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[54] **PROGRESSIVE GAMING SYSTEM**

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[63] Continuation-in-part of Ser. No. 600,670, Feb. 13, 1996, Pat. No. 5,766,076.

[51] Int. Cl.⁶ **A63F 9/22**

[52] U.S. Cl. **463/27**

[58] Field of Search 463/40, 41, 42,
463/25, 26, 27, 29; 273/143 R, 410

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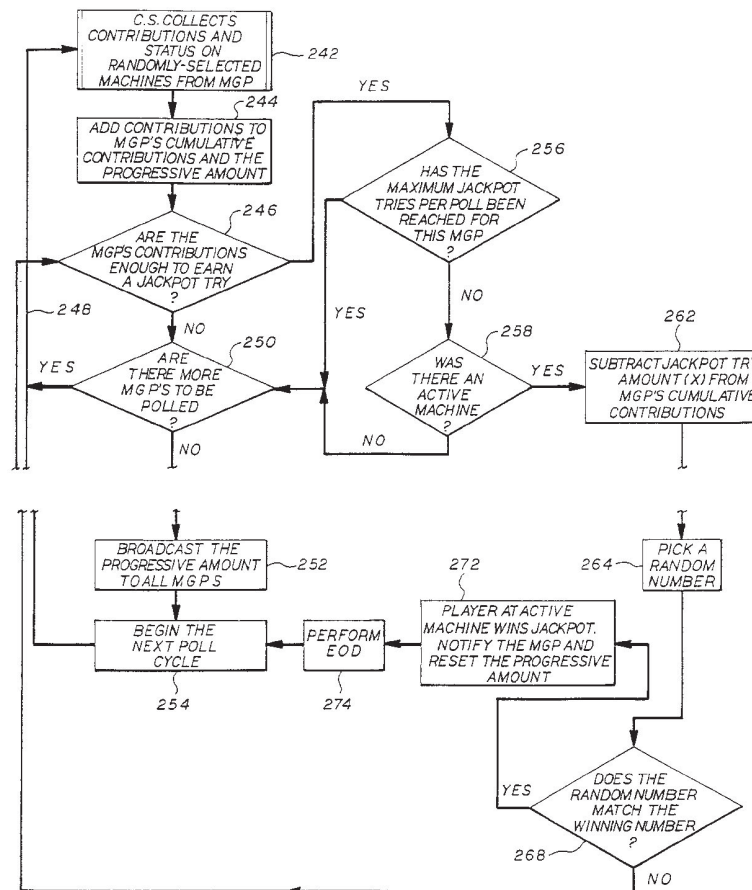
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[57] **ABSTRACT**

A progressive gaming system with wide applicability to a potentially large number of players is provided. A three-level hierarchy can be used in which a portion of wagers and individual terminals are earmarked for contribution to a progressive jackpot, each casino is allotted one chance at a prize for each threshold amount of contribution and a win/loss decision is made, for each such chance, by a central computer system.

1 Claim, 7 Drawing Sheets



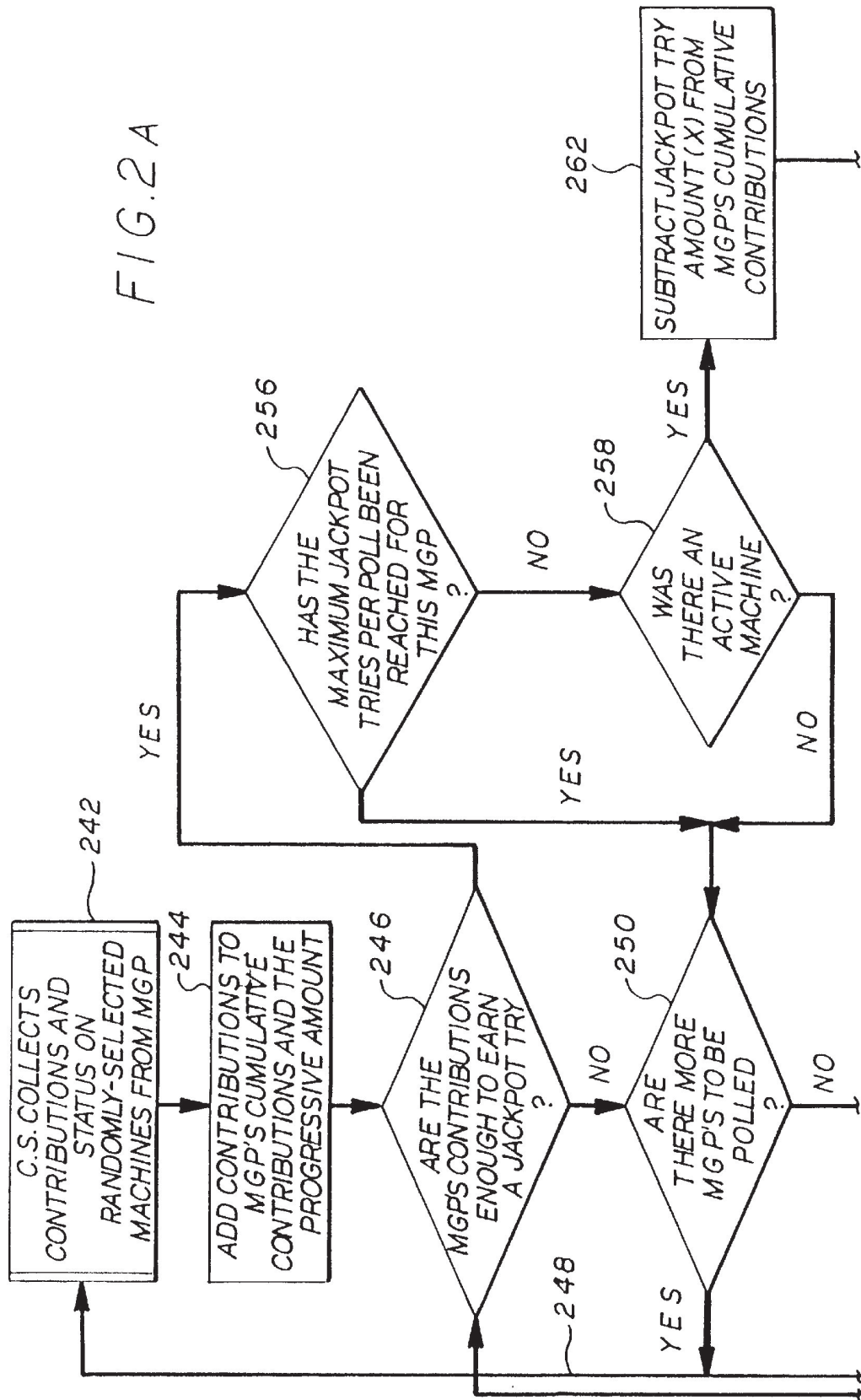
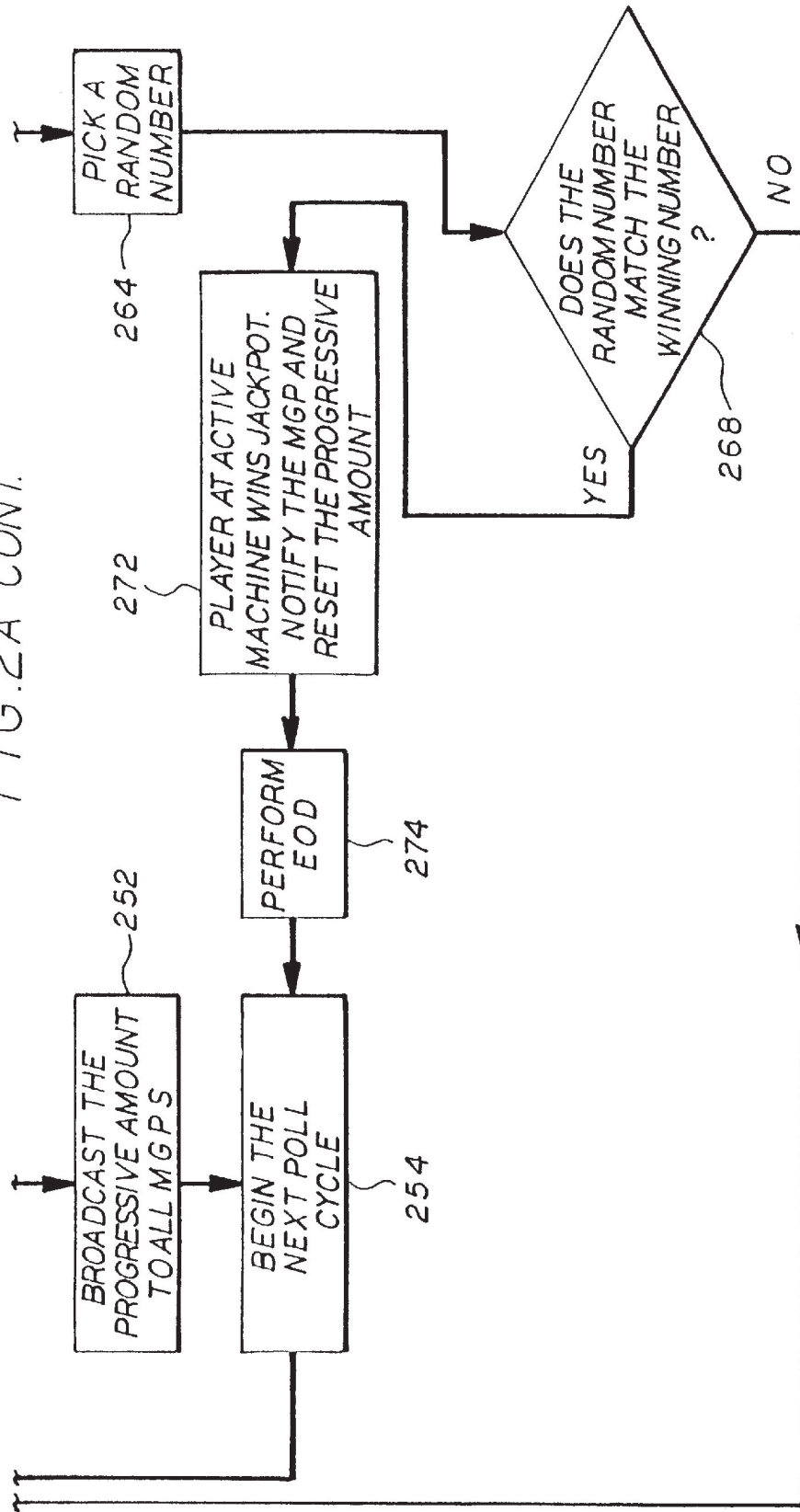
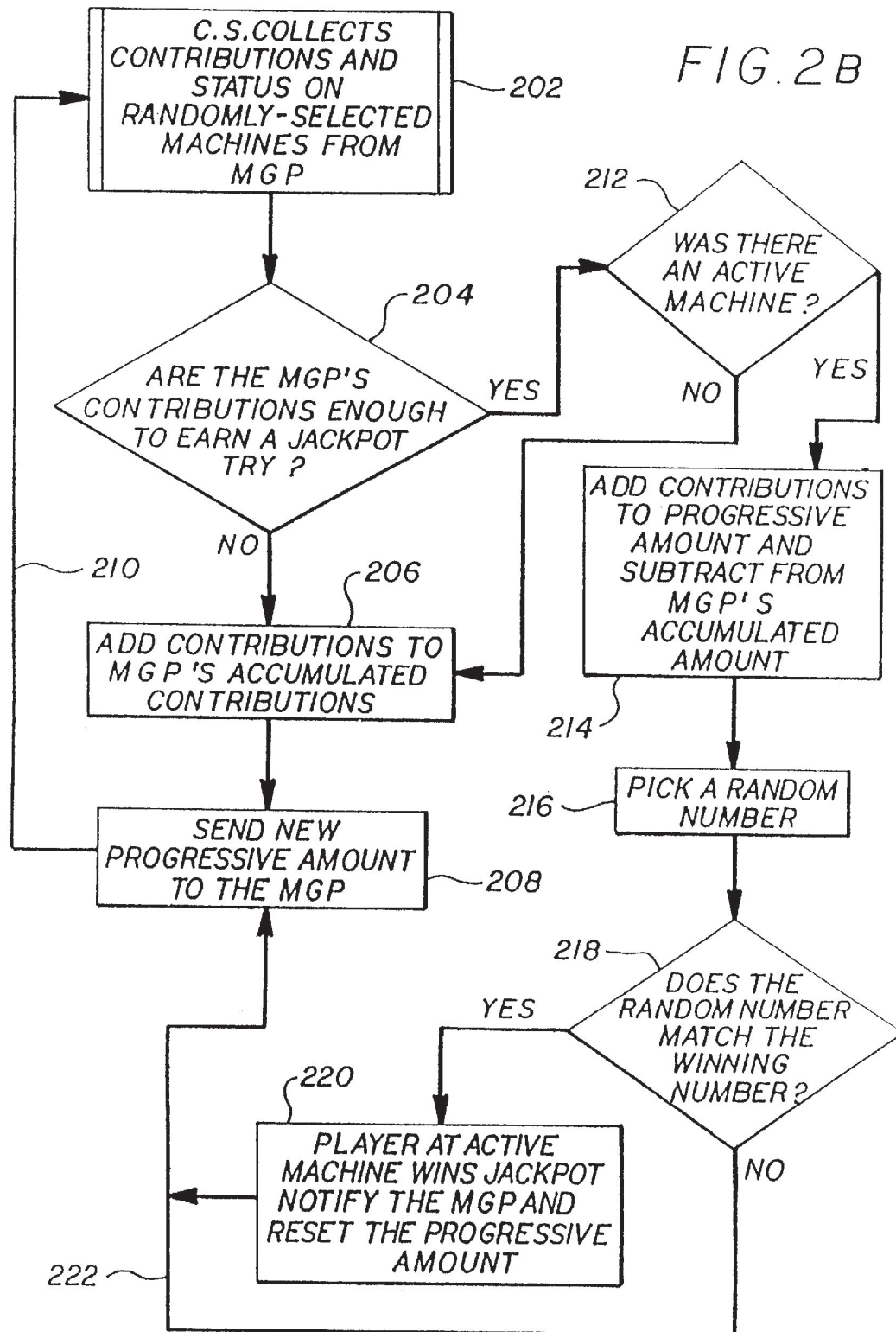


FIG. 2A CONT.





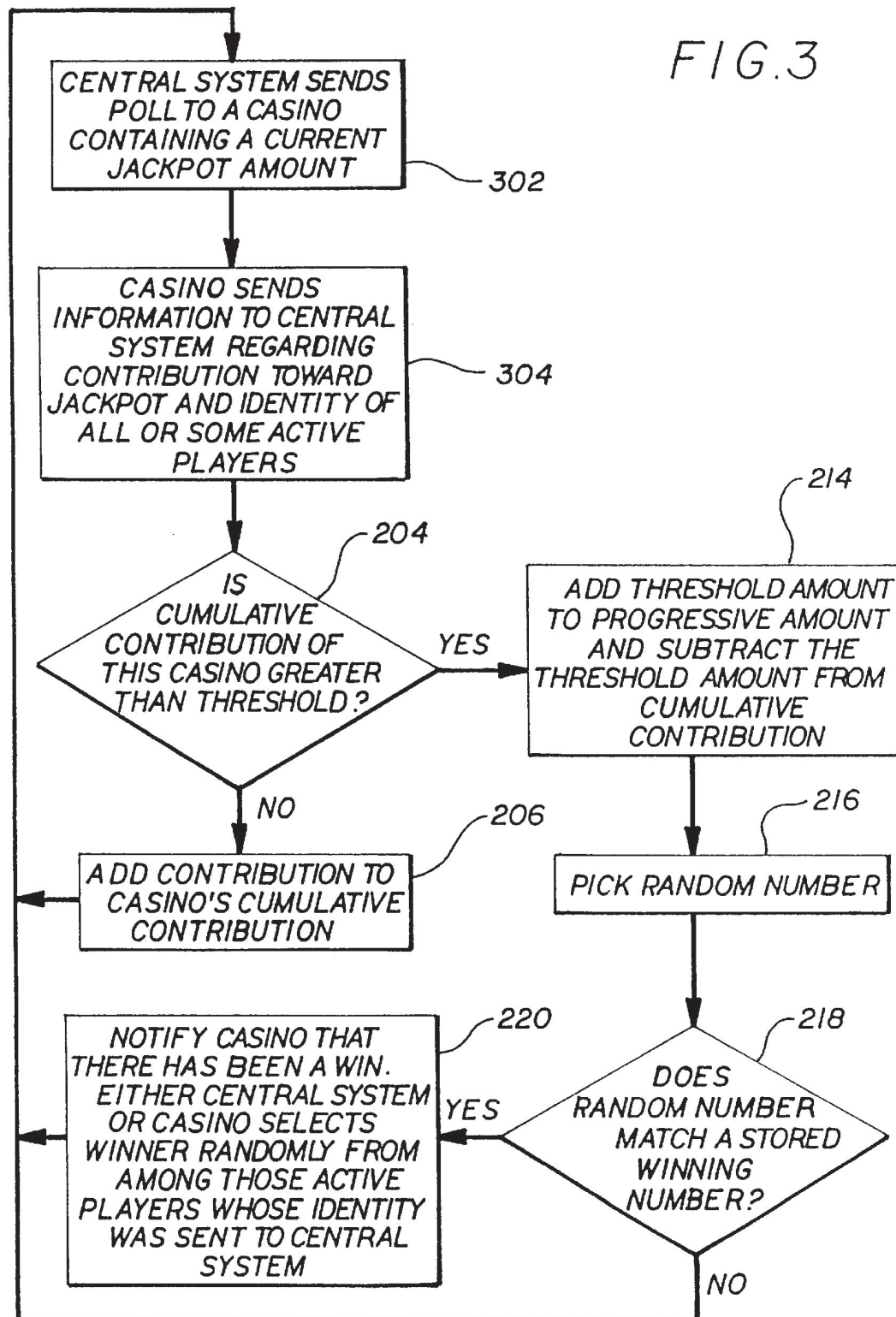


FIG. 4

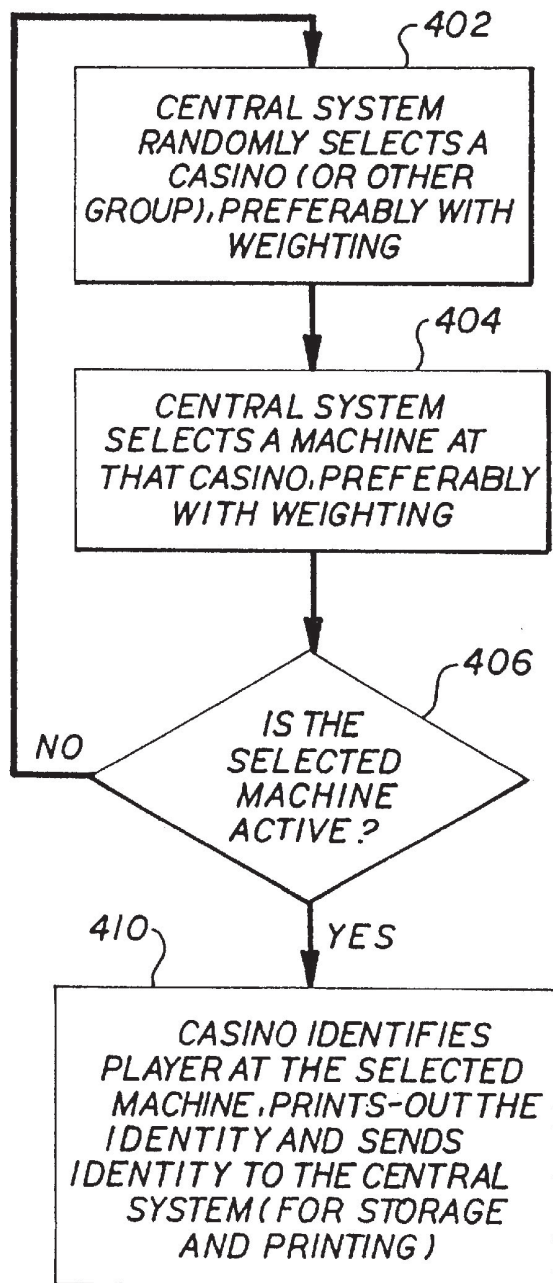


FIG. 5

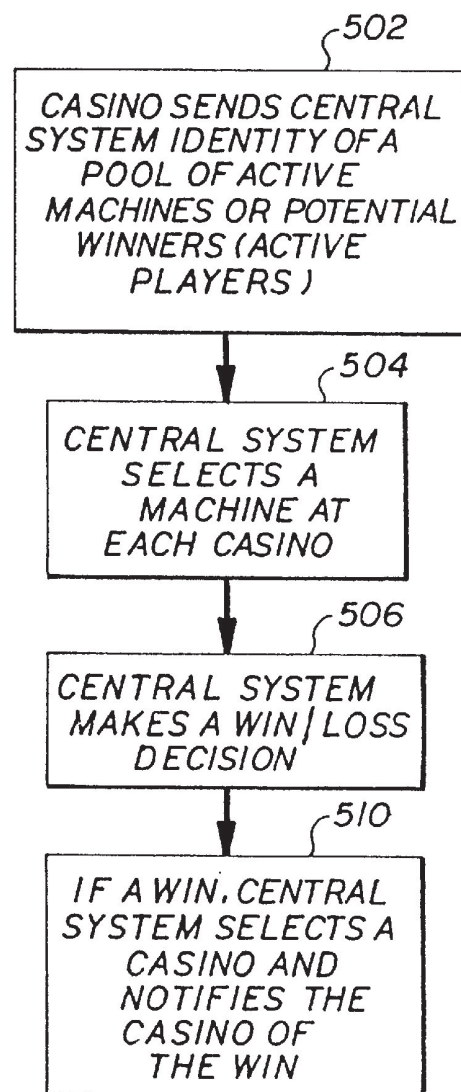
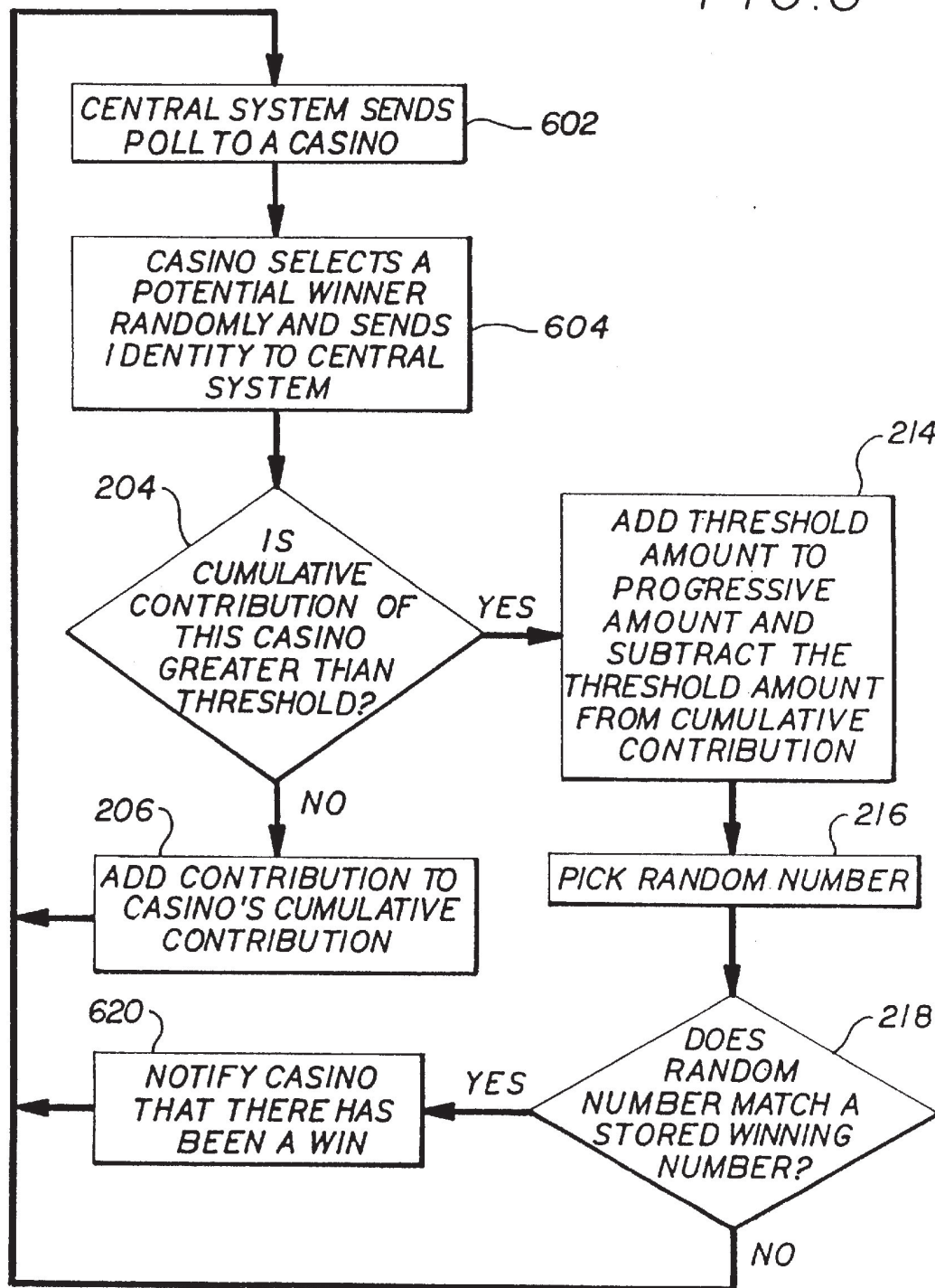


FIG. 6



PROGRESSIVE GAMING SYSTEM

This is a continuation-in-part of Ser. No. 08/600,670, filed Feb. 13, 1996 now U.S. Pat. No. 5,766,076. The present invention relates to a progressive gaming system and, in particular, to a system which provides an opportunity to win a jackpot or other prize to any of a number of electronically coupled gaming devices.

BACKGROUND INFORMATION

Gaming systems have included progressive systems in which the machines are linked together so that, in addition to the normal games played on the gaming machines, players can compete for an additional prize. One type of progressive gaming system is described, for example, in U.S. Pat. No. 4,837,728, issued Jun. 6, 1989, and assigned to International Game Technology.

Although progressive gaming systems have proved to be successful, it is believed there is a potential to provide progressive gaming systems which could make the systems available to a larger number of players, preferably while maintaining or enhancing the system's resistance to cheating.

In the past, progressive systems have been typically organized on a gaming device level, e.g., such that when a prize was awarded by the central system, it was directly awarded by the central system to an individual gaming device or terminal. This is believed to, from a practical point of view, place limits on the size of the progressive system, and thus limit its availability to potential players. Furthermore, in many previous progressive systems, the only gaming devices or terminals which could be used to participate in the progressive gaming were those which were specially constructed for coupling to a particular progressive system, such as only gaming devices made by a particular manufacturer, only those devices for playing a particular game, and/or only those devices using a certain monetary denomination or range of denominations (e.g. only dollar slot machines).

In some progressive systems, the event which triggers a potential win of a progressive jackpot is a win at a local gaming device. For example, in some slot machine systems, no progressive jackpot may be awarded until a play at one of the slot machines connected to the progressive system has resulted in a winning combination. In some systems, no prizes are awarded until a threshold condition occurs (such as the progressive jackpot reaching a variable threshold amount). The progressive jackpot will then be awarded to the player at the first connected slot machine to indicate a win. Although such a system is operable, it is believed a system which requires a local win in order to qualify for a progressive jackpot win does not provide the greatest entertainment value and player attraction possible.

Accordingly, it would be advantageous to provide a progressive gaming system which is not limited to awarding prizes to an individual gaming device or terminal, is not limited to a particular manufacturer, style or denomination of gaming terminal, is not limited to awarding the progressive jackpot only to local winners, and/or has potential for enhancing the number of players who can partake in the progressive system play while maintaining or enhancing resistance to cheating.

SUMMARY OF THE INVENTION

The present invention permits a hierarchically-organized progressive gaming system in which the central system need

not directly award a prize to a player at an individual gaming device or terminal. In one embodiment, multiple casinos (or other groupings) are coupled to a central system, and the central system provides each casino or group with a predetermined number (e.g. one) of chances at a prize for each buy-in, i.e. each multiple of a predetermined amount of contribution to the prize or jackpot. If a prize is awarded, as a result of such a chance at the prize, the casino or group awards the prize to a player (or players) who is (or recently was) actively playing in that casino or group, and who was randomly selected (possibly with some weighting, e.g., based on the denomination of the game) with the winner preferably being selected at the casino level. Thus, in one embodiment, the invention involves a hierarchy of at least three levels; gaming terminal, casino, and central system, in which there is no need for direct communication between the gaming terminals and the central system. Further, according to the present invention it is possible for a player to win a progressive jackpot even though that player has not had a local win, i.e. has not won a game on the particular gaming device being used.

To avoid the need for using only machines of a certain manufacturer or configured for a certain game, the system is preferably configured to operate in conjunction with any of a number of different types of gaming devices, (and/or networks of other electronic communication systems). In one embodiment, the progressive system can include any casino which uses a player tracking system such as a system in which users may use one or more encoded cards, which enable play, and/or identify the player. Because, particularly, these systems can be coupled to any of a number of types of machines, including machines made by different manufacturers, having different denominations and the like, the progressive gaming system of the present invention can be used in connection with a wide variety of gaming and other devices.

A number of approaches can be used to maintain or enhance resistance to cheating. In one embodiment, the progressive system is used only in connection with machines which have a capability of identifying a player, such as machines having a player tracking system. Preferably a casino identifies a potential winner for a given "chance" at the prize before the central system determines whether the casino (or, more properly, a player at that casino) has won the prize. Typically, in the system, the central computer will not know the identity of all potential winners (and/or will not know the identity of the winning player) at the time the prize is awarded. In another embodiment, for each poll of the casino or other group, the casino randomly selects one current (or recent) player who will get all the chances at the progressive prize for that poll. Typically there will be at most one chance at a progressive prize per poll. In another embodiment, for each chance a casino has at a prize, the casino transmits the identity or names of a plurality of randomly or pseudo-randomly selected players (winner nominees) to the central system and, if the central system determines that the casino was a winner, the central system selects, randomly, one of the nominated players as the winner. In another embodiment, rather than identifying players, the casino selects a particular machine or device as a potential winner.

BRIEF DESCRIPTION OF THE DRAWINGS

FIG. 1 is a schematic view of a gaming system, according to one embodiment of the present invention;

FIGS. 2A and 2B are flowcharts depicting methods for selecting a winner, according to embodiments of the present invention;

FIG. 3 is a flowchart depicting a method for selecting a winner, according to an embodiment of the present invention;

FIG. 4 is a flowchart depicting a method for selecting a winner, according to an embodiment of the present invention;

FIG. 5 is a flowchart depicting a method for selecting a winner, according to an embodiment of the present invention; and

FIG. 6 is a flowchart depicting a method for selecting a winner, according to an embodiment of the present invention.

DETAILED DESCRIPTION OF THE PREFERRED EMBODIMENTS

As depicted in FIG. 1, a gaming system may include a plurality of electronically-coupled components. In the embodiment depicted in FIG. 1, the system can be considered in three portions, a casino gaming and player tracking system 102, a casino progressive system 104, and a central computer system 106. The first portion 102 includes a plurality of gaming devices or terminals 108a, 108b, 108c, which can be any of a plurality of gaming devices or other operable and/or entertainment devices. In the depicted embodiment, the gaming devices 108a, 108b, 108c are slot machines. Other types of gaming devices that can be used include electronic slot machines, electronic poker machines, blackjack machines, lottery terminals, and the like. In the depicted embodiment the gaming devices 108a, 108b, 108c are coupled in a daisy-chain fashion through daisy chain unit 110a, to a processor controller 112, for coupling to a computer such as front end controller computer 114. The system may include a plurality of daisy chain units 110a-110d, each of which is coupled to a plurality of gaming devices 108. Although in the depicted embodiment there are three gaming devices 108a, 108b, 108c, connected to the first unit 110a, there may be more or fewer gaming devices coupled to each unit, and there may be more or fewer units. Gaming terminals can be coupled to the controller 114 in topologies other than a daisy chain fashion, such as a star topology, a ring topology, a hub topology and the like, as will be apparent to those of skill in the art.

In one embodiment, the gaming devices 108, which are used in connection with the described progressive gaming system, are those devices which are configured to use a player tracking system, and preferably a player tracking system which permits the casino computer system to identify the players playing at such machines. In general, a player tracker system involves a card reader or other user input-output (I/O) or identification device 172a, 172b, 172c, and cables 174a through 174d, or other communication links and/or communication electronics for providing information obtained via the I/O devices 172a, 172b, 172c to a computer such as front end controller 114, as well as software in the computer and/or gaming devices for communicating player information and using such information, e.g., as described below. In one embodiment, the player I/O devices 172a, 172b, 172c include a card reader 176, and a display screen 178. In one embodiment, players may purchase or otherwise obtain player tracking cards which are encoded with information such as being magnetically encoded, optically encoded, and/or punch encoded. In one embodiment, the cards may appear similar to a normal credit card with a magnetic strip thereon for encoding information. In one embodiment, when players purchase such cards, a player credit amount, related to the purchase price, is encoded on

the card. Alternatively, the card may be encoded with an identity number (ID) or other identification information that is then used to determine the value in a corresponding account held in the central computer system. When the card is inserted in the card slot 176, the gaming device 108a will accept the encoded credits or deduct them from the value held in the account as a wager amount, preferably updating the information to deduct wager amounts and reflect a current credit balance, and/or to add winnings. Other identification devices can also be used, such as voice print identification, retinal scan identification, fingerprint or thumbprint scan identification, and the like. Other types of player tracker cards and/or systems can also be used, such as systems which accept an ordinary credit card or debit card, systems which accept cards configured with a microprocessor and/or memory (so-called smart cards), and the like.

In one embodiment the present invention preferably is used in connection with a casino (or other grouping) which is configured with such a player tracking system. This provides numerous benefits. First, such systems provide an electronic coupling of gaming devices 108, to a central network or system 118, and thus the present invention can be implemented by making use of much of the network, communications and/or other infrastructure which is already present 102, and thus can be implemented with little additional hardware. Furthermore, this advantage is consistent with the desire, noted above, to provide a progressive system which is not limited to a particular gaming device manufacturer or configuration. Many player tracking systems have the capability to couple together gaming devices from many manufacturers or having many configurations, and thus by implementing the described progressive system, using an in-place player tracker system, this goal can be readily achieved. Yet another positive aspect of implementing the present invention in connection with a player tracker system, is the ability to maintain or enhance safeguards against cheating, e.g., by identifying potential winners (such as using the player tracker identity capability) preferably prior to determination of a winner by the central computer.

In the embodiment which is depicted and described, it is contemplated that a single chance at a particular prize or jackpot will be provided for each predetermined amount contributed by a casino toward the prize or jackpot. Although much of the following description is in terms of prize chances given to a "casino," the invention is not limited to embodiments in which only casino-wide chances at the prize are provided. There are many ways in which a plurality of gaming devices can be grouped together, so as to provide such grouping of gaming devices with chances at the prize. For example, a chance at a prize may be given (for each minimum contribution of the grouping toward the jackpot) to a subset of all the gaming devices in a casino, such as all the devices in a particular location of the casino, all the devices configured for a particular game, all the devices having a particular denomination or denominations, or the like. Unlike previous systems, such groupings by game or denomination are optional. The casino may be divided into several regions or groups, each group of gaming devices being able to accumulate contributions toward the prize of a size to attain a chance at the prize. The progressive system may be configured such that the groupings are changed from time to time, such as providing different groupings at different times of day, e.g., depending on the level of activity in the casino. It is also possible to have groupings which include gaming devices in two or more casinos, such as all gaming devices in all casinos owned by a particular company, a group of gaming devices in one

casino, plus a group of devices in another casino, or the like. Thus, although much of the following description is in terms of a "casino" group, this terminology is provided only for convenience of discussion, and with the understanding that other groupings of gaming devices can also be used.

As one example, it is assumed that a portion (e.g. 0.15%) of the wagers placed on the gaming devices **108a**, **108b**, **108c** are to be contributed toward the jackpot, and that a casino will receive one chance at the jackpot for every minimum contribution, e.g. for each \$4,000 contributed to the jackpot. Assume further, that there are five casinos in the system, each of which does sufficient volume to contribute \$20,000 per day towards the jackpot. Thus, in this example, the total jackpot will accumulate at an average rate of about \$100,000 per day. In this situation, each casino will receive approximately 5 chances at the jackpot each day. That is, considering all five connected casinos there will be a total of 25 chances at the jackpot per day. If it is assumed that the odds of winning a jackpot, for any chance, are set at one in 2,500, there will, on the average, be a prize awarded once every 10 days, and the average size of that prize will be \$1,000,000. Other examples will occur to those of skill in the art once the present disclosure is understood.

It is contemplated that when the central system has determined that the prize has been won, the casino whose "chance" resulted in the win, will award the entire prize to one player (selected, e.g. as described below). However, it is also possible to provide a system in which, once there has been an award of a prize, the casino may divide the winnings among two or more randomly selected players, such as by providing a first prize, second prize, third prize, etc.

In the embodiment of FIG. 1, the gaming devices **108a**, **108b**, **108c** in a casino (or other grouping) are coupled to a computer network, such as a token ring network **118**, providing information to a plurality of computers such as PC-type computers, for various purposes, such as security **120**, jackpot/fill booth operation **122**, scale interface **124**, camera interface **126**, club booth **128**, management **130**, and transaction processing **132**. In general, the hardware depicted in the casino **102** can be that known in the past for use in many types of player tracking systems.

The hardware of the progressive system **104**, and particularly the manner in which it is connected with the casino system **102**, and the central computer system **106**, and the manner in which it operates or is controlled, e.g., by software, is believed to be different from previous systems. In one embodiment, the progressive system includes an electronic processor such as a computer **138**, and a data communications system such as modems **142a**, **142b**, e.g., for providing communication with the central computer system **106**. The processor **138** receives information from the casino system, e.g., over a token ring connection **144**, and/or a communications or data tap, such as an RS **232** connection **146**. The information received from the casino system **102** may include information regarding which gaming devices **108** are being played, the identity of players at various gaming devices, the amount wagered at the various coupled gaming devices in the casino, and the like. The processor **138** also provides information to the casino system **102**, including information regarding the current value of the jackpot, received from the central system **106**, via communication devices **142a**, **142b**, the existence of any winners, and the like. The processor **138** communicates a number of types of information to the central system **106**, including accumulated amounts of contributions to the jackpot, e.g., in amounts to permit the casino system **102** to have a chance at the prize.

The central system **106** can be configured in an number of different manners. In the depicted configuration, the central system includes several computers, such as the work station computer **152**, a network server **154**, a central computer **156**, and an auxiliary central computer **158**, coupled over a computer network system such as an Ethernet system **160**. Preferably, the central computer **106** can be coupled not only to the first casino system **102**, described above, but also to a plurality of other casinos **165**, each of which will be coupled via a processor similar to the processor **138** depicted in FIG. 1. In the depicted embodiment, a port switch device **162** is provided for re-routing modems to auxiliaries. The central system may include various printers **166a**, **166b**, or other peripheral devices. In one embodiment, the central computer system may have hardware similar to that used for other gaming systems central computers, such as other progressive system central computers. However, the hardware will be controlled or operated, e.g., using software, in a fashion which is believed to be different from that of previous devices.

In one embodiment, all players who have active player tracking cards inserted in gaming devices **108** are eligible for progressive jackpots. Thus, in this embodiment, a player may win a progressive jackpot even though that player has had no win (or no recent win) on the particular gaming device(s) being played. An amount, either a flat amount for each actively played machine or a percentage of the coin-in amount, is earmarked for contribution to the progressive jackpot. A process, such as the gateway processor **138**, aggregates these contributions and maintains a current data base of game machines **108**, and player identity (or, more precisely, player-tracker card identity).

In this context, an active player may be defined in any of a number of ways. For example, a particular gaming machine may be considered to have an active player if (1) there is a card inserted in the player tracker system at the time of the polling cycle (described below), or within a certain period prior to the polling cycle, such as a predetermined number of seconds prior to the polling cycle, or any time since the previous polling cycle at that casino or, (2) if the gaming device or terminal is currently being played or has been played within a certain period prior to the polling cycle, regardless of whether there is a card in the card slot, (although, in one embodiment, a player is eligible only if the player can be identified, e.g. by a player identification system). Preferably, the system also ensures that a player is actually playing a game and not merely inserting a card and sitting at the machine without wagering. Therefore, certain other timing parameters for before and after a game is played may be included.

In one embodiment, the gateway processor and/or casino system **102**, is configured to identify abandoned player tracker cards, i.e., cards which are inserted in machines, but which have not been used for a predetermined period. Preferably, the processor **138** does not allow the players identified at such machines to have a chance at the jackpot until play become active once again on that card.

In one embodiment, as depicted in FIG. 2A, the central computer system collects contributions and status on randomly-selected machines from the processor (MGP) coupled to the machines in a given casino or other group **242**. The collected contributions are added to the casino's cumulative contributions and to the progressive amount **244**. If the contributions from a given casino or other group are insufficient to earn a try at the jackpot (e.g. by being less than a predetermined threshold amount), the central system continues to poll other casinos or other groups **248** if any groups

remain in this polling cycle **250**, and otherwise broadcast a new progressive amount to all the casinos **252** before starting the next poll cycle **254**. However, if a given casino or group's contributions is sufficient to earn a jackpot try, the central system first checks to see whether this casino or group has already had a number of jackpot tries for this poll which exceeds a prestored maximum jackpot tries per poll and determines whether there is no longer any active machine at this casino or group. In either of these cases, the procedure returns to step **250**. Otherwise the amount required for a jackpot try is subtracted from the cumulative contributions for this casino or group **262** and the central system picks a random number **264** and compares it with a prestored winning number **268**. If there is no match, the system returns to step **246**. However, there has been a match, i.e., if there has been a win at the progressive jackpot, a player at one of the active machines at the casino or group which succeeded at its try at the jackpot is the winner and the central system notifies the casino or group processor that there has been a win and resets the amount of the progressive prize **272**. Preferably, in response to a win of a progressive prize, an "end of day" accounting procedure is performed **274** before beginning the next poll cycle **254**.

In another embodiment, as depicted in FIG. 2B, the central computer system **106** periodically or frequently polls the processors **138** for each of the various connected casinos **102**, **164**, and collects the contribution from the various casinos. In one embodiment, the central system randomly selects a player at each casino and requests the name (or other identifier) of the player. The central system may randomly selects a number of the gaming devices **108** at each casino, and requests information regarding the status (e.g. valid player ID card inserted or not) at those selected machines. In this embodiment, such information is collected in order to detect and/or discourage cheating. In one embodiment, the poll message also conveys to the gateway processor **138** information about the current value of the jackpot. This information can be conveyed back to the casino **102**, e.g., for display at the gaming devices **108** if desired. Jackpot amounts can be displayed at the gaming devices in a number of fashions, e.g., via large overhead displays (not shown), as is common with progressive gaming devices, on a video display screen, e.g., on a portion of the screen **177** normally provided for electronic slot machines or other electronic gaming devices, and/or in a smaller display **178** provided as part of the player tracker system or module.

When the central system **106** has polled a processor **138** and retrieved the most recent contribution toward the jackpot, the central system determines whether the accumulated contributions from that casino **102** in the period since that casino's last chance at the jackpot, have exceeded a predetermined threshold amount **204**, which has been set as the amount needed to earn a try or chance at the jackpot. If the threshold amount has not been reached **206**, the contributed amount is simply accumulated in the account for that casino, the amount of the jackpot is updated **208**, and the procedure repeats **210**.

If the casino has reached the threshold amount, the central computer **106** then determines whether the status information sent by the processor **138** indicates that at least one of the machines **108** in the casino was active **202**. If there was not an active machine among the first random selection of machines in the casino, the contributions are accumulated and the system repeats so as to collect data on another randomly selected sample of the machines in the casino **202**. In one embodiment, this cycle **204**, **212**, **206**, **208**, **210**, **202**,

will repeat until either a poll response **202** returns with an active player ID or the procedure times out. In this way the central system **106** ensures that a casino **102** will receive one and only chance or attempt at the jackpot for every threshold amount of contribution towards the jackpot.

In one embodiment, once the threshold amount has been reached and an active gaming device **108** has been identified, the contributions from the casino are added to the progressive jackpot, and the threshold amount is subtracted from the casino's accumulated amount **214**. In another embodiment, contributions are added to the progressive prize regardless of jackpot tries. The central processor **106** then determines whether, as a result of the attempt or chance at the jackpot, the casino (or more properly, one or more players at the casino) is a winner. In the depicted embodiment, this is done by the central computer system **106**, generating a random number in a predetermined range, with the range being selected according to the predetermined odds of winning. For example, if the odds of winning are one in 2,500, the central computer will select a number randomly **206** in the range of 0 through 2,499. The computer will then compare this randomly selected number with a previously stored winning number **218**. Preferably, the winning number is a pre-stored constant, although, if desired, it can be randomly generated on the fly. If there is a match, then the player at the active machine identified in step **212** is the winner of the jackpot **220**. This information is conveyed to the processor **138**, and the progressive amount of the jackpot is reset and a new winning number is randomly generated. If there is no match, then the casino's chance at the jackpot was unsuccessful, and the procedure repeats **222**. The same procedure is followed for each casino connected to the central system **106**, with the casinos being polled successively.

A number of procedures can be used in connection with the present invention. Preferably, the procedures are configured to maintain or enhance the ability to detect, deter and/or prevent cheating. Preferably, the procedures require that potential winners are identified and logged in an auditable manner at both the casino level and the central system, preferably prior to selection of an actual winner. In one embodiment, the central system polls the various casinos to retrieve and transmit various information. As will be apparent to those of skill in the art, the present invention can be used in connection with communication systems other than polling systems, such as interrupt or peer-to-peer systems. In one contemplated polling system, it may require several polls and responses before the desired communication is finished and the central system moves on to poll another casino. Such a group of polls of a casino is referred to herein as a polling cycle. In a relatively small system, it may be possible to transmit the identity of every active player to the central system on every poll cycle. However, it is believed such communication would be impractical in a relatively large system, since it would require communication of a very large volume of information at a high frequency. Accordingly, in another embodiment, the casino sends the identity of only a subset of all active players on each poll cycle. The central system may request such information periodically from each casino in order or may randomly query the casinos for player identification.

In the embodiment depicted in FIG. 3, in response to a poll sent from the central system **302**, the casino transmits to the central system, in addition to the amount being contributed to the jackpot, the identity of all active players in the casino or the identity of a subset of all active players, preferably randomly selected **304**. The process of determin-

ing a threshold contribution and selecting a winner **204, 206, 214, 216, 218**, is similar to that depicted in FIG. 2. If there has been a winner, the central system **106** then notifies the casino **102**, which may then select the actual winner randomly from among the subset or pools of nominated winners sent to the central system or, alternatively, the central system may make this selection from among the pool of potential winners **220**. In general it is preferred for the casino to make the selection in those embodiments in which selection is random but weighted, e.g. giving preference to players who are playing on higher-denomination machines, or weighting the selection proportional to the relative amount a given player or machine has contributed toward the threshold.

In one alternative, it is possible for each casino to transmit to the central system the identity of a single active player who will be the winner if the casino's chance or try at the prize is successful. In the embodiment depicted in FIG. 4, the central system randomly selects one of the casinos (or other group or location **402**). This selection could, if desired, be a random but weighted selection (e.g., with a weighted scaling factor based on the number of machines per location, based on the contributions per location, or the like). The weighted scaling factor could be based upon an average contribution level per casino or actual contribution levels. Since, in one embodiment, the aggregate contribution per location is sent to the central system on each poll cycle, the scaling factor used in randomly selecting a location could be dynamically calculated based on the actual contributions for each location. After a location or casino is selected, the central system selects a machine at that location **404**. This selection may also be a weighted random selection, e.g., using a weighted scaling factor based upon machine denomination. This selection would then be sent to the casino system, which would determine whether there was an active player at that selected machine **406**. If there is no active player, the process will return **405** to permit the central system to select another machine. If there is an active player, the casino will identify the player at that machine (e.g., using a player tracking system), and may store, print out or otherwise log such identification, as well as sending the identity of the player to the central system (e.g., for storage and/or printing) **408**. Ultimately, a potential winner will be identified and logged by this process. Using this system, when a random number selection and comparison results in a determination of a win (e.g., using the selection and comparison method **216, 218** depicted in FIG. 2), the last recorded potential winner becomes the actual winner.

In yet another alternative, in response to a poll, the casino sends to the central system a pool of (randomly selected) actively-playing potential winners **502** (FIG. 5). This pool is randomly selected at the casino level, if desired, with a weighting factor, such as that described above.

In this way, a pool of potential winners is provided on each poll cycle. The central system would randomly select a potential winning machine from each location or casino **504**, and preferably this information will be appropriately stored, printed or otherwise logged in an accountable manner, e.g., as described above in connection with FIG. 4. The central system, after making a win/loss determination **506** (e.g., using a win/loss determination similar to that depicted in FIG. 2, **216, 218**) will, if there is a win **508**, select the winning location and notify the casino **510**. Since a pool of potential winners is available, all of them active players, the retry loop **405** (depicted in FIG. 4) is avoided, thus potentially reducing the amount of communication necessary. If no active players are identified by the casino in response to a poll **502**, the central system ignores that

polling cycle and repeats the process at a later time. In the embodiment of FIG. 5, security is maintained or enhanced since a single potential winner is not identified until after the award is determined **508**, and yet a complete auditable trail of potential winners is available **502**. The central system has a log of selections made at each casino on every poll cycle, not just from randomly selected locations. By providing this communication at every location on every poll cycle, overall integrity of the audit trail is relatively high.

In connection with the embodiment of FIG. 5, there may be some concern that the potential for cheating is shifted from the casino level to the central system. However, since the potential winner information is sent to the central system for audit purposes only (i.e., it is not necessary in order for the central system to make the win/loss decision **508**), one approach is to send the information from the casino **502** in encrypted form. It would then be possible to delay sending the encryption key from the casino to the central system until after the next polling cycle, i.e., until after the next pool of potential winners is sent to the central system. By delaying the transmission of the key until the next polling cycle, integrity of the system is enhanced. In the case of an actual winner, the central system would not be able to decrypt the winner identity information until after the selection was made.

According to another embodiment, depicted in FIG. 6, in response to a poll **602**, the casino randomly selects a single potential winner, identifies that potential winner (who will be an active player) and sends the identity of this potential winner to the central system **604**. The remainder of the procedure **204, 206, 212, 214, 216, 218**, is similar to that depicted in FIG. 2, except that, following a win, it is necessary only for the central system **620** to notify the casino that the nominated winner has won. If desired, it is possible to delay the selection, identification and/or transmission of the identity of the potential winner until after a determination that this casino has reached the threshold contribution **632**, and/or after there has been a determination that there has been a winner **634**. In the latter case, in order to comply with the objective of identifying potential winners before the winner selection, it is only the transmission to the central system that is delayed, rather than the step of identifying the potential winner.

When there has been a winner, the casino may respond in any of a number of fashions. For example, the winning machine may sound a bell or other audible signal, display a light, and the like. In the event a player has removed his or her card before the win alarm is sounded, casino personnel will have the player's identity (via the player tracking system) and can notify the winner in person.

In light of the above description, a number of advantages of the present invention can be seen. The present invention provides a progressive gaming system which is not limited to awarding a prize or jackpot by a central system directly to an individual gaming device or terminal. The present invention is believed to provide a potential for making progressive gaming systems available to a larger number of players and is not limited to participation, in a given system, only to those devices which are specially constructed for coupling to a particular progressive system, only those devices made by a particular manufacturer, only those devices for playing a particular game or only those devices using a certain monetary denomination. It is believed that, in addition to making the system widely available to a number of different players, the system also maintains or enhances resistance to cheating. The present system is believed to make it possible for a large number of terminals (such as on

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the order of ten thousand terminals) to participate in a single progressive prize while still providing effective and efficient communication of information among the computer of the system.

A number of variations and modifications of the present invention can be used. Although the progressive gaming system has been described in connection with gaming terminals such as electronic slot machines and the like, the embodiments of the present invention can be used in connection with a number of user input devices which are coupled together or coupled to a central system including automatic teller machines (ATMs), vending machines, telephone systems, interactive television systems, networked computers such as local area networks, wide area networks, client server or peer-to-peer networks, dial-up computer services such as dial-up internet services, dial-up database services and the like or permanent-node internet communications or database service communications. It is possible to use some aspects of the invention without using other aspects. For example, it is possible to use a three-level terminal-casino-central system for a progressive gaming system without transmitting the identity of a winner or potential winner to central system.

Although the invention has been described by way of a preferred embodiment and certain variations and modifications, other variations and modifications can also be used, the invention being defined the following claims.

What is claimed is:

1. Apparatus for a progressive gaming system comprising: first and second pluralities of gaming terminals in first and second locations, each gaming terminal configured for receiving wagers from players, and having a card reader for reading a card which identifies a player at said gaming terminal;
first and second computer network systems coupled to said first and second pluralities of gaming terminals respectively;

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each network system receiving from said coupled plurality of gaming terminals information related to the amount of wagers placed on said gaming terminals by said players and information indicating the identity of the players in accordance with the identities indicated by said card readers;

first and second computers coupled to said first and second networks and having a communication link to a central computer system;

said first and second computers configured to communicate to said central system, the magnitude of a contribution from said first and second pluralities of gaming terminals respectively towards a progressive prize;

said central computer system configured to periodically poll said first and second computers, wherein said first and second computers, in response to said polling, transmit to said central computer system an indication of said contribution, said central computer system adding said contributions to said progressive prize;

said central computer system generating a random number between 1 and a predetermined odds number comparing said random number to a stored winning number and, when said generated random number matches said stored winning number, said central system communicating a win decision to at least one of said first and second computers;

wherein said one computer, in response to receipt of said win decision, generates a signal to notify at least one of said players that said player has won said progressive prize;

wherein there is no direct communication between said gaming terminals and said central computer system.

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