A casino table game transaction management system for a plurality of gaming tables each having a dealer station and at least one player station, the system including bill acceptor assemblies adapted for utilization at the gaming tables, the bill acceptor assemblies each including a bulk note feeder, a note transportation system, a note validator configured to identify characteristics of each note being passed therethrough by the transportation system, and a cash box adapted to receive and to store notes. The bulk note feeder is configured to allow a user to quickly insert a stack of notes into the intake opening. The notes are then passed to the note validator located underneath the table. The system also includes a casino computer configured to monitor transactions within the system via a network interconnecting each of the bill acceptor assemblies at the gaming tables to the casino computer.
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(54) Title: TABLE GAME VALIDATION SYSTEM HAVING A BULK NOTE FEEDER ASSEMBLY

(57) Abstract: A casino table game transaction management system for a plurality of gaming tables each having a dealer station and at least one player station, the system including bill acceptor assemblies adapted for utilization on the gaming tables, the bill acceptor assemblies each including a bulk note feeder, a note transportation system, a note validator configured to identify characteristics of each note being passed therethrough by the transportation system, and a cash box adapted to receive and to store notes. The bulk note feeder is configured to allow a user to quickly insert a stack of notes into the intake opening. The notes are then passed to the note validator located underneath the table. The system also includes a casino computer configured to monitor transactions within the system via a network interconnecting each of the bill acceptor assemblies at the gaming tables to the casino computer.
TABLE GAME VALIDATION SYSTEM
HAVING A BULK NOTE FEEDER ASSEMBLY

BACKGROUND OF THE INVENTION


[0002] This application incorporates all the features of, and claims priority to the following US applications:

[0003] "TABLE GAME VALIDATION AND EVENT AUDIT SYSTEM", No. 10/941,316 filed on September 14, 2005;

[0004] "BULK NOTE FEEDER ASSEMBLY FOR TABLE GAME VALIDATOR ASSEMBLY", No. 10/958,946 filed on October 4, 2005;

[0005] both of which are Continuation In Part applications of U.S. Application number 10/863,059, filed on June 7, 2004 which is a Continuation of U.S. Application No. 10/081,756, filed February 20, 2002, entitled Gaming Table Validator Assembly, now U.S. Patent No. 6,745,887.

[0006] 2. Field of the Invention:

[0007] The present invention is directed to a bill acceptor adapted for mounting on a gaming table and the validation and event audit system for use in a gaming establishment that automates the receipt, tracking and event audit process for gaming table transactions. Certain of the concepts herein are also useful in the field of kiosk dispensing assemblies and checkout counters. In particular, the invention relates to the design, operation and implementation of a bill acceptor which can accept a stack of individual notes in a receiving slot or bulk note feeder mounted to, or proximate, a gaming table, and alternatively accept other types of markers utilized in a gaming establishment to account for player use, and the method by which the validator processes the notes and markers one at a time and passes validated notes through to a secure cash box while also interacting with the back room auditing and control systems.

[0008] 3. General Background and State of the Art:

[0009] Conventional gaming tables located in casinos are generally used to play games such as blackjack, poker, roulette, baccarat, craps and Pai Gow. Variations on poker games include Crazyfor Poker, Let It Ride, Three Card Poker, Wild Hold’Em and 357 Poker. Generally, each gaming table may have an outer periphery containing a plurality of player locations and a table
supervisor or dealer location located opposite the player locations. From the dealer’s location, the dealer controls the pace and operation of the game including for example dealing the cards, paying winning wagers and collecting losing wagers. Gaming establishments generally cluster the table games in such a manner that a Pit Boss can oversee and monitor the action on a number of gaming tables simultaneously. A Pit Boss can thus be responsible for five to twenty different gaming tables.

[0010] The operation of a gaming establishment is highly regulated and strictly monitored. The oversight of several gaming tables by a Pit Boss is thus a complicated task in that the Pit Boss is responsible for knowing approximately how much money is in play on all of the gaming tables, and the Pit Boss must be keenly aware of players who exhibit suspicious behavior. These responsibilities often take precedence over the other responsibilities of a Pit Boss, including customer service and customer ratings to promote the casino and enhance the experience for the preferred customers.

[0011] In view of the present regulation of gaming, systems adapted for use in the gaming industry are required to meet very high design and reliability standards. New systems that allow automation of the responsibilities presently assigned to the dealers and the Pit Boss must be compatible with existing regulations and may become subject to new regulations that require modifications after implementation.

[0012] The supervisor or dealer for each table game also has a number of responsibilities, including accepting, counting and then exchanging currency or notes received from a player for casino chips. Generally, when a player wants to exchange currency or notes for chips at the gaming table, the player gives the currency or notes to the dealer. Notes, as used herein, can include local and foreign currency, casino scrip, and casino issued tickets. The dealer typically counts out and then spreads the currency or notes on the playing surface of the gaming table. Video surveillance systems view each of the tables and may be used to confirm the dealer’s counting of received notes. The dealer is sometimes required to notify a Pit Boss when the dealer is exchanging currency or notes, typically when the amount is over a certain threshold. The Pit Boss in turn must maintain a running event audit of the money in play on each of the tables that he or she is supervising.

[0013] After receiving an approval from the Pit Boss, the dealer accepts the currency or notes and deposits them into a slot accessible from the playing surface of the gaming table.
slot leads to a channel for transporting the currency or notes from the slot to a cash box located below the playing surface. A plate may be used to push the currency or notes into the slot and ensure that the currency or notes properly fall into the cash box. Generally, the cash box beneath the gaming table does not include a stacking assembly to receive and stack, in an organized manner, the notes received. Thus, when the cash box is removed from the gaming table and taken to the counting room, the notes must be manually removed, sorted, stacked and counted. Gaming regulations may require that the receipts or cashbox on every table be audited at least once per day, thus requiring a manual sort and count for each active gaming table at least once per day.

[0014] The revenues received on the gaming tables are a significant source of income for a casino. Accordingly, the high volume of currency or notes exchanged invites the risks of receiving counterfeit currency or notes. Unlike slot machines, wherein the implementation of integrated bill acceptors in the slot machines has diminished the casinos’ risk of receiving counterfeit currency, most gaming tables remain susceptible to this risk. Due to the increased sophistication of counterfeitters and the increasing difficulties in discriminating between authentic and counterfeit currency, the manual or dealer inspection method of accepting currency on gaming tables is inadequate to protect casinos from currency fraud.

[0015] Further, as the use of casino scrip and casino cash voucher tickets increases, or other types of cash equivalents are adopted, there is a risk that these forms of notes will be compromised or counterfeited. Many casinos or gaming establishments now have “ticket out” systems installed in their slot machines. Such systems are described, for example, in U.S. Patent No. 6,048,265 hereby incorporated by reference. Generally, when a player wishes to cash out in a ticket out game, the casino’s central computer system issues a tracking number to the slot machine and the slot machine prints a bar coded ticket having the tracking number. The printed ticket may be used to start play on another slot machine or cashed out at a cashier station. Once the bar coded ticket is redeemed, the tracking number is invalidated. Accurate accounting of these alternative forms of notes requires that they be validated upon receipt, and the validation or authentication requires electronic communication with the casino’s central computer system in order to cancel out the ticket. Presently, these types of bar coded tickets issued by a slot machine can not be accepted at a gaming table as the gaming table does not
have a validator communicating with the central computer system to check the authenticity of
the tracking number of the bar coded ticket.

[0016] A few attempts have been made to patent the use of a bill acceptor assembly on
electronic gaming tables. For example, U.S Patent No. 5,775,993 ("the ‘993 Patent") issued to
Fentz et al. discloses a bill acceptor assembly mounted at each player station located around an
electronic roulette wheel. Similarly, in U.S. Patent No. 5,588,650 ("the ‘650 Patent"), each
player console located around an automated roulette wheel includes a bill acceptor. In both of
these patents, a computer, not a human being, directs the game. A player can insert money into
the bill acceptor to earn credits at any time, even though the player may not be able to place a
bet until the next betting period. Yet, both the ‘993 Patent and the ‘650 Patent have two
fundamental flaws. First, both patents use traditional single-feed bill acceptors where the player
must insert one note at a time into the bill acceptor. The bill acceptors in the ‘993 Patent and
the ‘650 Patent are not designed to accept multiple notes at one time. At a gaming table, players
may start their betting with a large sum of money which, in the configuration of the ‘993 or
‘650 Patents, would require each player to feed each note one at a time into the bill acceptor.
The effort involved in feeding each note can be time consuming and frustrating, and even more
so if the bill acceptor does not accept every note on the first feeding attempt.

[0017] Second, incorporating a bill acceptor into a computerized gaming table does not
involve the same difficulties as incorporating a bill acceptor into a conventional gaming table
operated by a human dealer. On the computerized gaming table, a computer using
preprogrammed software manages each player’s credits, operates the game, calculates and pays
out all winnings, and collects any losing wagers. No casino tokens or notes are dispensed until
a player cashes out. On-the other hand, a gaming table supervisor, dealer or operator has to do
all of the cash intake, chip or token distribution and wagering transaction functions by himself
or herself. In addition, the operator is given the responsibility of watching each player to ensure
that he/she does not cheat. Neither the ‘993 Patent nor the ‘650 Patent explain or address the
many concerns of how to incorporate the bill acceptor into a human operated gaming table. For
example, neither patent discloses how the operator would know how much money has been
inserted into the bill acceptor. This disconnect in information would prevent the operator from
knowing how many tokens to give back to the player.
Accordingly, a system for accepting valid currency and rejecting counterfeit currency on a conventional gaming table would be beneficial to the gaming industry. Such a system would increase the casino's profitability by decreasing the amount of counterfeit currency it may receive. Moreover, a bill acceptor capable of accepting and validating a stack of notes would significantly decrease the delay involved in feeding one note at a time into the bill acceptor. Implementation of bill acceptor's into the operation of gaming tables in a casino environment allows a number of additional improvements over the existing methods of operation. In view of the degree of sophistication involved and the necessary design and operation of such a bill acceptor that will be serviceable in the gaming industry, it may also be appreciated that a bill acceptor satisfying the requirements of the gaming industry will have wide application to a number of applications, including for example self serve kiosks and checkout counters.

**SUMMARY OF THE INVENTION**

The present invention is directed to a note or bill acceptor, which will accept various notes, located on a gaming table. Due to the expansion of the types of currency and currency substitutes which are accepted by current bill acceptors on current casino gaming machines, bills, vouchers, script, tickets and currency will be hereinafter collectively referred to as "notes." The bill acceptor of the present invention is directed to providing an efficient way to accept notes on a gaming table and simultaneously discriminate between authentic and counterfeit notes. Accordingly, a bill acceptor for accepting and rejecting notes on a gaming table is set forth which includes a validator assembly having a slot for receiving notes and an associated transport mechanism to pull the notes from the slot through the validator assembly. If the note is not authentic, the note can be transported to a bill rejection slot. If the note is authentic, the transport mechanism directs the note through an enclosed path down through (or around) the surface of the gaming table to a cash box. The bill acceptor is mounted to the gaming table with a mounting bracket, preferably so as to take advantage of the existing slot in the top of the gaming table into which the dealer or operator would normally insert the notes.

According to the present invention, a player or the dealer places a single or multitude of notes down a wide slot leading to a bill acceptor. The bill acceptor removes one note at a time from the others and uses various optical and magnetic sensors to determine the authenticity
of each note. If the note does not meet the standards of the bill acceptor for any reason, the note is rejected. The transport mechanism may divert the rejected note to a bill rejection slot, where the note is returned to the playing surface of the gaming table. An override “Accept” function or button, to allow the dealer to accept a questionable note, is also contemplated to allow the dealer to accept the notes, even though the bill acceptor is rejecting them. Alternatively, the rejected note may nonetheless be accepted with the remainder of the valid currency, for a variety of reasons, if the bill acceptor software is programmed accordingly. If the note is valid, a transport mechanism conveys the note to a cash box for storage. A display may indicate the total value of the notes received.

[0021] The accepted notes may be securely and orderly stacked inside the cash box if the cash box is configured to include a stacker. A lock on the cash box door prevents unauthorized access to the notes inside the cash box. Moreover, the bill acceptor and cash box can be assembled from more than one component to ensure ease of installation onto the gaming table. Further, a bill guard can be installed around the bill acceptor to minimize the possibility that a player would reach over the gaming table and attempt to remove the notes as they were being fed into or rejected from the bill acceptor.

[0022] Incorporation of the bill acceptor into the gaming table allows for significant improvements in the protection against fraudulent practices as well as the event auditing for each gaming table. The bill acceptor is communicatively coupled to the casino’s central computer system, either by hard wiring or wireless communication systems. The bill acceptor can be programmed to identify and accept counterfeit notes while notifying security or supervisory personnel of the receipt of such a note or notes. The bill acceptor can also be programmed to allow for a full event auditing of all transactions, including credit issuances, markers, token fills voided tickets and markers and other types of casino transactions. Further, the bill acceptor may be configured to provide information on the exact status of all transactions to the Pit Boss, either upon activation of a display or reporting function or via a hard wired or wireless communication system.

[0023] The above described and many other features and advantages of the present invention will become apparent from a consideration of the following detailed description in conjunction with the accompanying drawings.
BRIEF DESCRIPTION OF THE DRAWINGS

[0024] FIG. 1 is a perspective view of a gaming table with an installed bill acceptor.

[0025] FIG. 2 is a representative cross sectional view of the bill acceptor and a cash box assembly.

[0026] FIG. 3 is a perspective view of a mounting bracket for mounting the bill acceptor to the gaming table.

[0027] FIG. 4 is a perspective view of a cashbox housing and power assembly of the bill acceptor.

[0028] FIG. 5 is a perspective view of an alternative configuration for a bill acceptor and a bill guard installed on a gaming table.

[0029] FIG. 6 is a perspective view of another alternative embodiment of a bill acceptor for mounting on a gaming table.

[0030] FIG. 7 is a perspective view of yet another embodiment of a bill acceptor for mounting on a gaming table.

[0031] FIG. 8 is a top view of a note feeder portion of the bill acceptor of FIG. 7.

[0032] FIG. 9 is a side view of the note feeder portion of the bill acceptor of FIG. 7.

[0033] FIG. 10 is a cross sectional cutaway side view of the note feeder portion of the bill acceptor of FIG. 7.

[0034] FIG. 11 is cross-sectional view of the lock assembly of the note feeder portion of the bill acceptor along a line 11-11 shown in FIG. 8.

[0035] FIG. 12 is a perspective view of the note feeder portion of the bill acceptor rotated to expose the validator assembly.

[0036] FIG. 13 is a perspective view of the bill acceptor of FIG. 7 with a note feeder rotated upward and with the validator assembly being pulled out.

[0037] FIG. 14 is a schematic representation of a system that interconnects the bill acceptors on multiple gaming tables with a computer system according to the present invention.

[0038] FIG. 15 is a schematic diagram of system event transactions for the bill acceptor.

DETAILED DESCRIPTION OF THE PREFERRED EMBODIMENTS

[0039] Figure 1 provides a perspective view of a card type of gaming table 10 having a base 12 and a playing surface 14. The gaming table 10 as depicted has a dealer station 16 opposed
by semi-circularly arranged player positions. The gaming table 10 will normally have a drop slot 18, positioned proximate the dealer station 16, which defines a hole in the gaming table 10 and allows for notes to be deposited into a cash box contained proximate the base 12, or within the base. While a card type gaming table is depicted, the invention is applicable to other types of gaming tables such as craps tables and roulette tables.

[0040] As further illustrated in the exemplary embodiment of Figure 1, a bill acceptor 20 is positioned on the playing surface 14 of the gaming table 10. The bill acceptor 20 includes a housing 22 and a mounting bracket 24 to secure the housing 22 to the gaming table 10. The housing 22 includes a bezel 26 upon which notes can be stacked and sequentially fed through a slot 28 into the bill acceptor 20. The slot 28 generally comprises an opening dimensioned to receive the notes.

[0041] Figure 2 depicts a cross-sectional view of the bill acceptor 20 and an associated cash box 40 removed from the gaming table 10 of Figure 1. Within the bill acceptor 20, the notes are transported through a validator assembly 30 by a transportation assembly 32, as discussed below. A bill separator 36 may be located proximate the slot 28. The notes pass from the bill separator 36 through a bill discriminator 38 to determine if the notes are authentic. The bill acceptor 20 also includes, at an opposite end of the housing 22, a bill dispenser slot 34. In the event that the bill discriminator 38 determines that a note inserted into the validator assembly 30 is not authentic, the transportation assembly 32 passes the note through the housing 22 to the bill dispenser slot 34.

[0042] As illustrated, notes are to be inserted into the bill acceptor 20 through the slot 28. Notes rejected by the validator assembly 30 are ejected through the bill dispenser slot 34. Valid notes are deflected downward through a slot 35 located on the underside of the housing 22 which is to be positioned over the drop slot 18 of the gaming table 10. In an alternative embodiment, the notes are directed to a location along the back edge of the gaming table 10 to then be transported to the cash box 40.

[0043] A power assembly 42 draws the valid notes away from the validator assembly 30 and deposits them into the cash box 40, which is to be mounted below the playing surface 14 of the gaming table 10. The power assembly 42 also supplies power to and exchanges information with the validator assembly 30 through a power connector located on the underside of the housing 22 as discussed below. The cash box 40 is contained within a cash box housing 78.
having a cash box door 43 and a door lock 44 to prevent unauthorized access to the contents of the cash box 40. The cash box 40 may simply be an open container having a slot in the top through which the notes are inserted. As depicted in FIG. 2 the cash box 40 receives and stacks the notes. While the cash box 40 may have a single stacker for all of the notes, it may be preferable to have two stacker sections as depicted, wherein first stacker section 45 receives and neatly stacks currency. A second stacker 46 can be used to stack a selected currency denomination or alternatively all non-currency notes accepted by the bill acceptor. As another alternative, the second stacker 46 could be used to store “fill slips” signifying additional chips being brought to the gaming table. Thus, the second stacker 46 could be used to store all documents, or all non-currency items, received by the bill acceptor. Accordingly, for this dual stacker cash box, the power assembly 42 will have a transport system and a deflector 47 to allow the notes to be directed to the appropriate stacker along a first transport path 48 or a second transport path 49.

[0044] The validator assembly 30 contains a circuit board mounted validator processor 50 which is also preferably connected to a central computer or server (shown in FIG. 14) of the casino. The validator processor 50 has various processing capabilities which are known in the art. Upon receipt of a note and determination of validity, a signal is sent to the casino processor or server signifying receipt as well as the denomination of the note. The value of the notes accepted by the validator assembly 30 can then be displayed on an LCD display 54.

[0045] There may be situations where some or all of the notes received are rejected from the validator assembly 30 even though it may be apparent to the dealer that the rejected notes are authentic. In this and other situations, the dealer may want to accept the notes in spite of the refusal of the validator assembly 30. To override the decision of the validator assembly 30, the dealer could activate an override input, such as an Accept button 56 which is electrically connected (not shown) to the validator processor 50. Pressing the Accept button 56 will force the validator assembly 30 to accept the notes and the transportation assembly 32 to transport the notes to the cash box 40. Software associated with the bill acceptor 20 can be provided to keep track of the number of notes received as a result of the dealer overriding the validator assembly 30.

[0046] If a player wants to place a bet with a dealer operating a casino game on the gaming table 10, casinos generally require the player to use the casino’s own tokens to play. The player
may already have casino tokens in possession or may give notes to the dealer who will exchange the notes for an equivalent value of casino tokens. To validate the notes received from the player, the dealer or player places the stack of notes on the bezel 26. The bill separator 36 pulls off one note at a time through the slot 28. The technology of bill separators is known in the art, which includes feeding devices such as printers, photocopierns, currency counters, and automated teller machines that feed one sheet of paper, such as a note, from a stack of paper or notes.

[0047] The notes are then pulled into the bill discriminator 38 by the transportation assembly 32. Because they are electrically connected to one another, the bill discriminator 38 can instruct the transportation assembly 32 to direct and transport validated notes into the cash box 40 and invalid notes to the bill dispenser slot 34. The transportation assembly 32 includes belts 60 and 62 that transport the note from the bill discriminator 38 to the deflector 64. Depending on the authenticity of the note processed, the bill discriminator 38 will send a signal to a deflector 64 which directs the pathway of the note through the validator assembly 30. If the note is authentic, the deflector 64 will remain in an initial position to direct the notes downwards towards the cash box 40. In the event the note is not authentic according to the bill discriminator 38, the deflector 64 moves from the initial position to a secondary position to deflect the note to an exit or horizontal pathway out of validator assembly 30.

[0048] It is understood that the transportation assembly 32 discussed above is an exemplary embodiment for illustration purposes only. Other transportation systems well known or apparent to one skilled in the art are to be included within the scope of the present invention. In addition, in an alternative embodiment, the slot 28 and the bill dispenser slot 34 may be the same.

[0049] As illustrated in the cross-sectional view of Figure 2, the transportation assembly 32 transports valid notes past the deflector 64 to slot 35, which is positioned opposite a narrow extension of the power assembly 42, configured to extend up through the drop slot 18 of the gaming table 10. At the top of the narrow extension is a slit 70 into which the notes are directed. After entering the slit 70, the note passes between two wheels 72 and 74, driven by belts 66 and 68, respectively which draw the note down towards the cash box 40 and away from the validator assembly 30. The belt 66 extends down to the top of the cash box 40 to direct notes to the first stacker 45 of the cash box 40 if a deflector 47 is in an initial position according to the type of note. Belt 68, driven by a motor drive 69 and passing over or around various idler
wheels, drives belt 66 and controls the direction of notes directed to the second stacker 46 of the cash box 40 if the deflector 47 moves to a second position.

[0050] The bill acceptor 20 may be composed of multiple modules that facilitate installation on a gaming table 10, including for example the mounting bracket 24, the validator assembly 30, and the cash box housing 78 which contains the power assembly 42 as well as the cash box 40. The validator assembly 30 can be an independent component and compact assembly, for example, about the width and length of two U.S. currency bills placed consecutively lengthwise. The mounting bracket 24 is adapted to receive and securely hold the validator assembly 30 to the gaming table 10.

[0051] As illustrated in FIG. 3, the mounting bracket 24 may have a base plate 84 that is connected to two plates 86 extending upward and two plates 88 extending downward. The base plate 84 has an opening 90 that is similar in size to the opening of the drop slot 18. The upward plates 86, which rise upward from the base plate 84 and contain overhangs 92 and 94, secure the validator assembly 30 from the top, underside, and each side parallel to the length of the validator assembly 30. A locking mechanism may be provided on the validator assembly 30 so that it can mate and lock with a lock receiver to secure the validator assembly 30 to the mounting bracket 24.

[0052] The plates 88, which extend downward from the base plate 84, are parallel to the wider wall of the drop slot 18. The lower ends of the plates 88 extend down the full length of the drop slot 18. At the lower end, the plates 86 may include flanges 96 that clip to the underside of the gaming table 10. To install the mounting bracket 24, the plates 88 are inserted into and pushed through the drop slot 18. After the flanges 96 extend past the end of the drop slot 18, the flanges 96 grip onto the gaming table 10, preventing the removal of the mounting bracket 24. To remove the mounting bracket 24 from the gaming table 10, the flanges 96 must be squeezed together from below the gaming table 10.

[0053] As illustrated in FIG. 4, the top of the narrow extension of the power assembly 42 includes a plurality of pin contacts 100 located extending from the power assembly 42 toward the validator assembly 30. The pin contacts 100 may be spring-loaded to maximize contact between the pin contacts 100 and contacts located on the base of the validator assembly 30. The pin contacts 100 and contacts on the validator assembly 30 are made of alloys that allow transfer of electrical power and data between the validator assembly 30 and the power assembly.
42. Alternatively, pin contacts 100 may be used primarily to transfer power from the power assembly 42 to the validator assembly 30, whereas an optical coupling device 102 on the power assembly 42 communicates with an optical coupling device on the validator assembly 30 to transfer data information.

[0054] The pin contacts 100 are attached to a power supply and controller in the power assembly 42. A cable 104 can be provided to couple power to the power assembly 42 and also electrically couple the controller of the power supply 42 to a computer server (shown in FIG. 14) in the casino. Alternatively, wireless technology can be used to communicate information between the bill acceptor 20 and a computer server in the casino.

[0055] As illustrated in FIG. 5, a bill guard 106 attaches to the gaming table 10 and is positioned near the bill acceptor 20. The bill guard 106 minimizes the possibility that a player could reach onto the gaming table and remove the notes as they were being fed into or rejected from the bill acceptor. The bill guard 106 can be made of a translucent material such as high impact plastic. The bill guard 106 will allow the dealer and players to watch the bills as they are inserted into or rejected from the validator assembly 30. The bill acceptor 20 depicted in Figure 5 is an alternative embodiment, where the bezel 26 and the bill dispenser 34 are positioned on the same side of the validator assembly 30.

[0056] As depicted in an alternative embodiment in Figure 6, the bill acceptor 20 is enclosed within an integrated housing 78 containing the cash box 40. To install the bill acceptor 20 on the gaming table 10, a hole is cut into the gaming table 10. The hole may need to be larger than the drop slot 18. The bill acceptor 20 is mounted through this hole such that the validator assembly 30 is above the playing surface 14 and the cash box 40 is below. Mounting members 76 are provided to secure the bill acceptor 30 to the gaming table 10. The internal components of the bill acceptor 30 in the exemplary embodiment, such as the transportation assembly 32, bill separator 36, and the bill discriminator 38, would be used in this alternative embodiment.

[0057] In view of the foregoing discussion, it may be readily understood that alternative embodiments are contemplated. For example, a slot for receiving money can be located proximate to each player position. Because the slot includes an opening adapted to receive notes, the slot could be located on the playing surface of the gaming table, along the border of the gaming table or under the playing surface of the gaming table. A player could insert a note
into the slot or place the note on a bezel leading to the slot. A bill separator positioned proximate the slot could pull off one note at a time from the bezel. A transportation assembly generally similar to the system disclosed above would transport the note to a bill discriminator. There may be at least one bill discriminator per table to validate notes received from the slots. Valid notes may be transported to one central cash box or a plurality of cash boxes per gaming table. If one bill discriminator is installed proximate to each player position, a cash box may be installed proximate to each bill discriminator. This increases the number of cash boxes that need to be replaced by the casino personnel, but it also increases the cumulative note storage capacity on a gaming table. In addition, the increased storage capacity may decrease the frequency of replacements of filled cash boxes with empty ones. It is also possible to install only one central cash box per gaming table regardless of the number of bill discriminators. In such a configuration a transportation assembly positioned within or below the top of the gaming table will carry valid notes to a cash box and will return invalid notes to the player.

[0058] Once the bill discriminator determines the denomination and authenticity of the received note, the bill discriminator may send a signal to an LCD display 54 visible to the dealer and/or the player to indicate how much money a particular player has inserted. The LCD display 54 may indicate the total amount received, or list all of the bills and their amounts in addition to the total amount received. Further, by providing a numeric LCD display 54 showing the amount of received on the surface of the gaming table, security cameras can more readily monitor the intake of money or notes and disbursement of chips by the operator. After giving the equivalent amount in casino tokens to the player, the dealer can reset the reading on the LCD display. In this manner, the dealer can still control when the bets are placed, but doesn’t waste time in collecting, counting and verifying the authenticity of the notes collected. In the event the notes are rejected, the notes may be returned through the slot used for inserting money or a separate slot for rejected notes.

[0059] FIG. 7 depicts another embodiment of the invention. In FIG. 7, bill acceptor 120 is to be mounted on the gaming table 10 in a manner whereby a bulk note feeder assembly 110 is positioned at the edge of the gaming table 10 next to where the dealer will stand. The bulk note feeder assembly 110 includes a bulk note chute 112 having a tapering and curving cross sectional configuration allowing the dealer to insert a stack of up to twenty or thirty notes into the bill acceptor 120. The bill separator described above will be enclosed in a housing 134 and
positioned opposite a bottom opening of the bulk note chute 112 to sequentially pull the notes from the bulk note chute 112 into the bill acceptor 120. Notes to be rejected (if the computer software is so programmed) are passed to a note dispense assembly 114 positioned on the gaming table 10 inset from the bulk note chute 112. The bulk note chute 112 is pivotally mounted to the note dispense assembly 114 such that the bulk note chute 112 can swing upward and provide access to the bill separator and validator assembly within the housing 134. A lock assembly is provided to fix the bulk note chute 112 in place.

[0060] The bill acceptor 120 may be mounted onto the table 10 or along the edge of the table 10 so that the location of the bill acceptor 120 is convenient to use for the dealer and the housing 134, which encloses the validator assembly 30 and the cash box 40, is hidden under the table 10. For instance, in a gaming table application, the bill acceptor 120 may be coupled to an edge of a gaming table 10 so that the bulk note chute 112 is located near a dealer's right hand. The bulk note chute 112 has an intake opening 136 adapted to receive the notes. For instance, the intake opening 136 may receive thirty or more notes at one time.

[0061] To mount the bill acceptor 120 to the edge of a gaming table 10, a cavity 138 may be formed on the edge of the gaming table 10. The cavity 138 may be cut into the gaming table 10 and sized to receive a neck portion 140 of the bulk note feeder assembly 112 so that the note dispense assembly 114 protrudes from the top surface of the gaming table 10 while the housing 134 is located underneath the gaming table 10. The bulk note chute 112 protrudes from the edge of the gaming table 10. Drinks that may be accidentally spilled onto the gaming table are prevented from entering the bulk note chute 112 and the note dispense assembly 114. Alternatively, the bulk note feeder assembly 110 may be configured so that the top surface is flush with the top surface of the gaming table 14 once it is mounted to the gaming table 10.

[0062] One or more notes inserted into the intake opening 136 are sequentially processed by the validator assembly 30, as described above, to determine whether each of the notes is valid or not. The validator assembly 30 may have an inlet slot 28 (shown in FIG. 13) that is adapted to take in one note at a time from the plurality of notes inserted into the intake opening 136 of the bulk note chute 112. In particular, the inlet slot 28 may take in each of the plurality of notes along the narrow edge of the rectangular shape note. As such, the notes inserted into the intake opening 136 of the bulk note chute 112 will be provided to the inlet slot 28 of the validator 30 along a predetermined orientation, i.e., along the narrow edge of the rectangular.
shape note. The validator assembly 30 and cash box 40 held within the housing 134 may be placed underneath the gaming table 10 for safe keeping and out of the way of the dealer and players around the gaming table. With the intake opening 136 of the bulk note feeder assembly 110 protruding from the side 142 of the gaming table, a dealer may locate the intake opening 136 by touch and insert the notes into the intake opening 136 to minimize losing eye contact with the players around the table while dropping the notes into the intake opening 136 of the note feeder 132.

[0063] FIG. 8 is a top view of the bulk note feeder assembly 110 showing the intake opening 136 adapted to receive notes and the note dispense assembly 114 having a note rejection slot 144 adapted to dispense notes that are invalid or cannot be authenticated by the validator assembly 30. The notes inserted into the intake opening 136 may be transported to the validator assembly 30 located underneath the gaming table 10 to determine whether each of the notes is valid or not. The valid notes may be stored in the cash box 40 provided within the housing 134. The invalid notes or notes that cannot be authenticated by the validator assembly 30 may be rejected through the note rejection slot 144. The intake opening 136 and the note rejection slot 144 may be provided on the top surface of the note feeder 132 to allow a dealer to conveniently insert at least one note into the intake opening 136, and retrieve the rejected notes, if any, from the rejection slot 144.

[0064] A hinge 130 may be provided between the bulk note chute 112 and the note dispense assembly 114 to allow the bulk note chute 112 to pivot between a downward position (as shown in FIG. 9) and an upward position (as shown in FIG. 13) relative to the note dispense assembly 114. The hinge 130 may be configured such that when the bulk note chute 112 is in the upward position, the hinge 130 may maintain the bulk note chute 112 in the upward position without a holding pin or other staying device. The bulk note chute 112 may include a lock assembly 128 so that when the bulk note chute 112 is in the downward position, the lock assembly 128 locks the bulk note chute 112 in place relative to the note dispense assembly 114 to prevent the bulk note chute 112 from pivoting upwards. As discussed in more detail below, when the bulk note chute 112 is in the upward position, the inlet slot 28 of the validator assembly 30 may be exposed and the validator assembly 30 may be withdrawn from the housing 134 for maintenance.
FIGS. 9 and 10 show a side view, and a cross-sectional cutaway view, respectively of the bulk note feeder assembly 110 as illustrated in FIG. 7. As illustrated in FIGS. 7-10, the bulk note chute 112 is defined by an inner wall 152 which, in the construction as shown in FIG. 7, is essentially aligned with the edge of the table 10. Opposite the inner wall 152 is the outer wall 154, which is slanted inward toward the inner wall 152 to define the bulk note chute 112. The front outer wall 154 preferably includes a tactile indicator 158 which may include raised or depressed lettering, an arrow or dollar signs, etc. as depicted in FIG. 8. Oppositely disposed side walls 162 and 164 extend from the inner wall 152 to the outer wall 154 to define the side boundaries of the bulk note chute 112. The side walls 162 and 164 are either curved or taper towards one another at their lower edges. The taper is adapted so that bills which are not edgewise aligned can be dropped into the top of the bulk note chute 112 and, as they drop out the bottom of the bulk note chute 112, they will be more organized edgewise by the tapering effect of the side walls 162 and 164. A display panel 166 may be incorporated into a surface of either the inner wall 152 or the outer wall 154. Alternatively, the display panel 166 can be incorporated onto the note dispense assembly 114.

As best depicted in the side view of FIG. 9 and the cross-section view of FIG. 10, the outer wall 154 extends up higher than the inner wall 152. This may provide a raised surface so that when the dealer brings the notes backward from the table, they can be placed into the bulk note chute 112 and engaged against the outer wall 154 thereof without first dropping below the level of the table 10. As also illustrated in the cross-sectional view of FIG. 10, the outer wall 154 extends up to a crest 168 from which it extends outward and then downward as shown at handle 170 to form a recess 172 suitable for gripping and lifting the bulk note chute 112 upward.

Attached to the bottom of the walls forming the intake opening 136 is the chute 150. The chute 150 is defined by a top wall 182 which intersects and transitions from the bottom of the inner wall 152 of intake opening 136. The bottom of chute 150 is formed by the bottom wall 184 which extends from a smooth transition at the bottom of outer wall 154 and gradually curves from a vertically upward angle to a horizontal termination point at the bottom of the chute 150. Side walls 186 and 188 are continuous with the side walls 162 and 164, respectively, and together with the bottom wall 184, define the channel of the chute 150. At the lower edge of the chute 150 is a flange assembly 190 which allows interconnection and securement to the
front edge of the validator assembly 30 so that an outlet slot 192 formed at the bottom of chute 150 aligns with the inlet slot of the validator assembly 30.

[0068] The bottom wall 184 of chute 150 may include one or more slots or holes 194 which do not interfere with the progress of the bill or stack of notes as it progresses over the surface of the bottom wall 184. The holes 194 prevent liquids poured or spilled into the bulk note chute 112 from passing from the bulk note chute 112 into the bill validator assembly 30. As illustrated, the cross-sectional view of FIG. 10, the surfaces of the bulk note chute 112 and in particular the transition between intake opening 136 and the chute 150 are configured so as to allow the smooth progression of notes inserted to the intake opening 136 down through chute 150 and so that they can be provided to the validator assembly 30. If a stack of notes having a thickness greater than the width or height of the channel chute 150 at its base are placed into the intake opening 136, the upper most notes will be constrained by the top wall 182 until enough notes are removed from the bottom of this stack by the validator assembly 30 to allow all of the notes to drop to the bottom and, sequentially, be pulled into the validator assembly 30. By this configuration, a stack of notes may be quickly and efficiently processed once inserted into the intake opening 136 by the bill acceptors 120.

[0069] Before inserting a plurality of notes into the intake opening 136, a dealer may organize the plurality of rectangular shape notes so that they are roughly aligned relative to each other. The dealer may then insert the plurality of the notes along their narrow edges first into the intake opening 136. The outer wall 154 of the intake opening 136 may have a tactile indicator 158 such as an arrow which points in the downward direction. The tactile indicator 158 may be in the form of a large recessed arrow. The tactile indicator 158 may optionally include sensors to detect the motion of the notes passing through the chute 150 to monitor the location of the notes within the chute 150. Depending on the location of the notes in the chute 150, the tactile indicator 158 functions as a touch sensed indicator for the dealer or user that the notes inserted into the intake opening 136 may need to be pushed further into the chute 150.

[0070] The tactile indicator 158 may be back lit to indicate that the note or a stack of notes need to be pushed further into the chute 150. Once inserted into the chute 150, the notes may be then transported by gravity or a vacuum down the note chute 150 toward the inlet slot 28 of the validator assembly 30. The chute 150 has a smooth curved configuration so that the notes may be inserted substantially along the vertical axis into the intake opening 136 and exit out of the
chute 150 substantially along a horizontal axis. The curved configuration of the chute 150 aligns the stack of rectangular shape notes so that the notes exit through the outlet 192 in an orderly fashion along their narrow edges and into the inlet slot 28 of the validator assembly 30. The validator assembly 30 may be provided with the bill separator 36, as described above, to pull one note at a time from the notes provided through the chute 150.

[0071] The chute 150 may be secured to the note feeder 132 via fastening mechanisms such as screws. The internal surfaces of the chute 150 may be coated with a substance to minimize the friction between the interior surface of the chute 150 and the notes so that the notes pass through the chute 150 easily.

[0072] When the bulk note chute 112 is in the downward position, a set of fingers 196 located below the outlet 192 insert into openings in the validator assembly 30 so as to align the chute 150 and validator assembly 30. A set of pins 200 on the validator assembly 36 may act as sensors such that when the chute 150 is coupled to the validator assembly 30, the sensor pins 200 indicate to the validator assembly 30 that the bulk note feeder assembly 110 is in the downward position. Once the validator receive a signal from the sensors, the validator 30 may indicate through the display panel 166 that bill acceptor 130 is able to receive notes. In addition, a variety of information about the notes may be provided to the display panel 166. For instance, the validator assembly 30 may provide information about the total amount of notes inserted. The different denominations of notes included in a stack of notes, and rejected notes, if any, from the stack of notes. The validator assembly 30 may also provide information about the working status of the bill acceptor 120 and the validator assembly 30. The validator assembly 30 may also be connected to a network within a casino so that dealers can be provided with messages through the display panel 166 on each of the gaming tables.

[0073] FIG. 11 illustrates a cross-sectional view of the lock assembly 128 along the line 11 −11 shown in FIG. 8. The lock assembly 128 may have a lock cylinder 204 adapted to receive a key to rotate the lock assembly 128 between locked and unlocked positions. In the unlocked position, the bulk note feeder assembly 110 may pivot upward relative to the note dispense assembly 114 and move between the downward and upward positions. In the unlocked position, the note feeder 132 of the bulk note chute 112 may be detached from the note dispense assembly 114 and the chute 150 so that the note feeder 132 may be replaced with a note feeder.
having different dimensions configured to receive different sized notes. This way, currencies from other countries may be inserted into the note feeder 132 of the bill acceptor 120.

[0074] The cross-sectional view of FIG. 10 of the bulk note feeder assembly 110 best illustrates note dispense chute 206 within the note dispense assembly 114. The note dispense chute 206 extends from a bill dispense slot 34 on the top of validator assembly 30 to the note rejection slot 144 of the note dispense assembly 114. In FIG. 6, the bill dispense slot 34 of the validator assembly 30 is shown on the back end of the housing 22. Alternatively, the bill dispense slot 34 may be formed on a forward top surface of the housing 22 so that notes rejected through the bill dispense slot 34 may be provided to the note dispense chute 206 located above the bill dispense slot 34. If one or more notes cannot be validated or authenticated by the validator assembly 30, then the invalid note may be rejected through the bill dispense slot 34 of the validator assembly 30 and passed to the note dispense chute 206 which directs the invalid note to the note rejection slot 144. A dealer may retrieve the invalid note from the note rejection slot 144 and give back the invalid note to the player who provided the invalid note to the dealer. Depending on the venue in which the bill acceptor is employed, i.e., gaming table, kiosk or the like, the note dispense chute 186 may or may not be employed.

[0075] FIG. 12 illustrates the bulk note chute 112 in the upward position which exposes the validator assembly 30. FIG. 13 illustrates that once the bulk note chute 112 is in the upward position, the validator assembly 30 may be withdrawn from the housing 134 for maintenance or servicing. This figure illustrates the inlet slot 28 and the bill dispense slot 34 of the validator assembly 30. The validator assembly 30 may be removed or withdrawn partially without exposing the cash box 40 within the housing 134 to minimize the risk of the cash box being stolen or being tampered with by an unauthorized person. This allows a technician to troubleshoot the validator assembly 30 in the event of a jam without having to disassemble the entire bill acceptor 120.

[0076] The housing 134 may have a lower jaw 208 adapted to pivot about a pivot point 210 on the housing 134. The lower jaw 208 may pivot between a lower position as shown in FIG. 13 and an upward position as shown in FIG. 7. The lower jaw 208 may have locking edges 210 adapted to engage with the flange of the chute 150 when the bulk note feeder assembly 110 is in the lower position, and the lower jaw 208 is pushed up towards the upward position.
FIG. 14, schematically depicts multiple gaming tables 10,1010,2010 each having bill acceptors 20,30,120 that are interconnected over a low-level network 1130 to an Ethernet 1140. FIG. 14 shows six card tables 10, two roulette tables 1010 and two craps tables 2010, however, it is to be understood that any type and number of tables 10,1010,2010 can be interconnected and that multiple groups of tables, each group being overseen by a Pit Boss, may be interconnected. The Ethernet 1140 may also be connected to a gathering processor 1142 which is responsible for gathering game-related information from each bill acceptor 20,30,120 at each game table 10,1010,2010 via network 1130 and for transferring the game-related information to other computers on the Ethernet 1140. Gathering Processor 1142 relays this information to a router 1144. Router 1144 is the router for the Ethernet 1140. The data received by the router 1144 is relayed to the pit workstation 1146 and to the structured query language Database Server 1148, the Database Server 1148 houses the system database for the casino and, in most cases, the majority of the system applications themselves. In addition to the validators of the various gaming tables, the Database Server 1148 may also be interconnected via the Ethernet 1140 or a second low level network 1131 to a plurality (n) of gaming machines within the casino, or within other casinos, and to the note validators therein. This interconnectivity allows the Database Server 1148 to control the printing and cancellation of tickets at the gaming machines as well as at the gaming tables.

In the foregoing system, the pit workstation 1146 is the primary interface between pit personnel responsible for a group of gaming tables 10,1010,2010 as shown in FIG. 14, and the interface with the Database Server 1148 and a host management system 1150. The pit personnel can view individual game or table information at the pit workstation 1146 for a given game table 10,1010,2010 and execute system functions on the pit workstation 1146 including printing of certain types of tickets and reporting to the Database Server 1148. Optionally, the pit workstation 1146 may be configured to couple with handheld or portable computer devices 1147, such as personal data assistants ("PDA"), to download information directly to the PDA for pit personnel and/or the Pit Boss, so that the Pit Boss does not need to stay by the pit workstation 1146 to receive updates.

The system of FIG. 14 also depicts a number of additional computers or workstations connected via Ethernet 1140. The console computer 1154 ensures that all functions and processes are conducted in accordance with the rules and regulations established.
by the users and administrators having authority to access the system. The player tracking gateway computer 1156 serves as an interface between the host management system 1150 and the marketing database of a casino management system. The host management system 1150 may have an administrator terminal 1158. The player-tracking gateway computer 1156 enables the merge of slot and table tracking into a common database. Computers operating as the gathering processor 1142, router 1144, console computer 1154, player tracking gateway computer 1156 and the host management system 1150 with its administrator terminal 1158 may all be individual applications found within one computer such as the Database server 1148.

[0080] The Ethernet 1140 also provides the capacity for interconnecting the various computers to cash or vending kiosks 1162 as well as to cashier stations 1164 throughout the casino, either of which can provide players with a location to exchange vouchers, tickets and/or chips for cash. Further, the Ethernet 1140 allows connection to the count room computer 1166, located in the count room, so that all information available from the bill acceptors 20,30,120 located at each gaming table 10,1010,2010 is communicated to the count room. When a cash box from a bill acceptor 20,30,120 is delivered to the count room, the accumulated cash and other notes removed from the individual cash box can be verified against the electronically gathered information.

[0081] The network topology of FIG. 14 may vary considerably from casino to casino and from application to application. FIG. 14 is simply an illustration of an approach and is not meant to limit the teachings of the present invention as contained herein. The computer systems may be personal computer-based systems having conventional input such as keyboards, mouse controls, touch screens, bar code/ticket readers and printers. The teachings of the system of the present invention are independent of the specific nature and type of computer system and input devices as casinos generally have these computer components in place. The existing computer systems can be augmented to accommodate the advantages made available by implementation of the bill acceptors 20,30,120 at the gaming tables 10,1010,2010 with the addition of software modules and the appropriate hardware connections.

[0082] As in the case of the networked computer system, the specific implementation of the necessary software programs to integrate the present invention into a casino management system will need to be compatible with the existing or to be implemented software in the Database Server 1148. The following discussion of the various functions to be implemented
into the software module are therefore described in a manner to be exemplary in nature, it being understood that the concepts herein can be developed by those skilled with the various software operating systems utilized by casinos.

[0083] The provision of the bill acceptors 20 interconnected via the Ethernet 1140 to the supervisory stations allows for a number of additional transaction or "Events" to be accounted for at each gaming table 10,1010,2010. There are a number of transaction events contemplated by the present system, as illustrated in the flow chart of FIG. 15. Transaction events include, by way of example only, coded tickets representing the following types of transactions:

[0084] An Opener Event is, for example, the receipt of a note, cash or ticket for example a ticket printed by a slot machine, from a player that is exchanged for tokens or chips when a player wishes to join or continue playing on the gaming table 10,1010,2010.

[0085] A Credit Event is a transaction in which a dealer at a gaming table returns chips to a cashier or chip bank in the casino in exchange for a credit ticket. The cashier prints a credit ticket that is returned to the dealer and credit ticket is inserted into the bill acceptor so that the system including the Database Server 1148 and pit workstation 1146 are advised that chips are being taken from a table and returned to a cashier or chip bank.

[0086] A Fill Event occurs when a game table 10,1010,2010 requires additional chips from a cashier station or chip bank. A Fill Event may be requested whenever a gaming table 10,1010,2010 is first opened as the table will need to be provided with chips. A Fill Event may also be required when there is a substantial buy-in by a player or when a player wins a substantial amount and the table requires additional chips. A Fill Event ticket is either printed at the gaming table 10,1010,2010 by the bill acceptor 20,30,120 or at the pit workstation 1146. Once the Fill Event ticket is printed, it is taken to a cashier station to serve as the receipt of tokens from the cashier. The cashier scans the Fill Event ticket in a manner such that it is reported to the Database Server 1148 and issues the tokens. The tokens, preferably with the Fill Event ticket, are then taken to the Gaming Table 10,1010,2010 and the Fill Event ticket is inserted into the bill validator 20.

[0087] A System Marker Event is the issuance of marker, or credit, provided to a casino patron. For example, a patron known to the casino may request from the Pit Boss or another supervisor that a marker be issued. Upon such a request, the Pit Boss may initiate a transaction whereby a marker ticket is printed, for example at the Pit Workstation 1146 of FIG. 14, and
accepted or signed for by a patron. The marker ticket is essentially a withdrawal from or charge against an account maintained by the casino for the specific patron. The issuance of the System Marker is reported to the Database Server 1148, as well as to the host management system 1150 and the count room. The patron (or Pit Boss) takes the marker ticket to a gaming table and the marker ticket is inserted into the bill acceptor 20,30,120 so that the dealer may issue playing chips or tokens in an amount equivalent to the value of the marker ticket.

[0088] The acceptance of the System Marker by the bill acceptor 20,30,120 is a System “issuance” to “receipt” Marker Receipt Event. The issuance of the System Marker is reported to the Database Server 1148, as well as to the host management system 1150 and the count room.

[0089] A Closer Event occurs when a gaming table is taken out of service and all chips are returned to the cashier station. The chips are counted and the Pit Boss or the cashier generates a closer ticket either at the pit workstation 1146 or at the gaming table 10,1010,2010 on the bill acceptor 20,30,120. The closer ticket is inserted into the bill acceptor 20,30,120 where it is recorded. A copy may also be delivered with the tokens to the cashier station. When the cash box from the bill acceptor 20,30,120 is taken to the counting room, all of the transactions from the Opening Event to the Closing Event are tabulated and compared to the notes in the cash box including the transaction event tickets.

[0090] To allow for circumstances where communication with the casino’s central Database Server 1148 may not be available, provision is made to allow a Pit Boss to generate a Manual Marker. The Manual Marker may be a marker ticket that is issued on credit or against a deposit for selected patrons. A Manual Marker ticket may be printed for example at the pit-workstation 1146 causing a Manual Marker Event. When the Manual Marker is taken to the gaming table and accepted by the bill acceptor, whereupon a Manual Marker Receipt Event occurs, and the dealer issues to the player a selected number of chips represented by the Manual Marker. The Manual Marker Event and Manual Marker Receipt Event will be reported to the Database Server 1148 when system communications are restored.

[0091] As will be appreciated by casino management personnel, the allowance for positive on-line validation and reporting of each of the foregoing transaction events is a substantial improvement in the overall accountability and security of gaming table transactions. Specifically, all interactions between the cashier stations, Pit Boss, player transactions, and the
count room are reported to the Database Server 1148. The reporting functions required by
gaming control boards can be generated by the Database Server 1148 on whatever schedule is
desired. In addition, the Pit Boss can be freed up to attend to customer needs, and to more
effectively monitor the games, as the pit workstation 1146 and PDA 1147 advise the Pit Boss of
all significant transactions.

[0092] As noted above, the bill acceptor 20 can be programmed so that it will accept a
number of different types of notes besides currency. The bill acceptor 20,30,120 may also
preferably include a printer which allows the bill acceptor to print out various types of tickets
including for example a cash out ticket that can be issued to a player. These features, together
with the interconnection to the casino server system allow for a number of enhancements in the
control of the table gaming events that benefit the patron. As a first example, by the
incorporation of the bill acceptors 20,30,120 at each gaming table 10,1010,2010, a customer
who receives a printed ticket from a slot machine type of gaming device having a ticket-in and
ticket-out capabilities can provide the printed ticket at the gaming table. The ticket can be
scanned and accepted by the bill acceptor 20,30,120 which interconnects through the network
1130 to the Database Server 1148 to verify the ticket that had been printed by the slot machine.
Once the Database Server 1148 validates the ticket, it sends a signal back to the operator of the
game table (and the Pit Boss) to indicate the amount of money, in the form of tokens or chips, to
be provided to the player/patron.

[0093] If necessary, any differential between multiples of the value of chips and the amount
of a ticket can be printed and issued as a new ticket by the bill acceptor. For example, if a
player provides a ticket having a value of $58 to a gaming table having a minimum chip value
of $5, the bill acceptor 20,30,120 can print out a $3 ticket while the dealer distributes $55 in
chips to the customer. In this configuration, the bill acceptor 20,30,120 reads the bar code on
the ticket, sends a signal to the server thereby providing the tracking number from the bar code
of the ticket to the Database Server 1148. The Database Server 1148 checks the ticket number
as against the issuance number which it provided when the ticket was printed by a slot machine
and from that number determines if the ticket has previously been redeemed. If the ticket
number has not been redeemed, then the Database Server 1148 provides a signal to the bill
acceptor 20,30,120 at the table 10,1010,2010 indicating the amount of credits to be redeemed
against the ticket. The amount can be displayed to the dealer and optionally to the player on a display screen which may be included on the bill acceptor 20,30,120.

[0094] In view of the foregoing discussion, it may be readily understood that alternative embodiments are contemplated. For example, a slot for receiving money can be located proximate to each player position. Because the slot includes an opening adapted to receive notes, the slot could be located on the playing surface of the gaming table, along the border of the gaming table or under the playing surface of the gaming table. A player could insert a note into the slot or place the note on a bezel leading to the slot. A bill separator positioned proximate the slot could pull off one note at a time from the bezel. A transportation assembly generally similar to the system disclosed above would transport the note to a bill discriminator. There may be at least one bill discriminator per table to validate notes received from the slots. Valid notes may be transported to one central cash box or a plurality of cash boxes per gaming table. If one bill discriminator is installed proximate to each player position, a cash box may be installed proximate to each bill discriminator. This increases the number of cash boxes that need to be replaced by the casino personnel, but it also increases the cumulative note storage capacity on a gaming table. In addition, the increased storage capacity may decrease the frequency of replacements of filled cash boxes with empty ones. It is also possible to install only one central cash box per gaming table regardless of the number of bill discriminators. In such a configuration a transportation assembly positioned within or below the top of the gaming table will carry valid notes to a cash box and will return invalid notes to the player.

[0095] Once the bill discriminator determines the denomination and authenticity of the received note, the bill discriminator may send a signal to an LCD display 54 visible to the dealer and/or the player to indicate how much money a particular player has inserted. The LCD display 54 may indicate the total amount received, or list all of the bills and their amounts in addition to the total amount received. Further, by providing a numeric LCD display 54 showing the amount of received on the surface of the gaming table, security cameras can more readily monitor the intake of money or notes and disbursement of chips by the operator. After giving the equivalent amount in casino tokens to the player, the dealer can reset the reading on the LCD display. In this manner, the dealer can still control when the bets are placed, but doesn't waste time in collecting, counting and verifying the authenticity of the notes collected. In the
event the notes are rejected, the notes may be returned through the slot used for inserting money or a separate slot for rejected notes.

[0096] Having thus described different embodiments of the invention, other variations and embodiments that do not depart from the spirit of the invention will become readily apparent to those skilled in the art. The scope of the present invention is thus not limited to any one particular embodiment, but is instead set forth in the appended claims and the legal equivalents thereof.
WHAT IS CLAIMED IS:

1. A casino table game transaction management system for a plurality of gaming tables each having a dealer station and at least one player station, the system comprising:
   a plurality of bill acceptor assemblies adapted for utilization at said gaming tables, said bill acceptor assemblies each including a note transportation system, a note validator configured to identify characteristics of each note being passed therethrough by said transportation system, and a cash box adapted to receive and to store notes;
   a casino computer configured to monitor transactions within the casino; and
   a network interconnecting each of said bill acceptor assemblies at said gaming tables to said casino computer.

2. The casino table game transaction management system of Claim 1, wherein said note validator is configured to validate currency, bar coded tickets, casino scrip or vouchers.

3. The casino table game transaction management system of Claim 1, further comprising:
   a plurality of computers positioned throughout the casino and interconnected through said network to said casino computer.

4. The casino table game transaction management system of Claim 1, wherein said plurality of computers positioned throughout the casino include at least one of:
   a pit workstation computer;
   a database server;
   a host management system;
   a cashier station computer; and
   a count room computer.

5. The casino table game transaction management system of Claim 2, further comprising:
   network communication components for communicating information from a plurality of gaming machines to said casino computer whereby cash out tickets issued at said gaming machines may be redeemed at said gaming table when validated by one of said bill acceptor assemblies.
6. The casino table game transaction management system of Claim 1, wherein each of said bill acceptor assemblies further comprises:
   a display to indicate the value of the notes received into and validated by said note validator.

7. The casino table game transaction management system of Claim 1 wherein said management system is programmed to allow automation of a number of event transactions selected from the group consisting of: an Opener Event, a Credit Event, a Fill Event, a System Marker Event and a Closer Event.

8. The casino table game transaction management system of Claim 4 wherein the denomination of selected notes received by one or more of the bill acceptor assemblies is communicated to said pit workstation.

9. The casino table game transaction management system of Claim 4, further comprising:
   at least one personal data assistant device communicatively coupled to said pit workstation to receive information concerning all transactions by each of said bill acceptor assemblies within a designated grouping of gaming tables.

10. The casino table game transaction management system of Claim 1 wherein said note validator is programmed to accept non-currency notes including bills, vouchers, script, and tickets.

11. The casino table game transaction management system of Claim 1 wherein notes determined to be invalid are retained by said bill acceptor assembly and said note validator communicates a signal indicating the receipt of an invalid note to said casino computer.

12. The casino table game transaction management system of Claim 1, wherein said bill acceptor assemblies further comprise:
   a printer for printing a cash out ticket the value of which is communicated to said casino computer which assigns a specified code to be printed on said ticket.
13. The casino table game transaction management system of Claim 1, further comprising:
   A printer for printing a marker ticket issued for a selected player, the amount of said
   marker being reported to said casino computer; and
   bill acceptor assemblies wherein a code printed on said marker ticket is read by said
   validator, the code is forwarded to said casino computer, said casino computer verifying
   the amount of said marker and crediting the respective gaming table with having received the marker.

14. The casino table game transaction management system of Claim 1 wherein said casino
   computer receives information from said note validators of said bill acceptor assemblies and
   keeps track of the denominations of all currency received and stored in said cash box of each of
   said bill acceptor assemblies.

15. The casino table game transaction management system of Claim 13 wherein said cash
   box further comprises a memory device coupled to said note validator so that the denominations
   of all currency deposited into said cash box are stored in said memory.

16. The casino table game transaction management system of Claim 1, further comprising:
   at least one personal data assistant device communicatively coupled to receive
   information concerning transactions by each of said bill acceptor assemblies within a designated
   grouping of gaming tables.

17. The casino table game transaction management system of Claim 1 further comprising:
   a bulk note feeder chute positioned proximate said dealer station to receive notes to be
   provided to one of said bill acceptor assemblies.

18. A bill acceptor on a gaming table adapted for use with a table game transaction system,
    comprising:
    a bulk note feeder adapted for mounting to the gaining table, the bulk note feeder having
    note feeder and chute adapted to receive at least one note;
    a validator mounted below the surface of the gaming table, the validator configured to
    validate notes received from said note feeder; and
    a cash box located below the surface of the gaming table, the cash box adapted to receive
    and store notes from said validator.
19. The bill acceptor of claim 18, where in said note chute is configured to support and pass one or more notes inserted in a stack to said note feeder along a substantially horizontal axis to said validator.

20. The bill acceptor of claim 18, where in said note chute is curved to accept one or more inserted notes in a stack from a substantially vertical axis and present said stack to said note feeder of said validator along a substantially horizontal axis.

21. The bill acceptor of claim 18, where said note chute has a bottom channel wall including at least one open slot.

22. The bill acceptor of claim 18, where the bulk note feeder has a note dispense assembly and a bulk note chute adapted to pivot between an upward position and a downward position relative to said note dispense assembly.

23. The bill acceptor of claim 22, including a housing configured to enclose the validator and the cash box below the surface of the gaming table such that when the bulk note chute of the bulk note feeder is in the upward position, at least a portion of the validator can be withdrawn from the housing.

24. The bill acceptor of claim 18, wherein the note feeder has a tactile indicator.

25. A method of validating notes received at a gaming table of a table game transaction system, the method comprising:

   providing a note feeder with an intake opening mounted along the edge of said gaming table or an aperture through said gaming table, the intake opening configured to receive and arrange a stack of notes;

   mounting a validator below the surface of said gaming table to identify valid notes and invalid notes;

   locating a cash box below the surface of said gaming table to store the valid notes from the validator; and

   providing an information display panel easily viewable from above the surface of said gaming table.