

Jan. 15, 1952

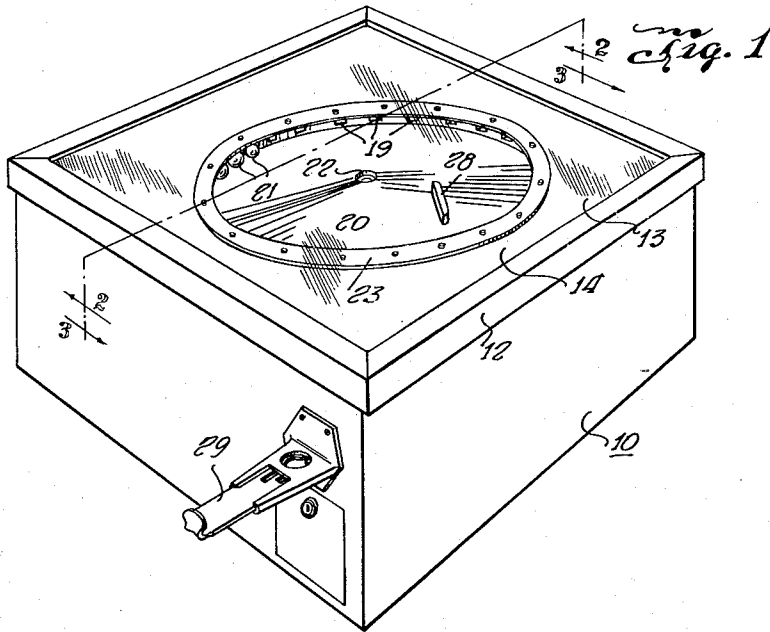
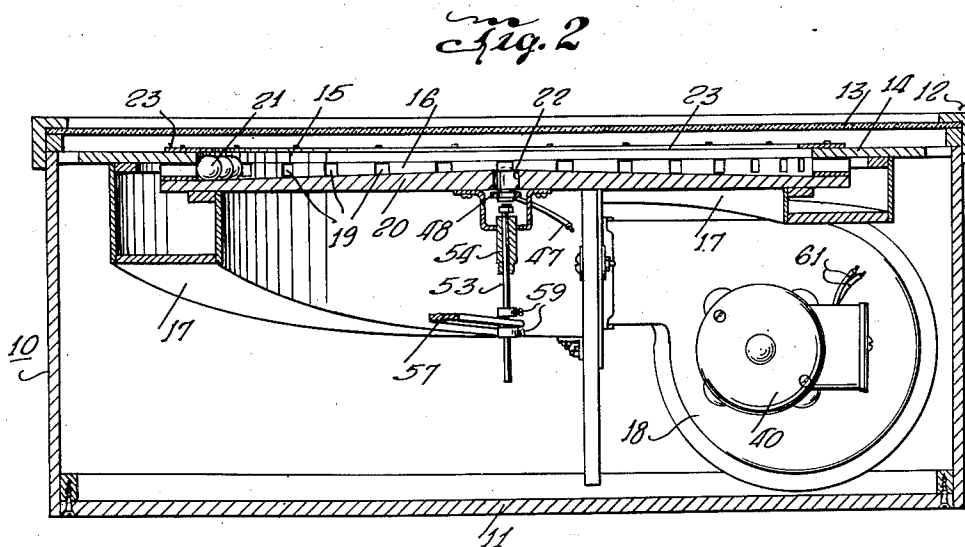
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2,582,844

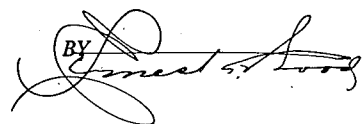
PNEUMATICALLY ACTUATED MARBLE GAME APPARATUS

Filed Aug. 4, 1949

3 Sheets-Sheet 1



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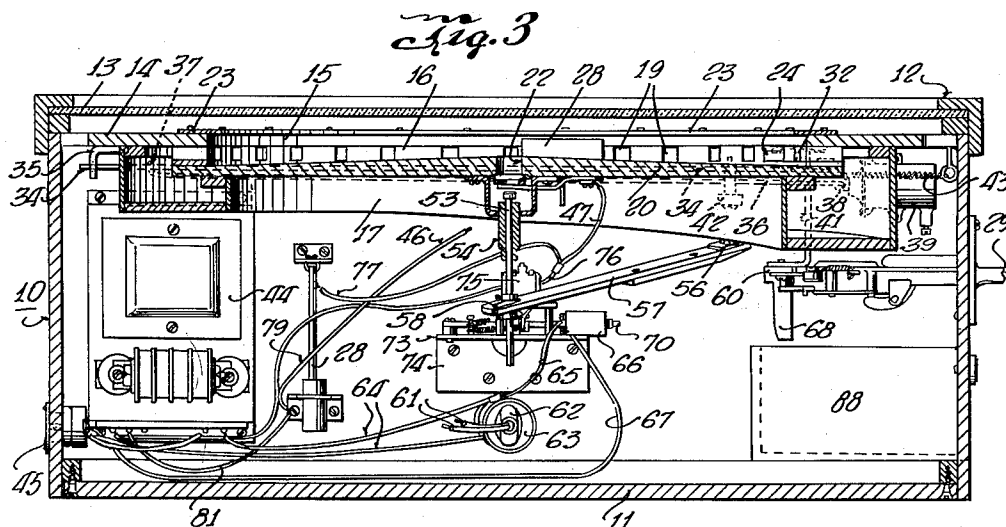
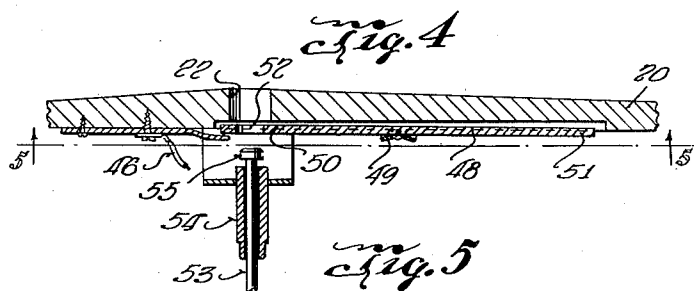
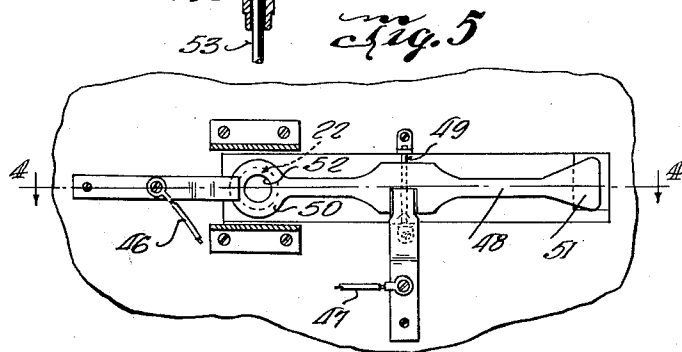
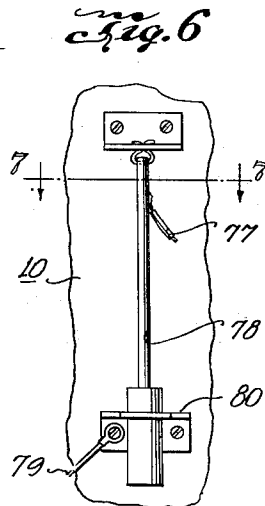
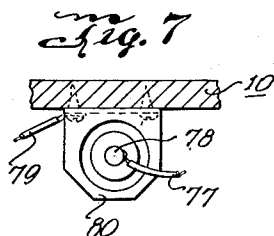
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PNEUMATICALLY ACTUATED MARBLE GAME APPARATUS

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3 Sheets-Sheet 2



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2,582,844

PNEUMATICALLY ACTUATED MARBLE GAME APPARATUS

Filed Aug. 4, 1949

3 Sheets-Sheet 3

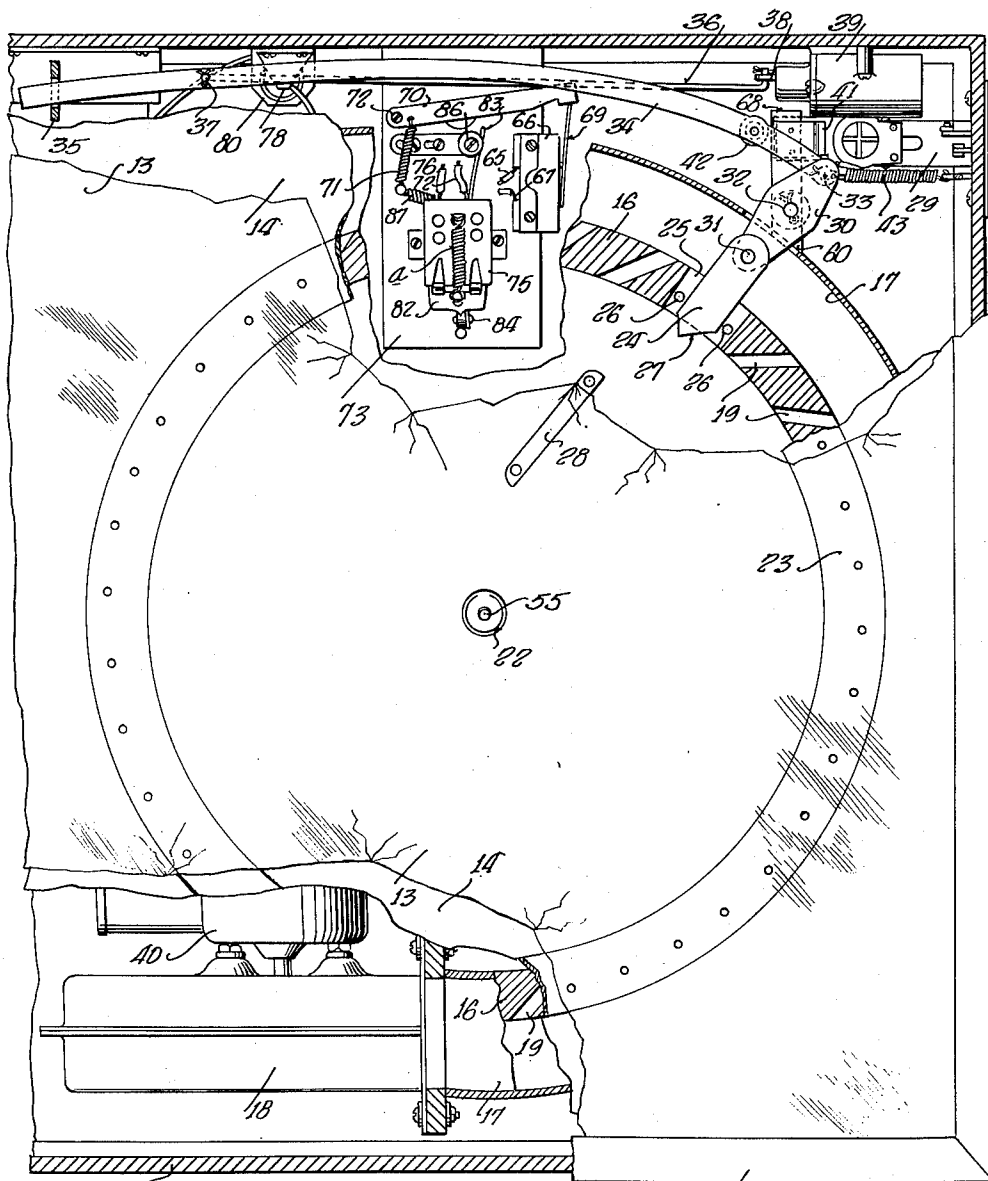
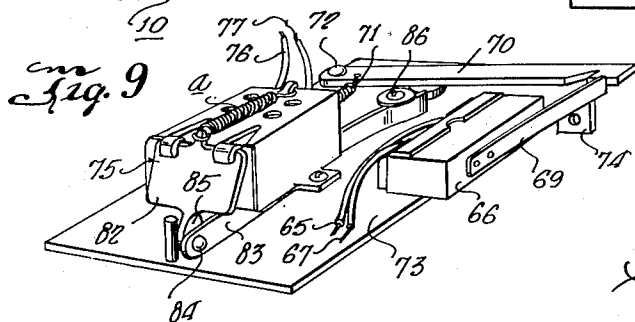
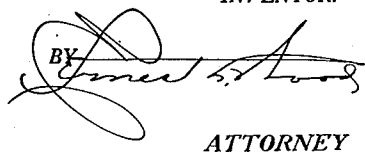


Fig. 8
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UNITED STATES PATENT OFFICE

2,582,844

PNEUMATICALLY ACTUATED MARBLE
GAME APPARATUSCarl L. Mourfield, Dallas, Tex., assignor to
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Application August 4, 1949, Serial No. 108,609

7 Claims. (Cl. 273-119)

1

This invention relates to amusement apparatus and more particularly to an electrically operated amusement machine in which marbles constitute the scoring medium.

The principal object of the invention is to provide a machine whose foremost feature of novelty resides in a circular and preferably convex playing field over which balls or marbles are constrained to travel under the influence of air under pressure supplied from an air chest sub-jacent to the playing field through a multiplicity of orifices circumferentially spaced about the perimeter of the playing field. Moreover, the machine includes a blower for supplying air to the air chest or manifold, as it may also be referred to; an aperture in the geometrical center of the playing field; a deflecting plate disposed strategically with respect to the central aperture to direct marbles generally towards the center of the field and a baffle arm adapted to move into the path of the marbles on their course about the playing field to propel the same in the direction of the baffle plate.

Another object of the invention is to provide an amusement device in which marbles are propelled over a pre-arranged area having an opening restricted to a single marble and towards which marbles are generally directed by adjacent means, together with a provision for suspending movement of the marbles when one of the number falls into the opening.

Still another object of the invention is to provide a coin operated amusement machine in which a group of vari-colored marbles are initially propelled by pneumatic means over a circular field and trapped singly in a central opening in the field to conclude the play, combined with means to expel the entrapped marble from the opening to initiate a new play.

A still further object of the invention resides in the novel mechanism for accomplishing the foregoing objects, which will become manifest as the description proceeds, taken in connection with the annexed drawings wherein:

Figure 1 is a front perspective view of an amusement machine constructed according to the invention.

Figure 2 is a view in vertical section on a slightly larger scale, taken on line 2-2 of Figure 1.

Figure 3 is a vertical sectional view taken on line 3-3 of Figure 1, viewing the machine in a direction opposite to Figure 2.

Figure 4 is a fragmentary sectional view of the marble actuated stopping switch and marble releasing plunger.

Figure 5 is a bottom plan view of the switch,

2

partly in section and taken on line 5-5 of Figure 4.

Figure 6 is an elevational view of the tilt switch on an enlarged scale.

Figure 7 is a transverse sectional view of the tilt switch taken on line 7-7 of Figure 6.

Figure 8 is a fragmentary top plan view on a still larger scale, with portions broken away to disclose concealed parts, and

Figure 9 is a perspective view of the operating switch, locking arm and releasing magnet.

Continuing with a more detailed description of the drawing, reference numeral denotes a case which may be of any desired shape but for purposes of illustration is shown as being square and is provided with a removable bottom 11. A frame 12 surrounds the top of the case and embraces a glass panel 13, the latter overlying the playing board or field, to be specifically described presently.

Immediately below the glass cover panel 13 is another panel 14 having a central opening 15. The panel 14 is preferably of cast metal or plastic and has formed on or affixed to its underside an annular manifold 16 whose inner periphery is flush with that of the central opening 15 of the panel.

A circular air chest 17 is suspended from the underside of the lower panel 14 and embraces the opening 15 therein in the manner best revealed in Figures 2 and 3 and this air chest is of diminishing cross-section from its intake end, to which is attached the discharge of a blower 18, to its opposite end, which is closed. Air from the blower 18 enters the air chest and is forced through a multiplicity of orifices 19 in the manifold 16, which are tangent to the central area of a playing field, consisting of a circular plate or disc 20 whose perimeter underlies the manifold 16.

The circular plate 20 has a slightly convex top surface so that a group of vari-colored marbles 21 (Fig. 2) will normally remain at the outer edge of the plate against the manifold 16, as shown until displaced in the manner to be presently explained. The plate 20 has an opening 22 in its geometrical center of a diameter only slightly greater than that of the marbles 21 and to prevent the marbles from becoming displaced upwardly from the race-way adjacent the manifold 16, a flat ring 23 is affixed to the panel 14, whose inner edge extends slightly inwardly of the edge of the central opening 15 of the panel. This ring precludes the likelihood that any of the marbles will leave the race-way and become lodged between the panel 14 and the glass 13.

It is apparent from the foregoing that when

3

the blower 18 is operated, the air from the chest 17, discharged through the orifices 19 will be expelled against the balls or marbles 21, causing them to move rapidly around the race-way. To arrive at the score of a game, each player selects a color among the vari-colored marbles as his own and in order to score, it is necessary that the selected marble enter the opening 22 in the plate 20 by causing the group of marbles to deviate from their circular course around the plate 20. This is accomplished by a baffle arm 24 (Figs. 3 and 8), slidably disposed in a slot 25 in the manifold 16, between a pair of guide pins 26. This arm 24 has a deflecting surface 27 on its operative end, against which marbles collide in their course around the race-way, propelling them in the direction of a deflecting plate 28. The marbles have a tendency to pause after impinging the deflecting plate 28, due to the incline presented by the convex surface of the playing field and to the fact that the marbles are set to spinning by their impact with the baffle arm and deflecting plate. This lends interest to the game but the pause is of short duration since other marbles sometimes collide at this point, causing the marble to either enter the scoring hole 22 in the plate 20 or return to the race-way. Should a marble enter the scoring hole 22 however, the blower will cease operating until another coin is deposited into the conventional coin slide 29. (Figs. 1, 3 and 8.) This procedure will be fully explained later.

Returning to the baffle arm 24 (Fig. 8), it will be observed that a link 30 is pivoted at 31 to the outer end of the arm 24. This link is also pivoted at 32 to the underside of the panel 14 which has been broken away in this figure but this pivotal engagement is shown in Figure 3. To the opposite end of the link is pivoted at 33, one end of an arcuately shaped lever 34. The lever 34 lies alongside the inner surface of one wall of the case 10 and is held within limits at its opposite end by a guide bracket 35. A rod 36 lies generally parallel with the lever 34 and has one end turned at right angles and entering a hole in the lever at 37 (Fig. 8) and at its opposite end, the rod connects with the plunger 38 of an air cylinder 39, which is affixed to one wall of the case. The purpose of the described arrangement is to permit unrestricted retraction of the baffle arm 24 from its position in the race-way but to allow its return slowly to the described position, after again energizing the motor 40 which operates the blower 18. This action enables the marbles to travel two or three times or more around the race-way before the baffle arm protrudes to interrupt their travel in the manner explained, and contributes further interest to the game.

To accomplish the above described action, the coin slide 29 has an arm 41 (Figs. 3 and 8) extending upwardly therefrom which is brought up against a roller 42, mounted on a stub shaft depending from the underside of the lever 34, when the coin slide 29 is thrust inwardly. Engagement of the arm 41 with the roller causes the lever 34 to move in the direction of thrust of the coin slide, imposing tension on the rod 36 under the resistance of a coil spring 43, which is attached at one end to the wall of the case 10 and at its other end to the end of the arcuate lever 34. This action causes the plunger 38 of the air cylinder 39 to move from the cylinder to draw air into the latter. The air is slowly expelled from the cylinder under the energy stored in the spring 43 and as this occurs, the baffle arm

4

24 is returning to its operative position in the race-way of the playing field 20.

To operate the machine, current is supplied through a conventional transformer 44 from a house circuit by means of a service cord, not shown, attached to a current inlet plug 45 (Fig. 3). From this transformer, current is supplied to a marble actuating switch through wires 46 and 47. This switch, which is shown in detail in Figures 4 and 5, consists of a bar 48 which is so balanced on a bearing 49 that its operative end 50, which lies immediately under the marble receiving opening 22 in the plate 20, will be normally raised by the weight of the tail portion 51 of the bar. The operative end 50 of the bar has a circular opening 52 therein through which is adapted to be extended a plunger 53, operating in a guide sleeve 54. This plunger is for the purpose of dislodging a marble falling into the hole 22 and has a head 55 thereon which is adapted to engage the marble and urge it out of the hole.

Pivoted at 56 (Fig. 3) to the underside of the air chest 17 is one end of a lever 57. This lever extends downwardly at an angle towards the center of the case and has a longitudinal slot 58 therein which receives the marble displacing plunger 53. A collar 59 is affixed to the plunger 53 on each side of the lever 57 (Fig. 2) to prevent sliding displacement of the lever longitudinally on the plunger. It is apparent that by raising and lowering the lever 57 on its hinge 56, the plunger 53 will be raised and lowered vertically. Movement of the lever 57 is accomplished by means of an arm 60 (Figs. 3 and 8) which is attached to and extends laterally from the inner end of the coin slide 29 and which slidably engages the underside of the sloping lever 57 when the coin slide is thrust inwardly. This action may be either for the purpose of ejecting a marble from the hole 22; for starting the blower motor 40 or both.

The blower motor 40 receives current through wires 61 and plug 62 (Fig. 3) which latter is inserted in a socket 63, affixed to a wall of the case. Current is supplied to the socket through wires 64 from the transformer 44, one of the wires 64 joining a wire 65 (Fig. 3) leading to a switch 66. A second wire 67 leads to the switch 66 from the inlet plug 45.

As the coin slide 29 is moved inwardly following the insertion of a coin, an arm 68 (Fig. 8), mounted on and depending from the inner end of the slide, is brought up against a leaf contact 69 of the switch 66 (Figs. 3, 8 and 9). This leaf contact, as in these figures, holds a switch locking arm 70 in disengaged position against the resistance of a coil spring 71. The locking arm 70 is pivoted at 72 to a mounting plate 73, affixed to one wall of the case by means of a flange 74 (Figs. 3 and 9) and this plate carries also a magnet 75 which functions to disengage the locking arm 70 from the switch contact 69, to open the circuit to the blower motor 40, when a marble enters the hole 22 and actuates the switch 50 thereunder or when the case 10 is tilted for any reason.

The magnet 75 has a wire 76 connected to the wire 47 which is joined to one of the contacts of switch 59 and a companion wire 77 which leads to the pendulum switch and the wire 46 leading to the companion contact of the marble switch 50. Still another wire 81 leads from the circular contact 80 to the transformer 44.

Referring to Figure 9; the magnet 75 is shown

as having an armature plate 82, hinged to one end thereof and under control of a coil spring a. An arm 83 is hinged at one end at 84 to an extension 85 on the armature plate 82 and extends under the magnet towards the opposite end of the plate, terminating just short of the switch locking arm 70. The arm 83 is held against a pin 86 by means of a coil spring 87 (Fig. 8).

When a coin is inserted in the coin recess of the slide 29 and the latter thrust inwardly, the depending arm 68 on the slide is brought up against the leaf contact 69 of switch 66. The blower motor 40 is thus energized and the blower will discharge air under pressure into the air chest 17, to emerge from all of the numerous orifices 19 in the manifold 16, at an angle to the race-way around the deck or playing field 20. Thus, the marbles are caused to travel in the race-way until the baffle arm 24, whose action has been delayed by the air chamber 39, moves across the race-way. When this occurs, the marbles are deflected against the angular plate 28 and when a marble falls into the central opening 22, the pivoted switch 50 will be depressed by the marble into engagement with its contact which will cause the magnet 75 to become energized. This action will cause the magnet to attract the armature plate 82, moving the arm 83 pivoted thereto towards and against the switch locking arm 70, thereby moving the same out of locking engagement with the leaf contact 69 of the switch 66. The switch will then open the circuit to the blower motor 40.

When the coin chute 29 is again thrust inwardly, the lateral arm 60 will be again brought into sliding engagement with the angular lever 57, thus raising the marble ejecting plunger 53 to remove the marble which has fallen into the hole 22. If a coin has been deposited in the coin chute, the blower will again start operating for a new game, the coin in the meantime falling into a receptacle 88 (Fig. 3).

Should an effort be made to encourage a marble to enter the hole 22 by tilting the case 10 while the blower is operating, the pendulum switch 78 will energize the magnet 75 and open the circuit to the motor 40.

Manifestly, the construction as shown and described is capable of some modification and such modification as may be construed to fall within the scope and meaning of the appended claims is also considered to be within the spirit and intent of the invention.

What is claimed is:

1. An amusement machine comprising a case, a circular and slightly convex deck in said case having an opening in the center thereof, an annular manifold adjacent the perimeter of said deck, defining a marble race-way and having circumferentially spaced orifices disposed to discharge air in directions tangent to said deck, a blower in said case below said deck, an annular air chest in communication with said manifold into which said blower is adapted to discharge air under pressure for release through said orifices to propel marbles around said race-way, a baffle automatically movable into said race-way to divert marbles from their circular course therein, a deflector mounted stationarily on said deck between the center opening thereof and said race-way against which marbles are directed by said baffle to deflect the same generally towards the opening in said deck, electrical means for operating said blower and means for deenergizing said

electrical means when a marble enters said deck opening.

2. An amusement machine including a slightly convex and circular deck having an opening in its center, a manifold surrounding said deck and defining a race-way for marbles on said deck, said manifold having circumferentially spaced orifices disposed to discharge streams of air in directions tangent to said deck to cause said marbles to travel around said race-way, means to prevent upward displacement of marbles from said deck, an air chest below said deck with which said orifices communicate, means for supplying air to said air chest to expel air through said orifices to propel marbles around said race-way, a baffle for changing the normal course of said marbles about said race-way, means for automatically moving said baffle to operative position, means for delaying movement of said baffle to operative position, means against which marbles are directed by said baffle for deflecting marbles towards the opening in said deck, and means effective to suspend function of said air supplying means when a marble falls into said deck opening.

3. A coin operated amusement device including a circular deck having a central opening, an air manifold surrounding said deck having orifices disposed to release air in directions tangent to said deck and defining a marble race-way, means for supplying air into said manifold for discharge under pressure through said orifice to propel marbles around said race-way, means automatically movable into said race-way for diverting marbles from said race-way, stationary means against which said marbles are directed by said automatically movable means for deflecting said marbles towards the center of said deck, means for manually retracting said automatically movable means, and means operative to suspend discharge of air through said orifices when a marble falls into said deck opening.

4. A coin operated amusement device including a circular and slightly convex deck comprising a playing field on which is disposed a group of vari-colored marbles, said deck having an opening in its center adapted to receive said marbles singly, means surrounding said deck through which air is discharged onto said deck in a direction to propel said marbles in a circular course around said deck, means for supplying air under pressure to said air discharge means, a baffle movable into the path of said marbles, a deflector plate stationarily mounted on said deck against which marbles are deflected by said baffle effective to influence the marbles generally towards the opening in said deck, means for delaying operation of said baffle, and means for suspending operation of said air supplying means when a marble falls into said deck opening.

5. In a coin actuated amusement device, a circular deck on which is disposed a group of vari-colored marbles and having an opening therein adapted to receive a single marble of said group, pneumatic means for propelling said marbles in a circular course about said deck, means automatically movable into the path of said marbles for diverting said marbles from their course, means against which marbles are deflected by said automatically movable means for directing the same generally towards the opening in said deck, and means operative to suspend function of said pneumatic means when a marble of said group falls into the opening in said deck.

6. In an amusement device in which vari-colored marbles constitute the scoring medium, a

7

circular deck on which a group of marbles are adapted to travel, said deck having an opening for receiving a single marble of said group, pneumatic means for propelling said marbles on said deck, a baffle arm movable automatically into the path of marbles travelling around said deck for diverting said marbles from their normal course about said deck, a deflecting plate disposed on said deck adjacent said opening and against which said marbles are directed by said baffle arm to influence the same towards said opening, means for manually retracting said baffle arm to inoperative position, and means for rendering said pneumatic means ineffective when a marble of said group falls into said deck opening.

7. An amusement device as set forth in claim 6 in which the pneumatic means consists of a circular air chest below the deck, a manifold surrounding said deck and having a multiplicity of angular orifices collectively in communication 20

8

with said air chest and disposed for directing air onto said deck tangent to the center thereof and a blower for supplying air to said air chest.

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