



US 20070021173A1

(19) **United States**

(12) **Patent Application Publication**

Seelig et al.

(10) **Pub. No.: US 2007/0021173 A1**

(43) **Pub. Date: Jan. 25, 2007**

(54) **GAMING DEVICE**

Publication Classification

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(51) **Int. Cl.**
A63F 9/24 (2006.01)

(52) **U.S. Cl.** 463/16

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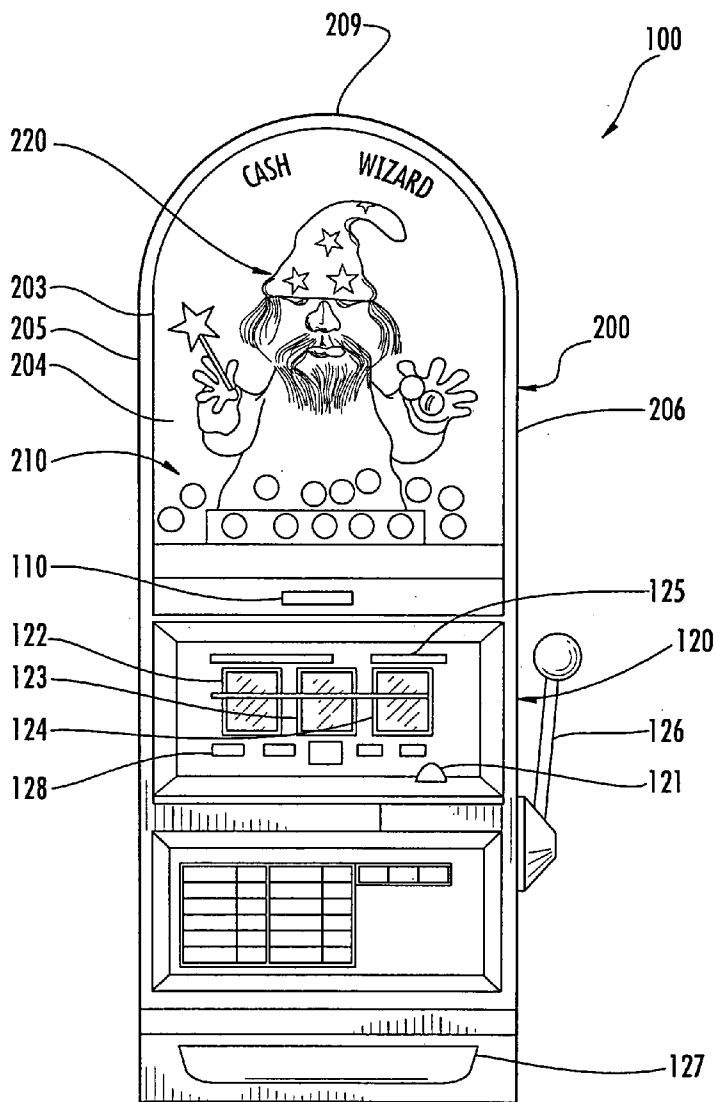
(57) **ABSTRACT**

In certain embodiments, the present invention relates to a gaming device including a game apparatus that is adapted to allow a player to play a game. The game apparatus includes a display object, a prize object and a positioning mechanism. A controller is in communication with the positioning mechanism. The controller is adapted to show the display object to the player and to hide the display object from the player. The controller is further adapted to show the prize object to the player and award a prize. The objects provide an illusion that they disappear and then reappear into view of the player.

(73) Assignee: **Atlantic City Coin & Slot Service Company, Inc.**, Pleasantville, NJ

(21) Appl. No.: **11/185,324**

(22) Filed: **Jul. 19, 2005**



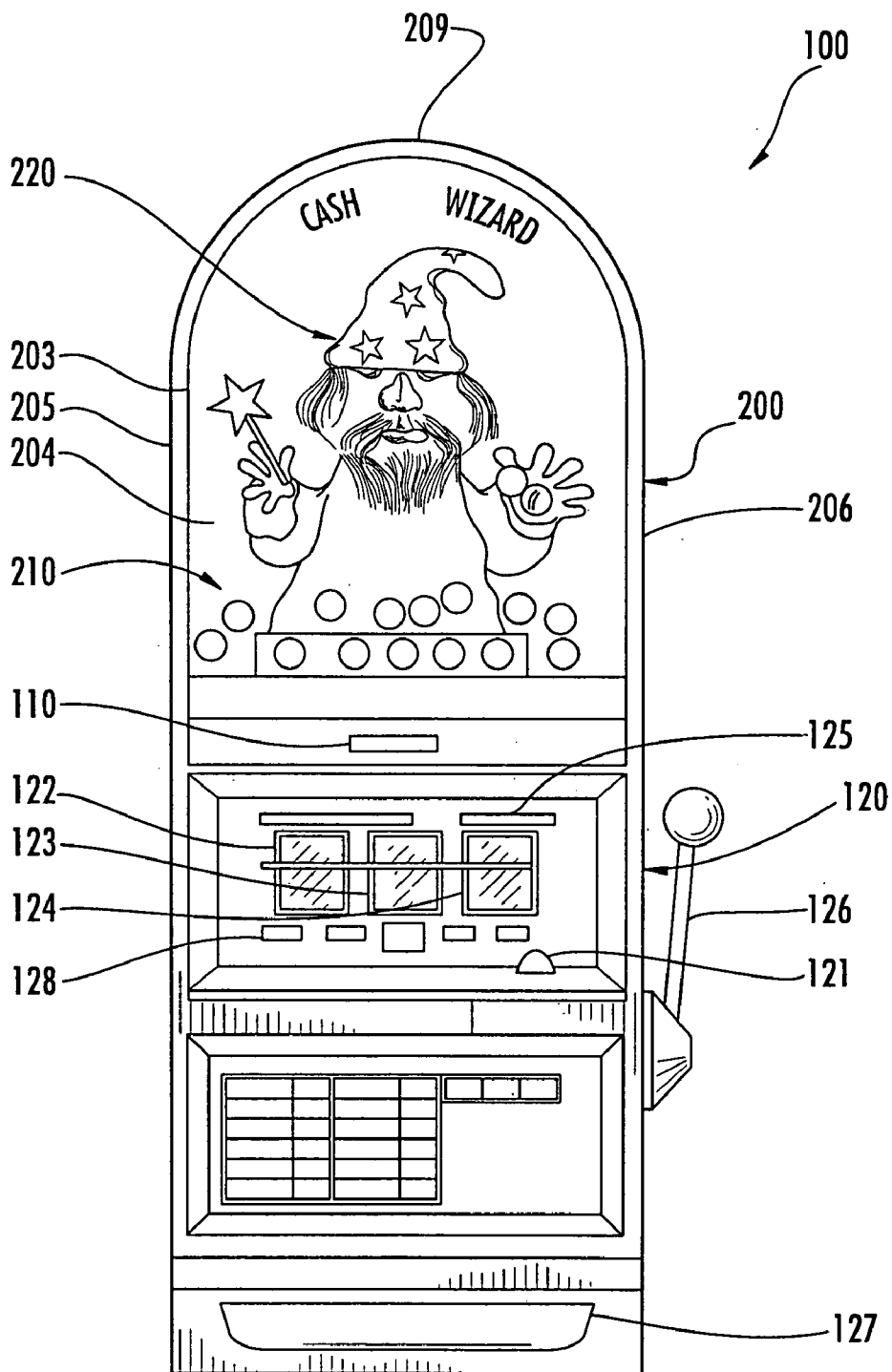
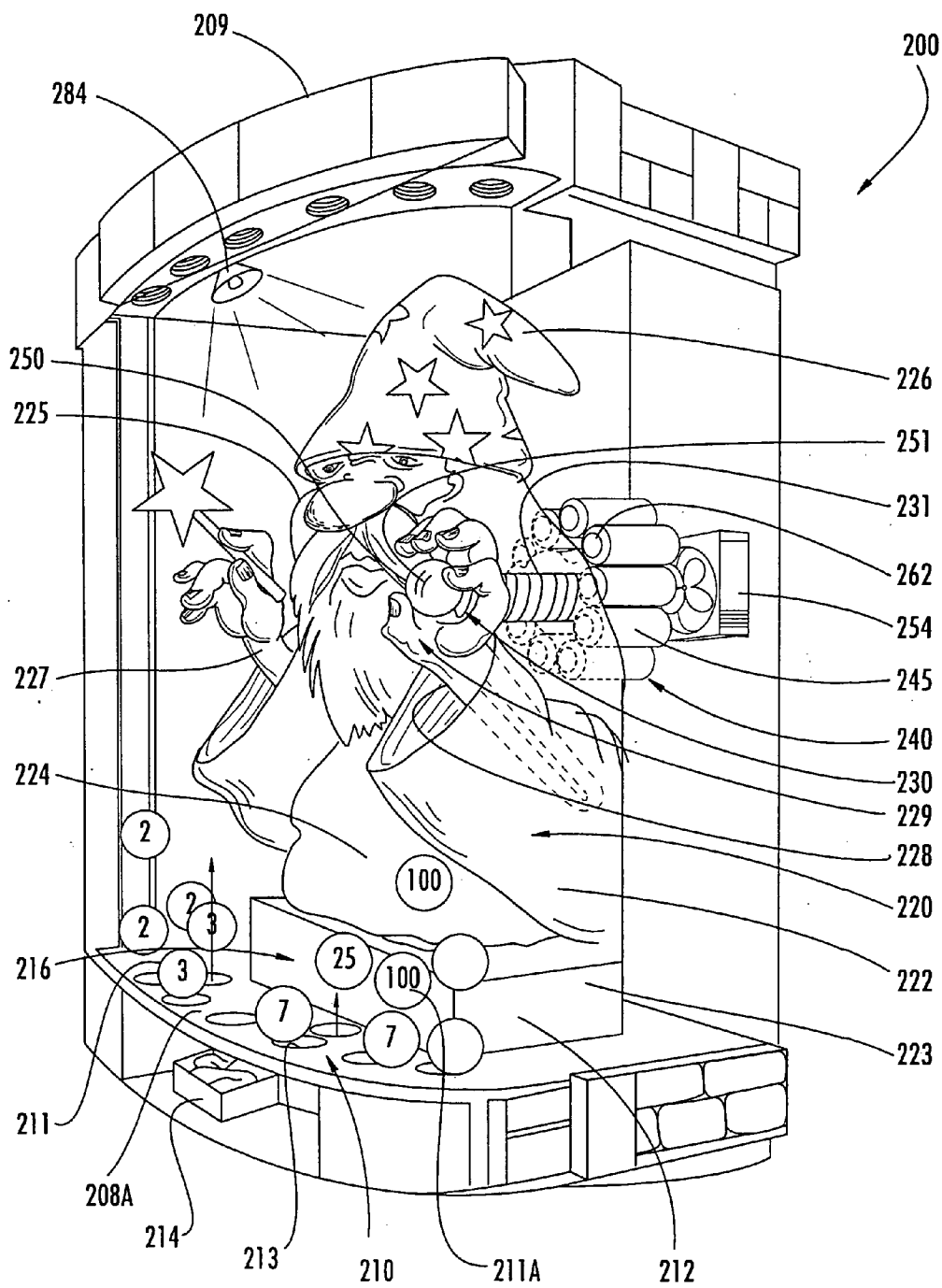


FIG. 1



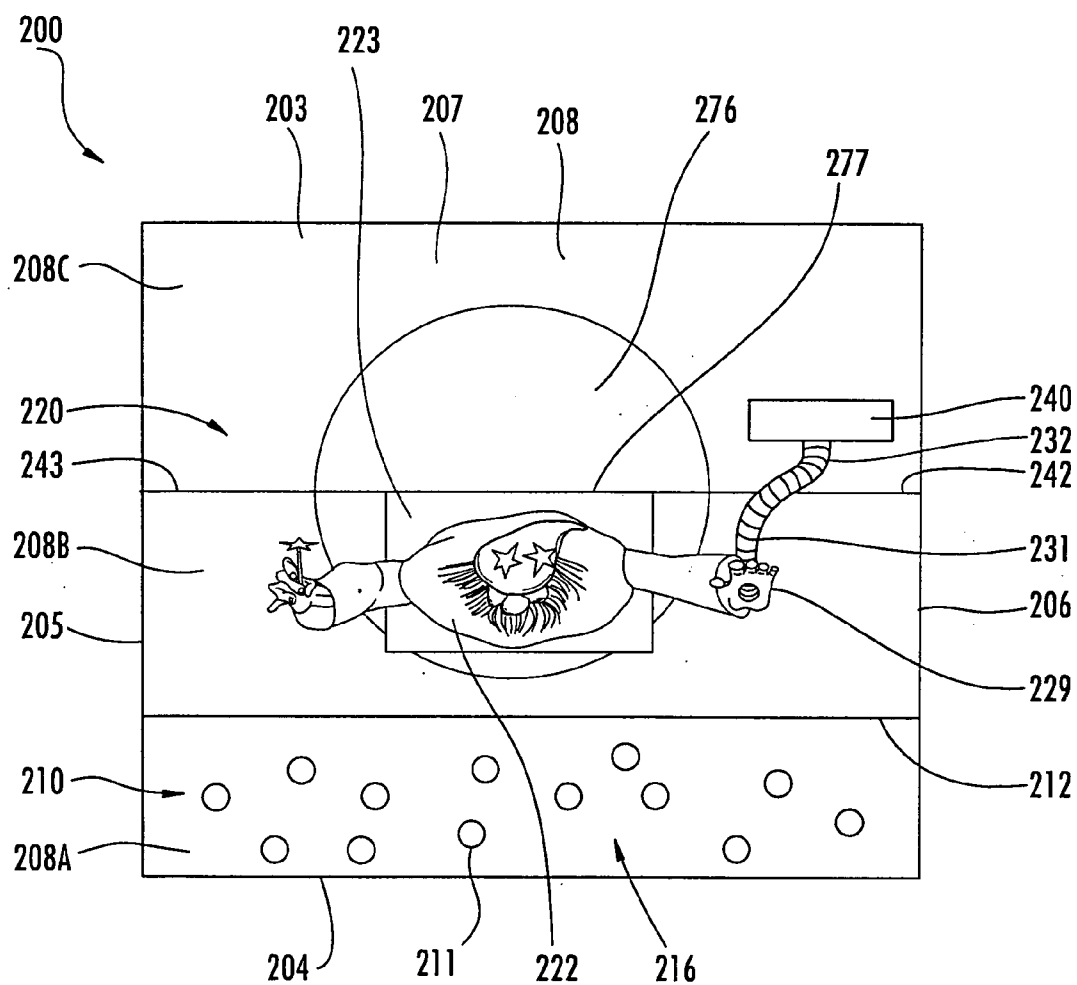


FIG. 3

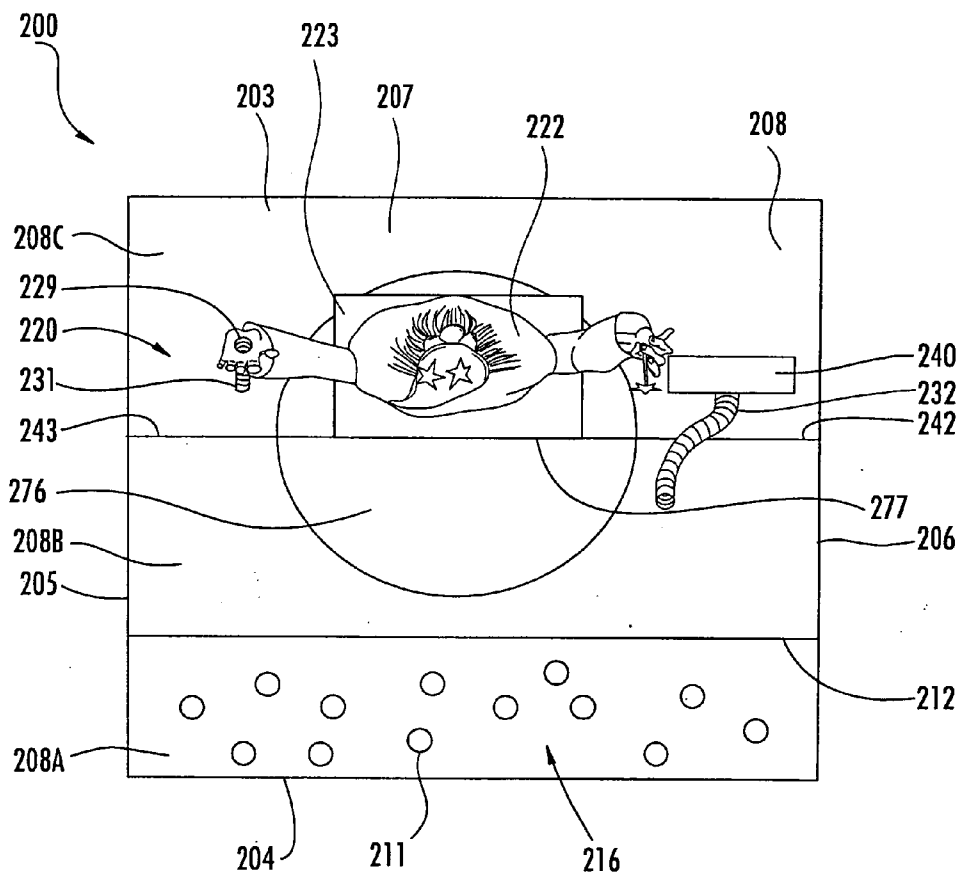


FIG. 4

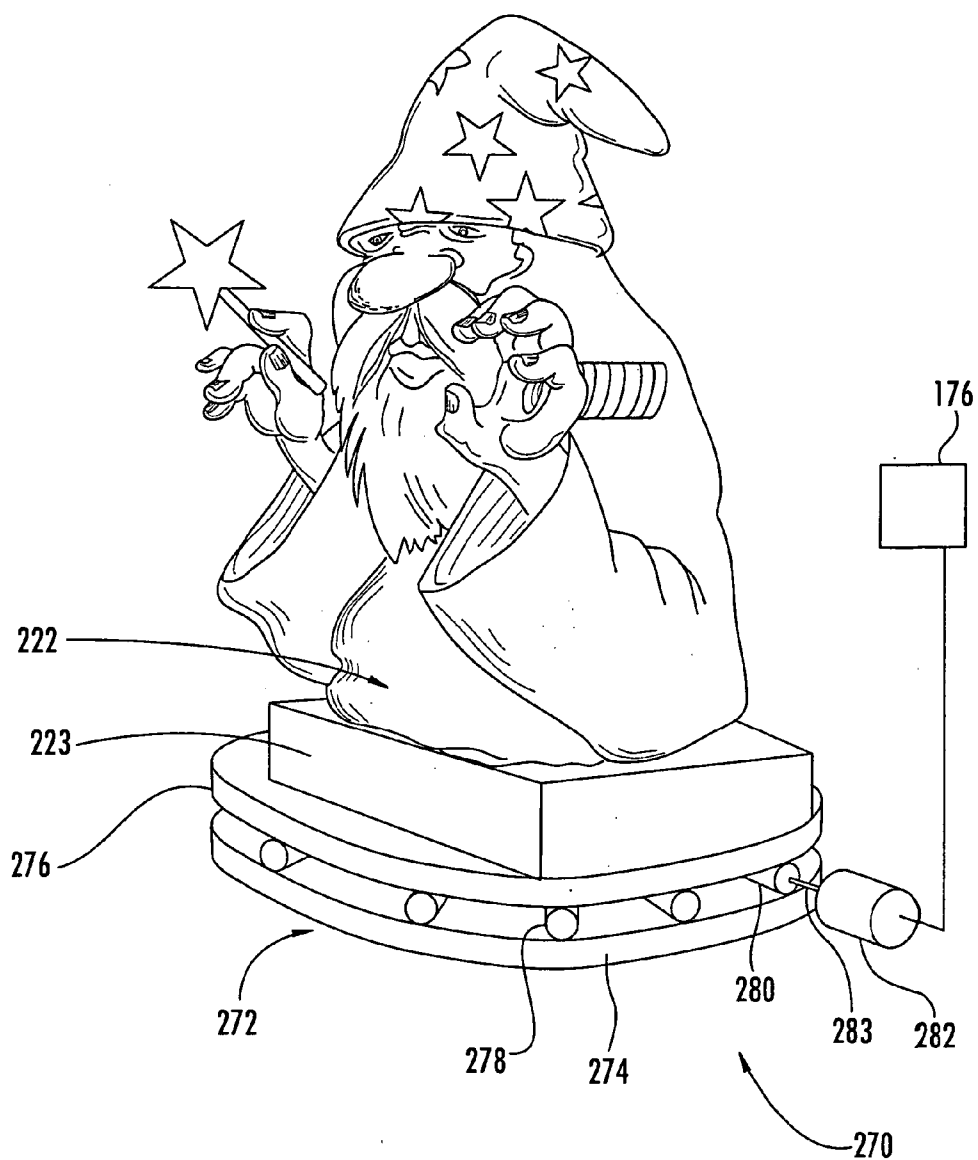


FIG. 5

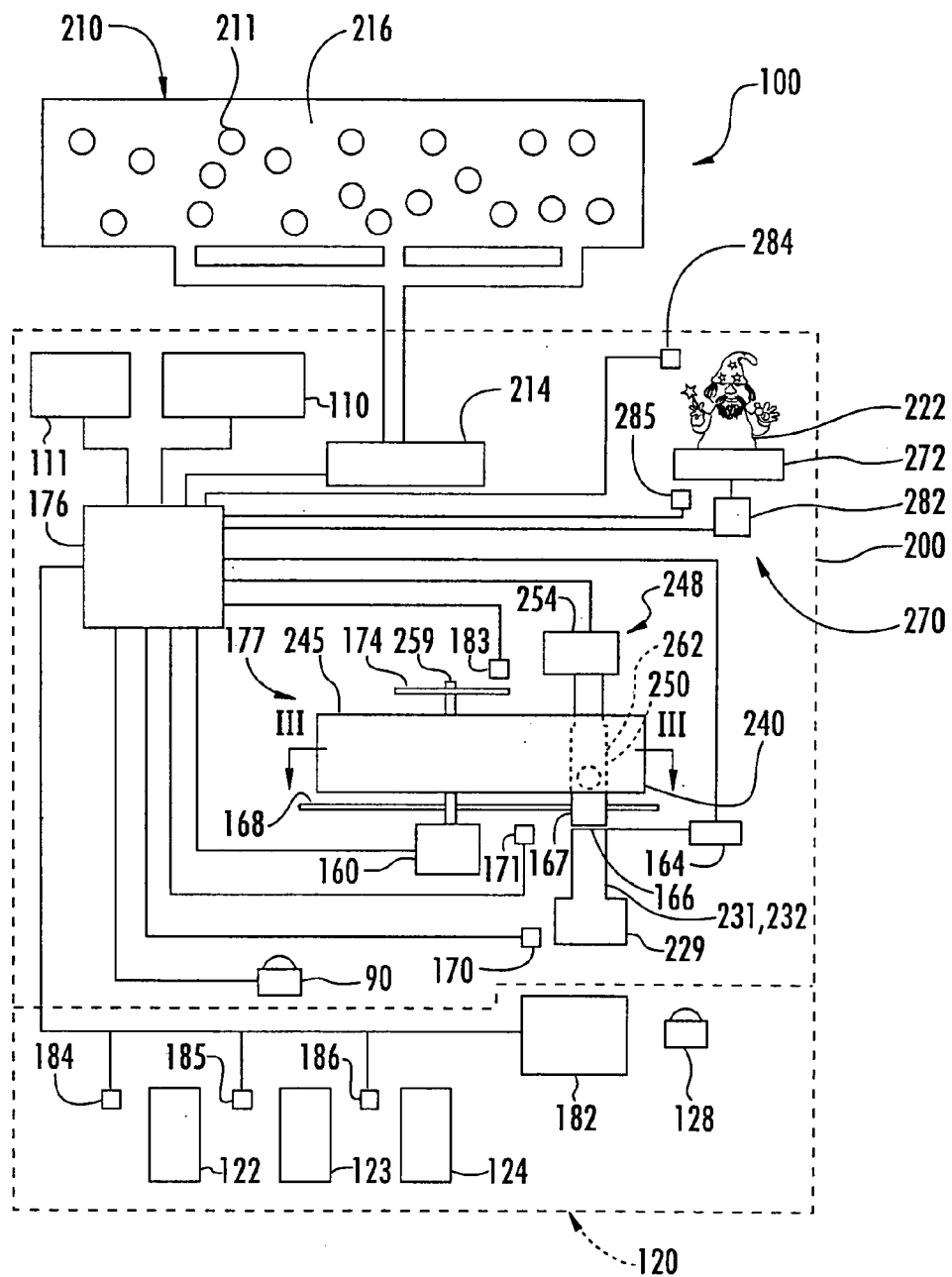


FIG. 6

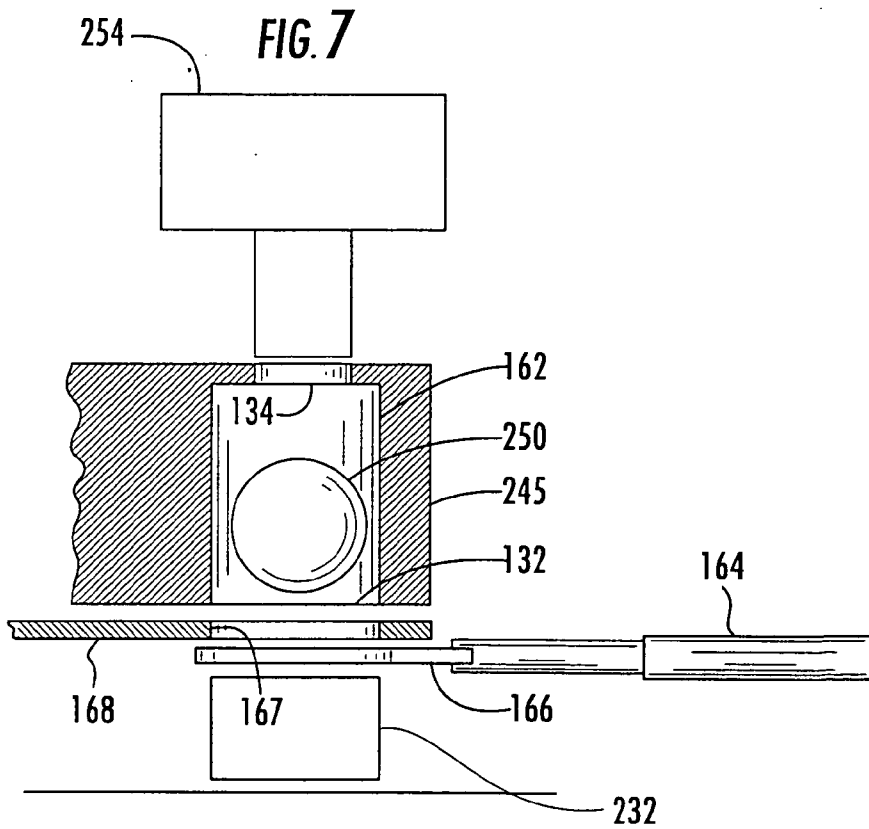
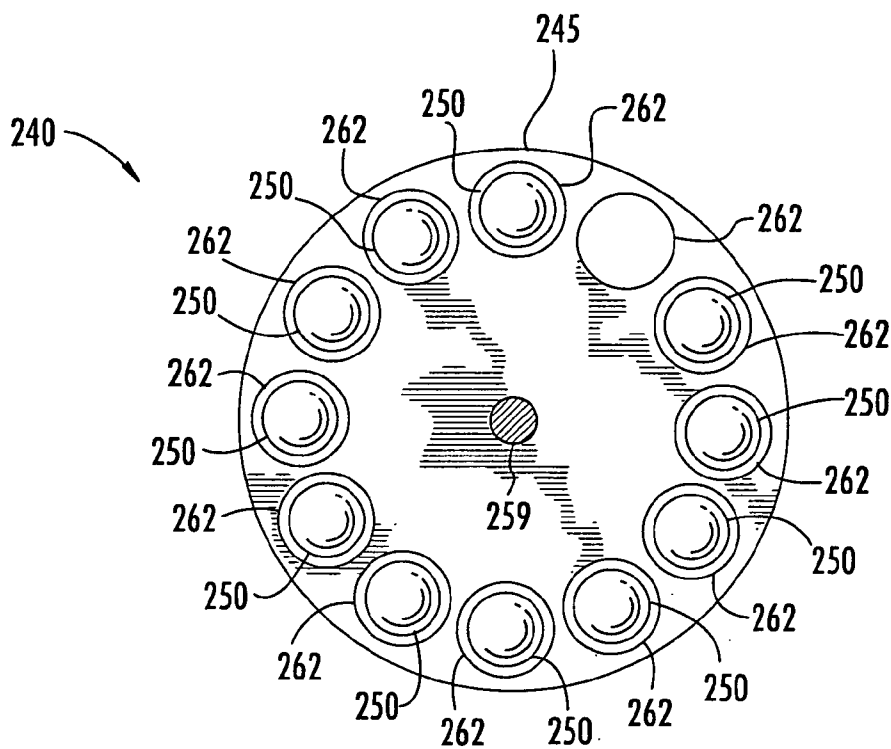


FIG. 8

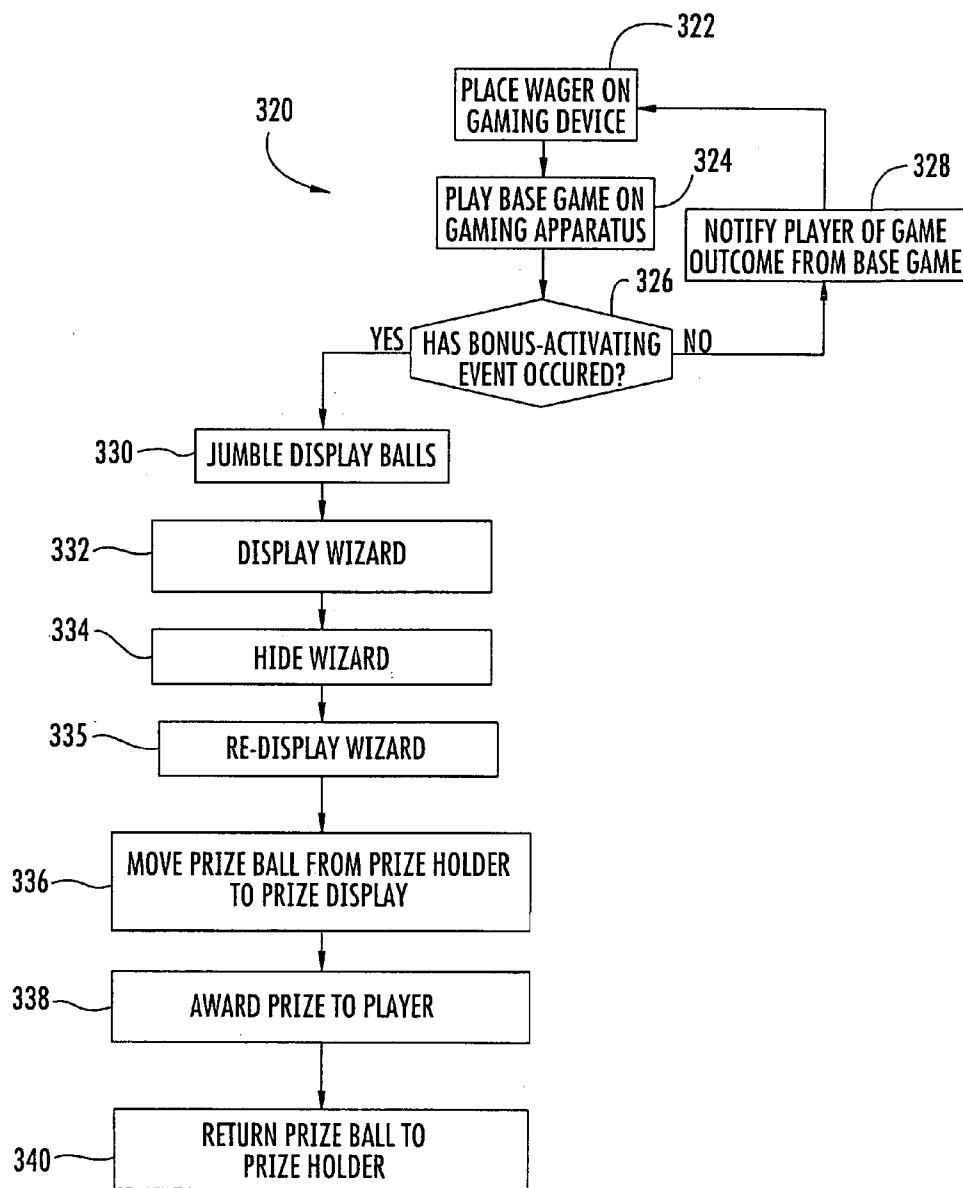


FIG. 9

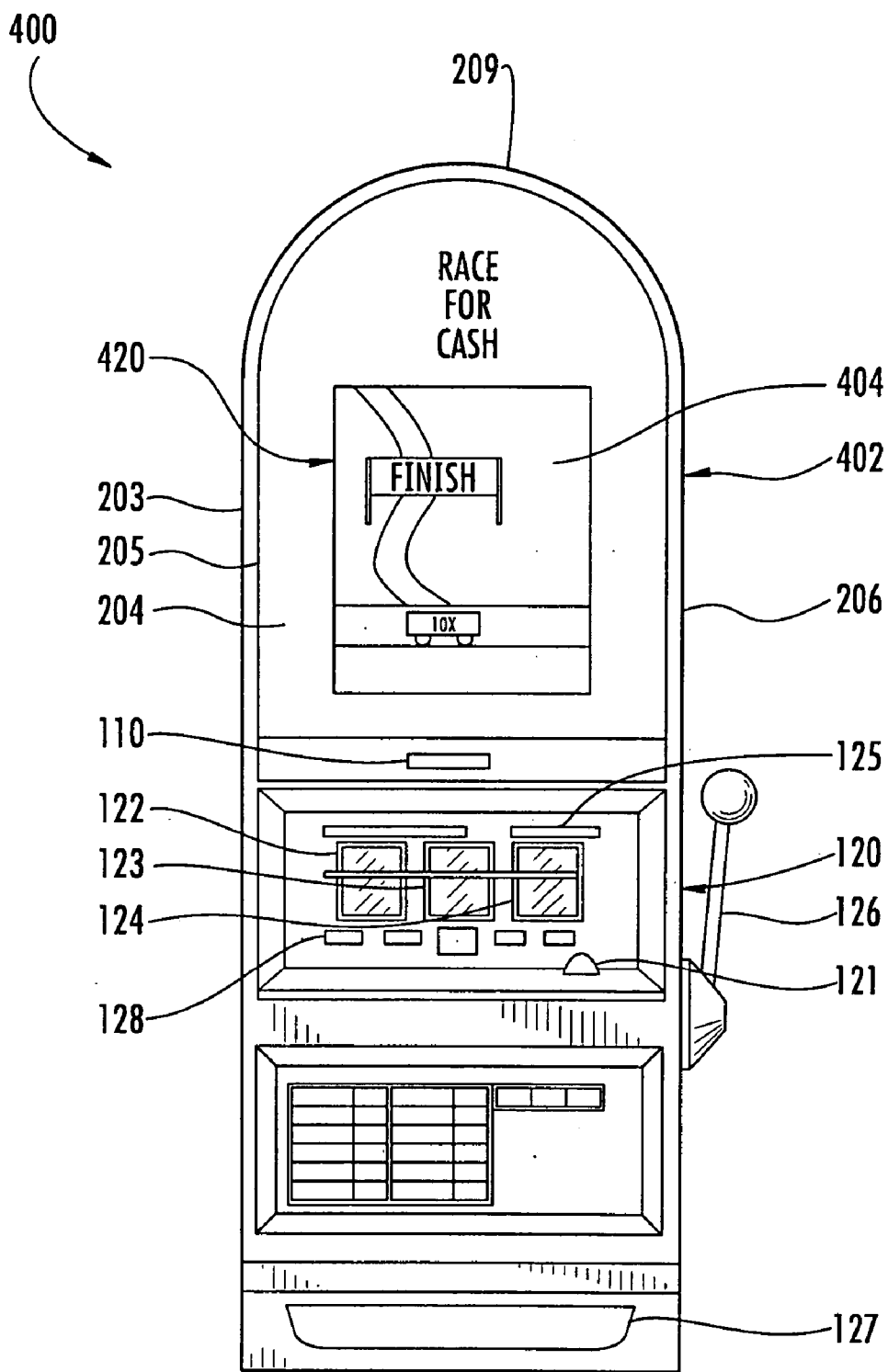


FIG. 10

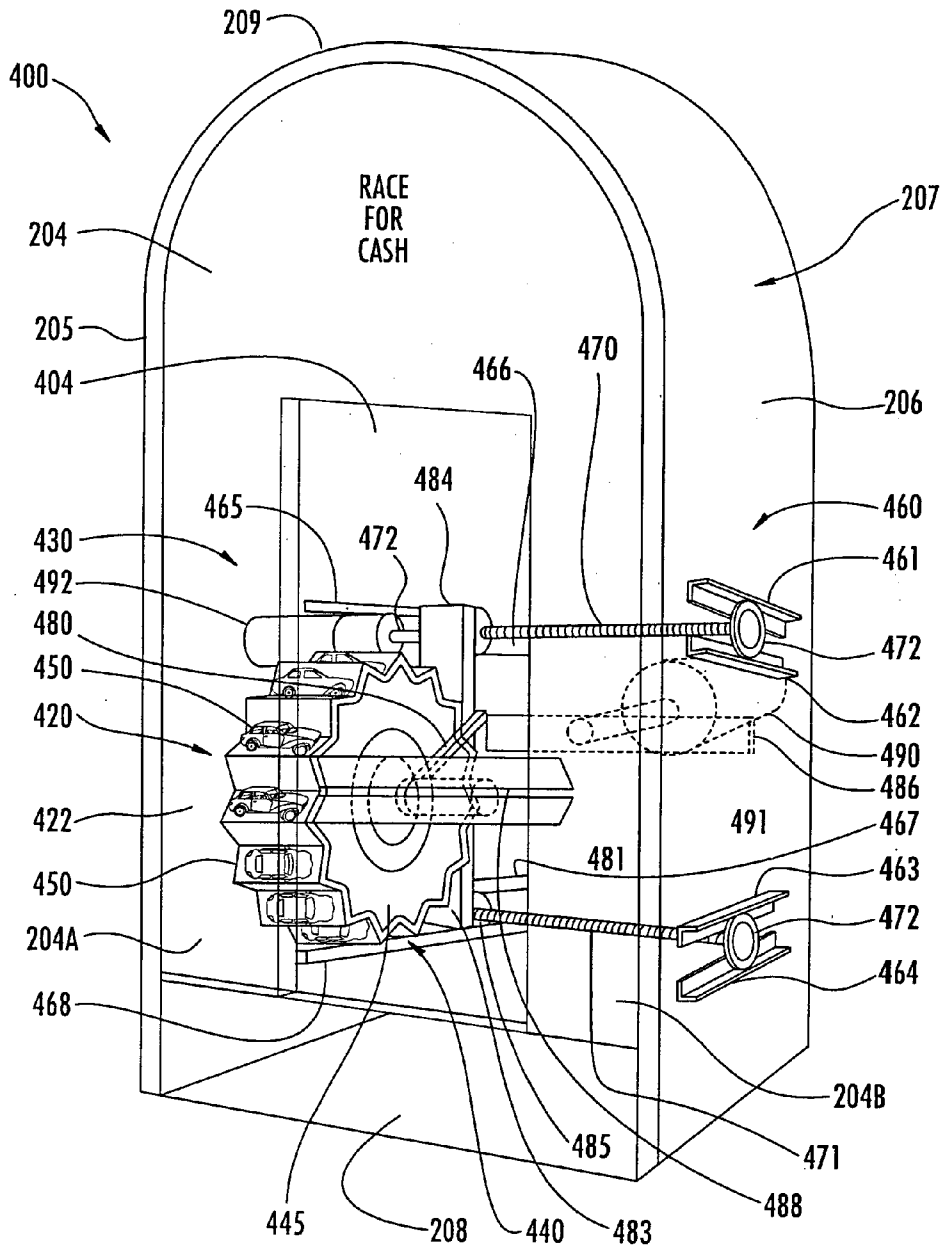


FIG. 11

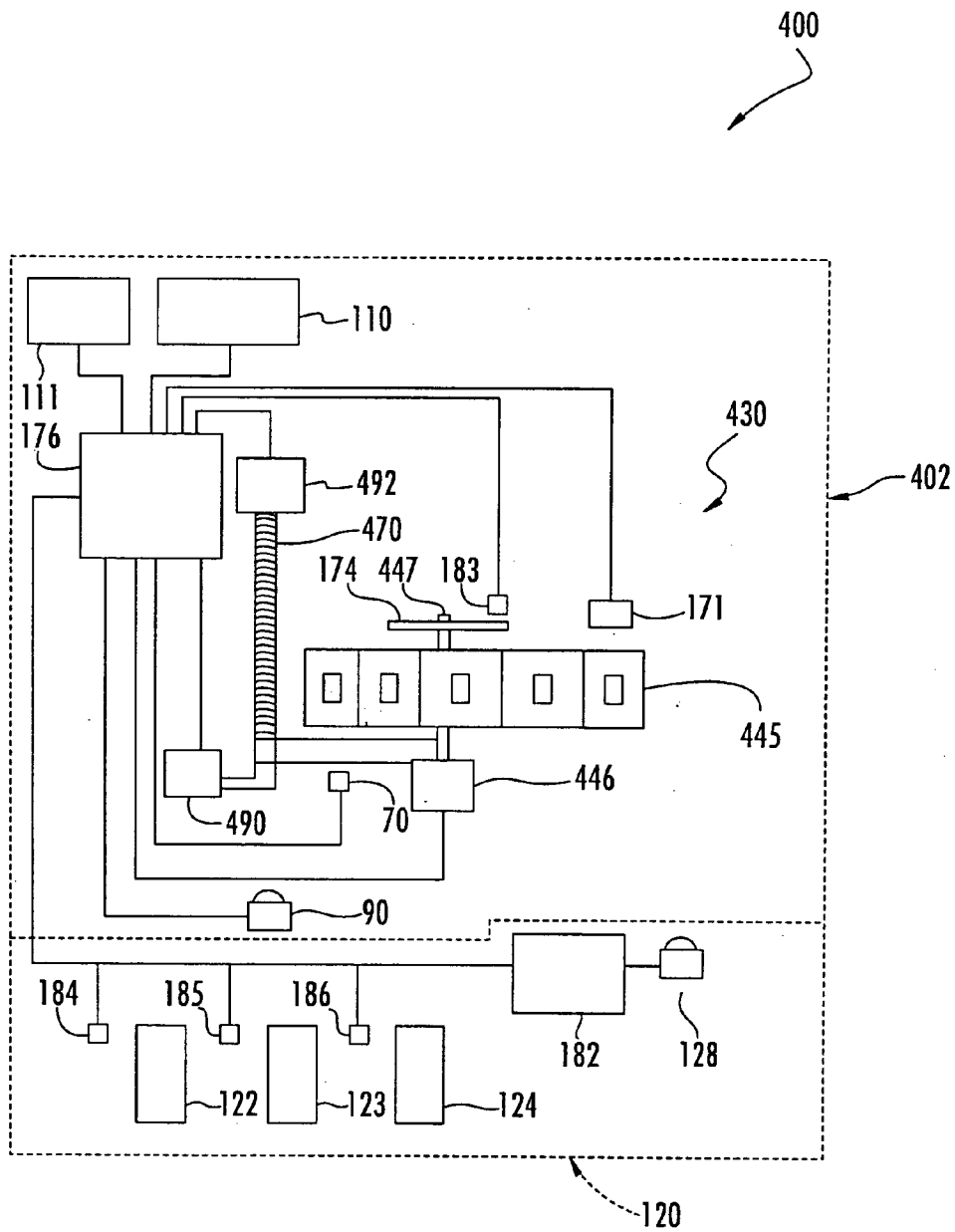


FIG. 12

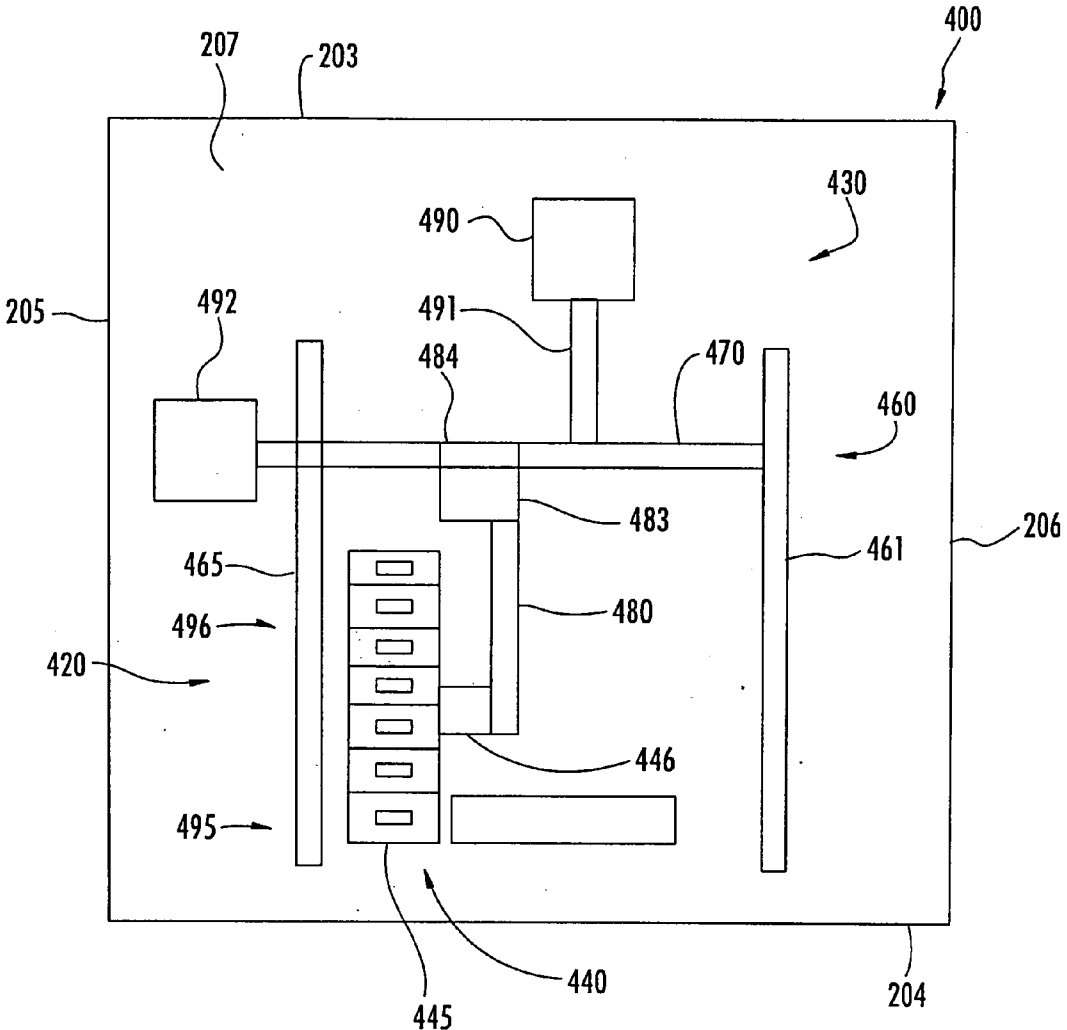


FIG. 13

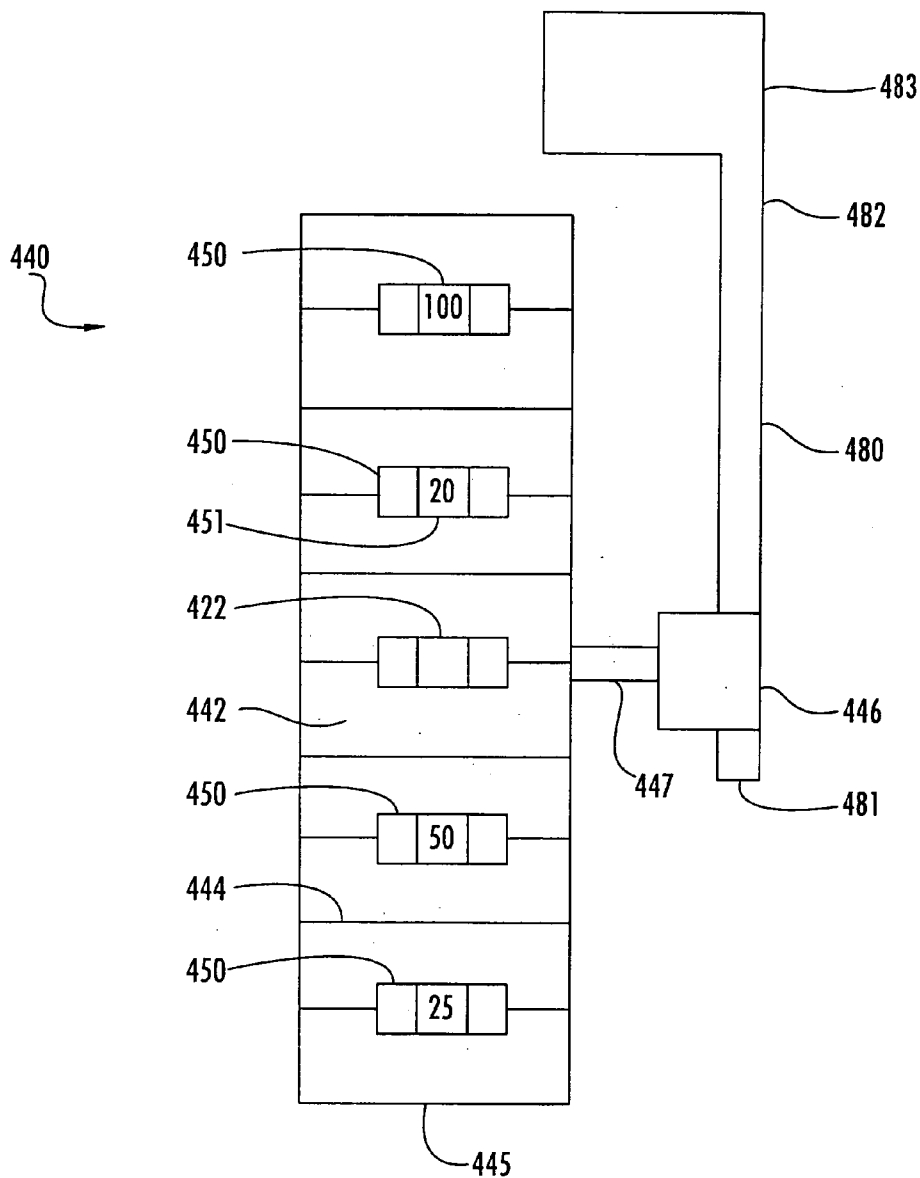


FIG. 14

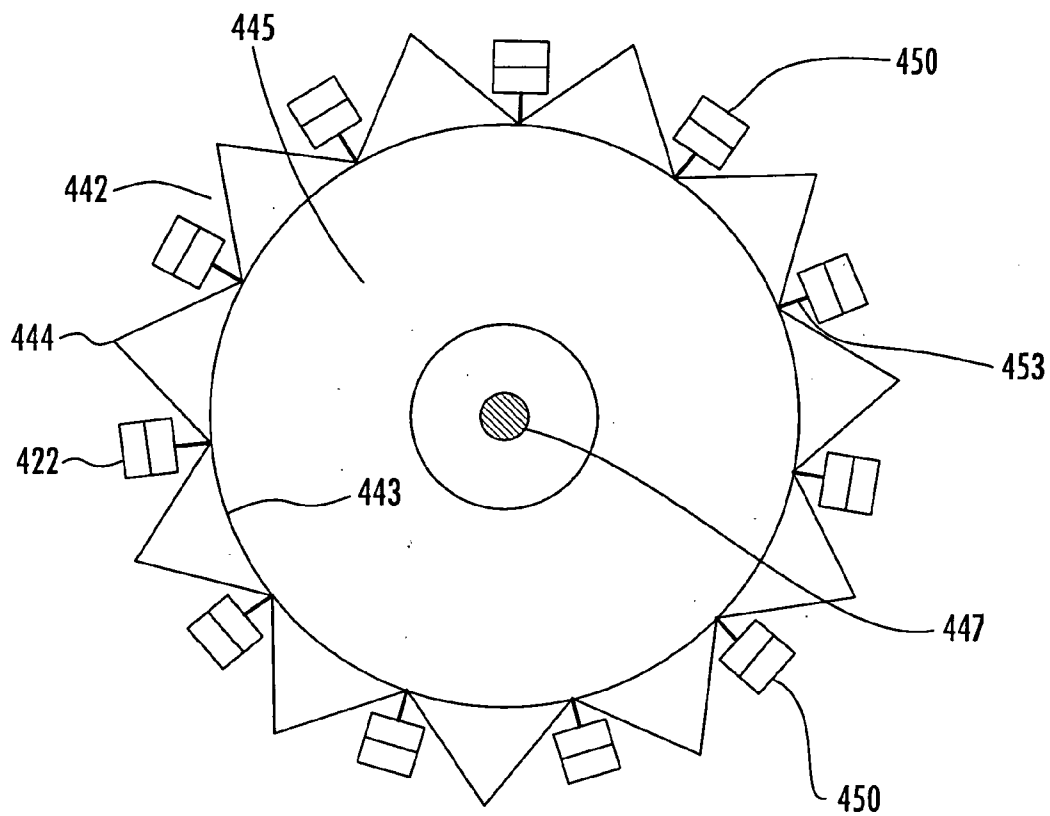


FIG. 15

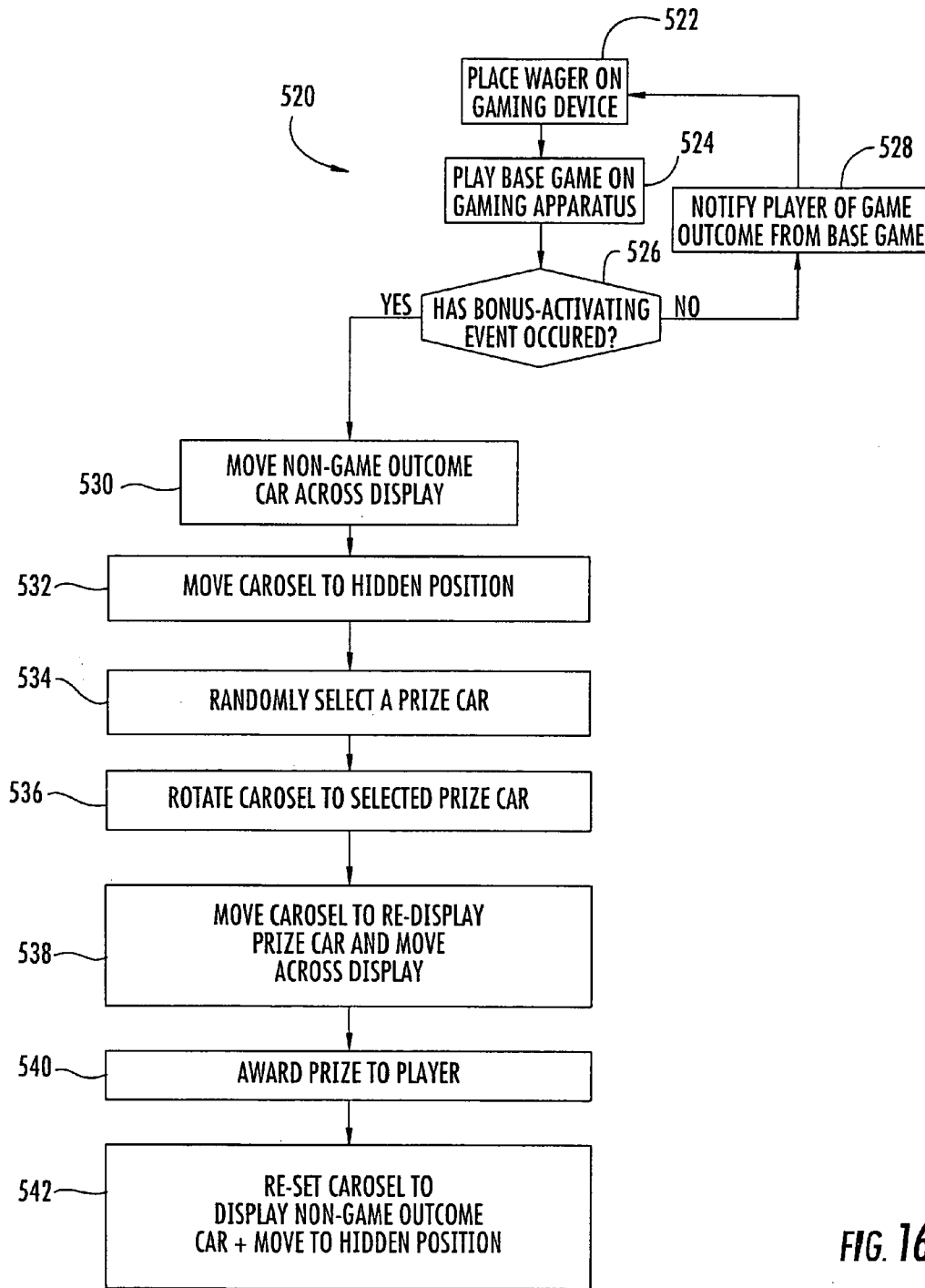


FIG. 16

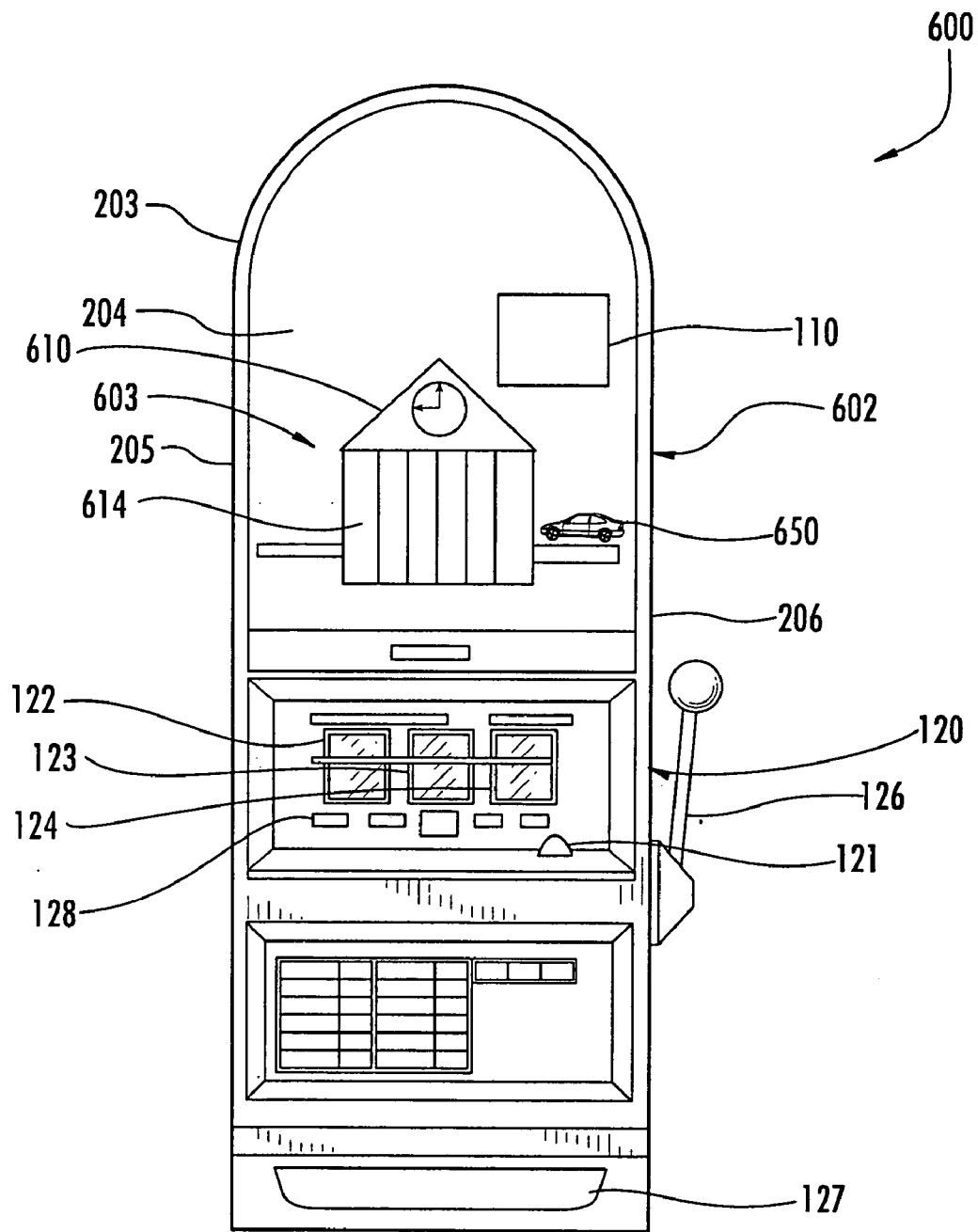


FIG. 17

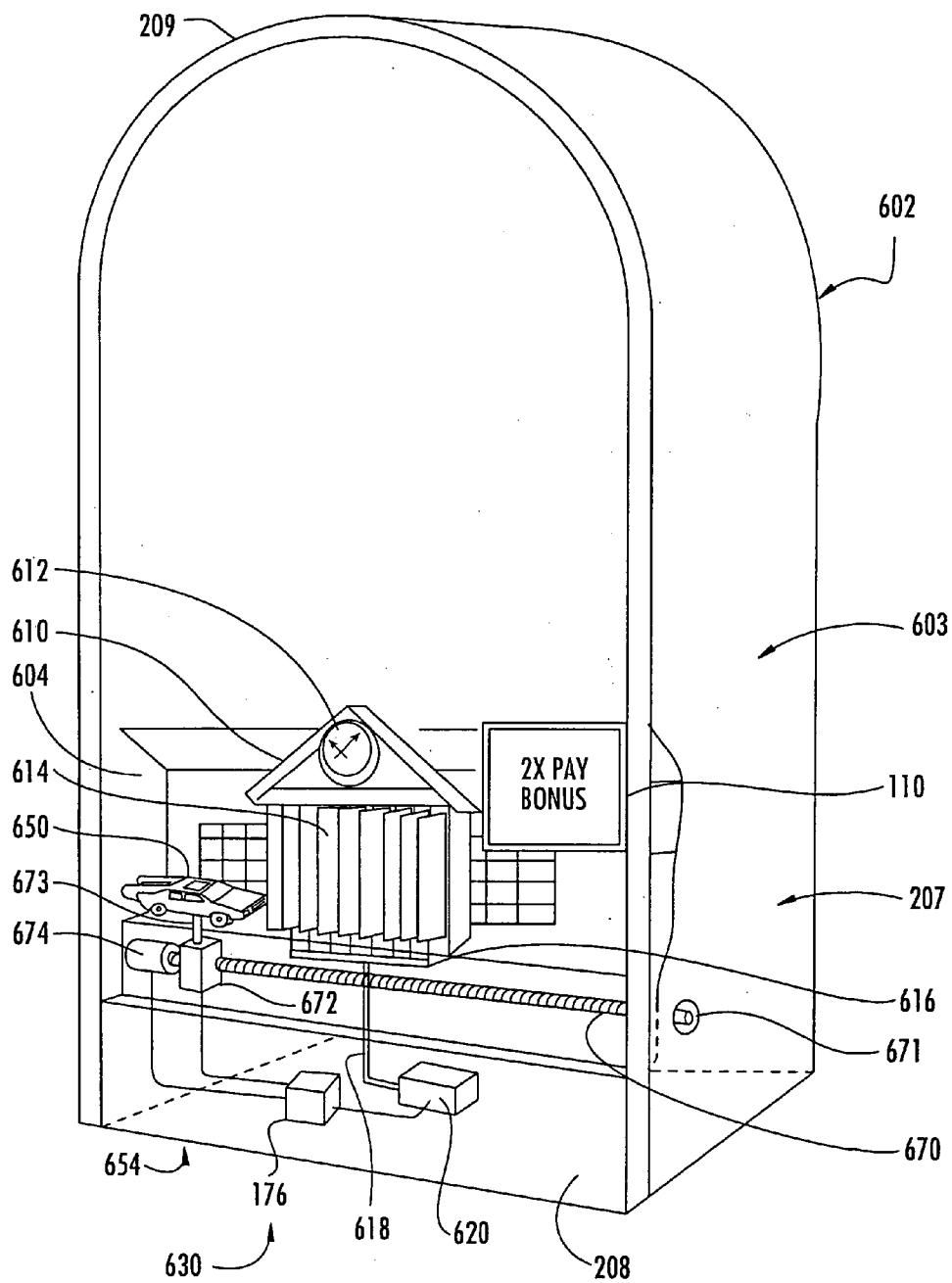


FIG. 18

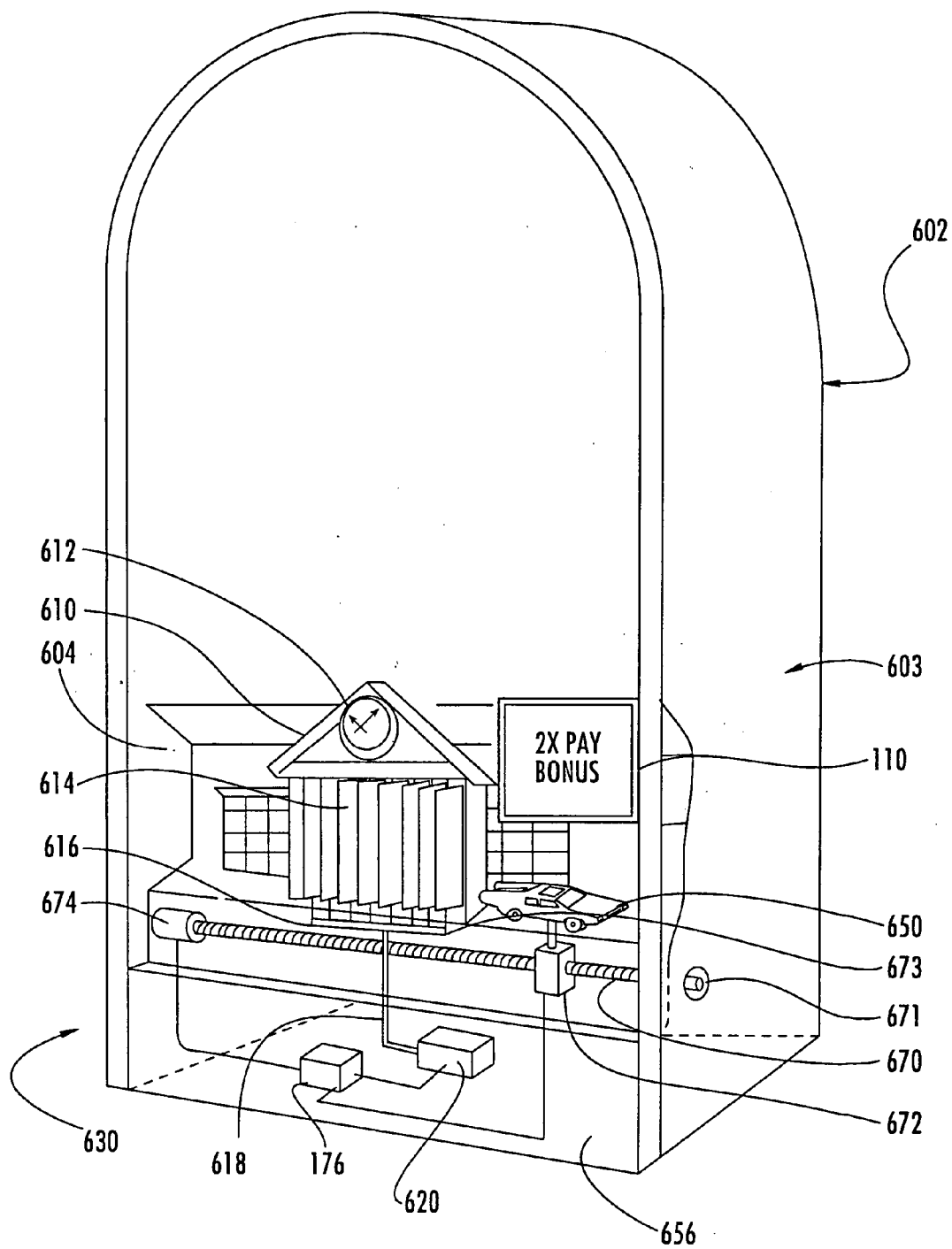


FIG. 19

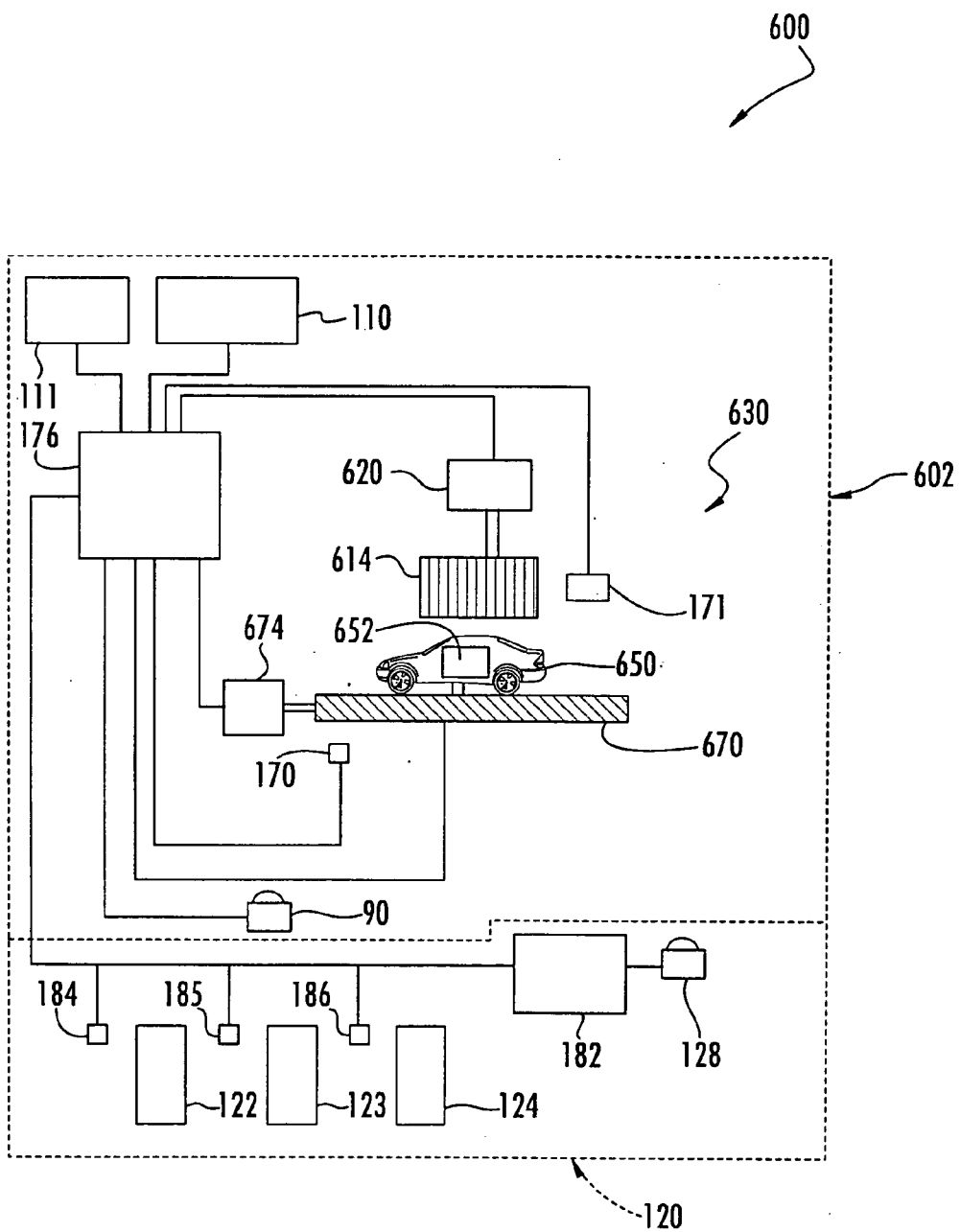


FIG. 20

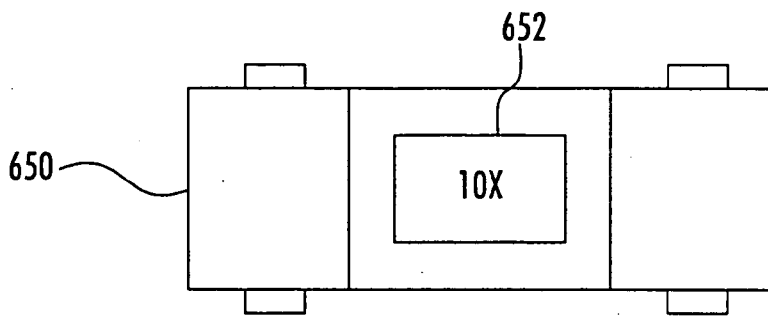


FIG. 21

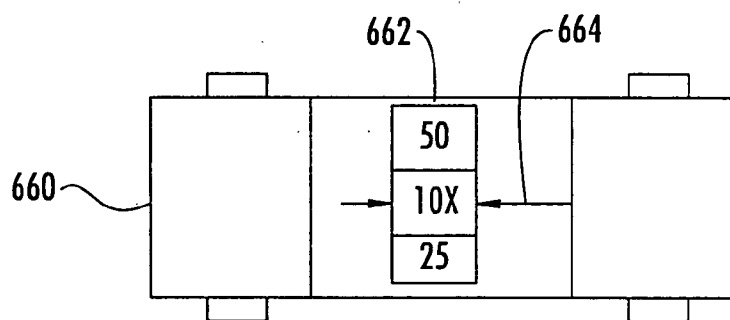


FIG. 22

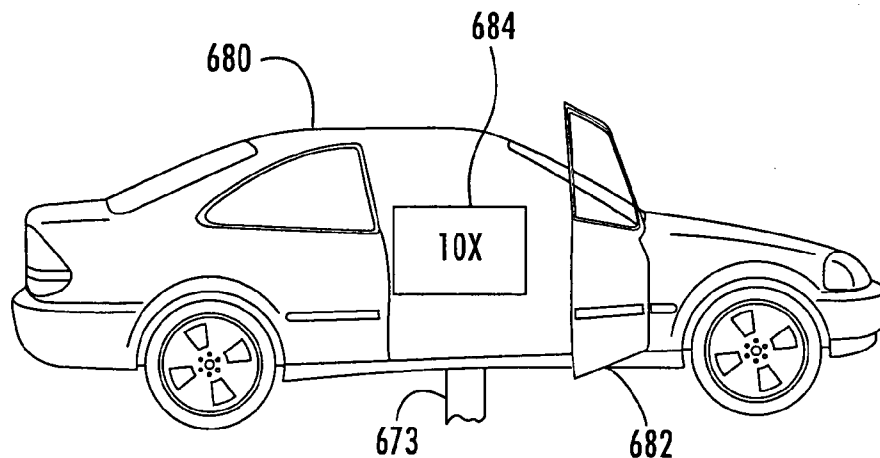


FIG. 23

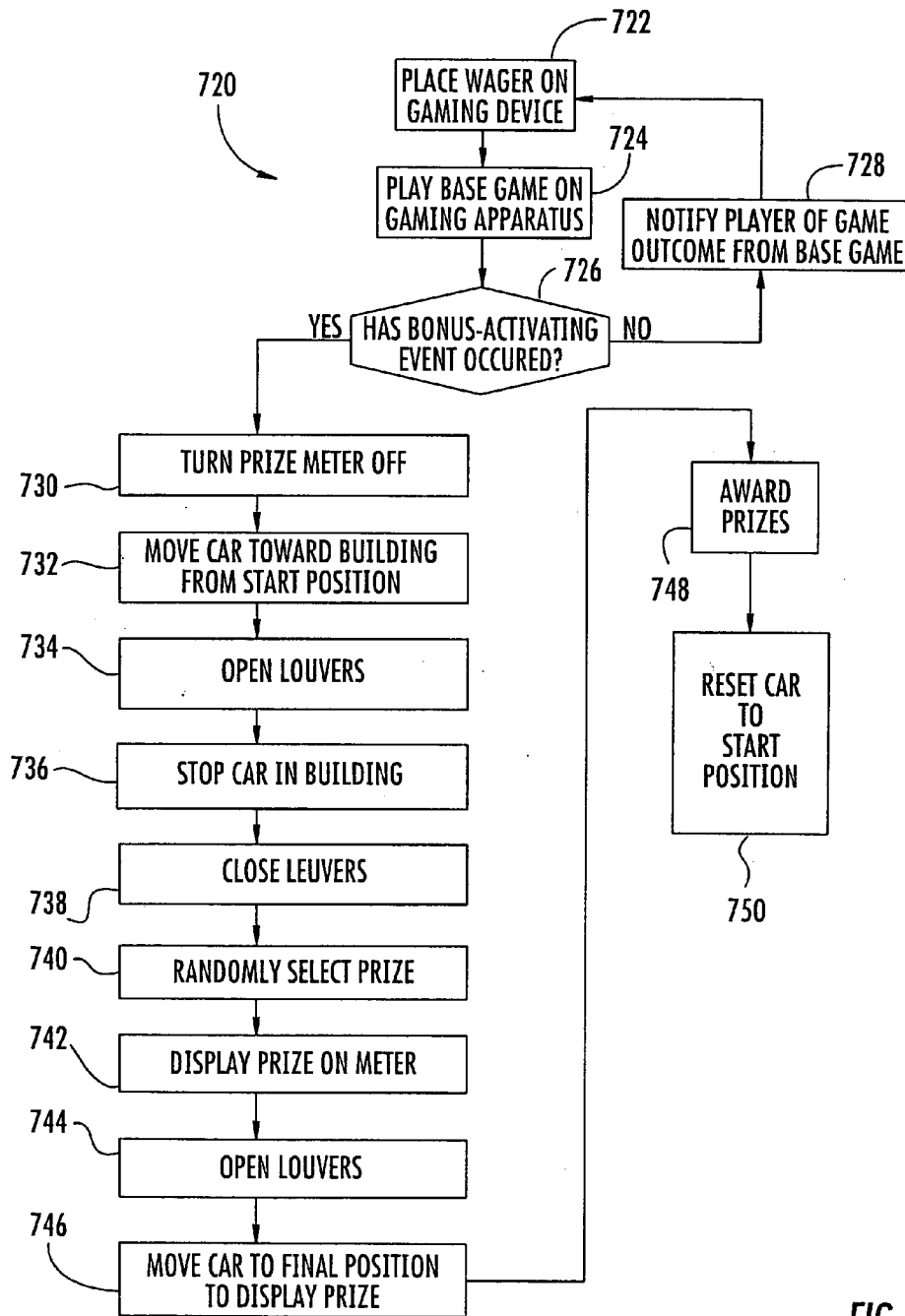


FIG. 24

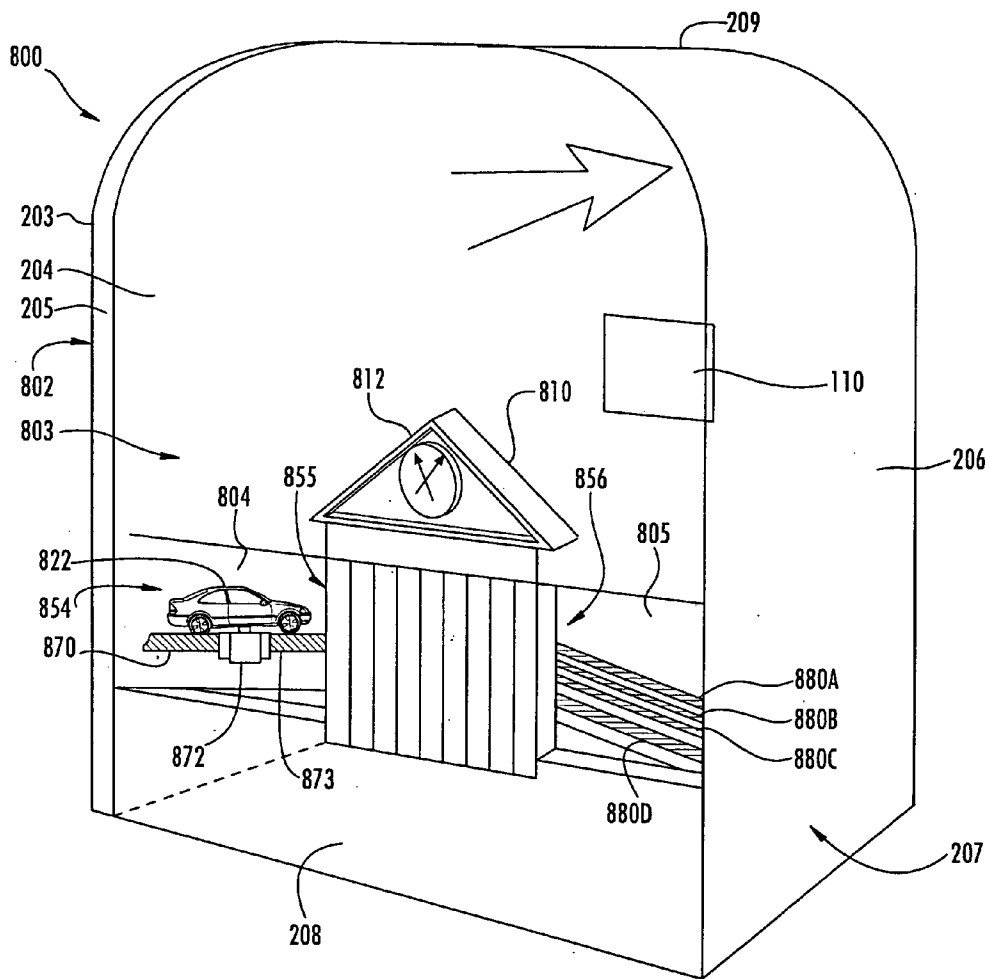


FIG. 25

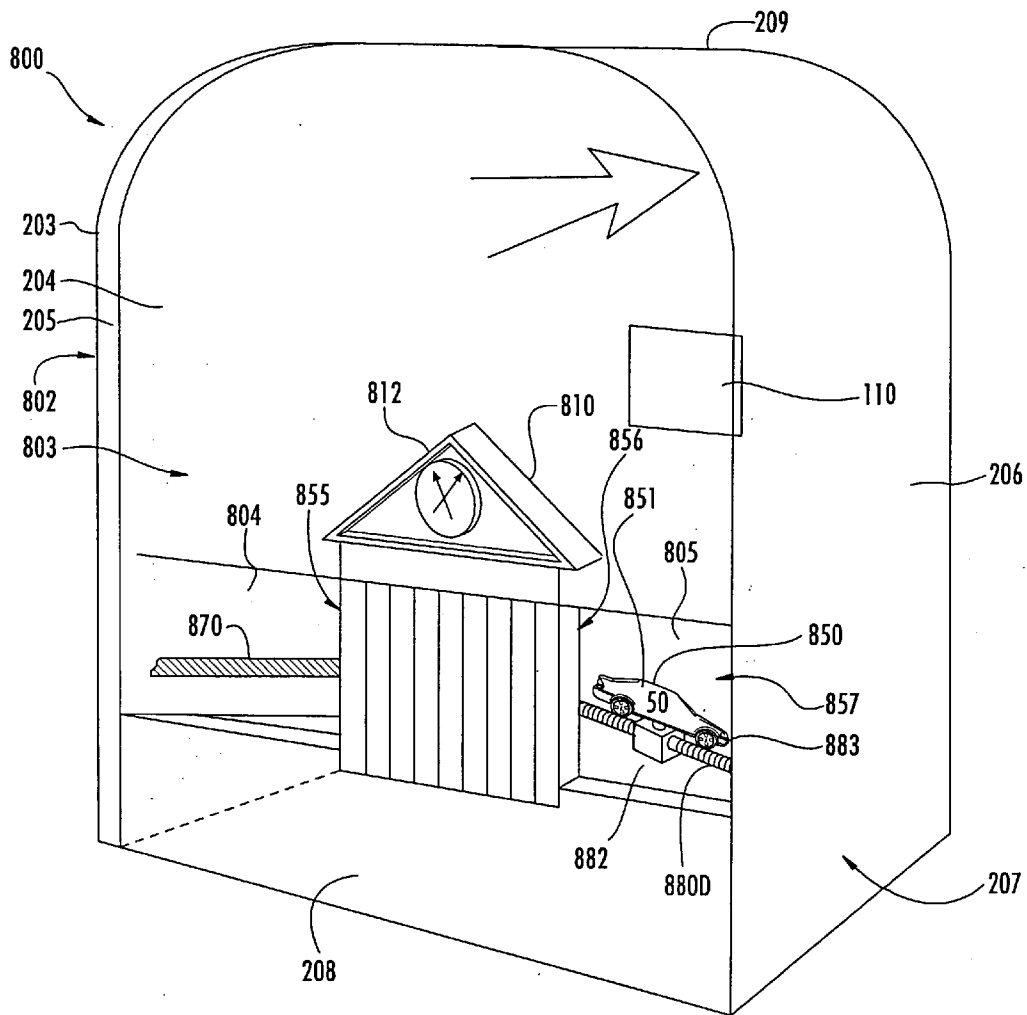


FIG. 26

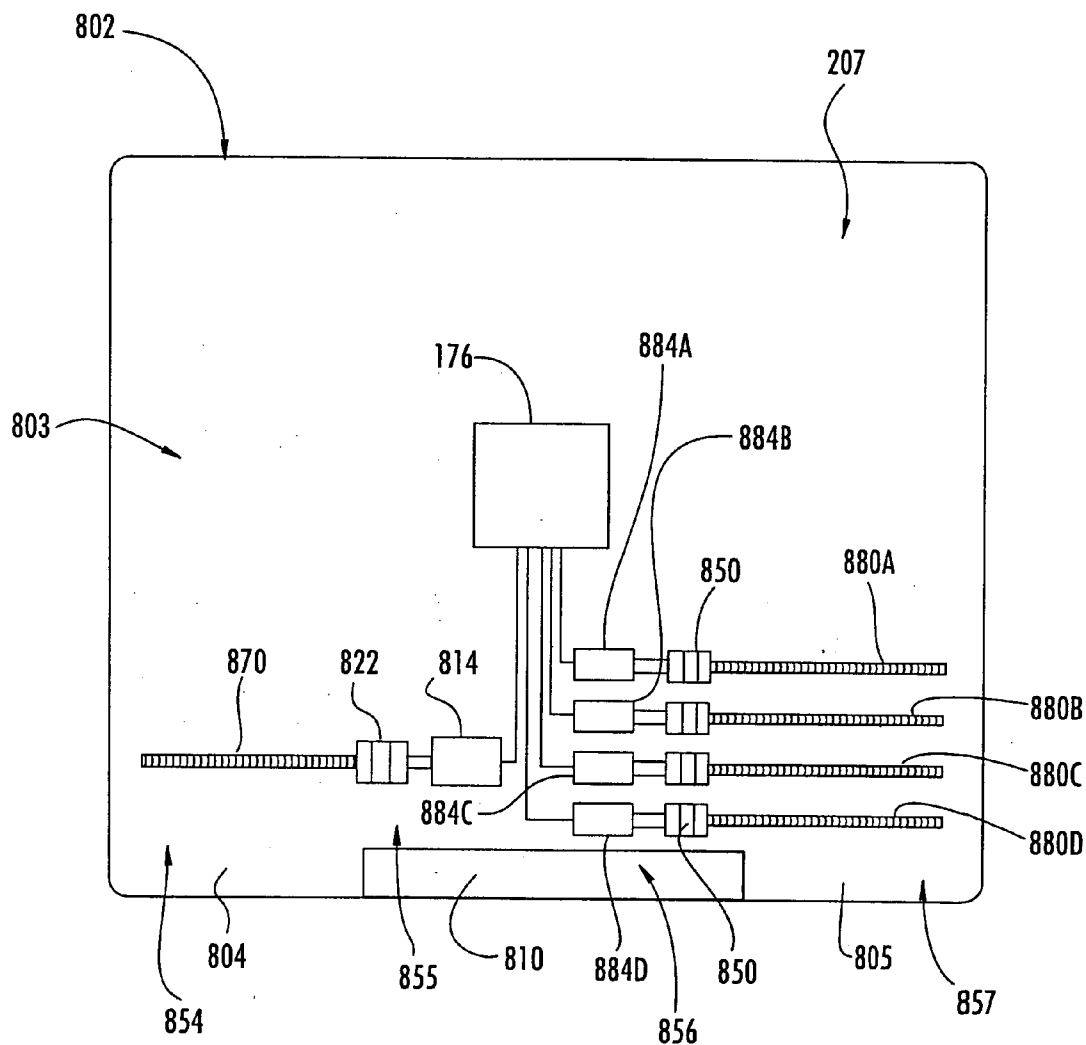


FIG. 27

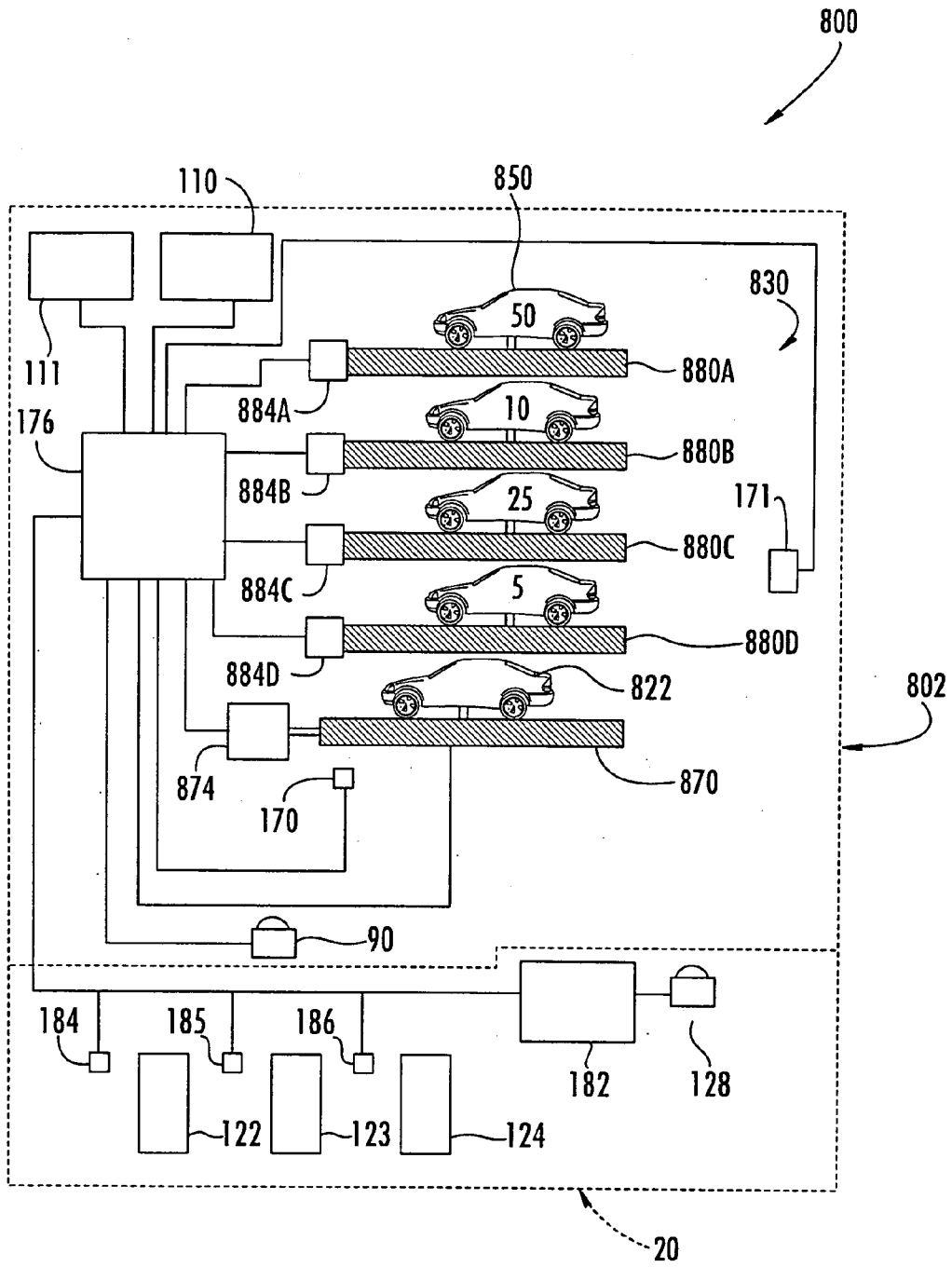


FIG. 28

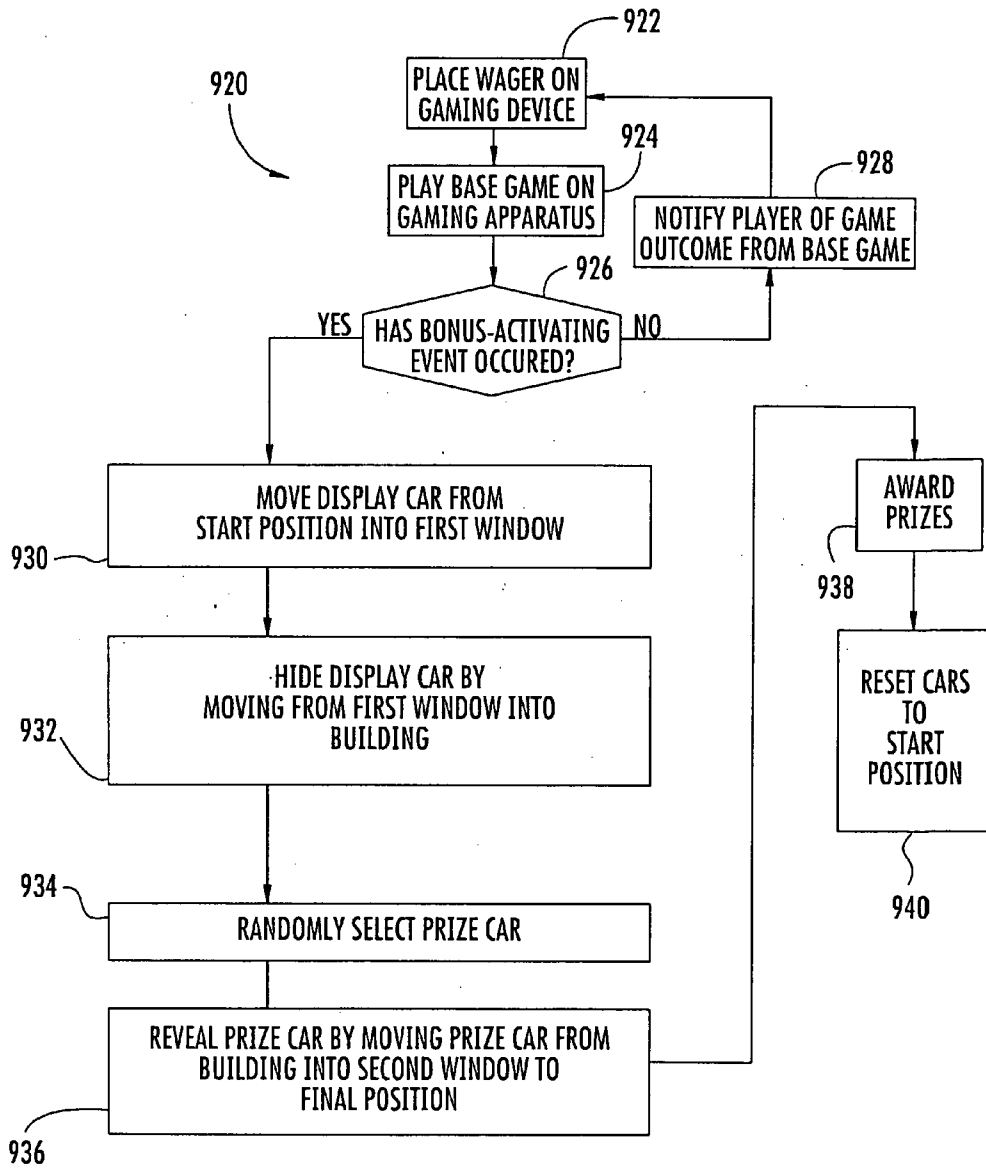


FIG. 29

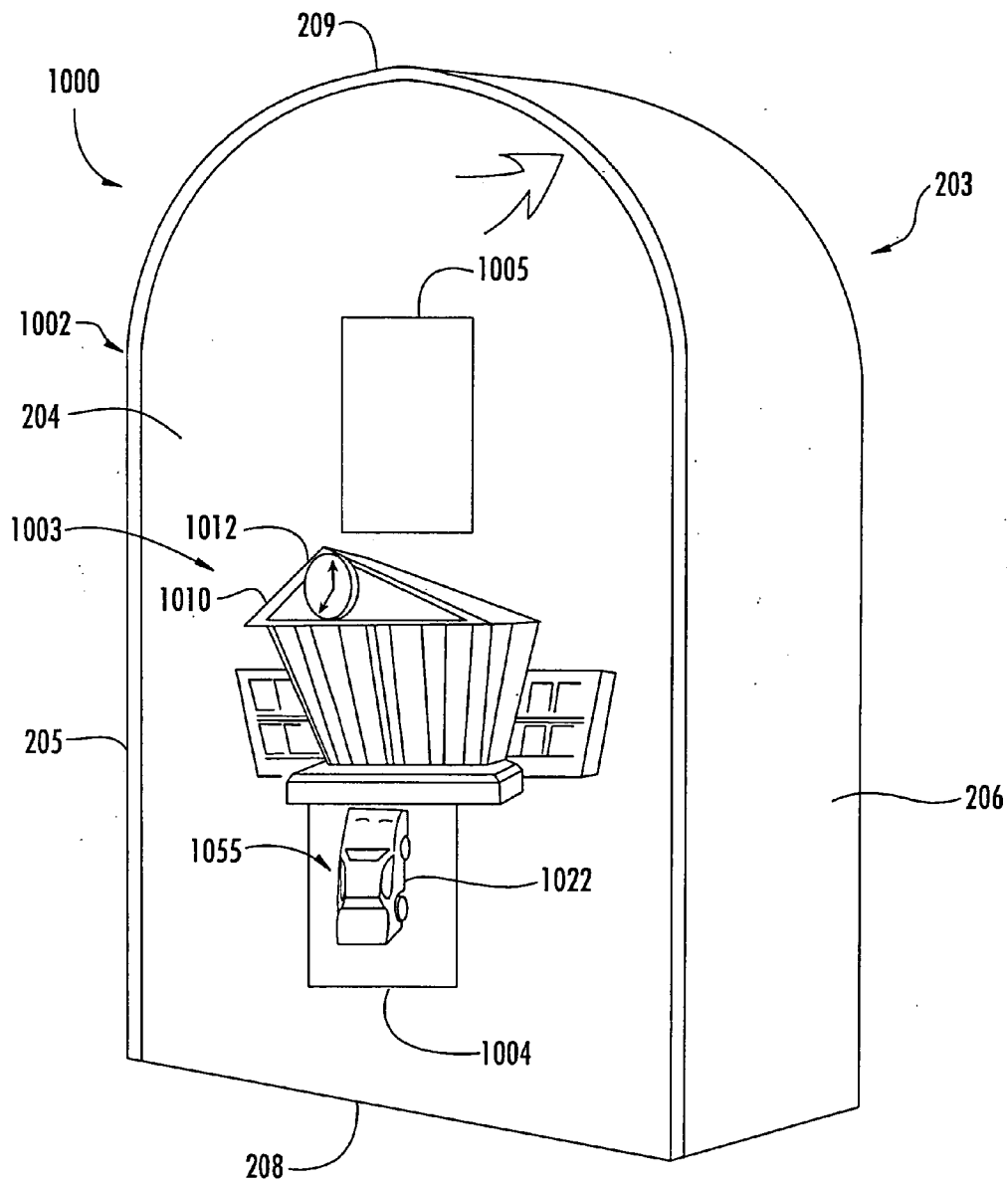


FIG. 30

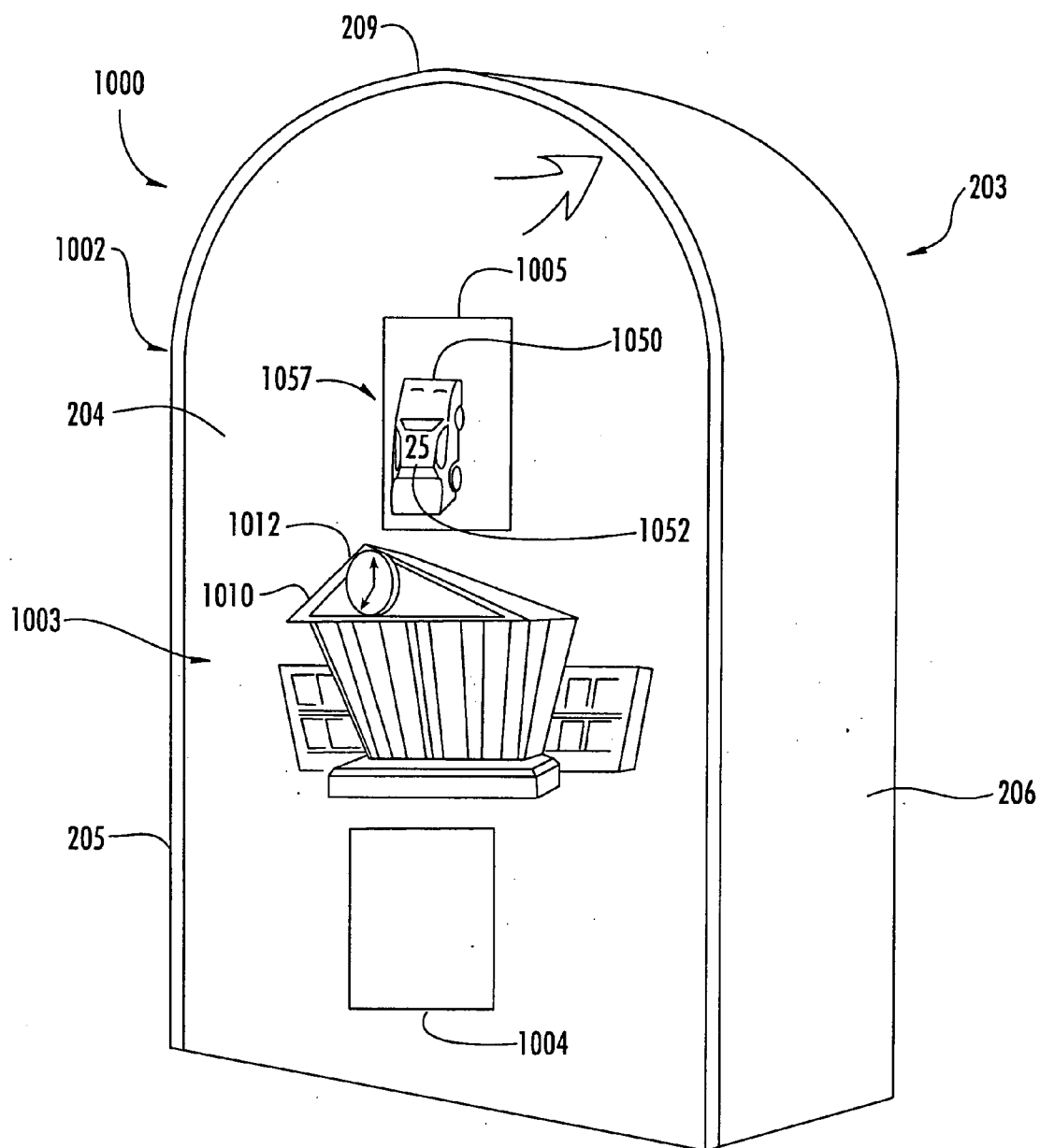


FIG. 31

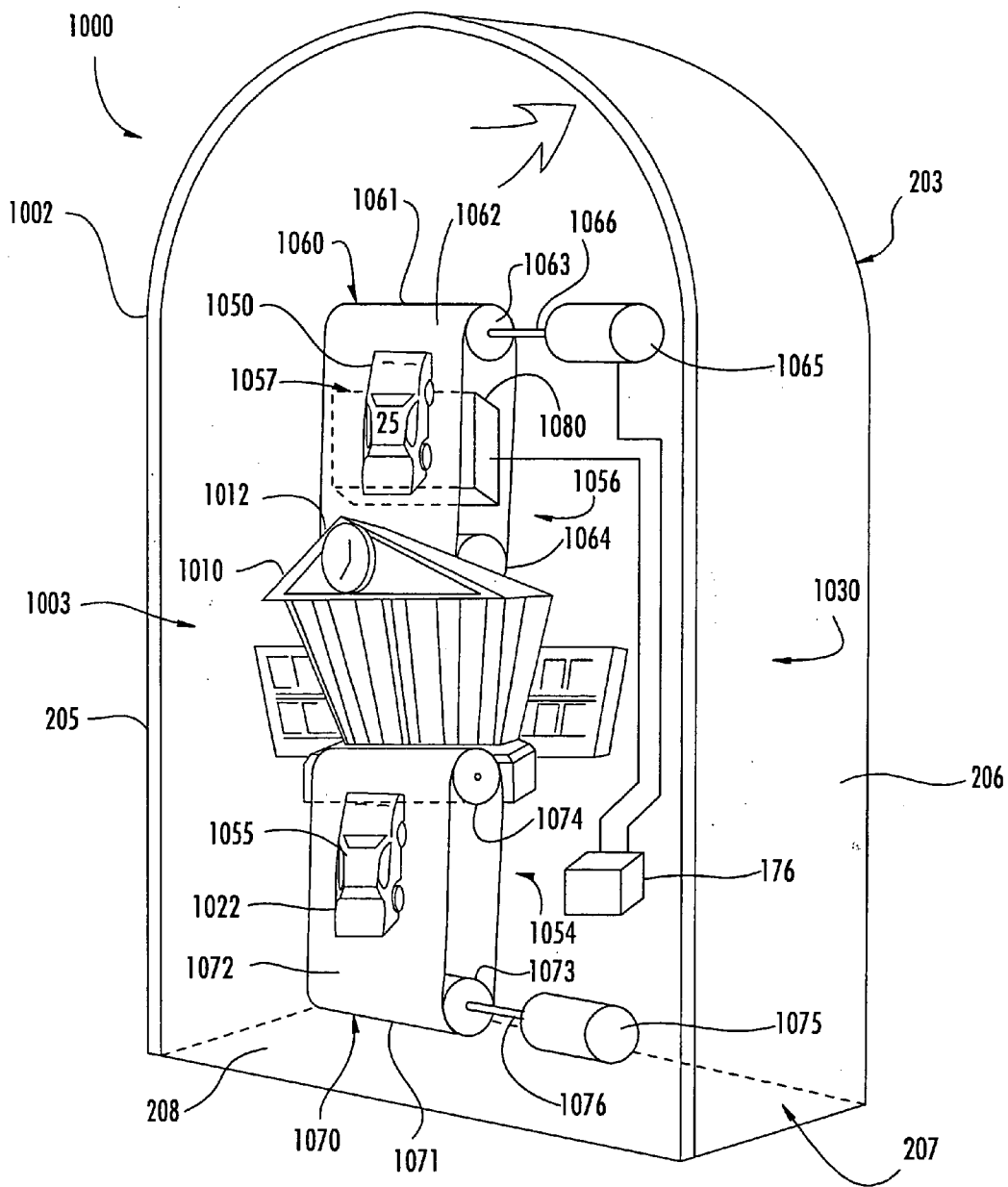


FIG. 32

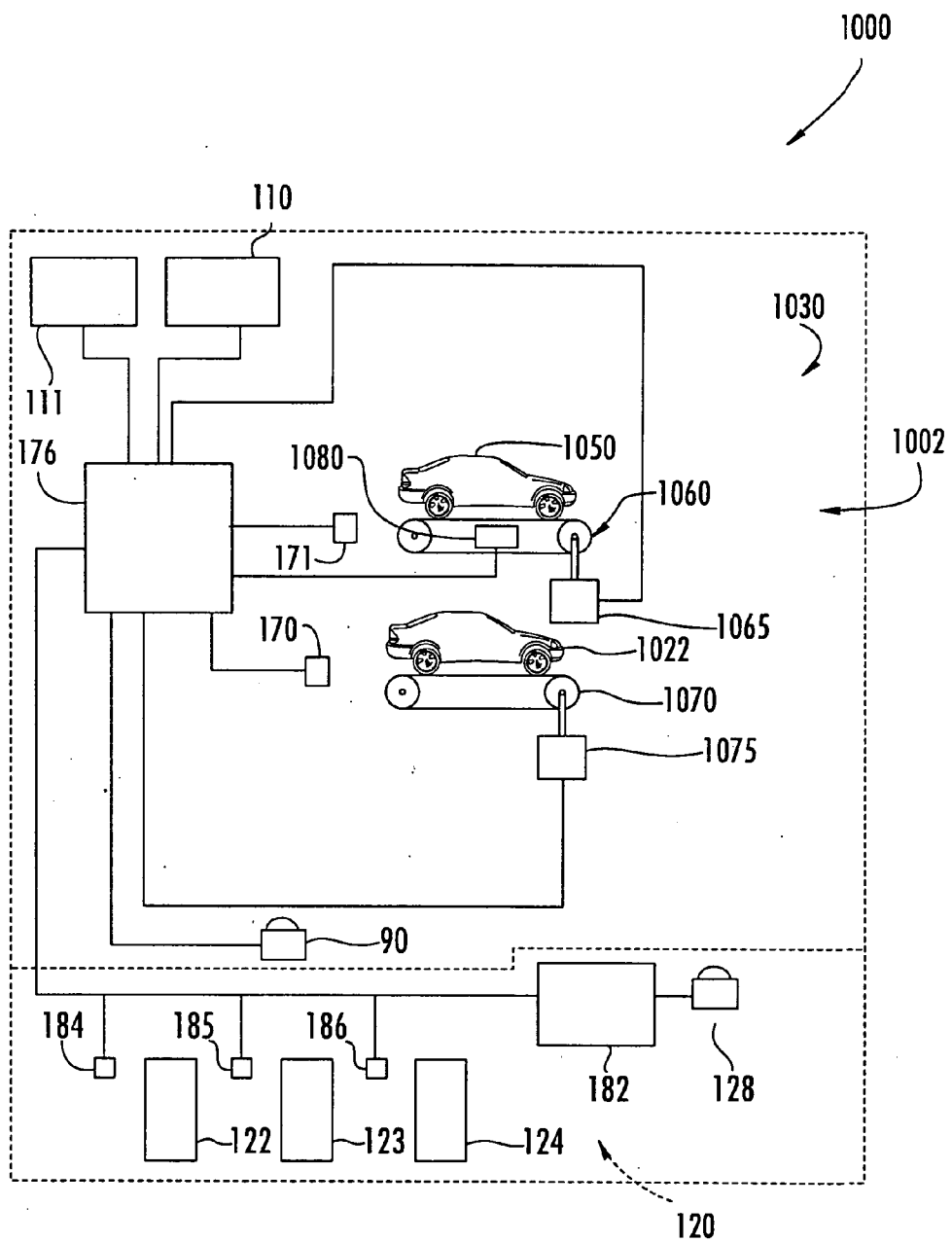


FIG. 33

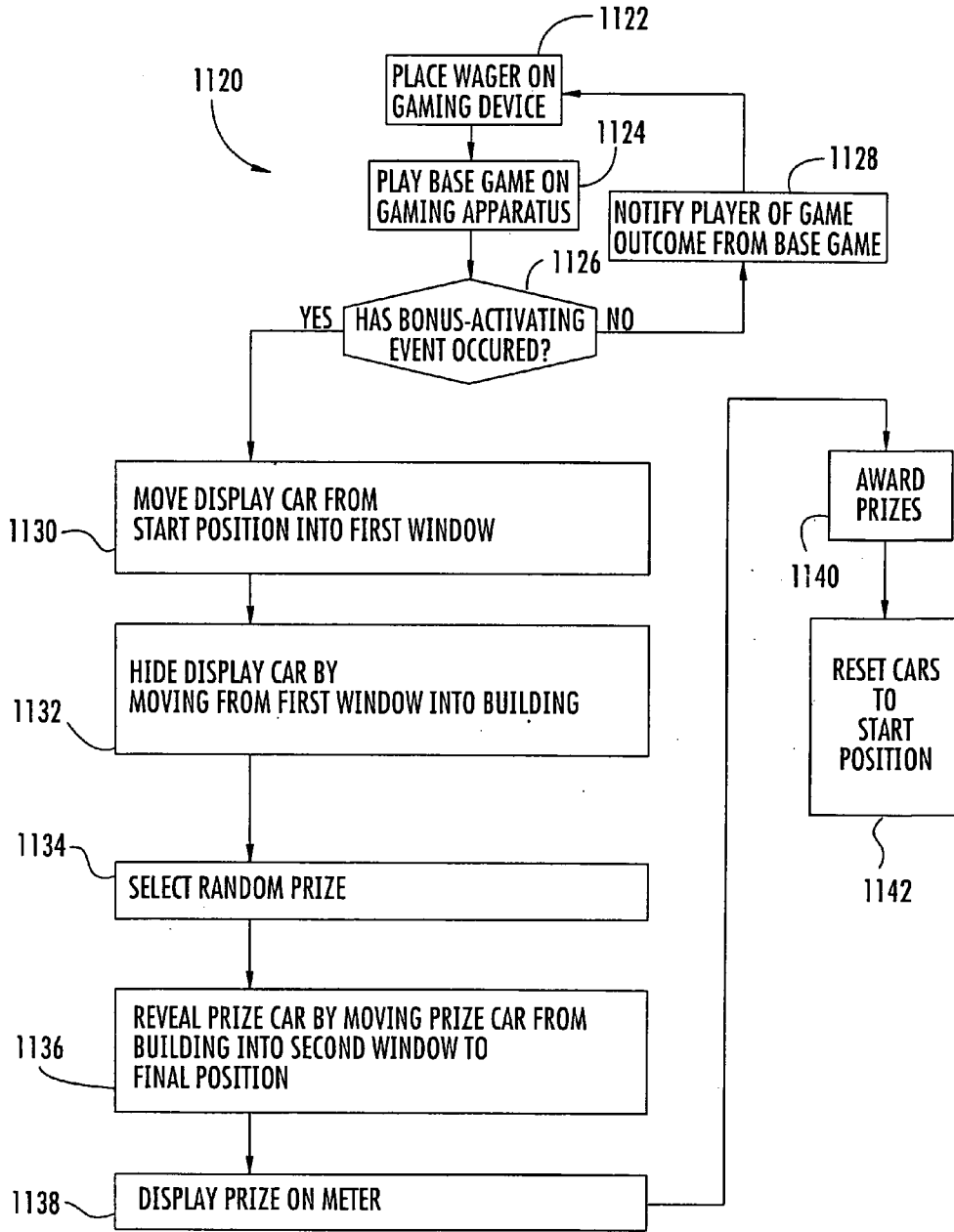


FIG. 34

GAMING DEVICE

FIELD OF THE INVENTION

[0001] The present invention relates to gaming devices. More specifically, the gaming device includes at least one object that can be moved to disappear from view of a game player and then reappear with a prize in view of the game player.

BACKGROUND

[0002] Gaming Devices

[0003] Gaming devices are well known in the art and a large variety of gaming devices have been developed. In general, gaming devices allow users or players to play a game. In many casino-type gaming devices, the outcome of the game depends, at least in part, on a randomly generated event. For example, a gaming device may use a random number generator to generate a random or pseudo-random number. The random number may then be compared to a predefined table to determine the outcome of the event. If the random number falls within a certain range of numbers on the table, the player may win a predefined prize. The table may also contain display information that allows the gaming device to generate a display that corresponds to the outcome of the game. The gaming device may present the outcome of the game on a large variety of display devices, such as mechanical spinning reels or video screens.

[0004] Bonus Prizes

[0005] Some gaming devices award bonuses in addition to prizes that are awarded in the primary game. A bonus can be defined as an additional prize that is awarded to the player when a predefined event occurs. An example of a bonus game can be found in U.S. Pat. No. 5,848,932 issued to Adams. One of the gaming devices described in this document comprises three spinning reels and a spinning wheel bonus display. When predetermined indicia are displayed on the spinning reels of the primary game, the wheel can be activated to indicate a bonus prize. The bonus prize is awarded in addition to any prizes awarded in the primary game.

[0006] In another embodiment described in this document, the gaming device includes a container having one or more movable objects and a transport device for transporting the one or more movable objects within the container. When predetermined symbols are displayed on the reels of the primary game, the transport device can be activated to transport the movable objects while the player is allowed to play the bonus game.

[0007] Generally, bonus prizes are offered in such games in order to increase the excitement and enjoyment experienced by players. This attracts more players to the game and encourages players to play longer. When gaming devices attract more players and the players play longer, they tend to be more commercially successful relative to other gaming devices.

[0008] Display Devices

[0009] In addition, highly visible display devices are utilized on gaming devices in order to attract players. Once players are attracted to the gaming device, they tend to play longer because the display device enhances the stimulation

and excitement experienced by players. It is, therefore, desirable for gaming devices to incorporate highly visible display devices.

[0010] The applicants believe that display devices tend to be more successful if they are a derivation of a well-known game or theme. They are more successful because players tend to be drawn to games that they instantly recognize. Many players are reluctant to try completely new games because they must spend time to learn the new game. It is, therefore, desirable to provide display devices that are based on well-known games or themes.

[0011] The applicants also believe that display devices tend to be more successful if they utilize physical objects rather than simulations. Although video devices and electronic signs can be used for display devices, players are more attracted to display devices that utilize physical objects. Physical objects can be even more effective display devices if they are moveable and they are used in combination with lights and sounds. With the movement of objects within display devices, it is advantageous to use transport devices that will attain maximum effectiveness while occupying a minimum amount of space. It is important to minimize the amount of occupied space because a smaller gaming device generally corresponds to an overall lower cost.

[0012] Jumbled Ball Displays

[0013] Two references that have attempted to utilize jumbled ball displays are U.S. Pat. No. 4,871,171 issued to Rivero and U.S. Pat. No. 5,380,007 issued to Travis et al. Rivero appears to disclose a game device with means for simulating the release of a ball. In this reference, a rotating drum 2 is provided with numbered balls 17. As the drum rotates, a ball is released into a transparent tube 16.

[0014] However, Rivero is not intended to show the player the ball that is released from the drum. Rather, the ball is held in the tube, out of view of the player, and an electronic simulation of the ball number is presented in a window 9. This is intended to give the player "the impression" that the ball has been counted. Rivero fails to disclose or suggest displaying actual balls to the player to indicate the outcome of the game or the value of a prize. In addition, in the Rivero device the balls are in a cage and quite exposed to the environment and tampering. The ball cage of Rivero is also mounted on the front side and well below the top of the gaming machine, hiding the ball cage from view of potential game players who are not in position to see the front side of the machine.

[0015] Travis et al. appears to disclose a video lottery gaming device with numbered balls 48. However, all of the balls are simulations generated by software and no physical balls are displayed to the player. Travis et al. also fails to disclose or suggest displaying actual balls to the player to indicate the outcome of the game or the value of a prize.

[0016] One of the disadvantages with Rivero and Travis et al. is that no actual physical balls are used to display the outcome of a game. This is less desirable because players like to see physical objects rather than electronic simulations of the physical objects. Moreover, players tend to believe that a game device is misleading when the device purports to display a simulation of an object rather than the object

itself. This is especially true when the object itself is supposedly available for viewing, as is the case in Rivero.

SUMMARY OF ONE EMBODIMENT OF THE INVENTION

Advantages of One or More Embodiments of the Present Invention

[0017] The various embodiments of the present invention may, but do not necessarily, achieve one or more of the following advantages:

[0018] the ability to provide game players with a more exciting and desirable gaming experience;

[0019] the ability to attract more patrons to play a game;

[0020] provide longer play times and a greater payout possibility for a player;

[0021] provide greater revenues for gaming operators;

[0022] provide a gaming device that utilizes a visually appealing and highly visible display device;

[0023] provide a gaming device that may allow a player to at least have the illusion of being able to affect a game outcome;

[0024] provide a gaming device that may convey a game outcome by placing a prize object in a prize object holder;

[0025] provide a gaming device that may use at least one moveable display object and prize object;

[0026] provide a gaming device that causes an object to disappear from view of the player and then reappear with a prize;

[0027] provide a gaming device that hides an object from view of the player and then redisplay the hidden object with a prize;

[0028] provide a gaming device that uses a race car theme;

[0029] provide a gaming device that causes an object to disappear from view of the player and then reappear with a prize; and

[0030] provide the illusion to a game player that an object vanishes and then reappears with a prize.

[0031] These and other advantages may be realized by reference to the remaining portions of the specification, claims, and abstract.

BRIEF DESCRIPTION OF ONE EMBODIMENT OF THE PRESENT INVENTION

[0032] In certain embodiments, the present invention relates to a gaming device including a game apparatus adapted to allow a player to play a game. The game apparatus includes a display object and a display object positioning mechanism connected to the display object. A prize object is adapted to convey a game outcome. A prize object positioning mechanism is connected to the prize object. A controller is in communication with the game apparatus, the display object positioning mechanism and the prize object positioning mechanism. The controller is adapted to show the display object to the player and to hide

the display object from the player. The controller is further adapted to show the prize object to the player.

[0033] In other embodiments, the present invention relates to a gaming method. According to the method, a player is allowed to place a wager and play a game of chance. A game outcome is determined, which may include a prize qualifying event. If the game outcome comprises the prize qualifying event a display object is displayed to the player. The display object is moved such that the display object disappears from view of the player. A prize object is selected. The prize object is moved such that the prize object reappears into view of the player. A prize is awarded to the player.

[0034] The above description sets forth, rather broadly, a summary of one embodiment of the present invention so that the detailed description that follows may be better understood and contributions of the present invention to the art may be better appreciated. Some of the embodiments of the present invention may not include all of the features or characteristics listed in the above summary. There are, of course, additional features of the invention that will be described below and will form the subject matter of claims. In this respect, before explaining at least one embodiment of the invention in detail, it is to be understood that the invention is not limited in its application to the details of the construction and to the arrangement of the components set forth in the following description or as illustrated in the drawings. The invention is capable of other embodiments and of being practiced and carried out in various ways. Also, it is to be understood that the phraseology and terminology employed herein are for the purpose of description and should not be regarded as limiting.

BRIEF DESCRIPTION OF THE DRAWINGS

[0035] FIG. 1 is substantially a front view of an embodiment of a gaming device of the present invention.

[0036] FIG. 2 is substantially a perspective view of the bonus game display of FIG. 1 with the front and side covers shown as transparent.

[0037] FIG. 3 is substantially a top view of FIG. 2 with the top of the housing removed showing the display object in a viewable position.

[0038] FIG. 4 is substantially a top view of FIG. 2 with the top of the housing removed showing the display object in a hidden position.

[0039] FIG. 5 is substantially a schematic diagram of a turntable mechanism.

[0040] FIG. 6 is substantially a schematic diagram of the gaming device of FIG. 1.

[0041] FIG. 7 is substantially a top cross sectional view of a prize object holder of the present invention taken along line III in FIG. 6.

[0042] FIG. 8 is substantially a side cross-sectional view of the prize object holder shown in FIG. 7.

[0043] FIG. 9 is substantially a flow chart of one of the possible game plays on the gaming device of FIG. 1.

[0044] FIG. 10 is substantially an alternative embodiment of a gaming device of the present invention using a race car theme.

[0045] FIG. 11 is substantially a perspective view of the bonus game display of FIG. 10 with the front and side covers shown as partially transparent.

[0046] FIG. 12 is substantially a schematic diagram of the gaming device of FIG. 10.

[0047] FIG. 13 is substantially a top view of the positioning mechanism and prize object holder shown in FIG. 11.

[0048] FIG. 14 is substantially an enlarged front view of the prize object holder shown in FIG. 11.

[0049] FIG. 15 is substantially an enlarged side view of the prize object holder shown in FIG. 11.

[0050] FIG. 16 is substantially a flow chart of one of the possible game plays on the gaming device of FIG. 10.

[0051] FIG. 17 is substantially another embodiment of a gaming device of the present invention using a car theme.

[0052] FIG. 18 is substantially a perspective view of the bonus game display of FIG. 17 with the front and side covers shown as partially transparent and showing an initial display.

[0053] FIG. 19 is substantially a perspective view of the bonus game display of FIG. 17 with the front and side covers shown as partially transparent and showing a final display.

[0054] FIG. 20 is substantially a schematic diagram of the gaming device of FIG. 17.

[0055] FIG. 21 is substantially a top view of an embodiment of the prize object shown in FIG. 19.

[0056] FIG. 22 is substantially a top view of another embodiment of the prize object shown in FIG. 19.

[0057] FIG. 23 is substantially a side view of a further embodiment of the prize object shown in FIG. 19.

[0058] FIG. 24 is substantially a flow chart of one of the possible game plays on the gaming device of FIG. 17.

[0059] FIG. 25 is substantially a perspective view of an alternative embodiment of the bonus game display shown in FIG. 17 showing an initial display.

[0060] FIG. 26 is substantially a perspective view of the bonus game display of FIG. 25 showing a final display.

[0061] FIG. 27 is substantially a top view of the bonus game display of FIG. 25 showing the positioning mechanism, the display object and the prize objects.

[0062] FIG. 28 is substantially a schematic diagram of the gaming device of FIG. 25.

[0063] FIG. 29 is substantially a flow chart of one of the possible game plays on the gaming device of FIG. 25.

[0064] FIG. 30 is substantially a perspective view of an alternative embodiment of the bonus game display shown in FIG. 17 showing an initial display.

[0065] FIG. 31 is substantially a perspective view of the bonus game display of FIG. 30 showing a final display.

[0066] FIG. 32 is substantially a perspective view of the bonus game display of FIG. 30 with the front and side covers shown as transparent and showing the positioning mechanism, the display object and the prize object.

[0067] FIG. 33 is substantially a schematic diagram of the gaming device of FIG. 30.

[0068] FIG. 34 is substantially a flow chart of one of the possible game plays on the gaming device of FIG. 30.

DESCRIPTION OF CERTAIN EMBODIMENTS OF THE PRESENT INVENTION

[0069] In the following detailed description of the embodiments, reference is made to the accompanying drawings, which form a part of this application. The drawings show, by way of illustration, specific embodiments in which the invention may be practiced. It is to be understood that other embodiments may be utilized and structural changes may be made without departing from the scope of the present invention.

[0070] In the Detailed Description below, the applicants utilize various spatially orienting terms such as "upper," "lower," "horizontal," and "vertical." It is to be understood that these terms are used for ease of description of the embodiments with respect to the drawings but are not necessarily in themselves limiting or requiring of an orientation as thereby described in the following Detailed Description.

[0071] As seen in FIG. 1, one embodiment disclosed herein comprises a gaming device, generally indicated by reference number 100. Gaming device 100 comprises a bonus game display device 200 and a game apparatus 120. Display device 200 may comprise a jumbled ball display 210 and a prize display 220.

[0072] Game Apparatus

[0073] With continuing reference to FIG. 1, game apparatus 120 may be any of a large number of devices that are adapted to allow players to play a game. For example, game apparatus 120 may utilize reel displays, such as spinning reels 122-124 or a video display (not shown), to display outcomes of the game. Means may also be provided for accepting wagers, such as a coin slot 121 or card reader 125, and for awarding prizes, such as a coin dispenser 127. A handle 126 and button 128 are provided for activating game apparatus 120 to begin a game. In at least one embodiment, game apparatus 120 may be an S Plus model gaming device manufactured by International Game Technology in Reno, Nev.

[0074] Game apparatus 120 is preferably controlled by an electronic controller 182 (see FIG. 6) that utilizes a random number generator. The random number generator produces a random or pseudo random number for each game. The outcome of the game may be determined by comparing the random number to a table of outcomes stored in a memory and accessed by controller 182. A number of different tables of outcomes may be used and different tables may be used for different games. The tables can be designed so that different prizes have different probabilities of being awarded. Such design techniques are well known in gaming. Examples of such designs are shown in U.S. Pat. No. 4,448,419, issued to Telnaes, and U.S. Pat. No. 5,456,465, issued to Durham. Controller 182 causes spinning reels 122-124 or the video display to show the outcome of the game that corresponds to the outcome of the random number generator. It is recognized that game apparatus 120 may operate in many other ways and still achieve the objects of the present invention.

[0075] Game apparatus 120 may also be capable of producing a bonus-activating event. This event may be many different types of events. For example, a bonus-activating event may comprise displaying a particular symbol, such as a “bonus” symbol, or combination of symbols, such as three “7” symbols, on reels 122-124. If the game being played is poker based, the bonus-activating event may be occurrence of a certain hand, such as a royal flush. Furthermore, a bonus-activating event may occur when a player accumulates a number of symbols or game outcomes over a number of separate game plays. For example, a bonus-activating event may occur when the player receives three “bonus” symbols during a period of time. The bonus-activating event may be based on an external event. For example, a bonus-activating event may occur when a group of players obtain a certain result.

[0076] Bonus Game Display Using a Character Theme

[0077] Referring to FIGS. 1-5, bonus game display device 200 is adapted to show a display object to a player, hide the display object and cause the display object to reappear with a prize object such as a prize ball. Bonus game display device 200 is further adapted to show a jumbled ball display 210.

[0078] Bonus game display device 200 can have a housing 203. A front cover or panel 204 and side covers 205 and 206 can cover housing 203. A game player would view bonus game display 200 through front panel 204. Housing 203 can have a cavity 207, a bottom surface 208 and a top surface 209. Bottom surface 208 has three bottom portions 208A, 208B and 208C. Jumbled ball display 210 and prize display 220 are mounted within cavity 207.

[0079] Jumbled ball display 210 comprises a plurality of display balls 211 that are contained by a container 216 formed by bottom surface portion 208A, wall 212, and covers 204, 205 and 206. Front cover 204 is at least partially transparent allowing players to view display balls 211 inside of the container 216. Front cover 204 can be made of a transparent material, such as plastic or glass. Container 216 can have many different shapes other than rectangular such as a sphere, cube, cylinder or triangular.

[0080] Although display balls 211 are preferably similar to Keno balls, many other types of balls may be used. For example, display balls 211 may be ping-pong balls or rubber balls. Bottom portion 208A can have several holes or openings 213. Holes or openings 213 can be covered with a screen or can be made smaller in diameter than display balls 211 so that display balls 211 do not enter openings 213. A fan 214 can be mounted below bottom portion 208A in cavity 207. When fan 214 is operating, display balls 211 are agitated or jumbled within container 216 by a stream of air exiting openings 213. A mechanical mixing device (not shown) can also cause agitation of the display balls. The forced air stream causes the balls to bounce and ricochet off of the walls of the container.

[0081] Display Balls 211 preferably have an indicia or symbol 211A thereon that indicate possible prizes that bonus game device 200 can award.

[0082] The purpose of jumbled ball display 210 is to attract and entertain players. When display balls 211 are agitated, they produce a vivid display that attracts the

attention of people nearby and provides an exciting display for players playing gaming device 100.

[0083] A prize display 220 can be mounted inside cavity 207. Prize display 220 comprises a display object 222, a positioning mechanism 270 and a prize object holder 240

[0084] Display object 222 can be a wide variety of objects selected to entertain and amuse a game player. In FIG. 2, display object 222 is shown as a human character such as a wizard or merlin. Alternatively, display object 222 could be an animal or physical object such as a car or airplane. Display object 222 can be mounted on a base 223. Display object 222 can have a body 224, a head 225, a hat 226 and arms 227 and 228.

[0085] Display object 222 has an attached prize object display 229. Prize object display 229 is shown as a hand attached to arm 228. Prize object display 229 has a hole 230 that is connected with a tube 231. Tube 231 is shown adjacent to tube 232.

[0086] A prize object holder or ball holder 240 is mounted in cavity 207 behind a wall 242. Wall 242 separates a part of bottom portion 208B and 208C below ball holder 240. Similarly, wall 243 separates another part of bottom portion 208B and 208C.

[0087] Prize balls 250 are stored in holder 240 in an individually controlled manner so that individual balls can be selectively removed from the ball holder. This allows particular balls with particular symbols or values to be individually manipulated and displayed when desired. This may be accomplished in different ways. In one embodiment, ball holder 240 comprises a carousel 245 having chambers 262 (see FIG. 7) that hold prize balls 250. Prize balls 250 have an indicia 251 on the ball that indicates a game outcome or prize.

[0088] A display object positioning apparatus or mechanism 270 moves display object 222. Referring to FIG. 5, display object positioning apparatus or mechanism 270 comprises a stepper motor 282 for rotating a turntable 272. Turntable 272 includes a stationary base 274 and a rotating platform disc 276. A wall 277 (FIG. 3) is attached to disc 276 and extends upwardly from disc 276. Display object 222 is attached to rotating disc 276 in front of wall 277. It is noted that display object 222 occupies the front portion of disc 276 while the back portion of disc 276 is empty. Base 274 and disc 276 can be made from metal or plastic materials.

[0089] Idle rollers 278 and one or more driven rollers 280 are mounted between stationary base 274 and rotating disc 276. The rollers allow disc 276 to rotate relative to base 274. Stepper motor 282 is connected to driven roller 280 through a shaft 283. Stepper motor 282 is in communication with controller 176. Thus, controller 176 can control the rotary position of display object 222.

[0090] Turning now to FIG. 6, bonus game display 200 comprises a controller 176 that is adapted to control the operation of gaming device 100. Controller 176 may be one or more computers or processor boards. For example, in the presently implemented embodiment, controller 176 comprises a bonus controller and stepper motor controller, which may be manufactured by Progressive Solutions in Carmichael, Calif., a core module by Z-World in Davis, Calif., and a sound board by Cleverdevices in Syosset, N.Y. Other,

equally suitable devices may be purchased from other manufacturers. It is recognized that controller 176 may be a single processor or processor board. Furthermore, it is also recognized that controller 176 and controller 182 may be combined in a single processor or processor board.

[0091] Controller 176 is adapted to detect when a bonus activating event occurs in game apparatus 120. This may be accomplished by primary game apparatus controller 182 transmitting a signal to bonus game controller 176 that a bonus event has occurred. For example, controller 182 may determine the outcome of each game and when a bonus-activating outcome occurs, it transmits a signal to controller 176. Alternatively, controller 176 may periodically interrogate controller 182. In another embodiment, one or more sensors may be provided for determining if a bonus activating event has occurred. For example, sensors 184-186 may sense the positions of reels 122-124. When reels 122-124 are in a bonus activating position, controller 176 would sense this position and begin a bonus sequence (described below). Sensors may also be provided external to gaming device 100 to detect external bonus-activating events.

[0092] Controller 182 may also transmit a variety of information to controller 176. For example, controller 182 may signal when coins or currency have been inserted, when a game starts, when an error has occurred, and when a sensor detects tampering.

[0093] When controller 176 detects a bonus-activating event, it may begin a bonus sequence by activating display 110. Display 110 may comprise many different kinds of display devices, such as video screens, lights, light emitting diodes, etc. Display 110 may comprise its own controller that is adapted to generate a variety of displays.

[0094] Display 110 may indicate that a player has qualified for a bonus round and prompt the player to perform an action. In an embodiment, the player is prompted to activate the bonus sequence by pressing input device 90. Input device 90 may be a simple button, a keyboard, or a touch screen display. In the embodiment in which the player must accumulate a number of bonus symbols to qualify for a bonus, display 110 may indicate the number of symbols the player has received.

[0095] When controller 176 detects input device 90 being activated, the controller would activate jumbled ball display 210. Alternatively, the fan 214 may begin automatically to agitate display balls 211 and input device 90 may be used to initiate the display sequence. In another embodiment, controller 176 may wait a predetermined time period for the player to activate input device 90. If the player does not activate input device 90 in that time period, controller 176 would automatically activate jumbled ball display 210 and initiate the display sequence. In yet another embodiment, controller 176 automatically initiates the display sequence in a predetermined time period, independent from input device 90, and input device 90 is only used to activate the jumbled ball display 210. Of course, no input device may be used and controller 176 may automatically activate and begin the display sequence.

[0096] Controller 176 next activates display object positioning mechanism 270. Positioning mechanism 270 is adapted to move display object 222 from a position in which display object 222 is viewable to a position in which display

object 222 is hidden from the view of the player. Positioning mechanism 270 may utilize a large variety of devices to achieve its purpose. In one embodiment, display object 222 is initially viewable by the game player as shown in FIG. 3. In FIG. 3, display holder 229 is empty. In other words, display holder 229 does not initially hold a prize ball 250.

[0097] Controller 176 instructs stepper motor 282 to move turntable 272 such that display object 222 rotates behind walls 232 and 234 as shown in FIG. 4. In this position, display object 222 is hidden from view of the player by walls 232, 234 and 277. At the same time that display object 222 is being rotated, lights 284 are turned off. Lights 284 are used to illuminate display object 222. When lights 284 are turned off, the illusion of the display object 222 disappearing is enhanced.

[0098] After a predetermined period of time, controller 176 instructs stepper motor 282 to move turntable 272 such that display object 222 moves back into view of the game player or reappears from behind walls 232 and 234 as shown in FIG. 3. Display object positioning mechanism 270 therefore provides the illusion to the player that the display object has disappeared and then reappeared.

[0099] The angular position of rotating disc 276 can be monitored using a sensor 285. Sensor 285 may use a variety of sensors such as infrared source and detector or may comprise portions with different reflective characteristics, such as physical holes or gaps or absorbent paint lines. Alternatively, an optical flag configuration similar to that described in U.S. Pat. No. 4,911,449, issued to Bertram, may be used.

[0100] While a rotating turntable was used to hide the display object, other mechanisms can be used. For example, display object 222 could be moved linearly behind a door or could be lowered below a trap door in order to be hidden. Display object 222 could also be hidden behind a curtain that is lowered. Mirrors or holograms could also be used to hide display object 222.

[0101] To display a prize ball, controller 176 performs a routine to determine which ball will be displayed. This may be performed by a number of methods that are well known in the art. For example, prize balls 250 may be sequentially displayed or displayed based on external events, such as certain bonus activating events.

[0102] In one embodiment, however, prize balls 250 are randomly selected. Controller 176 generates a random number and then compares the random number to a pay table similar to that described for game apparatus 120 or as described in U.S. Pat. No. 5,823,874, issued to Adams. A simple pay table may appear as follows:

TABLE 1

Random Number	Prize Ball Number	Amount Paid
0.00 to 0.50	1	\$1.00
0.51 to 0.75	2	\$5.00
0.76 to 0.95	3	x2
0.96 to 1.00	4	\$1,000.00

[0103] For example, if the random number generator produced 0.65, prize ball number 2 would be displayed and

\$5.00 would be awarded to the player. If the random number generator produced 0.80, prize ball number 3 would be displayed. Prize ball number 3 is a multiplier ball that multiplies some amount produced by game apparatus 120. Gaming apparatus 120, for instance, may award \$20 and the multiplier ball would multiply this by two, awarding the player \$40.

[0104] This embodiment is not necessarily limited to the example pay table shown. A greater number of prize balls may be used and, as will be discussed below, a combination of prize balls may be displayed. Furthermore, different kinds of prizes, besides monetary prizes, may be awarded. For example, the prizes may be goods, services, or additional games. The goods and services may be awarded in the form of physical objects, tickets, vouchers, coupons, etc. Additional games may be presented in the form of tickets, such as scratch off lottery tickets. In the embodiments in which tickets, vouchers, and coupons are used, the objects are dispensed using an internally or externally mounted dispenser 111. Such dispensers are well known in the art.

[0105] Once controller 176 determines the prize ball to be displayed and the prize to be awarded, the controller activates a positioning mechanism 177. Positioning mechanism 177 is adapted to position a selected prize ball 250 (that is separate from display balls 211) so that it can be displayed. Positioning mechanism 177 may utilize a large variety of devices to achieve its purpose. In one embodiment, all of the prize balls are held in prize object or ball holder 240. Ball holder 240 comprises a carousel 245. Carousel 245 may be made from a variety of materials, such as plastics, metals, or composites. In one embodiment, Carousel 245 is cast high-density urethane foam that is machined to obtain a precise shape. In one embodiment, carousel 245 is injection molded plastic.

[0106] Prize balls 250 preferably have a similar appearance to display balls 211. This creates the illusion that balls displayed in prize object display 229 originate from container 216. At least one of prize balls 250 have a symbol or indicia 251 that is capable of indicating a prize to be awarded to the player.

[0107] Prize balls 250 are stored in carousel 245 in an individually controlled manner so that individual balls can be selectively removed from the ball holder. This allows particular balls with particular symbols or values to be individually manipulated and displayed when desired. This may be accomplished in different ways. In one embodiment, carousel 245 comprises a chamber 262 for each prize ball stored. A display mechanism 248 is provided for removing ball 250 stored in chamber 262, displaying the ball, and replacing it in the chamber.

[0108] In one embodiment, carousel 245 is cylindrical as illustrated in FIG. 7. Chambers 262 are positioned outward from a central axis 259, near the periphery of the carousel. Thus, chambers 262 may be positioned by rotating carousel 245 around its central axis 259.

[0109] Returning to FIG. 6, positioning mechanism 177 comprises a stepper motor 160 for rotating carousel 245. Wheel 174 is rigidly attached to carousel 245 and sensor 183 are provided for determining the angular position of the carousel. Thus, controller 176 can position a ball 250 in carousel 245 where it can be removed and replaced by

rotating the carousel and monitoring its angular position. The angular position of each prize ball 250 is stored in memory in controller 176. Sensor 183 may be an infrared source and detector and the periphery of wheel 174 may comprise portions with different reflective characteristics, such as physical holes or gaps or absorbent paint lines. Alternatively, an optical flag configuration similar to that described in U.S. Pat. No. 4,911,449, issued to Bertram, may be used.

[0110] In an embodiment, display mechanism 248 comprises a fan 254, tubes 231, 232 and prize object display 229. Fan 254 is in communication with controller 176. Fan 254 can be a DC brushless fan motor model number BG0703-B044-000 available from Minebea Co., Ltd. of Tokyo, Japan.

[0111] Referring now to FIG. 8, each chamber 162 has a lower opening 132 that is large enough for prize ball 250 to pass through. An upper opening 134 is smaller in diameter than prize ball 250 such that prize ball 250 cannot fit through upper opening 134. Upper opening 134 is communicated with fan 254. A plate 168 is provided on the lower surface of carousel 245 for preventing prize balls 250 from falling out of chambers 162. A hole 167 is provided in one portion of plate 168 for allowing ball 250 to pass through the plate. A gate 166 blocks ball 250 until it is opened by an actuator 164. Gate 166 may cover the entire hole 167 or just a portion of it and it may be operated in a sliding or hinged manner. Actuator 164 may be an electrical solenoid actuator. Tube 232 is located adjacent to gate 166.

[0112] Referring to FIGS. 2, 6 and 8, in normal operation, after controller 176 has determined which ball is to be displayed, the controller rotates carousel 245 until the desired prize ball 250 is positioned next to plate hole 167. At the appropriate time, controller 176 activates actuator 164 to open gate 166 and turns on fan 254. The air stream from fan 254 moves prize ball 250 through hole 167, tubes 231 and 232 and into prize object display 229. Prize object display 229 is shown as a hand in FIG. 2, that is holding prize ball 250. Other types of displays can be used. For example, display 229 could be a chamber with a transparent or partially transparent wall that allows the player to see prize ball 250. In one embodiment, display 229 has fingers that appear to grasp and hold prize ball 250. Sensors 170 and/or 171 may be used to verify that prize ball 250 has fallen into display 229. If sensors 170 and/or 171 do not detect ball 250 in its proper position, controller 176 may enter an error mode. After the prize ball 250 is positioned in display 229, lights 284 are preferably turned back on in order to highlight the reappearance of the display object 222 now showing a prize that can be awarded.

[0113] If the ball is detected in its proper position, controller 176 may cause display 110 to display the prize, if any, that the player has won. Other effects may also be presented, such as pre-recorded sound from speakers. If the actual prize is money, the amount of the prize may be added to the player's credit meter or the prize may be dispensed from dispenser 111 or coin dispenser 127.

[0114] After ball 250 has been displayed long enough, controller 176 reverses the operation of fan 254 by reversing the polarity of current supplied to the fan motor. In this manner, fan 254 operates as a vacuum and pulls on prize ball 250. Prize ball 250 is therefore sucked from display 229

through tubes **231**, **231**, hole **167** and back into chamber **162**. Gate **164** is then closed. Sensor **171** may be used to verify that ball **250** has returned to chamber **162**. If the ball is not detected in its proper position, controller **176** may enter an error mode and an attendant is called.

[0115] Components of the present invention may be arranged alternatively so that display **229** is located above or below carousel **245** such that gravity can be used to move ball **250** in one direction.

[0116] A power failure or power surge could cause actuator **164** to malfunction and improperly open gate **166** while bonus game display **200** is idle. This could cause prize ball **250** to roll out of chamber **162** into display **229**, thereby giving a false indication that the player had won a prize. In order to prevent this, at least one chamber **162** does not have a prize ball **250** (see FIG. 7). This empty chamber is positioned over hole **167** whenever display **200** is idle.

[0117] Of course, other methods for moving display object **222** and prize balls **250** may be provided. For example, in certain embodiments, prize object holder **240** could be mounted to display object **222** and rotated along with display object **222** into a hidden position.

[0118] In another embodiment, a plurality of prize balls **250** could be simultaneously displayed. To accomplish this, plate **168** may have multiple holes **167** (not shown), each with its own gate **166** and actuator **164**, for supplying balls to multiple tubes **231**, **232** and display holders **229**.

[0119] With multiple balls being displayed, it is possible to use combinations of balls to indicate various bonus outcomes. It is also possible to replace the primary display of a gaming device with bonus game display **200**. In other words, game apparatus **120** may be entirely replaced with bonus game display device **200**.

[0120] Referring now to FIG. 9, a flowchart of a game play **320** using gaming device **100** is shown. At step **322**, a player preferably initiates game play **320** by placing a wager on the gaming device **120**. The wager may be in form of cash or credit from actual domestic or foreign currency, vouchers, coupons, tickets, electronic cards, and other sources or forms of wagers known in the art. Once the player initiates game play **320**, the player may play a base game on the gaming apparatus at step **324**. At step **326**, the controller (not shown) detects the occurrence of a bonus-activating event. If the controller does not detect a bonus-activating event, then the controller notifies the player of the game outcome from the base game at step **328**. The player may place a wager again and repeat steps **322** and **324** to continue playing a game on the gaming apparatus.

[0121] If the controller detects a bonus-activating event, the controller causes the jumbling of the display balls at step **330**. The controller then displays the display object **222** at step **332**. Next, the controller hides the display object **222** at step **334**. After a pre-determined period of time, the controller causes the display object to reappear at step **335**. The controller then randomly selects a prize ball **250** and moves it to the prize display **229** at step **336**.

[0122] Any prizes are awarded at step **338**. Prize balls **250** are moved from display **229** back to the prize holder at step **340**. The steps shown in the flowchart do not necessarily imply that the steps have to take place in a particular order.

The order of steps may be varied; some steps may be eliminated; and, some steps may be replaced with other steps. Such variations still fall within the scope of the invention.

[0123] In an embodiment of the invention, display object **222** can remain stationary. In this case, positioning mechanism **270** and turntable **272** can be omitted. If display object **222** is stationary, a blank display ball with no indicia would be stored in carousel **245**. After the bonus game has been activated, the blank display ball would be shown to the player. The blank display ball would then disappear using display mechanism **248** and a prize ball showing a prize indicia **251** would reappear in hand **229**. Preferably, light **248** is turned off during the exchange of balls to further enhance the illusion of the balls disappearing and then reappearing.

[0124] In another embodiment of the invention, only a portion of display object **222** can be moved. For example, only arm **228** could be moved. Arm **228** could be rotated or moved to a hidden position where a display ball would be exchanged for a prize ball. Arm **228** would then reappear holding a prize ball displaying a prize to be awarded.

[0125] It can thus be seen that the embodiments can solve one or more problems associated with the prior art or provide advantages over prior art devices. One embodiment of the present invention provides a gaming device that is attractive and entertaining and provides the illusion that a character disappears and then reappears with a prize award.

[0126] First Alternative Bonus Game Display Using a Race Car Theme

[0127] Referring to FIGS. 10-15, a gaming device **400** is shown. Gaming device **400** includes gaming apparatus **120** and bonus game display device **402**. Bonus game display device **402** is adapted to show a display object to a player, hide the display object and cause the display object to reappear with a prize object such as a prize car. Game apparatus **120** operates the same as previously described in conjunction with FIGS. 1-8.

[0128] Bonus game display device **402** can have a housing **203**. A front cover or panel **204** has a left panel **204A**, a right panel **204B** and side covers **205** and **206** that can cover housing **203**. A game player would view bonus game display **402** through a window **404** in front panel **204**. As shown in FIG. 10, window **404** can have attractive graphics mounted thereon. For example, a race track theme can be shown. Window **404** has one or more transparent areas. Housing **203** can have a cavity **207**, a bottom surface **208** and a top surface **209**. Prize display **420** can be mounted within cavity **207**.

[0129] Prize display **420** comprises a display object **422**, a plurality of prize objects **450**, a positioning mechanism **430** and a prize object holder **440**.

[0130] Display object **422** can be a wide variety of objects selected to entertain and amuse a game player. In FIGS. 10 and 11, display object **422** is shown as a car. Alternatively, display object **422** could be an animal or airplane. Display object **422** can be mounted to prize object holder **440**.

[0131] Several prize objects **450** are also mounted to prize object holder **440**. The prize objects **450** are shown as cars. Prize objects **450** and display object **422** are stored in holder

440 in an individually controlled manner so that individual cars can be selectively shown to a game player. This allows particular cars with particular symbols or values to be individually manipulated and displayed when desired. This may be accomplished in different ways. In one embodiment, prize holder **440** comprises a carousel **445** with attached display objects **422** and prize objects **450**. Prize objects **450** have an indicia **451** on the car that indicates a game outcome or prize.

[0132] A pair of rectangular spaced apart tracks **487** are mounted to front cover **204**. A slot **488** runs between tracks **487**. Tracks **487** can appear to simulate a car race track. While in FIG. 13, the carousel **445** and carriage **460** are shown for clarity, it is understood that in reality only tracks **487** and slot **488** would be visible. The rest of bonus game display **402** would be hidden behind front panel **204** and the graphics in window **404**.

[0133] A positioning apparatus or mechanism **430** moves carousel **445** and a carriage **460**. Referring to FIGS. 11 and 13, a carriage **460** is shown mounted in cavity **207**. Carriage **460** has eight-L or U shaped rails **461**, **462**, **463**, **464**, **465**, **466**, **467** and **468**. Carriage **460** has a pair of threaded rods **470** and **471**. Wheels **472** are mounted to the ends to threaded rods **470** and **471**. Wheels **472** rest in and are contained by rails **461-468**. Wheels **472** allow carriage **460** to move on rails **461-468** toward and away from front panel **204**.

[0134] Referring to FIG. 13, positioning apparatus or mechanism **430** further includes a stepper motor **446** that is attached to carousel **445** for rotating carousel **445**. A shaft **447** connects stepper motor **446** to carousel **445**. Stepper motor **446** is attached to arm **480** at end **481**. Arm **480** also has an end **482**. End **482** is connected to beam **483**. Beam **483** has one end connected to threaded block **484** and another end connected to threaded block **485**. Threaded blocks **484** and **485** are screwed onto threaded rods **470** and **471**, respectively.

[0135] Positioning apparatus or mechanism **430** further includes a linear actuator **490** that is attached to a cross-member **486** by a shaft **491**. Cross-member **486** is further attached to beam **483**. Cross-member **486** is not attached to any other part other than beam **483**. Shaft **491** and beam **483** are preferably perpendicular to each other. Linear actuator **490** is adapted to move carriage **460** toward and away from front panel **204**. Carriage **460** can be made from metal or plastic materials.

[0136] Positioning apparatus or mechanism **430** further includes a pair of stepper motors **492** that are attached to threaded rods **470** and **471**. Stepper motor **492** is shown only attached to threaded rod **470** in FIGS. 11 and 13. Threaded rod **470** preferably extends through one of wheels **472** in order to connect with stepper motor **492**. Stepper motors **492** rotate threaded rods **470** and **471** which moves threaded blocks **484** and **485** such that carousel **445** moves across window **404**.

[0137] Turning now to FIG. 12, bonus game display **402** comprises a controller **176** that is adapted to control the operation of the display. Controller **176** may be one or more computers or processor boards. For example, in the presently implemented embodiment, controller **176** comprises a bonus controller and stepper motor controller, which may be

manufactured by Progressive Solutions in Carmichael, Calif., a core module by Z-World in Davis, Calif., and a sound board by Cleverdevices in Syosset, N.Y. Other, equally suitable devices may be purchased from other manufacturers. It is recognized that controller **176** may be a single processor or processor board. Furthermore, it is also recognized that controller **176** and controller **182** may be combined in a single processor or processor board.

[0138] Controller **176** is adapted to detect when a bonus activating event occurs in game apparatus **120**. This may be accomplished by game apparatus controller **182** transmitting a signal to controller **176** that a bonus event has occurred. For example, controller **182** may determine the outcome of each game and when a bonus-activating outcome occurs, it transmits a signal to controller **176**. Alternatively, controller **176** may periodically interrogate controller **182**. In another embodiment, one or more sensors may be provided for determining if a bonus activating event has occurred. For example, sensors **184-186** may sense the positions of reels **122-124**. When reels **122-124** are in a bonus activating position, controller **176** would sense this position and begin a bonus sequence (described below). Sensors may also be provided external to gaming device **400** to detect external bonus-activating events.

[0139] Controller **182** may also transmit a variety of information to controller **176**. For example, controller **182** may signal when coins or currency have been inserted, when a game starts, when an error has occurred, and when a sensor detects tampering.

[0140] When controller **176** detects a bonus-activating event, it may begin a bonus sequence by activating display **110**. Display **110** may comprise many different kinds of display devices, such as video screens, lights, light emitting diodes, etc. Display **110** may comprise its own controller that is adapted to generate a variety of displays.

[0141] Display **110** may indicate that a player has qualified for a bonus round and prompt the player to perform an action. In an embodiment, the player is prompted to activate the bonus sequence by pressing input device **90**. Input device **90** may be a simple button, a keyboard, or a touch screen display. In the embodiment in which the player must accumulate a number of bonus symbols to qualify for a bonus, display **110** may indicate the number of symbols the player has received.

[0142] When controller **176** detects input device **90** being activated, the controller would activate positioning mechanism **430**. Positioning mechanism **430** is adapted to move display object or car **422** from a position in which the display object is viewable to a position in which the display object is hidden from the view of the player. In one embodiment, display object **422** is initially hidden behind panel **204** as shown in FIG. 11. Display object **422** does not have any indicia **451**. A sensor **183** (FIG. 12) can be used to determine that display object **422** (FIG. 11) is in the proper position. Turning to FIG. 12, wheel **174**, rigidly attached to carousel **445**, and sensor **183**, are provided for determining the angular position of the carousel. Thus, controller **176** can display object **422** in the proper position. The angular position of the display object and prize objects are stored in memory in controller **176**. Sensor **183** may be an infrared source and detector and the periphery of wheel **174** may comprise portions with different reflective characteristics, such as physical holes or gaps or absorbent paint lines.

[0143] As seen in FIG. 13, carriage 460 is initially located at a front position 495. Referring to FIGS. 11 and 12, controller 176 instructs stepper motors 492 to rotate threaded rods 470 and 471 in order to move carousel 445 across window 404 from behind panel 204A towards side 206. As carousel 445 travels across window 404, display object or car 422 moves along tracks 487. Therefore display object 422 appears to be traveling along tracks 487. It is noted that tracks 487 and the graphics portion of window 404 hides carousel 445 as it moves.

[0144] After a predetermined period of time, display object 422 moves behind panel 204B such that display object 422 is at least partially hidden from view of the player.

[0145] The position of carousel 445 along threaded rods 470 and 471 can be monitored using a sensor 171 (FIG. 12) that is in communication with controller 176. Sensor 171 can be a wide variety of sensors.

[0146] In order to fully hide display object 422 from view of the player, controller 176 instructs linear actuator 490 to move carriage 460 away from front panel 204 (best viewed in FIG. 13). Carriage 460 is moved from front position 495 to back position 496. Linear actuator 490 pulls on cross member 486 causing carriage 460 to rotate on wheels 472 away from front panel 204. Once carousel 445 has moved back from front panel 204, the display object 422 can no longer be seen at the side of panel 204B (FIG. 11). Positioning mechanism 430 therefore provides the illusion to the player that the display object or car has disappeared.

[0147] The position of carriage 460 can be monitored using a sensor 170 (FIG. 12) that is in communication with controller 176. Sensor 170 can be a wide variety of sensors.

[0148] While a linear actuator was used to move the carriage, other mechanisms can be used. For example, the carriage could be moved by a rotary actuator and threaded rod. Similarly, a belt and pulley or motor and gears could also be used.

[0149] While a stepper motor was used to move the carousel, other mechanisms can be used. For example, the carousel could be moved by a linear actuator. Similarly, a belt and pulley or motor and gears could also be used.

[0150] To display a prize object or car 450 (FIG. 14), controller 176 (FIG. 12) performs a routine to determine which object will be displayed. This may be performed by a number of methods that are well known in the art. For example, prize objects 450 may be sequentially displayed or displayed based on external events, such as certain bonus activating events may always cause the same prize car to be displayed.

[0151] In one embodiment, however, prize objects 450 are randomly selected. Controller 176 generates a random number and then compares the random number to a pay table similar to that described for game apparatus 120 or as described in U.S. Pat. No. 5,823,874, issued to Adams.

[0152] A simple pay table may appear as follows:

TABLE 1

Random Number	Prize Object Number	Amount Paid
0.00 to 0.50	1	\$1.00
0.51 to 0.75	2	\$5.00
0.76 to 0.95	3	x2
0.96 to 1.00	4	\$1,000.00

[0153] For example, if the random number generator produced 0.65, prize object or car number 2 would be displayed and \$5.00 would be awarded to the player. If the random number generator produced 0.80, prize object or car number 3 would be displayed. Prize object number 3 is a multiplier ball that multiplies some amount produced by game apparatus 120. Gaming apparatus 120, for instance, may award \$20 and the multiplier would multiply this by two, awarding the player \$40.

[0154] This embodiment is not necessarily limited to the example pay table shown. A greater number of prize objects or cars may be used. A combination of prize cars may be displayed. Furthermore, different kinds of prizes, besides monetary prizes, may be awarded. For example, the prizes may be goods, services, or additional games. The goods and services may be awarded in the form of physical objects, tickets, vouchers, coupons, etc. Additional games may be presented in the form of tickets, such as scratch off lottery tickets. In the embodiments in which tickets, vouchers, and coupons are used, the objects are dispensed using an internally or externally mounted dispenser 111. Such dispensers are well known in the art.

[0155] With continued reference to FIG. 12, once controller 176 determines the prize object to be displayed and the prize to be awarded, the controller again activates positioning mechanism 430. Positioning mechanism 430 is adapted to position a selected prize object 450 (FIG. 14) so that it can be displayed. Positioning mechanism 430 may utilize a large variety of devices to achieve its purpose. In an embodiment, all of the prize objects are held in carousel 445. Carousel 445 may be made from a variety of materials, such as plastics, metals, or composites. In one embodiment, Carousel 445 is cast high-density urethane foam that is machined to obtain a precise shape. In one embodiment, Carousel 445 is injection molded plastic.

[0156] Referring to FIG. 14, prize objects 450 preferably have a similar appearance to display objects 422. At least one of prize objects 450 have a symbol or indicia 451 that is capable of indicating a prize to be awarded to the player.

[0157] Prize objects 450 are stored in carousel 445 in an individually controlled manner so that individual cars can be selectively removed from the carousel. This allows particular cars with particular symbols or values to be individually manipulated and displayed when desired. In one embodiment, carousel 445 is cylindrical as illustrated in FIGS. 14 and 15. Thus, prize objects 450 may be positioned by rotating carousel 445 around its central axis 447.

[0158] As seen in FIG. 15, several V-shaped troughs 442 are positioned outward from a central axis 447, around the periphery 443 of the carousel. Troughs 442 are separated by

peaks 444. Posts 453 connect the periphery 443 to objects 422 and 450. Posts 453 hold the object above the surface of the periphery 433 and in troughs 442. The post 453 travels in slot 488 as the object moves across tracks 487. Therefore posts 453 hold objects 422 and 450 above tracks 487 as the carousel is moved. It is noted that tracks 487 are positioned such that they match the profile of V-shaped troughs 442. When carousel 445 moves, the tracks 487 are positioned just in front of V-shaped troughs 442.

[0159] Referring to FIGS. 12-14, after controller 176 has determined which prize object 450 is to be displayed, the controller rotates carousel 445 using stepper motor 446 until the desired prize object 450 is in position such that it can be re-displayed on tracks 487 (see FIG. 11). Again, wheel 174 and sensor 183 (FIG. 12) are used to confirm that the desired prize object has been selected.

[0160] Controller 176 instructs linear actuator 490 to move carriage 460 toward front panel 204. Linear actuator 490 pushes on cross member 486 causing carriage 460 to rotate on wheels 472 toward from front panel 204. Once carousel 445 has moved back to front position 495, positioning mechanism 430 moves carousel 445 using stepper motors 492 back across window 404 (FIG. 11) from front panel 204B towards front panel 204A. In this manner, the selected prize object 450 appears to be traveling on tracks 487. Positioning mechanism 430 therefore provides the illusion to the player that the car has reappeared.

[0161] Prize object 450 has an indicia 451 (FIG. 14) thereon that can indicate the outcome of the game and a prize to be awarded. Controller 176 may cause display 110 (FIG. 10) to display the prize, if any, that the player has won. Other effects may also be presented, such as pre-recorded sound from speakers. If the actual prize is money, the amount of the prize may be added to the player's credit meter or the prize may be dispensed from dispenser 111 or coin dispenser 127 (FIG. 10).

[0162] Tuning now to FIG. 11, prize object 450 may be continuously moved on tracks 487 or can be stopped on tracks 487 for a period time to entertain the player. Display object 422 or prize object 450 can be also be moved backwards or can be moved in any combination of forward and backward motion.

[0163] After prize object 450 has gone behind front panel 204A, controller 176 instructs linear actuator 490 to move carriage 460 away from panel 204. Carriage 460 moves from front position 495 to back position 496 (FIG. 13). Linear actuator 490 moves carriage 460 to the back position 496. Once carousel 445 has moved back to back position 496, carousel 445 is rotated such that display object 422 is in proper position to be re-displayed during the next bonus game. During periods when the bonus game is not operational, carriage 460 and carousel 445 are preferably stored at back position 496 behind front panel 204A. The display prize objects are therefore hidden when bonus game 402 is not operational.

[0164] Of course, prize display 420 can be operated in an attract mode during periods when game apparatus 120 is not being used. During the attract mode, prize objects could be made to travel back and forth along tracks 487 in order to draw attention to the gaming device.

[0165] Referring now to FIG. 16, a flowchart of a game play 520 using gaming device 400 is shown. At step 522, a

player preferably initiates game play 420 by placing a wager on the gaming device 120. The wager may be in form of cash or credit from actual domestic or foreign currency, vouchers, coupons, tickets, electronic cards, and other sources or forms of wagers known in the art. Once the player initiates game play 520, the player may play a base game on the gaming apparatus at step 524. At step 526, the controller (not shown) detects the occurrence of a bonus-activating event. If the controller does not detect a bonus-activating event, then the controller notifies the player of the game outcome from the base game at step 528. The player may place a wager again and repeat steps 522 and 524 to continue playing a game on the gaming apparatus.

[0166] If the controller detects a bonus-activating event, the controller causes the display object or car 422 to move across the display at step 530. The controller then moves the object and carousel 445 to a hidden or back position 496 at step 532. Next, the controller selects a prize object 450 to display at step 534. At step 536, carousel 445 is rotated to place prize object 450 in position for display. The controller then moves the carousel 445 causing the prize object to reappear and move back across the display at step 538.

[0167] Any prizes are awarded at step 540. Carousel 445 is rotated to show display object 422 and moved to a hidden position at step 542. The steps shown in the flowchart do not necessarily imply that the steps have to take place in a particular order. The order of steps may be varied; some steps may be eliminated; and, some steps may be replaced with other steps. Such variations still fall within the scope of the invention.

[0168] It can thus be seen that the embodiments can solve one or more problems associated with the prior art or provide advantages over prior art devices. One embodiment of the present invention provides a gaming device that is attractive and entertaining and provides the illusion that an object disappears and then reappears with a prize award.

[0169] Second Alternative Bonus Game Display Using a Race Car Theme

[0170] Referring to FIGS. 17-23, a gaming device 600 is shown. Gaming device 600 includes gaming apparatus 120 and bonus game device 602. Bonus game device 602 has a prize display 603. Bonus game display device 602 is adapted to show a display object to a player, hide the display object and cause the display object to reappear with a prize object such as a prize car. Game apparatus 120 operates the same as previously described in conjunction with FIGS. 1-8.

[0171] Bonus game display device 602 can have a housing 203. Housing 203 has a front cover or panel 204 and side covers 205 and 206 that can cover housing 203. Front panel 204 is shown partially transparent in FIGS. 18 and 19 in order to view the mechanism of prize display 603. A game player would view prize display 603 through a window 604 in front panel 204. As shown in FIG. 18, front panel 204 can have attractive graphics mounted thereon. For example, a movie theme can be shown. Window 404 has one or more transparent areas. Housing 203 can have a cavity 207, a bottom surface 208 and a top surface 209. Prize display 603 can be mounted within cavity 207.

[0172] Prize display 603 comprises a prize object 650, a building 610 and a positioning mechanism 630. Prize object 650 can be a wide variety of objects selected to entertain and

amuse a game player. In FIGS. 18 and 19, prize object 650 is shown as a car. Alternatively, the prize object could be an animal or airplane. A meter 652 (see FIG. 21) preferably is mounted to prize object 650. Meter 652 can be an array of light emitting diodes or can be a liquid crystal or plasma display. Meter 652 can be any type of suitable display.

[0173] Building 610 can be rigidly mounted within cavity 207. Building 610 has a clock 612 and doors or louvers 614. Clock 612 can display the current time or the hands of clock 612 can be made to spin rapidly during a bonus game. Louvers 614 can open and close. Louvers 614 can be controlled by positioning mechanism 630. Positioning mechanism 630 can include a rod 616 that is in turn attached to an arm 618. Rod 616 is attached to louvers 614. Arm 618 is mounted to a linear actuator 620. Linear actuator 620 can open and close louvers 614.

[0174] Positioning apparatus or mechanism 630 is further adapted to move prize object 650. Referring to FIGS. 18 and 19, a threaded rod 670 is shown mounted in cavity 207. Threaded rod 670 would be supported at each end by a bearing 671. A threaded block 672 is screwed onto threaded rod 670. A post 673 connects prize object 650 to threaded block 672.

[0175] Positioning apparatus or mechanism 630 further includes a stepper motor 674 that is attached to threaded rod 670. Stepper motor 674 rotates threaded rod 670 which moves threaded block 672 such that prize object 650 moves across window 604.

[0176] While in FIGS. 18 and 19, the positioning mechanism 630 is shown for clarity, it is understood that in reality only building 610 and display object 650 would be visible. The rest of display 603 would be hidden behind front panel 204 and the graphics in window 604.

[0177] Turning now to FIG. 20, bonus game display 602 comprises a controller 176 that is adapted to control the operation of the device. Controller 176 may be one or more computers or processor boards. For example, in the presently implemented embodiment, controller 176 comprises a bonus controller and stepper motor controller, which may be manufactured by Progressive Solutions in Carmichael, Calif., a core module by Z-World in Davis, Calif., and a sound board by Cleverdevices in Syosset, N.Y. Other, equally suitable devices may be purchased from other manufacturers. It is recognized that controller 176 may be a single processor or processor board. Furthermore, it is also recognized that controller 176 and controller 182 may be combined in a single processor or processor board.

[0178] Controller 176 is adapted to detect when a bonus activating event occurs in game apparatus 120. This may be accomplished by game apparatus controller 182 transmitting a signal to controller 176 that a bonus event has occurred. For example, controller 182 may determine the outcome of each game and when a bonus-activating outcome occurs, it transmits a signal to controller 176. Alternatively, controller 176 may periodically interrogate controller 182. In another embodiment, one or more sensors may be provided for determining if a bonus activating event has occurred. For example, sensors 184-186 may sense the positions of reels 122-124. When reels 122-124 are in a bonus activating position, controller 176 would sense this position and begin a bonus sequence (described below). Sensors may also be provided external to gaming device 600 to detect external bonus-activating events.

[0179] Controller 182 may also transmit a variety of information to controller 176. For example, controller 182 may signal when coins or currency have been inserted, when a game starts, when an error has occurred, and when a sensor detects tampering.

[0180] When controller 176 detects a bonus-activating event, it may begin a bonus sequence by activating display 110. Display 110 may comprise many different kinds of display devices, such as video screens, lights, light emitting diodes, etc. Display 110 may comprise its own controller that is adapted to generate a variety of displays.

[0181] Display 110 may indicate that a player has qualified for a bonus round and prompt the player to perform an action. In one embodiment, the player is prompted to activate the bonus sequence by pressing input device 90. Input device 90 may be a simple button, a keyboard, or a touch screen display. In the embodiment in which the player must accumulate a number of bonus symbols to qualify for a bonus, display 110 may indicate the number of symbols the player has received.

[0182] When controller 176 detects input device 90 being activated, the controller would activate positioning mechanism 630. Positioning mechanism 630 is adapted to move prize object or car 650 from a position in which the prize object is viewable to a position in which the prize object is hidden and then to cause the prize object to reappear. In one embodiment, prize object 650 is shown in an initial position 654 adjacent to side panel 205 as shown in FIG. 18. Meter 652 is initially turned off or blank by controller 176 as shown in FIG. 18. A sensor 170 can be used to monitor the position of prize car 650.

[0183] Controller 176 instructs stepper motor 674 to rotate threaded rod 670 in order to move prize car 650 from a starting position 654 to behind building 610. Therefore the prize car appears to be traveling behind building 610. In an embodiment, controller 176 instructs linear actuator 620 to open louvers 614 just before the prize car goes behind building 610. With the louvers in an open position, the prize car is visible through the louvers inside the building to the game player.

[0184] After a predetermined period of time, controller 176 closes louvers 614 using linear actuator 620. In this manner, the prize car 650 is now hidden from the game player. Positioning mechanism 630 therefore provides the illusion to the player that the prize object has disappeared. A sensor 171 can be used to monitor the position of louvers 614.

[0185] Controller 176 turns on meter 652 in order to display a prize award while prize object 650 is hidden. After a predetermined period of time, controller 176 opens louvers 614 using linear actuator 620. In this manner, the prize car 650 with meter 652 turned on now reappears in view of the game player. Positioning mechanism 630 therefore provides the illusion to the player that the prize object has reappeared displaying a prize or award. A random number generator as previously discussed can be used by controller 176 to select the prize to be displayed on meter 652.

[0186] After louvers 614 are opened, controller 176 instructs stepper motor 674 to rotate threaded rod 670 in order to move prize car 650 with meter 652 displaying a prize from behind building 610 to a final position 656

adjacent to side panel 206. Therefore the prize car appears to be traveling from behind building 610 to final position 656 while being viewable by the game player.

[0187] Controller 176 may cause display 110 to display the prize, if any, that the player has won. Other effects may also be presented, such as pre-recorded sound from speakers. If the actual prize is money, the amount of the prize may be added to the player's credit meter or the prize may be dispensed from dispenser 111 or coin dispenser 127.

[0188] Prize car 650 may be continuously moved forward along rod 670 or may also be moved backwards or can be moved in any combination of forward and backward motion.

[0189] After any prizes have been awarded, controller 176 moves prize object or car 650 back to starting position 654 and turns off meter 652 such that the prize object is in proper position to be re-displayed during the next bonus game.

[0190] Prize display 620 can also be operated in attract mode during periods when game apparatus 120 is not being used. During the attract mode, prize cars could be made to travel back and forth in order to draw attention to the gaming device.

[0191] While a linear actuator was used to move the louvers, other mechanisms can be used. For example, the louvers could be moved by a rotary actuator and threaded rod. Similarly, a belt and pulley or motor and gears could also be used.

[0192] While a stepper motor was used to move the threaded block and prize car, other mechanisms can be used. For example, a linear actuator could be used. Similarly, a belt and pulley or motor and gears could also be used.

[0193] Referring to FIG. 22, an alternative prize object 660 is shown. Prize object 660 has a spinning reel 662 mounted within object 660. A payline 664 indicates the game outcome to the game player. Spinning reel 662 replaces meter 652 of FIG. 21. Spinning reel 662 can be any suitable spinning reel as is well known in the art. Spinning reel 662 would be in communication with and controlled by controller 176.

[0194] Referring to FIG. 23, another alternative prize object 680 is shown. Prize object 680 has a moving door 682 that hides a meter 684. Meter 684 is similar to meter 652 of FIG. 21. Door 682 is moved by a mechanism (not shown) that would be in communication with controller 176. Meter 684 would be in communication with and controlled by controller 176. In an embodiment, controller 176 turns on meter 684 to show a prize and then opens door 682 to reveal the prize to the game player.

[0195] Turning now to FIG. 24, a flowchart of a game play 720 using gaming device 400 is shown. At step 722, a player preferably initiates game play 720 by placing a wager on the gaming device 120. The wager may be in form of cash or credit from actual domestic or foreign currency, vouchers, coupons, tickets, electronic cards, and other sources or forms of wagers known in the art. Once the player initiates game play 720, the player may play a base game on the gaming apparatus at step 724. At step 726, the controller (not shown) detects the occurrence of a bonus-activating event. If the controller does not detect a bonus-activating event, then the controller notifies the player of the game outcome from the

base game at step 728. The player may place a wager again and repeat steps 722 and 724 to continue playing a game on the gaming apparatus.

[0196] If the controller detects a bonus-activating event, the controller ensures that meter 652 is turned off at step 730 and causes the prize object 650 to move from the start position 654 toward building 610 at step 732. The controller then opens louvers 614 at step 734. The prize object 650 moves behind building 610 and stops at step 736. Louvers 614 are closed at step 738. The prize object 650 is now hidden from view of the game player. Next, the controller randomly selects a prize at step 740 and displays the prize on meter 652 at step 742. At step 744, louvers 614 are opened allowing prize object 650 and meter 652 to be viewed by the game player. The prize car therefore appears to reappear. The controller then moves the prize object or car to final position 656 at step 746.

[0197] Any prizes are awarded at step 748. Prize object 650 is moved from final position 656 back to start position 654 at step 750 in order to be in proper position for the start of the next bonus game. The steps shown in the flowchart do not necessarily imply that the steps have to take place in a particular order. The order of steps may be varied; some steps may be eliminated; and, some steps may be replaced with other steps. Such variations still fall within the scope of the invention.

[0198] It can thus be seen that the embodiments can solve one or more problems associated with the prior art or provide advantages over prior art devices. One embodiment of the present invention provides a gaming device that is attractive and entertaining and provides the illusion that an object disappears and then reappears with a prize award.

[0199] Third Alternative Bonus Game Display Using a Race Car Theme

[0200] Referring to FIGS. 25-29, a gaming device 800 is shown. Gaming device 800 would include gaming apparatus 120 (shown in FIG. 17) and a bonus game device 802. Bonus game 802 has a prize display 803. Bonus game device 802 is adapted to show a display object to a player, hide the display object and cause a prize object such as a prize car to reappear. Game apparatus 120 operates the same as previously described in conjunction with FIGS. 1-8.

[0201] Bonus game device 802 can have a housing 203. Housing 203 has a front cover or panel 204 and side covers 205 and 206 that can cover housing 203. Front panel 204 is shown partially transparent in order to view the mechanism of prize display 803. A game player would view prize display 803 through windows 804 and 805 in front panel 204. As shown in FIGS. 25 and 26, front panel 204 can have attractive graphics mounted thereon. For example, a movie theme can be shown. Housing 203 can have a cavity 207, a bottom surface 208 and a top surface 209. Prize display 803 can be mounted within cavity 207.

[0202] Prize display 803 comprises a display object 822, prize objects 850, a building 810 and a positioning mechanism 830. Display object 822 and prize objects 850 can be a wide variety of objects selected to entertain and amuse a game player. In FIGS. 25 and 26, objects 822 and 850 are shown as cars. Alternatively, the prize object could be an animal or airplane. Prize objects 850 can have an indicia 851 mounted thereon. Indicia 851 can indicate a game outcome

and can be a variety of indicia such as an award amount, a multiplier or a physical prize.

[0203] Building **810** can be rigidly mounted within cavity **207** or can be mounted to front panel **204**. Building **810** has a clock **812**. Clock **812** can display the current time or the hands of clock **812** can be made to spin rapidly during a bonus game.

[0204] Positioning apparatus or mechanism **830** is adapted to move display object **822** and prize objects **850**. Referring to FIGS. **25**, **26** and **27**, a threaded rod **870** is shown mounted in cavity **207**. Threaded rod **870** would be supported at each end by a bearing (not shown). A threaded block **872** is screwed onto threaded rod **870**. A post **873** connects display **822** to threaded block **872**. Threaded rod **870** is mounted below window **804**. A game player looking into window **804** would only see display object or car **822**. The rest of mechanism **830** would be hidden from view of the game player. A stepper motor **874** is attached to threaded rod **870**. Stepper motor **874** rotates threaded rod **870** which moves threaded block **872** such that display object **822** can be moved across window **804**.

[0205] Threaded rods **880A**, **880B**, **880C** and **880D** are shown mounted in cavity **207**. Threaded rods **880A-D** would be supported at each end by a bearing (not shown). A threaded block **882** is screwed onto each of threaded rods **880A-D**. A post **883** connects prize objects or cars **850** to threaded blocks **882**. Threaded rods **880A-D** are mounted below window **805**. A game player looking into window **805** would only see prize object or car **850**. The rest of mechanism **830** would be hidden from view of the game player. Stepper motors **884A**, **884B**, **884C** and **884D** are attached to threaded rods **880A-D**, respectively. Stepper motor **884** rotates one of threaded rods **880A-D** in order to move one of prize objects **850** across window **805**.

[0206] Turning now to FIG. **28**, bonus game **802** comprises a controller **176** that is adapted to control the operation of the device. Controller **176** may be one or more computers or processor boards. For example, in the presently implemented embodiment, controller **176** comprises a bonus controller and stepper motor controller, which may be manufactured by Progressive Solutions in Carmichael, Calif., a core module by Z-World in Davis, Calif., and a sound board by Cleverdevices in Syosset, N.Y. Other, equally suitable devices may be purchased from other manufacturers. It is recognized that controller **176** may be a single processor or processor board. Furthermore, it is also recognized that controller **176** and controller **182** may be combined in a single processor or processor board.

[0207] Controller **176** is adapted to detect when a bonus activating event occurs in game apparatus **120**. This may be accomplished by game apparatus controller **182** transmitting a signal to controller **176** that a bonus event has occurred. For example, controller **182** may determine the outcome of each game and when a bonus-activating outcome occurs, it transmits a signal to controller **176**. Alternatively, controller **176** may periodically interrogate controller **182**. In another embodiment, one or more sensors may be provided for determining if a bonus activating event has occurred. For example, sensors **184-186** may sense the positions of reels **122-124**. When reels **122-124** are in a bonus activating position, controller **176** would sense this position and begin

a bonus sequence (described below). Sensors may also be provided external to gaming device **800** to detect external bonus-activating events.

[0208] Controller **182** may also transmit a variety of information to controller **176**. For example, controller **182** may signal when coins or currency have been inserted, when a game starts, when an error has occurred, and when a sensor detects tampering.

[0209] When controller **176** detects a bonus-activating event, it may begin a bonus sequence by activating display **110**. Display **110** may comprise many different kinds of display devices, such as video screens, lights, light emitting diodes, etc. Display **110** may comprise its own controller that is adapted to generate a variety of displays.

[0210] Display **110** may indicate that a player has qualified for a bonus round and prompt the player to perform an action. In one embodiment, the player is prompted to activate the bonus sequence by pressing input device **90**. Input device **90** may be a simple button, a keyboard, or a touch screen display. In the embodiment in which the player must accumulate a number of bonus symbols to qualify for a bonus, display **110** may indicate the number of symbols the player has received.

[0211] When controller **176** detects input device **90** being activated, the controller would activate positioning mechanism **830**. Positioning mechanism **830** is adapted to display object or car **822** from a start position **854** in which the display object is viewable to a position **855** in which the display object is hidden and then to reappear as a prize object **850** showing a prize to be awarded. In one embodiment, display object **822** is shown in an initial position **854** adjacent to side panel **205** and prize object **850** is shown in an initial position **856** behind building **810** as shown in FIG. **25**. It is noted that display object **822** does not have any indicia **851**. A sensor **170** can be used to monitor the position of display object **822**.

[0212] Controller **176** instructs stepper motor **874** to rotate threaded rod **870** in order to move display car **822** from the starting position **854** to a hidden position **855** behind building **810**. Therefore the prize car appears to be traveling behind building **810** and out of view of the game player.

[0213] Controller **176** then selects one of prize objects **850** to display. A random number generator as previously discussed can be used by controller **176** to select the prize object or car to be displayed.

[0214] With reference to FIG. **27**, after a predetermined period of time, controller **176** instructs one of stepper motors **884A-D** to rotate one of threaded rods **880A-D** in order to move the prize object **850** from an initial position **856** behind building **810** to a final viewable position **857**. In the example shown, stepper motor **884A** is rotated to move prize object **850** along rod **880A**. Prize object **850** has indicia **851** (FIG. **26**) showing a prize award of 50 credits. Therefore the prize object appears to be reappear in view of the player with a prize award. A sensor **171** (FIG. **28**) can be used to monitor the position of prize objects **850**.

[0215] With continued reference to FIG. **28**, controller **176** may cause display **110** to display the prize, if any, that the player has won. Other effects may also be presented, such as pre-recorded sound from speakers. If the actual prize is

money, the amount of the prize may be added to the player's credit meter or the prize may be dispensed from dispenser 111 or coin dispenser 127.

[0216] After any prizes have been awarded, controller 176 moves prize object or car 850 back to position 856 behind building 810 and moves display object 822 back to starting position 854 such that the display and prize objects are in proper position to be re-displayed during the next bonus game.

[0217] Prize display 803 can also be operated in an attract mode during periods when game apparatus 120 is not being used. During the attract mode, the prize cars could be made to travel back and forth in order to draw attention to the gaming device.

[0218] While a stepper motor was used to move the threaded block and cars, other mechanisms can be used. For example, a linear actuator could be used. Similarly, a belt and pulley or motor and gears could also be used.

[0219] Various alternative prize displays could also be used in bonus game 802. For example, a meter could be mounted to prize objects 850 to show a prize. Another alternative display could use a spinning reel mounted within object 850.

[0220] Turning now to FIG. 29, a flowchart of a game play 920 using gaming device 800 is shown. At step 922, a player preferably initiates game play 920 by placing a wager on the gaming device 120. The wager may be in form of cash or credit from actual domestic or foreign currency, vouchers, coupons, tickets, electronic cards, and other sources or forms of wagers known in the art. Once the player initiates game play 920, the player may play a base game on the gaming apparatus at step 924. At step 926, the controller (not shown) detects the occurrence of a bonus-activating event. If the controller does not detect a bonus-activating event, then the controller notifies the player of the game outcome from the base game at step 928. The player may place a wager again and repeat steps 922 and 924 to continue playing a game on the gaming apparatus.

[0221] If the controller detects a bonus-activating event, the controller causes the display object 822 to move from start position 854 at step 930. At step 932 display object 822 is moved to hidden position 855 behind building 810. Display object 822 is now hidden from view of the game player. Next, the controller randomly selects a prize object 850 at step 934. At step 936, the selected prize object is moved from an initial hidden position 856 to a final position 857 where prize indicia 851 is viewable by a game player. Therefore, prize object 850 appears to reappear.

[0222] Any prizes are awarded at step 938. Display object 822 and prize objects 850 are moved back to starting positions 854 and 856, respectively at step 940 in order to be in proper position for the start of the next bonus game. The steps shown in the flowchart do not necessarily imply that the steps have to take place in a particular order. The order of steps may be varied; some steps may be eliminated; and, some steps may be replaced with other steps. Such variations still fall within the scope of the invention.

[0223] Fourth Alternative Bonus Game Display Using a Race Car Theme

[0224] Referring to FIGS. 30-34, a gaming device 1000 is shown. Gaming device 1000 would include gaming apparatus 120 (shown in FIG. 17) and a bonus game device 1002. Bonus game 1002 has a prize display 1003. Bonus game device 1002 is adapted to show a display object to a player, hide the display object and cause a prize object such as a prize car to reappear. Game apparatus 120 operates the same as previously described in conjunction with FIGS. 1-8.

[0225] Bonus game device 1002 can have a housing 203. Housing 203 has a front cover or panel 204 and side covers 205 and 206 that can cover housing 203. Housing 204 has a top 209. Front panel 204 is shown partially transparent in order to view the mechanism of prize display 803. A game player would view prize display 1003 through windows 1004 and 1005 in front panel 204. As shown in FIGS. 30 and 31, front panel 204 can have attractive graphics mounted thereon. For example, a movie theme can be shown. As shown in FIG. 32, housing 203 can have a cavity 207 and a bottom surface 208. Prize display 1003 can be mounted within cavity 207.

[0226] Prize display 1003 comprises a display object 1022, at least one prize object 1050, a building 1010 and a positioning mechanism 1030. Display object 1022 and prize object 1050 can be a wide variety of objects selected to entertain and amuse a game player. In FIGS. 30 and 31, object 1022 and 1050 are shown as cars. Alternatively, the prize object could be an animal or airplane. Prize object 1050 is made from a transparent material such as acrylic.

[0227] Building 1010 can be rigidly mounted within cavity 207 or can be mounted to front panel 204. Building 1010 has a clock 1012. Clock 1012 can display the current time or the hands of clock 1012 can be made to spin rapidly during a bonus game.

[0228] Positioning apparatus or mechanism 1030 is adapted to move display object 1022 and prize object 1050. Referring to FIG. 32, positioning mechanism 1030 comprises two vertically oriented conveyer belt mechanisms 1060 and 1070. Conveyer belt mechanisms 1060 and 1070 are mounted in cavity 207 at least partially behind building 1010. Conveyer belt mechanism 1060 includes a conveyer belt 1061 that has an outer surface 1062. Conveyer belt 1061 preferably is made from a transparent material such as acrylic or Mylar. Conveyer belt 1061 can resemble a race-track or road. In an embodiment, prize object 1050 can be mounted to belt surface 1062. While one prize object 1050 was shown mounted to belt surface 1062, more than one prize car can be mounted on the belt.

[0229] Conveyer belt 1061 is mounted for rotational movement on a driven roller 1063 and an idle roller 1064. A tensioning mechanism (not shown) would be used to force the rollers into frictional engagement with the conveyer belt. Driven roller 1063 is driven by a stepper motor 1065. Stepper motor 1065 can be connected to roller 1063 by a shaft 1066. Stepper motor 1065 rotates conveyer belt 1061 such that prize object 1050 can be moved across window 1005. A meter 1080 is mounted under belt 1061 between rollers 1063 and 1064. Prize object 1050 is preferably transparent so that meter 180 can be viewed by a player through belt 1061 and prize object 1050.

[0230] Conveyor belt mechanism 1070 includes a conveyor belt 1071 that has on outer surface 1072. Conveyor belt 1071 can be any suitable material such as acrylic or rubber. Conveyor belt 1071 can resemble a race track or road. In an embodiment, display object 1022 can be mounted to belt surface 1072. While one display object 1022 was shown mounted to belt surface 1072, more than one display car can be mounted on the belt.

[0231] Conveyor belt 1071 is mounted for rotational movement on a driven roller 1073 and an idle roller 1074. A tensioning mechanism (not shown) would be used to force the rollers into frictional engagement with the conveyor belt. Driven roller 1073 is driven by a stepper motor 1075. Stepper motor 1075 can be connected to roller 1073 by a shaft 1076. Stepper motor 1075 rotates conveyor belt 1071 such that display object 1022 can be moved across window 1004. A controller 176 is in communication with meter 1080, stepper motor 1065 and stepper motor 1075.

[0232] A game player looking into window 1004 would only see display object 1022 and belt surface 1072. A game player looking into window 1005 would only see prize object 1050, belt surface 1062 and meter 1080. The rest of positioning mechanism 1030 would be hidden from view of the game player.

[0233] Turning now to FIG. 33, bonus game 1002 comprises a controller 176 that is adapted to control the operation of the device. Controller 176 may be one or more computers or processor boards. For example, in the presently implemented embodiment, controller 176 comprises a bonus controller and stepper motor controller, which may be manufactured by Progressive Solutions in Carmichael, Calif., a core module by Z-World in Davis, Calif., and a sound board by Cleverdevices in Syosset, N.Y. Other, equally suitable devices may be purchased from other manufacturers. It is recognized that controller 176 may be a single processor or processor board. Furthermore, it is also recognized that controller 176 and controller 182 may be combined in a single processor or processor board.

[0234] Controller 176 is adapted to detect when a bonus activating event occurs in game apparatus 120. This may be accomplished by game apparatus controller 182 transmitting a signal to controller 176 that a bonus event has occurred. For example, controller 182 may determine the outcome of each game and when a bonus-activating outcome occurs, it transmits a signal to controller 176. Alternatively, controller 176 may periodically interrogate controller 182. In another embodiment, one or more sensors may be provided for determining if a bonus activating event has occurred. For example, sensors 184-186 may sense the positions of reels 122-124. When reels 122-124 are in a bonus activating position, controller 176 would sense this position and begin a bonus sequence (described below). Sensors may also be provided external to gaming device 1000 to detect external bonus-activating events.

[0235] Controller 182 may also transmit a variety of information to controller 176. For example, controller 182 may signal when coins or currency have been inserted, when a game starts, when an error has occurred, and when a sensor detects tampering.

[0236] When controller 176 detects a bonus-activating event, it may begin a bonus sequence by activating display

110. Display 110 may comprise many different kinds of display devices, such as video screens, lights, light emitting diodes, etc. Display 110 may comprise its own controller that is adapted to generate a variety of displays.

[0237] Display 110 may indicate that a player has qualified for a bonus round and prompt the player to perform an action. In one embodiment, the player is prompted to activate the bonus sequence by pressing input device 90. Input device 90 may be a simple button, a keyboard, or a touch screen display. In the embodiment in which the player must accumulate a number of bonus symbols to qualify for a bonus, display 110 may indicate the number of symbols the player has received.

[0238] When controller 176 detects input device 90 being activated, the controller would activate positioning mechanism 1030. Positioning mechanism 1030 is adapted to move display object or car 1022 from a hidden position 1054 to a viewable position 1055 and to move prize object or car 1050 from a hidden position 1056 to a viewable position 1057 showing a prize to be awarded.

[0239] In one embodiment, display object 1022 is initially in a hidden position 1054 behind conveyer belt 1070. It is noted that display object 1022 does not have any indicia mounted thereon. A sensor 170 can be used to monitor the position of display object 1022.

[0240] Controller 176 instructs stepper motor 1075 to rotate conveyer belt 1070 such that display object 1022 moves from behind belt 1070 to a viewable position 1055 in front of belt 1070 as shown in FIG. 30. Therefore the display car appears to be traveling into window 1004 where it is viewable by the game player.

[0241] Stepper motor 1075 continues to rotate conveyer belt 1070 such that display object 1022 moves behind building 1010 out of view of the player as shown in FIG. 31. Therefore the car appears to have disappeared. If desired, controller 176 can stop display object 1022 in window 1004 for a period of time.

[0242] After display object 1022 has moved into hidden position 1054, controller 176 instructs stepper motor 1065 to rotate conveyer belt 1060. This causes prize object 1050 to move from an initial hidden position 1056 behind belt 1060 to a viewable position 1057 in front of belt 1060 as shown in FIG. 31. Therefore, the prize car appears to be traveling from behind building 1010 into window 1005 where it is viewable by the game player. Therefore, the car appears to have reappeared. Prize object 1050 can be stopped in position 1057 for a period of time. A sensor 171 can be used to monitor the position of prize object 1050.

[0243] Next, controller 176 can turn on meter 1080 in order to display a prize award 1052 to the player. Meter 1080 is viewable through belt 1060 and prize object 1050. A random number generator as previously discussed can be used by controller 176 to select the prize to be displayed on meter 1080.

[0244] Controller 176 may cause display 110 to display the prize, if any, that the player has won. Other effects may also be presented, such as pre-recorded sound from speakers. If the actual prize is money, the amount of the prize may be added to the player's credit meter or the prize may be dispensed from dispenser 111 or coin dispenser 127.

[0245] After any prizes have been awarded, controller 176 moves prize object or car 1050 back to position 1056 behind building 1010 and moves display object 1022 back to position 1054 behind building 1010 such that the display and prize objects are in proper position to be re-displayed during the next bonus game.

[0246] Prize display 1003 can also be operated in an attract mode during periods when game apparatus 120 is not being used. During the attract mode, the cars could be made to move in order to draw attention to the gaming device.

[0247] While a conveyer belt was used to move the objects, other mechanisms can be used. For example, a linear actuator or rotary actuator and threaded rod could be used. Similarly, a motor and gears could also be used.

[0248] Various alternative prize displays could also be used in bonus game 1002. For example, a meter 1080 could be omitted and several prize objects could be mounted to belt 1061. Each of the prize objects would have prize indicia mounted thereon and the controller could select and position the prize object to indicate a game outcome by moving conveyer belt 1061.

[0249] Turning now to FIG. 34 a flowchart of a game play 1120 using gaming device 1000 is shown. At step 1122, a player preferably initiates game play 1120 by placing a wager on the gaming device 120. The wager may be in form of cash or credit from actual domestic or foreign currency, vouchers, coupons, tickets, electronic cards, and other sources or forms of wagers known in the art. Once the player initiates game play 1120, the player may play a base game on the gaming apparatus at step 1124. At step 1126, the controller (not shown) detects the occurrence of a bonus-activating event. If the controller does not detect a bonus-activating event, then the controller notifies the player of the game outcome from the base game at step 1128. The player may place a wager again and repeat steps 1122 and 1124 to continue playing a game on the gaming apparatus.

[0250] If the controller detects a bonus-activating event, the controller causes the display object 1122 to move from hidden position 1054 to viewable position 1055 in window 1004 at step 1130. At step 1132 display object 1022 is moved back to hidden position 1054 behind building 1010. Display object 1022 is now hidden from view of the game player. Next, the controller randomly selects a prize at step 1134. At step 1136, prize object 1050 is moved from an initial hidden position 1056 to a viewable position 1057. In this manner prize object 1050 provides an illusion to the game player that it has reappeared.

[0251] Meter 1080 displays the randomly selected prize at step 1138. Any prizes are awarded at step 1140. Display object 1022 and prize object 1050 are moved back to hidden positions 1054 and 1056, respectively at step 1042 in order to be in proper position for the start of the next bonus game. The steps shown in the flowchart do not necessarily imply that the steps have to take place in a particular order. The order of steps may be varied; some steps may be eliminated; and, some steps may be replaced with other steps. Such variations still fall within the scope of the invention.

[0252] There are other features and advantages of one or more the various embodiments. They should be apparent to those skilled in the art based on the disclosure above.

[0253] Although the description above contains many specifications, these should not be construed as limiting the scope of the invention but as merely providing illustrations of some of the present embodiments of this invention. This specification above, for instance, makes reference to bonus games and prizes. However, the present invention is not thereby intended to be limited to providing bonus prizes. Rather it is intended that the present invention can, in certain embodiments, be used independently as a stand-alone game without necessarily including bonusing. Thus, the scope of the invention should be determined by the claims as issued and their legal equivalents rather than by the examples given.

CONCLUSION

[0254] Accordingly, the present invention provides a gaming device including at least one moveable display object and at least one movable prize object that may be positioned to provide the illusion to a game player that the object has disappeared and reappeared with a prize. Gaming devices according to the present invention may provide exciting and attractive game displays to game players and may provide a number of game play possibilities for game designers.

[0255] Although the description above contains many specifications, these should not be construed as limiting the scope of the invention but as merely providing illustrations of some of present embodiments of this invention. Thus, the scope of the invention should be determined by the appended claims and their legal equivalents rather than by the examples given.

What is claimed is:

1. A gaming device comprising:

- (A) a game apparatus, the game apparatus being adapted to allow a player to play a game;
- (B) at least one display object;
- (C) a positioning mechanism connected to the display object;
- (D) a plurality of prize objects, the prize objects being adapted to convey a game outcome;
- (E) at least one prize object holder, the prize object holder being adapted to hold the prize object in an individually controllable manner, wherein prize objects in the prize object holder are hidden from the player;
- (F) a controller in communication with the game apparatus and the positioning mechanism, the controller being adapted to control the positioning mechanism in order to show the display object to the player and to hide the display object from the player, the controller further being adapted to select at least one prize object from the prize object holder; and
- (G) a display holder connected to the display object and communicated with the prize object holder, the display holder being adapted to display the selected prize object to the player, the controller further being adapted to move the prize object from the prize object holder to the display holder.

2. The gaming device of claim 1, wherein the prize object holder is a carousel adapted to hold the prize objects.

3. The gaming device of claim 1 wherein the positioning mechanism is a turntable.

4. The gaming device of claim 1 wherein the positioning mechanism is a trap door.

5. The gaming device of claim 1 further comprising a plurality of non-prize objects, the non-prize objects providing an illusion to the player that the prize objects are one of the non-prize objects.

6. A gaming method comprising, but not necessarily in the order shown:

- (A) allowing a player to place a wager and play a game of chance;
- (B) determining a game outcome, the game outcome comprising a prize qualifying event;
- (C) if the game outcome comprises the prize qualifying event:
 - (a) displaying at least one display object to the player;
 - (b) hiding the display object from the player;
 - (c) selecting a prize object from a plurality of prize objects in a prize object holder;
 - (d) displaying the prize object to the player; and
 - (e) awarding a prize to the player.

7. The method of claim 6 wherein the prize objects are rotated on a carousel.

8. The method of claim 6 wherein the display object and prize objects are rotated on a carousel.

9. The method of claim 6 wherein the prize objects are rotated on a conveyor belt.

10. The method of claim 6, further comprising illuminating a meter associated with the prize object.

11. A gaming device comprising:

- (A) gaming means for allowing a player to play a game;
- (B) display object means for displaying a display object to the player;
- (C) prize object means for displaying a prize object to the player and conveying a game outcome;
- (D) prize object holder means for holding the prize object means; and
- (E) controller means for causing the display object means to disappear and to cause the prize object means to appear to the player.

12. The gaming device of claim 11 wherein the prize object holder means is a carousel.

13. The gaming device of claim 11 wherein the prize object holder means is a conveyor belt.

14. The gaming device of claim 11 wherein the prize object holder means is a threaded rod.

15. The gaming device of claim 11 further comprising meter means mounted to the prize object means.

16. A gaming device comprising:

- (A) a game apparatus, the game apparatus being adapted to allow a player to play a game;
- (B) at least one display object;
- (C) a display object positioning mechanism connected to the display object;
- (D) at least one prize object, the prize object being adapted to convey a game outcome;
- (E) a prize object positioning mechanism connected to the prize object;
- (F) a controller in communication with the game apparatus, the display object positioning mechanism and the prize object positioning mechanism, the controller being adapted to show the display object to the player and to hide the display object from the player, the controller further being adapted to show the prize object to the player.

17. The gaming device of claim 16 further comprising a display holder connected to the display object for displaying the prize object.

18. The gaming device of claim 16 further comprising a meter mounted to the prize object.

19. A gaming method comprising, but not necessarily in the order shown:

- (A) allowing a player to place a wager and play a game of chance;
- (B) determining a game outcome, the game outcome comprising a prize qualifying event, if the game outcome comprises the prize qualifying event then;
- (C) displaying at least one display object to the player;
- (D) moving the display object such that the display object disappears from view of the player;
- (E) selecting a prize object;
- (F) moving the prize object such that the prize object reappears into view of the player; and
- (G) awarding a prize to the player.

20. The method of claim 19 further comprising opening a door on the prize object to reveal a game outcome.

21. The method of claim 19 further comprising illuminating a meter on the prize object to reveal a game outcome.

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