United States Patent [19]

Leonhart

[11] **3,910,580**

[45] **Oct. 7, 1975**

[54] **TABLE BALL GAME WITH MOVEABLE CIRCULAR BUMPER PORTIONS**

[76] Inventor: **Xaver Leonhart,** 8381 Harburg near Pilsting, Lower Bavaria, Germany

[22] Filed: **July 30, 1974**

[21] Appl. No.: **493,130**

[30] **Foreign Application Priority Data**

Sept. 10, 1973 Germany 2345558

[52] **U.S. Cl.** ..... **273/119 A;** 124/32; 273/129

[51] **Int. Cl.²** **A63D 3/02**

[58] **Field of Search** ..... 273/118 A, 119 A, 120 A, 273/121 A, 122 A, 123 A, 124 A, 125 A, 126 A, 127 D, 129, 119 R, 120 R, 121 R, 122 R; 124/32

[56] **References Cited**

UNITED STATES PATENTS

2,715,531	8/1955	Henry	273/129
2,825,565	3/1958	Hooker	273/125 A
2,962,287	11/1960	Canivet	273/119 A
3,582,074	6/1971	Menotti	273/121 A
3,704,889	12/1972	Huffman et al.	273/119 R
3,718,331	2/1973	Scott	273/129 X
3,770,276	11/1973	Breslow	273/119 R
3,785,650	1/1974	Halliburton	273/122 A X
3,834,706	9/1974	Leonhart	273/122 R

FOREIGN PATENTS OR APPLICATIONS

530,956	8/1954	Belgium	273/119 R

Primary Examiner—Richard J. Apley
Assistant Examiner—R. T. Stouffer
Attorney, Agent, or Firm—Brady, O'Boyle & Gates

[57] **ABSTRACT**

The playing field of a table ball game slopes downwardly from the center toward opposite ends and the balls are put in play transverse to the playing field and substantially at the center thereof by a projector assembly. At opposite ends of the playing field electromagnet operated bumper elements are manually selectively moved on guides laterally of the playing field and interruption of light beams across the ends of the field in front of the bumper elements actuate the electromagnets to repel the ball in play toward side bumper rails or the center of the field. The bumper elements are circular and are arranged in closely adjacent pairs to provide for the repelling of the ball in play therefrom in various directions on the playing surface within a rebound angle of at least 180°.

4 Claims, 2 Drawing Figures

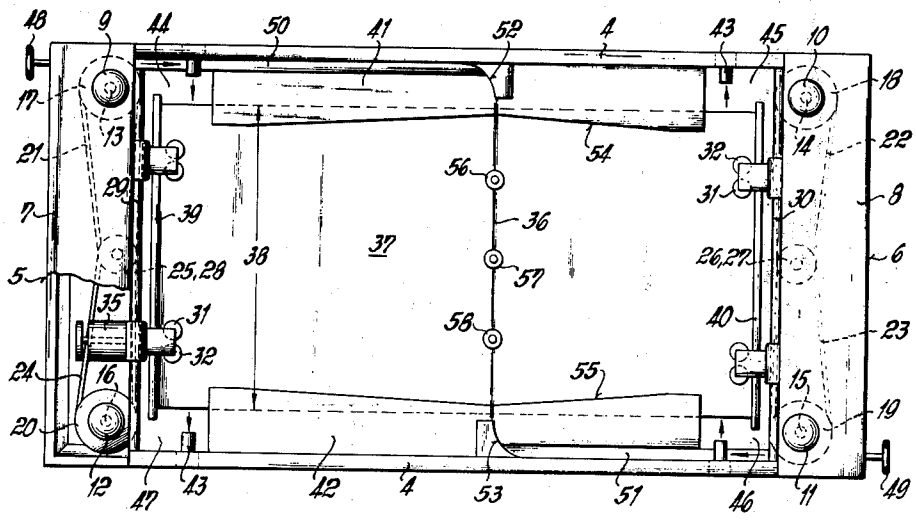


FIG. 1

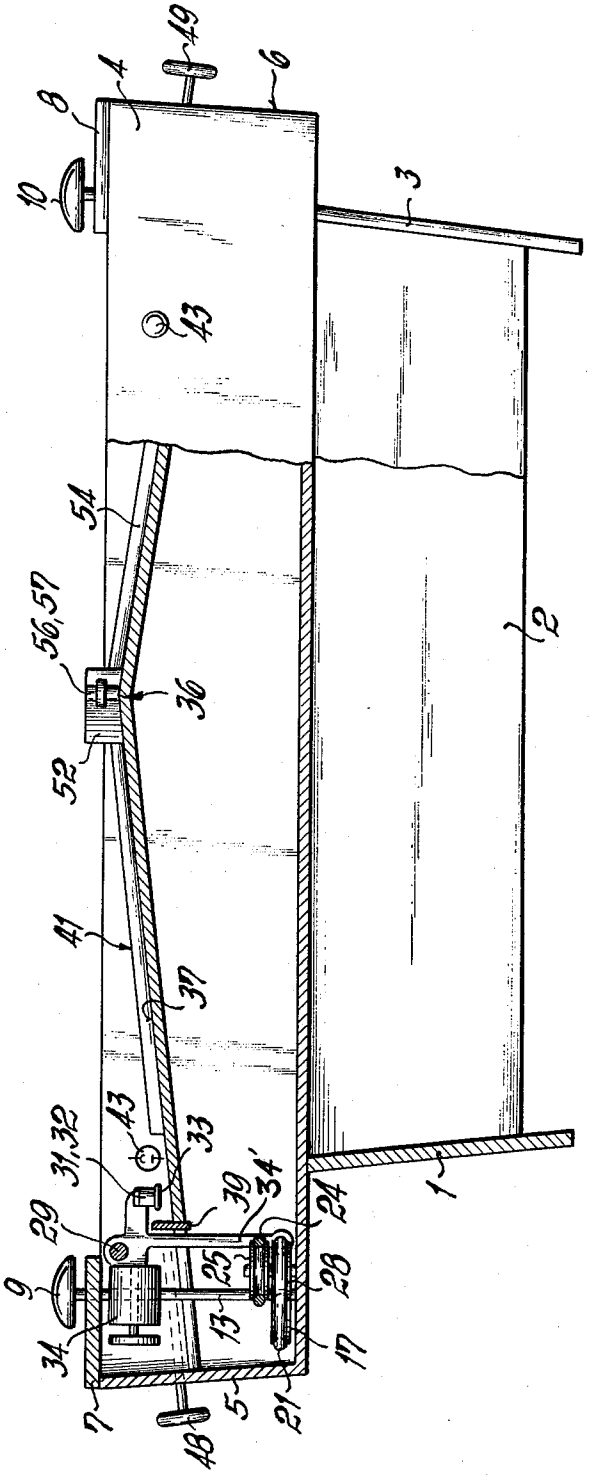

49
4
6
8
10
3
43
54
56,57
36
52
2
41
37
43
31,32
33
39
34'
24
29
1
9
25
23
34
13
17
7
5
21
48

FIG. 2

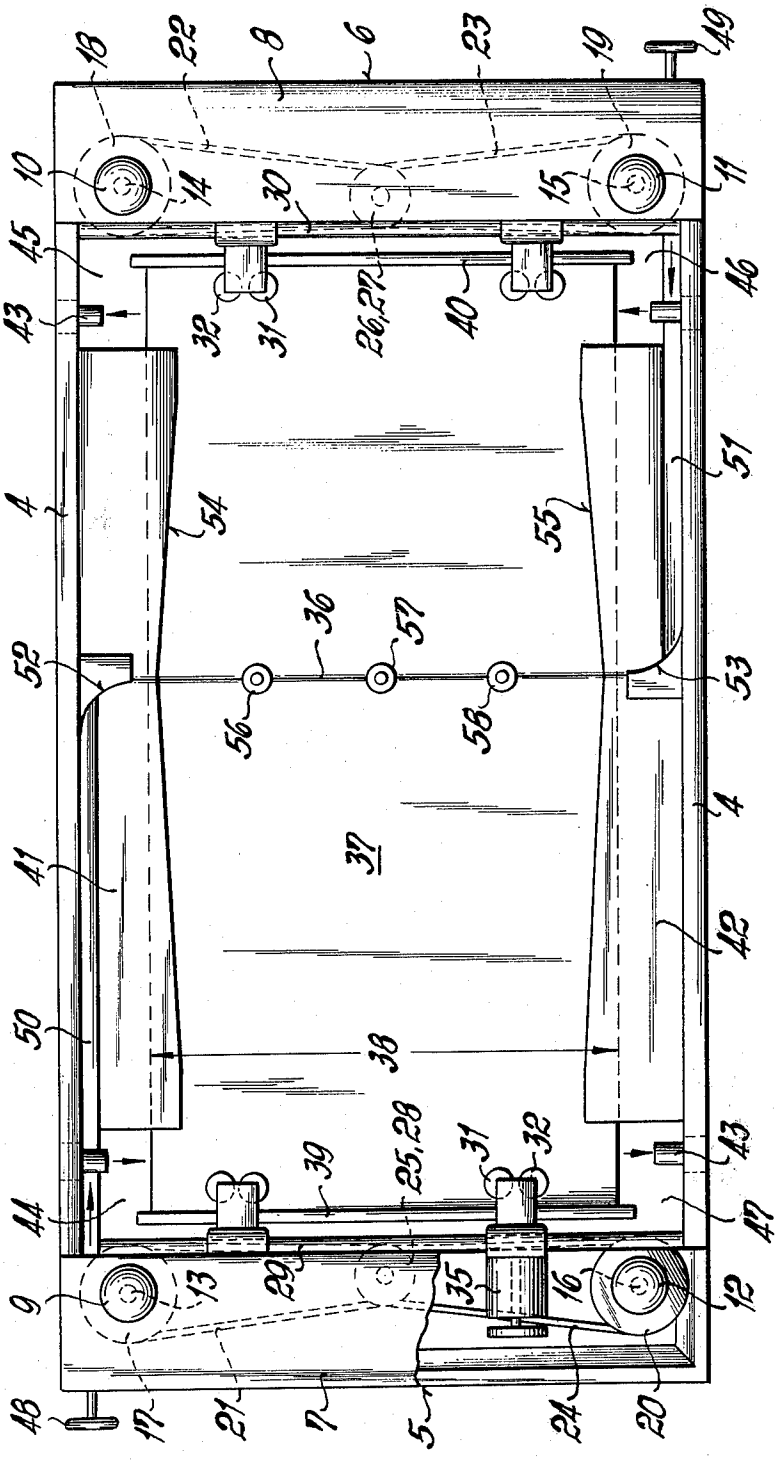

18
22
8
6
23
19
49
10
14
30
15
11
45
46
43
32
31
26,27
40
51
54
55
36
57
52
53
56
58
4
41
37
42
50
38
25,28
39
44
47
9
13
29
35
16
12
48
17
21
7
5
24
20

TABLE BALL GAME WITH MOVEABLE CIRCULAR BUMPER PORTIONS

FIELD OF THE INVENTION

The present invention relates to a table ball game which allows the ball to be moved in every direction on the playing field within an angle of 180° by an electromagnet operated bumper element assembly in spite of the fact that the ball projecting movement of the electromagnet operated assembly continues to be in the longitudinal direction of the playing field.

SUMMARY OF THE INVENTION

A table ball game according to the invention is characterized by two adjacent resilient elements provided with broad circular or bumper portions at their lower ends and connected to be displaced together in a reciprocating manner, by means of a lever on a guide, back and forth across one end of the playing area of the table game and parallel to the front sides of the game table, and further adapted to be pushed forwards by means of an electromagnet connected to the guide, whenever current is momentarily supplied to this electromagnet as a result of an interruption of a light beam to a photocell, which beam is positioned a short distance in front of the resilient elements and is directed across the end of the playing field parallel to the guide means and the front side of the game table.

The best arrangement is provided by the displacement of the resilient elements together with their electromagnets by means of an endless flexible member, such as a cord, held by two pulley wheels, disposed parallel to the guide means of the resilient elements, the shaft of one pulley wheel being adapted to be turned in alternate directions by a handle or knob connected thereto at a position above the playing field or playing area.

The playing field slopes downwardly in opposite directions from the center portion of the playing area towards the opposite ends or front faces of the table game. The playing field extends to positions at each end behind the resilient elements and the end extremities of the field are provided with transverse locating stops. The side edges of the playing field are spaced from the side walls of the game table leaving broad open side spaces running the length of the table, which side spaces are covered by broad strip members having resilient inner edges which function as side bumpers for the playing field. The resilient edges on opposite sides of the playing field are spaced further apart from each other toward the center portion of the playing area and the opposite ends terminate just in front of the transversely directed light beams of the photocell apparatus at opposite ends of the playing field.

To bring the played balls back into play on the playing field, a spring projector, for example, may be provided, which comprises a projecting rod with a handle and a return spring. By pulling back on the handle of the spring projector, a ball situated in front of it is propelled towards the center of the playing area via a guide groove extending longitudinally on one side of the playing field. From the guide groove the ball is directed toward the center of the playing area by means of a curved guide wall that changes the direction of the ball approximately 90°.

The game is considerably improved when three uniformly laterally distributed circular bumpers, of similar construction to the resilient elements, are rigidly secured across the center of the playing area at the apex of oppositely sloping playing field portions.

Other objects, features and advantages of the present invention will be made apparent from the following detailed description of a preferred embodiment thereof which is provided with reference to the accompanying drawings, in which:

BRIEF DESCRIPTION OF THE DRAWINGS

FIG. **1** is a side elevational view, partly in vertical longitudinal section, of a table game according to the invention; and

FIG. **2** is a top plan view of the table game of FIG. **1** where the top covering strip has been partially removed from one front side at one end of the table.

DESCRIPTION OF THE PREFERRED EMBODIMENT

The table for the game of the invention comprises a shallow rectangular box, having tapered sides **4, 5** and **6** which diverge towards the top, and which rests on a base frame **1, 2** and **3.** The front sides **5** and **6** of this box or table are each covered with a narrow top board **7, 8** at the opposite ends of which large knob-type handles **9, 10, 11** and **12** project upward therethrough. Each of the handles **9–12** is located on the upper end of a shaft **13–16,** each of which bears a large grooved pulley wheel **17, 18, 19** and **20,** respectively, on its lower end. Each pulley wheel **17–20** is connected by an endless flexible member, such as a cord or similar drawing element **21, 22, 23** and **24** to a small grooved pulley wheel **25, 26, 27** and **28.** All the pulley wheels **17–20** and **25–28** are arranged in such a way that a part of each of the endless cords **21–24** runs parallel to the front side **5,6** of the game table or parallel to the guide rods **29,30** mounted at opposite ends of the playing field below the inner edges of the top boards **7** and **8** and connected laterally across the table between the table sides **4.**

Two pairs of resilient elements **31, 32,** each possessing a circular bumper portion **33** on their lower ends are mounted on each of the guide rods **29,30** so as to be longitudinally displaceable therealong. A pair of the resilient elements **31,32** is connected in front of each electromagnet **34** and **35** which functions to reciprocate the resilient elements **31,32** towards the center **36** of the playing area **37** when current is passed therethrough. An arm **34'** connects each assembly of electromagnets and pair of resilient elements **31,32** to a respective one of the endless cords **21–24** so that the assembly is moved laterally back and forth on its guide rod **29** or **30** by manipulation of the appropriate knob **9, 10, 11** or **12.**

The playing field **37** which only possesses the width **38** and is thus considerably narrower than the mean width of the table box **4,** is located centrally within the box between the side walls **4.** It extends in length to behind the resilient elements **31,32,** and its laterally extending ends are provided with locating stops **39,40,** which form a ball stop on each end of the playing field. The open lateral spaces between the longitudinal side edges of the playing field **37** and the table sides **4** are in part covered by broad side strip members **41** and **42,** which have resilient inner edges **54** and **55,** respectively, thereon, facing the playing field, and since members **41** and **42** are elevated above the surface of the

playing field **37**, as indicated in FIG. **1**, the resilient edges **54** and **55** function as side rail bumpers for balls in play on the playing field. The resilient side edges **54** and **55** are spaced further apart from each other at the center **36** of the playing field and then slightly converge toward each other from the center of the field toward opposite ends of the field as shown in FIG. **2**. The opposite ends of the side strip members **41** and **42** terminate just in front of the photocells **43** supported by side members **4** and connected to receive a light beam directed laterally across the playing field, at ball level, from a light source on the opposite side member **4**.

The light beams to photocells **43** are positioned a short distance in front of the resilient elements **31,32** carried by the electromagnets **34** and **35**, and by circuitry, not shown, the photocells are connected to energize the electromagnets **34** and **35**, to push the resilient elements **31,32** toward the center of the playing field to repel any ball which might contact them, when the adjacent light beam is broken or interrupted by a ball rolling down the table from the center **36** toward the end of the playing field. In this connection the playing field **37** slopes downwardly in opposite directions from the center **36** of the playing area towards the stops **39** and **40** on opposite ends of the playing field.

Balls which fall into one of the free or open spaces **44, 45, 46** or **47** are caused to roll along a groove, not shown, toward a ball projector assembly having a projector handle **48** or **49**. By pulling back and releasing the spring-loaded handle **48** or **49** a ball is propelled longitudinally of the playing field, forwardly along a groove **50** or **51** towards the deflection surfaces **52** or **53**. From the deflection surfaces **52,53**, which change the direction of a ball by 90°, the balls move to the center **36** of the playing area.

If, during the game, a ball rolls through the light beam of a photocell **43**, the two electromagnets **34** and **35**, located on the side adjacent to the light beam, respond and move in a jerky manner towards the center **36** of the playing area. Depending on which part of the two resilient elements **31,32**, the ball strikes, it will move straight into the playing field or strike against the side strips **41–42**, at any particular angle, and be repelled by the resilient bumper edges **54,55** of the same, whereupon, it rolls past the fixed bumper stops **56–58** or else moves to another point on the playing field **37** when it is repelled by the stops **56–58**. If the ball misses the resilient elements it then rolls through the free spaces **44–47** away from the playing field **37** and can only be returned to the game by the activation of one of the handles **48** or **49** of the ball spring projector assemblies.

The terms and expressions which have been employed herein are used as terms of description and not of limitation, and there is no intention in the use of such terms and expressions, of excluding any equivalents of the features shown and described or portions thereof but it is recognized that various modifications are possible within the scope of the invention claimed.

I claim:

1. A table ball game comprising a playing surface having opposite ends, guide means connected substantially parallel with and adjacent to at least one of said opposite ends of said playing surface, a pair of resilient elements, a circular bumper portion connected to the lower end of each of said resilient elements, common means connected for back and forth movement on said guide means, the circular bumper portions which are connected to the lower ends of said pair of resilient elements being connected through said pair of resilient elements so as to be adjacent each other in side by side relation on said common means and positioned inwardly of the end of the playing surface and presenting a ball rebound surface of greater than 180°, control means connected to said common means to move said pair of resilient elements and circular bumper portions back and forth on said guide means, photocell circuit means connected to said table ball game and adapted to direct a light beam transversely across at least one of the opposite ends of said playing surface parallel with said guide means and positioned in front of the pair of circular bumper portions, and an electromagnet connected to the pair of circular bumper portions and with said photocell circuit means, said electromagnet providing means for moving said circular bumper portions forwardly when the light beam is momentarily interrupted, at least one game ball to be projected by said circular bumper portions, said circular bumper portions being spaced sufficiently close together to project said ball when positioned between the pair of circular bumper portions longitudinally of said playing surface when said circular bumper portions are moved forwardly by the action of said photocell circuit means and said electromagnet, and said circular bumper portions when so moved further being so shaped and positioned as to project said ball when contacting the circular bumper portions off center thereof to various directions on the playing surface within a rebound angle of at least 180°.

2. A table ball game as set forth in claim **1**, in which said control means includes at least a pair of pulleys connected on respective shafts, an endless flexible element connected around said pair of pulleys and having a portion disposed parallel with said guide means, a handle connected to the shaft of one of said pulleys to move said endless flexible element, and said electromagnet, pair of resilient elements, said circular bumper portions and common means connected to said endless flexible element and adapted to be moved back and forth above the playing surface on said guide means by said handle.

3. A table ball game as set forth in claim **1**, in which said playing surface slopes downwardly toward said opposite ends from the center portion thereof, said opposite ends of the playing surface extending behind said resilient elements and circular bumper portions, and a laterally extending raised stop element connected across each of said opposite ends.

4. A table ball game as set forth in claim **3**, including a support table having side walls, said playing surface positioned between said side walls and having side edges spaced a substantial distance from said side walls forming open ball receiving strips between said side walls and the edges of the playing surface, longitudinally extending side strips connected between said side walls and playing surface and overlying the latter and covering the medial portion of said open strips and terminating at opposite ends inwardly of the photocell circuit means directing said light beams providing open side ball receiving strips between the terminating ends of said side strips and the ends of the playing surface, and said side strips having inner resilient edges spaced further from each other toward the center of said playing surface.

* * * * *