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(54) Gaming token verification

(57) An apparatus and method for verifying the integrity and correct value of a game token. The token includes a primary and a secondary source of identification. The preferred primary token identification is an embedded RFID tag. The secondary token identification may be an alphanumeric serial number, a bar code or combination thereof. The game token is produced in conjunction with an electronic manifest. The manifest provides a production history of the game tokens and is a source of verification data. The data is subsequently used by a gaming establishment to verify the face value of the game token as compared to the physical appearance of the game token. In this way, counterfeit or altered game tokens may be identified prior to redemption.

FIG. 1B

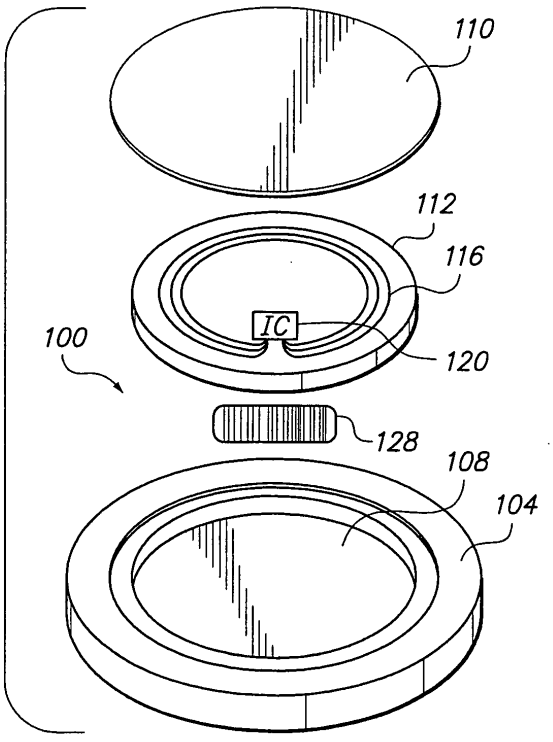

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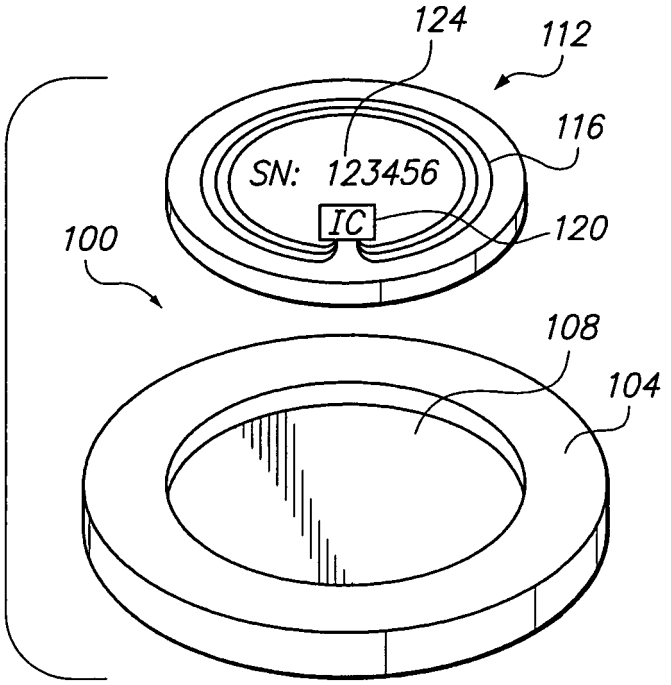
FIG. 1A



Description

Background of the Invention

[0001] This application claims priority to U.S. Provisional Patent Application No. 60/919,137 filed on March 19, 2007 titled A METHOD AND APPARATUS FOR GAMING TOKEN VERIFICATION.

Field of the Invention

[0002] The Present invention relates to game tokens, a game verification system and a method. Embodiments of the present invention relates to gaming chips or tokens, and in particular to a method and apparatus for securely verifying the identity of a gaming chip or token.

Related Art

[0003] Games of chance have been enjoyed by people for many years and have undergone increased and widespread popularity in recent times. As such, the gaming establishments that offer games of chance frequently deal in large sums of currency that change hands between the establishment and the patrons. Gaming establishments or casinos will commonly provide players with a convenient form in which to facilitate the monetary transactions. Casinos will usually implement some form of gaming chip or token payment scheme to facilitate the monetary transactions. In this type of payment structure, the player will usually obtain a gaming token that has an associated value in exchange for actual currency.

[0004] For example, the player may desire to obtain $100 worth of gaming tokens where the tokens are each worth $10. In this exchange, the player would provide the actual currency to the gaming establishment; the player would then receive ten $10 gaming tokens in which the player may now use in the gaming establishment for placing wagers on the various games of chance.

[0005] Correspondingly, when the player receives a winning payout in a game of chance, the player is typically paid in gaming tokens which may be re-issued. In this way, the gaming tokens become a form of proprietary currency for that gaming establishment. When the player has determined that they no longer desire to participate in the games of chance, the player may "cash-in" or redeem the gaming tokens for actual currency.

[0006] Although the gaming chip/token payment scheme has several advantages to the gaming establishment it also brings disadvantages. One disadvantage of the currently used gaming token scheme is that perpetrators attempt to counterfeit the gaming tokens and thus use the impostor tokens to defraud the gaming establishment of revenue. In this form of counterfeiting, a gaming token with a minimal value (i.e. $1) is physically altered to have an appearance of a high value gaming token such as a $1,000 token. The perpetrator then defrauds the gaming establishment by cashing in or betting what was originally only a $1 token for a $1,000. Alternatively, the same high quality manufacturing method that is used to create the original tokens may be used to create counterfeit tokens.

[0007] In the past there have been several attempts to deter counterfeiting efforts of gaming chips or tokens and to improve wager tracking. One solution is to embed the gaming token with a radio frequency transponder. The transponder, when energized and read, would then provide the gaming establishment with specific information regarding the gaming token such as token designation and value. While beneficial in some respects, this solution is still susceptible to illicit activity or confusion should the transponder fail. In this situation the gaming establishment would not be able to access the embedded information to verify the value of the token and the gaming establishment may still be required to pay the face value of the gaming token or risk loss of customer confidence or goodwill if such payment is not made.

[0008] Another attempt to provide an anti-counterfeiting measure was to secretly code the gaming token with an external identifier that could easily viewed with the naked eye, or could only be viewed under a specific lighting condition such as illumination by a specific fluorescent black light. While this solution was marginally helpful in preventing counterfeiting, this method was subsequently counterfeited along with the gaming token. Once a perpetrator obtained the specific fluorescent lamp, and matching stamp/ink/paint, all that was required to subvert this method was duplication of the coded external identifier.

[0009] In view of these disadvantages, embodiments seek to provide a gaming token that has an internal redundant system for verifying the token's integrity and associated value in the event the primary transponder fails or external identifier is unreadable.

Summary of the Invention

[0010] Aspects of the present invention are set out in the accompanying claims. To overcome the drawbacks of the prior art and provide additional benefits, embodiments provide a method and apparatus for gaming token verification comprised of a primary and secondary token identification. By providing a secondary form of token identification, a gaming establishment may cross-reference and verify a gaming token's value, origin and integrity.

[0011] In one embodiment, the apparatus includes a game token comprising: a token having a recess formed therein and a carrier substantially received within the recess. The carrier may have a primary identification element and a secondary identification element formed thereon. The primary identification element may have game token information encoded therein while the secondary identification element provides identification information associated with a manifest. In one or more embodiments, the manifest may be a source of historical information

regarding the game token as identified by its identification elements. For example, the manifest may comprise a history of a game token's production process. The manifest may be updated during production and over the life of a game token. The game token information may comprise at least the currency value of the game token as well as other information.

[0012] In another embodiment, the game token comprises a token having a recessed formed therein and a carrier substantially received within the recess. In this embodiment, the primary and secondary identification elements may be formed on the token. The primary identification element may have game token information encoded therein while the secondary identification element may provide identification information associated with a manifest.

[0013] The primary identification element may comprise an electronic transponder, such as a radio frequency identification chip, in one or more embodiments. The secondary identification element may be an alphanumeric code, a bar code or both which may or may not be configured to be readable by a device such as a reader. For example, the reader may comprise a radio frequency identification chip reader, an X-ray device or T-ray device. The reader may also be an X-ray imaging device even an X-ray imaging device with a bar code scanner.

[0014] In another embodiment, the game token comprises a token having a recess formed therein, a carrier substantially received within the recess, and at least two identification elements associated with the token. The first identification element may have game token information encoded thereon, while the second identification element may provide identification information associated with a manifest.

[0015] The first identification element may comprise an electronic transponder, such as a radio frequency identification chip, in one or more embodiments. The second identification element may be an alphanumeric code, a bar code or both which may or may not be configured to be readable by a device such as a reader. As with above, the reader may comprise a radio frequency identification chip reader, an X-ray device or T-Ray device. The reader may also be an X-ray imaging device even an X-ray imaging device with a bar code scanner.

[0016] The reader may be generally capable of accessing the secondary identification element of a game token in one or more embodiments and may be in communication with a computer, the computer configured to access a database, where the database may contain a manifest of game token identification data. Game token data may be displayed to a system operator on a display connected to the computer. In addition, a computer program operatively running on the computer may be configured to compare game token data obtained from the reader with game token data within said manifest. This may be used to verify the authenticity of a game token.

[0017] A method of verifying a game token prior to redeeming it for currency or other value is also provided. The method generally comprises: reading the secondary identification element of a game token to obtain a secondary game token identification; accessing a database containing a list of game token data; locating the secondary game token identification; obtaining a currency value for the game token from a manifest associated with the secondary game token identification; and paying the currency value of the game token if the currency value, as received from the manifest, matches a face value of the game token. If the currency value of the game token does not match the currency value from the manifest, payment of currency value for the game token may be refused.

[0018] Further particular and preferred aspects of the present invention are set out in the accompanying independent and dependent claims. Features of the dependent claims may be combined with features of the independent claims as appropriate, and in combinations other than those explicitly set out in the claims. Other systems, methods, features and advantages of the invention will be or will become apparent to one with skill in the art upon examination of the following figures and detailed description. It is intended that all such additional systems, methods, features and advantages be included within this description, be within the scope of the invention, and be protected by the accompanying claims.

Brief Description of the Drawings

[0019] The components in the figures are not necessarily to scale, emphasis instead being placed upon illustrating the principles of the invention. In the figures, like reference numerals designate corresponding parts throughout the different views. The present invention will be described further, by way of example only, with reference to preferred embodiments thereof as illustrated in the accompanying drawings in which:

[0020] Figure 1A is a perspective view of a gaming token with a primary transponder and a secondary alphanumeric serial number.

[0021] Figure 1B is a perspective view of a gaming token with a primary transponder and a secondary bar coded serial number.

[0022] Figure 2 is a block diagram illustrating an example embodiment of a workstation for verifying the secondary gaming token identifier.

[0023] Figure 3 is an enlarged view of the computer display of Figure 2 illustrating the secondary gaming token identifier as viewed at the workstation.

[0024] Figure 4 is a block diagram illustrating an example embodiment of a workstation for verifying the secondary gaming token identifier.

[0025] Figure 5 is a block diagram illustrating an example embodiment of a gaming token production and gaming establishment inventory system.

[0026] Figures 6A-6B illustrate an operational flow diagram of a gaming token verification system.

Detailed Description

[0027] In the following description, numerous specific details are set forth in order to provide a more thorough description of embodiments of the present invention. It will be apparent, however, to one skilled in the art, that the present invention may be practiced without these specific details. In other instances, well-known features are have not been described in detail so as not to obscure the invention.

[0028] Figure 1A illustrates an embodiment of the invention where the game token is equipped with a primary identification element and a secondary identification element. The primary identification element may be an embedded electronic transponder and the secondary identification element may be an alphanumeric code. An example of one such transponder is radio frequency identification (RFID) which comprises a microprocessor or sensor that may be activated by an antenna and/or energy omitting device thereby causing the electronic transponder to emit data. As seen in Figure 1A, in this example embodiment a game token 100 includes an outer surface and edge in the shape of a coin. The game token 100 can also be manufactured using the teachings of the following patents, which are hereby incorporated by reference in their entirety: 6,296,190, 6,581,747, 5,895,321, 6,264,109, 6,021,949, 5,166,502, 6,659,875, and 3,766,452.

[0029] The game token 100 has an outer rim 104 which may provide a marking area and also provides support structure. A recess 108 is provided within the game token 100 for receiving a carrier 112. In this embodiment the carrier 112 has embedded therein, an antenna 116, an integrated circuit (IC) 120 and a secondary alphanumeric identifier 124. In combination, the antenna 116 and IC 120 may form an RFID circuit that provides a primary identification means for authenticating the gaming token. In other embodiments, any other type of primary identification may be used, including the visual appearance of the token. The information associated with authentication of the game token may include: the token's monetary value, a serial number, gaming establishment name, token creation date, and other data that may be useful in the managerial function of the gaming establishment.

[0030] The secondary alphanumeric identifier 124 provides a backup or redundancy for authenticating the gaming token in the event the primary identification means should fail or be forced to fail (i.e., counterfeiting). The secondary alphanumeric identifier 124 is embedded into the carrier 112 or any other aspect of the token such that external observation by way of an unaided human eye would not reveal the secondary identifier's content. For example, the secondary alphanumeric identifier 124 may be printed or formed within the carrier 112 by using a metallic based ink/paint that is only visible under X-ray observation. In other embodiments any other material structure, which may not be read by the unaided eye. Another method that could be used is T-Ray technology that uses terahertz radiation to see through layers of material. The game token 100 may be completed by encapsulating the carrier 112 and outer rim 104 to form a permanently bonded unit. It is contemplated that in one embodiment, serial numbers are added to all the pieces of the chip. This provides additional accountability and tracking capability to the various methods of chip production. In addition, it provides higher security during each stage of chip production.

[0031] During manufacturing, a compression method may be utilized that hot presses materials together, including different colors while others will use injection molded outer rings and will then insert a "slug" into the chip ring. Another method is based on a full chip foundation from an injection mold and that the RFID tag is then laid in a special cavity on the chip then covered by the chip inlay. The inlay may comprise the label that describes the casino name and denomination.)

[0032] Figure 1B is an alternate embodiment for a game token 100. In this embodiment the outer rim 104, recess 108, carrier 112, antenna 116 and IC 120 have similar functionality as previously described. However the secondary identification is provided by a bar code 128 label. The bar code 128 is embedded, located or affixed to the interior surface of the carrier 112. By "interior surface" it is meant that the label would be captured between the carrier 112 and the recess 108 during assembly of the game token 100. Alternatively, the bar code 128 may be directly printed on the interior surface prior to encapsulation of the game token 100 or embedded within the carrier 112. In addition, it is contemplated that the 2nd ID may be placed at any location within, or on the token. The bar code 128 is a well known industrial technology and is not discussed in detail herein so as not to obscure the invention. The game token 100 may have an external label 110 placed over the carrier 112 after assembly of the game token outer rim 104 and carrier 112. Any other type of ID checker may be utilized.

[0033] Turning now to Figure 2, which illustrates a block diagram of the detection system in connection with verification of a game token. This is but one possible example configuration and the elements as shown are for purposes of discussion and hence are not to scale. As part of the workstation 200, there is a secondary identification reader 204 mounted thereon. There is a game token detection zone 208 which provides a predefined work area where a game token's secondary identification information may be acquired and evaluated. Reader 204 is operatively connected to a computer/processor 212 having memory 216. The computer 212 is configured to execute machine readable code which may be stored within memory 216. The machine readable code may comprise software code or code logic capable of interaction with other systems, such as the reader 204, display 220 or network 224. The computer 212 may include a user input interface for receiving input from a user such as gaming establishment supervisory personnel. The input may take the form of a keyboard, analog dial, poten-

tiometer, mouse, touch screen, or any other device capable of providing user input information to the computer 212. The computer may also be configured with one or more displays 220.

[0034] Additionally, the computer 212 may connect to a network 224 which in turn may connect to a database 228. A database 228 is generally understood in the art as an accessible memory for storing data. The network 224 may include accessibility to the database 228 for various gaming establishment personnel such as management and security.

[0035] In one embodiment, the reader 204 is such that it can access, display or read either the secondary alphanumeric identifier 124, secondary bar code 128 or both which may be embedded within a game token 100. One example of such a reader 204 would be an X-ray device. This type of reader allows the object to be passed through or into a detection area 208, the X-ray device then presents an image, of the object's internal structure, for operator review. The reader 204 may also provide visual output data which the computer 212 may then present to a user by way of the display 220. For example, referring to Figure 3, a display 220 may present a visual X-ray image of a gaming token 100, secondary alphanumeric identifier 124 and/or bar code 128.

[0036] It is also contemplated that the reader 204 may provide electronic informational data related to the gaming token 100 by way of the bar code and subsequently send this data to the computer 212 for review, additional processing and possible storage within the database 228. In this way, the reader 204 may function as both an X-ray device and bar code scanner. In Figure 3, an enlarged view of display 220 is illustrated showing an example of a scanned or read gaming token 100. In this view the game token's secondary identification information is boldly visible as compared to the surrounding structure of the game token 100.

[0037] The system shown in Figures 2 & 3 operates to provide a gaming establishment with an ability to verify a game token's true or intended identity from which the value may be determined. The true value of the game token may be ascertained in the event the primary identification transponder has failed to provide game token information. Also, a gaming establishment may desire to use the secondary identification means, to verify and compare the token's value with the primary transponder's reported token information. A look-up in a look up table may determine the value or algorithm run to determine value or could imprint value or a bar code may indicate numerous data items including a second ID or only the second ID.

[0038] Figure 4 illustrates a block diagram of the detection system in connection with a game token with an embedded electronic transponder. This is but one possible exemplary configuration and the elements as shown are for purposes of discussion and hence are not to scale. As part of this example embodiment, the workstation 400, there is one RFID antenna, for the primary transponder. The antenna 404 may be mounted below the workstation 400, be integral with the workstation, on the top of the workstation or any location. In this exemplary embodiment, the antenna 404 is integral with the top surface of the workstation and creates a detection zone 412 when so instructed by the detection system described above. The detection zone 412 may also be understood as the area in which the energy emitted by the antenna energizes the RFID circuitry of the game token.

[0039] The antenna 404 connects to a corresponding a primary transponder reader 416. It is contemplated that communication between the reader 416 and the antenna is bi-directional such that the reader or other device may provide an electrical excitation signal to the antenna. The antenna 404 converts the electrical signal to an electromagnetic field (EMF), which excites or powers the electronic transponder within the token located within the detection zone. As a result and in response to the EMF excitation signal, the antenna may also detect data emitted from the transponder. It is further contemplated that the antenna 404 would be frequency tuned to energize the transponder. For example, antenna 404 may be assigned to the primary transponder and to a primary reader 416 for communication there between. Once a game token is energized and the transponder is in communication with the antenna, the data from the transponder is sent back to the reader 416 and then on to the remainder of the system as described below.

[0040] The reader 416 connects to any type processor which may be embodied in a computer 424 having memory 428. The computer is configured to execute machine readable code which may be stored on the memory 428. The machine readable code may comprise software code or code logic capable of interaction with other systems, such as the reader. The computer 424 may include an input interface for receiving input from a user such as pit supervisory personnel or dealer. The user interface may comprise a keyboard, analog dial, potentiometer, mouse, touch screen, or any other device capable of providing information to the computer. The computer 424 may also be configured with one or more displays 220. The computer 424 will allow the input of information by gaming establishment supervisory personnel.

[0041] In the embodiment shown in Figure 4, the computer 424 connects to a network 224 which in turn may connect to a database 228. A database 228 is generally understood in the art as an accessible memory for storing data. The network 224 may provide access to the database for surveillance or other personnel in the gaming establishment.

[0042] In operation, a suspect token is first placed within the detection area and the secondary alphanumeric identifier, bar code or both are read by the reader/computer system. In one embodiment, the bar code is read into the system and this information is compared against information (in the form of a manifest which is discussed in detail below) which may be contained in a database associated with the game tokens. The comparison may

be performed by software executed on the computer or by casino personnel. The computer then displays the actual or intended value of the game token. The operator may then determine if the game token matches the intended value. For example, the operator may read or contract out to a third party for reader services, the secondary identifier and obtain an intended value of $5 from the manifest and this value may be presented on the display. This allows the secondary ID to be read without taking the token apart, but yet the secondary ID is not visible to the naked eye. This value is compared to the face value of the game token, if the token is structured (i.e. coloring and markings) as a $5 game token a redemption would likely be permitted because the gaming establishment has verified the intended value of the game token. However, if this same $5 token, as provided through electronic verification has a face value and is structured as a $1,000 token, the token is most likely a forgery and there may be an attempt to defraud the gaming establishment.

[0043] Manifest generation, game token production and game token inventory intake will be discussed with reference to Figure 5. Game token production 500 may begin with a company that specializes in RFID silicon chip manufacturing 504. At this stage the RFID chip is initially manufactured and may be programmed with information regarding the end use in the game token such as monetary value, denomination, RFID serial number, software version or other manufacturing information. The information programmed into the RFID chip by the manufacture is used to initiate and begin generating a manifest. The manifest will follow the RFID chip throughout the production process at the manufacturer. The manifest is preferably updated with information regarding the status of each actual RFID chip contained in the current production run. Upon completion of the RFID silicon chip manufacturing process both the actual RFID chips 508 and associated manifest 512 are provided to the next company in the production line for the gaming token such as an RFID tag manufacturer 516.

[0044] The RFID tag manufacturer 516 receives the actual RFID silicon chips 508 as well as the associated manifest 512. The manifest 512 may be in an electronic form that is readable by any computer system, such as a CD, DVD, flash memory stick, or by way of secure download via a network. The manifest 512 is preferably delivered in a protected and verifiable/authenticated format so that only authorized personnel may access and/or modify the manifest. The RFID tag manufacturer(s) 516 may then update and modify the manifest as required throughout the manufacturing process of producing the actual RFID tags. In this way, the manifest becomes a source of historical information regarding each RFID tag assembly and additionally provides for increase security regarding the manufacturing process.

[0045] In some embodiments this may establish a secure process because this method allows the electronic historic tracking of the semiconductor to tag manufacturer, tag manufacturer to end chip manufacturer and finally the chip manufacturer to the casino establishment. Basically, it provides the chain of trust from the primitive device (semiconductor) to the end user (gaming chip purchased from the casino). And at the end of this process all of the semiconductors that are produced, tags that are produced, and gaming chips that are produced will provide a verifiable log of the token. This provides a balance and record showing all of the operative and non-operative semiconductors, tags, tokens which are then all accounted for. Each of these elements which are not recorded and tracked could be used to create counterfeits. If these elements ever appear or are used in any other establishment, they would be known as suspect devices and to be then quarantined for investigation.

[0046] The RFID tag manufacturer 516 may assemble the RFID silicon chip with an associated antenna, and a secondary identification indicia into a completed RFID tag carrier. The secondary identification indicia may include an alphanumeric code, bar code or both. The RFID tag manufacturer 516 has the responsibility to update the manifest with accurate information regarding each RFID tag carrier assembly. At each stage of the manufacturing process, the manifest may be updated with information regarding each stage and with information regarding the token and sub-parts. Such information would include the values and association of the primary RFID transponder with the secondary identification indicia assembled within the completed RFID tag carrier assembly. The pairing of the primary RFID transponder with its mating secondary identification indicia provides a means for subsequent verification of the primary RFID transponder and eventually a complete game token 100. Once the RFID tag manufacturer 516 has completed their respective manufacturing process, both the actual completed RFID tags 520 and the currently updated manifest 524 are sent to a game token manufacturer 528 for further processing.

[0047] The game token manufacturer 528 may then begin the process of producing a completed game token in which the RFID tag carrier is encapsulated into a game token outer rim 104 (see Figure 1A). At this stage, the game token manufacturer 528 may use both the manifest data and data from the RFID tag carrier to produce a game token with the proper face value and ornamental structure. The ornamental structure may include the color scheme, texture, look and feel, or other distinguishing characteristics of the game token. The manifest may include image files showing the 'look' of the token. Game tokens will commonly have an elaborate color scheme, gaming establishment logo and currency value either printed on or molded into the token. The game token manufacturer 528 has the responsibility to update the manifest with information pertaining to the completed game token. For example, the manifest may be updated with information pairing each RFID tag carrier to a specific game token, where the information is keyed to the token's currency value, color scheme, image, dimensions, version number and other identifying data. Upon completion

of the game token 532 and updated manifest 536, both are provided to the gaming establishment for inventory intake and further processing. The gaming establishment 538 may receive the actual physical game tokens 532 and the current manifest 536 together in a single secure delivery or the tokens and manifest may be securely delivered in separate transactions. The manifest could be encrypted and to decrypt and if such a process is implemented then it may be necessary to use a separate certificate provided by the chip manufacturer, the technology license holder, or a chip broker or distributor of sorts. The certificate will be transmitted separately from the manifest and the chip shipments.

[0048] In one embodiment, the actual physical game tokens 532 may be delivered by an armored delivery service and the current manifest 536 may be delivered by secure electronic download over a network communication link. It is further contemplated, that the physical delivery of the gaming tokens 542 would be directed to gaming establishment personnel designated to the task of receiving game tokens and the electronic delivery of the manifest 546 would be directed to personnel designated to receive confidential electronic information. The manifest, which may be in electronic form, may be read directly by the casino, into their computer system which in turn reduces data entry burden the casino. In addition, the risk of data entry error by the casino is reduced.

[0049] Once the gaming establishment has received both the actual physical game tokens 542 and electronic manifest 546, the optional step of inventory intake processing begins to verify the accuracy of the manifest, if so desired. The physical game tokens are sent to a game token reading station 550 for electronic reading of the token's primary transponder. After the game tokens are electronically read, they are sent for secure storage and later use in the gaming establishment's vault 554. The electronic game token data 556 generated by the token reading station 550 is then sent to a game token inventory computer and/or reader 558 for further processing. Any computer or reader system may be utilized that is capable of reading a token.

[0050] In a parallel process, the manifest 546 is sent to an electronic data reader 562 for electronic processing of data contained within the manifest. The data reader 562 may be one of several known types of electronic data readers that are capable of operative connectivity to a computer system. Examples of a data reader include: a CD drive, DVD drive, flash memory reader, internet browser, hard drive or any other element capable of receiving electronic date. It is contemplated that the electronic data reader 562 be operatively compatible with the form and format of the electronically supplied manifest. Once the manifest is read, the manifest data 560 is forwarded to the game token inventory computer 558 for further processing and the original manifest data is subsequently sent to a secure electronic data archive 566 for storage.

[0051] The game token inventory computer 558 uses computer software installed thereon to perform further processing of the electronic game token data 556 and manifest data 560. The processing may include a comparison and validation between the electronic game token data 556 obtained from the game token reader 550 and the manifest data 560 obtained from the electronic data reader 562. Game token data that is not accurately matched or is in conflict with the manifest data may be used to alert gaming establishment supervisory personnel that an anomaly is present in the game token inventory intake process. In this way, the gaming establishment may conduct further research regarding the questionable game tokens and avoid putting these suspect tokens into play. This process provides another level of security to the transaction from the token vendor to the casino.

[0052] For game tokens that have been adequately compared and authenticated against the manifest, they may be place into the gaming rotation and put into play within the gaming establishment. Accurate comparison data may be subsequently sent to a game token information server 570 having an associated data base 574. This data, or subsets thereof, may be accessible from the network to provide access to various parties if so desired. A database 574 is generally understood in the art as an accessible memory for storing accessible data.

[0053] The gaming establishment may then have several departments that can access the game token information server 570 and associated database 574 to verify a game token's value or history. One departmental computer that may have access to the game token information server 570 is the vault computer 578. Some other examples of departments with access may be the gaming pit supervisory computer 582, security/surveillance computer 586 and the cashier/cage computer 590. The access may be read only, or read/write. These departments may use the detection systems previously described with respect to Figures 2 and 4 and comparison information stored on the game token information server 570 to perform a game token inquiry and verification when these departments suspect a game token has suffered an internal failure or when the token's integrity is questionable. This service may be contracted out to a third party service provider.

[0054] In operation, a game token may be verified prior to redemption according to the steps as illustrated in the operational flow diagram of Figure 6. This is but one possible example and as such, it is contemplated that in other embodiments, other methods of operation may be enabled without departing from the scope of the claims. In step 600, game token production is initiated by a gaming establishment which places an order for a quantity of game tokens of a specified denomination and ornamental appearance. During the production process of step 604, the game tokens are manufactured with a primary and a secondary identification means as provided by embodiments of the present invention. Additionally, during the manufacturing process, a manifest is generated and up-

dated 608 during major or essential production events. The manifest update may include tracking and recording of important game token related configuration tasks. It is contemplated that each vital step of the game token production process be recorded in the manifest and the responsible party at each step be identified. This provides increased security and the ability to track the production history of the game token 100. This can be used to help identify fraud or theft.

[0055] In step 612, the completed game tokens and associated manifest are securely delivered to the gaming establishment. This delivery comprises both actual physical delivery of the gaming tokens and a transfer of the manifest in some form of secure/authenticated data transfer such as by way of an encrypted CD, DVD, flash memory or by way of secure network download.

[0056] After receipt of both the physical game tokens and the electronic manifest, the gaming establishment performs optional inventory intake processing of these items in step 616. During the intake processing, the actual physical game tokens are electronically read into a computer system and compared to the electronic data recorded in the manifest. Parameters that may be compared are the primary/secondary transmitted token values, token face value, manifest token values, software version, serial numbers, or any other value, data, or parameter.

[0057] At step 620 a decision is made regarding whether the transmitted token information accurately represents the manifest data. If there is not an accurate match the game token may be quarantined at step 624 for further investigation by the gaming establishment. Conversely, if there is an accurate match at step 620, the game tokens are placed into service and the manifest data is provided to various departments within the gaming establishment 628.

[0058] In step 632, a game token may be presented for redemption at the gaming establishment. The token's currency value will need to be verified to ensure the game token is not counterfeit. The game token's primary identification may be queried and should provide the correct value of the token. In one embodiment this comprises a visual inspection of the token or RFID read process. The gaming establishment personnel may then compare the actual physical value as shown on the face of the game token with the value transmitted by the primary identification circuit. At decision step 634 the personnel may permit redemption of the token, at step 642 if there is confirmation of the value of the game token. Should there be a discrepancy, the game token may require additional processing at a step 638.

[0059] For further processing, the detection system of embodiments of the present invention may be initiated to query the secondary game token identification 646. Depending on the particular embodiment of the secondary identification, the gaming establishment personnel may either use an alphanumeric serial number, bar code or both to compare with the manifest data. In either event, the gaming establishment personnel will obtain secondary identification and compare this with the manifest data 654. After comparison at step 658, there will either be a confirmation of the secondary information and the manifest data and if so, redemption may be permitted 664. Conversely, if there is no confirmation between the secondary information and the manifest data, the game token may be quarantined 662. The term quarantined as used herein is defined to mean removed from play and optionally investigated.

[0060] As can be appreciated, the apparatus and method described herein has numerous advantages over other game token identification innovations. Once such advantage is that embodiments of the present invention provide a gaming establishment with a secondary way to verify a game token's true or intended value. This secondary identification may be implemented when the primary identification means has failed. Thus the gaming establishment has more than one way to verify a game token's value.

[0061] Another advantage over other innovations is that embodiments of the present invention provide for substantially increased security throughout the entire manufacturing process. At several stages of the manufacturing process a manifest is updated with various pertinent information regarding the game token, in this way a historical document is generated that catalogs the production process. This provides several levels of review and involves personnel from several companies to produce the final game token and associated manifest. By implementing a manifest that tracks the actual production of game tokens, the probability of a conspiracy to modify or alter the game tokens is reduced because the conspiracy would require involvement from management personal from several companies and this is unlikely.

[0062] Yet another advantage of embodiments of the present invention is that inventory intake processing at the gaming establishment is streamlined. In the past, the intake process was very labor intensive and required personnel to verify each token. This could be extremely time-consuming in the case where the gaming establishment ordered hundreds or thousands of game tokens. Embodiments of the present invention provide an enhanced system for intake processing and verification of freshly manufactured game tokens.

[0063] Embodiments provide an apparatus and method for verifying the integrity and correct value of a game token. The token includes a primary and a secondary source of identification. The preferred primary token identification is an embedded RFID tag. The secondary token identification may be an alphanumeric serial number, a bar code or combination thereof. The game token is produced in conjunction with an electronic manifest. The manifest provides a production history of the game tokens and is a source of verification data. The data is subsequently used by a gaming establishment to verify the face value of the game token as compared to the physical appearance of the game token. In this way, counterfeit or altered game tokens may be identified prior

to redemption.

[0064] While various embodiments of the invention have been described, other systems, methods, features and advantages of the invention will be or will become apparent to those of ordinary skill in the art upon examination of the figures and detailed description. It is intended that that all such additional systems, methods, features, and advantages be included within this description, be within the scope of the invention, and be protected by the accompanying claims. In addition, the various features, elements, and embodiments described herein may be claimed or combined in any combination or arrangement.

[0065] In so far as the embodiments of the invention described above are implemented, at least in part, using software-controlled data processing apparatus, it will be appreciated that a computer program providing such software control and a storage medium by which such a computer program is stored are envisaged as aspects of the present invention.

[0066] Although illustrative embodiments of the invention have been disclosed in detail herein, with reference to the accompanying drawings, it is understood that the invention is not limited to the precise embodiment and that various changes and modifications can be effected therein by one skilled in the art without departing from the scope of the invention as defined by the appended claims and their equivalents.

Claims

1. A game token comprising:

a token having a recess formed therein;
a carrier substantially received within said recess, wherein said carrier has a primary identification element and a secondary identification element formed thereon;
said primary identification element having game token information encoded therein; and
said secondary identification element providing identification information associated with a manifest.

2. The game token of claim 1, wherein the primary identification element further comprises an electronic transponder.

3. The game token of claim 2, wherein the electronic transponder is a radio frequency identification chip.

4. The game token of any preceding claim, wherein said secondary identification element, is an alphanumeric code, a bar code or both.

5. The game token of claim 4, wherein said secondary identification is configured to be readable using a reader.

6. The game token of claim 5, wherein said reader comprises is a radio frequency identification chip reader, an X-ray device or T-Ray device.

7. The game token of any preceding claim, wherein the game token information comprises at least the currency value of said token.

8. A game token verification system comprising:

at least one reader capable of accessing a secondary identification element of a game token;
a computer in communication with said reader, the computer configured to access a database, wherein said database contains a manifest of game token identification data;
a display connected with said computer for displaying game token data to a system operator; and
a computer program operatively running on said computer, where said computer program compares game token data obtained from at least one said reader with game token data within said manifest.

9. The system as recited in claim 8, wherein said reader is a radio frequency identification reader.

10. The system as recited in claim 8, wherein said reader is an X-ray imaging device.

11. The system as recited in claim 8, wherein said X-ray imaging device further comprises a bar code scanner.

12. The system as recited in any one of claims 8 to 11, wherein said secondary identification element comprises an alphanumeric code, a bar code or both.

13. The system as recited in any one of claims 8 to 12, wherein the game token data comprises at least the currency value of said token.

14. The system as recited in any one of claims 8 to 13, wherein the manifest comprises a history of the game token production process.

15. A method of game token verification prior to redemption, the method comprising:

reading a secondary identification element of a game token to obtain a secondary game token identification;
accessing a database containing a list of game token data;
locating the secondary game token identifica-

tion;
obtaining a currency value for the game token from the database, wherein the currency values is associated with the secondary game token identification;
paying the currency value of the game token if the currency value, as received from the database, matches a face value of the game token; and
refusing to pay the currency value of the game token if the currency value does not match the face vale of the game token.

16. The method of claim 15, wherein the secondary identification element comprises an alphanumeric code, a bar code or both.

17. The method of claim 15 or 16, wherein the step of reading the secondary identification element uses an X-ray reader, a bar code scanner or both.

18. A game token comprising:

a token having a first side and a second side and a token identifier visible from the either the first side, the second side, or both;
a primary identification element having game token information encoded therein, the primary identification element contained within the token and accessible by electronic activation; and
a secondary identification element providing identification information regarding the token.

19. The game token of claim 18, wherein the primary identification element comprises an electronic transponder.

20. The game token of claim 19, wherein the electronic transponder is a radio frequency identification chip.

21. The game token of any one of claims 18 to 20, wherein said secondary identification element, is an alphanumeric code, a bar code or both contained within the game token.

22. The game token of claim 21, wherein said secondary identification is configured to be readable using a reader.

23. The game token of claim 22, wherein said reader comprises is a radio frequency identification chip reader, an X-ray device or T-Ray device.

24. The game token of any one of claims 18 to 23, wherein the game token information comprises at least the currency value of said token.

FIG. 1A

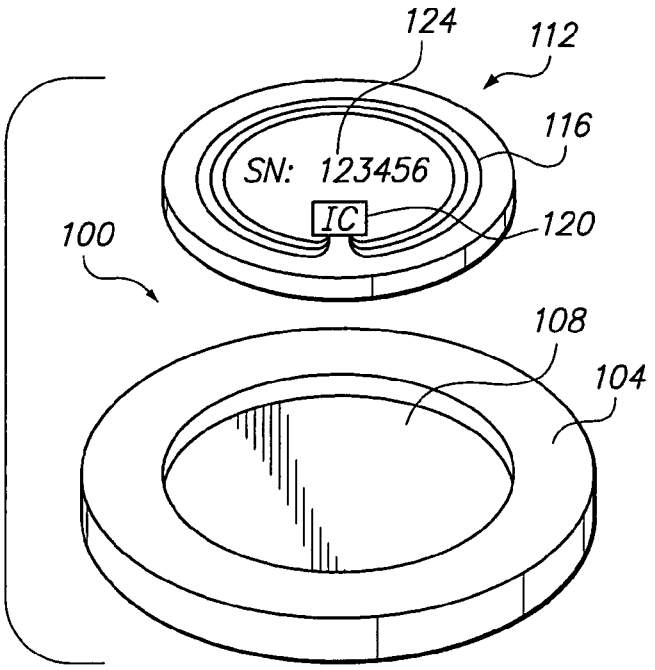

124
112
116
SN: 123456
IC
120
100
108
104

FIG. 1B

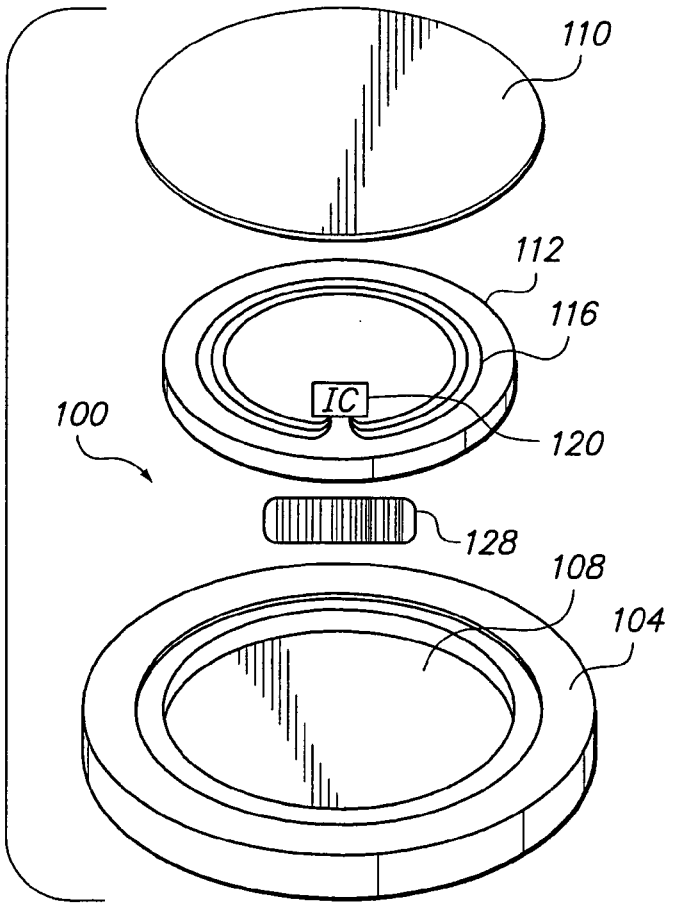

110
112
116
IC
100
120
128
108
104

FIG. 2

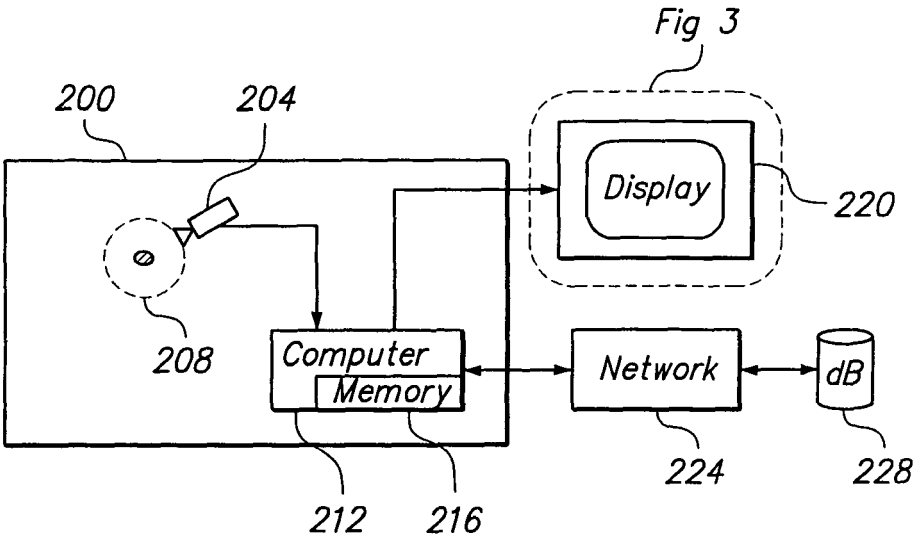


Fig 3
200
204
Display
220
208
Computer
Memory
Network
dB
224
228
212
216

FIG. 3

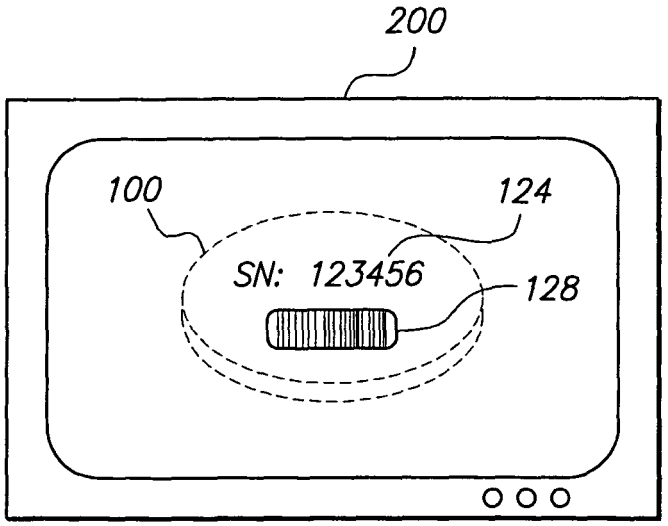
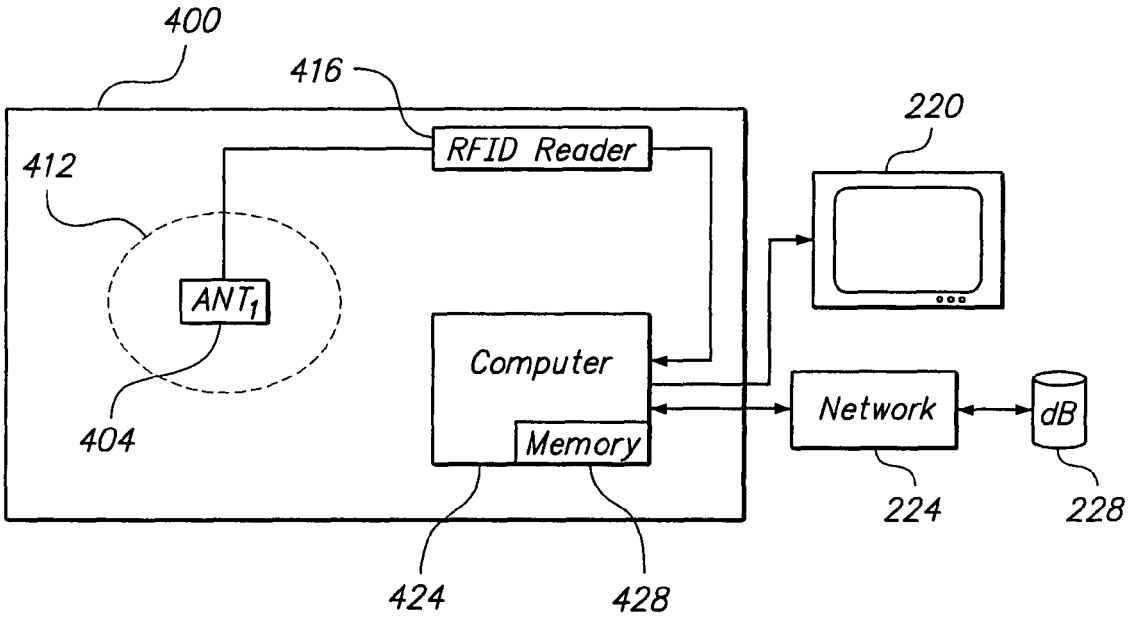

200
100
124
SN: 123456
128

FIG. 4


400
416
220
RFID Reader
412
ANT1
Computer
Network
dB
404
Memory
224
228
424
428

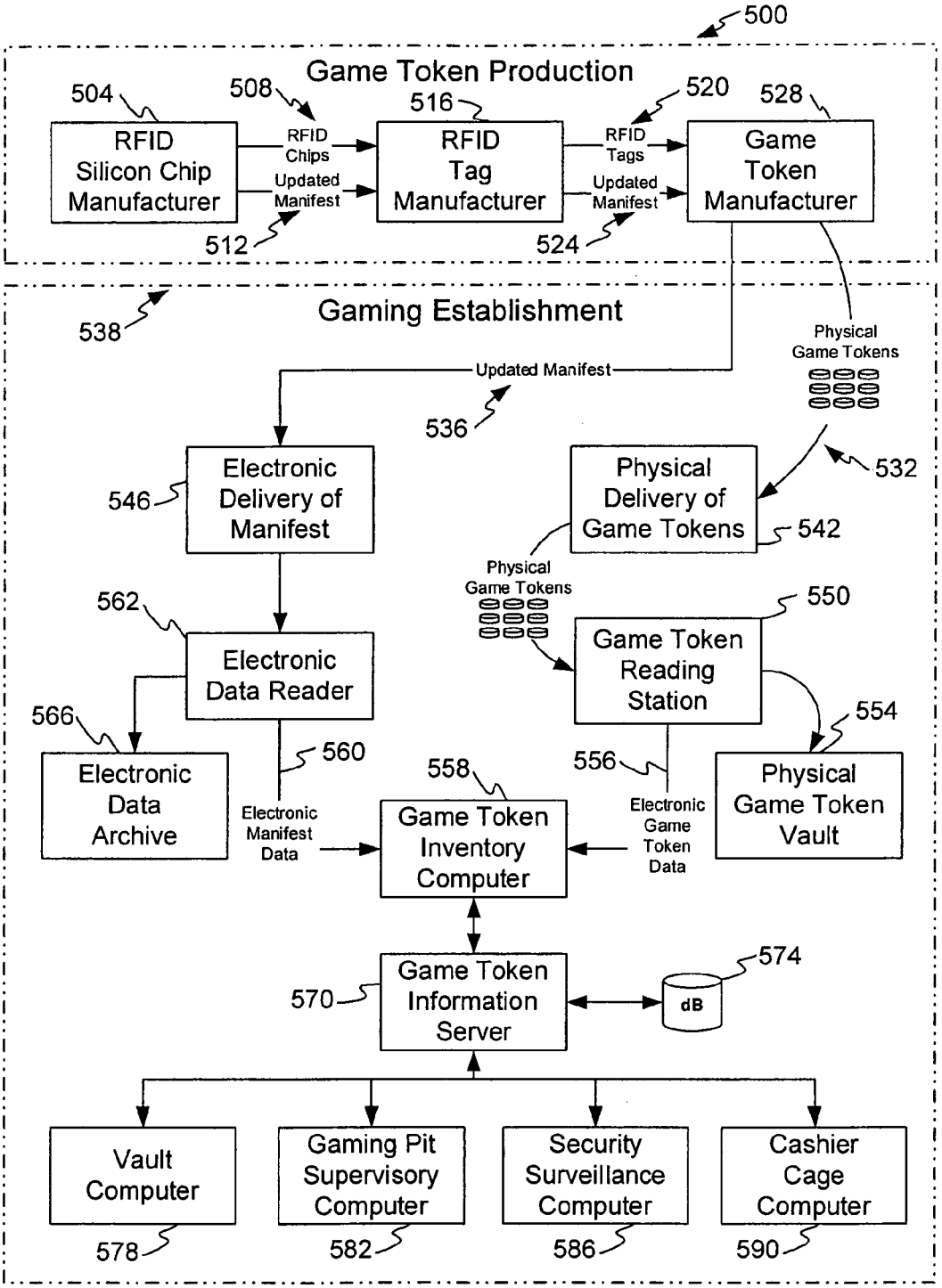

500
Game Token Production
504
508
516
520
528
RFID Silicon Chip Manufacturer
RFID Chips
Updated Manifest
RFID Tag Manufacturer
RFID Tags
Updated Manifest
Game Token Manufacturer
512
524
538
Gaming Establishment
Physical Game Tokens
Updated Manifest
536
546
Electronic Delivery of Manifest
Physical Delivery of Game Tokens
532
542
Physical Game Tokens
562
550
Electronic Data Reader
Game Token Reading Station
566
554
560
556
Electronic Data Archive
558
Physical Game Token Vault
Electronic Manifest Data
Game Token Inventory Computer
Electronic Game Token Data
574
570
Game Token Information Server
dB
Vault Computer
Gaming Pit Supervisory Computer
Security Surveillance Computer
Cashier Cage Computer
578
582
586
590

Fig. 5

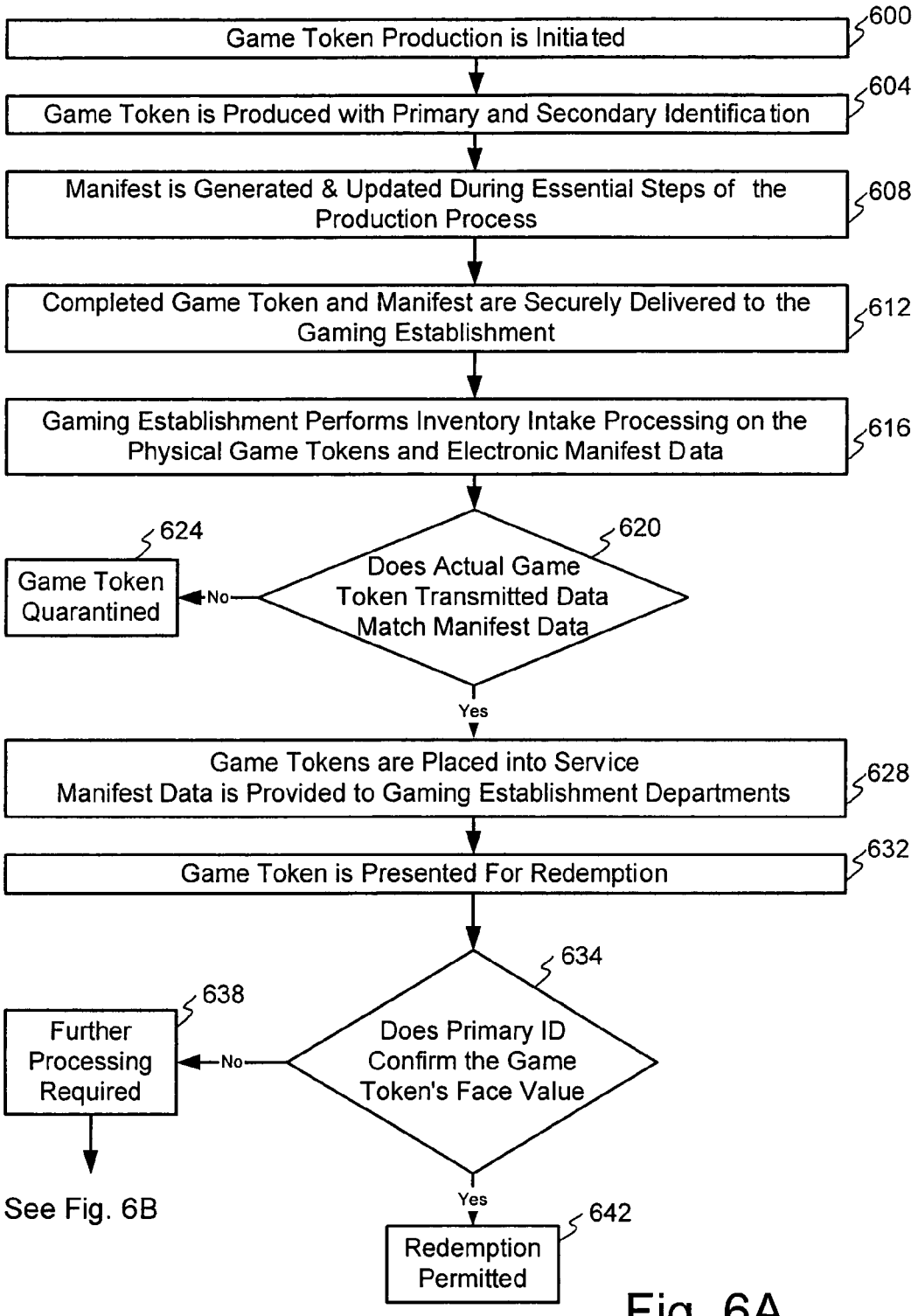

Game Token Production is Initiated
600
Game Token is Produced with Primary and Secondary Identification
604
Manifest is Generated & Updated During Essential Steps of the Production Process
608
Completed Game Token and Manifest are Securely Delivered to the Gaming Establishment
612
Gaming Establishment Performs Inventory Intake Processing on the Physical Game Tokens and Electronic Manifest Data
616
Does Actual Game Token Transmitted Data Match Manifest Data
620
No
Game Token Quarantined
624
Yes
Game Tokens are Placed into Service Manifest Data is Provided to Gaming Establishment Departments
628
Game Token is Presented For Redemption
632
Does Primary ID Confirm the Game Token's Face Value
634
No
Further Processing Required
638
See Fig. 6B
Yes
Redemption Permitted
642

Fig. 6A

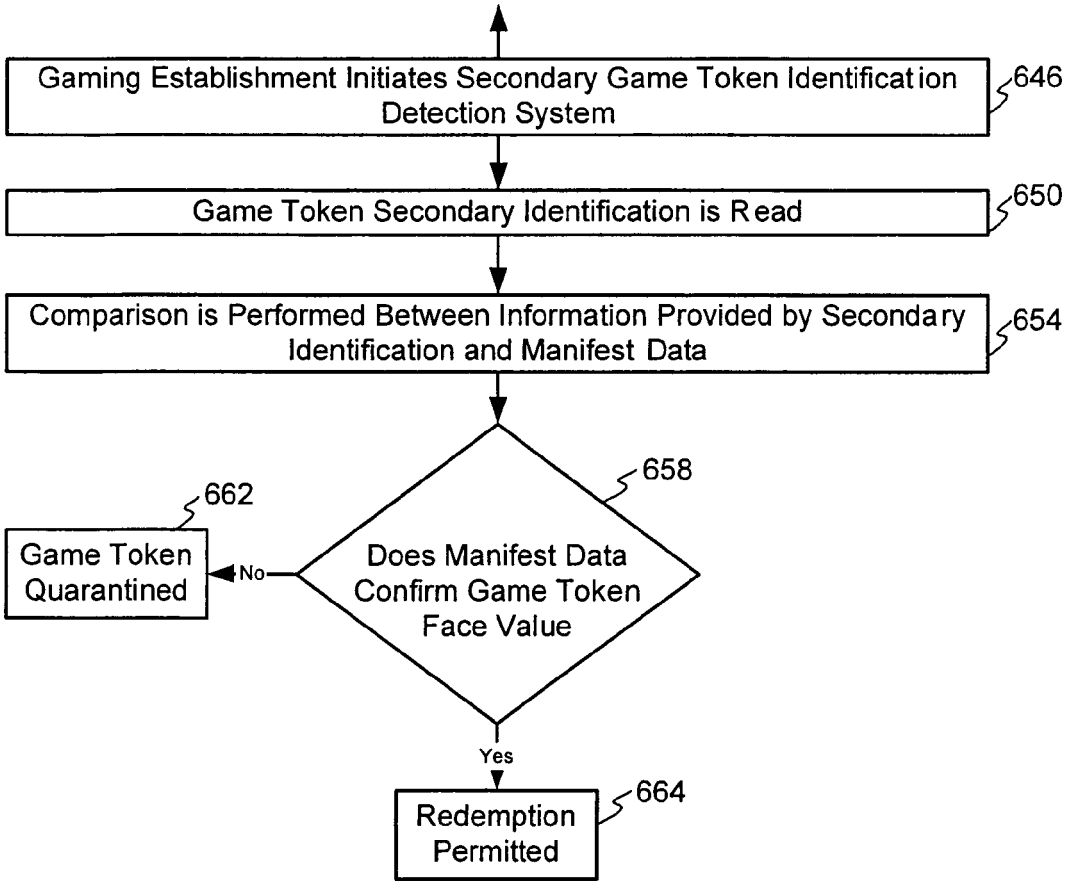

Gaming Establishment Initiates Secondary Game Token Identification Detection System
646
Game Token Secondary Identification is Read
650
Comparison is Performed Between Information Provided by Secondary Identification and Manifest Data
654
658
Does Manifest Data Confirm Game Token Face Value
No
662
Game Token Quarantined
Yes
664
Redemption Permitted

Fig. 6B

REFERENCES CITED IN THE DESCRIPTION

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Patent documents cited in the description

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