APPARATUS FOR USE WITH INTERACTIVE TABLE GAMES AND METHODS OF USE

Inventors: Chris Gadda, Las Vegas, NV (US); Chan Griswold, Reno, NV (US); Harold Mattice, Gardenville, NY (US); James Stockdale, Clovis, CA (US); Richard Wilder, Sparks, NV (US)

Correspondence Address:
Robert B. Reeser, III (IGT - 26668)
Armstrong Teasdale LLP
One Metropolitan Square, Suite 2600
St. Louis, MO 63102 (US)

Assignee: IGT, Reno, NV (US)

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ABSTRACT

Methods and apparatus for use with an interactive gaming table. In one aspect, an administration tool is provided for use with an interactive gaming table. The interactive gaming table includes a playing surface for displaying a game, a signal source, and a signal collector. The administration tool includes a primary identifying indicia that uniquely identifies the tool to the gaming table by reflecting a signal emitted by the signal source such that the signal reflected by the primary identifying indicia is received and analyzed by the signal collector. The administration tool also includes a secondary identifying indicia that is recognized by the gaming table by reflecting the signal emitted by the signal source such that the signal reflected by the secondary identifying indicia is received and analyzed by the signal collector, wherein a present state of the displayed game is changed based on a player's action taken with the tool.
APPARATUS FOR USE WITH INTERACTIVE TABLE GAMES AND METHODS OF USE

BACKGROUND OF THE INVENTION

[0001] This invention relates generally to table games within a gaming environment and, more specifically, to bonus award systems for use with interactive gaming display tables.

[0002] Casinos and other forms of gaming make up a growing multibillion dollar industry both domestically and abroad. Within such environments, table games are an immensely popular form of gaming and are a substantial source of revenue for gaming operators. Such table games are well known and may include for example, poker, Blackjack, baccarat, craps, roulette, and other traditional games. Moreover, such table games may include more recently introduced games such as Pai-gow, Caribbean Stud, Spanish 21, and Let It Ride.

In a typical gaming event at a gaming table, a player places a wager on a game, whereupon a winning may be paid to the player depending on the outcome of the game. As is generally known, a wager may involve the use of cash or one or more chips, markers or the like, as well as various forms of gestures or oral claims. The game itself may involve the use of, for example, one or more cards, dice, wheels, tokens or the like, with the rules of the game and any payouts or pay tables being established prior to game play. As is also known, possible winnings may be paid in cash, credit, one or more chips, markers, or prizes, or by other forms of payoffs.

[0003] Although standard, fully-manual gaming tables have been around for many years, gaming tables having more “intelligent” features are becoming increasingly popular. For example, many gaming tables now include automatic card shufflers, liquid crystal display (LCD) screens, biometric identifiers, automated chip tracking devices, and even cameras adapted to track chips and/or playing cards, among various other items and devices. Such additional items and devices add many desirable functions and features to a gaming table, although there are currently limits as to what may be accomplished. For example, known gaming tables that include such added items and devices currently lack a reward feature for players that qualify for a bonus round. Such gaming tables also currently lack a device for advancing game play in steps through user actions taken on a tabletop device.

BRIEF DESCRIPTION OF THE INVENTION

[0004] In one aspect, an administration tool is provided for use with an interactive gaming table, wherein the interactive gaming table includes a playing surface for displaying a game, a signal source, and a signal collector. The administration tool includes a primary identifying indicia that uniquely identifies the tool to the gaming table by reflecting a signal emitted by the signal source such that the signal reflected by the primary identifying indicia is received and analyzed by the signal collector.

[0005] In another aspect, a gaming device is provided for use with an interactive gaming table including a display surface for presenting a game, a processor, a light source, and a detector. The gaming device includes a base including a primary identifying indicia that uniquely identifies the device by reflecting light emitted by the light source such that the light reflected by the primary identifying indicia is received and converted into a signal representative of the reflected light by the detector, wherein the signal is analyzed by the processor.

[0006] In another aspect, a method of operating a rewards system for use with an interactive gaming table is provided, wherein the gaming table is configured to display a game. The rewards system includes a gaming device having a primary identifying indicia and a secondary identifying indicia. The method includes determining an identity of a device based on the primary identifying indicia, determining an action by a player based on the secondary identifying indicia, and changing a present state of the displayed game based on the determined action.

[0007] In another aspect, a gaming system is provided. The gaming system includes an interactive gaming display table including a playing surface for displaying a game, a video camera, and a processor. The gaming system also includes at least one player device including a primary identifying indicia that uniquely identifies the at least one player device, and at least one secondary identifying indicia. The video camera is configured to receive light reflected by the primary identifying indicia and the at least one secondary identifying indicia, and to generate a signal representative of the reflected light. The processor is configured to analyze the signal to recognize a movement of the at least one secondary identifying indicia and to determine an award for a player playing the game and advance the game according to the movement.

[0008] In another aspect, a method for providing a gaming event at an interactive gaming table is provided. The method includes presenting a gaming event on a display surface of the interactive gaming table, determining an identity of a device based on a unique device identifier extending over at least a portion of a base of the device, determining an action by a player with the device based on at least one action identifier, and changing a present state of the gaming event based on the action.

BRIEF DESCRIPTION OF THE DRAWINGS

[0009] The included drawings are for illustrative purposes and serve only to provide examples of possible structures and process steps for the disclosed inventive playing systems and methods for table games. The drawings do not limit any changes in form and detail that may be made to the invention by one skilled in the art without departing from the spirit and scope of the invention.

[0010] FIG. 1 is a schematic diagram of an interactive gaming display table;

[0011] FIG. 2 is a side view of an exemplary player device that may be used with the interactive gaming display table shown in FIG. 1;

[0012] FIG. 3 is a cross-sectional view of the player device shown in FIG. 2;
FIG. 4 is a bottom view of the player device shown in FIG. 2;

FIG. 5 is a schematic view of an alternative player device that may be used with the interactive gaming display table shown in FIG. 1;

FIG. 6 is a plan view of another alternative player device that may be used with the interactive gaming display table shown in FIG. 1;

FIG. 7 is a perspective view of yet another alternative player device that may be used with the interactive gaming display table shown in FIG. 1;

FIG. 8 is a side view of a further alternative player device that may be used with the interactive gaming display table shown in FIG. 1; and

FIG. 9 is a bottom view of the player device shown in FIG. 8.

DETAILED DESCRIPTION OF THE INVENTION

Exemplary applications of apparatus and methods according to the present invention are described herein. These examples are provided solely to add context and to aid in the understanding of the invention. It will thus be apparent to one skilled in the art that the present invention may be practiced without some or all of these specific details. In other instances, well known process steps have not been described in detail in order to avoid unnecessarily obscuring the present invention. Other applications are possible, such that the following example should not be taken as definitive or limiting either in scope or setting. In the detailed description that follows, references are made to the accompanying drawings, which form a part of the description and in which are shown, by way of illustration, specific embodiments of the present invention. Although these embodiments are described in sufficient detail to enable one skilled in the art to practice the invention, it is understood that these examples are not limiting, such that other embodiments may be used and changes may be made without departing from the spirit and scope of the invention.

Various advantages of the present invention include the introduction of devices for use with an interactive gaming table that is more fully automated, providing added benefits to the gaming operator, and also having various automated and player-friendly items and functionalities. The devices described herein may be used to, for example, award bonus jackpots to one or more players and/or to enable one or more players to step through gaming sequences according to the actions of one or more players using such devices.

FIG. 1 is a schematic diagram of an exemplary interactive gaming display table 100. In the exemplary embodiment, table 100 includes at least one processor 102 that is enclosed within a frame 104. Moreover, in the exemplary embodiment, table 100 uses infrared (IR) light to interact with tabletop devices, such as device 106, that are positioned on or slightly above a display surface 108, which is set within an upper surface 110 of table 100.

In one embodiment, one or more IR light sources 112 are coupled to, such as fixedly secured to, frame 104. In the exemplary embodiment, IR light source 112 includes a plurality of light emitting diodes (LEDs) and the light produced by IR light sources 112 is directed upward towards an underside of display surface 108. Infrared light from IR light sources 112 passes through a translucent layer 114 of display surface 108 and is reflected from any tabletop devices, such as device 106, positioned on, or near, display surface 108. In the

exemplary embodiment, translucent layer 114 is fabricated from a sheet of vellum, or any other suitable translucent material that has light diffusing properties. More specifically, after passing through translucent layer 114, the IR light may exit through display surface 108 without illuminating any tabletop devices 106. Alternatively, the IR light may illuminate one or more tabletop devices 106, that are positioned on display surface 108. Moreover, the IR light may illuminate one or more tabletop devices 106 that are positioned adjacent to, but not touching, display surface 108.

Moreover, in the exemplary embodiment, a digital video camera 116 is coupled to frame 104 below display surface 108. More specifically, video camera 116 is positioned with respect to display surface 108 to facilitate maximizing an amount of IR light reflected from tabletop devices 106 positioned above display surface 108. Video camera 116 includes an IR pass filter 118 that transmits only IR light and prevents ambient visible light from traveling through display surface 108. Because it is desired that video camera 116 produce an output signal representative of only the IR light reflected from tabletop devices 106, a baffle 120 is positioned between IR light source 112 and video camera 116 to substantially prevent IR light that is directly emitted from IR light source 112 from entering video camera 116. As such, IR light reflected from tabletop devices 106 may be reflected back through translucent layer 114, through IR pass filter 118, and into video camera 116. Alternatively, IR light reflected from tabletop devices 106 may be reflected or absorbed by other interior surfaces within table 100 without entering video camera 116.

In the exemplary embodiment, translucent layer 114 substantially diffuses both incident and reflected IR light. As such, tabletop devices 106 positioned above display surface 108, but not in contact with display surface 108, will reflect less IR light back to digital video camera 116 than tabletop devices 106 that are positioned in contact with display surface 108. Video camera 116 senses IR light reflected from tabletop objects 106 within its imaging field and produces a digital signal corresponding to images of the reflected IR light. The digital signal is input to processor 102 to enable a location of each tabletop device 106 to be determined. In addition, the size, orientation, and shape of tabletop device 106 may also be determined. Moreover, and as described in greater detail below, a tabletop device 106 may include an IR light reflective pattern or coded identifier that uniquely identifies that particular tabletop device 106 and/or identifies the tabletop device 106 as being within a particular class or group of related tabletop devices 106. Accordingly, the digital signal produced by video camera 116 may also be used to identify a tabletop device 106.

In one embodiment, processor 102 is integral to table 100. In an alternative embodiment, processor 102 is external to table 100 as part of, for example, a server (not shown). As used herein, the term "processor" may include any programmable system including systems using microcontrollers, reduced instruction set circuits (RISC), application specific integrated circuits (ASICs), logic circuits, and any other circuit or processor capable of executing the functions described herein. The above examples are exemplary only, and are thus not intended to limit in any way the definition and/or meaning of the term "processor". In the exemplary embodiment, processor 102 executes algorithms for processing the digital signal from digital video camera 116 and executes software applications that use a user interface.
functionality of table 100 to display graphic images. The graphic images include, for example, but are not limited to only including, pictures and/or a virtual environment that is visible on display surface 108. As such, table 100 also includes a video projector 122 that displays graphic images, a virtual environment, and/or text information on display surface 108. In one embodiment, video projector 122 is a liquid crystal display (LCD). In an alternative embodiment, video projector 122 is a digital light processor (DLP) display. To facilitate preventing IR light emitted by video projector 122 from entering table 100, wherein the IR light may interfere with the IR light reflected from tablettop devices 106, a filter, such as an IR cut filter 124, is positioned in front of a projector lens (not shown) of video projector 122.

Moreover, in one embodiment, table 100 also includes a plurality of mirror assemblies 136. Specifically, in the exemplary embodiment, a first mirror assembly 126 directs projected light from video projector 122 through an opening 128 defined in frame 104 such that the projected light is incident on a second mirror assembly 130. Second mirror assembly 130 reflects the projected light onto translucent layer 114, which is positioned at a focal point of video projector 122. Table 100 also includes at least one alignment device 132, which is sized to facilitate properly aligning first mirror assembly 126. A positioning device 134 adjusts an angle of second mirror assembly 130. Such devices 132 and 134 facilitate ensuring that the image projected onto display surface 108 is properly aligned with respect to display surface 108. Alternative embodiments may include alternate elements that may be used to align first and second mirror assemblies 126 and 130. Moreover, other alternative embodiments may not include mirror assemblies 136 and/or devices 132 and 134 but, rather, directly project light from video projector 122 onto display surface 108.

FIGS. 2-4 are schematic illustrations of an exemplary administrator tool or plunger device 200 that may be used with interactive gaming display table 100 (shown in FIG. 1). Specifically, FIG. 2 is a side view of plunger device 200, FIG. 3 is a bottom view of plunger device 200, and FIG. 4 is a cross-sectional view of plunger device 200. In the exemplary embodiment, plunger device 200 may be used to award a player a bonus round or bonus value. Alternatively, plunger device 200 may be used to enable one or more players to move through a game in steps. In the exemplary embodiment, plunger device 200 includes a cylindrical base 202 that includes a top surface 204 and an opposite bottom surface 206. Moreover, plunger device 200 also includes a plunger 208 having a shaft 210 and a handle 212 coupled to an upper end 214 of shaft 210. In the exemplary embodiment, handle 212 is generally oviform. In an alternative embodiment, handle 212 is formed into a “T” shape. Alternatively, handle 212 may be formed into any shape that enables plunger 208 to function as described herein. In the exemplary embodiment, and as best seen in FIG. 3, base 202 is formed with a channel 216 that extends from top surface 204 through base 202 to bottom surface 206. Channel 216 is sized to receive shaft 210 therein and to enable shaft 210 to slide into and out of base 202 as described herein.

Base 202 also includes a primary identifying mark or indicia 218. Primary identifying mark 218 extends over at least a portion of bottom surface 206. In the exemplary embodiment, primary identifying mark 218 functions as a unique identifier for plunger device 200. In the exemplary embodiment, primary identifying mark 218 is a tag that includes an infrared (IR) dot pattern (not shown) that reflects light from IR light source 112 (shown in FIG. 1) as described above. In an alternative embodiment, primary identifying mark 218 is a tag that includes a barcode that is readable by a scanner (not shown) and/or digital video camera 116 (shown in FIG. 1). In other alternative embodiments, primary identifying mark 218 is an RFID tag or any other suitable tag or device, such as a radial code or matrix code, that enables a unique identification of plunger device 200.

In the exemplary embodiment, shaft 210 includes a secondary identifying mark or indicia 220 that extends over at least a portion of shaft 210. Secondary identifying mark 220 is positioned relative to bottom surface 206 such that secondary identifying mark 220 is visible by, for example, digital video camera 116, when shaft 210 has been inserted into body 202. In one embodiment, secondary identifying mark 220 is an IR dot pattern (not shown) that reflects light from IR light source 112 as described above. In alternative embodiments, secondary identifying mark 220 is a barcode (not shown) that is readable by a scanner (not shown) and/or digital video camera 116, an RFID tag, or any other suitable tag, label, or device, such as a radial code or matrix code, that enables processor 102 to read secondary identifying mark 220 in order to associate secondary identifying mark 220 with an award and/or game move. In the exemplary embodiment, digital video camera 116 reads secondary identifying mark 220 when shaft 210 has been inserted into channel 216, and processor 102 thereafter identifies an action and/or award associated with secondary identifying mark 220. Moreover, in the exemplary embodiment, secondary identifying mark 220 is not permanently associated with a single game move or award. But rather, the game move and/or award may change according to a game being played at table 100. Further, a dealer may change the award associated with secondary identifying mark 220 according to predetermined rules regarding a stage of a game and/or an amount of a wager. In addition, in alternative embodiments, plunger device 200 may include more than one plunger 208, wherein each plunger 208 includes a secondary identifying mark 220. In such an embodiment, each secondary identifying mark 220 may be different, or one or more plungers 208 may include the same secondary identifying mark 220. Further, in alternative embodiments, a game move and/or award may be identified when plunger 208 is pulled upward from channel 216. In such an embodiment, digital video camera 116 is no longer capable of collecting IR light reflected from secondary identifying mark 220, and processor 102 thereafter identifies an award associated with secondary identifying mark 220. Furthermore, alternative embodiments may include one or more plungers 208, wherein each plunger 208 includes more than one secondary identifying mark 220.

During operation, and referring to FIGS. 1-4, a player at interactive gaming display table 100 makes a wager on a game such as, but not limited to, Blackjack, Let It Ride, Pai-gow, roulette, and slots. The game is projected by digital video projector 122 by projecting light through IR cut filter 124. The projected light is reflected by first mirror assembly 126 towards second mirror assembly 130 and is then reflected by second mirror assembly 130 through translucent layer 114 for display on display surface 108. At some point during the game, the player may become eligible for an award. At such time, the dealer may place a reward device, such as plunger device 200, near the player. Prior to collecting the award, infrared light emitted by IR light source 112 and reflected by
primary identifying mark 218 is collected by digital video camera 116. Digital video camera 116 generates a signal representative of the reflected IR light and transmits the signal to processor 102. Based on the signal's representation of the IR light reflected by primary identifying mark 218, processor 102 identifies plunger device 200.

[0031] The player collects the award by depressing plunger 208 into channel 216. Depressing plunger 208 enables IR light emitted by IR light source 112 to be reflected by secondary identifying mark 220. The reflected light is collected by digital video camera 116, which generates a signal representative of the reflected IR light and transmits the signal to processor 102. Again based on the signal’s representation of the IR light reflected by secondary identifying mark 220, processor 102 identifies an award for the player. For example, when the award is a bonus game, processor 102 causes video projector 122 to project a bonus game such that display surface 108 is changed to display a bonus game for the player. As another example, when the award is a number of points or dollars, processor 102 adds the points or dollars to the player’s account. Alternatively, the player may collect the award by pulling plunger 208 upward from channel 216. In such an embodiment, digital video camera 116 is no longer capable of collecting IR light reflected from secondary identifying mark 220, and processor 102 thereafter identifies an award associated with secondary identifying mark 220.

[0032] In an alternative embodiment, plunger device 200 may be used to progress through a game, such as through step-by-step progression of player moves and/or decisions. For example, a player at interactive gaming display table 100 makes a wager on a game such as, but not limited to, BlackJack. As described above, the game is projected by digital video projector 122 by projecting light through IR cut filter 124. The projected light is reflected by first mirror assembly 126 towards second mirror assembly 130, wherein the light is then reflected by second mirror assembly 130 through translucent layer 114 for display on display surface 108. In such an embodiment, the dealer or operator will place a plunger device 200 near the player at the time the wager is made. To identify the player’s decisions during play the plunger device 200 is associated with the player according to the primary identifying mark 218. As described above, infrared light emitted by IR light source 112 and reflected by primary identifying mark 218 is collected via digital video camera 116. Digital video camera 116 generates a signal representative of the reflected IR light and transmits the signal to processor 102. Based on the signal’s representation of the IR light reflected by primary identifying mark 218, processor 102 identifies plunger device 200 and associates plunger device 200 with a player position at table 100 and determines that the player will be using plunger device 200 to advance through the game.

[0033] In the alternative embodiment, and during game play, the player signals each game-related decision by depressing plunger 208 into channel 216. Depressing plunger 208 enables IR light emitted by IR light source 112 to be reflected by secondary identifying mark 220. The reflected light is collected by digital video camera 116, which generates a signal representative of the reflected IR light and transmits the signal to processor 102. Again, based on the signal’s representation of the IR light reflected by secondary identifying mark 220, processor 102 identifies an action, such as changing the state of the game, performed by the player. Processor 102 then projects the identified action as described above. For each decision that occurs during game play, the player depresses plunger 208 into channel 216. Processor 102 associates each successive signal representative of IR light reflected from secondary identifying mark 220 as a new decision by the player, and causes the displayed game to change accordingly. Alternatively, a player decision may be identified when plunger 208 is pulled upward from channel 216. In such an embodiment, digital video camera 116 is no longer capable of collecting IR light reflected from secondary identifying mark 220, and processor 102 thereafter identifies a player decision associated with secondary identifying mark 220.

[0034] FIG. 5 is a schematic illustration of an alternative administrator tool or bonus device 500 that may be used with interactive gaming display table 100 (shown in FIG. 1). Specifically, FIG. 5 is a top view of bonus device 500. In the exemplary embodiment, bonus device 500 includes a base 502 and a door or lid 504. Lid 504 is hingedly coupled to base 502 by one or more hinges 506. Specifically, in the exemplary embodiment, a first hinge portion 508 is coupled to base 502 and a second hinge portion 510 is coupled to lid 504. Hinges 506 enable lid 504 to be swung or lifted from base 502. Lid 504 includes a handle 512. In the exemplary embodiment, handle 512 is substantially centered with respect to lid 504. In one embodiment, handle 512 is formed integrally from lid 504. In an alternative embodiment, handle 512 is coupled to a top surface 514 of lid 504 by a mechanical coupling device such as, for example, screws or an adhesive.

[0035] Base 502 also includes a primary identifying mark or indicia 516. Primary identifying mark 516 extends over at least a portion of a bottom surface 518 of base 502. In the exemplary embodiment, primary identifying mark 516 functions as a unique identifier for bonus device 500. In the exemplary embodiment, primary identifying mark 516 is a tag that includes an infrared (IR) dot pattern (not shown) that reflects light from IR light source 112 (shown in FIG. 1) as described above. In an alternative embodiment, primary identifying mark 516 is a tag that includes a barcode that is readable by a scanner (not shown) and/or digital video camera 116 (shown in FIG. 1). In other alternative embodiments, primary identifying mark 516 is an RFID tag or any other suitable tag or device, such as a radial code or matrix code, that enables a unique identification of bonus device 500.

[0036] In the exemplary embodiment, lid 504 includes a secondary identifying mark or indicia 520. Secondary identifying mark 520 extends over at least a portion of a bottom surface 522 of lid 504. In the exemplary embodiment, secondary identifying mark 520 is positioned in relation to IR light source 112 and digital video camera 116 such that secondary identifying mark 520 is visible to, for example, digital video camera 116 when lid 504 is in a closed position against base 502. In one embodiment, secondary identifying mark 520 is an IR dot pattern (not shown) that reflects light from IR light source 112 as described above. In other embodiments, secondary identifying mark 520 is a barcode readable by a scanner (not shown) and/or digital video camera 116, an RFID tag, or any other suitable tag, label, or device, such as a radial code or matrix code, that enables processor 102 to read secondary identifying mark 520 in order to associate secondary identifying mark 520 with an award and/or game move. In the exemplary embodiment, digital video camera 116 reads secondary identifying mark 520 when lid 504 is in a closed position. When lid 504 is opened, digital video camera 116 is no longer capable of collecting IR light reflected from secondary identifying mark 520, and processor 102 thereafter
identifies an award associated with secondary identifying mark 520. Moreover, in the exemplary embodiment, secondary identifying mark 520 is not permanently associated with a single game move or award, but rather, the game move and/or award may change according to a game being played using table 100. Further, a dealer may change the award associated with secondary identifying mark according to predetermined rules regarding a stage of a game and/or an amount of a wager. Alternatively, an award may be identified when lid 504 is lowered to rest against base 502. In such an embodiment, digital video camera 116 recognizes the presence of IR light reflected from secondary identifying mark 520, and processor 102 thereafter identifies an award associated with secondary identifying mark 520. Furthermore, alternative embodiments may include a lid 504 that includes more than one secondary identifying mark 520.

[0037] During operation, a player at interactive gaming display table 100 makes a wager on a game such as, but not limited to, Blackjack, Let It Ride, Pai-gow, roulette, and slots. The game is projected by digital video projector 122 by projecting light through IR cut filter 124. The projected light is reflected by first mirror assembly 126 towards second mirror assembly 130, and is then reflected by second mirror assembly 130 through translucent layer 114 for display on display surface 108. At some point during the game, the player may become eligible for an award. At such time, the dealer may place a reward device, such as bonus device 500, near the player. Prior to collecting the award, infrared light emitted by IR light source 112 and reflected by primary identifying mark 516 is collected by digital video camera 116. Digital video camera 116 generates a signal representative of the reflected IR light and transmits the signal to processor 102. Based on the signal's representation of the IR light reflected by primary identifying mark 516, processor 102 identifies bonus device 500. The player collects the award by moving lid 504 upward from base 502. As lid 504 is moved, IR light emitted by IR light source 112 is no longer reflected by secondary identifying mark 520. The loss of reflected light is recognized by processor 102, and processor 102 identifies an award for the player based on secondary identifying mark 520. For example, when the award is a bonus game, processor 102 causes video projector 122 to project a bonus game such that display surface 108 is changed to display a bonus game for the player. As another example, when the award is a number of points or dollars, processor 102 adds the points or dollars to the player's account.

[0038] FIG. 6 is a top view of a bonus device 600 that includes a base 602 and a plurality of doors or lids 604. Each lid 604 is hingedly coupled to base 602 by one or more hinges 606. In the exemplary embodiment, a first hinge portion 608 is coupled to base 602 and a second hinge portion 610 is coupled to lid 604. Hinges 606 enable lid 604 to be swung or lifted from base 602. Each lid 604 includes a handle 612. In the exemplary embodiment, each handle 612 is substantially centered with respect to a respective lid 604. In one embodiment, handle 612 is formed integrally from lid 604. In an alternative embodiment, handle 612 is coupled to a top surface 614 of lid 604 by a mechanical coupling such as, for example, screws or an adhesive.

[0039] Base 602 also includes a primary identifying mark or indicia 616. Primary identifying mark 616 extends over at least a portion of a bottom surface 618 of base 602. In the exemplary embodiment, primary identifying mark 616 functions as a unique identifier for bonus device 600. In one embodiment, primary identifying mark 616 is a tag that includes an infrared (IR) dot pattern (not shown) that reflects light from IR light source 112 (shown in FIG. 1) as described above. In an alternative embodiment, primary identifying mark 616 is a tag that includes a barcode that is readable by a scanner (not shown) and/or digital video camera 116 (shown in FIG. 1). In further alternative embodiments, primary identifying mark 616 is an RFID tag or any other suitable tag or device, such as a radial code or matrix code, that enables a unique identification of bonus device 600.

[0040] In the exemplary embodiment, each lid 604 includes a secondary identifying mark or indicia 620. Each secondary identifying mark 620 extends over at least a portion of a bottom surface 622 of a respective lid 604. In the exemplary embodiment, each secondary identifying mark 620 is positioned in relation to IR light source 112 and digital video camera 116 such that each secondary identifying mark 620 is visible to, for example, digital video camera 116 when a respective lid 604 is in a closed position against base 602. In one embodiment, secondary identifying mark 620 is an IR dot pattern (not shown) that reflects light from IR light source 112 as described above. In alternative embodiments, secondary identifying mark 620 is a barcode readable by a scanner (not shown) and/or digital video camera 116, an RFID tag, or any other suitable tag, label, or device, such as a radial code or matrix code, that enables processor 102 to read secondary identifying mark 620 in order to associate secondary identifying mark 620 with a reward and/or game move. In the exemplary embodiment, digital video camera 116 reads secondary identifying mark 620 when lid 604 is in a closed position. When lid 604 is opened, digital video camera 116 is no longer capable of collecting IR light reflected from the respective secondary identifying mark 620, and processor 102 identifies an award associated with the respective secondary identifying mark 620. Moreover, in the exemplary embodiment, secondary identifying mark 620 is not permanently associated with a single game move or award, but rather, the game move and/or award may change according to a game being played using table 100. Further, a dealer may change the award associated with secondary identifying mark 620 according to predetermined rules regarding a stage of a game and/or an amount of a wager. Alternatively, an award may be identified when lid 604 is lowered to rest against base 602. In such an embodiment, digital video camera 116 recognizes the presence of IR light reflected from secondary identifying mark 620, and processor 102 thereafter identifies an award associated with secondary identifying mark 620. Furthermore, alternative embodiments may include one or more lids 604 that each include more than one secondary identifying mark 620.

[0041] FIG. 7 is a perspective view of a bonus device 700 that includes a base 702 and a plurality of doors or lids 704. Each lid 704 is hingedly coupled to base 702 by one or more hinges 706, as described above. Each lid 704 is formed with a lip 708 that facilitates moving lid 704. As described above with respect to FIG. 6, base 702 also includes a primary identifying mark or indicia 616 (shown in FIG. 6). Primary identifying mark 616 extends over at least a portion of a bottom surface 618 (shown in FIG. 6) of base 702. In the exemplary embodiment, primary identifying mark 616 functions as a unique identifier for bonus device 700. In one embodiment, primary identifying mark 616 is a tag that includes an infrared (IR) dot pattern (not shown) that reflects light from IR light source 112 (shown in FIG. 1) as described above.
above. In an alternative embodiment, primary identifying mark 616 is a tag that includes a barcode that is readable by a scanner (not shown) and/or digital video camera 116 (shown in FIG. 1). In further alternative embodiments, primary identifying mark 616 is an RFID tag or any other suitable tag or identifying device, such as a radial code or matrix code, that enables a unique identification of bonus device 700.

In the exemplary embodiment, each lid 704 includes a secondary identifying mark or indicia 620 (shown in FIG. 6). Each secondary identifying mark 620 extends over at least a portion of a bottom surface 622 (shown in FIG. 6) of a respective lid 704. In the exemplary embodiment, each secondary identifying mark 620 is positioned in relation to IR light source 112 and digital video camera 116 such that each secondary identifying mark 620 is visible to, for example, digital video camera 116 when a respective lid 704 is in a closed position against base 702. In one embodiment, secondary identifying mark 620 is an IR dot pattern (not shown) that reflects light from IR light source 112 as described above. In alternative embodiments, secondary identifying mark 620 is a barcode readable by a scanner (not shown) and/or digital video camera 116, an RFID tag, or any other suitable tag, label, or device, such as a radial code or matrix code, that enables processor 102 to read secondary identifying mark 620 in order to associate secondary identifying mark 620 with a reward and/or game move. In the exemplary embodiment, digital video camera 116 reads secondary identifying mark 620 when lid 704 is in a closed position. When lid 704 is opened using lip 708, digital video camera 116 is no longer capable of collecting IR light reflected from the respective secondary identifying mark 620, and processor 102 identifies an award associated with the respective secondary identifying mark 620. Moreover, in the exemplary embodiment, secondary identifying mark 620 is not permanently associated with a single game move or award, but rather, the game move and/or award may change according to a game being played using table 100. Further, a dealer may change the award associated with secondary identifying mark according to predetermined rules regarding a stage of a game and/or an amount of a wager. Alternatively, an award may be identified when lid 704 is lowered to rest against base 702. In such an embodiment, digital video camera 116 recognizes the presence of IR light reflected from secondary identifying mark 620, and processor 102 thereafter identifies an award associated with secondary identifying mark 620. Furthermore, alternative embodiments may include one or more lids 704 that each include more than one secondary identifying mark 620.

During operation, and referring to FIGS. 6 and 7, a player at interactive gaming display table 100 makes a wager on a game such as, but not limited to, Blackjack, Let It Ride, Pai-gow, roulette, and slots. The game is projected by digital video projector 122 by projecting light through IR cut filter 124. The projected light is reflected by first mirror assembly 126 towards second mirror assembly 130, and is then reflected by second mirror assembly 130 through translucent layer 114 for display on display surface 108. At some point during the game, the player may become eligible for an award. At such time, the dealer may place a device, such as bonus device 600, near the player. Prior to collecting the award, infrared light emitted by IR light source 112 and reflected by primary identifying mark 616 is collected by digital video camera 116. Digital video camera 116 generates a signal representative of the reflected IR light and transmits the signal to processor 102. Based on the signal’s representation of the IR light reflected by primary identifying mark 616, processor 102 identifies bonus device 600. The player collects the award by moving one of the plurality of lids 604 upward with respect to base 602. Lifting lid 604 causes IR light emitted by IR light source 112 to no longer be reflected by a respective secondary identifying mark 620. The loss of reflected light is recognized by processor 102, and processor 102 identifies an award for the player based on the respective secondary identifying mark 620. For example, when the award is a bonus game, processor 102 causes video projector 122 to project a bonus game such that display surface 108 is changed to display a bonus game for the player. As another example, when the award is a number of points or dollars, processor 102 adds the points or dollars to the player’s account.

In another alternative embodiment, one or more players at interactive Gaming display table 100 make a wager on a game such as, but not limited to, Blackjack, Let It Ride, Pai-gow, roulette, and slots. The game is projected by digital video projector 122 by projecting light through IR cut filter 124. The projected light is reflected by first mirror assembly 126 towards second mirror assembly 130, and is then reflected by second mirror assembly 130 through translucent layer 114 for display on display surface 108. At some point during the game, one or more players may become eligible for an award. At such time, the dealer may place a device, such as bonus device 600, on display surface 108. Prior to collecting the award, infrared light emitted by IR light source 112 and reflected by primary identifying mark 616 is collected by digital video camera 116. Digital video camera 116 generates a signal representative of the reflected IR light and transmits the signal to processor 102. Based on the signal’s representation of the IR light reflected by primary identifying mark 616, processor 102 identifies bonus device 600. The player collects the award by moving one of the plurality of lids 604 upward with respect to base 602. Lifting lid 604 causes IR light emitted by IR light source 112 to no longer be reflected by a respective secondary identifying mark 620. The loss of reflected light is recognized by processor 102, and processor 102 identifies an award for the player based on the respective secondary identifying mark 620. For example, when the award is a bonus game, processor 102 causes video projector 122 to project a bonus game such that display surface 108 is changed to display a bonus game for the player. As another example, when the award is a number of points or dollars, processor 102 adds the points or dollars to the player’s account.

During operation, and referring to FIGS. 6 and 7, a player at interactive gaming display table 100 makes a wager on a game such as, but not limited to, Blackjack, Let It Ride, Pai-gow, roulette, and slots. The game is projected by digital video projector 122 by projecting light through IR cut filter 124. The projected light is reflected by first mirror assembly 126 towards second mirror assembly 130, and is then reflected by second mirror assembly 130 through translucent layer 114 for display on display surface 108. At some point during the game, the player may become eligible for an award. At such time, the dealer may place a device, such as bonus device 600, near the player. Prior to collecting the award, infrared light emitted by IR light source 112 and reflected by primary identifying mark 616 is collected by digital video camera 116. Digital video camera 116 generates a signal representative of the reflected IR light and transmits the signal to processor 102. Based on the signal’s representation of the IR light reflected by primary identifying mark 616, processor 102 identifies bonus device 600. The player collects the award by moving one of the plurality of lids 604 upward with respect to base 602. Lifting lid 604 causes IR light emitted by IR light source 112 to no longer be reflected by a respective secondary identifying mark 620. The loss of reflected light is recognized by processor 102, and processor 102 identifies an award for the player based on the respective secondary identifying mark 620. For example, when the award is a bonus game, processor 102 causes video projector 122 to project a bonus game such that display surface 108 is changed to display a bonus game for the player. As another example, when the award is a number of points or dollars, processor 102 adds the points or dollars to the player’s account.
primary and secondary identifying marks 808 and 810 are tags that includes a barcode that is readable by a scanner (not shown) and/or digital video camera 116 (shown in FIG. 1). In alternative embodiments, primary and secondary identifying marks 808 and 810 are RFID tags, or any other suitable tag or device, such as a radial code or matrix code, that enables a unique identification of wand device 800. Primary identifying tag 808 functions as a unique identifier for wand device 800, and each secondary identifying tag 810 functions to identify a player action based on a location of secondary identifying tag 810 on object 100.

During operation, a player at interactive gaming display 100 makes a wager on a game such as, but not limited to, Blackjack, Let It Ride, Pai-gow, roulette, and slots. The game is projected by digital video projector 122 by projecting light through IR cut filter 124. The projected light is reflected by first mirror assembly 126 towards second mirror assembly 130, and is then reflected by second mirror assembly 130 through translucent layer 114 for display on display surface 108. At some point during the game, the player may become eligible for an award. At such time, the dealer may place a device, such as wand device 800, near the player. Prior to collecting the award, infrared light emitted by IR light source 112 and reflected by primary identifying mark 808 is collected by digital video camera 116. Digital video camera 116 generates a signal representative of the reflected IR light and transmits the signal to processor 102. Based on the signal’s representation of the IR light reflected by primary identifying mark 808, processor 102 identifies wand device 800. The processor collects the award by moving wand device 800 to a position on display surface 108 that is associated with a wager and/or a bonus game area. Infrared light emitted by IR light source 112 is reflected by secondary identifying mark 810. The reflected light is collected by digital video camera 116, which generates a signal representative of the reflected IR light and transmits the signal to processor 102. Again based on the signal’s representation of the IR light reflected by secondary identifying mark 810, processor 102 identifies the position of wand device 800 and identifies an associated award for the player based on the location of secondary identifying mark. For example, when the award is a bonus game, processor 102 causes video projector 122 to project a bonus game such that display surface 108 is changed to display a bonus game for the player. As another example, when the award is a number of points or dollars, processor 102 adds the points or dollars to the player’s account.

The above-described methods and apparatus enable an authorized host, dealer, and/or game attendant to instantly reward a player at a surface top computer gaming device points, credits, prizes, and/or other rewards. The primary identifying mark facilitates identifying the player device and associating the player device with the player, the game being played, and/or the player action being rewarded. The secondary identifying mark facilitates identifying the reward to be awarded to the player. Moreover, the second identifying mark facilitates identifying the action that the player wishes to take with regards to the game being played at the surface top computer gaming device. Using a surface top computer gaming device and, specifically, using the above-described player reward system facilitates playing multiple games at different times using the same gaming device, and without a need to physically change the tabletop.

Although the apparatus and methods described herein are described in the context of a bonus device for use with an interactive gaming display table, it is understood that the apparatus and methods are not limited to bonus devices or interactive gaming display tables. Likewise, the apparatus and methods illustrated are not limited to the specific embodiments herein, but rather, components of the apparatus can be utilized independently and separately from other components described herein.

While the above-described embodiments have been described in terms of various specific embodiments, those skilled in the art will recognize that the above-described embodiments may be practiced with modification within the spirit and scope of the claims.

What is claimed is:

1. An administration tool for use with an interactive gaming table, wherein the interactive gaming table includes a playing surface for displaying a game, a signal source, and a signal collector, said tool comprising:
   a primary identifying indicia that uniquely identifies said tool to the gaming table by reflecting a signal emitted by the signal source such that the signal reflected by said primary identifying indicia is received and analyzed by the signal collector; and
   a secondary identifying indicia that is recognized by the gaming table by reflecting the signal emitted by the signal source such that the signal reflected by said secondary identifying indicia is received and analyzed by the signal collector, wherein a present state of the displayed game is changed based on a player’s action taken with said tool.

2. An administration tool in accordance with claim 1 further comprising:
   a base, said primary identifying indicia extending over at least a portion of said base; and
   a plunger sized for insertion within a portion of said base, said secondary identifying indicia extending over at least a portion of said plunger.

3. An administration tool in accordance with claim 2 wherein said plunger is configured to be moved within a channel defined within said base by the player during a game, said secondary identifying indicia is read by the gaming table when said plunger is inserted into said channel for use in determining an award for the player.

4. An administration tool in accordance with claim 2 wherein said plunger is selectively moved within said channel by the player to enable the game to be advanced based on an action associated with said secondary identifying indicia.

5. An administration tool in accordance with claim 2 wherein said plunger comprises a plurality of plungers, each of said plungers comprises at least one secondary identifying indicia associated with an award for the player during the game, each of said secondary identifying indicia extends over at least a portion of each of said plurality of plungers.

6. An administration tool in accordance with claim 1 further comprising:
   a frame, said primary identifying indicia extending over at least a portion of said frame; and
   a lid coupled to said frame, said secondary identifying indicia extending over at least a portion of said lid.

7. An administration tool in accordance with claim 6 wherein said lid moved by the player during a game such that a corresponding movement of said secondary identifying indicia is read by the gaming table for use in determining an award for the player.
8. An administration tool in accordance with claim 6 wherein said lid comprises a plurality of lids, each said lid comprises at least one secondary identifying indicia associated with an award for the player during the game, each of said at least one secondary identifying indicia extends over at least a portion of each of said plurality of lids.

9. An administration tool in accordance with claim 1 wherein said primary identifying indicia and said secondary identifying indicia each extend over at least a portion of a bottom surface of said device, the gaming table recognizes said secondary identifying indicia and changes the present state of the game based on a location of said tool relative to the gaming table.

10. A gaming device for use with an interactive gaming table comprising a display surface for presenting a game, a processor, a light source, and a detector, said gaming device comprising:

- a base comprising a primary identifying indicia that uniquely identifies said device by reflecting light emitted by the light source such that the light reflected by said primary identifying indicia is received and converted into a signal representative of the reflected light by the detector, wherein the signal is analyzed by the processor; and
- a secondary identifying indicia, wherein said secondary identifying indicia reflects light emitted by the light source such that the light reflected by said secondary identifying indicia is received and converted into a signal representative of the reflected light by the detector, wherein the signal is analyzed by the processor to determine how a present state of the presented game is to be changed.

11. A gaming device in accordance with claim 10 further comprising a plunger sized for insertion within a portion of said base, said secondary identifying indicia extending over at least a portion of said plunger.

12. A gaming device in accordance with claim 11 wherein said plunger is configured to be moved within a channel defined with said base by a player during a game, said secondary identifying indicia is read by the processor when said plunger is moved within said channel for use in at least one of determining an award for the player and advancing the game according to an action associated with said secondary identifying indicia.

13. A gaming device in accordance with claim 10 further comprising a lid coupled to said base, said secondary identifying indicia extending over at least a portion of said lid.

14. A gaming device in accordance with claim 13 wherein said lid is configured to be moved by a player during a game, a movement of said secondary identifying indicia is recognized by the processor when said lid is moved for use in determining an award for the player.

15. A method of operating a rewards system for use with an interactive gaming table configured to display a game, wherein the rewards system includes a gaming device having a primary identifying indicia and a secondary identifying indicia, said method comprising:

- determining an identity of a device based on the primary identifying indicia;
- determining an action by a player based on the secondary identifying indicia; and
- changing a present state of the displayed game based on the determined action.

16. A method in accordance with claim 15 wherein the device includes a plunger and a base sized to receive at least a portion of the plunger therein, wherein determining an action comprises:

- moving the plunger within a channel defined within the base; and
- determining that the secondary identifying mark has moved in relation to the gaming table.

17. A method in accordance with claim 15 wherein the device includes a plurality of plungers and a base sized to receive the plurality of plungers, wherein determining an action comprises:

- moving a first plunger of the plurality of plungers within a first channel defined within the base;
- determining that a secondary identifying indicia extending over at least a portion of the first plunger has moved in relation to the gaming table;
- moving a second plunger of the plurality of plungers within a second channel defined within the base; and
- determining that a secondary identifying indicia extending over at least a portion of the second plunger has moved in relation to the gaming table.

18. A method in accordance with claim 15 wherein the device includes a lid coupled to a base, wherein determining an action taken comprises:

- moving the lid, thereby moving the secondary identifying indicia; and
- determining that the secondary identifying indicia has moved in relation to the gaming table.

19. A method in accordance with claim 15 wherein the device includes a plurality of lids coupled to a base, wherein determining an action taken comprises:

- moving a first lid of the plurality of lids;
- determining that a secondary identifying indicia extending over at least a portion of the first lid has moved in relation to the gaming table;
- moving a second lid of the plurality of lids; and
- determining that a secondary identifying indicia extending over at least a portion of the second lid has moved in relation to the gaming table.

20. A gaming system comprising:

- an interactive gaming display table comprising a playing surface for displaying a game, a video camera, and a processor; and
- at least one player device comprising a primary identifying indicia that uniquely identifies said at least one player device, and at least one secondary identifying indicia, wherein said video camera is configured to receive light reflected by said primary identifying indicia and said at least one secondary identifying indicia, and to generate a signal representative of the reflected light, and said processor is configured to analyze the signal to recognize a movement of said at least one secondary identifying indicia and to one of determine an award for a player playing the game and advance the game according to the movement.

21. A gaming system in accordance with claim 20 further comprising:

- at least one plunger, said at least one secondary identifying indicia extends over at least a portion of said at least one plunger; and
- a base comprising at least one channel sized to receive said at least one plunger, said primary identifying indicia extends over at least a portion of said base.
22. A gaming system in accordance with claim 20 further comprising:
   a base, said primary identifying indicia extends over at least a portion of said base; and
   at least one lid coupled to said base, said at least one secondary identifying indicia extends over at least a portion of said at least one lid.

23. A method for providing a gaming event at an interactive gaming table, said method comprising:
   presenting a gaming event on a display surface of the interactive gaming table;
   determining an identity of a device based on a unique device identifier extending over at least a portion of a base of the device;
   determining an action by a player with the device based on at least one action identifier; and
   changing a present state of the gaming event based on the action.

24. A method in accordance with claim 23 wherein changing a present state of the gaming event comprises determining an award for the player having taken the action, wherein the award is associated with the at least one action identifier.

25. A method in accordance with claim 23 wherein changing a present state of the gaming event comprises advancing the gaming event according to an action associated with the at least one action identifier.

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