United States Patent

[11] 3,617,064

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[54] **GOLF GAME**
12 Claims, 12 Drawing Figs.

[52] **U.S. Cl.** ..... **273/176 R,** 273/176 L, 273/185 D
[51] **Int. Cl.** **A63b 67/02**
[50] **Field of Search** 273/176, 184, 185; 73/379, 380, 381

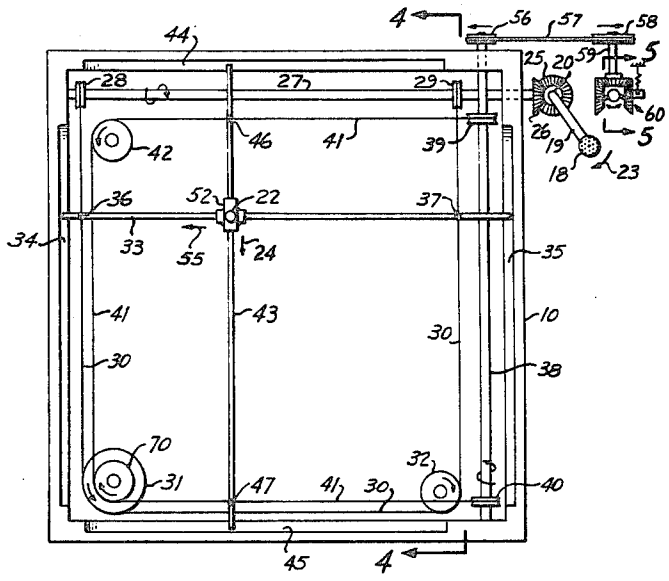
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ABSTRACT: A device which indicates the distance and direction of flight of a struck golf ball includes a translucent disc rotatably mounted to a translucent cover plate on a housing. The disc includes indicia which portrays a representation of golf course fairways and greens. When viewed through the disc, a movable buttonlike member supported within the housing, below the plate, provides an indication of the position of a golf ball on the golf course fairway. The buttonlike member is adapted to be moved both along and laterally of the fairway representation in response to a tethered golf ball and teelike member being struck by a golf club. A system of gears, pulleys and carried rods connected the buttonlike member to the tethered golf ball and teelike member. The movement of the teelike member controls the lateral movement of the buttonlike member.



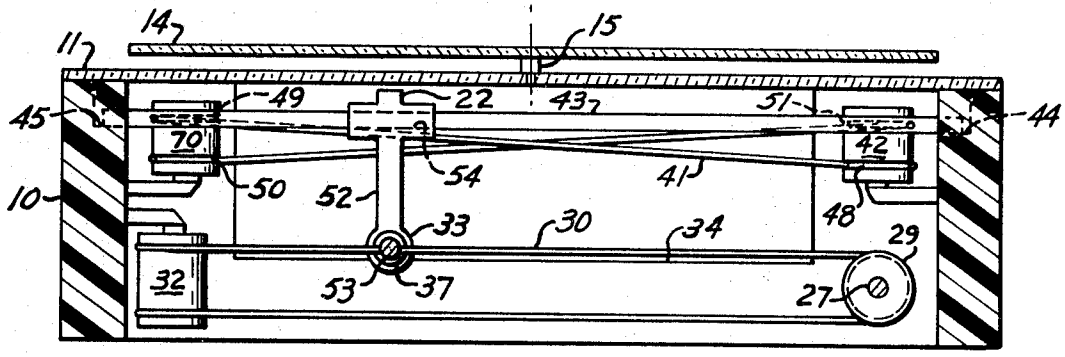


FIG. 4

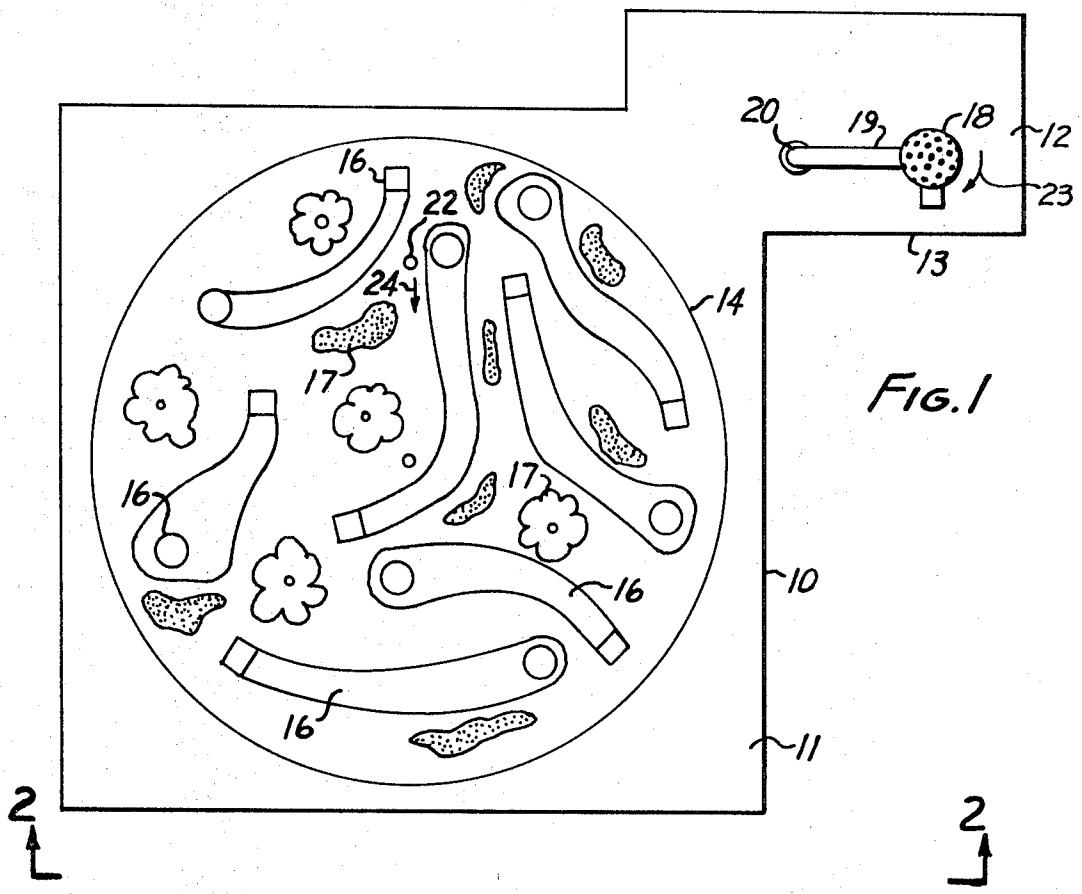


FIG. 1

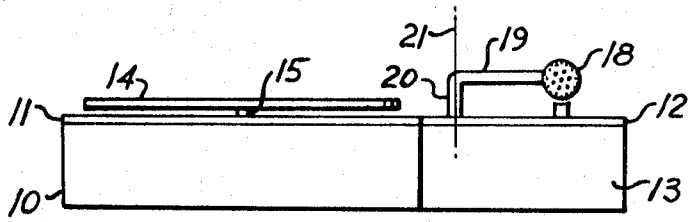


FIG. 2

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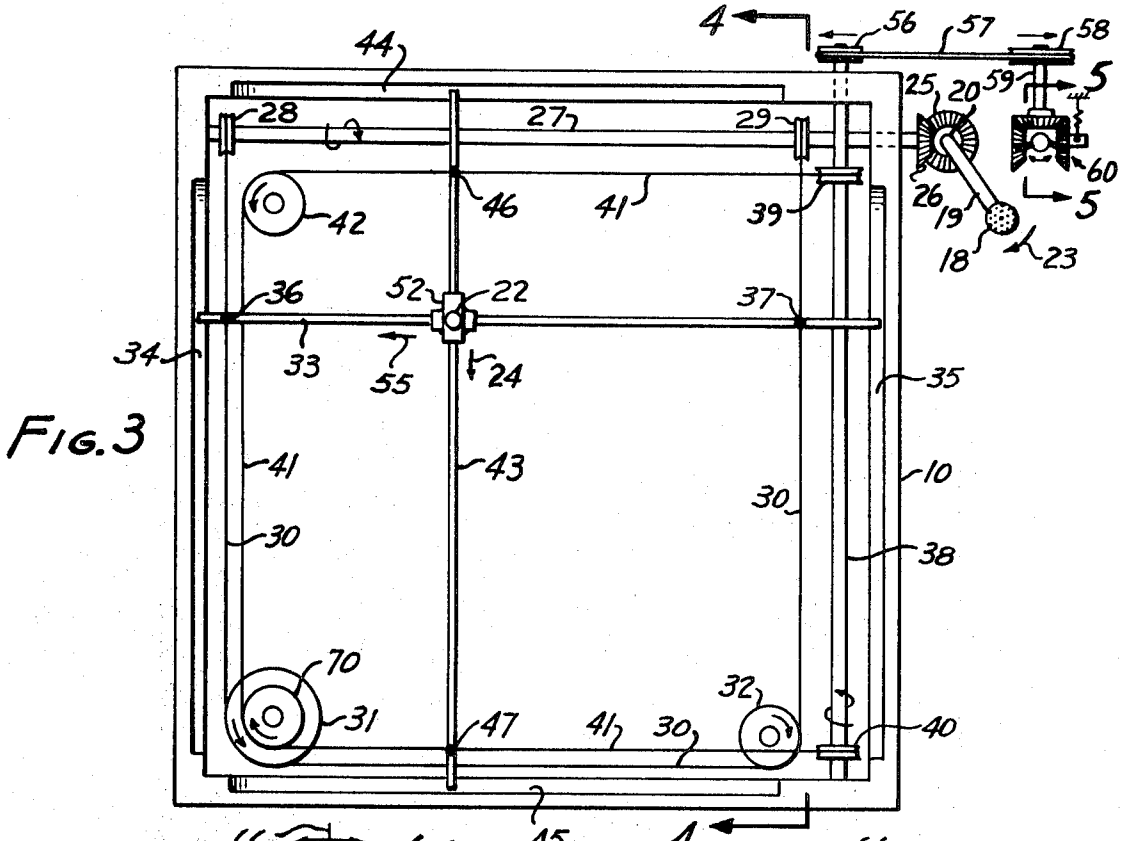


FIG. 3

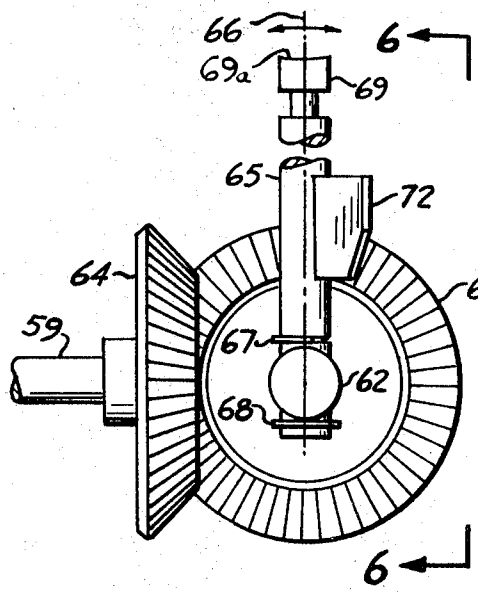


FIG. 5

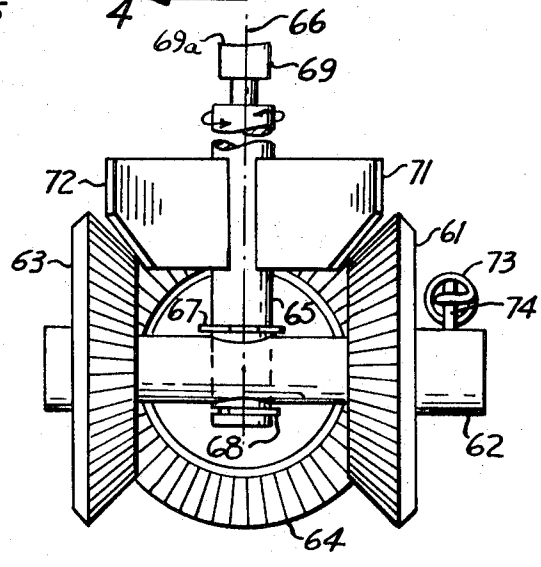


FIG. 6

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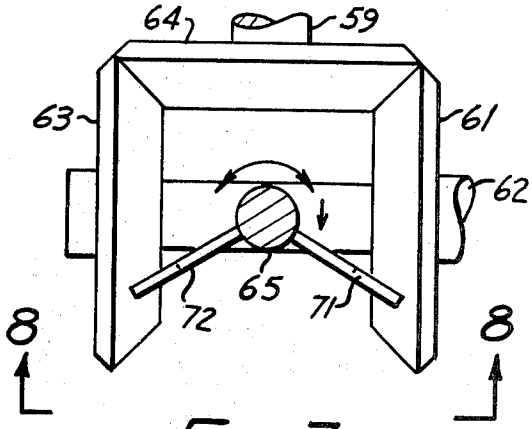


FIG. 7

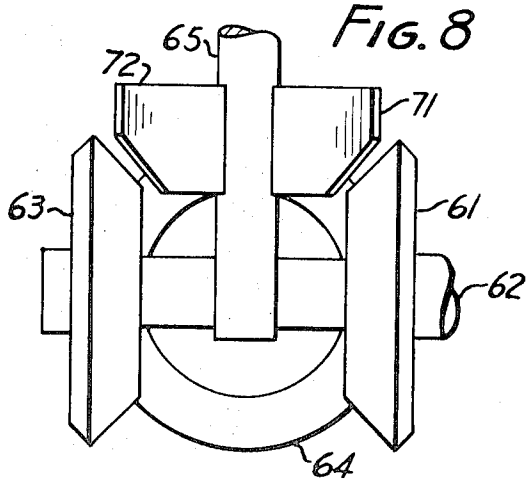


FIG. 8

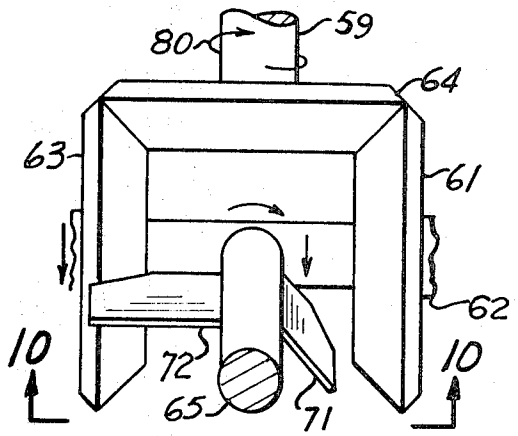


FIG. 9

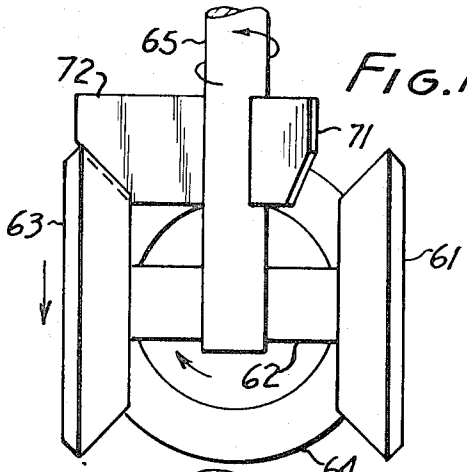


FIG. 10

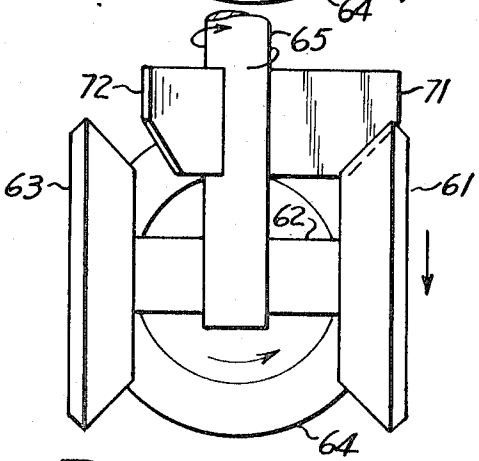


FIG. 12

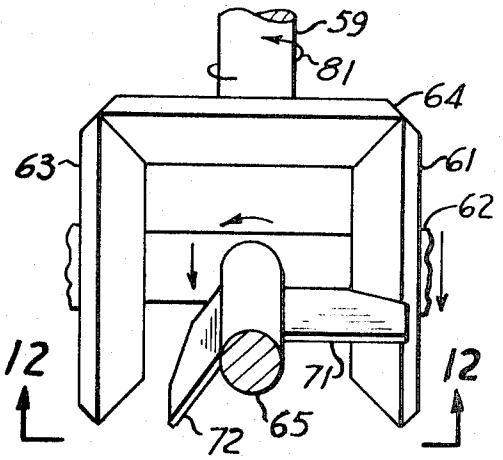


FIG. 11

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GOLF GAME

This invention relates to golfer's aids, and particularly to apparatus whereby a golf ball may be hit or driven with a golf club and indicia indicates the range and accuracy of such hit of drive.

Proficiency at the game of golf is ordinarily measured by accuracy in driving a golf ball down a fairway as well as putting the ball into the golf hole upon reaching the green. Proficiency is not ordinarily achieved until the golfer has spent many hours practicing hitting golf balls. Heretofore, golfers have been able to practice putting on a rug or carpet or other simulated golf green gut have not been able to practice long drives unless they are actually on a golf course or driving range. When the weather conditions were poor, it was not always possible to practice driving golf balls due to the poor condition of a golf course or driving range.

It is an object of the present invention to provide apparatus for simulating fairways whereby a golfer may practice driving golf balls down a fairway, the apparatus indicating the range and accuracy of such drives.

Another object of the present invention is to provide apparatus whereby golfers may practice driving golf balls but no golf ball is actually hit from the premises.

Another object of the present invention is to provide apparatus which permits a golfer to practice hitting golf balls over various golf courses without actually being present at the particular course.

Another object of the present invention is to provide gaming apparatus whereby several players may play golf on a simulated course.

In accordance with the present invention, apparatus is provided whereby a golf ball is fixedly mounted to an extended arm of a rotatable shaft. Upon hitting the golf ball, for example, with a golf club, the ball rotates the shaft thereby causing an indicator to move across a simulated golf course. Gear means associated with the golf ball is provided for moving the indicator to indicate "slicing" or "cutting" the ball with the golf club.

One feature of the present invention resides in the fact that the indicator will move sideways to indicate "slices" and "cuts" due to imperfect hitting of the golf ball.

In accordance with another feature of the present invention, the simulated golf course is rotatable, so that the apparatus may be utilized for simulation of driving first in one direction, and then in another direction.

In accordance with another feature of the present invention, the simulated golf course may simulate actual golf courses so that a golfer may practice drives on fairways of existing golf courses. The above and other features of this invention will be more fully understood in the following detailed description and the accompanying drawings, in which:

FIG. 1 is an elevation view of the apparatus in accordance with the presently preferred embodiment of the present invention;

FIG. 2 is a side view elevation of the apparatus illustrated in FIG. 1 taken at line 2—2 in FIG. 1;

FIG. 3 is a plan view of the apparatus as in FIG. 1 with the top removed to show the mechanics of the apparatus;

FIG. 4 is a section view taken at line 4—4 in FIG. 3;

FIG. 5 is a view of gear arrangement taken at line 5—5 in FIG. 3;

FIG. 6 is an end view of the gears illustrated in FIG. 5 taken at line 6—6 in FIG. 5; and

FIGS. 7–12 illustrate the operation of the gears in various modes of operation of the apparatus. Referring to FIGS. 1 and 2, there is illustrated the golfer's aid apparatus in accordance with the presently preferred embodiment of the present invention. The apparatus comprises a frame 10 supporting translucent top plate 11. Upper surface 12 is disposed on frame 10 over extended portion 13 of the device. Translucent disc 14 is journaled to plate 11 via shaft 15. Translucent disc 14 carries indicia 16 representative of the fairways, greens, and starting pads of various golf courses, the disc carrying indicia of several fairways. Additional indicia 17 indicative of trees, sand traps and the like may be dispersed about the representation of the course to further provide realism to the course depicted on disc 14.

Golf ball 18 is mounted to arm 19 which in turn forms an integral part of vertically disposed shaft 20 which is adapted to be rotated at about axis 21. As will be more fully understood hereinafter, rotation of ball 18 about axis 21 causes rotation of shaft 20 which in turn provides mechanical movement of button or indicia 22 located behind translucent plate 11 below the simulated course depicted by indicia 16 and 17. Rotation of shaft 20 in the direction illustrated by arrow 23 will cause movement of button 22 in the direction of arrow 24. Also, as will be more fully understood hereinafter, if the ball is not hit precisely tangentially to the arc of rotation of the ball, such as might be occasioned by hitting the ball off center, slightly to one side or the other of the tangent of the arc defined by the rotation of the ball abut axis 21, apparatus is provided for moving the indicia 22 in a direction perpendicular to the direction indicated by arrow 24. Hence, in the event that the hit would "slice" or "cut" the ball, which would ordinarily result in the ball taking a curvilinear path on a fairway of a golf course, the movement of the ball is simulated by indicia 22 in that indicia 22 not only moves forwardly along the simulated course but slightly to one side.

FIGS. 3–6 illustrate the operation of the apparatus. As illustrated particularly in FIG. 3, planetary gear 25 is fixed to shaft 20 and is adapted to be driven by rotation of shaft 20. Gear 25 is engaged to gear 26 to rotate gear 26 which in turn drives shaft 27. Shaft 27 is journaled to opposite sides of frame 10. Pulleys 28 and 29 are fixedly attached to shaft 27 and endless belt 30 is wound over pulleys 28 and 29 and about pulleys 31 and 32. Preferably, endless belt 30 is cross over in the region between pulleys 31 and 32 so that the belt passes through an upper slot of one pulley and the lower slot of the other pulley and the pulleys will move in the direction indicated by the arrows thereon when golf ball 18 is moved in the direction of arrow 23. Rod 33 has its ends slidably supported in slots 34 and 35 of frame 10 and, is fixedly attached at points 36 and 37 to endless belt 30.

Shaft 38 is journaled to opposite sides of frame 10 and carries pulleys 39 and 40 fixedly attached thereto. Endless belt 41 is wrapped over pulleys 39, 40, 70, and 42. As in the case of endless belt 30, it is preferred that endless belt 41 be crossed over between pulleys 70 and 42 so that the endless belt passes through an upper slot of one pulley and thence through a lower slot of the next pulley. Rod 43 has its ends slidably supported in slots 44 and 45 of frame 10 and is connected to endless belt 41 at points 46 and 47. The path of endless belt 41 may be traced commencing at point 46, about pulley 39, the lower slot 48 of pulley 42 (FIG. 4), the upper slot 49 of pulley 70, to point 47, about pulley 40, the lower slot 50 of pulley 70, the upper slot 51 of pulley 42, and back to point 46. Likewise, the path of endless belt 30 may be traced, commencing at point 36, around pulley 28 through the lower slot of pulley 31, the upper slot of pulley 32, to point 37, around pulley 29, through the lower slot of pulley 32, the upper slot of pulley 31, and back to point 36.

In the event of rotation of shaft 38, rod 43 moves in a direction normal to rod 33, in the direction of, or reverse to, arrow 55. As illustrated in FIGS. 3 and 4 indicia or button 22 comprises an upper portion of housing 52 which is journaled to each of shafts 33 and 43 by means of oversized passages 53 and 54 respectively.

As heretofore described the rotational movement of gall 18 about axis 21 in the direction of arrow 23 causes movement of indicia 22 in the direction of arrow 24. The extent or distance of movement of indicia 22 is dependent upon the number of rotations of shaft 27 which in turn is dependent upon the number of rotations of ball 18 about axis 21 which inturn is dependent upon the force striking ball 18. Also, as previously indicated, the indicia may be moved normal to the direction of arrow 24 in the direction of arrow 55. The apparatus for accomplishing movement of indicia 22 in the direction of, or op-

posite to, arrow 55 comprises shaft 38, endless belt 41 and pulleys 39, 40, 70, and 42 associated therein.

Shaft 38 is journaled to frame 10 and carries fixedly attached pulley 56 which is coupled by means of belt 57 to pulley 56 which in turn is attached to shaft 59 of gear assembly 60. Gear assembly 60 is illustrated in greater detail in FIGS. 5 and 6. Preferably, belt 57 is crossed over so that pulleys 56 and 58 rotate in opposite directions. Alternatively, a chain of gears may be positioned to drive shaft 38 upon rotational movement of shaft 59.

Gear assembly 60, illustrated in greater detail in FIGS. 5 and 6, comprises a set of differential gears having gear 61 journaled to shaft 62 by means of bearings (not shown). Gear 64 is fixedly attached to shaft 59 and is engaged to gears 63 and 61. It is to be understood that a housing (not shown) holds the assemblage together, the housing having been removed for purposes of illustration.

Shaft 65 is journaled to shaft 62 and is adapted to rotate about axis 66. Clips 67 and 68 are fastened to shaft 65 on each side of shaft 62 to prevent movement of shaft 65 along its axis.

Tee 69, having an indented portion 69*a* conforming to ball 18, is mounted to the uppermost portion of shaft 65 and is positioned directly beneath golf ball 18 when shaft 65 is in its upright or normal position and when ball 18 is in the position shown in FIG. 1. Hence, tee 69 simulates the tee on which the golf ball normally rests prior to being hit by a golfer on an actual golf fairway. Teeth 71 and 72 are mounted to shaft 66 and are so disposed and arranged with gears 61 and 63 that upon clockwise rotation of shaft 65 about axis 66, tooth 72 engages gear 63, and upon counterclockwise rotation of shaft 65, tooth 71 engages gear 61. Spring 73 is attached to pin 74 which in turn is mounted to shaft 62 outside of the gear arrangement so that upon rotation of shaft 62 in a clockwise direction (as appears in FIG. 5) spring 72 is biased in tension to bias shaft 62 back to the position illustrated in FIGS. 5 and 6.

In operation of the apparatus in accordance with the present invention, indicia 22 is moved to a position below the tee on the course shown by indicia 16 on disc 14, and the disc is rotated so that the direction of arrow 24 corresponds to the direction in which the player desires to drive the ball. Ball 18 is positioned over tee 69, and the player standing adjacent ball 18 hits the ball with an ordinary golf club. Upon hitting the ball 18, the ball rotates in the direction of around axis 21 driving shaft 27 several revolutions to drive belt 30. At the same time, the golfer's club might strike golf tee 69 causing it likewise to rotate shaft 65 about axis 66 so that one or the other of teeth 71 and 72 engage a respective gear 61 and 63. Tee 69 is rotated about shaft 62 to drive the gear engaged by tooth 71 or 72 to drive shaft 38 to drive endless belt 41.

Rotation of shaft 27 and driving of belt 30 causes rod 33 to move laterally in the direction of arrow 24, carrying with it indicia 22 which is slidably attached to rod 43. Also, rotation of tee 69 causes one of the teeth 71 or 72 to engage one of the gears 63 or 61, respectively, to drive gear 64 and shaft 59 in a respective direction.

In the case illustrated in FIGS. 9 and 10, the player has hit tee 69 off center in such direction that a ball on a tee would travel forwardly and to the right (looking down a fairway), shaft 65 is rotated clockwise so that tooth 72 engages gear 63. As tee 69 rotates shaft 62, gear 63 is driven to rotate gear 64 and shaft 59 in the direction illustrated by arrow 80. Shaft 38 is driven by pulleys 56 and 58 and belt 57 in such a manner that endless belt 41 moves rod 43 in the direction illustrated by arrow 55. At the same time, rod 33 travels in the direction illustrated by arrow 24 due to rotation of ball 18 about the axis of shaft 20. Indicia 22, being loosely coupled to rods 33 and 43 moves down the fairway and somewhat to the right in the simulated fairway illustrated on disc 14 (FIG. 1).

Conversely, and as illustrated in FIGS. 11 and 12, if tee 69 is hit in such a manner that a ball on the tee would be driven to the left (as looking down the fairway) a counterclockwise rotation is imparted to shaft 65 causing tooth 71 to engage gear 61 thereby driving shaft 59 in the direction illustrated by arrow 81. Hence, shaft 38 will be driven in the direction opposite to that indicated so that endless belt 41 drives rod 43 in the direction opposite to arrow 55 so that indicia 22 would appear to move forwardly and to the left down the simulated fairway on disc 14.

In the event that a direct hit is made on ball 18, shaft 65 is not rotated about axis 66 and instead rotates about the axis of shaft 62 so that neither tooth 71 or 72 engages a respective gear, and shaft 38 is not rotated. FIGS. 7 and 8 illustrate the condition of a direct hit on the ball.

Spring 73 is provided for the purpose of returning shaft 62 to the position illustrated in FIGS. 5 and 6 after each hit by the golfer. In this regard, each time shaft 62 is rotated about its axis, increased tension on spring 73 mechanically biases shaft 62 at pin 74 to return shaft 62 to its original position. Stop means (not shown) may be provided to limit the travel of shaft 65.

In the event that it is desirable to alter the direction of travel of indicia 22 down the fairway, such alteration can be achieved by relatively rotating disc 14 until angular position of disc 14 is such that the direction of arrow is directly in line of the desired direction in which the player desires to hit a ball.

The present invention thus provides a golfer's aid whereby a golfer may practice driving a golf ball on a simulated fairway. The apparatus is compact and may be used in a building, such as a living room of a home or apartment. The indicia moves across the simulated fairway by a distance corresponding to the force striking ball 18 and can be accurately related by means of the gears to the scale of the course depicted on disc 14.

According to one feature of the invention, the indicia 16 indicates the putting green may be independently rotatable on disc 14 so that in the event that a golfer hits indicator 22 past the "cup," the green may be rotated so the golfer can putt back to the cup.

Several players may engage in a game of golf at one time and the indicia 22 may be moved from position to position in accordance with the location of the golf ball of the player playing at the particular time. In the event several players are engaged in a game utilizing the apparatus in accordance with the present invention, it would be desirable to include removable indicia (not shown) to be attached to disc 14 to indicate the position of each player's golf ball.

The apparatus according to this invention is useful and for driving an indicator down a simulated fairway by hitting a golf ball so that the apparatus simulates the drive of the ball on a fairway. With the apparatus, the golfer is able to make several drives to the green and then putt on the green to the simulated golf hole. The present invention thus provides apparatus by which an entire game of golf may be simulated and which permits the playing of one, or several, players at a time.

Although the present invention has been described in connection with mechanical drive mechanisms for driving indicia 22, it is to be understood that motor means, such as an electrical motor, may be utilized for moving indicia 22. In this regard, it is possible that sensor means (not shown) responsive to the speed of rotation of shaft 20, could operate on such motor means to drive indicia 22 forwardly in the direction of arrow 24, and position-sensitive means, such as contact switches (not shown) could be associated with shaft 65 to sense hits on ball 18 which are not directly in line with the tangent of the arc traveled by the ball about axis 21.

One feature of the invention resides in the fact that disc 14 may depict an actual golf course, or fairways on actual golf courses so that the user may practice his swing and relate such practice to existing courses. Disc 14 is removable from the socket receiving shaft 15 in plate 11 so that replacement disc 14 depicting other courses may be mounted to plate 11.

This invention is not to be limited by the embodiment shown in the drawings and described in the description, which is given by way of example and not of limitation, but only in accordance with the scope of the appended claims.

What is claimed is:

1. Apparatus comprising: a housing supporting a platform; movable indicia means supported by said housing for indicating a simulated position of a golf ball on said platform; a ball supported by said housing and adapted to be struck by a golf club; and drive means for moving said indicia means in a direction and for distance across said platform dependent upon the direction and force striking the ball.

2. Apparatus according to claim 1 wherein said drive means comprises first motive means for moving said indicia means in a first direction for a distance dependent upon the force striking said ball and second motive means for moving said indicia in a direction perpendicular to said first direction.

3. Apparatus according to claim 2 wherein said ball is mounted to an extended arm of a shaft having an axis about which the shaft and ball may be rotated, said second motive means being operable to move said indicia means when said ball is struck in a direction which is not tangent to the arc of travel of said ball about said axis.

4. Apparatus according to claim 2 wherein said first motive means comprises first carrier means supported by said housing and coupled to said indicia means, support shaft means defining an axis and having an outwardly extending arm, said ball being mounted to said outwardly extending arm and coupled to said shaft means and said first carrier means for moving said carrier means in a direction parallel to said first direction upon rotation of said shaft means about said axis.

5. Apparatus according to claim 4 wherein said second motive means comprises second carrier means supported by said housing and coupled to said indicia means, and means coupled to said second carrier means for moving said second carrier means in a direction perpendicular to said first direction upon striking said ball in a direction not parallel to the tangent of the arc of rotation of said ball about said axis at the point of impact of the ball.

6. Apparatus according to claim 5 wherein said indicia means includes a body, first journal means journaling said body to said first carrier means for movement along said first carrier means and second journal means journaling said body to said second carrier means for movement along said second carrier means

7. Apparatus according to claim 2 wherein said first motive means comprises a first drive shaft journaled to said housing, a substantially vertical support shaft defining an axis and having an outwardly extending arm, said ball being mounted to said outwardly extended arm, gear means coupling said support shaft to said first drive shaft so that upon rotation of said ball about said axis said first drive shaft is rotated, a first carrier rod slidably supported by said housing, the length of said first carrier rod being disposed substantially normal to said first direction, and first endless belt means being attached to said first carrier rod and coupled to said first drive shaft to move said first carrier rod in a direction parallel to said first direction upon rotation of said first drive shaft, and said second motive means comprises a second drive shaft journaled to said housing, an upwardly extending shaft having a tip adapted to be positioned on the arc of rotation of said ball in close proximity to said ball, sensor means coupled to said second drive shaft to rotate said second drive shaft when said upwardly extending shaft is moved in a direction not parallel to the tangent of the arc of rotation of said ball, said second drive shaft being rotated in one direction when said upwardly extending shaft is moved to one side of said tangent and said second drive shaft being rotated in the opposite direction when said upwardly extending shaft is moved to the opposite side of said tangent, a second carrier rod slidably supported by said housing, the length of said second carrier rod being disposed substantially parallel to said first direction, and second endless belt means attached to said second carrier rod and coupled to said second drive shaft to move said second carrier rod in a direction perpendicular to said first direction upon rotation of said second drive shaft, said indicia means being coupled to said first and second carrier rods to move with said carrier rods.

8. Apparatus according to claim 7 wherein said indicia means includes a body, first journal means journaling said body to said first carrier rod for movement along the length of said first carrier rod, and second journal means journaling said body to said second carrier rod for movement along the length of said second carrier rod.

9. Apparatus according to claim 7 wherein said sensor means comprises differential gear means comprising a driven gear coupled to said second drive shaft, and first and second drive gears engaged to said driven gear, said upwardly extending shaft being coupled to a further shaft which is journaled to said first and second drive gears, first and second tooth means mounted to said upwardly extending shaft whereby upon striking said tip in a direction not parallel to the tangent of the arc of rotation of said ball one of said tooth means engages a respective one of said drive gears and said upwardly extending shaft rotates about the axis of said further shaft thereby driving said respective drive gear to said driven gear in a respective direction.

10. Apparatus according to claim 9 wherein said indicia means includes a body, first journal means journaling said body to said first carrier rod for movement along the length of said first carrier rod, and second journal means journaling said body to said second carrier rod for movement along the length of said second carrier rod.

11. Apparatus according to claim 2 further including means journaling said platform to said housing for rotation about an axis of said platform.

12. Apparatus according to claim 2 further including fixed indicia means on said platform depicting a golf course.

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