United States Patent

[11] **3,620,536**

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[21] Appl. No. **17,229**
[22] Filed **Mar. 6, 1970**
[45] Patented **Nov. 16, 1971**

[54] **GOLF COURSE**
14 Claims, 19 Drawing Figs.

[52] **U.S. Cl.** ..... **273/176 A,** 273/182 R
[51] **Int. Cl.** **A63b 67/02,** A63b 69/36
[50] **Field of Search** 273/176, 181, 182

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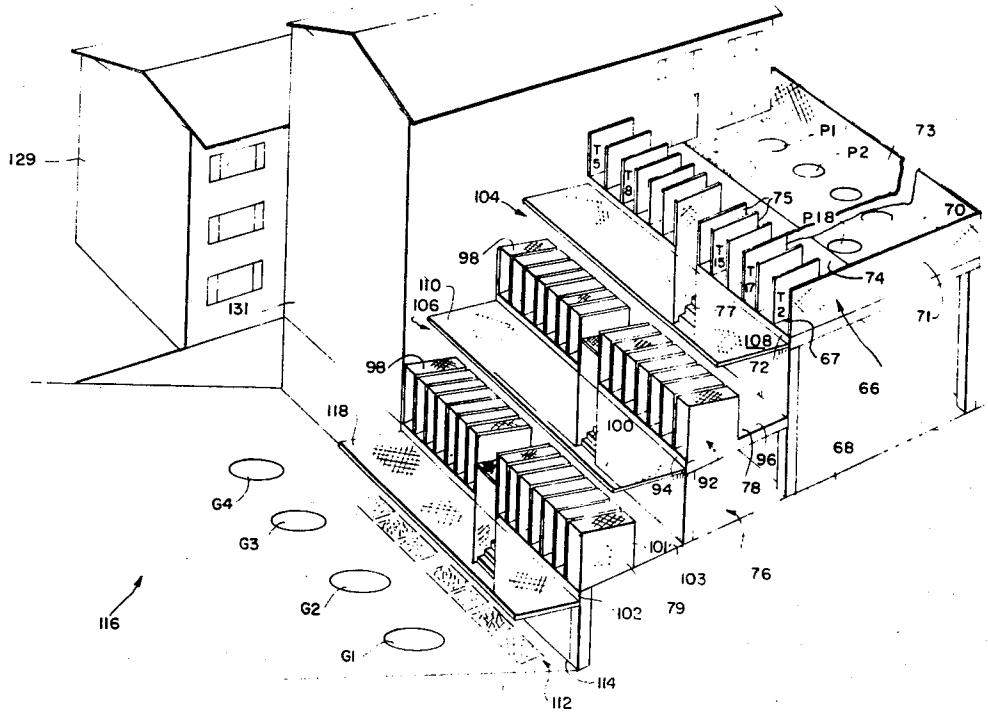
Primary Examiner—George J. Marlo
Attorney—Finnegan, Henderson & Farabow

ABSTRACT: A golf course having two parallel fairways and a supplementary green area separating the fairways. A hitting area for hitting golf balls onto the fairways includes a tee level for hitting drive shots onto the fairways and first and second approach levels positioned in front of and vertically below the tee level for hitting approach shots onto the fairways. Protective screens separate the levels from each other so that golf balls hit on one level cannot injure players on another level. The fairways have a first group of target greens at their far end and a second group of target greens are spaced along the fairways at different distances from the front of the tee level. The fairways slope downward toward the tee area and may be formed as part of the existing terrain. Alternatively, the fairways may be made of a green colored wire mesh material including upwardly projecting bumpers. Gutters are provided at the sides of the fairways for retrieving driven golf balls. Deflectors, adopted to be moved, separate the gutters from the fairways. The target greens are in the form of panels having the front ends supported by jacks to permit tilting same. Balls are removed from the supplementary green area by a system of rollers which sweep across same and move golf balls into a centrally located gutter. Golf putting greens are located behind the tee areas.



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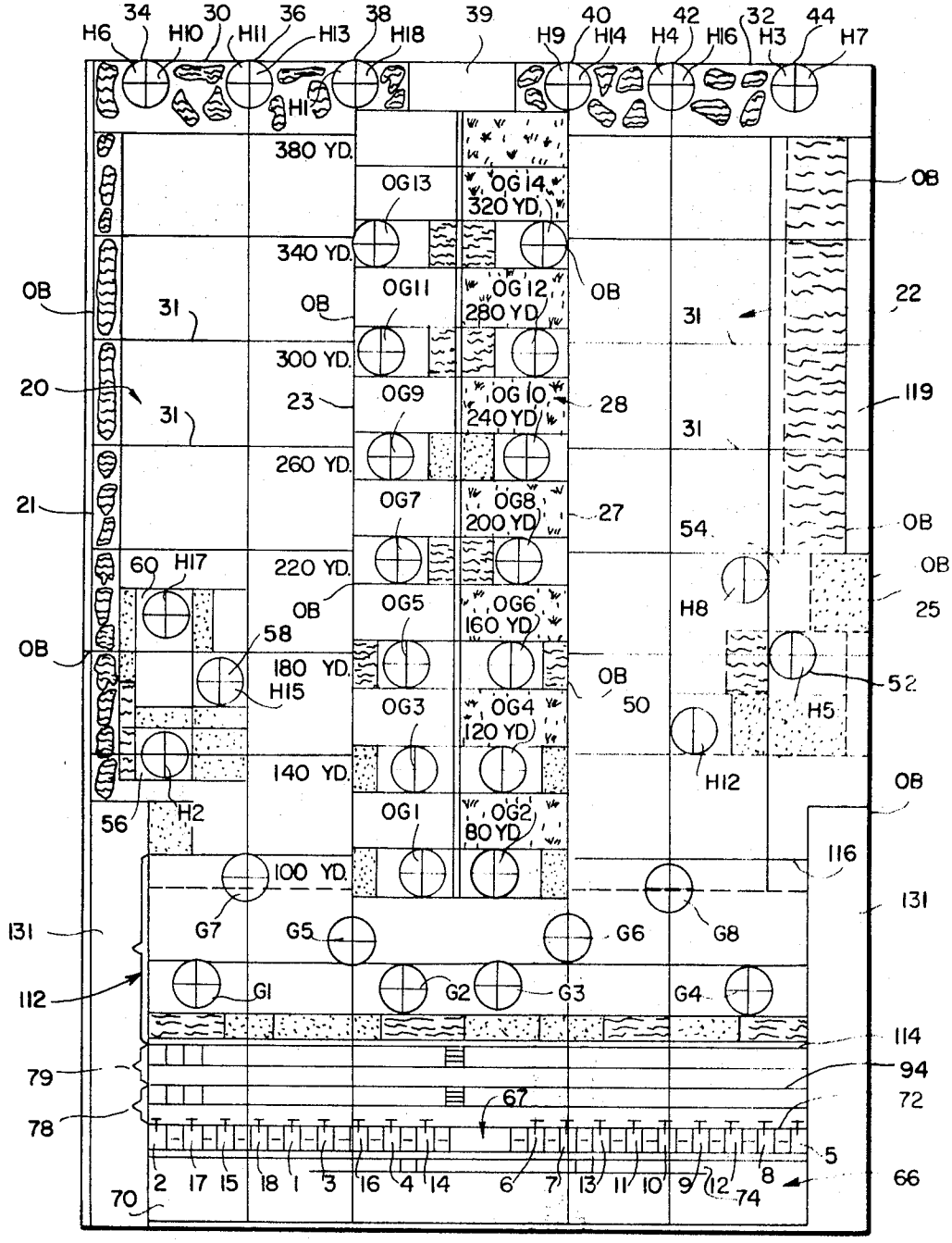

FIG. 1

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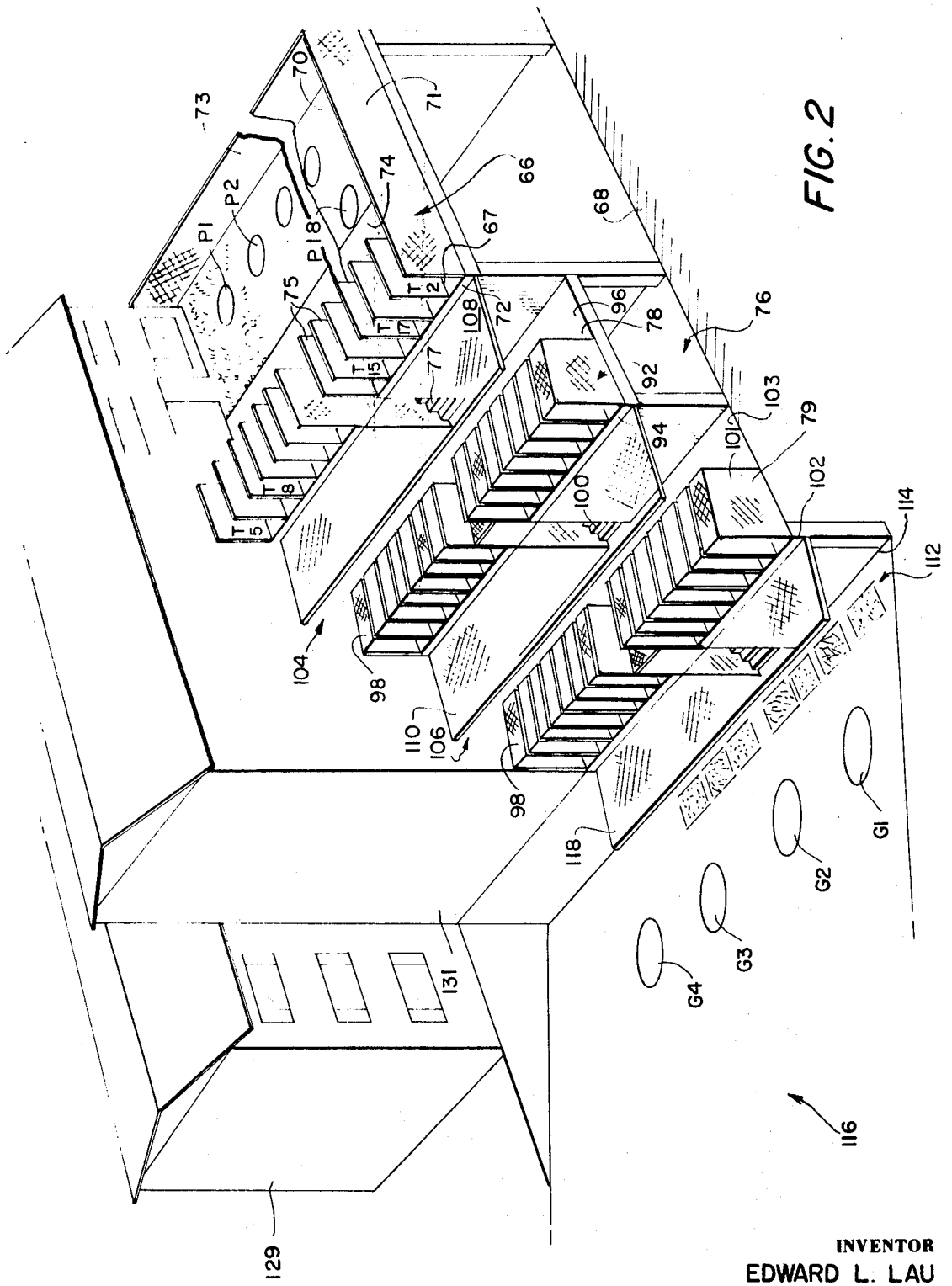

FIG. 2

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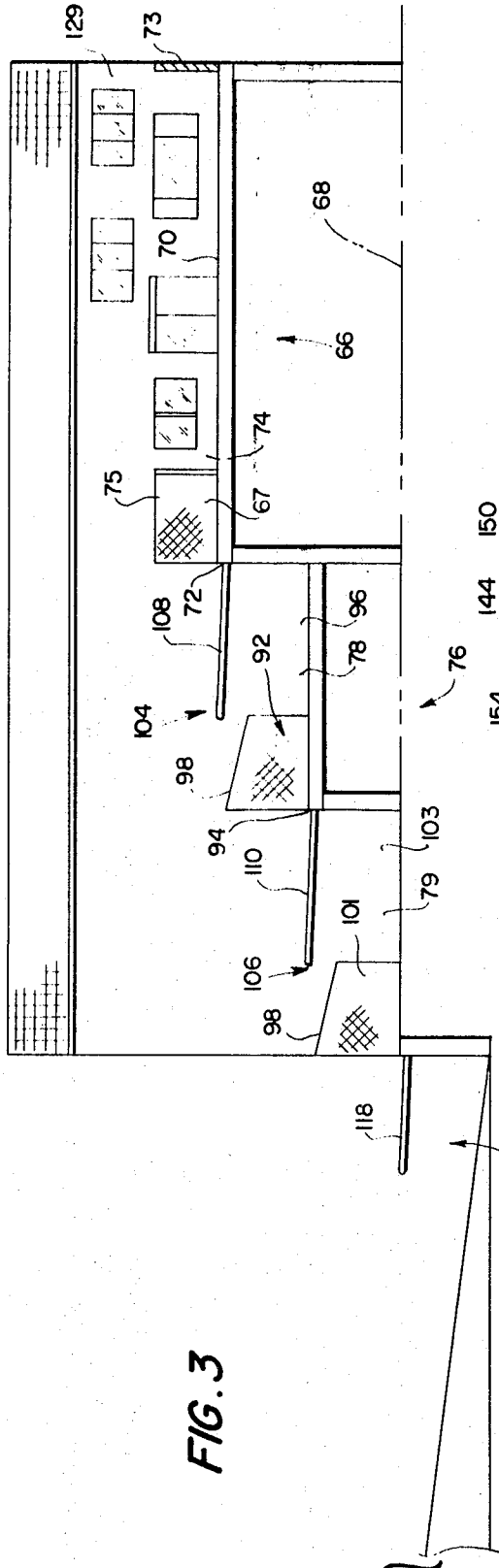

FIG. 3

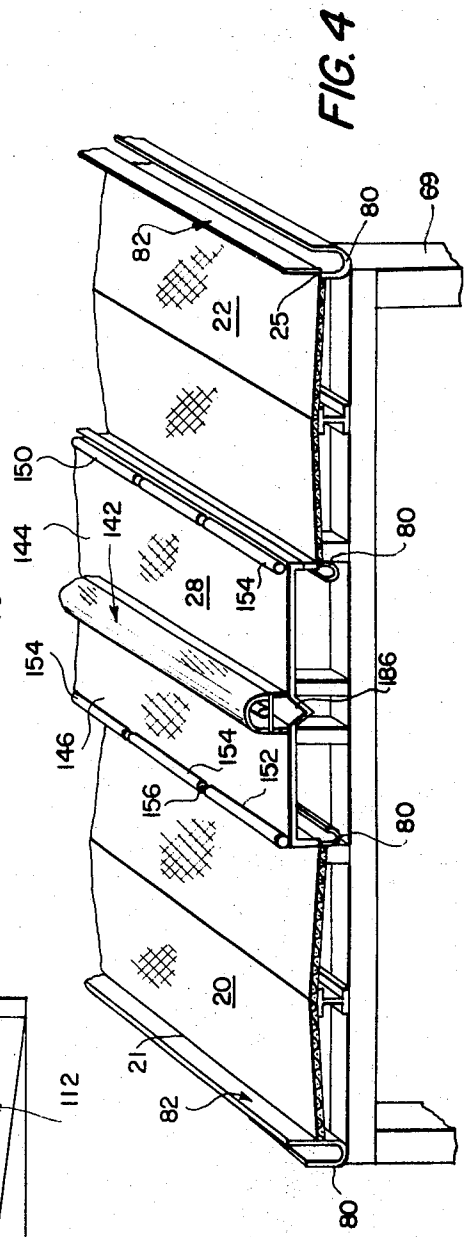

FIG. 4

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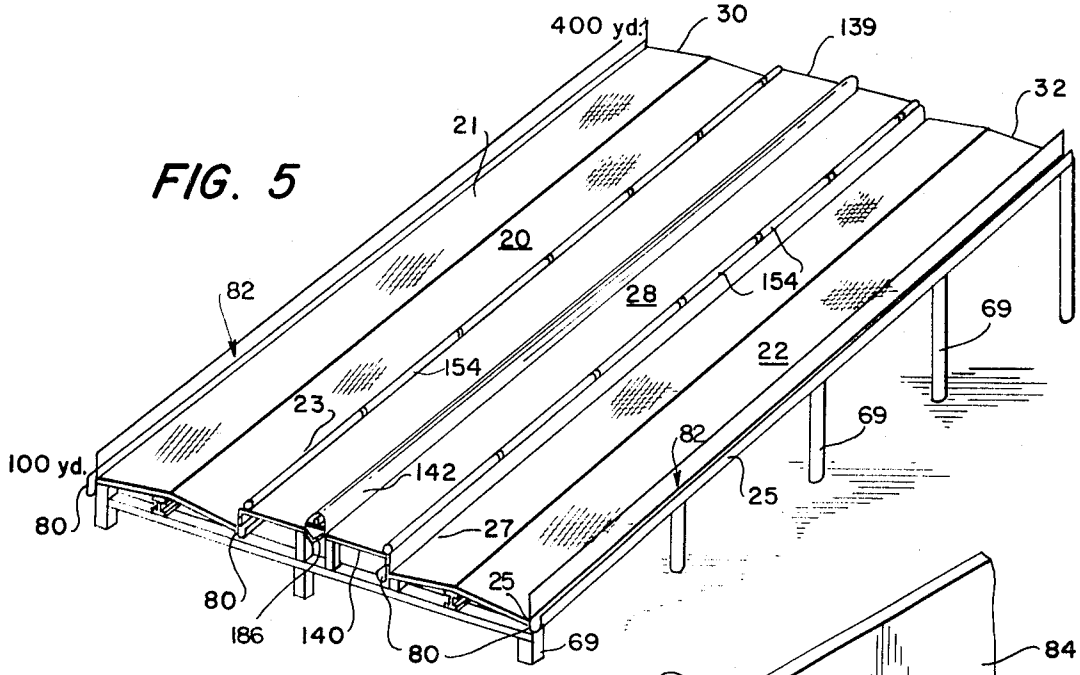
FIG. 5



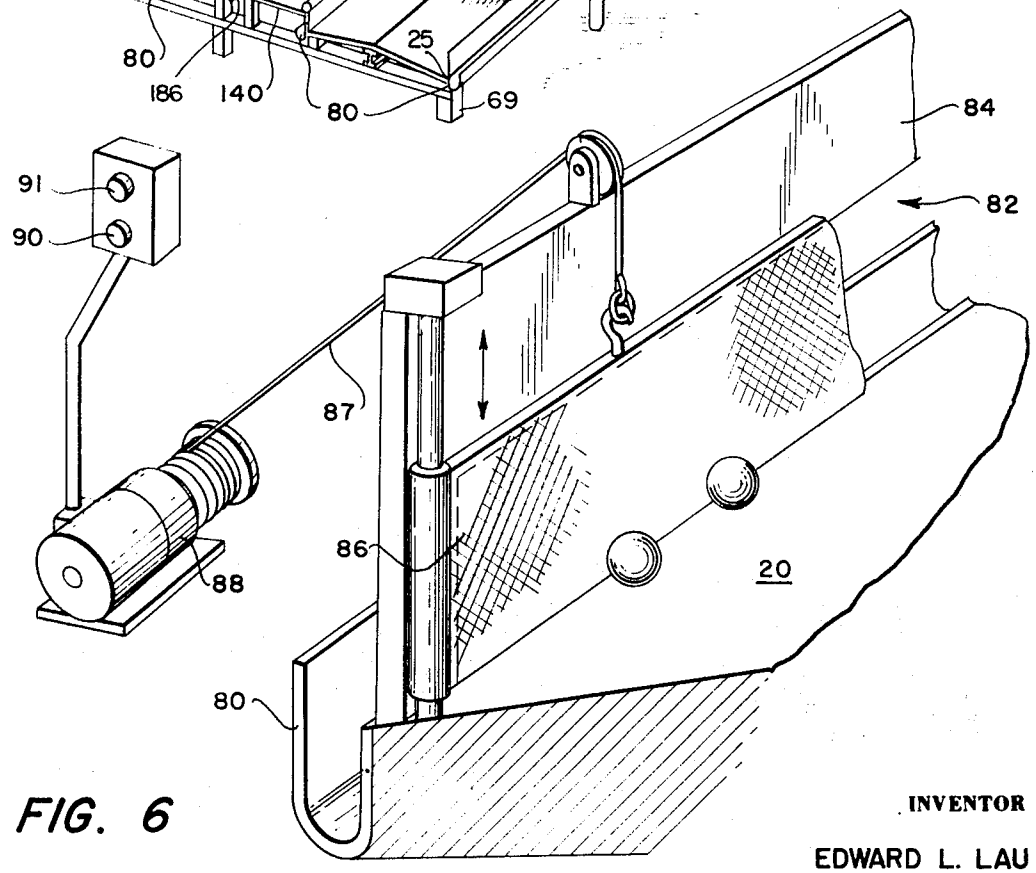


FIG. 6

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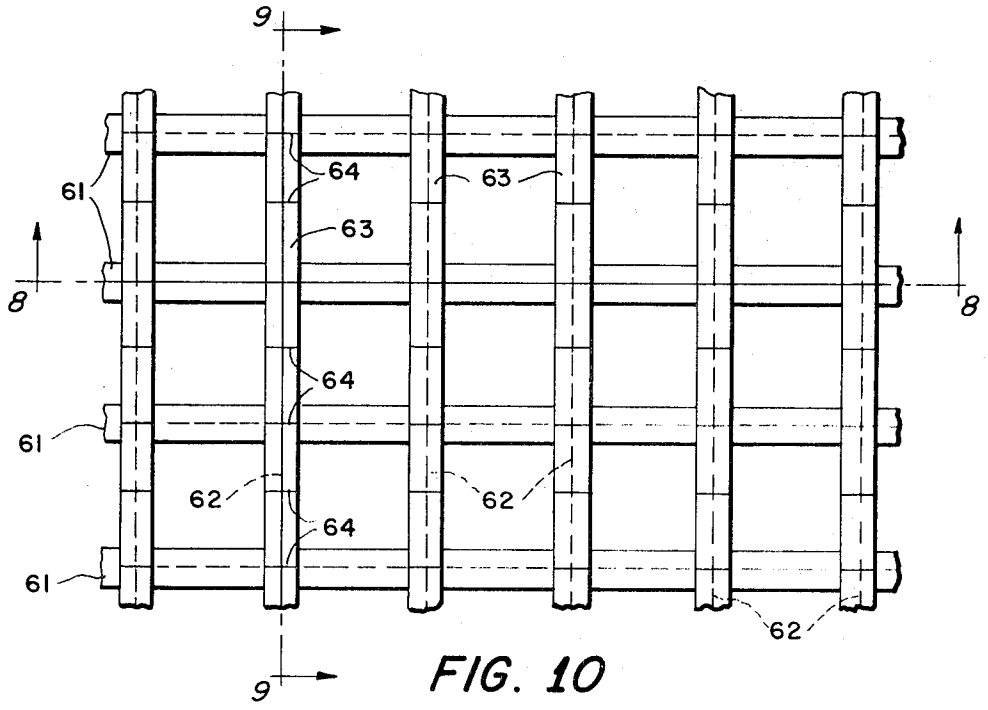


FIG. 10

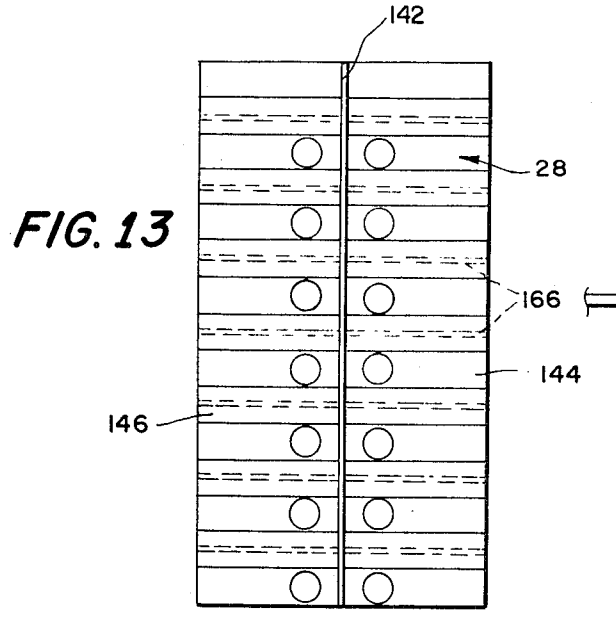
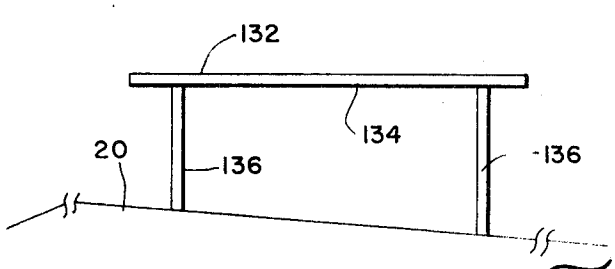


FIG. 13



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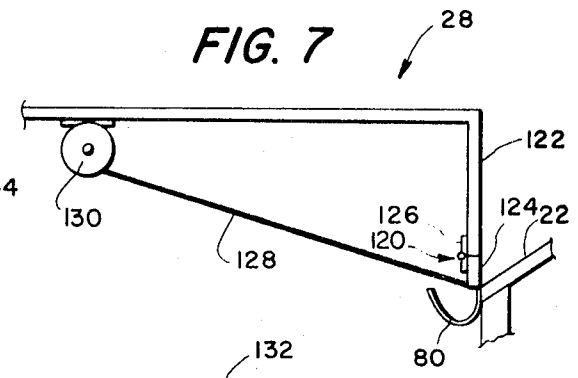

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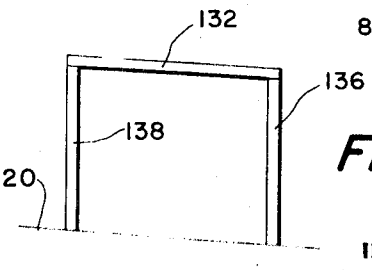

FIG. 9

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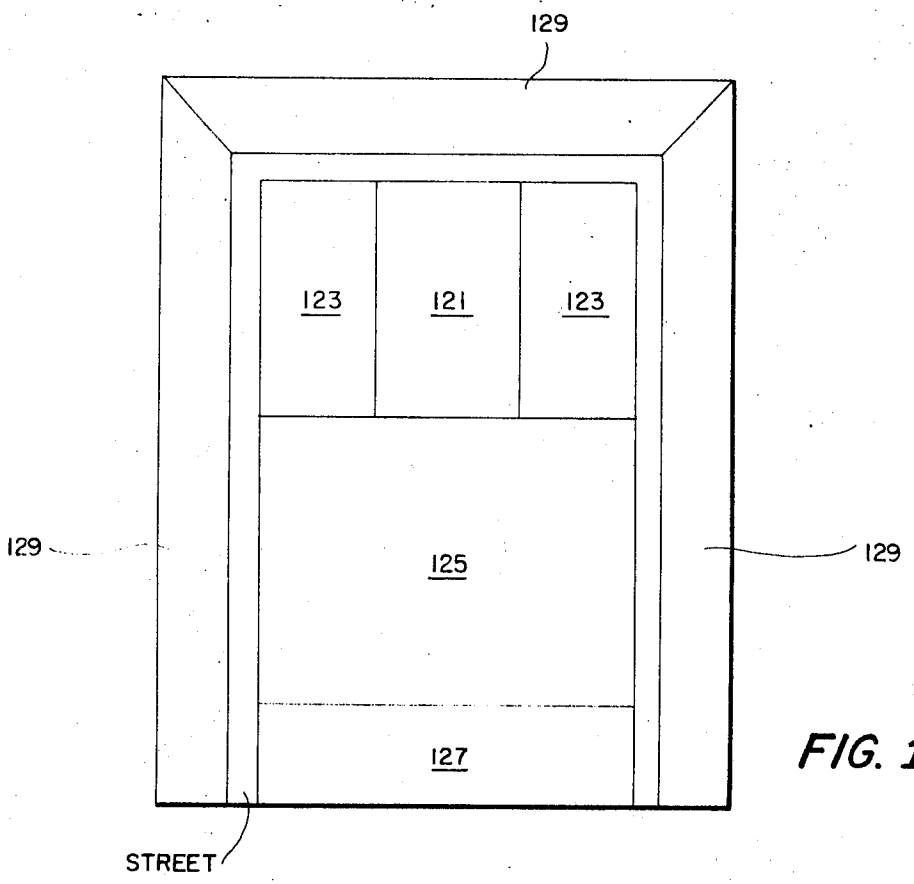

FIG. 19

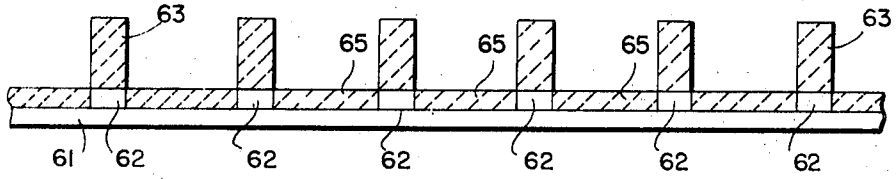

FIG. 11

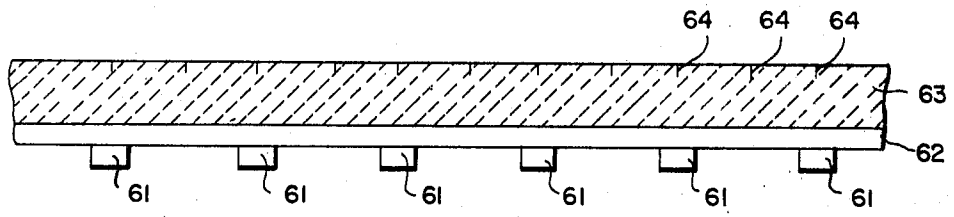

FIG. 12

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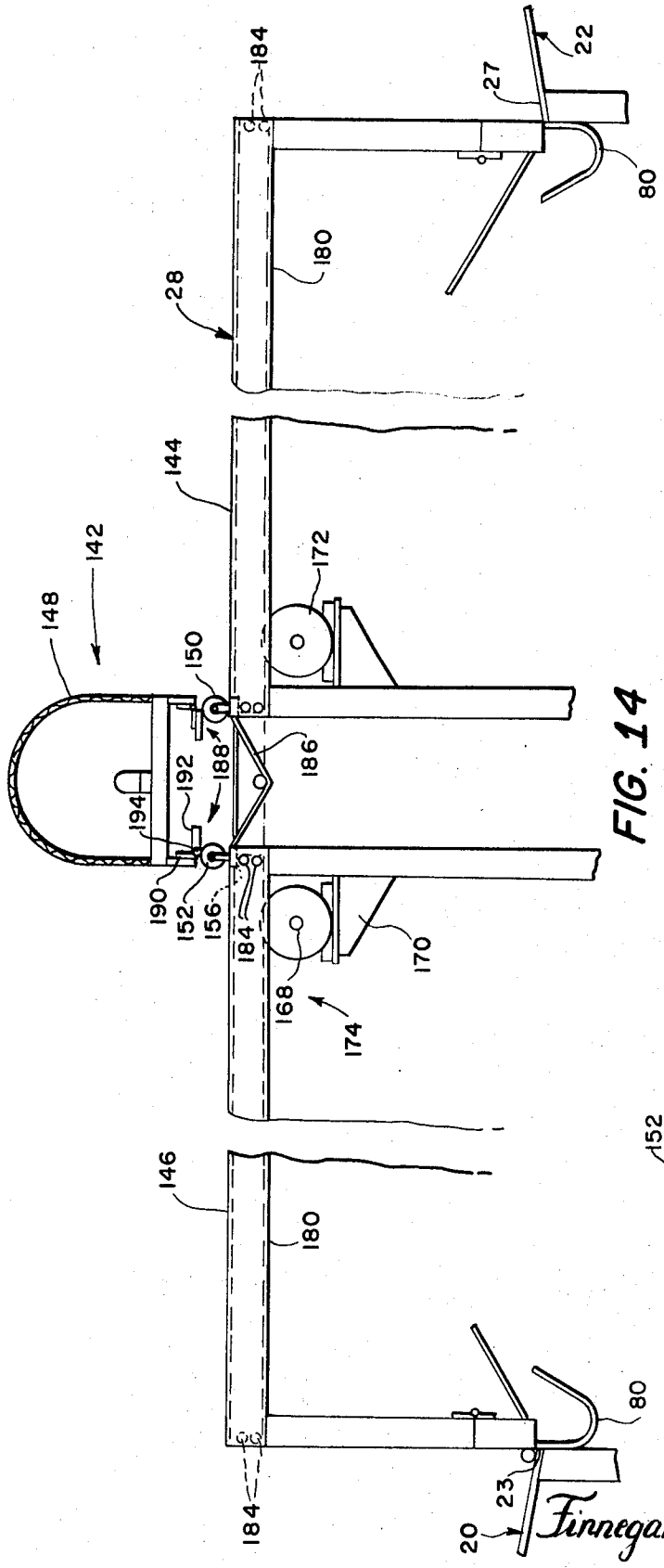

FIG. 14

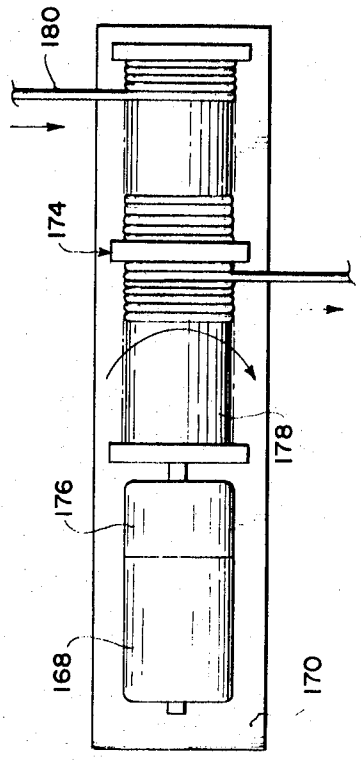

FIG. 16

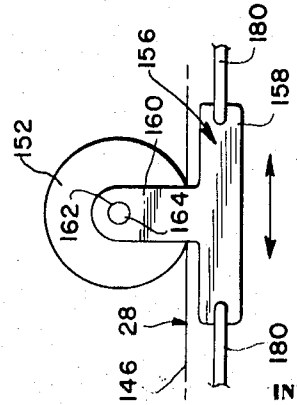

FIG. 15

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HOLE	PAR	MEN'S YDG	HDC	LADIES YDG
1	4	365	7	350
2	3	155	15	155
3	4	450	9	425
4	5	570	3	510
5	3	200	11	200
6	4	425	13	400
7	4	470	1	445
8	3	145	17	145
9	5	525	5	480
OUT	35	3305		3110

ADDRESS

PHONE

HOLE	PAR	MEN'S YDG.	HDC	LADIES YDG.
10	4	390	16	360
11	4	485	2	460
12	3	165	18	165
13	5	510	6	495
14	4	445	10	425
15	3	180	12	180
16	4	460	8	440
17	3	210	14	210
18	5	585	4	545
IN	35	3430		3280
OUT	35	3305		3110
TOT	70	6735		6390
LESS HANDICAP				
NET SCORE				

SCORER

ATTEST

CADDY

DATE

29

FIG. 17

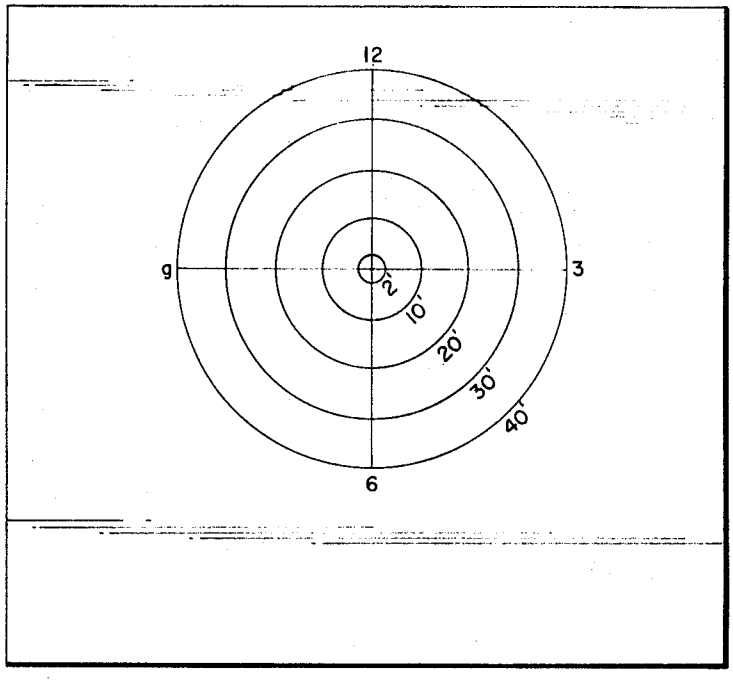

FIG. 18

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GOLF COURSE

This invention relates to golf courses and more particularly to golf courses for playing a game which closely simulates the conventional game of golf.

The prior art has developed many types of golf courses which attempt to simulate the conventional golf game in one or more aspects. For example, there are a vast number of miniature golf courses which provide players with an opportunity to practice the putting stroke. There are also pitch and putt golf courses which enable players to practice both the putting strokes and pitch or chip shots that are normally used in a game of golf. Further, golf courses which use a relatively small amount of land have been designed to simulate all of the different strokes of golf. However, these golf courses have not satisfied the need of more golf courses for the public.

There has been a growing recognition of the need for golf courses which successfully overcomes the shortcomings of the conventional 18-hole course and which incorporate all of its advantageous features. The game of golf has reached such a degree of popularity that the number of golf courses presently available are not able to accommodate the large number of people who desire to play. As a result of this shortage, waiting times to begin play of 3 to 4 hours are not uncommon.

Further, since each group of players must wait for the preceding group to finish play in a particular fairway or green, the time to play eighteen holes is often unduly extended.

Moreover, the high cost of land and the large extent of land necessary to build conventional golf courses serve as a barrier to the building of new gold courses.

The popularity of golf is due in large measure to the success of the professional tournaments which enable spectators to watch a gathering of top golfers compete. However, the spectators are able to watch only one group at a time and must either follow the group through 18 holes of play to see the play of all the holes or must stay at one hole to see all the groups. Therefore, it would be desirable to provide a golf course which enables the spectators to observe all of the golfers and all of the holes from a central location without having to scurry about the golf course.

Accordingly, it is an object of this invention to provide a golf course which requires a relatively small amount of land and which will enable the golfer to use all the golf clubs that are normally used in conventional game of golf.

It is another object of this invention to provide a golf course which can accommodate a great number of people at the same time and which reduces the time necessary to play a full 18 holes of golf.

It is a further object of this invention to provide a gold course which enables spectators to readily observe the play of all of the golfers on all of the holes of the golf course from a spectator section.

It is yet another object of this invention to provide a golf course which can be used on a 24 hours a day basis to accommodate a large number of players and which enables the better and faster players to go ahead of the less experienced and slower players so that the slower players do not present a burden on the golf course.

A further object of this invention is to provide a golf course which affords both the playing golfers and the viewing spectators the utmost protection from injury.

Additional objects and advantages of the invention will be set forth in part in the description which follows and in part will be obvious from that description or may be learned by the practice of the invention. The objects and advantages are realized and attained by means of the instrumentalities and combinations particularly pointed out in the appended claims.

In accordance with its purpose, as embodied and broadly described, the golf course of the present invention comprises a plurality of adjacent fairways each having a far end, a near end and opposed sides, and a hitting area at the near end of the fairways for hitting golf balls onto the fairways. The hitting area includes an upper tee level having a plurality of tees at a front edge for hitting drive shots onto the fairways and an approach level vertically spaced below and in front of the tee level and closer to the far ends of the fairways that the tee level for hitting approach shots onto the fairway. A protective covering extending from the front edge of the tee level and directly above the approach level separates the approach level from the tee level and prevents golf balls hit on the tee level from reaching the approach level. A first group of target green are at the far end of each fairway and a second group of target greens are spaced along each of the fairways at different distances from the front edge of the tee level.

Preferably, the golf course includes a sand trap, rough, and chip shot level vertically spaced below and in front of the approach level and separated from the approach level and tee level by a protective screen extending from the approach level and directly above the sand trap, rough and chip shot level. It is also preferred that the tee level have a plurality of putting greens behind the tees. The approach level preferably comprises a first approach level vertically spaced below and in front of the tee level and a second approach level vertically spaced below and in front of the first approach level and the protective covering includes a wire screen which separates the second approach level from the first approach level and tee level.

Desirably, the fairways are sloped downwardly from the far end toward the near end and are further sloped downwardly from their center toward their sides. It is also desirable to provide a supplementary area between the adjacent fairways.

The invention consists in the novel parts, constructions, arrangements, combinations, and improvements shown and described. The accompanying drawings, which are incorporated in and constitute a part of this specification, illustrate examples of preferred embodiments of the invention, and together with the description, serve to explain the principles of the invention.

It is to be understood that both the foregoing general description and the following detailed description are exemplary and explanatory but are not restrictive of the invention.

Of the drawings:

FIG. **1** is a plan view of a golf course made in accordance with the teachings of this invention;

FIG. **2** is a perspective view of the hitting area of this invention but showing only a representative number of tees and approach stalls;

FIG. **3** is a side view of the hitting area of this invention;

FIG. **4** is a fragmentary perspective view of the sloped fairways and supplementary green area of one embodiment of this invention;

FIG. **5** is a perspective view of the elevated fairways showing their slope downward from the far end of the playing field;

FIG. **6** is a fragmentary perspective view of a gutter at the side of a sloped fairway and a deflector which separates the gutter from the fairway;

FIG. **7** is a fragmentary view of a gutter at the side of a sloped fairway and showing another embodiment of a deflector for separating the gutter from the fairway;

FIG. **8** is a fragmentary front elevation view showing a panel to be used for a target green and its relationship to the center to side slope of the sloped fairways;

FIG. **9** is a fragmentary side elevation view showing a panel to be used for a target green and its relationship to the far end to near end slope of the sloped fairways;

FIG. **10** is a plan view of the wire mesh used to make the elevated fairway surfaces;

FIG. **11** is a vertical sectional view taken along lines **8—8** of FIG. **10**;

FIG. **12** is a vertical sectional view taken along lines **9—9** of FIG. **10**;

FIG. **13** is a plan view of one embodiment of the supplementary green area of this invention;

FIG. **14** is a front elevation showing the supplementary green area and a golf ball removal system for that area in great detail;

FIG. **15** is a front elevation view of a slider used in the golf ball removal system for the supplementary green area;

FIG. 16 is a plan view of a portion of a power transmitting system used in the golf ball removal system for the supplementary green area;

FIG. 17 is a plan view of a scorecard to be used by either men or women when playing the golf course of this invention;

FIG. 18 is a plan view of a green made in accordance with teachings of this invention; and

FIG. 19 is a plan view of the ground level under the sloped fairways.

In accordance with the invention, the golf playing field comprises a plurality of adjacent fairways with each fairway having a far end, a near end and opposed sides. As here embodied, and as best seen in FIG. 1, the playing field has a first fairway generally 20 of substantially rectangular shape which is to the left of a supplementary green area, generally 28, described in greater detail hereafter, and a second fairway generally 22 of the same shape which is to the right of the supplementary area. Fairway 20 has an out-of-bounds mark OB at its left side 21 and an out of bounds mark OB at its right side 23 where it joins supplementary area 28. Similarly, fairway 22 has an out of bounds mark OB at its right side 25 and an out of bounds mark OB at its left side 27 where it joins supplementary area 28. Right side 25 of fairway 22 and left side 21 of fairway 20 each have 2-inch rough areas and sand traps which provide the usual risks for errant shots.

Fairways 20 and 22, respectively, have far ends 30 and 32 each of which are provided with a first group of target greens. As shown in FIG. 1, each far end has a group of three target greens with first fairway 20 having target greens 34, 36 and 38 and second fairway 22 having target greens 40, 42, and 44. Each of these target greens represents two holes with target green 34 representing the sixth hole to be played, H6, and the 10th hole, H10. The remaining target greens are clearly marked as to the holes they represent.

Although each of these targets is substantially the same distance from the front edge 72 of a tee area, generally 67, to be described in greater detail hereafter, it is to be understood that each hole represents a different par value and a different length. Thus, for example, hole H6 is a par four, 425-yard hole, while hole H4 is a par five, 570-yard hole. The remaining holes with their par values and a yardage are indicated on a scorecard 29 shown in FIG. 17. Scorecard 29 has one column for indicating the yardage to be played by men and a second column for indicating the yardage to be played by women. Of course, the yardage of the par four and par five holes can be changed by indicating a different length of the scorecard without any alteration of the golf course to make it easier or harder to score par. Scorecard 29 is an every day scorecard showing a par 70 for 18 holes with a total distance of 6,735 yards to be played by men and w6,390 yards to be played by women. A championship men's scorecard to be used in tournament play can be provided to shown a par of 70 for a total distance of 7,035 yards.

The fairways also have a second group of target greens spaced along each of the fairways at different and known distances from the front edge 72 of tee area 67. As shown in FIG. 1 right fairway 22 has target green 50, 52, and 54 which have holes H12, H5, and H8, thereon and left fairway 20 has target greens 56, 58 and 60 which have holes H2, H15, and H17 thereon. These holes are all par three holes and their exact yardage can be found on scorecard 29.

Thus the two fairways 20 and 22 have a total of eighteen holes and as will be noted from FIG. 1 the holes are surrounded by the usual sand trap and 2-inch rough areas. Additional hazards such as water hazards can be appropriately placed on the course. A water fountain 39 separates target green 38 from the target green 40.

The fairways are provided with crosslines 31 at intervals of every forty yards throughout their length to indicate the distance of drive shots from front edge 72 of tee area 67. Each target green is provided with a golf hole cup of present regulation size, that is, the cup is 4¼ inches in diameter and 4 inches deep. As best seen in FIG. 18, a white line circle of 2 feet in diameter is drawn about the edge of the cup for indicating a conceded putt. In championship play or other important tournaments this conceded putt may be waved and all putts would be putted out. A series of concentric white line circles at 10-foot intervals are also drawn around the cup to indicate distance from the center of the cup.

The playing field itself is laid out on a plot of land approximately 300 yards wide by 500 yards long. In one embodiment of the playing field, the 18-hole golf course layout is built on the ground level of the plot of land. In this embodiment, the golf course is to be built further out of town and in a not too heavily populated area where the rental or purchase price of a suitable track of land is relatively inexpensive. The tract of land would preferably have a contour not unlike the terrain of an average fairway.

In another embodiment of the playing field, the fairways are elevated above ground level and are sloped downwardly from the far end toward their near end and are further sloped from their center portion to their sides. In this embodiment the golf course is to be built on relatively expensive land and multiple use of the land is necessary to offset its high cost.

In the embodiment where the fairways are elevated and sloped and as best shown in FIGS. 4 and 5 centers of fairways 20 and 22 are 24 feet above ground at their far ends 30 and 32 and are gradually sloped toward the near end so that at the 100-yard crossmarker the center of the fairway is 8 feet above ground level. Each fairway additionally has a 2-foot slope from its center downward towards each side so that at the far end of the fairway the sides of 77 fairways are 22 feet above ground level and at the 100-yard crossmarker the sides of the fairway are 6 feet above ground.

As best seen in FIGS. 4 and 5 each of the sides of the sloped fairway are provided with gutters 80 that extend lengthwise of the fairway, from their far ends 30 and 32 to the 100-yard crossmarker and have the same far end to near end slope as the fairways. At the 100-yard marker a container (not shown) is provided for each gutter for collecting golf balls that drop into the gutter. Golf balls hit onto the fairway will roll to wither the right or left side of the fairway since the fairways are slanted from their center towards the sides and will then drop into the gutters. When the golf balls drop into the gutters they will, because of the far end to near end slope of the gutters, roll down the gutters and into the container provided at the 100-yard marker.

The gutters are recessed below the surface of the fairways and the gutters at left side 21 of fairway 20 at the right side 25 of the fairway 22 are separated from the fairway surface by a vertically extending two foot high deflector. Means are provided for moving the deflector to enable golf balls on the fairway to fall into the gutter. As here embodied and as best seen in FIG. 6, a sliding deflector 82 separates fairway 20 from gutter 80 and is comprised of a top stationary rubber covered metal support 84 and a metal screen 86. Metal screen 86 is slidably attached to metal support 84 and can be moved upward toward the top of the support by a reversible electrical motor 88 which is connected to the screen by a cable 87. Motor 88 is controlled by forward and reverse actuating buttons 90 and 91 located at a central control area. The metal screen can be raised approximately 3 inches so that any golf balls at the screen can fall into the gutter. The motor is periodically activated so that gold balls that have accumulated at the screen can be deposited into the gutters.

Gutters 80 at right side 23 of fairway 20 and at left side 27 of fairway 22 are also separated from the fairway surface by a deflector. This deflector can be similar to sliding deflector 82 shown in FIG. 6 or it can be a hinged deflector, generally 120, as best shown in FIG. 7. Hinged deflector 120 comprises a top stationary rubber covered support 122 and a bottom metal screen 124 which is attached to support 122 by a spring hinge 126. A wire 128 is attached to the bottom of metal screen 124 and is wound about a drum 130 driven by motor (not shown) which can be actuated from the central control area.

Upon actuation of the motor, drum 130 rotates and further winds wire 128 about the drum to shorten the length of the

wire between the drum and the bottom of metal screen **124**. As wire **128** is shortened the bottom of metal screen **124** is rotated toward drum **130** and raised above the fairway surface a sufficient distance to allow golf balls to pass between the fairway and screen. Since the fairway surfaces are sloped downward toward gutters **80**, any golf balls accumulated at the screen will roll into the gutters. Upon stoppage of the motor the bias of the spring in spring hinge **126** returns metal screen **124** to its original position at the fairway surface. As will be apparent to those of ordinary skill in the art. Either this hinged deflector **120** or the sliding deflector **82** shown in FIG. **6** can be used with a gutter **80**.

When the fairways are elevated and sloped, as in FIGS. **4** and **5**, the six par three target greens **50**, **52**, **54**, **56**, **58**, and **60** which form the second groups of target greens preferably comprise panels which are elevated above the surface of the sloped fairways. As best seen in FIGS. **8** and **9**, a panel **132** is elevated with respect to sloped fairway surface **20**. As seen in FIG. **9** panel **132** has a far end to near end slope which is the same as the far end to near slope of the fairways. The panels do not, however, have a slope from side to side as do the fairways, but, as can be seen in FIG. **8**, have a horizontal front end **134**.

Each panel is approximately 20 yards by 40 yards and is covered with a fire-resistant synthetic material having different areas differently colored to indicate the different play areas, such as the sand trap and green areas, of the target green. The panels are supported at their front end by two spaced jack means, here embodied, as hydraulic cylinders **136**, which when fully extended maintain the front edge of the panel a minimum distance of 15 inches above the sloped fairway surface. As will be apparent to those of ordinary skill in the art, the jack means can be any equivalent means which can support and raise and lower the front end of the panel. The far end of the panel is supported by two horizontally spaced posts **138** to which the panel is hingedly attached.

Golf balls hit onto panels **132** can be removed from the panels by actuating hydraulic cylinders **136** to lower front end **134** of the panels approximately 1 foot. When panel **132** is lowered, golf balls on the panel will roll off the panel and onto the fairways. Since the fairways are sloped downwardly from their center to their sides the golf balls will then roll automatically to the sides of the fairways and will accumulate at deflectors **82** and **120** which separate the fairway surfaces from gutters **80**. The golf balls will then roll into the gutters when the deflectors are moved as disclosed above.

The sloped fairway surfaces are preferably made of a green-colored wire mesh which simulates the conventional golf course fairways. The wire mesh is supported by conventional means, here illustrated in FIG. **5** as metal support pillars **69** which extend about the perimeter of the golf course and which gradually increase in height as they approach the far end of the fairways.

The wire mesh, as seen in FIGS. **10**, **11**, and **12** is comprised of one-quarter inch wide bottom wires **61** which are parallel to the sides of the fairways, and one-quarter inch top wires **62** which perpendicularly intersect bottom wires **61** and are parallel to the ends of the fairways. Top wires **62** are joined to bottom wires **61** by conventional means such as welding. The wires are made of rustproof material such as aluminum and are one-eighth inch thick. The centers of the wires are 1 inch apart so that the intersecting top and bottom wires form three-quarter inch square openings.

The wire mesh is provided with one-half inch high rubber bumpers **63** which extend transversely of the length of the fairways. As best seen in FIG. **12**, the top surface of bumpers **63** is provided with one-eighth inch deep cut lines **64** spaced at one-half inch intervals to impart increased resilience to the bumpers. Bumpers **63** are equally spaced from each other every three-quarters of an inch to provide a breaking action for balls hit onto the fairway and are glued to the top surface of top wires **62**. The bumpers eventually cause the golf balls hit onto the fairway to slow down and roll either to the left or right side of the fairway and into the gutters. Bottom wires **61**, as shown in FIG. **11**, can be provided with one-quarter inch wide by one-eighth inch thick fire-resistant rubber or synthetic covers **65** which can be glued onto the top surface of the wires to provide a fairway surface which has similar resilient properties throughout.

In accordance with the invention a hitting area is provided at the near end of the fairways for hitting golf balls onto the fairways. The hitting area comprises an upper tee level having a plurality of tees at a front edge for hitting drive shots onto the fairways and an approach level vertically spaced below and in front of the tee level and closer to the far end of the fairways than the tee level for hitting approach shots onto the fairways.

As here embodied a tee level, generally **66**, is divided into tee area **67** and a putting area **70** by a 6-foot wide walkway **74** that extends parallel to the front edge **72** of the tee area. As can be seen from FIGS. **2** and **3**, tee level **66** is elevated with respect to the ground **68** and is 24 feet above ground to constitute the highest level of the hitting area. The tee level is supported by conventional means such as building frames or posts. The tee level is 40 yards deep, has a 4-foot high wire fence **73** at its back and 8-foot high wire fences **71** at its sides.

Tee area **67** is comprised of a plurality of tees, and as shown in FIG. **1**, is provided with 36 tees with every other tee being numbered from T1 to T18 in an order to be shortly explained. The tees are 20 feet wide and extend from front edge **72** towards putting area **70** for a distance of 24 feet. As seen in FIG. **2** which shows a representative number of tees on each side of the tee area, each tee is separated from adjoining tees by 8-foot high wire fences **75** which are located at each side of the tee and which extend the full depth of the tee. The surfaces of the tees are covered with a grass turf kept smooth and closely clipped in the same manner as a conventional tee.

As can be seen from FIG. **1**, adjacent tees are not consecutively numbered throughout but are numbered so that a golfer playing consecutively numbered tees will, for the most part, be at a different location of the tee area for each succeeding tee shot. This arrangement provides the player walking exercise and further provides a different angled position and wind condition for each tee shot. The unnumbered tees can be played as either of the two adjacent numbered tees when the numbered tees are occupied since they are in substantially the same position on the tee area as the numbered tees and would provide a drive shot that for all practical purposes would be the same as that taken from the numbered tee.

Putting area **70**, as best shown in FIG. **2**, is located at the back of the tee area for convenience, safety and spectator enjoyment. The area is 90 feet deep by 760 feet wide and has 18 putting holes which are numbered from P1 to P18. The surface of putting area **70** can be of real grass, synthetic grass or similar material and can be constructed in an undulated fashion to provide interesting and difficult putting positions which require expert putting skills. As with each of the target greens, each putting green has a regulation cup in the center, a white line circle of 2 feet in diameter around the edge of the cup for indicating a conceded putt and a plurality of concentric circles for indicating distance from the center of the cup.

The approach level, generally **76**, is divided into a first approach level **78** which is positioned below and in front of front edge **72** of tee area **66** and a second approach level **79** which is positioned in front of and below the first approach level. The approach levels are built in accordance with conventional construction principles and are here shown as supported by framework. As shown in FIGS. **2** and **3**, first approach level **78** is 12 feet below tee level **66** and extends for 20 yards from the front **72** of the tee level toward the far ends **30** and **32** of the fairways. A stairway **77** at the center of tee area **67** connects tee level **66** with first approach level **78**.

FIrst approach level **78** is substantially rectangular in shape and is provided with 36 wire mesh stalls or cages, generally **92**, at its front edge **94** and a 36-foot deep safety walkway **96** which is behind the cages and which extends parallel to front

edge 94. Each cage has two sides which are perpendicular to front 94 and top 98 which is sloped downward from a height of 12 feet at front edge 94 at first approach level 78 to a height of 11 feet at the rear of the cage. The wired cages thus have an open front end facing the fairways and an opposing end which faces walkway 96. The surface of first approach level 78 is preferably a grass surface and the wired cages are movable back to 24 feet from front edge 94 of level 78 to allow for repair and regrowth of the grass.

Second approach level 79 is vertically spaced below and in front of first approach level 78. As best seen in FIGS. 2 and 3, second approach level 79 is 20 yards deep and is 12 feet below first approach level 78 at the ground level 68. Second approach level 79 is connected to first approach level 78 by a stairway 100 which is at the center of the level so that the players may freely move from one level to the other. The second level has 36 wire cages 101 which extend along front edge 102 of the level and which are otherwise identical to that used for the first approach level. The surface of level 79 is preferably a grass surface and the wire cages 101 can be moved to allow for repair and regrowth of grass. The second approach level also has a 36-foot deep safety walkway 103 which is behind the cages and which extends parallel to front edge 102.

The first and second approach levels thus provide 72 protected stalls for playing second and subsequent shots to the fairway. It will be apparent to those skilled in the art that the number of approach level can be varied to provide golf courses having different capacities.

In accordance with the invention, a protective covering extending from the front edge of the tee level is provided directly above the approach level for separating the approach level from the tee level and preventing golf balls hit on the tee level from reaching the approach level.

As here embodied, the protective covering comprises a first protective screen, generally 104, which separates first approach level 78 from tee level 66 and a second protective screen, generally 106, which separates second approach level 79 from first approach level 78 and tee level 66. First protective screen 104 includes the tops 98 of wire cages 92 and a green wire mesh protective overhead screen 108 which extends from the front edge 72 of tee area 67 to the back of wire cages 92 for the full width of first approach level 78. Screen 108 is secured to front edge 72 by conventional means such as braces. Overhead screen 108 has a 1-foot upward slope from front edge 72 of tee area 67 toward the fairways. Overhead wire screen 108 in cooperation with the top 98 of cages 92 thus serves as a protective covering so that golf balls hit from the tee area 67 cannot reach first approach level 78 and cannot injure anyone at this level.

Similarly, second protective screen 106 includes the tops 98 of wire cages 101 and a green wire mesh overhead screen 110 which extends from the front edge 94 of first approach level 78 to the back of wire cages 101 for full width of second approach level 79. Overhead screen 110 has a 1-foot upward slope from the front edge 94 of first approach level 78 toward the fairways.

In accordance with a preferred embodiment of this invention, the playing field is provided with a supplementary green area which extends between the adjacent sides of the fairways, As here embodied, supplementary green area 28 begins at the 100-yard marker of the fairways and continues toward the far end of the fairways. Supplementary green area 28 is substantially rectangular in shape and is provided with a plurality of objective greens numbered OG1, OG2, etc. As shown in FIG. 1, the supplementary area contains seven spaced pairs of objective greens with adjacent pairs being spaced along the length of the supplementary area at every 40 yards. As with each of the target greens, each objective green has a putting green, a regulation cup in the center of the green, a white line circle of 2 feet in diameter around the edge of the cup for indicating a conceded putt and a plurality of concentric circles for indicating distance from the center of the cup. These objective greens are further provided with the usual sand traps and rough grass around the periphery of the putting green.

Although the supplementary area begins with the 100-yard marker of the fairway, the first two objective greens OG1 and OG2 at this marker are marked at 80 yards. These greens are marked for this distance since they are normally played from front 94 of first approach level 78 which is 20 yards closer to the 100-yard marker than front edge 72 of the tee area 67 and are thus only 80 yards from the front of the first approach level. Similarly, each pair of objective greens is to be normally played from first approach level 78 and is thus marked at 20 yards less than the corresponding distance marker on the fairways.

In the embodiment where the fairway surface is at ground level, the supplementary area is also at ground level and is in effect the center portion of the tract of land selected for the playing field.

In the embodiment where the fairway surface is elevated and sloped upwardly from the ground level, supplementary green area 28 is also elevated and sloped. As shown in FIG. 5, supplementary green area 28 is sloped downwardly from its far end 139 toward its near end 140, but as opposed to the center to side slope of the fairways, the entire playing surface of the supplementary area has no side slope. Thus every point on the supplementary green area at the 100 marker of the fairway is at substantially the same elevation above ground level.

In a presently preferred embodiment and as best seen in FIG. 14, supplementary green are 28 is not only elevated with respect to the ground level but is also elevated above sides 23 and 27 of fairway surfaces 20 and 22. The supplementary area is elevated approximately 2 feet above the sides of the fairway so that it is substantially the same elevation as the center portions of the fairways.

The surface of the elevated supplementary green area is a smooth, continuous surface made from fire-resistant synthetic material which can be glued onto galvanized tin or aluminum sheet material. The sheet material is, in turn, welded to a braced frame which forms part of the structure for supporting the golf course.

The surface of the supplementary green area is preferably a dark green color to distinguish it from the fairway surfaces which are preferably a light green color. Similarly, a brown color is used for indicating all 2-inch rough areas and a yellow color is used to designate all sand traps.

Supplementary green area 28 is provided with a central lighting system for lighting the golf course and enabling night play. As best seen in FIGS. 13 and 14, a central lighting system, generally 142, divides supplementary green area 28 into two equal substantially rectangular segments, right segment 144 and left segment 146. The lighting system is approximately 2 feet wide and is enclosed by a three-quarter inch diameter wire mesh 148 which protects the interior of the lighting system from being struck by golf balls.

The golf balls hit onto the supplementary green area can be periodically removed by a ball removal system having a roller for sweeping the balls off the supplementary green area and onto the fairway surfaces. As here embodied, the ball removal system comprises a first roller 150 on the right segment 144 of supplementary green area 28 and a second roller 152 on left segment 146 of the supplementary area. The rollers extend the full length of the supplementary green and thus can sweep the entire area with one transverse of the area.

Rollers 150 and 152 are comprised of a number of roller sections 154 (FIGS. 4 and 5) which are rotatably mounted at their ends for free rotation on sliders, generally 156. Each roller section is approximately 40 yards long and is made from 1½-inch diameter metal tubing which is coated with a synthetic rubberized material.

Each slider 156, as best seen in FIG. 15, has a base 158 which is recessed below the surface of supplementary green area 28 and a projection 160 which extends above the surface of the supplementary green area. Projection 160 has an opening 162 and a rod 164 passes through the opening and extends

from both sides of the projection so that a roller section **154** can be rotatably mounted for free rotation in each end of the rod.

Base **158** of each slider **156** is slidable mounted on a track **166** which, as seen in FIG. **13**, is cut into the surface of supplementary green area and which extends across the width of each segment **144** and **146** of the supplementary green area. Each segment **144** and **146** of the supplementary green area is provided with tracks at 40-yard intervals throughout the length of the area to accommodate the sliders which are also spaced at 40-yard intervals.

Roller **152** is powered by a series of reversible electrical motors **168** (FIG. **14**) which are spaced at approximately 40 yard intervals throughout the length of the supplementary green area and which are supported beneath the area by platforms **170**. Rollers **150** is similarly powered by a series of motors **172**. The rollers are connected to the motors by power transmitting systems which are substantially the same and thus only the connections between roller **152** and motors **168** will be described in detail. It is to be understood, however, that roller **150** similarly connected to motors **172**.

Each motor **168** is connected to roller **152** by a power transmitting system, generally indicated in FIGS. **14** and **16** by numeral **174**. Power transmitting system **174** includes a reducing gear **176** attached to the main drive shaft of motor **168**, a winding drum **178** connected to reducing gear **176**, and a belt **180** attached to winding drum **178** and slider **156**.

Belt **180** passes over four pulleys **184** which define a closed path of travel for the belt. As seen in FIG. **15**, belt **180** is attached to slider **156** at both ends of base **158** and can exert a pulling force on either end of the base to move slider **156** across supplementary green area **28** either to the right or to the left in track **166**.

In a preferred embodiment of the ball removal system for the supplementary green area **28** a central gutter **186** that extends the full length of the supplementary green area is provided directly beneath and between the sides of the central lighting system to thereby divide the supplementary green area in half. Central gutter **186** is made from metal and is similar to gutters **80** in that it has the same far end to near end slope as gutters **80**. At the 100-yard marker of the fairway a container (not shown) is provided for collecting golf balls that fall into this gutter.

As seen in FIG. **14**, central gutter **186** is separated from the supplementary green area by spring hinged sections generally **188**, which are similar to hinged deflectors **120** shown in FIG. **7**. Sections **188** comprise a top stationary rubber covered support **190** and a metal flap **192**, which is attached to the support by a spring hinge **194**. Rollers **150** and **152** can deflect flaps **192** into the interior of the lighting system so that the rollers can be recessed into the sides of the lighting system. During normal operation it is contemplated that the rollers will usually be recessed into the sides of the lighting system.

When it is desired to remove golf balls hit onto the supplementary green area, motors **168** and **172** are actuated and roller **152** is moved outwardly from the central lighting system toward fairway **20** and roller **150** is similarly moved outwardly toward fairway **22**. To move roller **152** outwardly, motors **168** are rotated in a clockwise direction (when viewed from the near end of the supplementary green area) to impart a clockwise rotation to winding drums **178** which, in turn, cause belts **180** to move in a counterclockwise direction. The movement of belt **180** is a counterclockwise direction pulls sliders **156** toward left fairway **20** and causes roller **152** to travel toward fairway **20**. Similarly, roller **150** is moved toward right fairway **22** by rotating motors **172** in a counterclockwise direction (when viewed from the near end of the supplementary green area). As the rollers move outwardly toward the fairways, they strike the golf balls on the supplementary green area and propel them toward the edge of the area so that the golf balls drop onto the sloped fairway surfaces. Golf balls falling onto the fairway surfaces will, because of the sloped construction of the fairways, roll toward gutters **80** where they will be connected as described above.

Each roller will remain at the outer edge of the supplementary green area until additional golf balls again accumulate on the area. At this time, motors **168** and **172** are again actuated, but are rotated in directions opposite those used to bring the rollers to the edge so that the rollers will now be moved toward the central lighting system. As the rollers move toward the lighting system, they propel golf balls on the supplementary area toward the system and central gutter **186**. When the rollers reach the lighting system they deflect metal flap **192** inwardly so that the golf balls can fall into central gutter **186** and roll to the collection container provided for this gutter.

Preferably, the jack means for lowering panels **132** to drop golf balls from the panels onto the fairway surfaces, and the rollers for sweeping the golf balls off supplementary green area onto the fairway surfaces are actuated simultaneously so that the golf balls can be accumulated at the deflectors **82** and **120** at the same time. Each deflector can then be actuated at the same time so that the fairway surfaces and supplementary green area will be cleared of golf balls at the same time. Of course, and as will be apparent to those of ordinary skill in the art, the exact sequence for collecting the golf balls can be varied to suit the characteristics of specific golf courses as those characteristics are developed by the players.

In accordance with a preferred embodiment of this invention a sand trap, chip, and rough shot level is provided. In the embodiment where the fairways have a sloped surface and as seen in FIGS. **1**, **2**, and **3**, this level, generally **112**, has a back area **114** which is 12 feet below front edge **102** of second approach level **79**. Level **112** is 60 yards deep and slants upwardly from its back area **114** to its front edge **116** which is 8 feet above front edge **102** of the second approach level **79**, that is, it is 8 feet above ground level. The back area **114** of level **112** is divided into a number of sand, 2-inch rough, and chip areas to provide players with an opportunity to use the appropriate shots from each area.

As seen in FIGS. **1** and **2**, the sloped surface of this level is provided with four transversely spaced greens, G_1, G_2, G_3, G_4, immediately in front of back area **114** and the sand, chip, and rough shots are taken to these greens. This level is further provided with two greens G_5 and G_6 which are 40 yards from the back **114** and two greens G_7 and G_8 which are sixty yards from the back **114** so that a player can take 2 inch rough shots, chip shots and sand shots, to a green which is at a greater distance from the back **114** than the four greens immediately in front of back **114**. An overhead wire mesh **118** extends from front edge **102** of a second approach level **79** to the front green $G_1 \ldots G_4$ to protect the players in this level from being struck by a ball hit from one of the approach levels or tee area.

In a preferred embodiment of the invention the playing field is provided with a driving range. As shown in FIG. **1** a driving range **119** is positioned along the far end of right side **25** of right fairway **22** and is 15 yards wide by 160 yards long. In the embodiment where the fairways are elevated the driving range will se similarly elevated.

The provision of elevated sloped fairways enables the ground underneath to be utilized for other purposes. One possible arrangement of the ground level is shown in FIG. **19**. In this arrangement, area **121** at the far end of the ground level is used for a building which is two stories high having a maximum height of 20 feet. The area **123** on either side of this area is useful as a recreation area such as a park. A parking area **125** and store space **127** can also be provided. It will be apparent to those skilled in the art that the area below the elevated fairways can be used for many purposes and can provide a considerable shopping center.

The golf course can also be surrounded by high-rise apartments along the outer periphery of the playing field. Thus, as shown in FIGS. **19**, **2**, and **3**, the two sides and far end of the fairway are bounded by apartment houses **129**. The provision of a golf course, a shopping center and high-rise apartments in one area provides an integrated total community that offers safe living conditions and easily accessible recreational facilities.

Also, as shown in FIGS. 1 and 2, club houses 131 can be provided at both sides of the hitting area to enable spectators to view the hitting area and all the golfers playing the course from a central location.

The method of play will now be described for the embodiment where two approach levels are provided. The golfer starts play on the left fairway at the number one tee, T1, to begin play at the first hole. The player hits a tee or driving shot from T1 and tries to reach the number 1 hole, H1, at the far end of the left fairway. As seen from the scorecard, hole H1 is a par four, 365-yard hole. Assuming that the tee shot does not reach the target green for hole H1 at the far end of the fairway, the player then determines the remaining yardage to the hole by observing the position of the ball with respect to the side yard markers and calculating the remaining distance. For example, if the tee shot travels 200 yards down the middle of the fairway, the player has a remaining distance of 165 yards to hole H1.

The golfer then walks down the stairs to one of the two approach levels and picks out the objective green on the left fairway that is closest to 165 yards from the approach level. To aid the golfer in determining which objective green is to be played and the exact spot on the approach level that is 165 yards from the objective green, the scorecard shows in scale the complete course layout on one side and a ruler is provided to measure in scale the distance between any two points on the scorecard and thus on the golf course. The player then hits the second shot to the selected objective green and if he holes out he will have an eagle 2. If he lands within the 2-foot circle around the cup he scores a conceded birdie 3. If he lands elsewhere on the green he notes the location and distance of the ball to the cup. The golfer then returns to the putting green via the stairs and places the ball in the proper location and distance on putting green number P1 where he then putts out the hole.

If on the second shot the player misses the green and lands in the 2-inch rough or in the sand or at a distance from the green which requires a chip shot he descends via the stairs to the sand trap, chip and rough shot level to play the appropriate shot to an objective green corresponding to the distance between the ball and the green that he was playing. Again, the ruler and scorecard enable the player to accurately calculate the distance between the ball and the objective green that he was playing and determine which objective green he should now play. After selecting the appropriate green he plays until he is able to land onto that green. Then via the stairs he returns to putting area 70 at the rear of the tee level 66 and putts out hole P1 as previously described. After completing play of the first hole the player then proceeds to play hole number 2 by proceeding to tee number T2. Hole No. 2 is a par 3 hole and is played directly from the tee to the green, in a manner similar to the play of hole number 1. The remaining holes are then played in their consecutively numbered order.

It will be noticed that holes H6, H10, H11, and H13 are on left fairway 20 but that their respective tees, T6, T10, T11, and T13 are on the right side of tee area 67. All the tee shots must, however, be hit onto right fairway 22 and subsequent second shots are hit from the left side of the approach levels onto left a fairway 20 or objective greens on the left portion of supplementary green area 28. The out of bounds markers at the sides of the fairways indicate when a shot has been hit onto a wrong fairway, and when this occurs the player is penalized by his losing a stroke and the distance the ball travels.

Similarly, holes H14, H4, H16, and H3 are on the right fairway but their respective tees are on the left side of tee area 67. These tee shots must however be hit onto left fairway 20 and the subsequent shots must be hit from the right side of the approach levels onto right fairway 22 or onto the selected objective green on the right portion of supplementary green area 28.

This method of play eliminates as much as possible crisscrossing of shots from the right fairway to the left fairway and provides out of bounds penalties for errant shots. This method of play also creates more walking exercise and requires more skill on straight fade or draw shots from players under different wind conditions.

Play on this course is continuous and there is no time wasted in waiting for players to clear the fairways or putting greens ahead. Thus, the length of time required to play this course is about one-fifth the time required to play a conventional course. Also, it is possible for faster and better players to go ahead of slower players without any inconvenience to the slower players. Thus, a slow foursome starting play from T1 may finish 18 holes of play in one and a half hours, while a faster foursome starting immediately after this foursome may finish 18 holes of play in about three-quarters of an hour.

The invention in its broader aspects is not limited to the specific details shown and described but departures may be made from such details within the scope of the accompanying claims without departing from the principles of the invention and without sacrificing its chief advantages.

I claim:

1. A golf course comprising:

a plurality of adjacent fairways each having a far end, a near end and opposed sides;

a hitting area at a near end of the fairways for hitting golf balls onto said fairways, a said hitting area comprising an upper tee level having a plurality of tees at a front edge for hitting drive shots onto said fairways and an approach level vertically spaced below and in front of said tee level and closer to the far end of the fairway than the tee level for hitting approach shots onto said fairways;

a protective covering extending from the front edge of the tee level and positioned directly above the approach level for separating the approach level from the tee level and preventing golf balls hit from the tee level from reaching the approach level;

a first group of target greens at the far end of each fairway; and

a second group of target greens spaced along each of said fairways at different distances from the front edge of the tee level.

2. The golf course of claim 1 including a sand trap, chip, and rough shot level vertically spaced below and in front of said approach level and having a protective screen for separating the rough shot level from the approach and tee levels and preventing golf balls hit from the those levels from reaching rough shot level.

3. The golf course of claim 2 wherein said tee level has a plurality of putting greens behind said tees.

4. The golf course of claim 3 wherein said approach level comprises a first approach level vertically spaced below and in front of the tee level and a second approach level vertically spaced below and in front of the first approach level, said protective covering comprising a first wire screen which separates the tee level from the first approach level and a second wire screen which a separates the second approach level from the first approach level and tee level.

5. The golf course of claim 4 wherein the fairways are elevated above ground level and sloped downwardly from the far end toward the near end and are further sloped downwardly from their center toward their sides.

6. The golf course for claim 5 including gutters at the sides of the fairways for receiving golf balls hit onto the fairway.

7. The golf course of claim 6 including deflectors for separating the gutters from the fairway surfaces and means for moving said deflectors to enable golf balls onto said fairways to fall into said gutters.

8. The golf course of claim 6 wherein said second group of target greens comprise panels elevated above said fairway surface and having the same far end to near the end slope as said fairways, and jack means to raise and lower the front end of said panels to permit golf balls that have accumulated on said panels to roll onto said fairways and toward said gutters.

9. The golf course of claim 5 wherein the surfaces of the sloped fairways are comprised of a green colored wire mesh having bottom wires which are parallel to the sides of the fairways and top wires which are transverse to the sides of the fairways, said top wires having projecting bumpers which slow down golf balls hit onto the fairways.

10. The golf course of claim 5 including a supplementary green area between said adjacent fairways for providing a target for shots taken from said approach levels.

11. The golf course of claim 10 wherein said supplementary area has the same far end to near end slope as the fairways, and including gutters having the same far end to near end slope as the fairways for separating the supplementary area from said adjacent fairways, said gutters being capable of receiving golf balls from the adjacent fairways and the supplementary green area.

12. The golf course of claim 11 where said supplementary green area is elevated above said fairways, and including a ball removal system to sweep golf balls from said area onto said fairways.

13. The golf course of claim 12 where said ball removal system includes a roller for traversing said area and propelling golf balls onto said fairways from said area and including a central gutter which divides said supplementary green area in half, said roller also sweeping golf balls into said central gutter.

14. A golf playing field comprising a first fairway, a central supplementary green area adjacent one side of said first fairway area, a second fairway adjacent the other side said green area, a hitting area arranged at a near end of said fairways, said hitting area having an upper tee area which has a plurality of tees for driving a golf ball to said fairways, a first approach level for hitting fairway shots to the fairway, the first approach level being vertically spaced from and in front of the tee area, a protective screen directly above the first approach level to separate the approach level from the tee area and prevent golf balls hit on the tee area from reaching the approach level, a second approach level for hitting fairway shots to the fairway, the second level being vertically spaced from and in front of the first level, a protective screen directly above the second level to separate the second level from the tee area and prevent golf balls hit on the tee area and first approach level from reaching the second approach level, a first group of three target greens at the far end of each fairway and a second group of three target greens spaced along each of said fairways at different distances from the front edge of the teeing area, each of said target greens at the far end being associated with two of said plurality of tees to provide two different holes and playing conditions for each of said target greens and a total of 18 holes for the golf course.

* * * * *

UNITED STATES PATENT OFFICE
CERTIFICATE OF CORRECTION

Patent No. 3,620,536 Dated November 16, 1971

Inventor(s) Edward L. Lau

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

Claim 2, Line 5, delete "the".

Claim 4, Line 7, delete "a".

Claim 7, Line 3, delete "onto" and substitute therefor --on--.

Claim 8, Line 3, delete the second occurrence of "the".

Claim 9, Line 5, insert --each-- after "wires".

Signed and sealed this 26th day of December 1972.

(SEAL)
Attest:

EDWARD M.FLETCHER,JR.
Attesting Officer

ROBERT GOTTSCHALK
Commissioner of Patents

ORM PO-1050 (10-69)

USCOMM-DC 60376-P69
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