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(54) **METHODS OF CASHLESS GAMING AND
PLAYER TRACKING**

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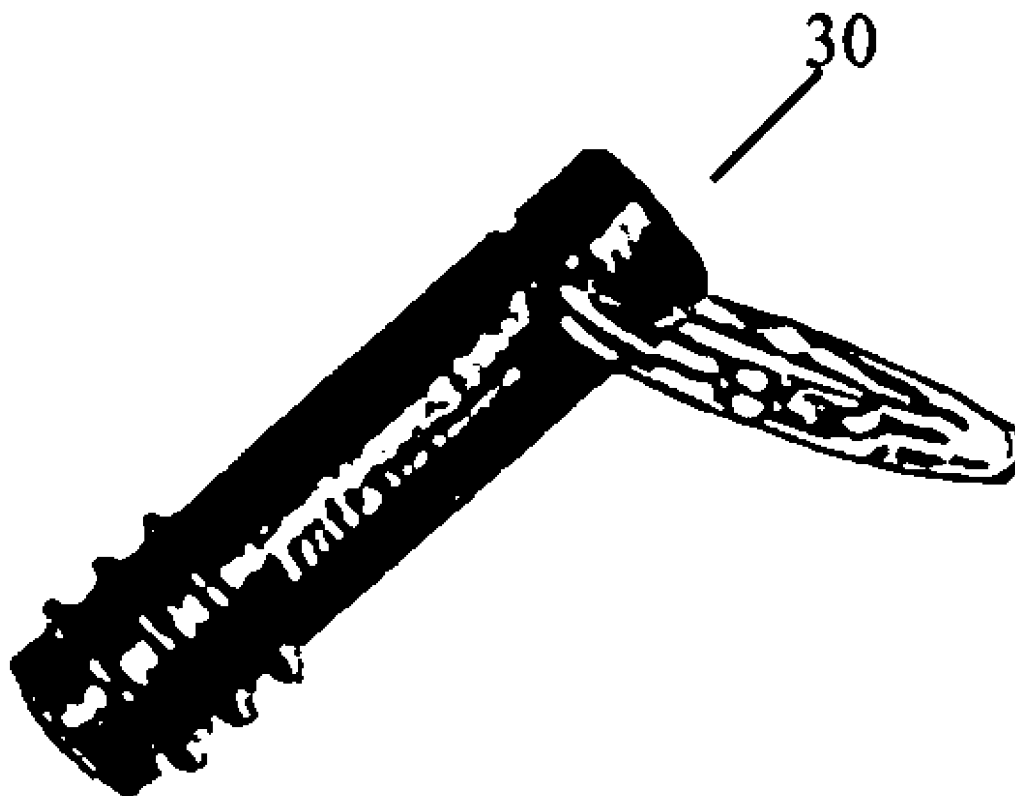
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(57) **ABSTRACT**

Methods of cashless gaming and player tracking use buttonless RFID technology at both gaming machines and gaming tables to transfer a predetermined denominated amount of credit from a remote network connected gaming account server to the gaming machine or table. Gaming machines have an Idle State, an anonymous credit state, and an identified credit state, each with specific methods for changing from one to another. Gaming tables have a keypad for the dealer, RFID readers at each seating position, and a transaction display visible to the dealer, the patrons, and an overhead security camera.

(21) Appl. No.: **11/214,923**

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Prior Art

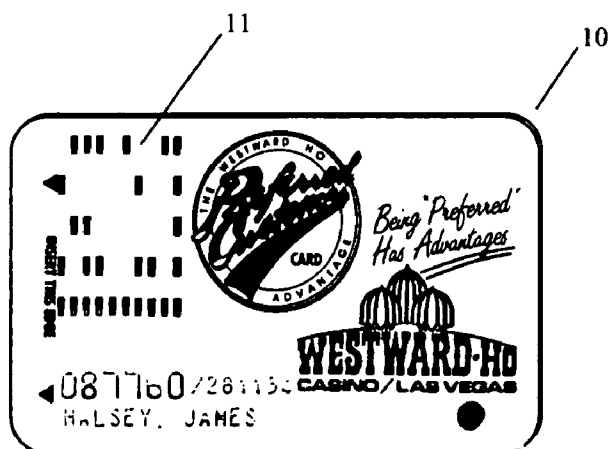


Fig. 1A

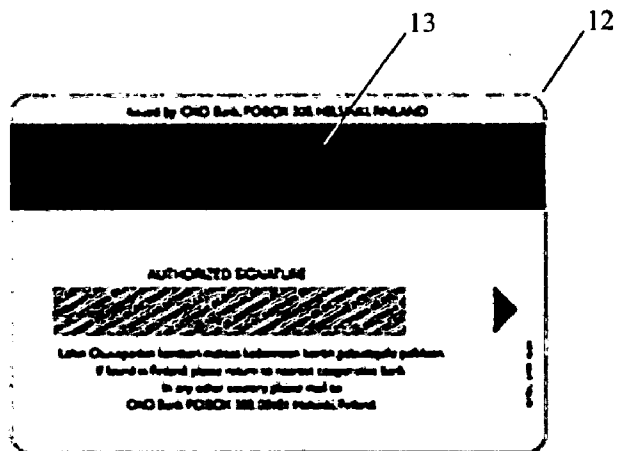


Fig. 1B

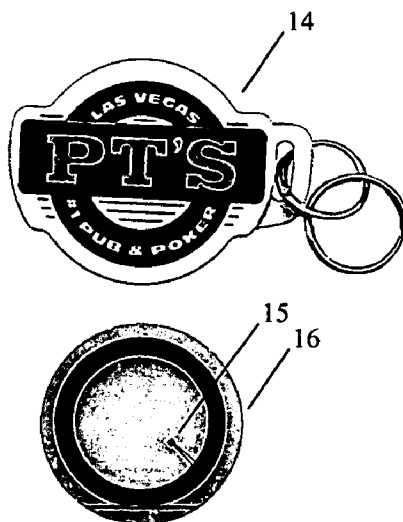


Fig. 1C

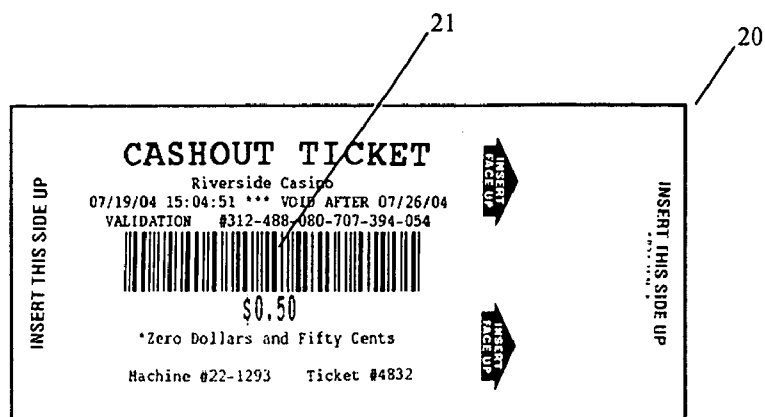


Fig. 2A

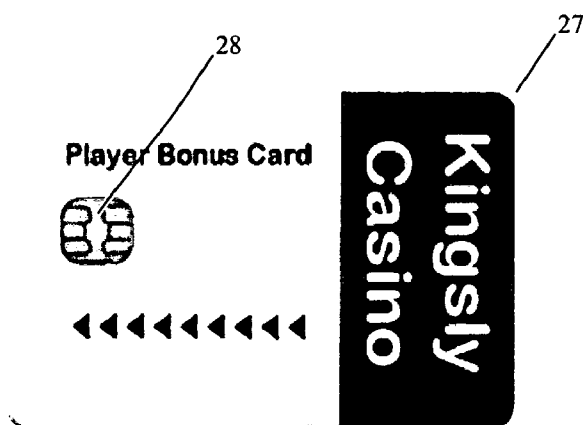


Fig. 2B

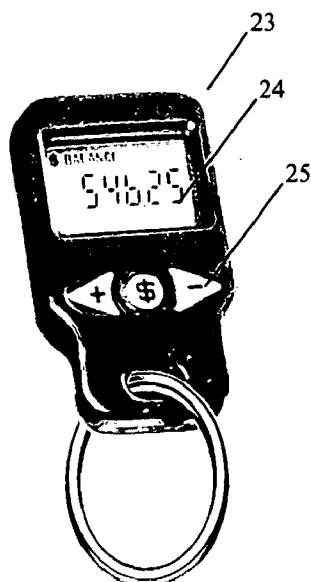


Fig. 2C

Prior Art

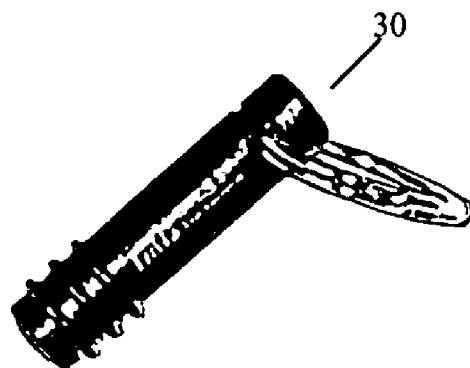


Fig. 3A

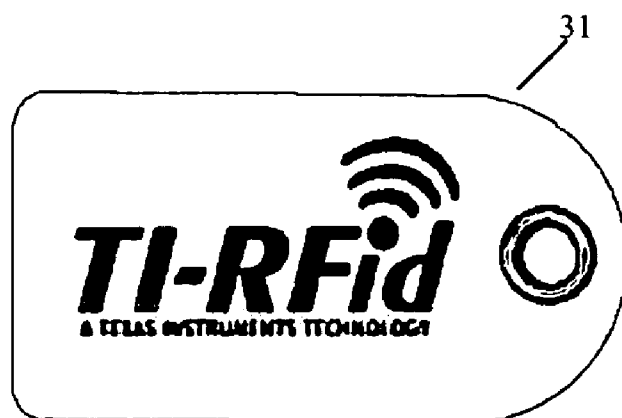


Fig. 3B

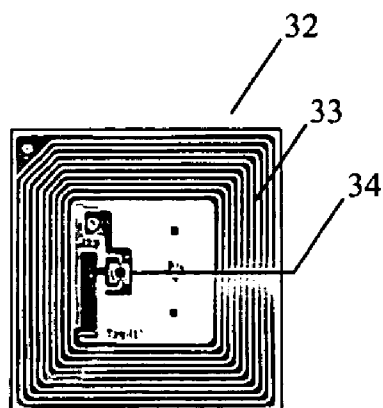


Fig. 3C

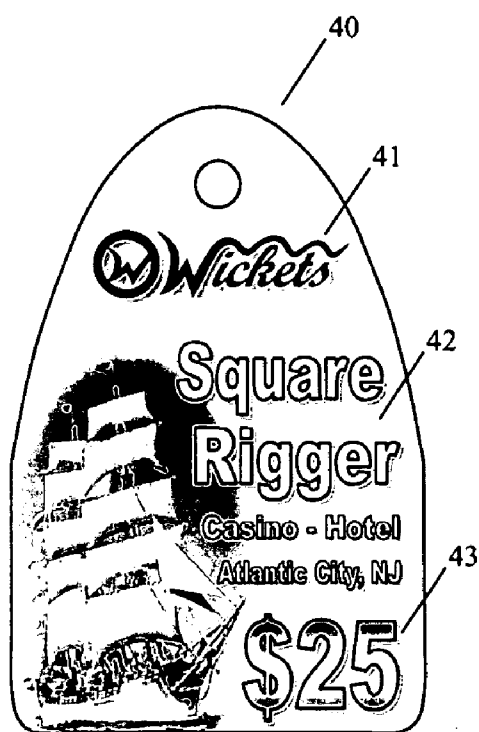


Fig. 4A

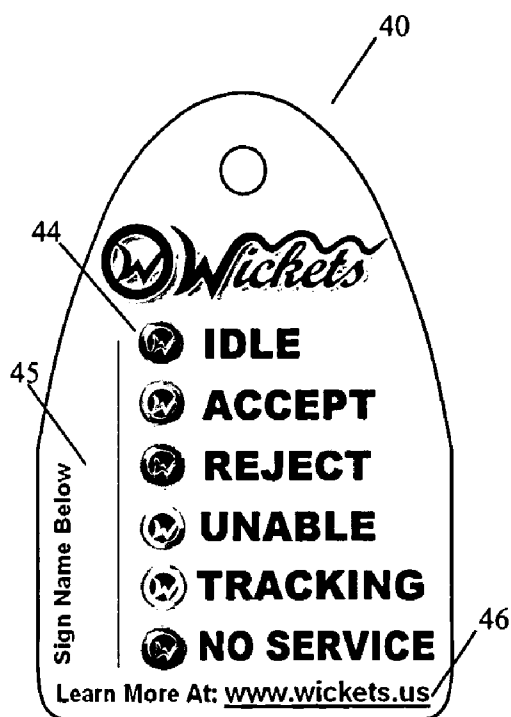


Fig. 4B



Fig. 4C



Fig. 4D

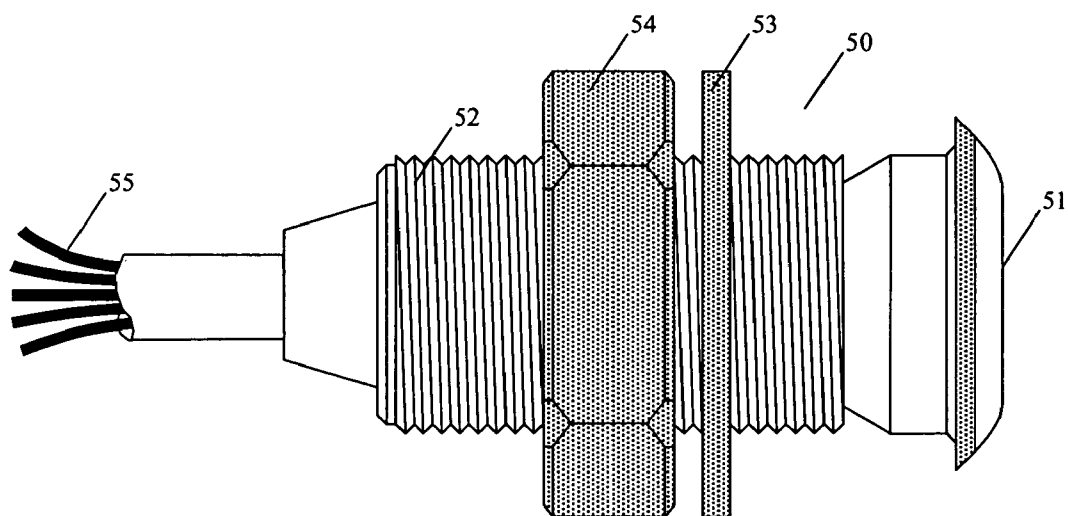


Fig. 5

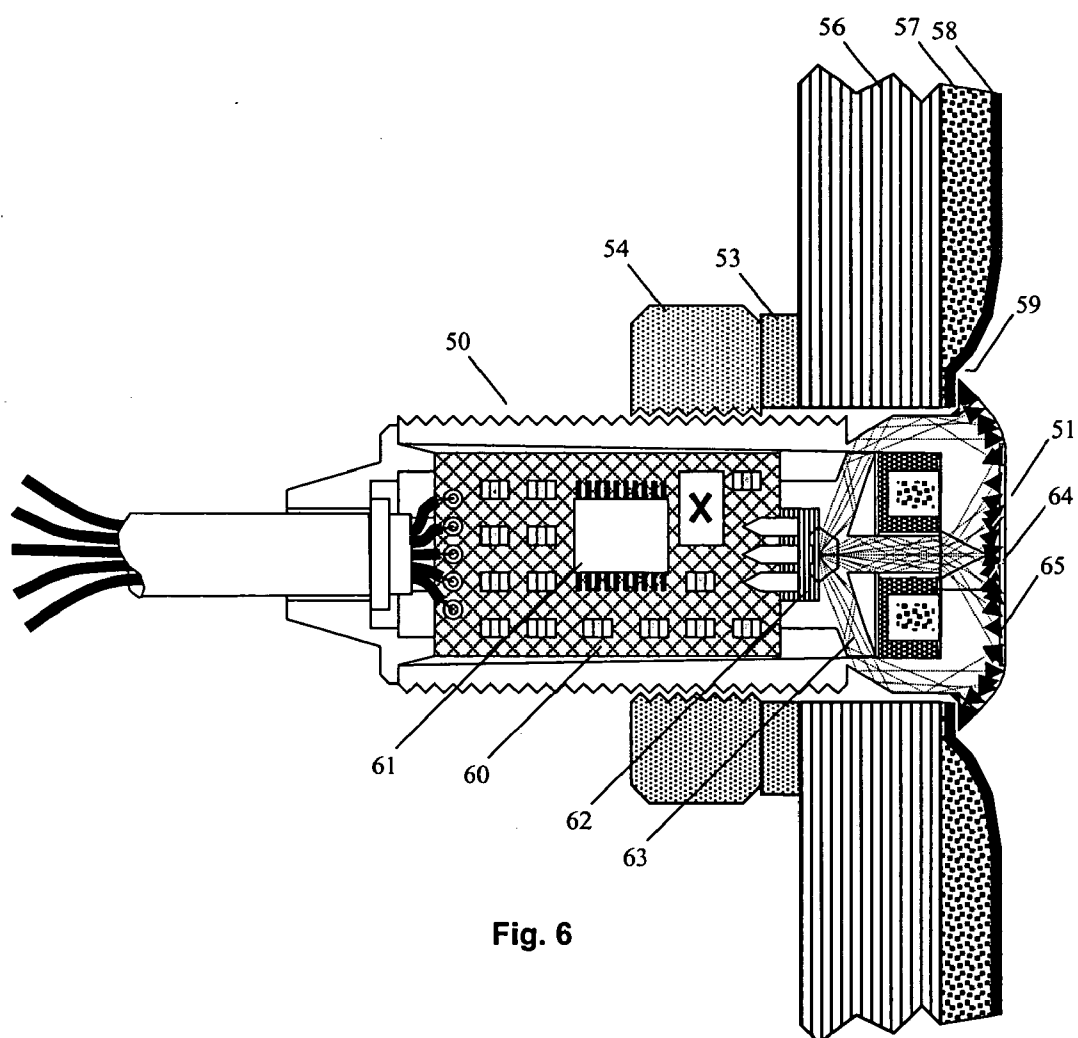


Fig. 6

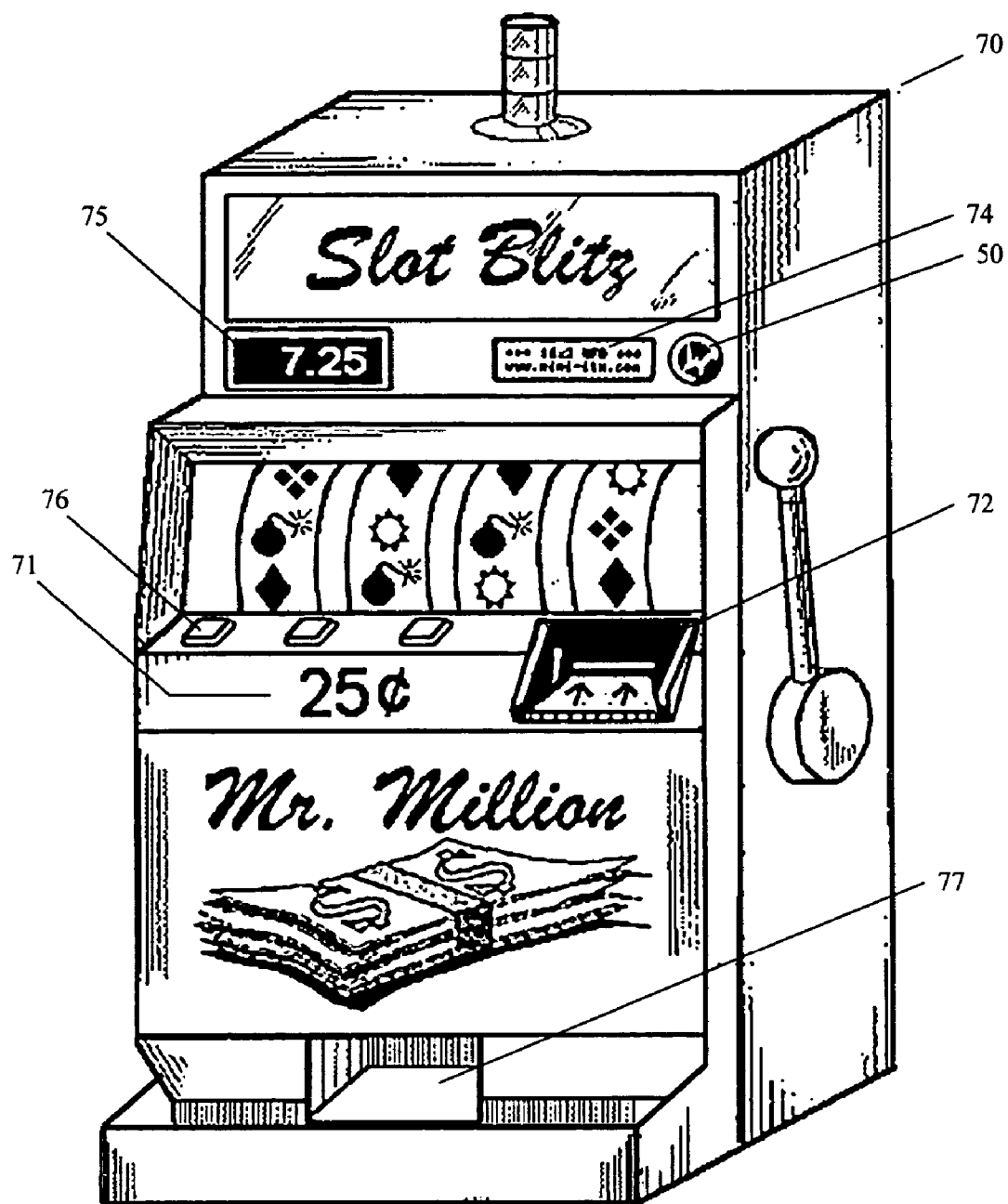


Fig. 7

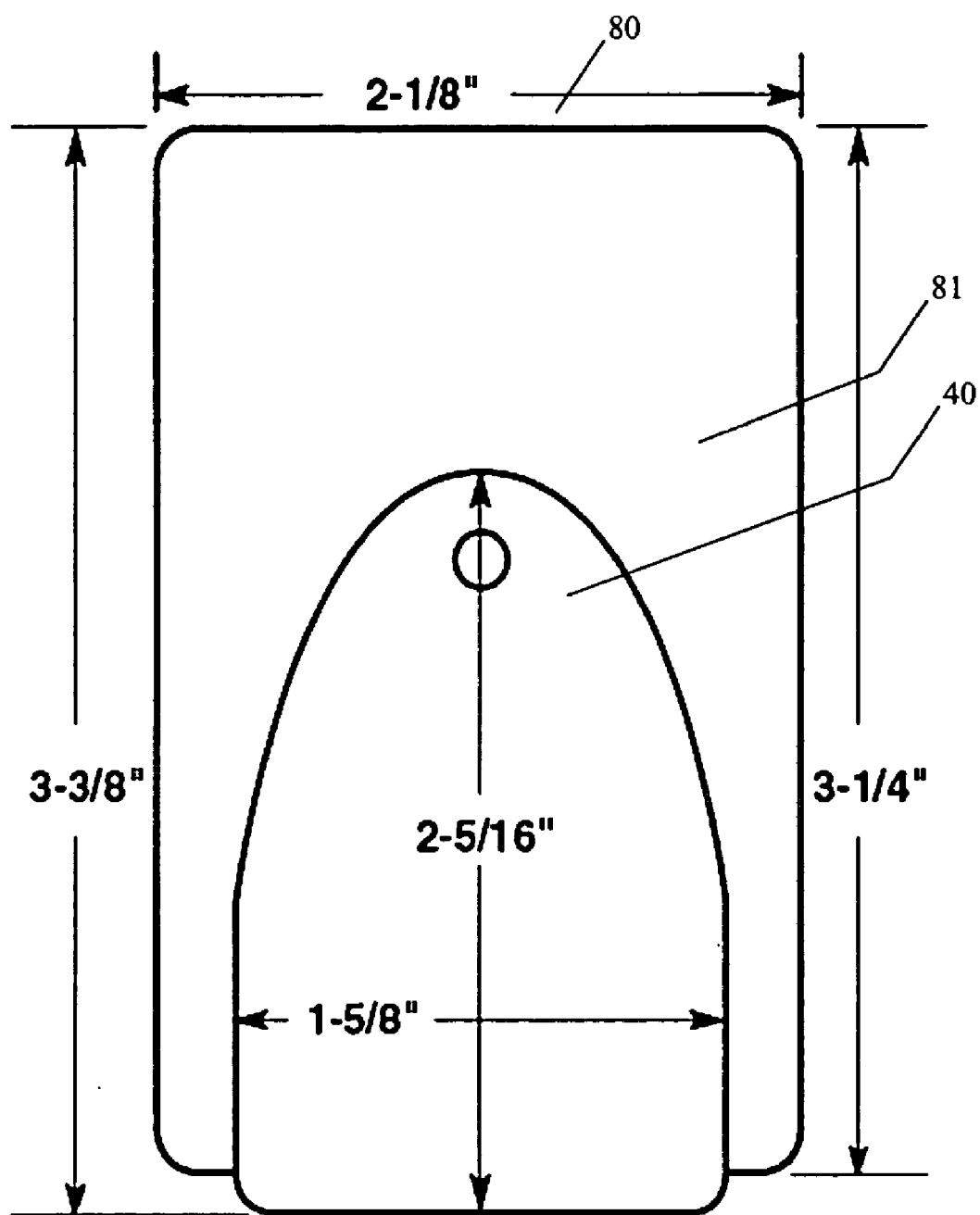


Fig. 8

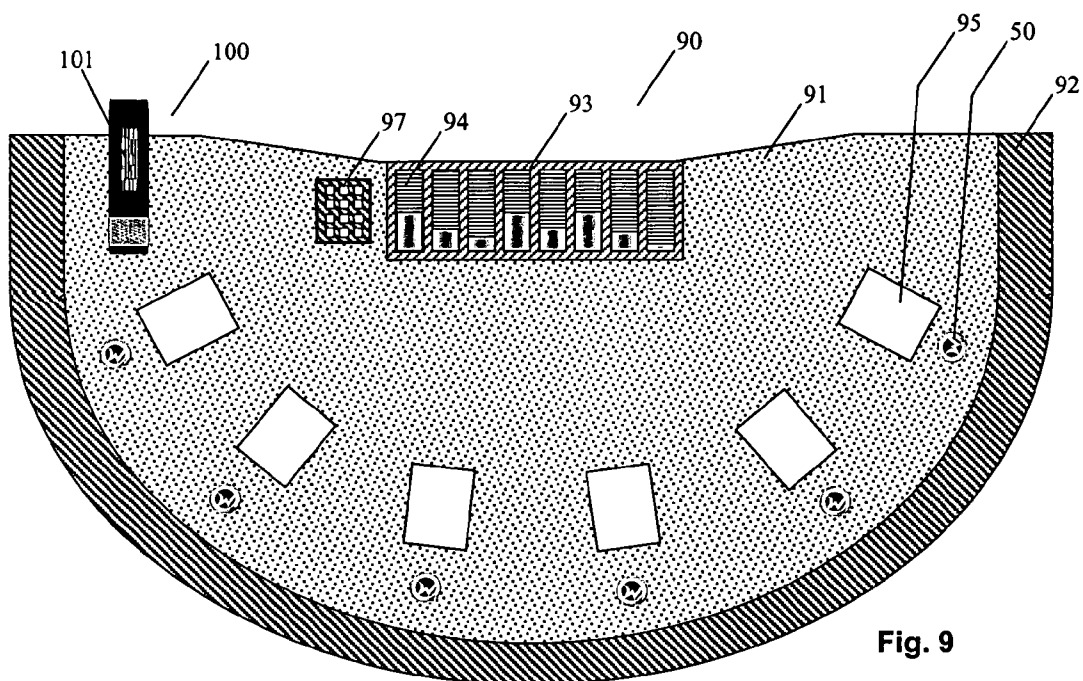


Fig. 9

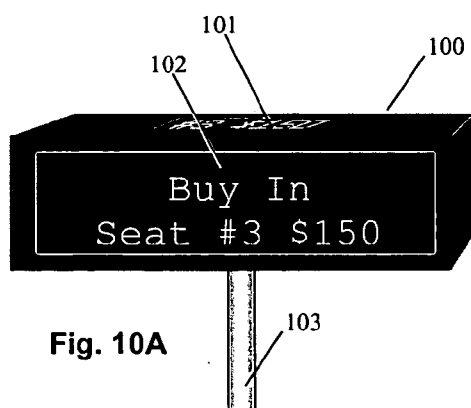


Fig. 10A

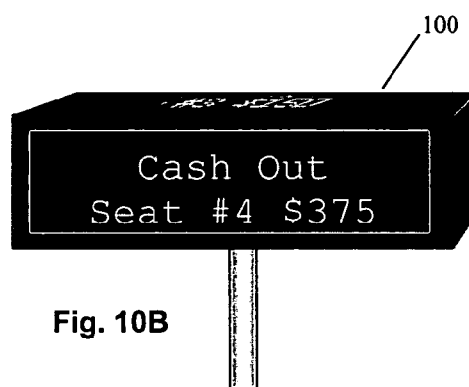


Fig. 10B

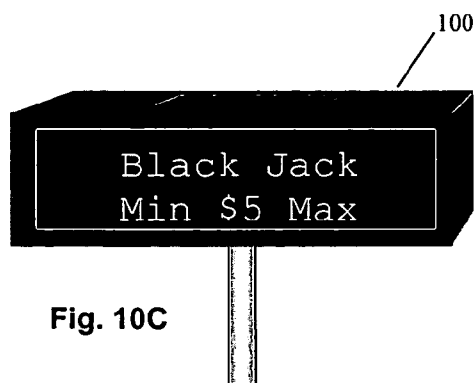


Fig. 10C

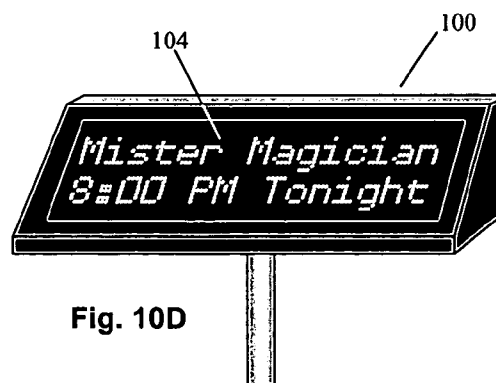


Fig. 10D

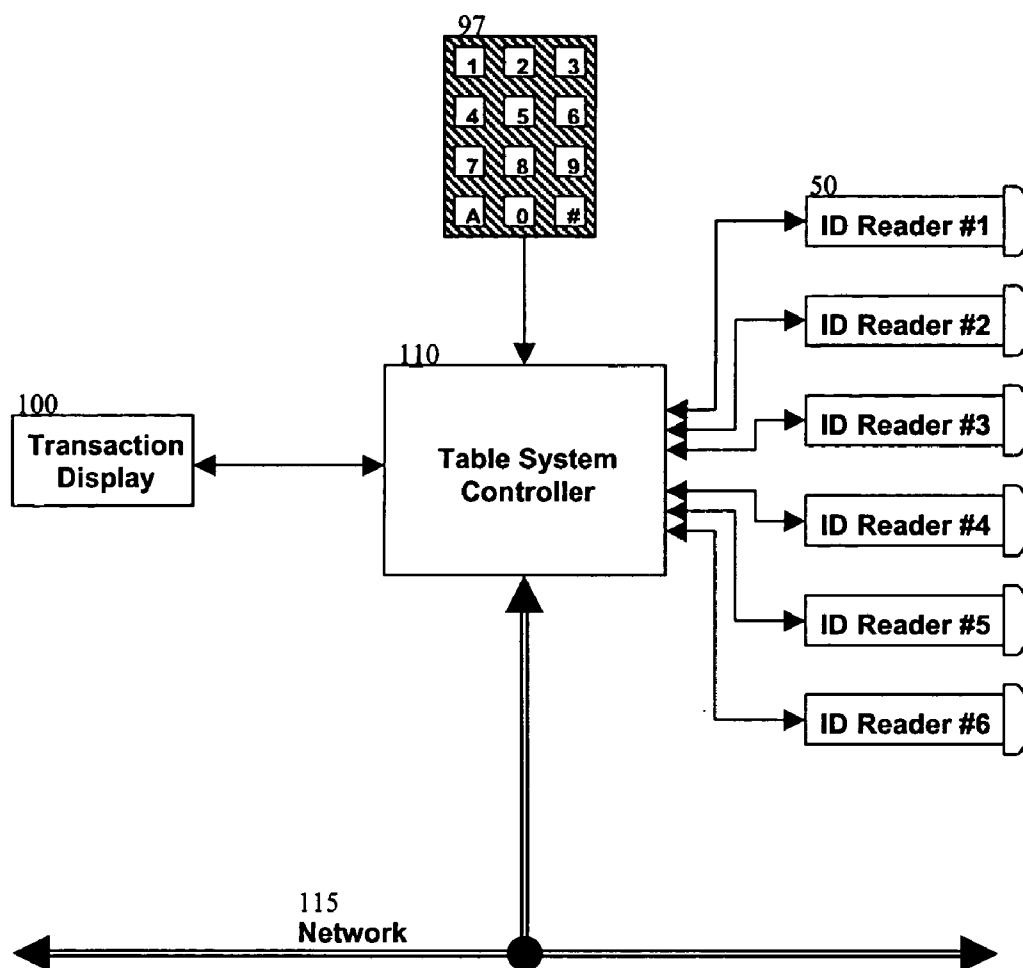


Fig. 11

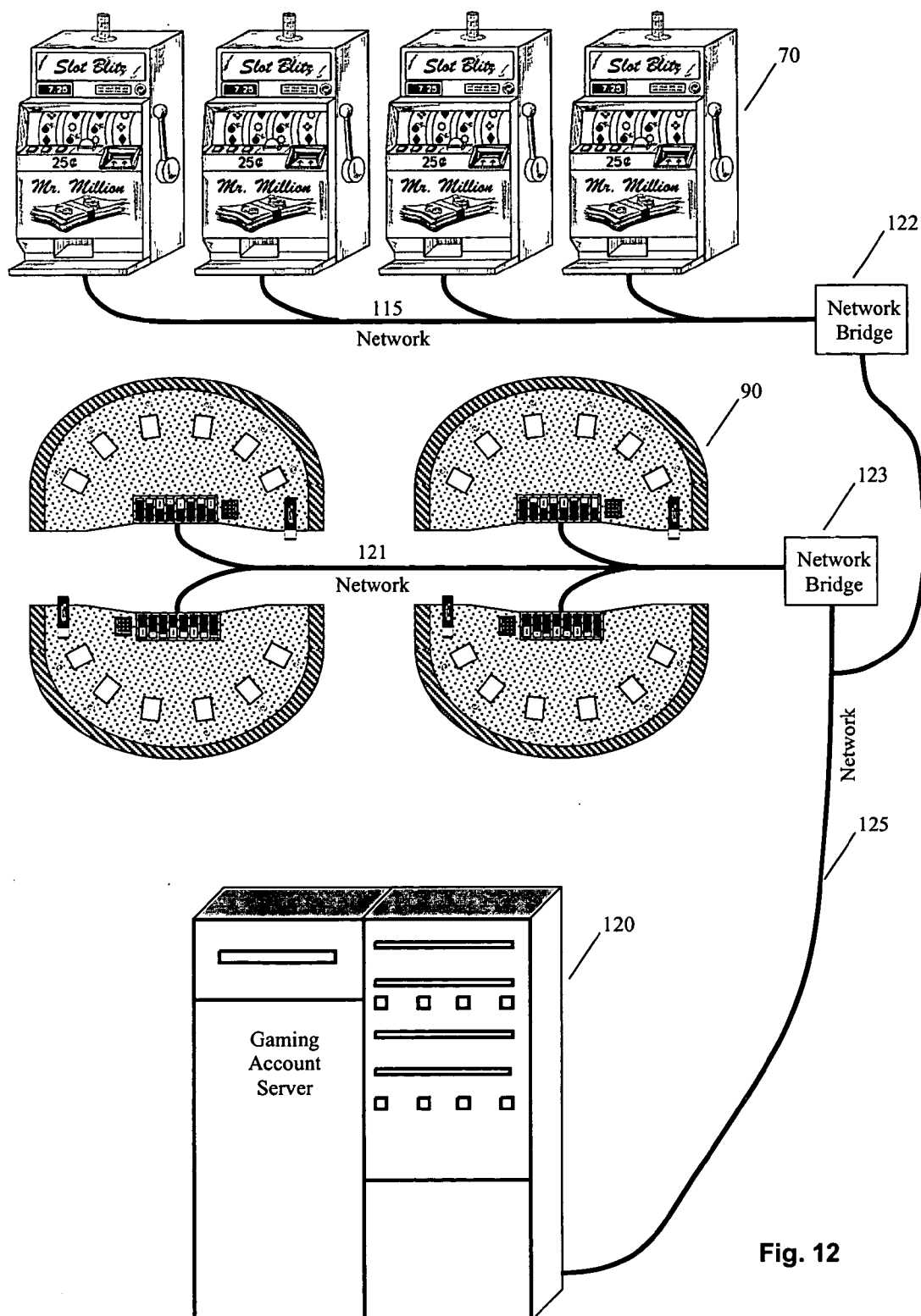


Fig. 12

Fig. 13

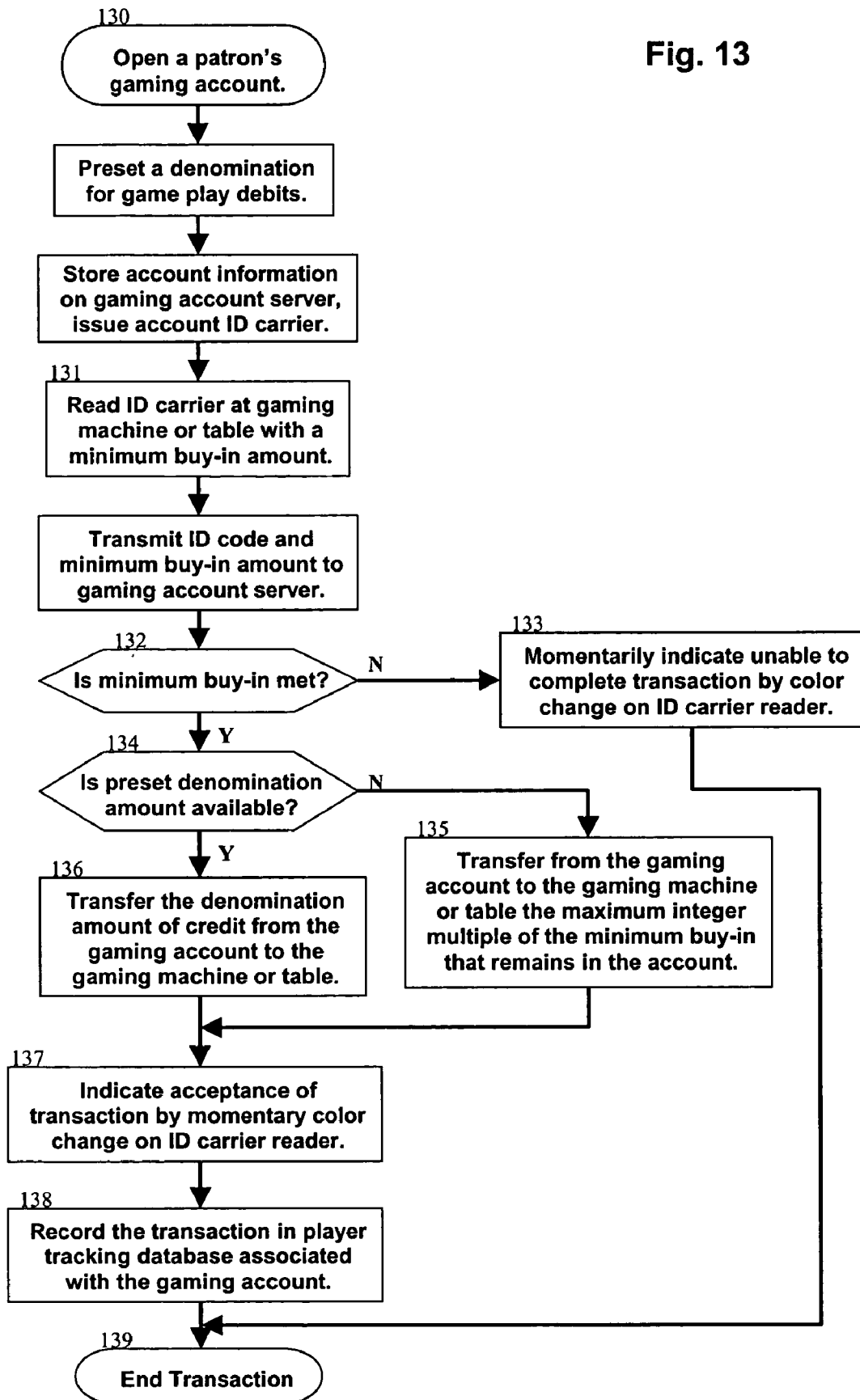


Fig. 14

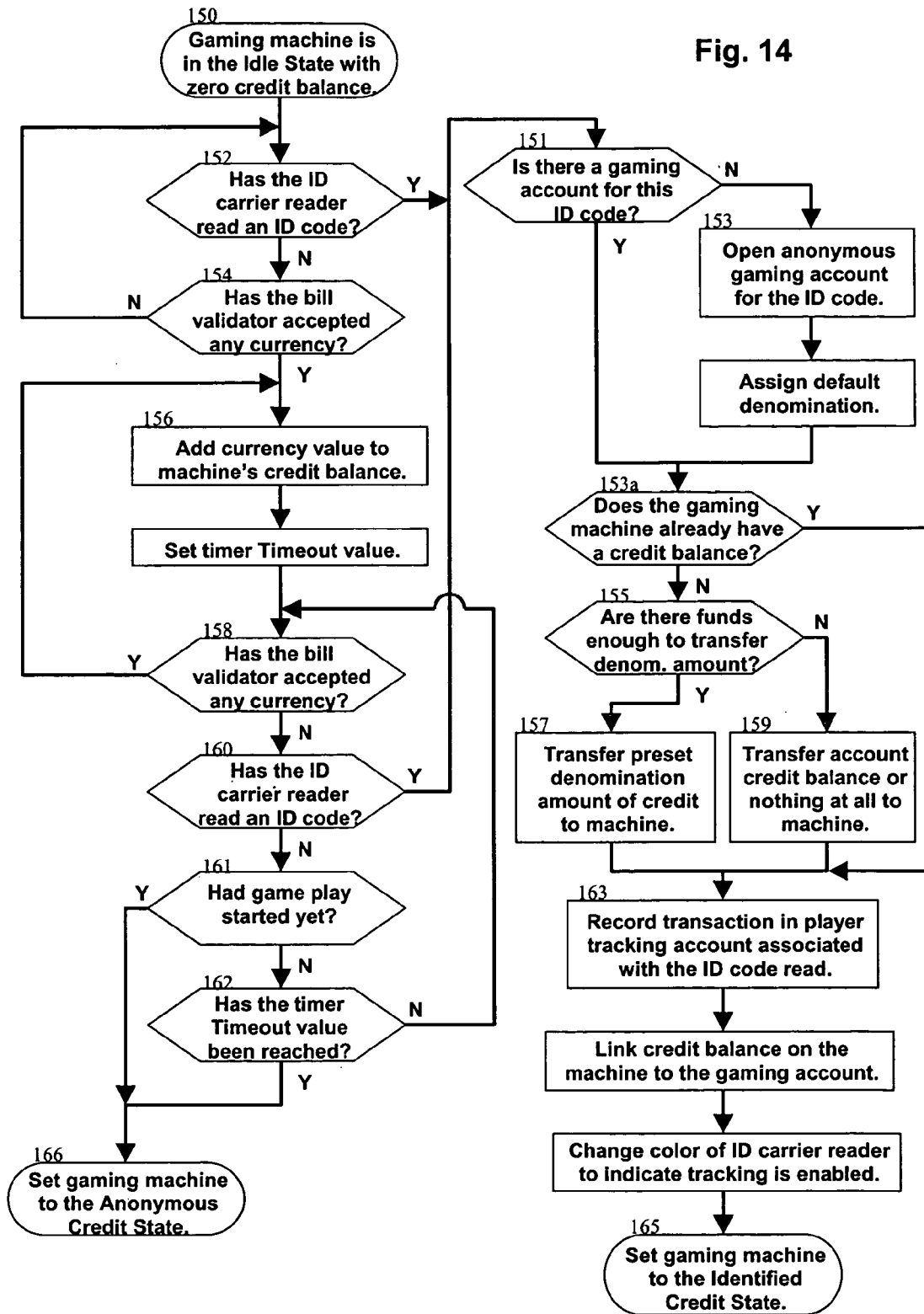


Fig. 15

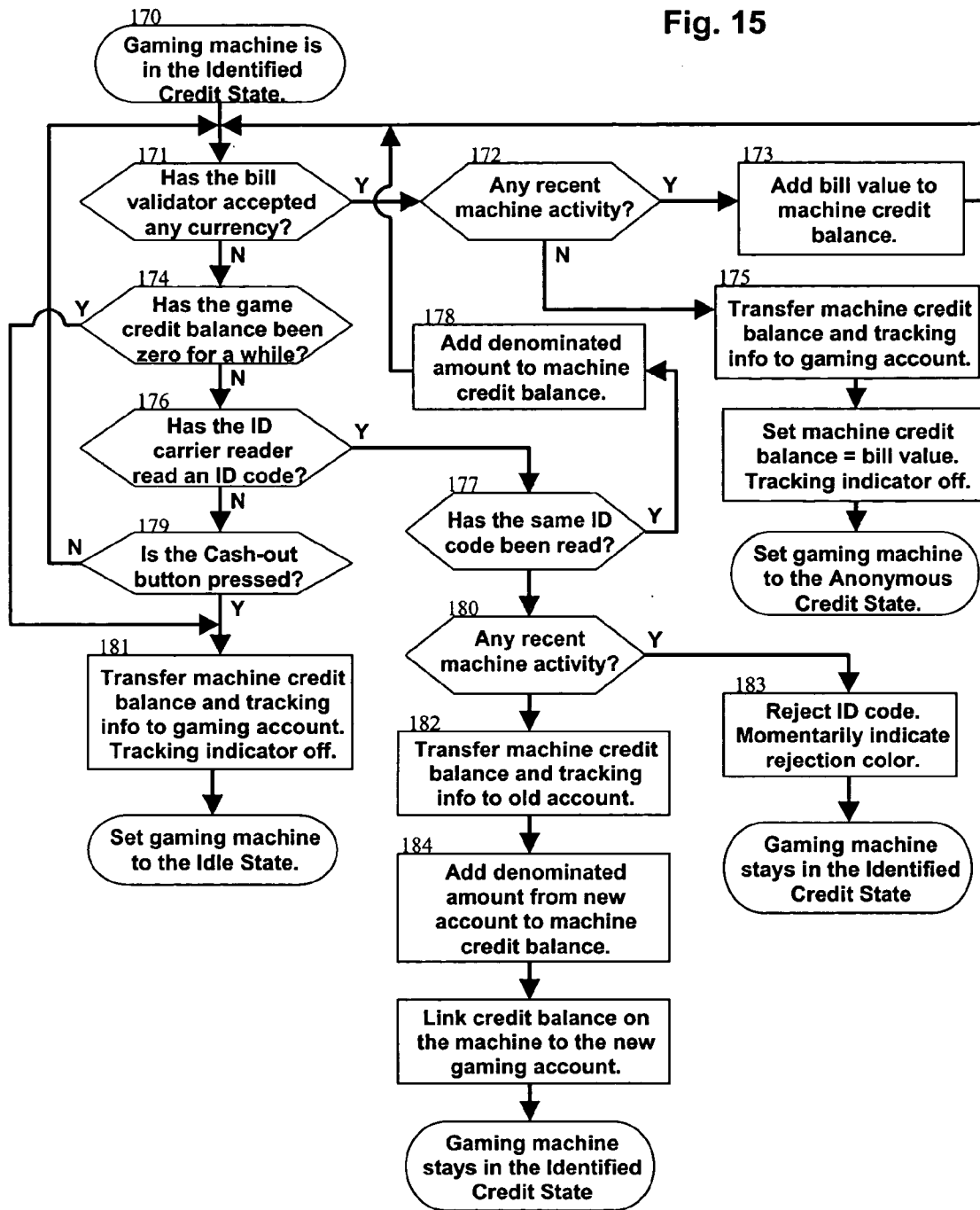


Fig. 16

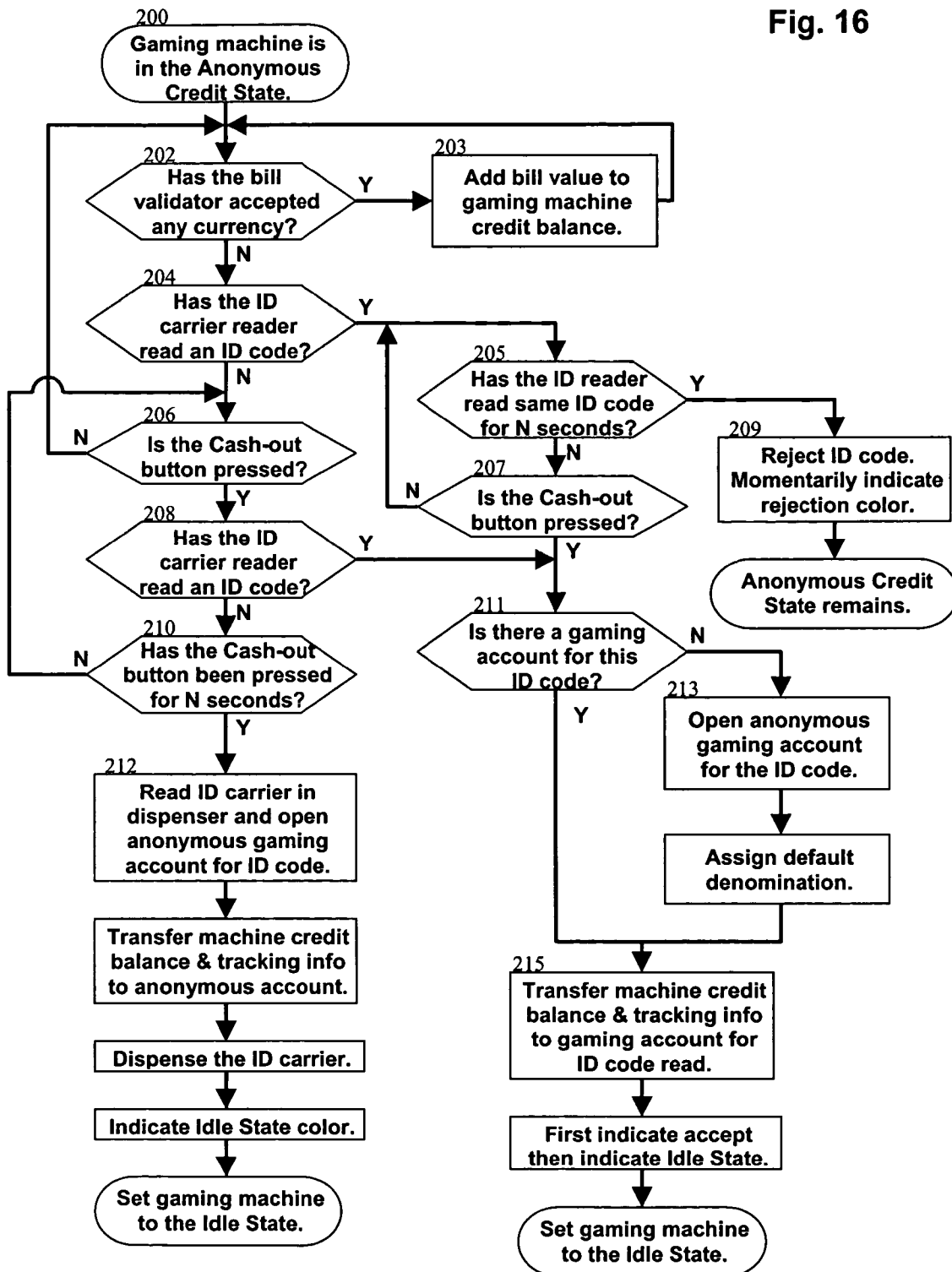


Fig. 17

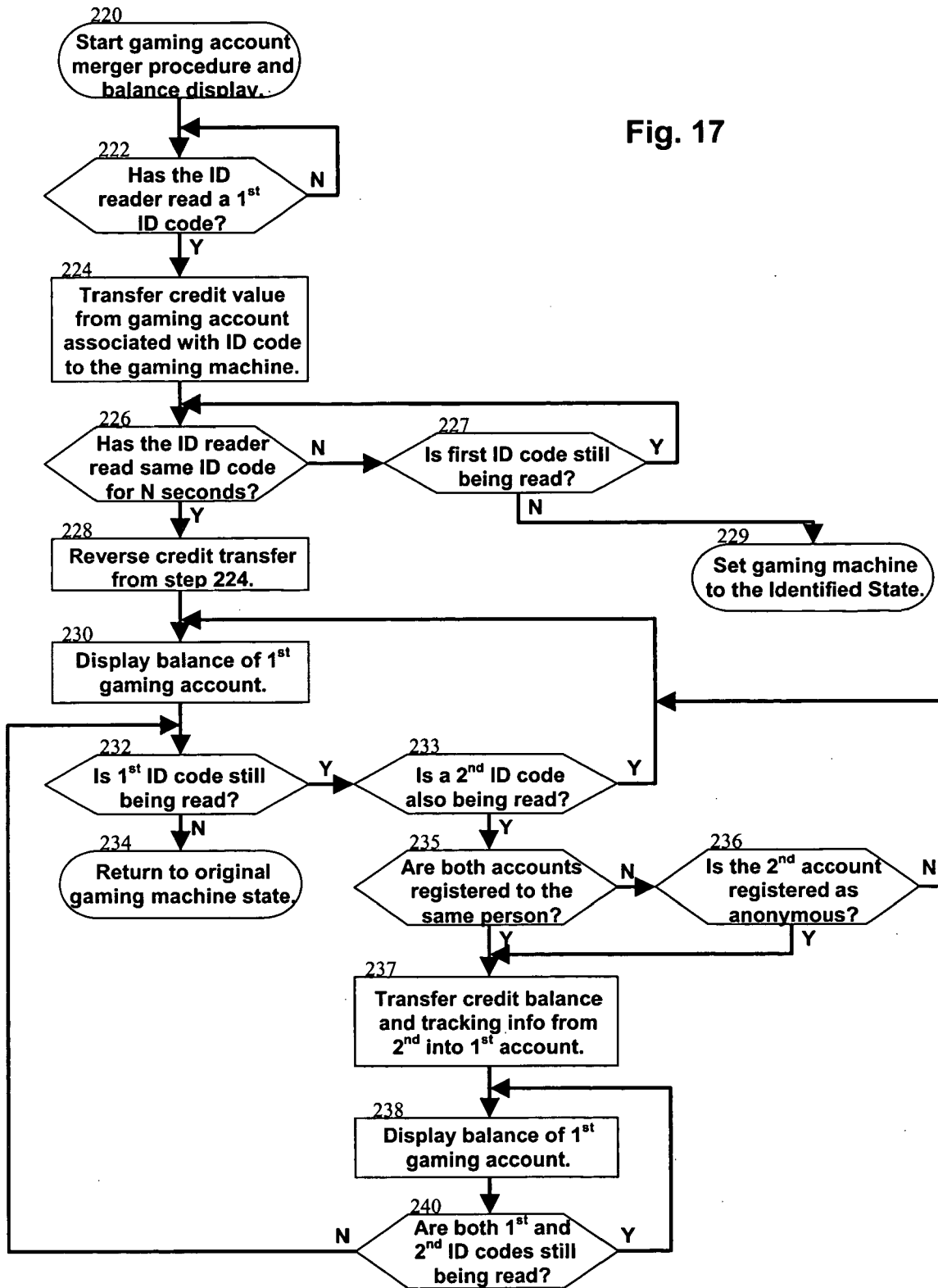
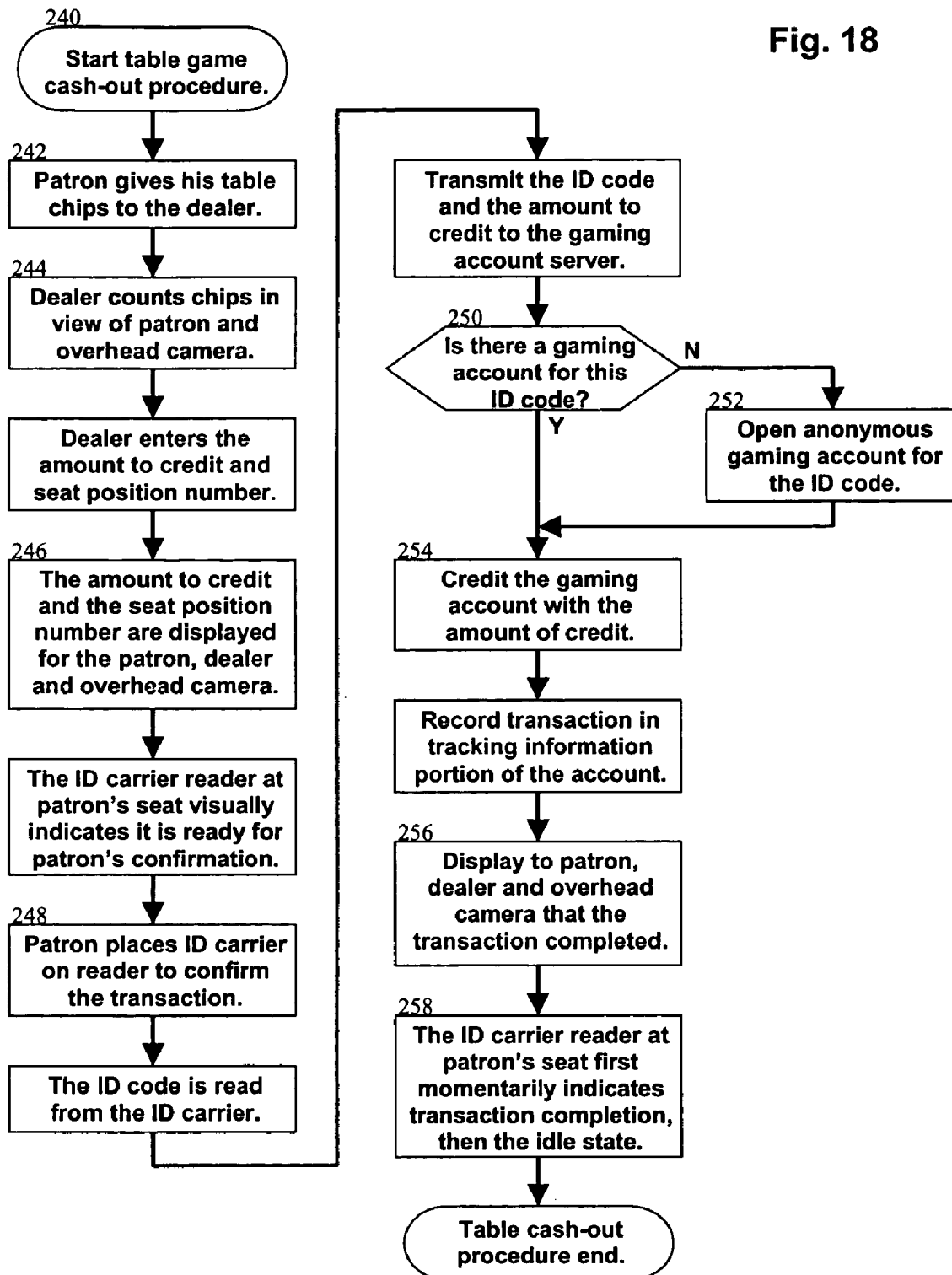


Fig. 18



METHODS OF CASHLESS GAMING AND PLAYER TRACKING

FIELD OF THE INVENTION

[0001] This invention pertains to casino gaming, and in particular to methods of cashless gaming and player tracking designed to simplify and secure their operation while eliminating the supplies, maintenance, and repair costs associated with coin acceptors, bill acceptors, card readers, and ticket printers.

BACKGROUND OF THE INVENTION

[0002] Casinos and gaming equipment manufactures continually strive to improve the attraction of gaming to the patron while reducing the operating costs of the equipment. Operating costs include amortized installation costs, operating supplies, maintenance costs and repair costs.

[0003] On the operating cost side of the equation, one of the more significant categories is that of coins, tickets, bills, and their associated acceptors, hoppers, and printers. Each of these electromechanical devices occasionally requires attention to maintain it in proper working order. Coin acceptors and coin hoppers can become jammed with bent coins. Bill validators can become jammed with worn or dirty bills. Ticket printers can become jammed with paper debris. Optical sensors in each of them occasionally need cleaning. Coins must be provided to fill all of the hoppers and back room hopper fill inventory requirements. Personnel must empty drop vaults and perform hopper fills on call. Ticket printers must have their paper ticket stock replenished periodically. Although the material and labor costs for any one machine may seem insignificant, when a casino has many thousands of gaming machines, the aggregate cost becomes worthy of attention.

[0004] On the attraction side of the equation, in addition to the attractive design of a game itself, casinos have long employed loyalty club programs to reward their better customers with perks, such as free meals, free rooms, and free entertainment. Today, most casinos employ one of a number of available player tracking systems at gaming machines in order to both identify the patron and to record the amount of the patron's gaming activity. The hardware and software that implements gaming loyalty club programs is commonly known as a player tracking system.

[0005] When player tracking systems first took root they used a plastic card the size of a credit card **10** with numerous punched holes **11**, as shown in FIG. 1A. The holes **11** were read by an optical card reader, as disclosed in U.S. Pat. No. 5,702,304 granted December to Acres, et al. As the industry progressed, the optically read card **10** was replaced by a card **12** having a magnetic strip **13**, as illustrated in FIG. 1B. More recently RFID technology has been employed for player tracking. An RFID (radio frequency identification) keyfob **14** having an RFID inlay **16** with RFID chip **17** and antenna **18** of FIG. 1C is used by Golden Gaming for its casinos and pubs as a player tracking identification means. The keyfob **14** is placed near a reader at a slot machine when the patron logs onto the player tracking system to earn loyalty points while playing. The RFID keyfob has no magnetic reading head to get dirty and intermittent over the course of reading thousands of player cards, and there are no

optical sensors to get dirty and intermittent over the course many thousands of player card insertions.

[0006] Ease of registration for a loyalty program is an important part of attracting and maintaining customers. Patrons have come to the casino because they are interested in playing the games, as opposed to standing in a line to fill out paperwork for a casino loyalty program. A gaming machine adapted to provide a method of registering a patron to a loyalty program at the gaming machine wherein the patron or a casino service representative enters personal identification information for the account into a device on the gaming machine or on a hand-held wireless device is disclosed in U.S. Pat. No. 6,896,618 granted May 24, 2005 to Benoy, et al.

[0007] Casinos and gaming equipment manufacturers have also worked to reduce the material and labor costs associated with the money involved in gaming machines. Initially slot machines were all coin operated. In order to reduce the labor cost of selling coins or tokens to patrons, bill validators were introduced on slot machines in the mid 1990s. However, with the subsequent growth in popularity of the nickel video slot machines hopper fills became a problem. When a patron feeds a \$20 bill into a machine and then later presses the cash-out button, the average patron will get a significant portion of that \$20 bill in change. That typically results in dispensing nearly 400 nickels and as a consequence results in frequent hopper fills with heavy bags of coins, and furthermore results in frequent instances when a patron is forced to wait ten to fifteen minutes for the hopper refill in order to get fully paid when the slot machine runs out of coins during a cash-out procedure. The industry solution to this problem has been to pay patrons with a barcoded ticket **21** of FIG. 2A which is printed by the slot machine. The ticket **21** has a barcode **22** representative of an amount of money owed the patron. The barcode and the amount are both transmitted through a network connection to a central server at which that information may later be accessed. The ticket **21** may then be redeemed at the next machine by a bill validator adapted to read the barcoded ticket **21**, or at the cashier. A slot machine having a bar code ticket printer and a bar code ticket reader to avoid having to use coins or tokens in the operation of slot machines is disclosed in U.S. Pat. No. 6,048,269 granted Apr. 11, 2000 to Burns, et al. This technology has become known in the industry as ticket-in-ticket-out, or TITO.

[0008] TITO was the first widely successful electronic funds transfer (EFT) technology for slot machines. Although it is a partial step toward cashless gaming, it really only goes as far as coinless gaming. TITO machines still rely on a bill validator for the patron to initially put gaming credits on a machine. Furthermore, the industry standard means of reading the barcoded tickets is through the bill validator. True cashless gaming requires elimination of coins, bills, and hopefully even tickets.

[0009] Attempts have been made to link together the player tracking account with a debit account to achieve cashless gaming. A cashless gaming system wherein a patron provides money and an ID card to a clerk and wherein the ID number and the amount of money are stored in the memory of the validation terminal is disclosed in U.S. Pat. No. 5,265,874 granted Nov. 30, 1993 to Dickinson. The patron subsequently uses the ID card for operating one of a

number of game terminals which reads and validates the patron's ID card and then downloads the cash amount from the validation terminal. Upon actuation of the cash-out button the remaining amount is uploaded back to the validation terminal where it may subsequently be likewise downloaded to another game terminal. Slot machine manufacturer IGT markets a system with these features under the trademark Coinless Transit. It utilizes a player tracking card as the ID card and describes the system as a "virtual coin cup" due to the fact that the entire amount is transferred from machine to machine through the "validation terminal" account.

[0010] A version of slot machine manufacturer IGT's Coinless Transit system uses a Smart Card **27** of FIG. **2B** having contact pads **28** for connection to an embedded encrypted data storage processor in accordance with ISO standard 7816. It stores gaming credits on the card and enforces transaction limits. Similarly, slot machine manufacturer Atronic offers a system called Chip Cash that uses Smart Card technology. Funds are loaded onto the card at a cashier station or simply via the bill validator of the slot machine, and may be cashed out directly from the slot machine to the card. The Chip Cash card may be personalized to also be a player tracking card with optional PIN protection. The advantage of a Smart Card system is that it can operate independently of concern for compatibility and licensing fees required for network connection to a casino player tracking account system since the value is carried on the card and the card provides its own validation and security features. The disadvantage is that if the card is damaged or stolen, the value stored on it is permanently lost. A system fairly similar to both of the above described systems is being marketed by MaxeTag of Australia but instead employs an RFID tag having writable storage memory to hold the gaming funds within the RFID transponder chip in much the same way as does a Smart Card. In any of these systems, once funds have been transferred to the gaming machine, there is no further link maintained between the remaining funds balance on the gaming machine and the patron's ID. The ID must again be present when transferring funds back off the machine to a remote account, and certainly of course, to a Smart Card or RFID transponder that is designed to be an electronic funds carrier.

[0011] A patron identification card having UV fluorescent qualities that is linked to a patron's account on a host computer is disclosed in U.S. Pat. No. 6,641,035 granted Nov. 4, 2003 to Predescu, et al. The Predescu et al. patent discloses, but does not claim, that at each game play the amount won is credited and the amount lost is debited to the patron's account, thus allowing patrons to enjoy games without using cash or tokens. There is neither apparent downloading of a fixed amount of credit to the game disclosed nor is there any apparent limit to the amount of play available. Although the method has its merits, limitless play or an open credit account has yet to be approved in any notable gaming jurisdiction, and likely will not become approved because of the inherent risks to those susceptible to gambling addiction.

[0012] To address the problem of limiting the amount the access to funds associated with a patrons credit card or banking debit card account, a gaming machine which allows electronic funds transfer to a gaming machine requests playing credit in according to a limited preset amount not

controlled by the patron is disclosed in U.S. Pat. No. 5,902,983 granted May 11, 1999 to Crevelt, et al., and in U.S. Pat. No. 6,347,738 granted Feb. 19, 2002 also to Crevelt, et al.

[0013] A coin shaped token for use in a cashless transaction having a memory, a display, a keypad and an RF input/output interface embedded within the token body to communicate with an electronic gaming device is disclosed in U.S. Pat. No. 6,629,591 granted Oct. 7, 2003 to Griswold, et al. Monetary value and transaction history is stored in the memory. The keypad and display provide a means for the patron to navigate a menu of choices regarding actions and amounts. A very similar device and system called Easy Money, manufactured by Ardent Gaming and used in Isle of Capri casinos, has an electronics funds carrier **23** of FIG. **2C** with an LCD display **24**, a keypad **25**, and utilizes RF communication to transfer funds to and from a gaming machine. These devices in effect are like a Smart Card with a keypad and display. Just like the Smart Card, the disadvantage is that if it is damaged or stolen, the value stored on it is permanently lost. Its more complex construction makes it inherently more susceptible to damage and places additional manufacturing cost burden on the many electronic funds carriers rather than on the fewer transceivers in the gaming machines.

[0014] In addition to the methods of transferring credit for cashless gaming systems previously described, still other ways of determining how much credit or value is to be transferred have been used in other markets. A fueling system capable of conducting a wireless transaction to effect payment based on a patron's use of an RFID transponder to link to one of the patron's credit card accounts is disclosed in U.S. Pat. No. 6,073,840 granted Jun. 13, 2000 to Marion. The amount of the payment is defined by the amount of fuel pumped by the patron. The nature of the transaction allows the amount to be unknown and unlimited until the fuelling is complete largely because it is a credit account and because the risk is inherently limited by the limited size of a vehicle fuel tank.

[0015] Despite the considerable effort that has been applied heretofore towards both player tracking systems and cashless gaming systems, many important aspects of such systems stand in further need of improvement, particularly when they are combined as a single system. While the prior art already has examples of the combination, the problems that remain in the current systems include: a) magnetic strip card systems suffer from the simplicity of making copies, reader heads the get dirty and fail, and the requirement to leave the card in the reader during game play results in many cards being erroneously abandoned when the patron leaves a gaming machine; b) RF tokens or keyfob devices with buttons and LCD displays are comparatively fragile and expensive, all value stored on them is lost if they are lost or broken, and they do not provide a reasonably economical path for the complete elimination of physical monetary media in gaming machines; c) the electrical contacts of Smart Card readers are at least as susceptible to reliability problems as are magnetic strip card reader heads, and the laminated chip embedded in the card is susceptible to damage through bending which can lead to loss of all value stored thereon; and d) ticket-in-ticket-out systems are really only capable of a single use for transfer of monetary value from one machine to another, and they still use a physical

media prone to paper jams and do require regular refilling of blank ticket stock. Furthermore, because card systems have not taken the next evolutionary step in design toward simplicity a) they either make the erroneous assumption that the patron wants the full balance of the account transferred to the gaming machine or they require the patron to press buttons or navigate menu screens to select the amount to transfer, or b) they have not developed the requisite security measures to inherently identify and protect a patron's monetary value currently held by a gaming machine from the surreptitious actions of a second patron.

[0016] As can readily be appreciated, there remains a need for further improvement in methods of cashless gaming and player tracking designed to simplify and secure their operation while eliminating the supplies, maintenance, and repair costs associated with coin acceptors, bill acceptors, card readers, and ticket printers.

SUMMARY OF THE INVENTION

[0017] In a first embodiment of the present invention a method of cashless gaming includes providing a patron with an ID carrier having an ID code that uniquely identifies the patron's gaming account, predetermining a denomination amount for association with the ID code, reading the ID code at a gaming machine or gaming table, verifying that a gaming account associated with the ID code may be charged the predetermined denomination amount, providing the patron with the predetermined denomination amount of credit for gaming, and charging the predetermined denomination amount to the gaming account.

[0018] In a second embodiment of the present invention a method of cashless gaming includes providing a patron with an ID carrier having an ID code that uniquely identifies the patron's gaming account on a remote network connected gaming account server. The gaming account includes both credit balance and player tracking information. Reading the ID code at a gaming machine or table automatically links play activity to the player tracking database and provides for electronic funds transfer.

[0019] In a third embodiment of the present invention for cashless gaming, a table game has a keypad for the dealer, an ID carrier reader at each seating position, and a transaction display visible to the dealer, the patron, and to an overhead security camera. When the patron presents his ID carrier to the ID carrier reader at his seat, the transaction display indicates the seating position and a multiple of a predetermined denomination of credit that the patron requests in playing chips from the dealer. The chips are counted and delivered to the patron and a keypad acknowledgement completes the transaction.

[0020] In a fourth embodiment of the present invention for cashless gaming, a gaming machine has an Idle State, an Anonymous Credit State, and an Identified Credit State in order to properly treat the difference between anonymous currency and identified gaming accounts. Sets of methodical steps provide definition for transition from one state to another in response to currency validation, cash-out requests, reading of a first ID code, reading of a second ID code, and various account credit balance conditions in order to protect the patron while providing simplicity in system use.

[0021] In a fifth embodiment of the present invention cashless gaming methods are shown for creating an instant anonymous account and funding the account from a gaming machine. An ID carrier is dispensed and an account is instantly created when an anonymous currency using patron cashes out from a gaming machine. Patrons new to casino property can use an ID carrier from another property to instantly create a gaming account at a machine without the need for any additional overt registration steps.

[0022] The foregoing and many other additional method details described herein finally provide for an integrated electronics funds transfer system and player tracking system, preferably utilizing the non-contact secure technology of RFID, which removes unnecessary costs from the patron's ID carrier without compromising security or simplicity in use.

BRIEF DESCRIPTION OF THE DRAWINGS

[0023] FIG. 1A is a top plan view, and illustrates a prior art player tracking card having an ID code composed of a series of punched holes.

[0024] FIG. 1B is a bottom plan view, and illustrates a prior art player tracking card having an ID code composed of a magnetic pattern on a magnetic recording strip.

[0025] FIG. 1C is a top plan view, and illustrates a player tracking keyfob having an ID code composed of an RFID circuit with a unique serial number.

[0026] FIG. 2A is a top plan view, and illustrates a cash-out ticket for ticket-in-ticket-out.

[0027] FIG. 2B is a top plan view, and illustrates a smartcard with an embedded chip.

[0028] FIG. 2C is a front perspective view, and illustrates an electronic funds carrier.

[0029] FIG. 3A is a side perspective view, and illustrates a low frequency RFID keyfob.

[0030] FIG. 3B is a top plan view, and illustrates a high frequency RFID keyfob.

[0031] FIG. 3C is a top plan view, and illustrates a high frequency RFID inlay.

[0032] FIG. 4A is a top plan view, and illustrates a \$25 denominated RFID player tracking keyfob.

[0033] FIG. 4B is a bottom plan view, and illustrates a denominated RFID player tracking keyfob.

[0034] FIG. 4C is a top plan view, and illustrates a \$5 denominated RFID player tracking keyfob.

[0035] FIG. 4D is a top plan view, and is illustrative of a \$100 denominated RFID player tracking keyfob.

[0036] FIG. 5 is a side plan view, and illustrates an RFID transceiver.

[0037] FIG. 6 is an axial cross-sectional view of the RFID transceiver of FIG. 5, and illustrates interior components and mounting of the RFID transceiver relative to an apertured support.

[0038] FIG. 7 is a front perspective view, and illustrates a slot machine.

[0039] FIG. 8 is a top plan view, and illustrates an RFID keyfob card assembly in a breakaway holder having the outer dimensions of a standard credit card.

[0040] FIG. 9 is a top plan view, and illustrates a gaming table.

[0041] FIG. 10A is a front perspective view, and illustrates a transaction display.

[0042] FIG. 10B is a front perspective view, and illustrates a transaction display.

[0043] FIG. 10C is a front perspective view, and illustrates a transaction display.

[0044] FIG. 10D is a front perspective view, and illustrates a transaction display.

[0045] FIG. 11 is a block diagram, and illustrates components for the gaming table embodiment of the invention and the connections therebetween.

[0046] FIG. 12 is a system diagram, and illustrates the interconnections between gaming tables, gaming machines, and a gaming account server.

[0047] FIG. 13 is a flow chart, and illustrates the steps for performing a denominated cashless gaming transaction.

[0048] FIG. 14 is a flow chart, and illustrates the steps for transitioning a gaming machine from an Idle State to another state.

[0049] FIG. 15 is a flow chart, and illustrates the steps for transitioning a gaming machine from an Identified Credit State to another state.

[0050] FIG. 16 is a flow chart, and illustrates the steps for transitioning a gaming machine from an Anonymous Credit State to another state.

[0051] FIG. 17 is a flow chart, and illustrates the steps for performing a merger of gaming accounts and display of a gaming account balance.

[0052] FIG. 18 is a flow chart, and illustrates the steps for performing a cash-out procedure at a gaming table.

DETAILED DESCRIPTION OF THE INVENTION

[0053] Within the context of the invention description that follows, the term gaming machine refers to slot machines and their derivatives, including the mechanical reel types, video reel types, video poker, video black jack, and various adventure games for gambling whether or not they actually still have a traditional coin slot. The term gaming table refers to craps tables, roulette tables, and card tables for black jack, baccarat, Pai Gow, Let It Ride, and others. An ID carrier includes any machine readable card, keyfob, button, or other device which holds an ID code that can uniquely identify a patron, and more specifically a patron's gaming account. RFID transponders are also commonly known as RFID tags. The term cash-out button refers to a physical button, a virtual button on a touch-screen display, or other means by which the patron may otherwise invoke a cash-out request. Although the preferred embodiment of the invention includes a bill validator, it is representative of any type of currency, including the private currency of sponsored tokens and coupons.

[0054] Within the casino gaming industry, customer loyalty programs are commonly used in an attempt to attract and hold a casino property's best customers. At the root of the customer loyalty programs used within the casino gaming industry are the automated player tracking systems used in the gaming machines, and the manual player tracking systems used at the gaming tables. The magnetic strip card readers used at the gaming machines to read player tracking cards are not very physically practical at a gaming table, and at a gaming table there is not the same kind of connection with metered wagering for the automated tracking of play activity as has long been available in the gaming machines.

[0055] The preferred embodiment for an ID carrier is an RFID transponder. RFID transponders, such as the cylindrical keyfob 30 of FIG. 3A, have a long standing record for quickly and securely linking to a patron's credit card account to effect payment at the gas pump. This service is marketed by Exxon/Mobile under the Speedpass trademark. The keyfob 30 is manufactured by Texas Instruments, operates at 134 KHz and has a 64 bit read-only serial number. The keyfob 31 of FIG. 3B, also manufactured by Texas Instruments and marketed under the Tag-It trademark, operates at 13.56 MHz, has a flat internal inlay 32 of FIG. 3C, a printed antenna 33, a transponder chip 34, and a 64 bit read-only serial number. The 64 bit serial number provides over 18 billion—billion different numbers, enough for three billion per person on earth, and which is enough to insure there will never be two alike, at least not in the lifetime of anyone alive today. These RFID transponders additionally have a programmable user data area that can be used to identify the sponsor and various application specific parameters. One of the primary reasons for embracing RFID technology is the degree of difficulty of counterfeiting it, especially when compared to the punched-hole plastic card 10 of FIG. 1A. Even the magnetic strip card 12 of FIG. 1B is not even close to safe as magnetic strip card readers and writers have long been freely available on the market to anyone so interested in connecting them together to make card copies. Even American Express and MasterCard have embraced and have started to market credit cards with an embedded Texas Instruments Tag-It RFID inlay.

[0056] In addition to the aforementioned security value of RFID, other relatively important qualities of the technology include its low cost, its physical reliability, and the fact that the account value is not directly stored on it. When considering the economics of a system involving very large numbers of ID carriers, much effort should be applied to eliminating cost from the ID carrier, even at the expense of moving it into the ID carrier reader. Certainly this means eliminating buttons, batteries, and displays from the ID carrier, as are evident in the electronic funds carrier 23 of FIG. 2C. While the cost of an RFID keyfob today at about 75¢ in moderate volume cannot come close to the cost of the printed ticket 20 of FIG. 2A, the printed ticket 20 is a fragile one-time-use instrument. Thus, when considering the delivered cost of a paper ticket, it doesn't take too many transactions before a multi-use RFID keyfob starts looking economically justifiable. Another part of the cost picture relates to maintenance costs and indirect lost opportunity costs of intermittent equipment related to physical contact media. Eventually physical contact readers will get dirty, unreliable, and need some labor clock time for cleaning,

adjustment, and possible replacement. Non-contact RFID thus provides the best balance of ID carrier cost, operating cost, and security.

[0057] As previously noted, use of an RFID tag for player tracking is not a new concept and is easily understood in operation. However, many logistical questions arise when attempting to use an RFID tag for electronics funds transfer. In the previously mentioned application for using an RFID tag to pay at the pump, there is no need to for the patron to enter an amount to charge to the account as it is precisely defined by the amount of gasoline pumped. Also as previously mentioned, slot machine manufacturer IGT markets a system under the trademark Coinless Transit that utilizes a player tracking card as an ID card to electronically transfer game credits from one gaming machine to the next. The system is described as a virtual coin cup because the entire amount is transferred from machine to machine. While this is another easy answer to the question of how much to transfer when the ID code is read from the ID carrier, it is not very practical if one wants to place a few days worth of gaming funds into a gaming account. Not many people really want to empty their complete stash into each machine or as the buy-in at a gaming table.

[0058] The answer to what to transfer from a gaming account to a gaming machine or a gaming table without the need to read menus and push buttons is found by realizing that people of different economic means are quite satisfied to classify themselves, for example, as a \$5, \$25 or \$100 buy-in category of patron. Thus when a patron registers with the casino for an ID carrier, they can select their buy-in category and receive an ID carrier denominated as \$5, \$25 or \$100. The denomination value could be stored as additional information along with the ID code on the ID carrier, or it could be stored in the gaming account on a remote network gaming account server. Such an ID carrier may take the form of an RFID keyfob 40 of FIG. 4A having a product trade name 41, casino property information 42, and denomination information 43 printed on a front face. A back face of the RFID keyfob 40 shown in FIG. 4B provides information 44 interpreting the transaction status indication of an ID carrier reader based on the illumination color of a sensing face of the ID carrier reader, a signature location 45 for indication of ownership, and a help reference 46 to get further instruction on use of the ID carrier. The RFID keyfobs of FIGS. 4C and 4D illustrate ID carriers denominated in \$5 and \$100 respectively.

[0059] One of the ways in which a patron can acquire an ID carrier 40 is during registration as a hotel guest at a hotel-casino. During the registration process, the patron selects a denomination amount for an ID carrier. The clerk provides an ID carrier of that denomination, reads the ID code from it, and opens a gaming account for the patron associated with the ID code. The gaming account is a database that may include a) patron identification information, such as a name, driver's license, phone number, etc., b) credit balance information, c) credit transfer records, and d) gaming activity records for the loyalty program player tracking system. The patron can then elect to deposit funds for gaming into the account.

[0060] The denomination amount associated with the ID carrier can be stored in the gaming account database, or can be written into an additional user data area of the RFID

transponder memory when it is factory configured for the application. In the preferred embodiment of the invention, the denomination information is stored on the RFID transponder along with information to identify the casino property and information that identifies it as a patron transponder versus one of a service employee that may use the same ID carrier reader to access the gaming machine for diagnostics, maintenance or repair. Since the ID carriers reasonably should have printed graphics indicating the denomination amount, the casino property, it make reasonable sense to factory configure the respective ID carriers to hold the same information internally.

[0061] An RFID transceiver 50 suitable for use as an ID carrier reader for RFID keyfob 40 of FIGS. 4A-4D is illustrated in FIGS. 5 and 6, and is the subject matter of co-pending U.S. patent application Ser. No. _____ file on _____ in the name of Scott Juds and is incorporated herein by reference. The RFID transceiver 50 has a sensing face 51, a threaded tubular body 52 for through-panel mounting, a washer 53 and nut 54 for securing the mounting, and wires 55 for providing power and communication with other system components. FIG. 6 illustrates the mounting of RFID transceiver 50 through a table surface having a plywood base 56, a foam cushion layer 57, and a felt-like surface layer 58. Tightening the nut 54 against washer 53 on the underside of the table base 56 causes compression of the foam cushion layer 57 and the felt-like surface layer 58 about a periphery 59 of the RFID transceiver 50. The RFID transceiver 50 has a circuit board 60 having component parts 61 and others for creating the RF signals necessary for interrogation of the keyfob transponder and for interpretation of the corresponding signals received. The RF signals are transmitted and received through a ferrite core antenna 64. The sensing face 51 of RFID transceiver 50 is illuminated by a multi-color LED 62 which emits light into a light pipe 63 for transmission through and around a ferrite pot core 64. The LED 62 is preferably an RGB type capable of producing any color desired through proper combination of the three base colors red, blue and green, and the relative intensity control of each. Thus, the RFID transceiver 50 can directly indicate to a patron the status of a transaction by the color of its illumination as detailed by information 44 on the back face of the RFID keyfob 40 of FIG. 4B. Each icon adjacent to one of the transaction states of the information 44 is printed with its respective color. For example, IDLE (FIG. 4B) may be blue, ACCEPT may be green, REJECT may be red, UNABLE may be yellow, TRACKING may be white, and NO SERVICE may be purple. The RFID transceiver 50 is designed to communicate via RS-232 and have the capability of replacing the RS-232 interface magnetic strip card reader currently popular in player tracking systems.

[0062] A gaming machine 70 illustrated in FIG. 7 includes a machine base denomination display 71, a bill validator 72 for accepting paper currency, an RFID transceiver 50 to read a patron's ID carrier, a player tracking display 74 for displaying information about points being earned, a credit balance display 75, a cash-out button 76, a dispensing tray 77, and various other customary component parts to facilitate the functionality of the gaming machine 70. Basic use of a patron's ID carrier at the gaming machine 70 is described as follows. Upon approaching the gaming machine 70, the patron observes the ID carrier reader 50 has blue illumination, indicating it is in the Idle State. The patron positions his denominated ID carrier 40 in close proximity

to ID carrier reader **50** wherein the ID code on ID carrier **40** is read. When the gaming machine has verified that the gaming account associated with the ID code has a sufficient credit balance, the denominated amount of credit is transferred from the gaming account to the gaming machine. To indicate acceptance, the ID carrier reader **50** momentarily changes the illumination of its sensing face from blue to green. If the patron desires to have twice the denominated amount transferred from the gaming account to the gaming machine, the patron simply places the ID carrier **40** in close proximity to the ID carrier reader **50** a second time. The credit balance of the gaming machine for game play by the patron is shown at all times in the credit balance display **75**.

[0063] When the patron first uses his ID carrier **40** at the gaming machine **70** and a denominated amount is transferred from his gaming account to the gaming machine **70**, the credit balance on the gaming machine **70** additionally becomes linked to the gaming account, and thus also linked to the patron. The purpose of maintaining a link between the future remaining credit balance on the gaming machine and the gaming account is so that the continued presence of the ID carrier within reading range of the ID carrier reader is not required, thus allowing the patron to keep the ID carrier secured in a pocket or a purse. While the credit balance on the gaming machine **70** is linked to the patron's gaming account, the illuminated face color of the ID carrier reader **50** changes to white to indicate the linked state so that the patron knows that game play activity will be attributed to the patron and logged to the player tracking portion of his gaming account. If the patron decides to leave the gaming machine **70** while a credit balance remains, the patron presses the cash-out button **76**. Since the remaining credit balance is linked with the patron's gaming account, the remaining credit balance is simply transferred back to the patron's gaming account. The ID carrier **50** momentarily changes the color of its illuminated sensing face to green to indicate acceptance of the cash-out transaction, and then returns its color to blue to indicate an Idle State concurrent with the credit balance display **75** indicating a zero balance. The link is terminated when the remaining credit balance is either transferred back to the gaming account from the gaming machine or reduced to zero through exhaustive game play.

[0064] Certain precautions are required to protect patron's credit balance, but these precautions should not have any adverse side effects on the operation of the casino or the play of other patrons. For example, while a first patron is playing a gaming machine **70** that has its credit balance linked to the first patron's gaming account it is possible that a second patron could place his ID carrier **40** in proximity to the ID carrier reader **50**. The system must not simply just transfer additional credit value from the second patron's gaming account to add to credit balance on the gaming machine **70** and then change the linkage to the second patron's account. This would constitute hijacking of the credit balance of the first patron by the second patron, and could happen when the first patron was distracted from the gaming machine by the perpetrator's accomplice. There are two parts to the solution of this problem. The first part of the solution is to reject the second patron's attempted transaction when the read ID code is different from the ID code of the current gaming account linkage. A rejection of an ID carrier **40** (and ID code) is indicated by momentarily changing the color of the sensing face of ID carrier reader to red. However, this part

of the solution by itself creates a secondary problem. If the first patron decides to abandon a machine having a trivial remaining balance linked to his gaming account, that machine would then reject the ID carrier **40** of other patrons who may later desire to use the gaming machine, thus effectively disabling the gaming machine from use. In the second part of the solution, upon reading the ID carrier **40** of a second patron, a test is made to determine if there has been recent game play activity. If, for example, there has been no game play activity for at least five minutes, then the remaining credit balance on the gaming machine **70** is first returned to the gaming account of the first patron, and then the denominated amount associated with the ID code and gaming account of the second patron is transferred to the gaming machine **70** and displayed in credit balance display **75**. In both parts of the solution the first patron's money is protected, and an appropriate decision is made relative to which patron should have control of the gaming machine.

[0065] The die cutting layout shown in FIG. **8** has an ID carrier **40** embedded in a retainer portion **81** providing a card assembly **80** with the overall dimensions of a standard credit card. The retainer portion **81** is easily broken away from the ID carrier **40** by the patron after dispensing. There are numerous credit card dispensers available on the market, such as the CDT-200 Series from Vendapin L.L.C., that could be adapted to dispense the card assembly **80**. The retainer portion **81** can further serve to carry printed introductory instructions to aid a patron's understanding of what to do with the ID carrier **40**. The CDT-200 Series dispenser includes the capability to both hold or to fully eject the card assembly **80**. In addition to the possibility of dispensing ID carriers **40** at the hotel-casino registration desk or at a kiosk, in the preferred embodiment of the invention a card assembly dispenser (not shown) is installed within the slot machine **70**. The benefits of doing so include a) the elimination of coin and ticket handling costs and, b) providing a means to cash-out a cash paying customer while gently converting them to the use of the ID carrier. In practice, a cash paying customer approaches gaming machine **70** and inserts one or more currency bills into bill validator **72** to provide a credit balance for game play. When the patron has finished his game play, he presses the cash-out button **76**. The gaming machine **70** instructs the installed card assembly dispenser to dispense a card assembly **80** to the patron into the dispensing tray **77**. In the process of dispensing the card assembly **80**, the card is made to pass over another ID carrier reader **50** (FIGS. **5** and **6**) to read its ID code. The ID code and the credit balance are transmitted to a remote gaming account server **120** (FIG. **12**) where a new gaming account is instantly opened. In addition to providing the new gaming account with the credit balance from the gaming machine, the game play activity since the gaming machine last had a zero credit balance may also be transmitted to and stored in a player tracking portion of the gaming account.

[0066] Upon the automatic opening of an account associated with a dispensed ID carrier **40** card assembly **80**, a base denomination for use of the ID carrier **40** must be predetermined. A first method of denomination predetermination is to select and write this information into a programmable memory location within the RFID transponder chip **34** of FIG. **3C** prior to loading the ID carriers **40** into the dispenser. The predetermined denomination may be associated with the base wagering denomination of a gaming machine. A casino may decide, for example, that \$5 predetermined denomina-

tion ID carriers should be used in gaming machines **70** having a base wager denomination of \$1 and under and that a \$25 predetermined denomination should be used for gaming machines with a base wagering denomination of \$5 and \$10, etcetera. In the preferred embodiment of the invention, the predetermined denomination is an integer multiple, between one and one hundred, of the base wagering denomination of the gaming machine. A second method of denomination predetermination is to have the gaming machine automatically report its base wagering denomination when transmitting information to the remote gaming account server **120** to open the account. The gaming account server can then set the predetermined denomination to an integer multiple, between one and one hundred, of the base wagering denomination of the gaming machine. A third method of denomination predetermination is to select from a menu a default value for use as the predetermined denomination. The menu selection may be made from a setup menu available on the gaming machine or on the gaming account server. Finally, a fourth method of denomination predetermination is to ask the patron to enter this information at the gaming machine when the ID carrier is dispensed. The patron may also be asked to select a PIN number for use with the account at that time.

[**0067**] Use of the ID carrier at a gaming table **90** (FIG. **9**) is quite similar, but includes some additional steps required to accommodate the human dealer involved in the transaction. The gaming table **90** has a playing surface **91**, an elbow rest **92**, a chip tray **93**, table chips **94** of a variety of denominations sorted by tray column, card position markers **95** at each seating location indicating where cards will be dealt, ID carrier readers **50** at each patron seating location (unnumbered), dealer keypad **97**, and a transaction display **100**. The transaction display **100**, also shown in FIGS. **10A-10D**, is designed to provide visual confirmation to the patron, the dealer, and an overhead security camera. This can be accomplished by both having a vertical facing display **101** and a forward facing display **102** (FIGS. **9**, **10A** and **10B**) or a single back-tilted display **104** that can simultaneously be viewed and provide confirmation to all parties. Preferably the display is tilted back from vertical between 30 and 60 degrees, although angles as low as 20 degrees would still provide a sufficiently readable display for the overhead security camera. Transaction display **100** is positioned on a pedestal **103** on the left side corner of the gaming table **90** where an engraved sign is usually posted to indicate the name of the game played at the table and the minimum and maximum wager.

[**0068**] When a patron arrives at gaming table **90** and wishes to buy-in, the patron places his ID carrier **40** in proximity to the ID carrier reader **50**. The ID code is read, the gaming account credit balance and the predetermined denomination are checked against the minimum wager requirements to authorize a transaction. If the requirements are met, the sensing face of the ID carrier reader **50** will momentarily change color to green to indicate acceptance and the preset denominated amount will appear on transaction display **100** along with the seat number of the patron making the transaction. Each time the patron repeats bringing his ID carrier **40** in proximity to the ID carrier reader **50** the amount shown on the transaction display **100** will increment by the preset denomination amount. When the patron has completed incrementing his buy-in amount, the dealer counts out the requisite number of table chips **94** in

full view of the patron and the overhead security camera. When the counted table chips have been delivered to the patron, the dealer hits a confirmation key on dealer keypad **97** to enable completion of the transaction by charging the patron's gaming account with the amount, momentarily indicating the confirmation on transaction display **100**, and then returning the display function to its normal passive message functions.

[**0069**] When a patron at a gaming table desires to cash-out, he returns his table chips **94** to the dealer who counts them out for everyone, including the overhead security camera, to see. The dealer then enters the amount and the seating position number using the dealer keypad **97**. The information is shown on the transaction display **100** for everyone, including the overhead security camera, to see. The sensing face of the ID carrier reader **50** at the seating position of the patron starts flashing white to indicate that his pending transaction needs to be confirmed by reading of the ID code from his ID carrier **40**. When the ID code is read, the amount shown in the transaction display **100** (FIG. **10B**) is transferred to the patron's gaming account, the transaction display **100** momentarily confirms completion of the transaction, and the sensing face **51** (FIG. **6**) of the ID carrier reader **50** at the seating position of the patron preferably turns green before returning to its blue idle color.

[**0070**] Transaction information is always displayed on both the vertical facing display portion **101** and the forward facing display portion **102** of the transaction display **100** for the dealer, patron and overhead security camera to see. The forward facing display portion **102** (FIGS. **10A** and **10B**) shows information in a more verbose format than the vertical facing display portion **101** in order to facilitate its intrinsic understanding at first glance. The forward facing display **102** can additionally integrate the function of the former engraved sign when no transaction is taking place, as illustrated in FIGS. **10C** and **10D**.

[**0071**] The block diagram of FIG. **11** illustrates the preferred embodiment of the gaming table system components and their connections for performing the functions of the present invention. A table system controller **110** controls the information flow to and between the other components and the network for access to gaming account information on the remote gaming server. The table system controller **110** is a module that mounts under the gaming table and connects to each of the other components as shown. In the preferred embodiment of the invention, the table system controller **110** is an embedded microcontroller design executing firmware that performs the functions as described anywhere herein by text or flow charts. One suitable microcontroller is the Freescale (formerly Motorola) MC68HC705C9A having 32 I/O pins, 16K of ROM, 176 bytes of RAM, and SPI port and an RS-232 port. Communication to each of the ID readers **50** requires an RS-232 port which is provided in the table system controller **110** through use of multiple SPI to RS-232 interface chips such as the MAX3100 produced by Maxim Integrated Products. The keypad interface to the microcontroller is simply a direct connection between the three column and four row signal wires and well known keypad scanning and contact debounce algorithms. One suitable keypad is the model 88AC2 manufactured by Grayhill. One suitable transaction display **100** is the Noritake's model GU140X32F-7000 vacuum fluorescent display with 140x32 pixel graphics display capability and a serial port interface

packaged in a suitable molded housing such as the 5.9" by 3.2" transparent cover housing model 1591DTBU produced by Hammond Manufacturing. The network interface may be a simple RS-485 design requiring little more than a transceiver buffer such as the Linear Technology model LTC1335IN to provide the multi-drop functionality from RS-232. The protocol will depend on the player tracking network system already installed in a casino, the details of which are known and easily implemented as the installation demands. The power supply for all of the components can be provided by a pre-packaged and safety agency approved module such as the 6.0VDC 500 mA model 318AS06050 manufactured by Tamura. Further details involving the design of the table system controller 110 or its connections are well known to those skilled in the art of electronic design.

[0072] The block diagram of FIG. 12 illustrates the interconnection of a plurality of gaming machines 70 and gaming tables 90 through networks 115, 121, and 125 through network bridges 122 and 123 to a remote gaming account server 120. In a typical casino installation, a group of up to 32 machines use a low bandwidth RS-485 multi-drop network 115 that connects to a network bridge 122 that functions to translate the protocols between networks. Although interconnection of the gaming tables 90 into a player tracking system is both rare and incomplete in today's casinos, the preferred embodiment of the invention requires a network 121 to connect each of the gaming tables through network bridge 123 onto network 125 in order to access a patron's gaming account on the gaming account server 120.

[0073] The flow chart of FIG. 13 illustrates method steps of opening and using a patron's gaming account. When a patron opens a gaming account in step 130, a denomination for transactions is selected and stored either in the gaming account database on the gaming account server 120 or may be stored in the ID carrier 40. In step 131 the patron arrives at a gaming machine or gaming table where the ID carrier is presented for reading. Gaming tables typically have a minimum wager limit, such as \$5, \$25, or \$100. Gaming machines also have a minimum wager amount which may vary between 1¢ and \$1,000. The read ID code and the minimum wager amount are transmitted to the gaming account server 120 for approval. If the preset denomination amount is stored in the ID carrier 40, it too is transmitted to the gaming account server 120. In step 132 it is determined if the minimum buy-in (or wager amount) is met. If it is not met, step 133 is executed to indicate by color change in the ID carrier reader 50 that the system is not able to complete the transaction and ends the process in step 139. In the preferred embodiment of the invention, the color yellow is used to indicate the inability to complete a transaction for an otherwise valid ID code. If the minimum buy-in is met, then in step 134 it is determined if the preset denomination amount is available in the patron's gaming account credit balance. If the preset denomination amount is available, it is transferred from the gaming account to the gaming machine or table. If it is not available, then the maximum integer multiple of the minimum buy-in amount that is available in the gaming account is transferred to the gaming machine or table. If any amount is transferred, in step 137 the color of the ID carrier reader 50 momentarily is preferably changed to green to indicate acceptance of the transfer. Finally, in step 138 a record of the transaction is saved in the player tracking portion of the gaming account.

[0074] The flow chart of FIG. 14 illustrates the method steps of transitioning a gaming machine from an Idle State to either an Anonymous Credit State or an Identified Credit State. An Idle State is defined as a gaming machine having zero credit balance and no remaining links to any patron's gaming account. In step 150 starting with the Idle State the gaming machine loops through steps 152 and 154 checking to see if an ID code has been read or if a bill has been validated. If an ID code has been read, the gaming account server 120 is checked for an existing gaming account associated with the ID code. If no account currently exists, an anonymous one is instantly opened for the patron and a denomination for transactions is assigned either by default or by patron selection from a menu presented on the gaming machine 70. A default denomination may be determined by a preselected value stored in the gaming account server 120 for all new anonymous accounts, or it may be a preselected value related to the class of gaming machine that read the ID code. No credit value exists, so none is transferred to the gaming machine. However, the credit balance on the gaming machine 70 is at least temporarily linked to the new gaming account and the ID carrier reader color is momentarily changed to green to indicate acceptance, and then the color changes to white to indicate that tracking is enabled. If the account is not new and there is no current credit balance on the gaming machine 70, then in step 155 the gaming account balance is checked for a credit balance of at least the preset denomination amount. If sufficient credit is available, step 157 transfers the preset denomination amount to the gaming machine 70, records the transaction in the player tracking database, links the credit balance on the gaming machine 70 to the gaming account, momentarily changes the color of the ID carrier reader 50 to green to indicate acceptance, and then changes the color to white to indicate that tracking is enabled. Finally in step 165, whether the account was new or already existed, the gaming machine state is set to the Identified Credit State.

[0075] At step 156 of the flow chart of FIG. 14 a bill has been validated and the value of the currency is added to the gaming machine's credit balance. A timer is set to a Timeout value after the validation of the bill. If additional bills are validated prior to the Timeout period elapsing, the currency value is again added to the gaming machine's credit balance and the timer is reset to the Timeout value. If game play commences in step 161 or the Timeout period is reached in step 162 the gaming machine state is set to the Anonymous Credit State in step 166. This state indicates that the patron is a cash player and no link exists to any gaming account. If an ID code is read subsequent to bill validation, but prior to the Timeout period elapsing, the credit balance accumulated on the gaming machine 70 is recorded in the player tracking account, credit balance on the gaming machine 70 is linked to the gaming account, the color of the ID carrier reader 50 momentarily changes to green to indicate acceptance, and then changes the color to white to indicate that tracking is enabled. Finally in step 165, whether the account was new or already existed, the gaming machine state is set to the Identified Credit State. If the ID code read did not have an existing gaming account, one is first automatically created for the patron in step 153.

[0076] The flow chart of FIG. 15 illustrates the method steps of transitioning a gaming machine 70 from an Identified Credit State to either an Anonymous Credit State or an Idle State. An Identified Credit State is defined as the state

of a gaming machine **70** wherein the credit balance is linked to a gaming account associated with an ID code read from and patron's ID carrier **40**. If a bill has been validated during the Identified Credit State in step **171**, the gaming machine **70** will simply add the bill value to the gaming machine credit balance in step **173** if there has been recent machine activity indicating that the patron is still actively involved with the gaming machine. However, if there has been no activity on the gaming machine for some lengthy period of time, preferably in the range of at least one to five minutes, there becomes doubt that the patron who's ID code and gaming account are linked to the gaming machine is still involved with the gaming machine. To ensure that anonymous cash from a second patron is not erroneously linked to the first patron's gaming account after having abandoning the gaming machine, the remaining credit balance on the gaming machine is transferred to the patron's gaming account in step **175** along with the associated player tracking information accumulated, then the color of the ID carrier reader **50** is changed from the white tracking color to the blue color. The gaming machine credit balance is then set to the value of the validated bill and the gaming machine state is then set to the Anonymous Credit state.

[**0077**] While in the Identified Credit state of FIG. **15**, the gaming machine **70** is checked in step **174** to determine if the credit balance on the gaming machine has been zero for a while, perhaps 15 seconds to a minute. This can occur if game play on the gaming machine has consumed the credit balance, or if it was the reading of and ID code from an ID carrier in the Idle State that brought the gaming machine to step **181** where the color of the ID carrier reader is changed from the white tracking color back to the idle blue color and the gaming machine state is set to the Idle State. Similarly, if the patron presses the cash-out button, the remaining credit balance on the gaming machine is transferred back to the patron's gaming account, the color of the ID carrier reader **50** is changed from the white tracking color back to the idle blue color and the gaming machine state is set to the Idle State.

[**0078**] Additionally, in the Identified Credit State of FIG. **15**, the ID carrier reader **50** may read an ID code from a patron's ID carrier **40** in step **176**. If the ID code is the same one associated with the linked gaming account, the preset denominated amount is transferred from the gaming account to the gaming machine **70**, and the ID carrier reader color momentarily preferably turns green to indicate acceptance. Although not detailed in this flowchart, steps **132** through **138** of FIG. **13** are incorporated herein into the meaning of step **178**. If the ID code read is different from the one associated with the linked gaming account, the action taken is dependent on whether there has been recent activity on the gaming machine. If so, the ID code is rejected, the ID carrier reader preferably turns red momentarily to indicate the rejection, and the Identified Credit State and account linkage remain. If it appears that the gaming machine has been abandoned, the credit balance on the gaming machine is transferred back to the gaming account to which it is linked in step **182**, then the denominated amount associated with the new ID code and gaming account is transferred to the gaming machine **70**, and the gaming machine's credit balance is linked to the new gaming account. Although not detailed in this flowchart, steps **132** through **138** of FIG. **13** are incorporated herein into the meaning of step **184**. The gaming machine **70** remains in the Identified Credit State.

[**0079**] The flow chart of FIG. **16** illustrates the method steps of transitioning a gaming machine **70** from an Anonymous Credit State to either an Idle State or an Identified Credit State. An Anonymous Credit State is defined as the state of a gaming machine wherein there is a credit balance but it is not linked to any patron's gaming account. In the Anonymous Credit State, the value of any bill validated in step **202** is simply added to the credit balance of the gaming machine in step **203**. If the cash-out button is pressed void of having read an ID code at about the same time, then in step **212** the ID code of the next ID carrier in an ID carrier dispenser is read, the ID code and the credit balance are transferred to the remote gaming account server, a new anonymous account is created to save the credit balance, the ID carrier is dispensed to the patron, and gaming machine state is set to the Idle State.

[**0080**] If an ID code is read in step **204** or **208** and the cash-out button is not pressed within a short period of time, such as two seconds, the ID code is rejected, the color of the ID carrier reader **50** is momentarily changed to a red color to indicate rejection in step **209**, and then returned to the blue color. The gaming machine **70** remains in the Anonymous Credit State. If the cash-out button is pushed and an ID code is simultaneously read within that short period of time, the credit balance on the gaming machine is transferred to the gaming account associated with the ID code in step **215** and the ID carrier reader color is momentarily changed to green to indicate acceptance and then to blue. The gaming machine then is set to the Idle State. If a gaming account did not previously exist for this ID code, an anonymous gaming account is first created in step **213**.

[**0081**] The flow chart of FIG. **17** illustrates the method steps of merging two gaming accounts and displaying a gaming account balance. When a first ID code is read in step **222**, credit value is transferred from the associated gaming account to the gaming machine **70**. If the same ID code is continuously read for more than about 2 seconds, the credit transfer to the gaming machine is reversed in step **228** and the gaming account balance is displayed for the patron in step **230**. If a second ID code is then simultaneously read the gaming account balance and player tracking information from the second gaming account is transferred to the first gaming account in step **237** if both ID codes are registered to the same person, or if at least the second gaming account is an anonymous gaming account. This provides a patron with a method of combining various fragmented accounts into a single gaming account anywhere there is an ID carrier reader without the need to wait in line at a cashier cage.

[**0082**] The flow chart of FIG. **18** illustrates the method steps of a cash-out procedure at a gaming table. The patron first gives his table chips to the dealer for reimbursement in step **242**. The dealer counts the table chips in full view of the patrons and the overhead security camera in step **244**, and then enters the amount to credit the patron into a keypad with the seating position of the patron (FIG. **9**). Both the amount to credit the patron and the seating number of the patron are displayed for each of the patron, the dealer, and overhead security camera to see in step **246**. The ID carrier reader **50** at the patron's seating location then begins to blink a white color to indicate that a pending transaction needs approval using the patron's ID carrier **40**. In step **248** the patron confirms the transaction by placing his ID carrier in sufficient proximity to the ID carrier reader for it to read the

ID code. The credit amount and the ID code are then transmitted to a remote gaming account server. If there is no account associated with the ID code read, then an anonymous gaming account is immediately opened for the ID code. In step 254 the amount is credited to the gaming account and a record of the transaction is stored in the player tracking portion of the gaming account. In step 256 the display indicates to the patron, the dealer and the overhead security camera that the transaction has been completed. Likewise, the ID carrier at the patron's seating position first momentarily is changed to a green color to indicate acceptance, and then back to the idle blue color.

[0083] It is to be understood that the above described embodiments of the invention are illustrative only, and many variations and modifications will become apparent to one skilled in the art without departing from the spirit and scope of the present invention.

We claim:

1. A method of conducting a cashless gaming transaction comprising the steps of

providing a patron with a gaming account and an ID carrier having an ID code that uniquely identifies the patron's gaming account,

storing a predetermined denomination amount for association with the ID code prior to conducting a cashless gaming transaction,

providing at least one of a gaming machine and a gaming table with an ID carrier reader,

reading the ID code from an ID carrier,

transmitting the ID code to a remote network connected gaming account server and verifying that the gaming account associated with the ID code may be charged the predetermined denomination amount,

providing the patron with the predetermined denomination amount of credit for gaming, and

charging the predetermined denomination amount to the gaming account.

2. The method of conducting a cashless gaming transaction according to claim 1 including the step of storing in and reading back from the ID carrier the predetermined denomination amount associated with the ID code.

3. The method of conducting a cashless gaming transaction according to claim 1 including the step of storing in and reading back the gaming account the predetermined denomination amount associated with the ID code.

4. The method of conducting a cashless gaming transaction according to claim 1 including the step of reading the ID carrier with a non-contact reader having neither buttons nor display for patron interface during the cashless gaming transaction.

5. The method of conducting a cashless gaming transaction according to claim 1 including the step of providing at least the date and amount of the transaction to a player tracking database associated with the gaming account for recording therein.

6. A method of conducting a cashless gaming transaction comprising the steps of

providing a patron with a gaming account and an ID carrier having an ID code that uniquely identifies the patron's gaming account,

storing a predetermined denomination amount for association with the ID code prior to conducting a cashless gaming transaction,

providing a gaming machine with an ID carrier reader,

reading the ID code from an ID carrier,

transmitting the ID code to a remote network connected gaming account server and verifying that the gaming account associated with the ID code may be charged the predetermined denomination amount,

providing the patron with the predetermined denomination amount of credit for gaming,

charging the predetermined denomination amount to the gaming account, and

maintaining a link between the future remaining credit balance on the gaming machine and the gaming account without the continued presence of the ID carrier within reading range of the ID carrier reader until the remaining credit balance is at least one of transferred back to the gaming account from the gaming machine and played down to zero.

7. The method of conducting a cashless gaming transaction according to claim 6 including the step of

awarding player tracking points during play of the gaming machine while a link remains between the credit balance on the gaming machine and the gaming account, and

transmitting awarded player tracking points from the gaming machine to the remote network connected gaming account server for accumulation and storage in the gaming account.

8. The method of conducting a cashless gaming transaction according to claim 7 including the step of changing an illuminated portion of the ID carrier reader from a first color to a second color to indicate that an exclusive link is established.

9. A method of conducting a cashless gaming transaction comprising the steps of

providing a patron with a gaming account and an ID carrier having an ID code that uniquely identifies the patron's gaming account,

storing a predetermined denomination amount for association with the ID code prior to conducting a cashless gaming transaction,

providing a gaming machine with an ID carrier reader,

reading the ID code from an ID carrier,

transmitting the ID code to a remote network connected gaming account server and verifying that the gaming account associated with the ID code may be charged the predetermined denomination amount,

providing the patron with the predetermined denomination amount of credit for gaming,

charging the predetermined denomination amount to the gaming account,

generating a cash-out request on the gaming machine while a credit balance from a provided predetermined denomination amount remains on the gaming machine, and

transferring the remaining credit balance from the gaming machine to the gaming account.

10. A method of conducting a cashless gaming transaction comprising the steps of

providing a patron with a gaming account and an ID carrier having an ID code that uniquely identifies the patron's gaming account,

providing a gaming machine or with an ID carrier reader and a currency validator,

reading the ID code from an ID carrier,

transmitting the ID code to a remote network connected gaming account server and verifying that the gaming account associated with the ID code may be charged a first amount,

providing the patron with the first amount of credit for play on the gaming machine,

charging the first amount to the gaming account,

validating currency of a second amount while a credit balance from a provided first amount associated with the gaming account remains on the gaming machine,

transferring the remaining credit balance from the gaming machine to the gaming account, and

providing the second amount of credit for play on the gaming machine.

11. A method of conducting a cashless gaming transaction comprising the steps of

providing each of a plurality of patrons with a gaming account and an ID carrier having an ID code that uniquely identifies each patron's gaming account,

providing a gaming machine with an ID carrier reader,

reading a first ID code from a first ID carrier of a first patron,

transmitting the first ID code to a remote network connected gaming account server and verifying that the first gaming account associated with the first ID code may be charged a first amount,

providing the first patron with the first amount of credit for gaming,

charging the first amount to the first gaming account,

reading a second ID code from a second ID carrier of a second patron while a credit balance from a first provided amount associated with the first ID code remains on the gaming machine,

transmitting the second ID code to the remote network connected gaming account server and verifying that a second gaming account associated with the second ID code may be charged a second amount,

transferring the remaining credit balance from the gaming machine to the first gaming account,

providing the second patron with the second amount of credit for gaming, and

charging the second amount to the second gaming account.

12. A method of conducting a cashless gaming transaction comprising the steps of

providing a patron with a gaming account and an ID carrier having an ID code that uniquely identifies the patron's gaming account,

locating the patron's gaming account on a remote network connected gaming account server,

providing the gaming machine with an ID carrier reader and a currency validator,

reading the ID code from an ID carrier during a first period of time,

validating an amount of currency during at least one of the first period of time and a second predetermined period of time after the first period of time has terminated, and

associating the amount of currency with the gaming account only if the currency was validated during one of the first and second periods of time, wherein associating the amount of currency with the gaming account is one of a) transferring the amount of currency in credit from the gaming machine to the gaming account, and b) providing the amount of currency in credit for play on the gaming machine and maintaining a link between the future remaining credit balance on the gaming machine and the gaming account without the continued presence of the ID carrier within reading range of the ID carrier reader until the remaining credit balance is at least one of transferred back to the gaming account from the gaming machine and played down to zero.

13. The method of conducting a cashless gaming transaction according to claim 12 wherein the second predetermined period of time is limited by the first game play after having read the ID code from the ID carrier.

14. A method of creating and using a cashless gaming account comprising the steps of

providing a patron with an ID carrier having an ID code that can uniquely identify a patron's gaming account,

providing a plurality of gaming machines each with an ID carrier reader,

reading the ID code from an ID carrier at a first gaming machine,

transmitting the ID code from the first gaming machine to a remote network connected gaming account server,

determining that there is no gaming account currently associated with the ID code,

automatically creating an anonymous gaming account associated with the ID code,

reading the ID code associated with the anonymous gaming account at a second gaming machine, and

transferring credit between the second gaming machine and the anonymous gaming account.

15. The method of creating a cashless gaming account according to claim 14 including the steps of

automatically initializing a player tracking points balance upon creation of the anonymous gaming account,

awarding player tracking points during play of a gaming machine while a credit balance remains on the gaming machine associated with the transfer of credit from the anonymous gaming account to the gaming machine, and

transmitting awarded player tracking points from the gaming machine to the remote network connected gaming account server for accumulation and storage in the gaming account.

16. The method of creating and using a cashless gaming account according to claim 14 including the step of predetermining a denomination amount to associate with the anonymous gaming account and wherein a transfer of credit from the anonymous gaming account to the second gaming machine is a sum equal to the predetermined denomination amount so long as the anonymous gaming account credit balance is at least one of greater than and equal to the predetermined denomination amount prior to the transfer.

17. The method of creating and using a cashless gaming account according to claim 16 wherein the step of predetermining a denomination amount to associate with the anonymous gaming account is based on one of a) an integer multiple between one and one hundred of the base wagering denomination of the first gaming machine, b) an amount selected by the patron from a limited menu of choices offered, b) a default amount predetermined with a setup menu parameter in the first machine, and c) a default amount predetermined with a setup menu parameter in the remote network connected gaming account server.

18. The method of creating and using a cashless gaming account according to claim 16 including the step of reading a predetermined denomination amount from the ID carrier and wherein a transfer of credit from the anonymous gaming account to the second gaming machine is a sum equal to the predetermined denomination amount so long as the anonymous gaming account credit balance is at least one of greater than and equal to the predetermined denomination amount prior to the transfer.

19. A method of creating and using a cashless gaming account comprising the steps of

providing a first gaming machine with a currency validator,

validating a patron's currency to provide a credit balance on the first gaming machine,

generating a cash-out request on the first gaming machine,

reading a predetermined ID code from an ID carrier and dispensing the ID carrier to the patron from the first gaming machine,

transmitting the predetermined ID code to a remote network connected gaming account server,

automatically creating an anonymous gaming account on the gaming account server associated with the predetermined ID code,

transferring the remaining credit balance from the first gaming machine to the anonymous gaming account,

providing each of a plurality of other gaming machines with an ID carrier reader,

reading the predetermined ID code from the patron's ID carrier at a second gaming machine,

transferring credit between the second gaming machine and the anonymous gaming account,

reading the predetermined ID code from the patron's ID carrier at a third gaming machine, and

transferring credit between the third gaming machine and the anonymous gaming account.

20. The method of creating a cashless gaming account according to claim 19 including the steps of

automatically initializing a player tracking points balance upon creation of the anonymous gaming account,

awarding player tracking points during play of a gaming machine while a credit balance remains on the gaming machine associated with the transfer of credit from the anonymous gaming account to the gaming machine, and

transmitting awarded player tracking points from the gaming machine to the remote network connected gaming account server for accumulation and storage in the gaming account.

21. The method of creating a cashless gaming account according to claim 19 wherein the step of transferring credit between the second gaming machine and the anonymous gaming account includes transferring the remaining credit balance from the second gaming machine to the anonymous gaming account.

22. The method of creating a cashless gaming account according to claim 19 including the step of automatically associating a predetermined denomination amount with the ID code upon creation of the anonymous gaming account and wherein a transfer of credit from the anonymous gaming account to any of the plurality of other gaming machine is a sum equal to the predetermined denomination amount so long as the anonymous gaming account credit balance is at least one of greater than and equal to the predetermined denomination amount prior to the transfer.

23. The method of creating a cashless gaming account according to claim 22 wherein the predetermined denomination is an integer number of one of dollars and euros and wherein the integer is one of one, five, ten, twenty, twenty five, fifty, one hundred and five hundred.

24. The method of creating a cashless gaming account according to claim 23 wherein the predetermined denomination is an integer multiple, greater than zero, of the base wagering denomination of the gaming machine dispensing the ID carrier.

25. A method of viewing a cashless gaming account balance comprising the steps of

providing a patron with a gaming account and an ID carrier having an ID code that uniquely identifies the patron's gaming account,

locating the gaming account on a remote network connected gaming account server,

providing at least one of a gaming machine and a gaming table with an ID carrier reader,

providing the at least one of a gaming machine and a gaming table with a numerical display,

holding the ID carrier in proximity to the ID carrier reader for a period of time during which its ID code may be continuously read,

requesting the credit balance of the gaming account associated with the ID code from the remote network connected gaming account server, and

displaying the credit balance of the gaming account on the numerical display only if the period of time exceeds a first predetermined number of seconds.

26. The method of viewing a cashless gaming account balance according to claim 25 wherein the first predetermined number of seconds is between one and ten.

27. The method of viewing a cashless gaming account balance according to claim 25 including the steps of

transferring a predetermined denomination amount from the gaming account to the credit balance on the gaming machine when the ID code is first read and subsequently verified by the remote network connected gaming account server, and

transferring the predetermined denomination amount back to the gaming account from the credit balance on the gaming machine when the period of time exceeds a second predetermined number of seconds that is at least one of equal to and greater than the first predetermined number of seconds.

28. The method of viewing a cashless gaming account balance according to claim 25 including the steps of

requesting the player tracking points balance of the gaming account associated with the ID code from the remote network connected gaming account server, and

displaying the player tracking points balance on the numerical display in conjunction with the display of the credit balance.

29. A method of managing credit value on a gaming machine comprising the steps of

providing the gaming machine with a currency validator for accepting a patron's currency,

providing the gaming machine with an ID reader for reading an ID code from a patron's ID carrier in order to transfer credit between a gaming account associated with the ID code on a remote network connected gaming account server and the gaming machine,

providing the gaming machine with at least an idle state, an anonymous credit state, and an identified credit state,

accepting a patron's currency to provide credit on the gaming machine when the gaming machine is in the idle state and then setting the credit state to the anonymous credit state,

reading a first ID code from a patron's ID carrier and transferring an amount of credit to the gaming machine from the gaming account associated with first ID code when the gaming machine is in the idle state and then setting the credit state to the identified credit state,

setting the credit state of the gaming machine to the idle state within a predetermined period of time after the credit balance on the gaming machine becomes zero, and

maintaining an identified credit state without the continued presence of the patron's ID carrier within reading range of the ID reader.

30. The method of managing credit value on a gaming machine according to claim 29 wherein the transferred amount is a predetermined denominated amount.

31. The method of managing credit value on a gaming machine according to claim 29 including the step of

determining that the gaming machine is in the anonymous credit state,

determining that there has been no game play activity since the anonymous credit state was entered,

reading the ID code from the patron's ID carrier,

associating the credit balance on the gaming machine with the gaming account, wherein associating the credit balance on the gaming machine with the gaming account is one of a) transferring the credit from the gaming machine to the gaming account, and b) providing a link between the future remaining credit balance on the gaming machine and the gaming account without the continued presence of the ID carrier within reading range of the ID carrier reader until the remaining credit balance is at least one of transferred back to the gaming account from the gaming machine and played down to zero, and

setting the credit state to the identified credit state.

32. The method of managing credit value on a gaming machine according to claim 31 including the step of determining that a predetermined time period less than substantially 60 seconds has not elapsed since the acceptance of the patron's currency.

33. The method of managing credit value on a gaming machine according to claim 29 including the step of

determining that the gaming machine is in the anonymous credit state,

generating a cash-out request,

reading a predetermined ID code from an ID carrier and dispensing the ID carrier to the patron from the gaming machine,

automatically creating an anonymous gaming account associated with the predetermined ID code on the gaming account server, and

transferring the remaining credit balance from the gaming machine to the anonymous gaming account.

34. The method of managing credit value on a gaming machine according to claim 29 including the step of

determining that the gaming machine is in the identified credit state,

reading a subsequent ID code from a patron's ID carrier,

determining that the subsequent ID code is the same as the first ID code, and

automatically transferring the same amount of credit from the gaming account associated with the first ID code to

the gaming machine and summing it with the current credit balance on the gaming machine.

35. The method of managing credit value on a gaming machine according to claim 29 including the steps of

determining that the gaming machine is in the identified credit state,

reading a subsequent ID code from a patron's ID carrier,

determining that the subsequent ID code is different from the first ID code, and

transferring no credit between the gaming machine and the gaming account associated with the subsequent ID code.

36. The method of managing credit value on a gaming machine according to claim 29 including the steps of

determining that the gaming machine is in the identified credit state,

reading a subsequent ID code from a patron's ID carrier,

determining that the subsequent ID code is different from the first ID code,

transferring the remaining credit balance from the gaming machine to the gaming account associated with the first ID code, and

transferring a second amount of credit from the gaming account associated with the subsequent ID code to the gaming machine.

37. The method of managing credit value on a gaming machine according to claim 29 including the steps of

determining that the gaming machine is in the identified credit state,

generating a cash-out request, and

transferring the remaining credit balance from the gaming machine to the gaming account associated with the first ID code.

38. The method of managing credit value on a gaming machine according to claim 29 including the steps of

determining that the gaming machine is in the identified credit state,

awarding player tracking points during play of the gaming machine, and

transmitting awarded player tracking points from the gaming machine to the gaming account associated with the first ID code.

39. The method of managing credit value on a gaming machine according to claim 29 including the step of

determining that the gaming machine is in the identified credit state,

determining that there has been no game play activity since the identified credit state was entered,

validating an amount of currency,

increasing the credit balance on the gaming machine by the amount of currency, and

providing a link between the future remaining credit balance on the gaming machine and the gaming account without the continued presence of the ID

carrier within reading range of the ID carrier reader until the remaining credit balance is at least one of transferred back to the gaming account from the gaming machine and played down to zero.

40. The method of managing credit value on a gaming machine according to claim 29 including the step of

determining that the gaming machine is in the identified credit state,

determining that since the last instance of reading the first ID code a predetermined period of time less than substantially two minutes has not elapsed without an instance of game play activity,

validating an amount of currency,

increasing the credit balance on the gaming machine by the amount of currency, and

providing a link between the future remaining credit balance on the gaming machine and the gaming account without the continued presence of the ID carrier within reading range of the ID carrier reader until the remaining credit balance is at least one of transferred back to the gaming account from the gaming machine and played down to zero.

41. A method of merging gaming accounts comprising the steps of

providing a patron with a first non-contact ID carrier having a first ID code that uniquely identifies a first gaming account associated with the first ID code on a remote network connected gaming account server,

providing the patron with a second non-contact ID carrier having a second ID code that uniquely identifies a second gaming account associated with the second ID code on the remote network connected gaming account server,

providing at least one of a gaming machine and a gaming table with an ID reader for reading an ID code from a patron's non-contact ID carrier,

placing the first non-contact ID carrier within reading range of the ID reader and reading the first ID code,

placing the second non-contact ID carrier within reading range of the ID reader while the first non-contact ID carrier still remains within reading range of the ID reader and reading the second ID code from the second non-contact ID carrier,

verifying that at least one of a) both first gaming account and second gaming account are registered to the same person, and b) that at least the second gaming account is an anonymous account,

establishing one of the gaming accounts as the surviving gaming account and the other as the terminated gaming account, and

transferring all credit value from the terminated gaming account to the surviving gaming account.

42. A method of merging gaming accounts comprising the steps of

providing a patron with a first non-contact ID carrier having a first ID code that uniquely identifies a first gaming account associated with the first ID code on a remote network connected gaming account server,

- providing the patron with a second non-contact ID carrier having a second ID code that uniquely identifies a second gaming account associated with the second ID code on the remote network connected gaming account server,
- providing at least one of a gaming machine and a gaming table with an ID reader for reading an ID code from a patron's non-contact ID carrier,
- placing the first non-contact ID carrier within reading range of the ID reader and reading the first ID code,
- placing the second non-contact ID carrier within reading range of the ID reader while the first non-contact ID carrier still remains within reading range of the ID reader and reading the second ID code from the second non-contact ID carrier,
- verifying that at least one of a) both first gaming account and second gaming account are registered to the same person, and b) that at least the second gaming account is an anonymous gaming account, and
- linking the first and second gaming accounts into a single linked gaming account having a credit balance that is the sum of the credit balance from the first gaming account and the second gaming account and which can be accessed by reading either the first or second non-contact ID carrier.
- 43.** A method of conducting a cashless gaming transaction comprising the steps of
- providing a patron with a gaming account and an ID carrier having an ID code that uniquely identifies the patron's gaming account,
- locating the gaming account on a remote network connected gaming account server,
- providing the gaming table with a data entry means, a transaction display means, and at least one ID carrier reader,
- entering an amount of credit with the data entry means to be returned to the patron's gaming account,
- visually displaying the amount of credit to be returned to the patron's gaming account on the transaction display means such that each of the patron, the gaming table operator, and an overhead security camera can read the amount of credit,
- reading the ID code from the patron's ID carrier to approve the transaction, and
- transferring the amount of credit to the gaming account associated with the ID code.
- 44.** The method of conducting a cashless gaming transaction according to claim 43 including the steps of
- providing the transaction display means with a single display face, and
- tilting the display face back from vertical substantially between 20 degrees and 60 degrees.
- 45.** The method of conducting a cashless gaming transaction according to claim 43 including an ID carrier reader at each seating position of the gaming table and comprising the steps of
- emitting a first color of light from the sensing face of the ID carrier reader when it is in an idle state, and
- emitting a second color of light from the sensing face of the ID carrier reader at the patron's seating position when a transaction approval is required of the patron.
- 46.** The method of conducting a cashless gaming transaction according to claim 43 including the step of providing at least one of the date and the amount of the transaction to a player tracking database associated with the gaming account for recording therein.
- 47.** A method of conducting a cashless gaming transaction comprising the steps of
- providing a patron with a gaming account and an ID carrier having an ID code that uniquely identifies the patron's gaming account,
- locating the gaming account on a remote network connected gaming account server,
- providing the gaming table with an acknowledgement means, a transaction display means, an ID carrier reader at each seating position at the gaming table, and a table system controller means for communicating with and controlling each of the acknowledgement means, transaction display means, and ID carrier readers, and for communicating with the remote network connected gaming account server,
- reading the ID code from the patron's ID carrier at a seating position,
- verifying that a gaming account associated with the ID code may be charged an amount of credit,
- visually displaying the amount of credit to be drawn from the patron's gaming account on the transaction display means such that each of the patron, the gaming table operator, and an overhead security camera can read the amount of credit,
- providing the patron with the amount of credit for play at the gaming table,
- acknowledging with the acknowledgement means that the patron has been provided with the amount of credit, and
- charging the amount of credit to the gaming account associated with the ID code.
- 48.** The method of conducting a cashless gaming transaction according to claim 47 including the steps of
- providing the transaction display means with a single display face, and
- tilting the display face back from vertical substantially between 20 degrees and 60 degrees.
- 49.** The method of conducting a cashless gaming transaction according to claim 47 including the step of predetermining a denomination amount to associate with the gaming account and wherein a transfer of credit from the gaming account to the gaming table is a sum equal to an integer multiple of the predetermined denomination amount.
- 50.** The method of conducting a cashless gaming transaction according to claim 47 including the step of providing at least one of the date and the amount of the transaction to a player tracking database associated with the gaming account for recording therein.

51. The method of conducting a cashless gaming transaction according to claim 47 including the step of visually displaying the seating position on the transaction display means such that each of the patron, the gaming table operator, and an overhead security camera can read the seating position.

52. The method of conducting a cashless gaming transaction according to claim 47 including the steps of

providing a minimum buy-in limit for the table game,

setting the amount of credit equal to zero if the credit balance in the gaming account is less than the minimum buy-in limit,

setting the amount of credit equal to a predetermined denomination amount associated with the gaming account if the credit balance in the gaming account is at least equal to the predetermined denomination amount, and

setting the amount of credit equal to an integer multiple of the minimum buy-in limit if the credit balance in the gaming account is greater than the minimum buy-in limit and less than a predetermined denomination amount associated with the gaming account.

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