United States Patent [19]

Hagelberg

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[54] **MINIATURE GOLF COURSE**

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Sept. 25, 1973 Sweden 7313009

[52] **U.S. Cl.** ..... **273/176 FA;** 273/176 B
[51] **Int. Cl.²** **A63B 67/02**
[58] **Field of Search** 273/176, 178, 177, 179, 273/180

[56] **References Cited**

UNITED STATES PATENTS

1,886,399 11/1932 Hause ..... 273/176 F
2,827,299 3/1958 Dean ..... 273/176 F

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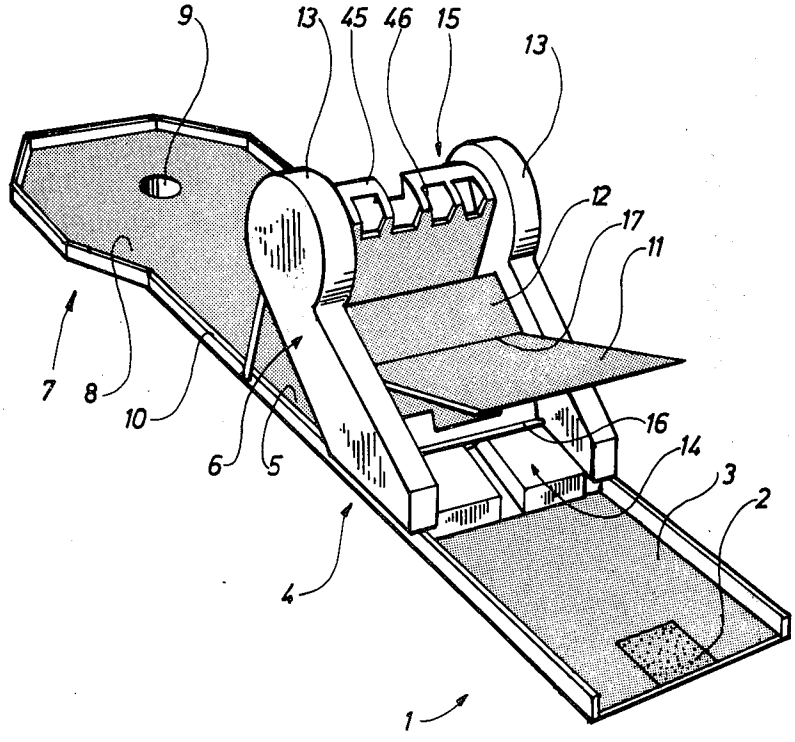
Attorney, Agent, or Firm—Toren, McGeady and Stanger

[57] **ABSTRACT**

The present invention relates to a miniature golf course comprising a first section including a starting zone or "tee" and a middle section with a number of obstacles and a last section including a finishing zone or "green" with a hole or other ball catching device and the middle section is provided with a device including changeable obstacles so that in the same course several types of obstacles can be played, whereby a very rich variety of obstacles can be played and the obstacles are suitable to be automatically changed by means of a mechanism.

10 Claims, 11 Drawing Figures



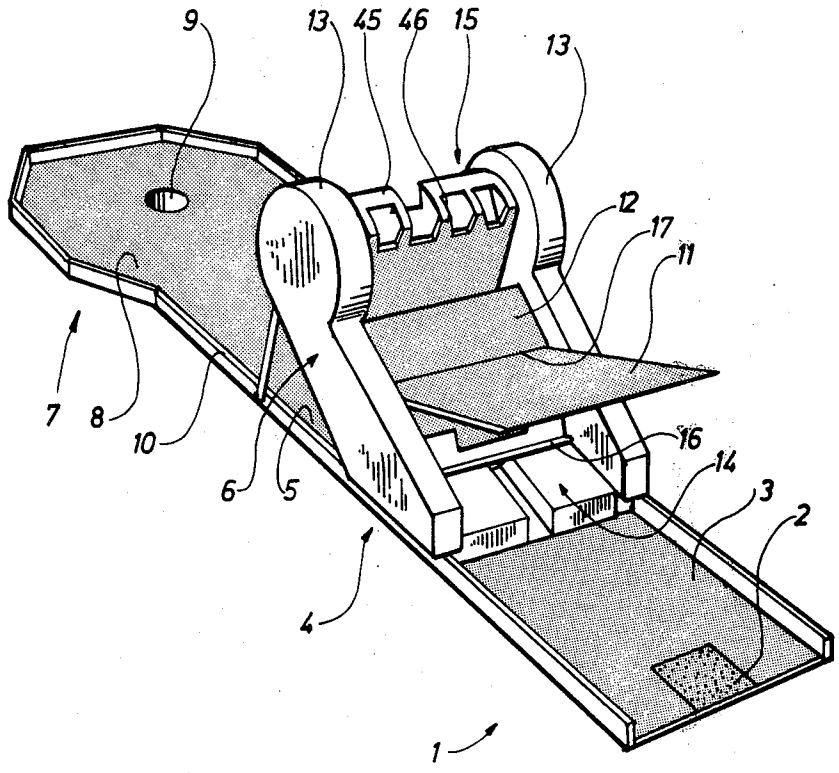


FIG. 1

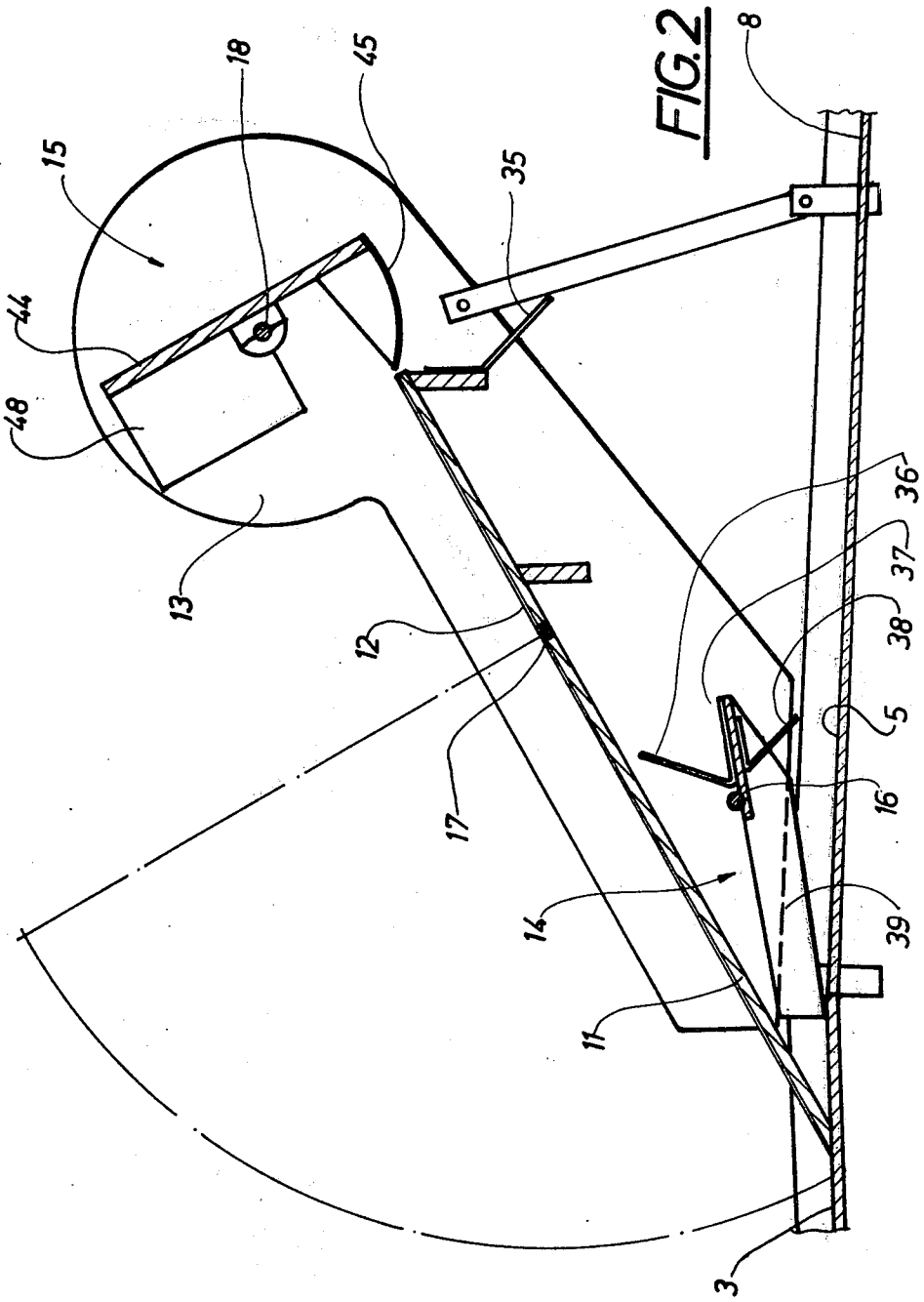


FIG.2
8
18
45
15
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44
48
13
12
17
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11
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37
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5
16
39
3

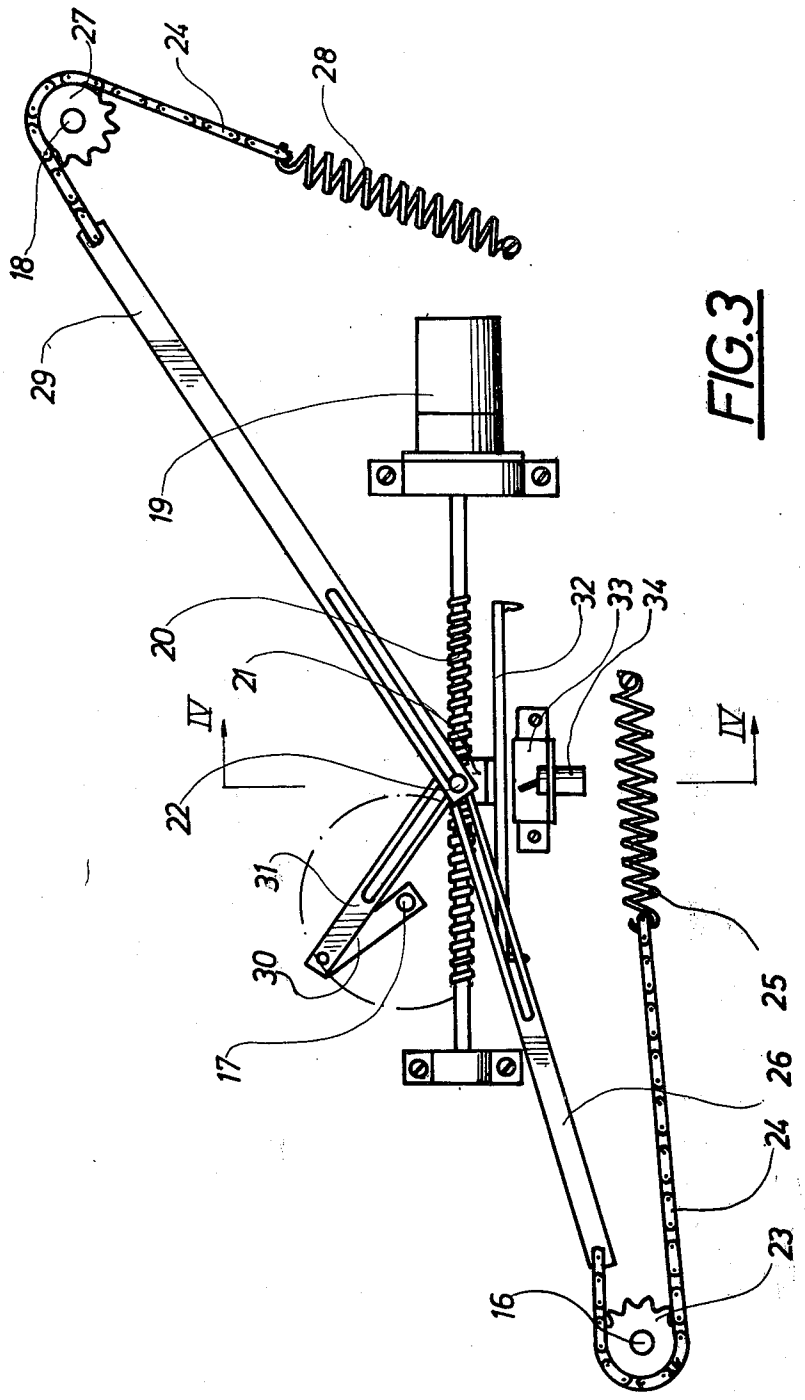

FIG.3

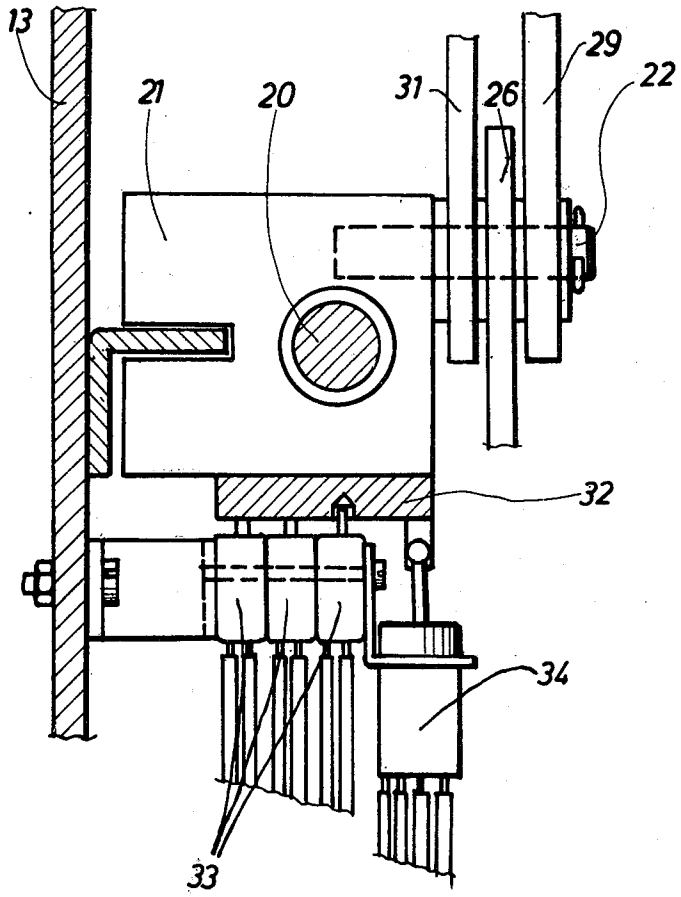

FIG. 4

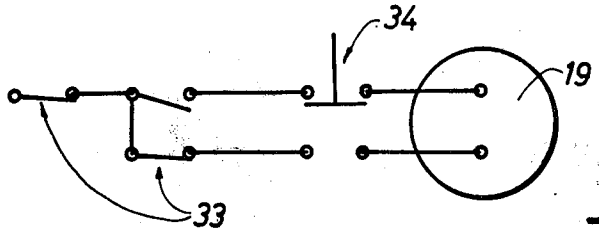

FIG. 5

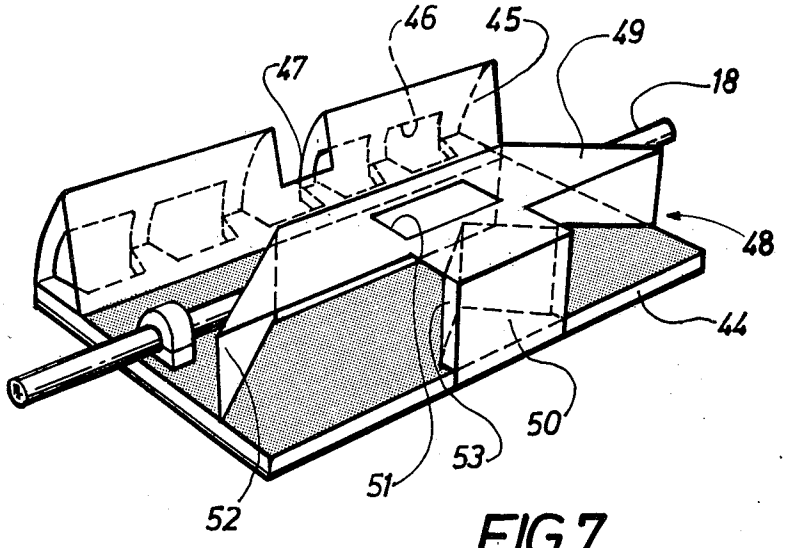

FIG. 7

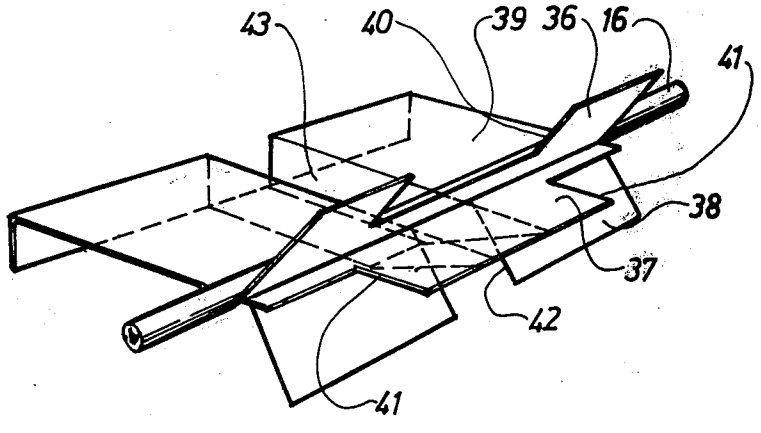

FIG. 6

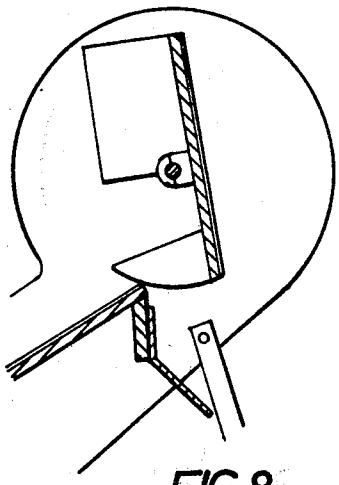

FIG. 8

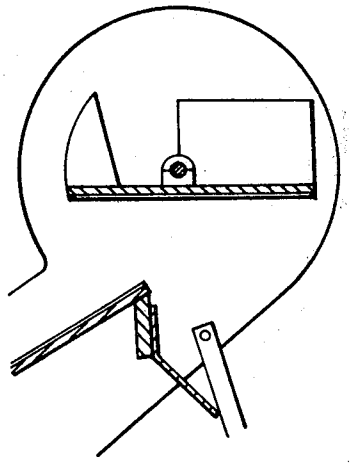

FIG. 9

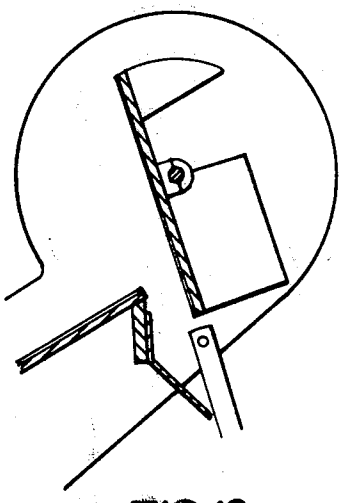

FIG. 10

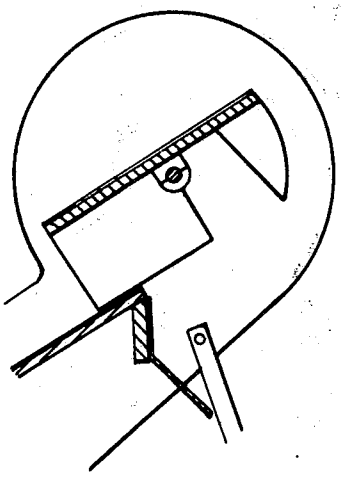

FIG. 11

MINIATURE GOLF COURSE

The present invention relates to a miniature golf course comprising a first section including a starting zone or "tee", a middle section with a number of obstacles and a last section including a finishing zone or "green" with a hole or other ball catching device.

Usually conventional plants for miniature golf games comprise nine, twelve or eighteen courses of the kind mentioned. In each course the first section and last section are substantially similar to the corresponding section of the other courses. The most important difference between the different courses is to be found in the middle section at which obstacles of various types are arranged. Consequently, it is theoretically possible to obtain all the desired types of ball paths and degrees of difficulty represented in a complete miniature golf game plant by means of only one course, if the middle section of the same is provided with changeable obstacles. It is evident that the reducing of the plant to only one or a few courses means a reduction in the costs and the area needed for a complete arrangement.

From the prior art (Swiss patent specification 474 273) a miniature golf course is known in which the obstacles are changeable. However, in this known device the obstacle arrangements are bulky and not suitable to be combined with a machine for the automatic changing of the obstacles. The reachable variation in the types of obstacles is also very low which does not make the playing so interesting.

An object of the invention is to provide an obstacle device in which the types of obstacles available are very different in their character and which types are corresponding to the types of the obstacles used in conventional miniature golf courses.

It is also an object of the present invention to provide a device comprising changeble obstacles for a miniature golf course, which device is suitable to combine with an automatic obstacle changing machine.

It is another object of the invention to provide a mechanism for changing the obstacles of the device.

The objects of the invention are obtained by means of a miniature golf course in which the middle section provides a substantially plane playing ground and thereabove shutter means pivotable by means of a shaft which is substantially horizontal and transverse to the course between a first position in which the edge of the shutter means opposite to the shaft connects to the playing ground so that the shutter means forms a playing ground sloping upwards in the direction from the first section and a second position in which the shutter means is lifted from the playing ground allowing the passage of playing ball under it whereby changeable obstacle means are positioned under the shutter means and connected to the playing ground and at the upper end of the shutter so that a ball can be played first through the first obstacle means on the playing ground when the shutter is in its upper position and upon the shutter through the second obstacle means when the shutter is in its lower position.

An embodiment of the invention is described in the following and shown on the accompanying drawings, in which

FIG. 1 is perspective view of a miniature golf course according to the invention;

FIG. 2 shows an obstacle device of the same in section;

FIG. 3 shows a mechanism for automatic changing of the obstacles in elevational view;

FIG. 4 is a section along the line IV—IV in FIG. 3 in an enlarged scale;

FIG. 5 is an electric circuit relating to FIG. 4;

FIG. 6 is a perspective view of an obstacle means;

FIG. 7 is a perspective view of another obstacle means, and

FIGS. 8 – 11 illustrate the obstacle means in FIG. 7 in different positions.

According to FIG. 1 the course comprises a first section 1 with a starting zone or "tee" and a play ground 3; a middle section 4 with a play ground 5 underlying an obstacle device 6; and a last section 7, forming a finishing zone or "green" with a playing ground 8 and a hole 9 in which the ball can be sunk. A barrier 10 open at the starting zone surrounds the playing ground 3, 5, 8. The obstacle device 6 includes changeable obstacles. By a game the ball is played from the tee 2 through that obstacle of the obstacle device 6 which is changed in working position and to the green 7 into the hole 9. By next game new obstacles of the obstacle device 6 is changed in position and the ball has to be played in another way and so on.

As shown in FIGS. 1 and 2 the obstacle device 6 is provided with shutter means 11 connected to a sloped playing ground 12 and stretching between two gable pieces 13. The shutter means 11 is pivotable by means of a shaft 17 between a position in which the lower end, opposite to the shaft 17 connects to the playing ground 3 of the first section 1 (this position is shown in FIG. 2 by means of continuous lines) and an upper position (shown in FIG. 1 and by means of dash-dotted lines in FIG. 2) in which the playing ground 5 under the obstacle means 6 is accessible. Under the shutter means 11 and over the playing ground 5 there is provided a first obstacle means 14, which is pivotable by means of a shaft 16 and at the upper end of the sloped playing ground 12 is provided a secod obstacle means 15 pivotable by means of a shaft 18 (FIG. 2). According to the intended function of the desribed arrangement the ball is to be played from the playing ground 3 through the obstacle means 14 and on the playing ground 5 to the last section 7 when the shutter is moved to said upper position and when the same is in its lower position the ball is intended to run on the playing ground 3 upwards on the shutter 11 and the sloped playing ground 12 and through the obstacle means 15 from which it drops down onto the playing ground 8 thereby directed towards the hole 9 by a board 35 (FIG. 2).

Accordingly, there are two main variations possible by means of the two positions of the shutter means; in the one the ball is played in a substantially plane running way and in the other on a slope. These two main variations are in turn variable by means of the different positions of the respective pivotable obstacle means 14 and 15. Consequently, all the various obstacle combinations of the obstacle device 6 is possible to obtain by means of pivoting of the three shafts 16, 17 and 18.

The first obstacle means 14 is shown in FIG. 6. To the shaft 16 are three screens 36, 37 and 38 attached and also a box-shaped part 39. The screen 36 is in the middle provided with a relatively wide gate 40, the screen 37 is provided with gates 41 at its ends and the screen 38 is in the middle provided with a narrow gate 42. The box-shaped part 39 is in the middle provided with a chute 43 open in both ends. In different pivoting posi-

tions of the obstacle means **14** the screens **36 – 38** or the part **39** in turn connects to the playing ground **8** and consequently the ball has to be played through the gates **40, 41, 42** or the chute **43** respectively. (By using the side gates **41** the ball is played so it bounces against the barrier **10**).

The second obstacle means is shown in FIG. **7** in perspective and in section in FIG. **2.** It comprises a board **44** and a plate forming a part of a circumference and of a chord to a circle which has its centre in the shaft **18.** On the part forming the circumference five gates **46** (FIGS. **1, 7**) are provided which continue on the board **44.** The middle gate is stretching all over the circumferential part and ends at **47** (FIG. **7**) on the part forming the chord.

Opposite to the plate **45** is a box-shaped part **48** attached to the board **44.** This part is showing a T-shaped "lid" **49,** the "stem" of which is connected to the board **44** by means of a gable **50** while the side sections are open. In the middle of the T-shaped part **49** there is a hole **51** and within the box-shaped part surfaces **52** and **53** provided to re-bound the ball are arranged.

In the position of the obstacle means **15,** shown in FIG. **2,** the ball has to be played through the middle gate at **47** (FIG. **7**); by the position shown in FIG. **8** through one of the five gates **46**; in a position in which the edge of the board **44** connects to the sloped playing ground **12** through the middle gate **46**; by the position shown in FIG. **9** over the edge of the playing ground **12** in a bounce against the board **44**; in the position shown in FIG. **10** over the edge of the playing ground **12** through the slit in front of the board **44** and in the position shown in FIG. **11** in a bouncing movement within the part **49** and out through the opening **51.**

As mentioned in the foregoing all the variations of the obstacle device are possible by pivoting the three shafts **16, 17** and **18** in a certain sequence. An automatic mechanism for the pivoting of the shafts is shown in FIG. **3.** The ends of the three shafts **16, 17** and **18** are shown in the figure. The shaft **16** is provided with a sprocket **23** and the shaft **18** with a sprocket **27** while the shaft **17** is provided with a lever **30.** The sprockets **23** and **27** are provided with chains **24** which in one end are subjected to the force from springs **25** and **28** respectively. The other end of the chains are attached to links **26, 29** respectively. The lever **30** is provided with a link **31.** All of the links are connected to a pin **22** which is movable in elongated grooves ending a distance from the end of the respective link. The pin **22** is attached to a nut **21** cooperating with a screw **20** turnable by means of a motor **19.** On the nut **21** is attached a plate **32** which by means of holes in the same actuates electrical switches **33** and by means of end stops a change-over switch **34.** The motor **19** is connected to the switches **33** and reversible by means of the changeover switch **34.** This arrangement will make it possible to bring the pin **22** to move to and fro along the screw **20** whereby the pin **22** brings the links **26, 29,** 31 to move when the pin contacts the respective outer ends of the grooves or it moves free in the grooves accordingly to the position of the pin **22** on the screw **20** and the position of the grooves relatively thereto. The movement of the links when the pin **22** is in contact with the end of the groove will appear in two directions: either the links with the connected chains are drawn in the direction away from the respective sprocket or the links are allowed to move in direction towards the sprocket under the force of the springs. At the shaft **17** the link **31** will perform a corresponding movement whereby the weight of the shutter **11** will give a force equal to the force of the springs. When the pin has allowed the respective link to move so far towards the sprocket or the shaft **17** respectively that the obstacle means or the shutter respectively have reached their end positions the pin will move free in the respective groove by further movement of the screw **10** and the links will stand still.

The arrangement of the switches is evident from FIG. **4.** When the hole provided plate **32** passes the switches the current to the motor **19** will be switched off when the switch in the circuit with its manoevre lever falls in into one of the holes in the plate **32.** The holes are suited to the intended position of the shafts **16, 17, 18** and the reached position remains until the motor is momentarily subjected to the current during a moment so long that the plate **32** moves such a distance that the hole passes the switch. Of the three switches **33** the one is intended to work in the one running direction of the motor and the other to work in the other running direction of the motor. The third switch is intended to give the starting position for the cycle. This arrangement is evident from FIG. **5** according to which one switch **33** is connected to the motor by the one position for the reversing change-over switch **34** and the other of the switches **33** by the other position of the change-over switch. By means of this arrangement it is possible to reach different stopping positions by forward and backward movement.

If the mechanism is in the position shown in FIG. **3** whereby the obstacle means **14** and the shutter means **11** are in the position shown in FIG. **2** and the motor **19** turns the screw **20** so that the nut **21** moves to the right in FIG. **3,** the pin **22** will draw the links **26** and **31** with it whereby the shutter means **11** swings upwards and the obstacle means **14** pivots clock-wise (in FIG. **2**). Simultaneously the pin **22** moves free in the groove of the link **29** so that the obstacle means **15** stands in the end position shown in FIG. **2** under the force of the spring **28.** During the movement the mechanism will stop in different stopping positions according to the function of the switches **33,** which positions correspond to different playing positions of the obstacle means **14.** Thereby the shutter means **11** will be in different pivoting positions in the upper part of its pivoting range which, however, has no importance to the play. When the motor **19** and thereby the nut **21** reverses in the end position of the latter by means of the changeover switch **34** the shutter means **11** is lowered and the obstacle means **14** is pivoted back to the end position shown in FIG. **2.** When the position shown in FIG. **3** of the pin **22** again is reached during its movement to the left, the pin can move freely in the grooves of the links **26** and **31** while the link **29** begins to be drawn by the pin **22.** Thereby the sprocket **27** turns and the obstacle means **15** pivots. By the next end position the pin **22** reverses and the obstacle means **15** pivots against the force from the spring **28** until it reaches the position shown in FIG. **3** and described in the foregoing. By suitable stopping positions obtained by means of the plate **32** and the switches **33** the obstacle means **15** can be brought to stop in the intended positions with the obstacles in playing position. In the same way it is possible to reach the end position for a finished play.

The shown and described golf course comprises only one obstacle device. However, there can be two or more obstacle devices of the same or different types on the same course.

I claim:

1. A miniature golf course comprising a first section including a starting zone, a middle section extending from one end of said first section and a last section extending from the opposite end of said first section and having a number of obstacles located thereon, and a last section extending from the opposite end of said middle section from said last section and including a finishing zone with a hole or other ball-catching device, wherein the improvement comprises that said middle section comprises a substantially level playing ground, a pivotally mounted shutter means located above said playing ground, said shutter means including support means located above said playing ground for supporting said shutter means for pivotal displacement between a first position in which an edge of said shutter means contacts said playing ground and forms a playing surface sloping upwardly from said playing ground and said playing surface extending from the location of contact with said playing ground in the direction from said first section toward said last section and a second position wherein the edge which contacts said playing ground in the first position is spaced upwardly from said playing ground so that a ball can be played from said first section over said playing ground towards said last section passing under said shutter means, a first obstacle means mounted on said playing ground below said shutter means and said first obstacle means including a plurality of movably displaceable obstacles thereon selectively positionable relative to said playing ground for affording a variety of obstacles on said playing ground and second obstacle means mounted on said shutter means at a position thereon spaced from the location at which said shutter means contacts said playing ground in the first position and said second obstacle means including a plurality of movably displaceable obstacles thereon selectively positionable relative to said playing surface on said shutter means for affording a variety of obstacles on said playing surface.

2. A miniature golf course, as set forth in claim **1,** wherein means are operatively connected to said first and second obstacle means and to said shutter means for coordinating the movement of said first and second obstacle means and said shutter means for affording a variety of arrangements of the obstacle means and the shutter means.

3. A miniature golf course, as set forth in claim **2,** wherein said support means comprises a first shaft pivotally mounting said shutter means, a second shaft pivotally mounting said first obstacle means, a third shaft pivotally mounting said second obstacle means, and said means operatively connected to said first and second obstacle means and to said shutter means comprises a driving means and a linkage arrangement connected to said driving means and to each of said first, second and third shafts for pivoting said shafts for selectively locating said shutter means and said first and second obstacle means.

4. A miniature golf course comprising a first section including a starting zone, a middle section extending from said first section, and a last section extending from the opposite end of said middle section from said first section and including a finishing zone with a hole or other ball-catching device, wherein the improvement comprises that said middle section comprises a substantially level playing ground, a pivotally mounted shutter means located above said playing ground, said shutter means including a shaft supported above said playing ground and being level and extending transversely of the direction of said middle section extending between said first section and last section, said shutter means being pivotally displaceable between a first position in which an edge of said shutter means extending generally parallel to said shaft contacts said playing ground and forms a playing surface sloping upwardly from said playing ground and said playing surface extending from the location of contact with said playing ground in the direction extending from said first section toward said last section and a second position wherein the edge of said shutter means which contacted said playing ground in the first position is spaced upwardly from said playing ground so that a ball can be played from the starting zone of said first section over said playing ground toward said last section passing under said shutter means, a first obstacle means mounted on said playing ground below said shutter means and said first obstacle means including a plurality of movably displaceable obstacles thereon selectively positionable relative to said playing ground for affording a variety of obstacles on said playing ground and second obstacle means mounted on said shutter means at a position thereon spaced from the location at which said shutter means contact said playing ground in the first position and said second obstacle means including a plurality of movably displaceable obstacles thereon selectively positionable relative to said playing surface on said shutter means for affording a variety of obstacles on said playing surface, and means operatively connected to said first and second obstacle means and to said shaft for said shutter means for coordinating the movement of said first and second obstacle means and of said shutter means.

5. A miniature golf course, as set forth in claim **4,** wherein a second shaft pivotally mounts said first obstacle means, a third shaft pivotally mounts said second obstacle means and said means operatively connected to said first and second obstacle means and to said shaft for said shutter means comprises a driving motor and linking means connected to said driving motor and to said shaft for said shutter means and said second and third shafts for transmitting the driving action of said driving motor to said shafts for selectively positioning said shutter means and said first and second obstacle means.

6. A miniature golf course, as set forth in claim **5,** wherein said driving motor includes a screw extending from and turnable by said motor, means including a pin mounted on said screw and arranged for movement therealong as said screw is turned by said motor, a lever connected to said shaft for said shutter means, a first link connected at one end to said pin and at said other end to said lever, a second link connected at one end to said pin and having its other end positioned adjacent said second shaft for said first obstacle means, a sprocket mounted on said second shaft, a spring-biased chain connected to said second link and extending over said sprocket for said second shaft, a third link connected at one end to said pin and extending therefrom with its other end located adjacent said third shaft, a sprocket mounted on said third shaft, a spring-biased

chain connected at one end to the end of said third linkage adjacent said third shaft and extending over said sprocket on said third shaft, and switch means positioned in the path of said means including said pin movable along said screw for controlling said motor for coordinating the movements of said shafts for selectively and automatically positioning said shutter means and said first and second obstacle means.

7. A golf course including a section having a substantially level playing ground, a shaft positioned above said playing ground, a shutter means pivotally mounted on said shaft for movement between a first position in which an edge of the shutter means contacts said playing ground and a second position in which the edge contacting the playing ground in the first position is pivoted upwardly from said playing ground so that a ball can pass along said playing ground below said shutter means, a first obstacle means mounted on said playing ground below said shutter means and said first obstacle means including a plurality of movably displaceable obstacles thereon selectively positionable relative to said playing ground for affording a variety of obstacles on said playing ground, second obstacle means mounted on said shutter means and located on the upper end of said shutter means when said shutter means is in the first position, said second obstacle means including a plurality of movably displaceable obstacles thereon selectively positionable relative to said playing surface on said shutter means for affording a variety of obstacles on said playing means, a second shaft pivotally mounting said first obstacle means, a third shaft pivotally mounting said second obstacle means, and a driving organ, a plurality of links interconnected to one another and connected to said driving organ with each of said links connected to a different one of said first, second and third shafts so that each link movably displaces one of said shafts for selectively positioning said shutter means and said first and second obstacle means.

8. A miniature golf course, as set forth in claim **7**, wherein said links are arranged to be driven in one direction by said driving organ and spring means connected to said links associated with said second and third shafts for moving said links in the opposite direction to the movement by said driving organ.

9. A miniature golf course, as set forth in claim **7**, wherein a driving screw is connected to said driving organ and means movable along said driving screw in response to the driving action of said driving organ and connected to said links for transmitting the driving action of said driving organ to said links.

10. A miniature golf course, as set forth in claim **7**, wherein a programming means is arranged to selectively operate said driving organ, said programming means comprising a switching arrangement disposed in the path of movement of said means on said driving screw for regulating the direction of movement of said driving screw via said driving organ for coordinating the movement of said shutter means and said first and second obstacle means.

* * * * *