Oct. 20, 1953 D. W. PRICE 2,656,189

AMUSEMENT GAME APPARATUS OF THE SHUFFLEBOARD TYPE

Filed Nov. 15, 1951 3 Sheets-Sheet 1

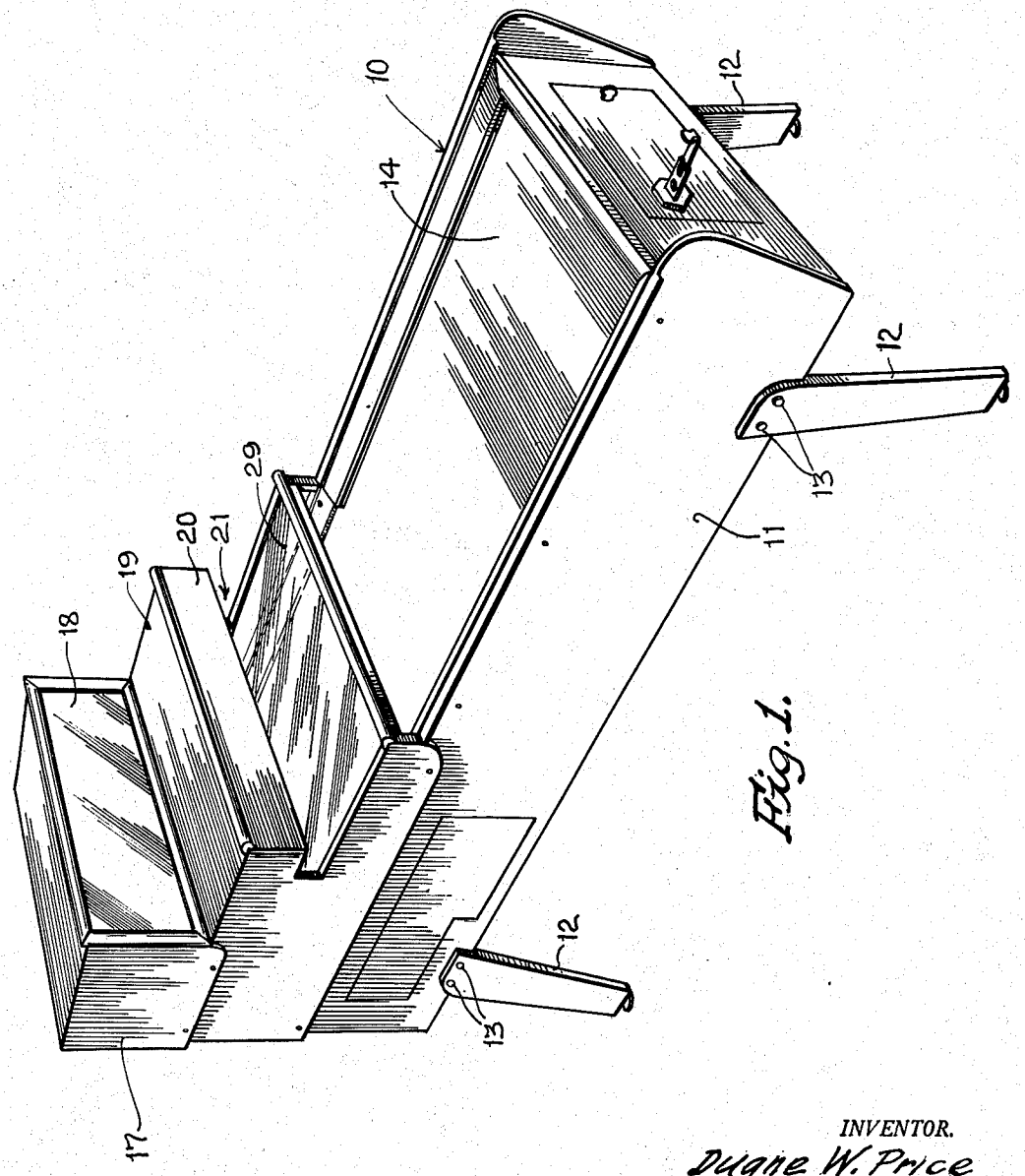



Fig. 1.

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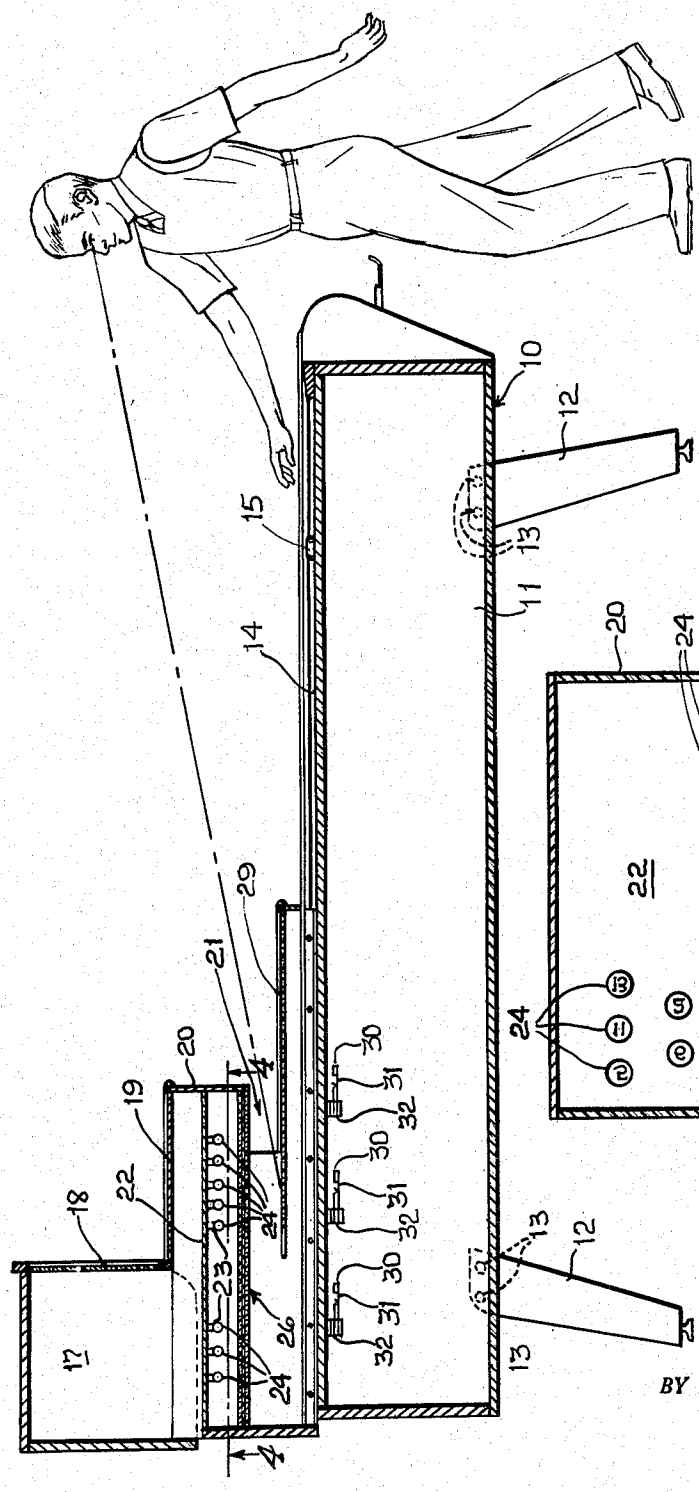



Fig. 2.

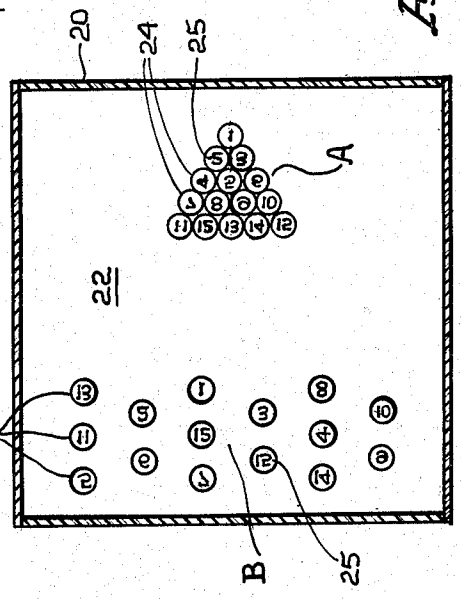



Fig. 4.

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AMUSEMENT GAME APPARATUS OF THE SHUFFLEBOARD TYPE

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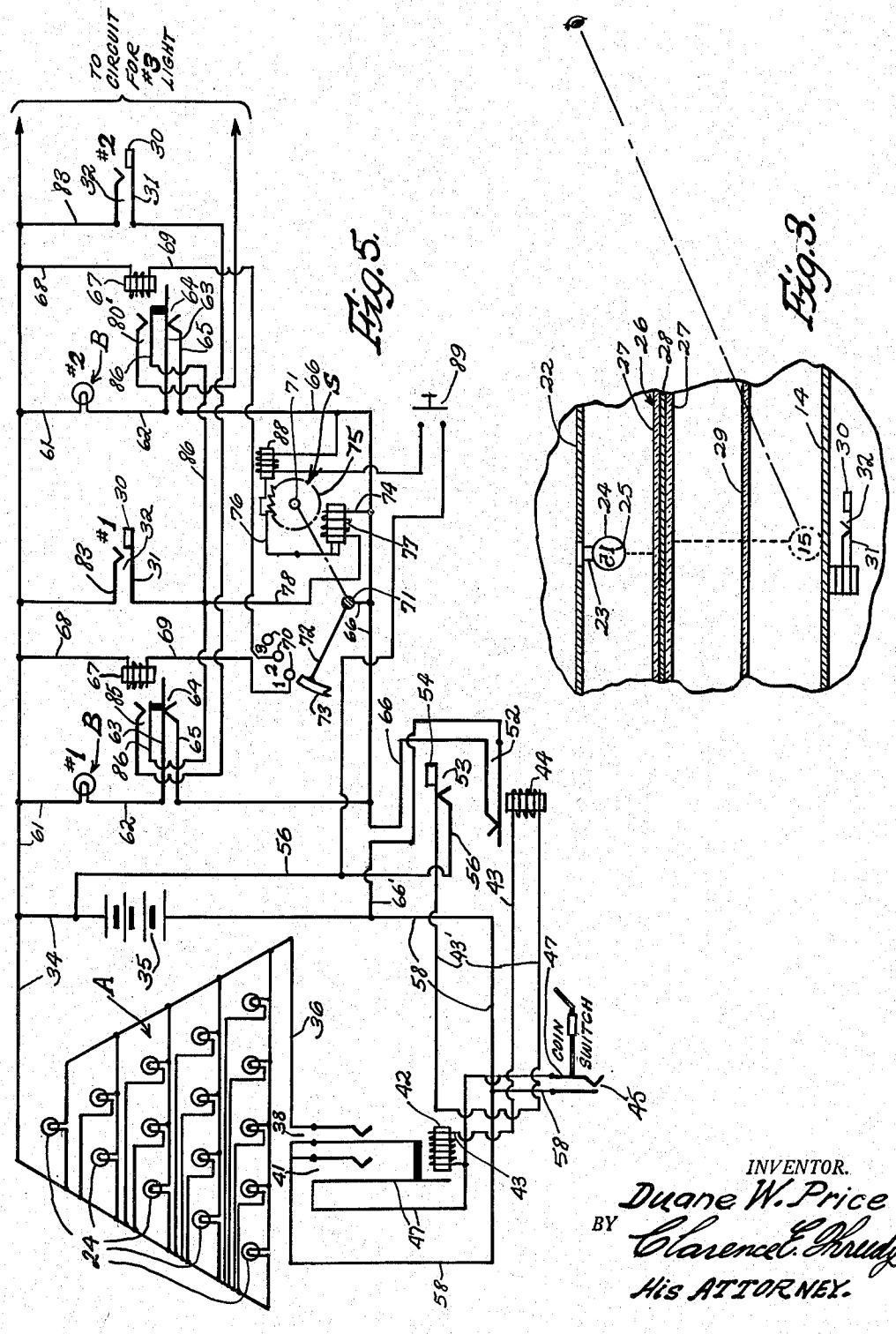



Fig. 5.



Fig. 3.

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# UNITED STATES PATENT OFFICE

2,656,189

## AMUSEMENT GAME APPARATUS OF THE SHUFFLEBOARD TYPE

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Application November 15, 1951, Serial No. 256,409

7 Claims. (Cl. 273—126)

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This invention relates to certain new and useful improvements in amusement game apparatus of the shuffleboard type in which a metal puck is employed as a playing piece to actuate by magnetic attraction circuit controlling switches. As such the invention has for its object the provision of a game apparatus of the character hereinafter described, which will afford the maximum amusement to the player.

In the present instance the amusement game apparatus provides an arrangement for reflecting an image to a position approximately on a playing surface whereby to provide to the eye of the player an illusion of depth, in that the reflected object will appear to the player to be positioned upon the playing surface over which the puck is manually or otherwise moved.

Other objects will appear hereinafter.

The invention consists in the novel combination and arrangement of parts to be hereinafter described and claimed.

The invention will be best understood by reference to the accompanying drawings showing the preferred form of construction, and in which:

Fig. 1 is a perspective view of a preferred form of my amusement game apparatus;

Fig. 2 is a longitudinal vertical sectional detail view of the same;

Fig. 3 is a fragmentary longitudinal sectional view similar to Fig. 2 but on an enlarged scale;

Fig. 4 is a sectional detail view taken substantially on line 4—4 of Fig. 2;

Fig. 5 is a schematic view of a suggested circuit which may be employed in my improved game apparatus.

As will be apparent from the description hereinafter set forth, my improved amusement game apparatus, while not being limited to, solely for the purposes of illustration, simulates the well-known pool game. To accomplish the several objects of the invention, a suitable cabinet 10 is provided. This cabinet includes a portion 11 supported by legs 12 attached adjacent the corners thereof as at 13. Within the body 11 adjacent the open top thereof is a board 14, substantially horizontal and providing a playing field over which a suitable puck 15 of metallic construction is adapted to be propelled by the player.

Extending above the body 11 at one end portion of the cabinet is a housing 17. The front panel 18 of this housing 17 may be employed as a score board. Between this housing 17 and the body 11 is an enclosure 19 which provides a housing for operating instrumentalities (some of which are diagrammatically shown) used in con-

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nection with the operation of the game. This enclosure 19 provides a vertical front wall 20 beneath the lower edge portion of which is an elongated sight opening 21. Within this enclosure 19 is a panel 22 carrying on the underside thereof two groups of lamp sockets 23 of any approved construction, the groups being designated "A" and "B." These sockets 23 have mounted therein electric bulbs 24 which are of the configuration and size of pool balls and each having printed thereon in reverse order, numbers 25, to numerically identify the balls, as is the practice in connection with pool balls.

Below this panel 22 is a refractor panel 26 which may consist of two transparent plates 27 between which is arranged a sheet 28 of transparent plastic to increase the density of the light passing through the plates 27 and to give a greater degree of refraction. Below the refractor panel 26 is positioned a reflector plate 29. As will be noted in Fig. 2, the distance between the refractor panel 26 and the reflector plate 29 is substantially equal to the distance between the panel 22 and the refractor panel 26. The reflector plate 29 is positioned so that a line extending parallel to and drawn from the front wall would divide the plate substantially into equal parts.

This reflector plate 29 is positioned above the playing surface 14. The distance between the reflector plate 29 and the playing surface 14 is substantially equal to the distance between the reflector plate 29 and the refractor panel 26.

The lamp bulbs carried by the sockets of Group A are arranged in rack formation to simulate pool balls arranged in a rack upon the playing surface 14 when the image of these bulbs is reflected from the reflector plate 29.

The lamp bulbs carried by the sockets of Group B are arranged to simulate the scattered balls of the rack of balls after they have been hit by the simulated cue ball, which in the present instance, is the puck 15. These electric bulbs are arranged in an electric circuit to be presently described.

When the various electric bulbs are illuminated and are reflected through the reflector plate 29, such reflector plate 29 produces an illusion of depth which, in the present instance, will locate the images of the electric bulbs as being positioned on the playing surface 14. As the numerals appearing on these bulbs are reversed, it is clear that when reflected the numerals will appear in proper position to be easily read.

In playing the game it is intended that the puck 15 be propelled over the playing surface 14 so as to pass over permanent magnets 30 each

carried by a leaf spring 31 of a switch structure 32.

These switch structures 32 are arranged in the circuit now to be described. In connection with this circuit, it is pointed out that the circuit shown is merely for illustrative purposes and that this invention is not to be limited to the particular circuit shown, as such circuit may be modified or completely rearranged without departing from the spirit of this invention.

The electric bulbs 24 of the sockets of Group A and which are arranged in rack formation, are connected in parallel, with corresponding sides connected by lines 34 to one side of a power source 35.

One side of a coin switch 45 by a line 47 is connected to one side of an electromagnetic coil 42. The other side of such coil by a line 43 is connected to one side of the electromagnetic coil 44. The other side of such coil 44 by a line 43' is connected to one side of a main or game conditioning puck switch 53. The other side of such switch is connected by line 56 to one side of the power source 35. By line 58 the other side of switch 45 is connected to the other side of the power source 35.

The arrangement is such that when switch 45 is closed, the circuit to the power source 35 and the coils 42 and 44 will be completed. The energized coil 44 will open a switch 52. The opening of such switch will deenergize the circuit to the electric bulbs 24 mounted in the sockets of Group B. The energized coil 42 will close a switch 38 to complete a circuit between the electric bulbs of Group A and the source of power 35 through lines 34, 36 and 58. At the same time a holding switch 41 is closed by the energized coil 42 to complete a circuit between the coils 42 and 44 and the power source 35 through lines 58, 47, 43, 43', 56 and 34. This condition will continue until the switch 53 is opened by the attraction of the magnet 54 thereof by a puck passing thereover within the field of the magnet 54.

When switch 53 is opened, the coils 42 and 44 are deenergized, allowing switches 38 and 41 to open to deenergize the light bulbs mounted in the sockets of Group A. Also, the switch 52 will be closed by the deenergization of coil 44 to complete the circuit for energizing the light bulbs 24 mounted in the sockets of Group B, which light bulbs have been connected with the power source 35 by the closing of the switch 52 upon the openings of the switches 41 and 38. The electric bulbs 24 in the Group B sockets are intended to be successively deenergized in the order of their numerical number, to simulate the playing of the pool game after scattering or breaking up of the rack balls. This may be accomplished in several ways. A suggested or preferred circuit for successively deenergizing such electric bulbs as are mounted in the sockets of Group B in their order of numerical designation, to-wit, 1–15 inclusive, will now be described.

Corresponding sides of each of the electric bulbs 24 mounted in the sockets of Group B, are each connected by a line 61 to the power source 35 through the line 34. Corresponding sides of such electric bulbs are each connected by a line 62 to one side 63 of a switch 64. The opposite side 65 of the switch 64 by line 66 is connected to the opposite side of the power source 35 through line 66' in which the switch 52 is incorporated. Thus, it will be seen that as long as the switches 64 and the switch 52 are closed, the electric bulbs mounted in the



sockets of Group B will be energized. To successively extinguish in the order of their numerical indication from 1 to 15 inclusive, such electric bulbs 24, there are associated with the switches 64 electromagnetic coils 67. Corresponding sides of these coils by lines 68 are connected to the power source 35 through lines 61 and 34. Opposite corresponding sides of these coils are connected by lines 69 to contacts 70 of a step-up mechanism S, there being one contact 70 for each of the fifteen electric bulbs 24. This step-up mechanism S is constructed substantially in accordance with that disclosed in United States Letters Patent 2,281,262. Such mechanism includes a shaft 71 on which is mounted an arm 72. In the present instance this arm 72 carries a contact plate 73 which is adapted to engage the contacts 70 of the step-up mechanism. The step-up mechanism includes a ratchet wheel 75 which is advanced step-by-step by an advancing pawl 76 actuated by an electromagnetic coil 77. One side of the coil 77 by a line 78 is connected to the leaf springs 31 of the puck switches 32, which switches 32 each include a permanent magnet 30. The opposite side of such switches 32 by line 83 is connected to the power source 35 through lines 61 and 34. The opposite side of the coil 77 is connected by a line 74 to the power source 35 through the line 58.

The arrangement is such that each time a metallic puck attracts one of the magnets 31, the switch 32 with which that magnet is associated will be closed. Assuming that the switch 32 in the circuit with the #1 electric bulb (indicated as #1, Fig. 5) is closed, a circuit will be completed between the power source 35 and the coil 77, and thus advance the ratchet wheel 75 a distance sufficient to move the contact plate 73 into contact with the first of the contacts 70. When this condition takes place, the coil 67 adjacent the switch 65 in the circuit in which the simulated ball switch #1 is located, will be energized and open the switch 64, thereby deenergizing the electric bulb simulated the #1 pool ball. At the same time, the energized coil 67 closes a switch 85 which has one side connected by a line 86 to a similar switch 80' in the circuit which controls the deenergization of the electric bulb indicated by the numeral #2 and which simulates the #2 pool ball.

Thus, it will be seen that if the switch 80' is open and a puck passes over the magnet of the switch 32 in the circuit of the #2 electric bulb, simulating the #2 pool ball, such bulb will not be deenergized because of the lack of completion of a circuit to the coil 67 in the circuit of the electric bulb simulating the #2 pool ball. In other words, before any one of the electric bulbs simulating the pool balls bearing #2 to 15 can be extinguished, it is necessary that electric bulb simulating the #1 pool ball be first extinguished. Thus, by this arrangement, in numerical order the electric bulbs simulating the pool balls #1 to 15 are successively extinguished to simulate that the player has, by the simulated cue ball in the form of the puck, disposed of the balls numbered #1 to 15 in successive order.

Included as a part of the step-up mechanism is reset coil 88 which operates in substantially the same manner as the reset coil of the patent hereinbefore referred to, to allow the ratchet wheel to return under action of the spring to zero or starting position, with the wiper arm 72 disengaged from the contact point 70. In the circuit to this coil 88 may be arranged a reset push button 89

by which the player may manually reset the step-up mechanism to starting position.

While I have before stated, the circuit just before described is shown and described for illustrative purposes only. For example, instead of arranging the electric bulbs to simulate pool balls, the circuit may be designed so that the electric bulbs will simulate a billiard game. Furthermore, a circuit may be provided for extinguishing one or more of the electric bulbs 24 whenever the puck misses the switch controlling the electric bulb which simulates the #1 pool ball. Other combinations and arrangements may be incorporated in the circuit to simulate a complete pool or billard game or any other game in which the playing pieces may be simulated by electric bulbs.

When the "rack" electric bulbs mounted in the sockets of Group A are illuminated, their images will be reflected from the reflector plate 29, and as this plate 29 is positioned substantially midway between the playing surface 14 and the refractor plate 26, these illuminated balls will appear to the player as being on the playing surface 14 when the reflected images are viewed by the player through the reflector plate 29. The arrangement is attractive to the player and by reason thereof adds to the pleasure and amusement in the playing of the game.

While I have illustrated and described the preferred form of construction for carrying my invention into effect, this is capable of variation and modification without departing from the spirit of the invention. I, therefore, do not wish to be limited to the precise details of construction set forth, but desire to avail myself of such variations and modifications as come within the scope of the appended claims.

Having thus described my invention, what I claim as new and desire to protect by Letters Patent is:

1. An amusement game apparatus comprising an opaque playing surface over which a playing piece is propelled, an opaque panel above and in spaced relation with respect to the playing surface, a plurality of light producing elements carried by and extending from the under surface of said panel, a refractor structure beneath and in parallel spaced relation with respect to said panel, a reflector panel arranged in a horizontal position between the refractor structure and the playing surface, and means for energizing said light producing elements, said light producing elements producing an illusion of being positioned upon the playing surface when the reflection of said elements is reflected off said reflector panel.

2. An amusement game apparatus comprising an opaque playing surface over which a magnetically attracted playing piece is propelled, an opaque panel above and in spaced relation with respect to the playing surface, a plurality of light producing elements carried by and extending from the under surface of said panel, a refractor structure beneath and in parallel spaced relation with respect to said panel, a reflector panel arranged in a horizontal position between the refractor structure and the playing surface, and means for energizing said light producing elements, said light producing elements producing an illusion of being positioned upon the playing surface when the reflection of said elements is reflected off said reflector panel, said energizing means including an electric circuit and switch elements in said circuit, each switch element being positioned below the playing surface and including a magnet adapted to be attracted by the playing piece propelled over said playing surface.



3. An amusement game apparatus comprising an opaque playing surface over which a magnetically attracted playing piece is propelled, an opaque panel above and in spaced relation with respect to the playing surface, a plurality of light producing elements carried by and extending from the under surface of said panel, a refractor structure beneath and in parallel spaced relation with respect to said panel, a reflector panel arranged in a horizontal position between the refractor structure and the playing surface, and means for energizing said light producing elements, said light producing elements producing an illusion of being positioned upon the playing surface when the reflection of said elements is reflected off said reflector panel, said energizing means including an electric circuit and switch elements in said circuit, said switch elements being arranged beneath the playing surface and each switch element including a magnet adapted to be attracted by the playing piece propelled over said playing surface.

4. An amusement game apparatus comprising a cabinet, an opaque playing surface arranged in said cabinet in a horizontal plane and over which a playing piece is propelled, an enclosure at one end and above said cabinet, a substantially horizontal opaque panel mounted in said enclosure, a plurality of electric bulbs carried by and extending from the under surface of said panel, a refractor structure arranged in a substantially horizontal plane within said enclosure beneath said panel and forming together with said panel and the side walls of the enclosure a light chamber, a reflector panel arranged beneath said enclosure and above said playing surface, and means for energizing said electric bulbs, said electric bulbs when reflected on said reflector panel producing an illusion of being positioned upon the playing surface when said playing surface is viewed from an angle with respect to said reflector panel, said energizing means including an electric circuit and switch elements in said circuit, said switch elements being arranged beneath the playing surface and each including a magnet adapted to be attracted by the playing piece propelled over said playing surface.

5. An amusement game apparatus comprising a cabinet, a playing surface in said cabinet and over which a metallic puck is propelled, a housing above and at one end of the cabinet, an opaque horizontally arranged panel in said housing, a refractor panel arranged in said housing beneath said opaque panel and in spaced relation with respect thereto, a reflector panel having a portion extending beneath and in spaced relation to the reflector panel and the remaining portion extending exteriorly of the housing, said reflector panel being in spaced relation with respect to the playing surface and in spaced relation with respect to said refractor panel, a plurality of light producing elements carried by the opaque panel above said refractor panel, and means for energizing said light producing elements, said energizing means including an electric circuit and switch elements in said circuit, said switch elements being arranged beneath the playing surface and each including a magnet adapted to be attracted by the puck propelled over said playing surface.

6. An amusement game apparatus comprising a cabinet, a playing surface in said cabinet and over which a metallic puck is propelled, a hous-

ing above and at one end of the cabinet, an opaque horizontally arranged panel in said housing, a refractor panel arranged in said housing beneath said opaque panel and in spaced relation with respect thereto, a reflector panel having a portion extending beneath and in spaced relation to the reflector panel and the remaining portion extending exteriorly of the housing, said reflector panel being in spaced relation with respect to the playing surface and in spaced relation with respect to said refractor panel, a plurality of light producing elements carried by the opaque panel above said refractor panel, and means for energizing said light producing elements, said light producing elements being arranged in at least two groups with one of said groups simulating the rack balls of a pool game and the other of said groups simulating scattered balls.

7. An amusement game apparatus comprising a cabinet, a playing surface in said cabinet and over which a magnetically attracted puck is propelled, a housing above and at one end of the cabinet, an opaque horizontally arranged panel in said housing, a refractor panel arranged in said housing beneath said opaque panel and in spaced relation with respect thereto, a reflector panel having a portion extending beneath and in spaced relation to the reflector panel and the remaining portion extending exteriorly of the



housing, said reflector panel being in spaced relation with respect to the playing surface and in spaced relation with respect to said refractor panel, a plurality of light producing elements carried by the opaque panel above said refractor panel, and means for energizing said light producing elements, said energizing means including an electric circuit and switch elements in said circuit, said switch elements being arranged beneath the playing surface and each including a magnet adapted to be attracted by the puck propelled over said playing surface, said light producing elements being arranged in at least two groups with one of said groups simulating the rack balls of a pool game and the other of said groups simulating the scattered balls.

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