **47** are fabricated from a material such as flexible foam plastic with a sheet covering of a material such as flexible plastic covered cloth. Said cushions **46** and **47** are fabricated with an inclined top surface **50** to allow balls hit into said target to roll out through the openings **51** and **52** located in annulus walls **44** and **45.** It should be discerned that if said floor **12** is inclined, said surface of cushions **46** and **47** need not be fabricated with said inclined top surface. Openings **51** and **52** are positioned at the lowest point of inclination of both cushions **46** and **47** and are of such size as to allow balls to roll freely through. Ball detection means such as photoelectric unit components **53** and **54** are fixedly mounted on wall of outer annulus ring **44** and positioned adjacent to opening **51** as shown in FIG. **3.** This arrangement will allow light rays **55** to project horizontally across opening **51** for the purpose of detecting the passage of balls. Also, ball detection means such as photoelectric unit components **56** and **57** are fixedly mounted on wall of inner annulus ring **45** and positioned with respect to opening **52** so that light rays **58** will project horizontally across said opening **52.**

If the game facility is not automated, a player or scorer must observe the trajectory of every ball hit toward the targets, in order to record the established target score. If the game facility is automated, it is not essential to observe the ball trajectory. Detection means are provided to assist in the scoring of each shot. Balls hit into the upright target **19** are classified after falling downwardly, within the confinemenets of the backstop **21** and baffles **22,** into the various sections or compartments within the ball receiver **20.** The function of the backstop **21** is to dampen the impact of the propelled balls so that rebound will be negligible. The upright baffles **22** are intended to define the target areas and aid in segregating balls propelled within the said target areas. Also, nets **13, 13** are used to prevent propelled ball cross-fire into unauthorized targets, when a plurality of golf lanes are utilized. Balls hit into the center target area will drop into the center compartment of the said ball receiver. In so doing, the ball will roll down center chute **28** and through opening **30** where the light rays **33** are broken thus classifying the ball and indicating a directional accuracy score of one. Balls hit within either the right or left off-center areas of target **19** will drop into the right or left compartment respectively. In so doing, the ball will roll down chute **34** and through opening **35** to break the light rays **38** thus classifying the ball and indicating a directional accuracy score of two. Balls leaving openings **30** and **35** will drop down onto inclined ramp **40** and discharged out of sadi ball receiver **20** through opening **39.**

Balls propelled within the floor target **43** are classified directly in the following manner. If the ball hits within the target area of cushion **46,** the ball will roll downward and through opening **52.** In so doing, the ball breaks the light rays **58** thus classifying the ball as having hit the center portion of the target and therefore an accuracy score of one will be alloted. If the ball hits within target area of cushion **47** the ball will roll downwardly within the annulus cushion and emerge through opening **51.** In so doing, the ball breaks the light rays **55** thus classifying the ball as having hit within the off-center target area and an accuracy score of two will be indicated. If the ball misses target **43** completely an accuracy score of three will be alloted. The prime function of the said cushions **46** and **47** is to act as damping means to prevent balls propelled into said floor targets from rebounding out.

With reference to the block diagram of FIG. **7,** the photoelectric and acoustic sensing systems, the counter, the control relays, the latch relays, the inertia switches, the time delay, the pulsers, the time sequence programmer, and the D.C. power supply are standard commercially available components. Said cited components can be substituted for by equivalent devices classified as fluidic, electronic, electromechanical, etc. to yield a control system equivalent to that depicted and described herein.

The time sequence programmer or time sequence signal producing means for producing time sequenced signals is to be construed as a timing device which upon receiving an initiating signal operates to provide a plurality of sequentially timed output control pulses.

The pulser or pulsing means for providing a preset number of pulses is to be construed as a device which upon receiving an input start signal provides a preset number of output control pulses.

Sensing means for initiating the time sequence signal producing means is to be construed as acoustic or ultrasonic sensing units, photoelectric sensing units, inertia switches, etc.

Acoustic sensing unit consists of the acoustic transducer and the acoustic controls.

Photoelectric sensing unit consists of the light source, photo sensor, and photoelectric control.

Sensing means for terminating the time sequence signal producing means is to be construed as inertia switches, ultrasonic sensing units, photoelectric sensing units, acoustic sensing units, etc.

Ball momentum determining and indicating means is to be construed as any means functional in providing a numerical representation of ball momentum. One possible means, as herein disclosed, includes the use of a time sequence programmer, counter, and ancillary control devices such as depicted in FIG. **7.**

Directional accuracy determining and indicating means for vertical targers is to be construed as any means functional in providing a numerical representation based on which discrete zone of a plurality of target zones was hit by a propelled ball. One possible means as herein disclosed, includes the use of pulsers, counter, vertical target baffles, ball receiver with associated ball detection means, and ancillary control devices such as depicted in FIG. **7.**

Accuracy determining and indicating means for the floor targets as herein disclosed, includes such func-

tionally associated components as pulsers, counter, vertical annulus walls, ball detection means, and ancillary control devices such as depicted in FIG. 7.

The target switching means in conjunction with control relay No. 1 is used as a selection means to either engage or disengage the vertical and floor targets into or from the control system. The said switching means can exist as pushbuttons when the system is not completely automatic. When automatic, said switching means can exist as relay contacts controlled by a programmer which dictates the golf shot sequencing mode of operation. This means that when balls are being hit toward the vertical target, the floor target will be deactivated and vice versa.

With reference to FIG. 7, which shows the controls set on the vertical target mode of operation, it can be discerned that when the ball is dislodged from the golf ball tee **9** the acoustic transducer picks up the sound of impact and transmits the signal to the acoustic controls which in turn operates to emit an output pulse from terminal **60.** Said pulse will be conveyed to the indicating device or counter to reset it to a zero count, and through the contacts of control relay No. 1 to terminal **61** of latch relay No. 1 to effectuate the closing of its normally open contacts for conveyance of power therethrough to terminal **62** of the time sequence programmer. Also, said pulse will be conveyed to terminal **63** of said programmer to initiate its operation. After activation, said programmer such as an electromechanical single cycle multi-cam timing programmer will immediately emit a pulse from terminal (a) to the counter to register a momentum factor count of 1 therein. If the said ball hits the vertical target **19** within 0.250 seconds, the inertia switches will operate and power will be conveyed therethrough to provide a pulse to terminal **64** of control relay No. **2.** This pulse will cause a momentary closure of contacts **65** such that the release coil of said latch relay No. **1** is momentarily energized to return its contacts to the initial normally open condition for termination of power to said programmer by way of terminal **62.** This means that the said programmer is de-activated at a momentum factor score of 1 and at the end of the programed cycle, all output contacts will assume the normally open position at reset. Now, after the ball hits said target **19** and gravitates into the ball receiver **20,** the directional accuracy portion of the score will be provided dependent on which zone of said target was hit. If the center zone was hit, light source **31** in conjunction with photo sensor **32** will operate to send a signal through the contacts of control relay No. **1** to activate the photoelectric controls **66** which provides one pulse through terminal **67** to said counter to advance it one count such that the counter will display a final composite score of 2 for the golf shot. If instead, the off-center zone was hit, light source **36** in conjunction with photo sensor **37** will operate to send a signal through the contacts of control relay No. **1** to cause the photoelectric controls **68** to emit a pulse to activate pulser No. **1.** Said pulsing means or pulser, such as an electromechanical single cycle multi-cam programmer timer, will in turn emit two pulses from terminal **69** to said counter to advance it two counts such that said counter will display a final composite score of 3 for the golf shot.

If said ball does not hit said target **19** within 0.250 seconds, said programmer will continue to operate and at 0.250^{+} seconds a second pulse will be emitted from terminal (b) to the counter. If said ball hits said target within 0.278 seconds, said programmer will be de-activated as previously stated, and a momentum factor count of 2 will remain registered on said counter.

If said ball does not hit said target within 0.278 seconds, said programmer will continue to operate and at 0.278^{+} seconds a third pulse will be emitted from termianl (c) to advance the counter. If said ball hits said target within 0.312 seconds, said programmer will be de-activated and a momentum factor count of 3 will remain registered on said counter.

If said ball does not hit said target within 0.312 seconds, said programmer will continue to operate and at 0.312^{+} seconds a fourth pulse will be emitted from terminal (d) to advance the counter. If said ball hits said target within 0.357 seconds, said programmer will be de-activated and a momentum factor count of 4 will remain registered on said counter.

If said ball does not hit said target within 0.357 seconds, said programmer will continue to operate and at 0.357^{+} seconds a fifth pulse will be emitted from terminal (e) to advance the counter. If said ball hits said target within 0.417 seconds, said programmer will be de-activated and a momentum factor count of 5 will remain registered on said counter.

If said ball does not hit said target within 0.417 seconds, said programmer will continue to operate and at 0.417^{+} seconds a sixth pulse will be emitted from terminal (f) to advance the counter. If said ball hits said target within 0.500 seconds, said programmer will be de-activated and a momentum factor count of 6 will remain registered on said counter.

If said ball does not hit said target within 0.500 seconds, said programmer will continue to operate and at 0.500^{+} seconds a seventh pulse will be emitted from terminal (g) to advance the counter. If said ball hits said target within 0.625 seconds, said programmer will be de-activated and a momentum factor count of 7 will remain registered on said counter.

If said ball does not hit said target within 0.625 seconds, said programmer will continue to operate and at 0.625^{+} seconds an eight pulse will be emitted from termianl (h) to advance the counter. If said ball hits said target within 0.833 seconds, said programmer will be de-activated and a momentum factor count of 8 will remain registered on said counter.

If said ball does not hit said target within 0.833 seconds, said programmer will continue to operate and at 0.833^{+} seconds a ninth pulse will be emitted from terminal (i) to advance the counter. If said ball hits said target within 1.250 seconds, said programmer will be de-activated and a momentum factor count of 9 will remain registered on said counter.

If said ball does not hit said target within 1.250 seconds, said programmer will continue to operate and at 1.250^{+} seconds a tenth pulse will be emitted from terminal (j) to advance the counter. Now, all balls hereonafter whether hitting the target or not will register a momentum factor count of 10.

It is to be discerned that the above cited momentum factor scores are in all cases concatenated with a directional accuracy factor score, such as previously explained, to provide a composite score for each ball hit from said tee **9** toward said vertical target.

If a ball driven from said tee **9** does not hit said vertical target, the programmer will operate to emit one pulse from each terminal from (a) through (j) of said

programmer, thus providing ten consecutive pulses to the counter to register a count of **10** thereupon. After a time delay, such as **3** seconds, a pulse will be emitted from both terminals (k) and (l) of said programmer. The pulse from terminal (k) will activate pulser No. **2** such that three pulses will be emitted from terminal **70** to said counter to advance it three counts to a final composite count of **13.** The pulse from terminal (1) will operate the release coil of latch relay No. **1** to return its contacts to the normally open condition such that power is terminated to the programmer through terminal **62.**

When in the vertical target mode of operation, subsequent operation of the apparatus will follow the same cycle of operation such as described above for each ball dislodged from said tee **9.**

If the floor target is put into operation by the target switching means, control relay No. **1** will operate to switch all of its contacts such as to disengage the vertical target from the circuit and engage the floor target into the circuit. Now, with the controls set on the floor target mode of operation, it can be discerned that when a ball is dislodged from said tee **9** the acoustic controls will operate to emit an output pulse from terminal **60.** Said pulse will be conveyed to the counter to reset it to a zero count, and through the contacts of control relay No. **1** to terminal **71** of latch relay No. **2** to effectuate the closing of its normally open contacts for conveyance of power therethrough to terminal **72** of the time delay. Also, said pulse will be conveyed to terminal **73** of said time delay to initiate its operation, and to terminal **75** of latch relay No. **3** to return its contacts to the closed condition when previously actuated open. After activation, said time delay such as an electromechanical single cycle multi-cam timer will emit a pulse from terminal **74** to activate the pulsing means or pulser No. **2** if the ball dislodged from said tee **9** does not enter said floor target within a specified time. For example, if no ball enters said floor target within say 5 seconds, pulser No. **2** will operate to emit three pulses from terminal **70** to said counter to register a count of 3 therein. However, if a ball enters the center portion of said floor target within said 5 second time limit, light source **57** in conjunction with photo sensor **56** will operate to send a signal through the contacts of control relay No. **1** to activate the photoelectric controls **66** which provides one pulse through terminal **67** to said counter to register an accuracy score of 1 for said golf shot. Meanwhile, since said ball has hit within said floor target within said 5 seconds, a pulse will be provided to the release coil of latch relay No. **2** to cause the return of its contacts to the normally open condition for termination of power to terminal **72** of said time delay. This essentially means that said time delay is de-activated since no pulse will be emitted from terminal **74** to activate pulser No. **2** after said **5** second time interval. Also, said pulse from terminal **67** will be conveyed to latch relay No. **3** to open its normally closed contacts, thus de-activating photo sensor **54** so that it will not cause operation of photoelectric control **68** when a ball hit into said center zone **46** finally rolls out through opening **51** of said annulus wall **44.** If instead, the off-center portion of said target **43** is hit, light source **53** in conjunction with photo sensor **54** will operate to send a signal through the contacts of control relay No. **1** to activate the photoelectric controls **68** to emit a pulse to pulser No. **1.** Activation of said pulser will provide two pulses through terminal **69** for conveyance to said counter to register an accuracy score of 2 for the golf shot. Since the ball has hit within said floor target, pulser No. **2** will be de-activated in the same manner as described above for balls hit within the center zone of said target. It is to be noted that power is provided to light sources **31** and **36** when the upright target is in operation, and to light sources **53** and **57** when the floor target is in operation.

It is to be discerned that when the floor target mode of operation is in affect, subsequent operation of the apparatus will follow the same cycle of operation such as explained above for each ball dislodged from said tee **9.**

Having thusly described the invention, the following is claimed:

1. A golf game apparatus, comprising a golfing lane having a golf ball tee disposed at one end from which golf balls are hit, an upright target disposed at the opposite end for halting balls propelled from said tee, a floor target disposed forward of said upright target, directional accuracy determining and indicating means functionally associated with said tee and each of said targets to automatically provide a numerical accuracy representation for each of said balls propelled toward said targets, and ball momentum determining and indicating means functionally associated with said tee and said upright target to automatically provide a numerical momentum magnitude representation for each of said golf balls propelled toward said upright target with either tee or fairway type golf clubs; said ball momentum magnitude representation being dependent solely on ball velocity or on the time required for said ball to travel a predetermined fixed distance.

2. The invention as defined by claim **1,** whereby said momentum magnitude and said directional accuracy representations are further characterized as being combined to provide a composite score for each of said propelled balls.

3. The invention as defined by claim **2,** wherein said ball momentum determining and indicating means is further characterized as including time sequence signal producing means functional in providing intermittent signals.

4. The invention as defined by claim **3,** wherein said ball momentum determining and indicating means is further characterized as including an indicating device interconnected to receive said intermittent signals for effectuating the display of a numerical representation thereupon.

5. The invention as defined by claim **4,** wherein said ball momentum determining and indicating means is further characterized as including sensing means disposed with respect to said tee and operative in initiating said time sequence signal producing means to emit a signal when a ball is dislodged from said tee.

6. The invention as defined by claim **5,** wherein said ball momentum determining and indicating means is further characterized as including sensing means disposed with respect to said target and operative in terminating the signal emission of said time sequence signal producing means when said ball hits said target.

7. The invention as defined by claim **6,** wherein said directional accuracy determining and indicating means is further characterized as including pulsing means interconnected such as to provide a preset number of

pulses to said indicating device for effectuating the display of a numerical representation thereupon.

8. The invention as defined by claim **7,** wherein said directional accuracy determining and indicating means is further characterized as including upright baffles mounted upon said upright target such as to separate it into discrete zones.

9. The invention as defined by claim **8,** wherein said directional accuracy determining and indicating means is further characterized as including a ball receiver disposed adjacent to said upright target.

10. The invention as defined by claim **9,** wherein said directional accuracy determining and indicating means is further characterized as including ball detection means disposed with respect to said ball receiver and said floor target for classifying balls propelled therewithin.

11. The invention as defined by claim **10,** wherein said indicating device is further characterized as a counter.

12. The invention as defined by calim **11,** wherein said sensing means for initiating the operation of said time sequence signal producing means is further characterized as an acoustic sensing unit, and said sensing means operative in terminating the signal emission of said time sequence signal producing means is further characterized as one or more inertia switches.

13. The invention as defined by claim **12,** further characterized as including ball confining means surrounding said golfing lane for containing therewithin, balls propelled from said tee to said targets.

14. The invention as defined by claim **13,** further characterized as comprising a plurality of said golfing lane combinations adjacently placed such that each will include confining means therebetween for preventing ball cross-fire into adjacent targets.

15. The invention as defined by calim **14,** wherein each of said floor targets are further characterized as including upright annulus walls therewithin for establishing center and off-center zones.

16. The invention as defined by claim **15,** wherein each of said floor targets are further characterized as including ball detection means cooperatively associated with each of said floor targets for providing classifying information as to which zones of said targets were hit.

17. The invention as defined by claim **16,** wherein said center and off-center zones of said floor targets are further characterized as containing cushions functional as damping means for preventing balls propelled into said targets from rebounding out.

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