Sept. 2, 1969 R. D. CLATTERBUCK 3,464,700

SPIRAL PATH WITH OBJECT RECEIVING MEANS

Filed June 17, 1966 4 Sheets-Sheet 1

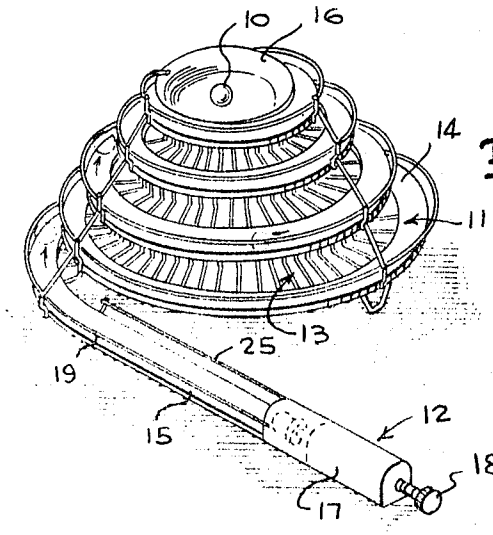
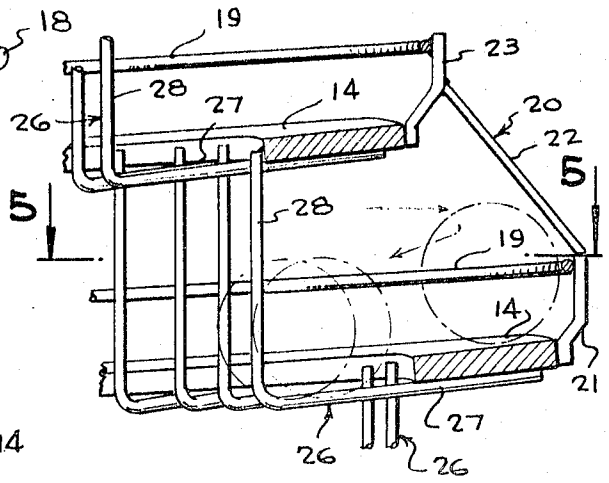


Fig-1

Fig-4



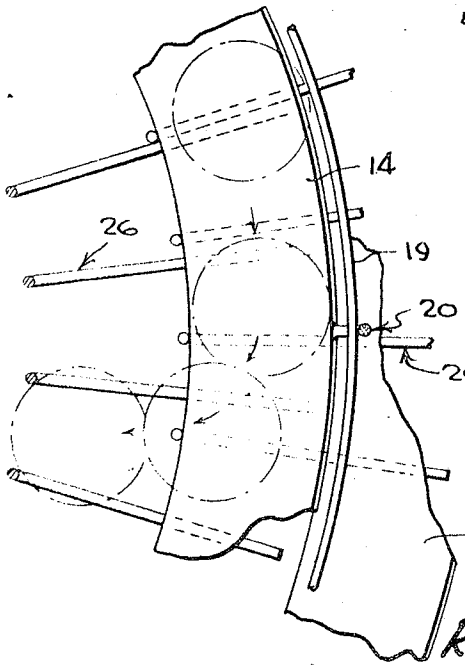


Fig-5

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Fig-2

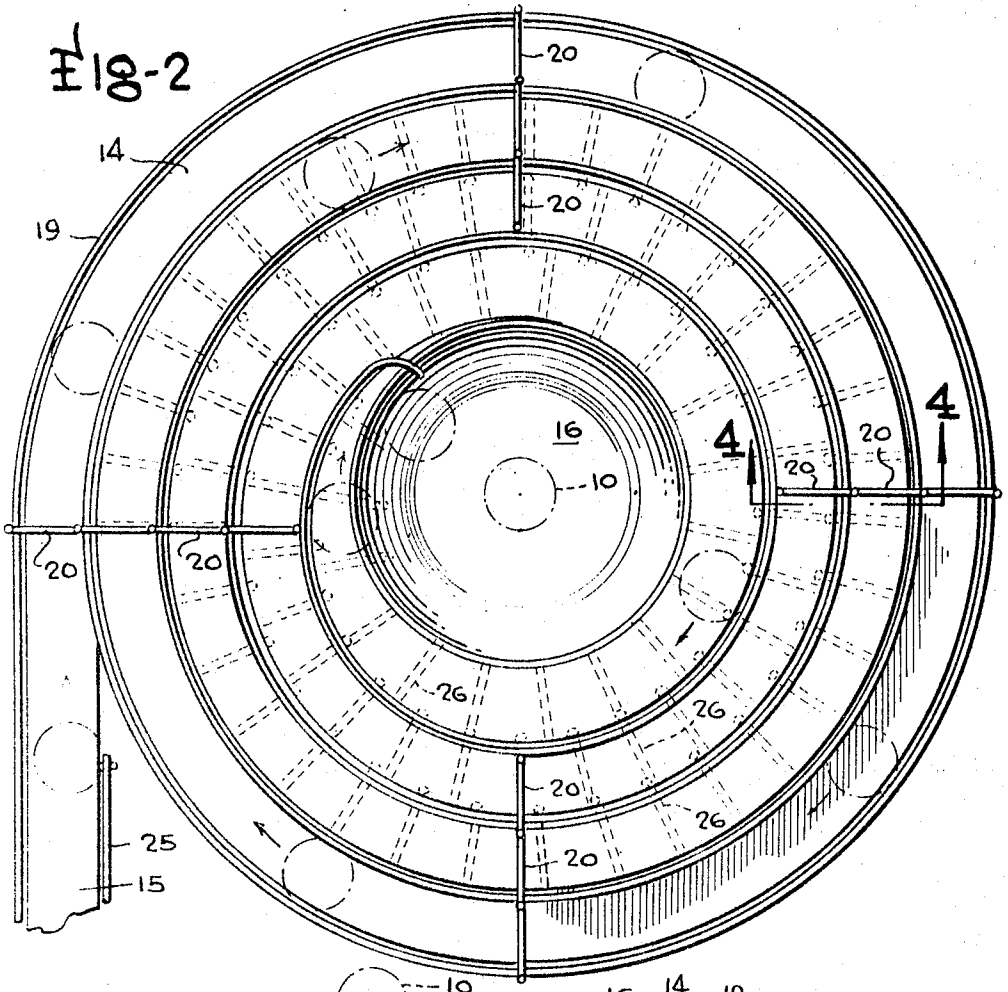
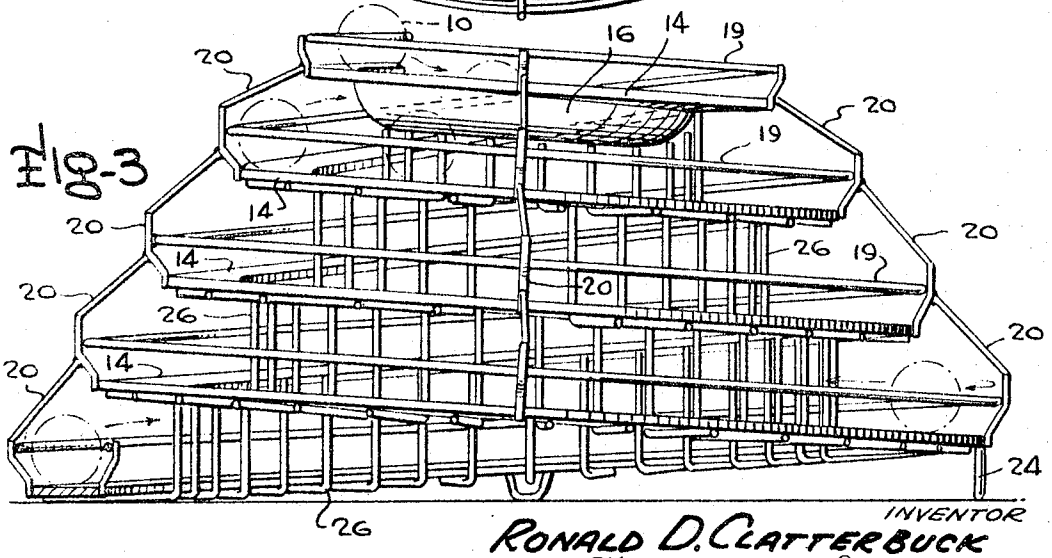


Fig-3



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SPIRAL PATH WITH OBJECT RECEIVING MEANS

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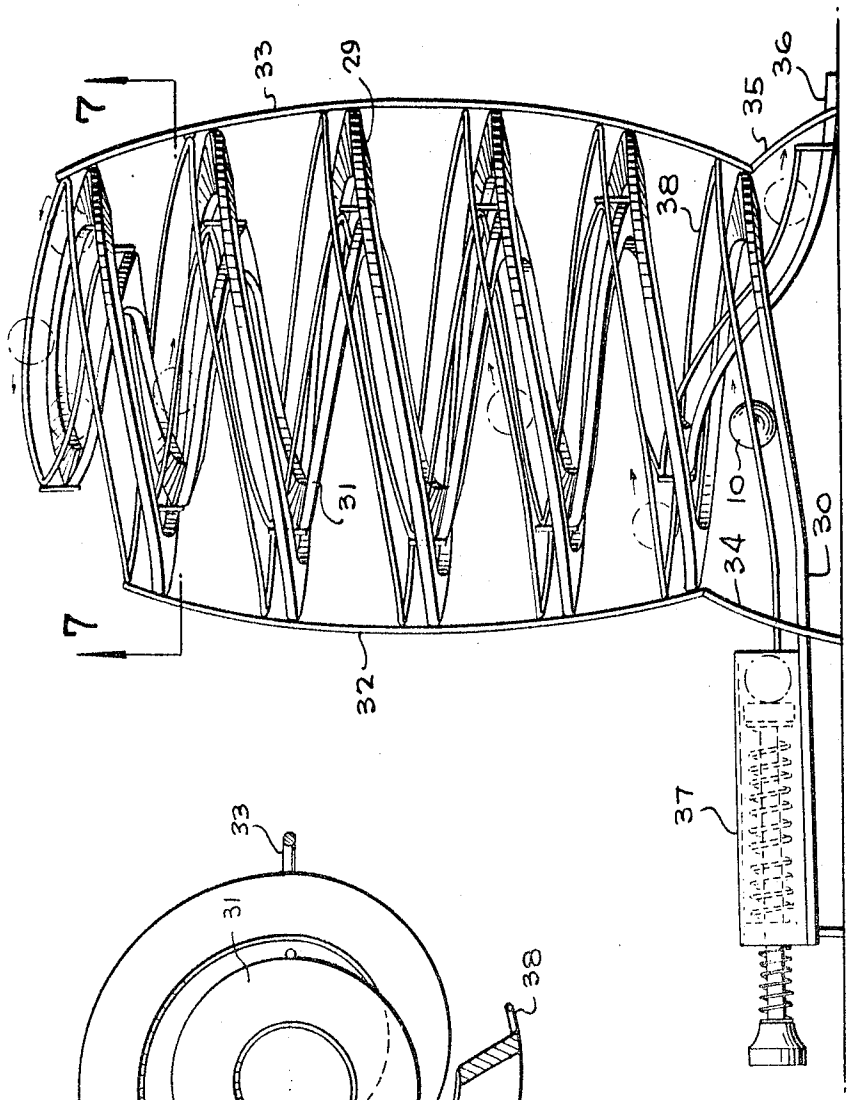


FIG-6

FIG-7

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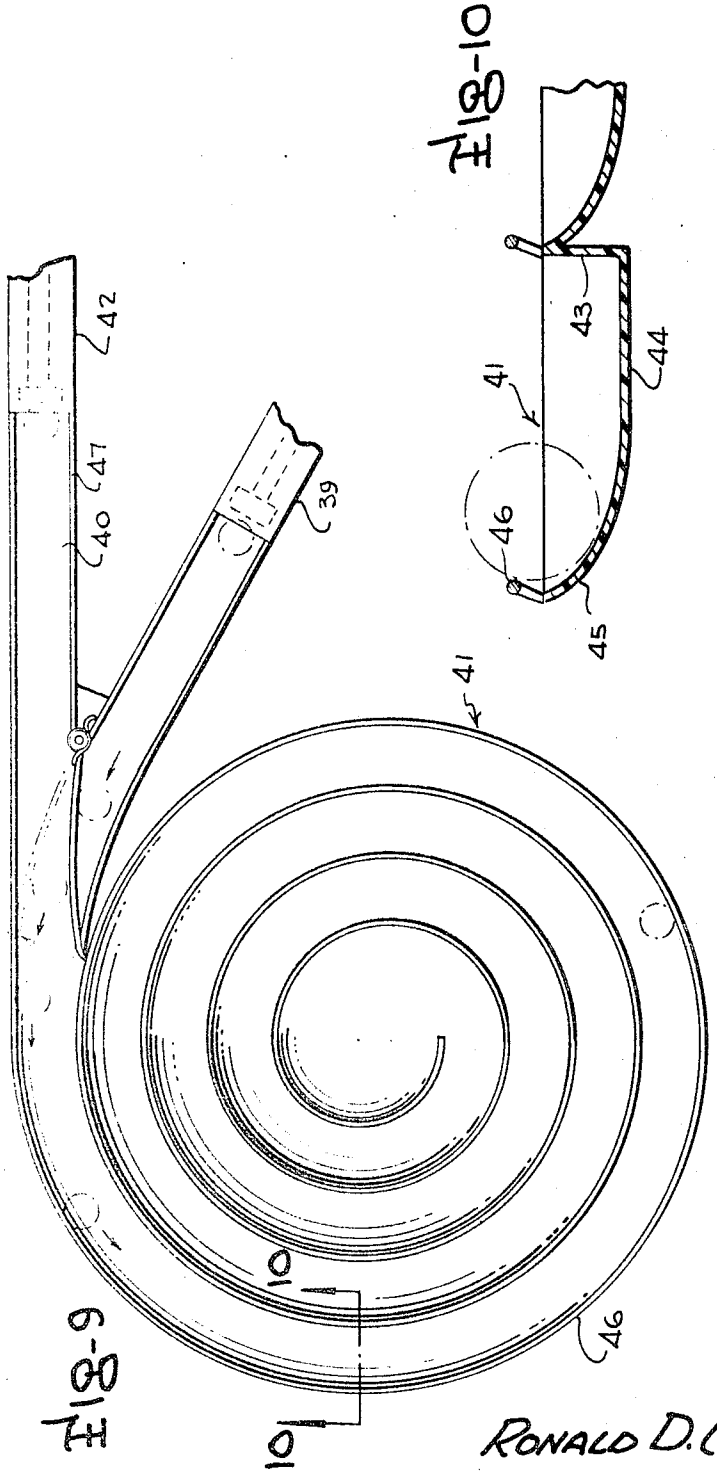
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SPIRAL PATH WITH OBJECT RECEIVING MEANS

Filed June 17, 1966 4 Sheets-Sheet 4



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United States Patent Office 3,464,700 Patented Sept. 2, 1969

3,464,700

SPIRAL PATH WITH OBJECT RECEIVING MEANS

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Filed June 17, 1966, Ser. No. 558,357
Int. Cl. A63d 13/00; A63f 7/10
U.S. Cl. 273—119 10 Claims

ABSTRACT OF THE DISCLOSURE

A game board with an ascending spiral path having wire elements placed there along to receive projected spherical objects. These wire elements are spaced apart less than the diameter of the spherical objects to receive the objects once they lose their momentum and velocity. Another embodiment provides for both ascending and descending spiral paths with propelling devices and spherical object receiving pockets. The paths may be interconnected at their upper or lower ends to provide a continuous path. In addition, two propelling devices may be employed to propel objects along the same path by different players.

This invention relates to a game device, and more particularly to a game of skill in which an object is propelled along a guide path.

In the prior art, there are various types of games in which an object such as a ball is propelled along a predetermined path, wherein it is the principal object of the game to impart a selected force on the ball so that it will travel and be guided to a selected location along the line of travel. Usually, such game structures include various means for obstructing or altering the intended flight characteristics of the ball for which the player must make compensation in playing the game. Most of such prior art games, however, often either are complicated in construction, or are not provided with adequate means for affecting the flight characteristics of the ball, to require a sufficiently high level of skill of the player to maintain his interest in the game.

Accordingly, it is the general object of this invention to provide a novel game device.

Another object of this invention is to provide a novel game device in which the main object of the game is to propel an object such as a ball along a line of travel, so that it will be propelled to a selected location along the line of travel.

A further object of this invention is to provide a novel game device in which an object such as a ball is propelled along a guide path to a selected location, wherein the guide path is arranged in a novel manner whereby the flight characteristics of the ball are affected for which compensation must be made by the player.

A still further object of this invention is to provide a novel game device which requires a certain amount of skill of the player, which serves to increase his interest in the game.

Another object of this invention is to provide a novel game device which is comparatively simple to play.

A further object of this invention is to provide a novel game device which is comparatively simple in construction and relatively inexpensive to manufacture.

Other objects and advantages of the present invention will become more apparent to those persons skilled in the art, from the following description taken in conjunction with the accompanying drawings, wherein:

FIGURE 1 is a prespective view of an embodiment of the invention;

FIGURE 2 is an enlarged top plan view of the invention illustrated in FIGURE 1;

FIGURE 3 is an enlarged side elevational view of the embodiment illustrated in FIGURE 1;

FIGURE 4 is an enlarged cross-sectional view taken along line 4—4 in FIGURE 2;

FIGURE 5 is an enlarged cross-sectional view taken along line 5—5 in FIGURE 4, having a portion thereof broken away;

FIGURE 6 is a side elevational view of another embodiment of the invention;

FIGURE 7 is a cross-sectional view taken along line 7—7 in FIGURE 6;

FIGURE 8 is a side elevational view of a modification of the embodiment illustrated in FIGURES 6 and 7;

FIGURE 9 is a top plan view of a third embodiment of the invention; and

FIGURE 10 is an enlarged cross-sectional view taken along line 10—10 in FIGURE 9.

Briefly described, the present invention relates to a game device generally comprising means for guiding a propelled object along an ascending spiral path, a plurality of means disposed coextensively with the guide means for receiving the object from the guide means and the guide means having means for directing the object into one of the receiving means when the object, having been propelled along the guide means, loses its velocity and momentum, causing it to fall into the receiving means.

According to a more specific embodiment of the invention, there is provided a game device of the type described, wherein the diameter of the guide means decreases progressively and the guide means comprises a continuous track inclined inwardly and downwardly toward the vertical centerline of the device, having a guide rail for preventing the object from leaving the track outwardly. The object consists of a sphere which is received in the receiving means, comprising a plurality of wire elements spaced along the inner side of the track. Each of the wire elements is provided with a first portion projecting inwardly from the track and a second portion projecting upwardly therefrom, with the spacing between the inwardly projecting portions thereof being less than the diameter of the object, so that the object will be received and supported between successive wire elements. The sphere either can be thrown or bowled onto the track or a mechanism can be provided on the game device for propelling the object along the track.

Referring to FIGURES 1 through 5, there is shown a first embodiment of the invention. This embodiment includes generally a ball **10**, a guide means **11**, along which the ball **10** is propelled, a mechanism **12** for propelling the ball along the guide means **11**, and a receiving means **13** for receiving the ball from the guide means **11**. The guide means **11** consists of a continuous ascending spiral track **14**, having a rectilinear section **15** disposed tangentially and being formed as a continuation of the lower end of the spiral section **11**, and a receptacle **16** mounted on the upper end of the guide means at which the upper end of the track member **14** terminates to discharge the ball therein. The diameter of the spiral track member **14** decreases progressively. The track member is inclined inwardly and downwardly toward the vertical centerline of the device, as best illustrated in FIGURE 4, so that the ball **10** propelled along the track member **14** will be caused to roll inwardly toward the receiving means **13** when it has lost its velocity and momentum at a point along the track member **14**. The ball is propelled along the rectilinear section **25** of the guide means and onto the track member **11** toward the elevated receptacle **16** by means of the mechanism **12**. This mechanism includes a housing member **17**, having a spring biased plunger **18** operatively mounted therein and aligned with the rectilin-

ear section **15** of the guide means whereby the handle thereof can be pulled back and released so that the plunger strikes the ball, propelling it along the guide means.

The ball, during its flight, is prevented from falling off of the guide means **11** by means of a guide rail **19** disposed coextensively with and along the outer side of the rectilinear section **15** and the spiral track member **14**. The guide rail consists of an elongated wire member which is supported between successive convolutions of the track member by means of support struts **20**. As best illustrated in FIGURE 4, the strut members **20** each include an upstanding portion **21** having the lower end thereof secured to the outer edge of the track member **14** and an inwardly and upwardly extending portion **22** which extends above the next successive convolution of the spiral track member, and is secured at its upper end to a strut member **23** having its lower end secured to the next successive convolution of the spiral track member. It will be appreciated that the arrangement of strut members **20** spaced circumferentially about the spiral track member **14** support the spiral track member **14** and maintain the successive convolutions thereof in vertically spaced relation. As best illustrated in FIGURE 3, the track member is provided with a foot member **24**, which supports the elevated end of the first convolution of the spiral track member. The rectilinear section **15** of the guide means also is provided with a guide rail **25** disposed along one side thereof opposed to the guide rail **19**, to prevent the ball from leaving the guide means during the initial part of its travel.

The receiving means **13** generally consists of a plurality of wire elements **26** which are spaced along the inner side of the spiral track member **14**. Each of these wire elements includes an inwardly projecting portion **27**, having the outer end thereof secured to the under side of a convolution of the track member **14**, and an upwardly projecting portion **28**, which is secured to the inner edge of the next succeeding convolution of the spiral track member. The spacing between successive wire elements **26** is less than the diameter of the ball **10**, so that when the ball rolls inwardly off of the spiral track member **14**, it will be caught between and supported on successive wire elements.

In playing the embodiment of the invention illustrated in FIGURES 1 through 5, the ball is placed in the open front end of the propelling mechanism **12**, as illustrated in dotted lines in FIGURE 1. The handle of the plunger **18** then is retracted and released so that the plunger under the force provided by the spring member acting on the plunger, propels the ball along the rectilinear section onto the spiral track member **14** of the guide means. The guide rails **19** and **25** prevent the ball from leaving the rectilinear section **15** of the guide means, while the guide rail **19** prevents the ball from falling outwardly off of the spiral track member **14**. If sufficient force is imparted to the ball **10**, it will ascend along the spiral track member **14** and be deposited onto the receptacle **16** on the top of the device. However, if the ball loses its velocity and momentum at any point along the spiral track member **14**, it will be caused to roll inwardly along the spiral track member **14** toward the receiving means **13**. As illustrated in FIGURES 4 and 5, the ball with fall onto a pair of successive wire elements **26**. The ball will be held in such position supported on the inwardly projecting portions **27** of the successive wire elements, and prevented from falling inwardly by means of the upwardly projecting portions **28** thereof.

It will be appreciated that each of the openings between successive wire elements **28** can be assigned different numerical values. By controlling the force imparted on the ball **10**, the player can attempt to guide the ball into a selected opening to obtain a particular score. It further will be appreciated, however, that the structure provides certain variables which affect the flight characteristics of the ball. The flight characteristics of the ball are affected by such factors as the force imparted on the ball to propel it along the guide means, the ascendency of the guide means and the decrease in the diameter of the spiral track member.

The embodiment illustrated in FIGURES 1 through 5 can be provided with various different means for receiving the ball along the length of the spiral track member, after the ball has lost its velocity and momentum. The spiral track member **14** can be inclined either inwardly and downwardly, or inwardly and outwardly with the receiving means formed on the lower end of the track to receive the ball. It also is contemplated that an enclosed tubular guide means can be used along which the ball is propelled, including suitable receiving means such as pockets and the like which are disposed along the length of the guide means and are adapted to receive the ball when it loses its velocity and momentum. It further is contemplated that the guide means can consist of a tubular member having a plurality of openings along the bottom thereof for receiving the ball when it has lost its velocity and momentum.

In the embodiment illustrated in FIGURES 1 through 5, the strut members **20** and the wire elements **28** serve to provide the support structure for the entire device. The wire elements **28** and strut members **20** also serve to maintain the successive convolutions of the spiral track member **14** in spaced vertical relation.

The receptacle **16** disposed at the top of the device is intended to receive the ball under circumstances where a sufficient force has been imparted on the ball to propel it the entire course of the guide means. The receptacle can be replaced with any other suitable means including a return track which would return the ball to the starting station of the device. In addition, the receiving means **13** also can be provided with guide means such as tubular members, which will return the ball to selected locations on the device.

Referring to FIGURES 6 and 7 of the drawings, there is illustrated a second embodiment of the invention. This embodiment is illustrated diagrammatically for the purpose of clarity, although it will be understood that the construction of the guide means and the receiving means is similar to the guide means for receiving means described in connection with the embodiment illustrated in FIGURES 1 through 5. The device illustrated in FIGURES 6 and 7 includes guide means having an ascending spiral section **29**, having the lower end thereof connected to a rectilinear section **30** and the upper end thereof being connected to a second descending spiral section **31**, which is disposed within the ascending spiral section **29**.

The ascending spiral section **29** is supported by means of circumferentially spaced vertical frame members **32** and **33** which are connected to suitable foot members **34** and **35**. The successive convolutions of the ascending section **29** are spaced vertically and the diameter of the section **29** progressively increases from the bottom thereof to a maximum at approximately its midpoint and then decreases toward the upper end thereof. The descending section **31** is supported on the ascending section **29**. Similarly, the successive convolutions of the descending guide section **31** are spaced vertically and the diameter of the section **31** increases downwardly to a maximum, to its midpoint, and then decreases toward the bottom end of the device. The descending section **31** is provided with a discharge section **36** at the lower end thereof.

The ball **10** is propelled onto the guide sections **29** and **31** by means of a propelling mechanism **37**. The mechanism is conventional in construction, having a spring biased plunger member which can be retracted and released to impart a force on the ball to propel it onto the sections **29** and **31**. The guide sections **29** and **31** are provided with a guide rail **38** similar to the guide rail described in connection with the first mentioned embodi-

ment, which is secured to the vertical frame members 32 and 33. The guide sections 29 and 31 are inclined inwardly and downwardly to cause the ball to roll inwardly and downwardly into the receiving means which are similar to the receiving means 13 described in connection with the first embodiment.

The embodiment of the game illustrated in FIGURES 6 and 7 is played in substantially the same manner as the game described in connection with the fisrt mentioned embodiment. The ball 10 is placed in the propelling mechanism 37 and the handle of the plunger thereof is retracted and released to impart a force on the ball 10. If the ball 10 is propelled with a sufficient force, it will ascend along the guide section 29, and descend along the guide section 31, to be discharged along the section 36. However, if a lesser force is imparted on the ball, the ball will be propelled onto either of the sections 29 or 31 and will at some point lose its velocity and momentum, so that it will be caused to roll inwardly and downwardly between a pair of wire elements of the receiving means disposed along the inside of the sections 29 and 31.

Each of these locations will be designated with a different numerical value, so that the player will receive a certain score when the ball comes to rest in a designated location. It will be appreciated that several factors will affect the flight characteristics of the ball, including the force initially imparted to the ball, to propel the same, the ascendency of the ball along the section 29, the descent of the ball along the section 31 and the increase and decrease in the diameters of the sections 29 and 31. In this embodiment, as in the case of the first mentioned embodiment, the guide means for the ball can include several alternate arrangements as previously described.

The embodiment illustrated in FIGURES 6 and 7 also can be modified as shown in FIGURE 8. The lower ends of spiral sections 29 and 31 are connected so that a ball traveling downwardly on descending spiral section 31*a* will continue to travel upwardly on ascending spiral section 29*a*.

FIGURES 9 and 10 illustrate a third embodiment of the invention. This embodiment includes a rectilinear guide section 40, a spiral guide section 41 and a propelling mechanism 42. The mechanism 42 is employed to propel a ball on sections 40 and 41 which lie in the same plane and have similar cross-sectional configurations. The guide sections are provided with a substantially vertical inner wall 43, a bottom wall 44 and an outer upwardly curved or rounded wall 45. A rail 46 is provided on the upper end of the curved wall 45 to prevent a ball traveling along the guide sections 40 and 41 from leaving the sections. An additional rail 47 is provided on the upper end of inner wall 43 of section 40 to assist in guiding the ball on section 40.

The embodiment shown in FIGURES 9 and 10 is played essentially in the same manner as the aforementioned embodiments. A ball is propelled onto the section 41 and travels along the curved wall 45 as best shown in FIGURE 10. As soon as the ball loses momentum, it will fall onto the bottom wall 44 and be retained at a point by suitable means. Various retaining means can be utilized, including a series of depressions along guide section 41. Each retaining means is assigned a different numerical or other value, depending on the particular rules of the game.

In addition, a second propelling mechanism 39 can be employed in any of the embodiments as illustrated in FIGURE 9. This would permit a second player to play along with the first player. The two players can propel their prospective balls onto the guide section either simultaneously or sequentially.

From the foregoing detailed description it will be evident that there are a number of changes, adaptations and modifications of the present invention which come within the province of those skilled in the art. However, it is intended that all such variations not departing from the spirit of the invention be considered as within the scope thereof as limited solely by the appended claims.

I claim:

1. A game device comprising stationary means for guiding a propelled spherical object along an ascending spiral path of progressively decreasing radius, said guide means comprising a continuous track inclined inwardly and downwardly, having a guide rail for preventing the object from leaving the track outwardly, a plurality of means disposed along at least a portion of the length of said guide means for receiving said object from said guide means, said reeciving means comprising a plurality of wire elements disposed along the inner side of said track, each of said wire elements having a first portion projecting inwardly from said track and a second portion projecting upwardly therefrom, the spacing between successive inwardly projecting portions of said wire elements being less than the diameter of said object so that said object will be received and supported between successive wire elements when said object, having been propelled along said guide means, loses its velocity and momentum, causing it to roll onto successive wire elements and means for propelling said object along said track.

2. A game device comprising stationary means for guiding a propelled object along a first section providing an ascending spiral path and a second section providing a descending spiral path, said sections being connected at the upper ends theerof to provide a continuous path, a plurality of means disposed in spaced relation with said guide means along at least a portion of the length thereof for receiving said object from said guide means, successive receiving means being contiguous, and said guide means having means for directing said object toward one of said receiving means when said object, having been propelled along said guide means, loses it velocity and momentum causing it to fall into one of said receiving means.

3. A game receiving device according to claim 2, wherein said section providing the descending spiral path is contained within said section providing the ascending spiral path, and the radii of said sections progressively first increase to a maximum radius and then decrease.

4. A game device according to claim 2, wherein means are provided for propelling the object along said guide means.

5. A game device according to claim 2, wherein the guide means comprises a continuous track inclined inwardly and downwardly having a guide rail for preventing the object from leaving the track outwardly, and said receiving means comprises a plurality of pockets disposed along the inward side of said track.

6. A game device according to claim 3, wherein said guide means comprises a continuous track inclined inwardly and downwardly having a guide rail for preventing the object from leaving the track outwardly, said object consists of a sphere, said receiving means comprises a plurality of wire elements spaced along the inward side of said track, each of said wire elements having a first portion projecting inwardly from said track and a second portion projecting upwardly therefrom, the spacing between the inwardly projecting portions of the wire elements being less than the diameter of said object so that said object can be received and supported between successive wire elements and means for propelling said object along said track.

7. A game device according to claim 2, wherein the lower ends of said guide means sections are connected to provide a continuous path for said object.

8. A game device according to claim 4, wherein the lower ends of said guide means are connected to provide a continuous path for said object.

9. A game device according to claim 2, including a second means for propelling a second object along said guide means.

10. A game device according to claim 7, including a

second means for propelling a second object along said guide means.

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