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[54] ROLLING BALL GAME APPARATUS

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[52] **U.S. Cl.** .....**273/86 C,** 273/120 R

[51] **Int. Cl.**.....**A63f 7/02**

[58] **Field of Search** .273/86 C, 120 R, 120 A, 121 R, 273/121 A, 122 R, 122 A, 124 R, 124 A, 125 R, 125 A; 46/43

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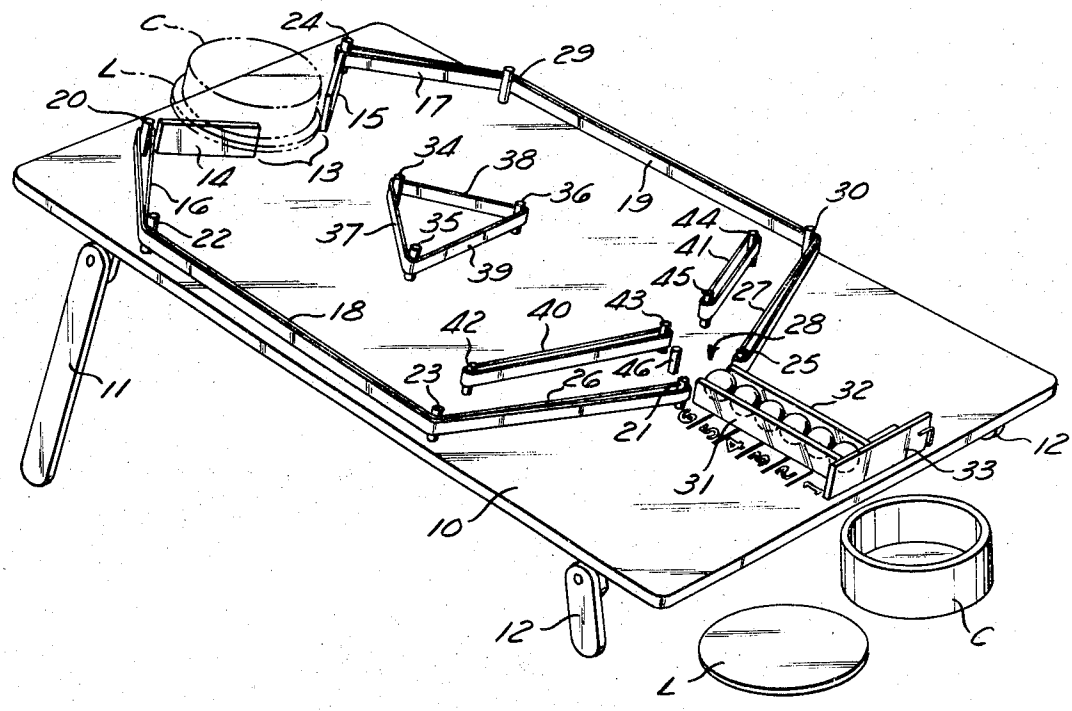
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[57] **ABSTRACT**

An inclined game board having a start opening near its upper end which is wide enough to pass several game balls at a time, a finish opening near its lower end which passes only one game ball at a time, and rubber band deflectors positioned between the start and finish openings to deflect the game balls for a random order finish. One or more deflectors near the finish opening are positioned to cause the balls to enter the finish opening one at a time.

5 Claims, 3 Drawing Figures



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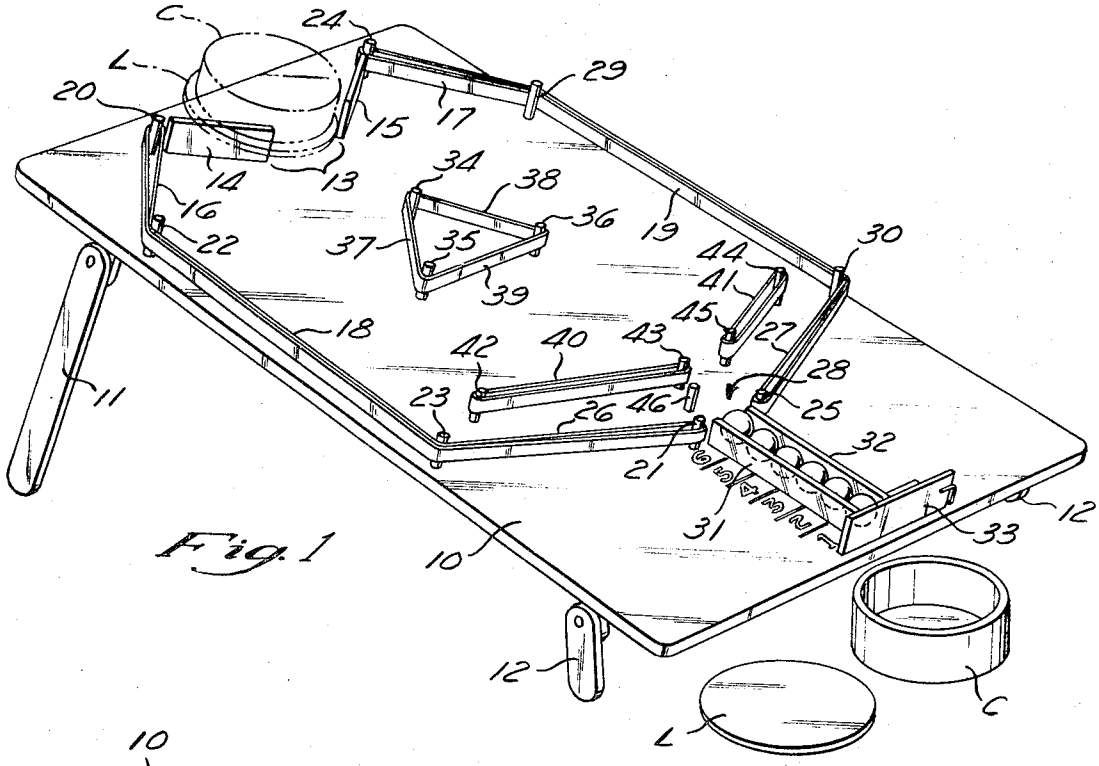


Fig. 1

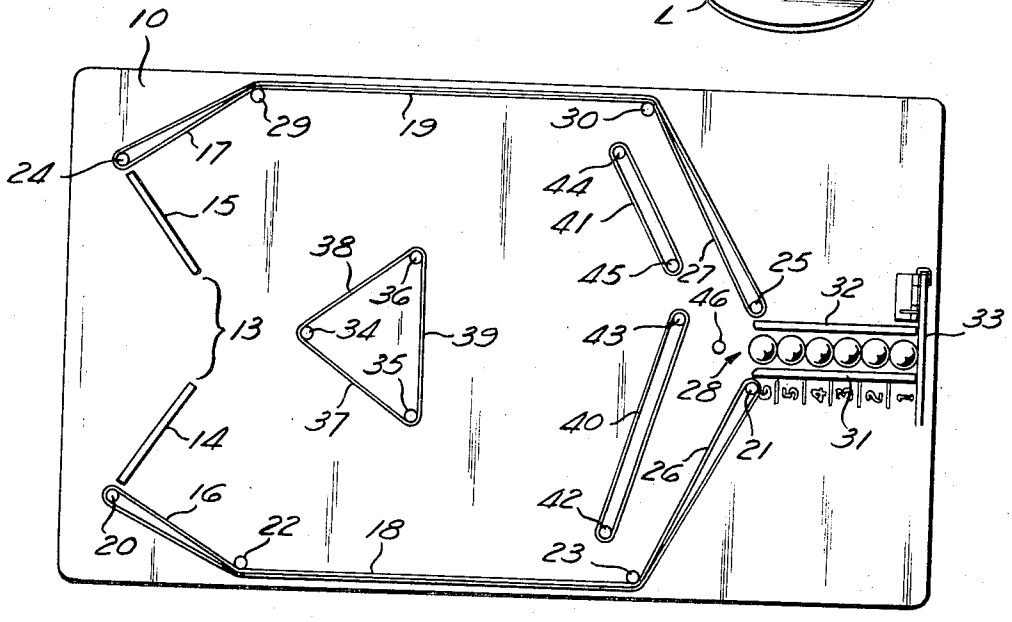


Fig. 2

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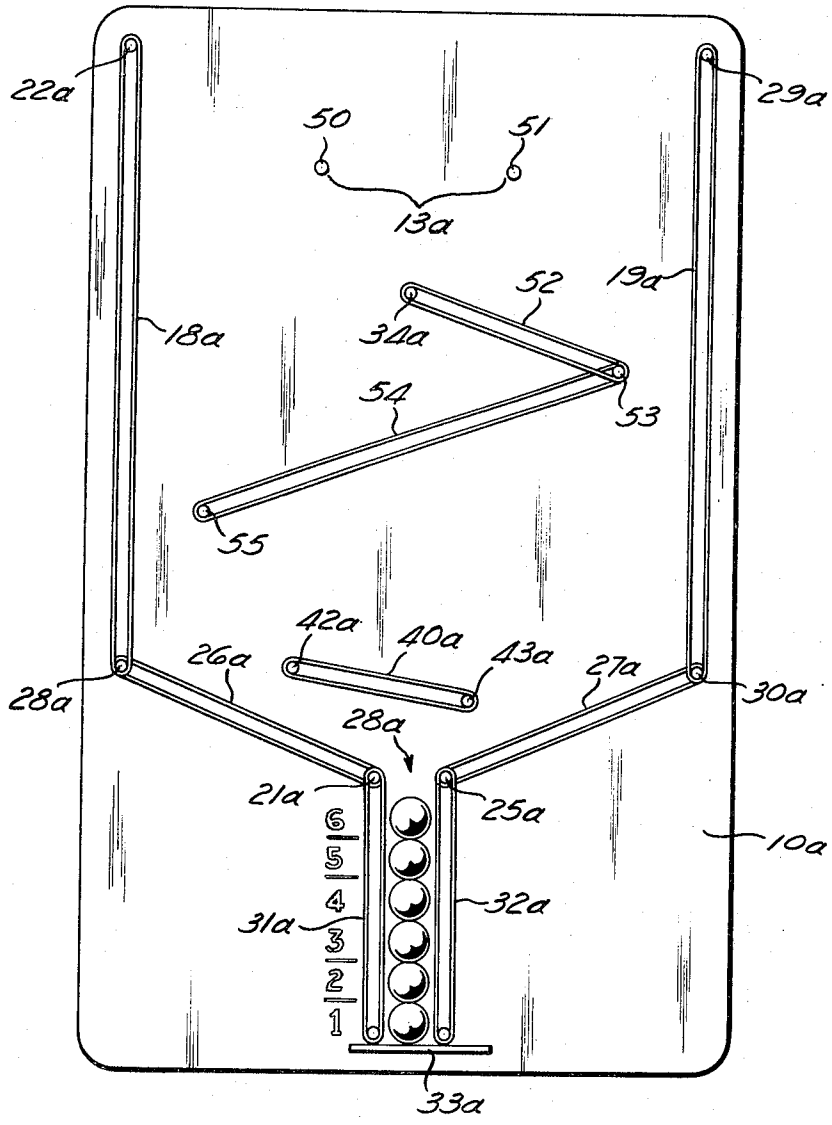


Fig. 3

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ROLLING BALL GAME APPARATUS

This invention relates to a rolling ball game apparatus.

A principal object of this invention is to provide a novel game apparatus in which several game balls roll from a simultaneous start and encounter a multiplicity of random collisions with each other before reaching a random order finish.

Another object of this invention is to provide such a game apparatus having elongated, resilient deflectors positioned to deflect the game balls, as they roll from start to finish, so as to promote their random collisions with each other and the random order distribution of their arrival at the finish.

Another object of this invention is to provide a novel rolling ball game apparatus having one or more deflectors arranged near the finish to cause the balls to enter the finish opening one at a time.

Another object of this invention is to provide a novel rolling ball game apparatus which is relatively simple and inexpensive in construction and yet provides an almost infinite variety of travel paths for the different game balls as they roll from their simultaneous start to a serial-order finish.

Further objects and advantages of this invention will be apparent from the following detailed description of two presently-preferred embodiments, which are shown in the accompanying drawings.

In the drawings:

FIG. 1 is a top perspective view of a first embodiment of the present game apparatus;

FIG. 2 is a top plan view of this game apparatus; and

FIG. 3 is a top plan view of a second embodiment of the present game apparatus.

Referring to FIGS. 1 and 2, this embodiment of the present game apparatus comprises a flat, rigid game board 10 supported by back legs 11 and shorter front legs 12 so that the board is inclined downward from back to front. The front and back legs may be hinged to the game board, as shown, or they may be removably attached or permanently attached to it, as desired.

Toward its upper end the game board has an entry or start opening 13, which is provided by the space between two rigid wall segments 14 and 15 extending up from the game board and converging laterally inward and downward along the board toward each other. This start opening 13 is wide enough to pass several game balls at a time. These game balls preferably are marbles having distinctive markings, such as different colors. They are shaken up in a cup C over which the player holds a thin flexible lid L, which is slightly larger than the mouth of the cup. The player inverts the cup, lid down, over the game board behind the start opening and then lifts the cup away from the underlying lid enough to permit all the game balls to drop down onto the game board more or less simultaneously and roll down through the start opening 13 in a random order.

The wall segments 14 and 15 on opposite sides of the start opening 13 are part of opposite wide walls on the game board. These side walls also include wall segments 16 and 17, which extend downward and laterally outward from the upper ends of segments 14 and 15, respectively, over to the opposite side edges of the board, and wall segments 18 and 19, which extend from the lower ends of segments 16 and 17, respectively, down along these side edges of the board. The wall segments 16 and 18 and the wall segments 17 and 19 together constitute opposite side deflectors on the game board.

The game board is provided with bottom end walls 26 and 27, which incline downward and laterally inward toward each other from the lower ends of the respective side deflectors. At their lower ends the bottom end walls terminate short of each other to define a finish opening 28, which is just slightly larger than the width of a single game ball.

In the particular embodiment shown a single rubber band provides the left side deflector 16, 18 and the left bottom end wall 26. This rubber band is under suitable tension to have the desired resiliency, with its upper end looped around a post 20 near the outer end of wall segment 14 and its lower end looped around a post 21 at the left side of the finish opening 28. Between its ends this rubber band extends around the outside of posts 22 and 23 located near the left side of the game board.

Similarly, a single tensioned rubber band provides the right side deflector 17, 19 and the right bottom end wall 27. This rubber band has its upper end looped around a post 25 at the right side of finish opening 28. Between its ends this rubber band extends around the outside of posts 29 and 30 located near the right side of the game board.

A finish chute extending down along the game board from the finish opening 28 is provided by a pair of upstanding, laterally spaced walls 31 and 32. These walls of the finish chute may be of rigid, transparent plastic, or they may be provided by wires or by rubber bands. The spacing between the opposite walls of the finish chute is the same as the width of the finish opening, so that the game balls end up in the finish chute serially in the same order as they pass through the finish opening. Numbers are printed on the game board next to wall 31 to indicate the order of finish, in this case from "1" to "6."

The lower end of the finish chute is closed by a hinged gate 33, which may be lifted up to permit the balls to drop into the cup C when the game is over.

A short distance below the start opening 13, three upstanding posts 34, 35 and 36 are arranged on the game board in a triangular pattern, with the uppermost post 34 centered below the start opening 13 and the other posts 35 and 36 disposed to the left and right, respectively. A tensioned rubber band is wrapped around these three posts to provide a pair of elongated, resilient upper deflectors 37 and 38 and a lower segment 39 connecting their lower ends. The upper deflectors 37 and 38 are inclined downward and laterally outward away from each other.

A pair of elongated, resilient lower deflectors 40 and 41 are located on the board downward from the upper deflectors 37 and 38 and upward from the respective bottom end walls 26 and 27. These lower deflectors are inclined downward and laterally inward in the same general directions as the respective bottom end walls 26 and 27.

The left lower deflector 40 is provided by a tensioned rubber band having its opposite ends looped around post 42 and 43. The lower post 43 is positioned to the right of the finish opening 28, so that the lower end of

deflector **40** extends completely across this opening. At the upper post **42** the deflector **40** is spaced from the adjacent side wall **18** and from post **23** just slightly more than the width of a single game ball. Toward its lower end, the deflector **40** diverges slightly away from the adjacent bottom end wall **26**. The lower end extremity of deflector **40** (at post **43**) is spaced from the right bottom end wall **27** slightly more than the width of two game balls.

The right lower deflector **41** is appreciably shorter than the left lower defector **40**. Deflector **41** is provided by a rubber band looped around spaced apart posts **44** and **45** under tension. At post **44** the upper end of deflector **41** is spaced from the adjacent side wall **19** and from post **30** just slightly more than the width of a single game ball, and throughout its extent it has this spacing from the right bottom end wall **27**.

The spacing between the lower ends of the lower deflectors **40** and **41** is greater than the width of a single game ball and just slightly less than twice the width of a game ball.

An additional deflector in the form of an upstanding post **46** is positioned below the left lower deflector **40** and centered above the finish opening **28**. This post is spaced below deflector **40** by slightly more than the width of a single game ball, and it is spaced from the lower ends of the bottom end walls **26** and **27** by slightly more than the width of a single game ball.

In the use of this game apparatus, the player shakes the cup C and drops the game balls onto the game board just behind the start opening **13**, as already described. The marbles spill out onto the board and roll down through the start opening, usually several at a time. They continue to roll down the board and bounce off the upper deflectors **37** and **38**. Depending on their respective velocities and directions and their respective points of impact against these deflectors, they tend to be deflected toward one or the other of the side wall segments **18** or **19**. However, the game balls may collide with each other and be deflected by such collisions, as well as by bouncing off the side walls.

Eventually the balls roll down the board toward one or the other of the lower deflectors **40** and **41**. Some may pass around the outer ends of these deflectors and then roll down the bottom end walls **26, 27** to the finish opening. The remainder will strike one or the other of the lower deflectors **40** and **41** and normally they will collide with each other in a multiplicity of random collisions before passing down, one at a time, through the opening between posts **43** and **45**.

Below the lower deflectors **40** and **41**, additional collisions between the game balls and these deflectors, between the game balls and the bottom end walls **26** and **27**, and of one game ball against another, may take place. Also, most of the game balls will strike the post **46** before finally passing down through the finish opening **28**. Post **46** is so positioned to further insure that only one game ball at a time passes into the finish opening.

The overall result of the arrangement of the deflectors in the present game apparatus, coupled with the more-or-less simultaneous start of the game balls and their random distribution at the start, is that the paths of the several game balls from start to finish are unpredictable and there is an effectively random distribution of their order of finish. That is, when the game is played a sufficient number of times, each game ball finishes first with about the same frequency as each of the others. This exceptional randomness is achieved despite the structural simplicity of the present game apparatus. In actual practice, there is virtually no chance that a particular game ball will have a short path to the finish or that it will be deflected only once or twice. Instead, each game ball is subjected to several collisions, with resultant deflections in its direction of movement, so that its ultimate path and time required to travel from start to finish are determined by a multiplicity of variables.

FIG. **3** is a top plan view generally similar to FIG. **2**, but showing a second embodiment of the present game apparatus. Elements of the FIG. **3** apparatus which correspond to those in the apparatus of FIGS. **1** and **2** have the same reference numerals, with an "*a*" suffix added, and a detailed description of these elements will be omitted as unnecessary.

In FIG. **3** the ball start opening **13***a* is defined by a pair of upstanding posts **50** and **51**, located toward the upper edge of the inclined game board **10***a*. The upper deflectors include a tensioned rubber band **52** which is inclined downward and to the right from a post **34***a* centered below the ball start opening **13***a*. Band **52** has its lower end looped around a post **53** located downward and to the right from post **34***a*. The second upper deflector is provided by a tensioned rubber band **54** extending from post **53** downward and to the left, over to a post **55**. Post **53** is spaced from the adjacent said deflector **19***a* by slightly less than the width of two game balls and, post **55** has the same spacing from the adjacent side deflector **18***a*.

A single lower deflector in the form of a tensioned rubber band **40***a* is positioned overlying the finish opening **28***a*. This deflector **40***a* extends between a post **42***a*, which is spaced above the inclined left bottom wall **26***a* by just slightly less than the width of two game balls, over to a post **43***a* located farther down along the game board and to the right of the finish opening **28***a* and spaced above the right bottom wall **27***a* by just slightly less than the width of two game balls. With this arrangement the single lower deflector **40***a* is nonsymetrically positioned relative to the finish opening, with more of this deflector being located to the left of the finish opening than to the right.

In this apparatus the opposite side walls of the finish chute are provided by rubber bands **31***a* and **32***a*. The opposite side deflectors are provided by tensioned rubber bands **18***a* and **19***a*, and the respective bottom end walls are provided by tensioned rubber bands **26***a* and **27***a*.

The FIG. **3** game apparatus is used in the manner already described in detail with reference to FIGS. **1** and **2**. Some of the game balls rolling down the game board strike the upper deflector **52** and are deflected to the right. The remainder strike the other upper deflector **54** and are deflected to the left.

As they continue to roll down the game board some of the game balls roll down past either end of the lower deflector **40***a* and bounce off either of the inclined bottom end walls **26***a* and **27***a*. Others bounce off the top of the upper deflector **40***a* before striking either bottom end wall.

In practice each game ball usually undergoes several random collisions with various ones of the resilient deflectors **52**, **54**, **18***a*, **19***a*, **40***a*, **26***a*, and **27***a*, as well as with other game balls, so that the order of their finish is extremely variable and unpredictable.

While two presently-preferred embodiments of this invention have been illustrated in the accompanying drawings and described in detail herein, it is to be understood that the invention is susceptible of other embodiments differing from the particular arrangements shown. For example, certain of the deflectors, particularly the side deflectors, may be rigid, if desired. Also, additional deflectors, such as upstanding posts on the game board, may be provided.

I claim:

1. A rolling ball game apparatus comprising an inclined game board having a ball entry near its upper end for several game balls at a time and a finish opening near its lower end which is wide enough to pass only one game ball at a time, means for releasing several game balls simultaneously at said ball entry, a pair of elongated resilient upper deflectors spaced below said ball entry on the game board and extending downward and laterally in opposite directions for respectively deflecting the game balls rolling down simultaneously from the ball entry laterally outward in opposite directions, opposite side deflectors extending down along the game board laterally outward from the upper deflectors for deflecting laterally inward the game balls which bounce off said upper deflectors so as to cause multiple random collisions among the game balls, a pair of bottom end walls which incline downward and laterally inward respectively from the lower ends of said side deflectors to said finish opening, and a resilient lower deflector which extends laterally inward and downward from one side of the game board and across said finish opening, said lower deflector having its upper end spaced from the side deflector at said one side of the game board by more than the width of a single game ball, and said lower deflector being spaced above said finish opening on the game board by more than the width of a single game ball and throughout its entire extent being spaced above both bottom end walls on the game board by more than the width of a single game ball.

2. A game apparatus according to claim **1**, and further comprising an upstanding post on the game board below said lower deflector and substantially centered above the finish opening, said post being spaced from the lower ends of both bottom end walls at the finish opening by slightly more than the width of a single game ball.

3. A game apparatus according to claim **2**, and further comprising a second resilient lower deflector extending laterally inward and downward from the opposite side of the game board, said second lower deflector being disposed completely on said opposite side of the finish opening and having its upper end spaced from the side deflector at said opposite side of the game board by more than the width of a single game ball, said second lower deflector throughout its entire extent being spaced above the bottom end wall on said opposite side of the finish opening by more than the width of a single game ball, and said second lower deflector having its lower end spaced from the lower end of said first-mentioned lower deflector by more than the width of a single game ball.

4. A game apparatus according to claim **3**, wherein said upper deflectors have adjoining upper ends substantially centered below said ball entry on the game board.

5. A game apparatus according to claim **1**, wherein one of said upper deflectors has its upper end substantially centered below said ball entry on the game board, and the other of said upper deflectors has its upper end adjoining the lower end of said one upper deflector toward one side of the game board, and said other upper deflector extends down along the game board and laterally past the upper end of said one upper deflector and toward the opposite side of the game board.

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