



US 20060030400A1

(19) **United States**

(12) **Patent Application Publication**
Mathis

(10) **Pub. No.: US 2006/0030400 A1**

(43) **Pub. Date: Feb. 9, 2006**

(54) **METHOD AND APPARATUS FOR SKILL GAME PLAY AND AWARDS**

(52) **U.S. Cl. 463/20**

(76) **Inventor: Richard Mathis, Las Vegas, NV (US)**

(57) **ABSTRACT**

Correspondence Address:
REED SMITH, LLP
TWO EMBARCADERO CENTER
SUITE 2000
SAN FRANCISCO, CA 94111 (US)

(21) **Appl. No.: 11/247,092**

(22) **Filed: Oct. 11, 2005**

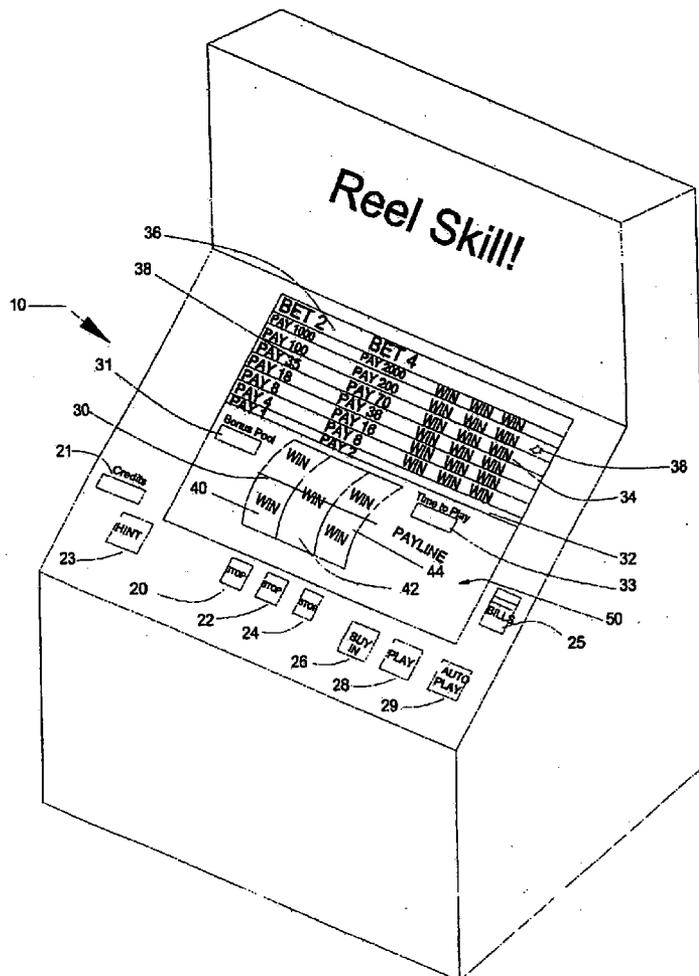
Related U.S. Application Data

(63) **Continuation-in-part of application No. 10/125,975, filed on Apr. 19, 2002.**

Publication Classification

(51) **Int. Cl. A63F 9/24 (2006.01)**

A skill game operates according to the look and feel of a game of chance. The skill game is, for example, a traditional game of chance modified so that a player's skill substantially determines the outcome of the game. In one embodiment, the skill game is a card game with face down cards and the chance elements of the card game are reduced or eliminated by providing a player of the skill game information about the face down cards. An example embodiment is wager acceptance, random prize determination, then skill game play. In one embodiment, the amount of skill required is adjustable to meet varying regulatory and gaming guidelines and/or operator goals. In one embodiment, the skill game pits players against each other and is played on a skill game machine that does not resemble a slot machine.



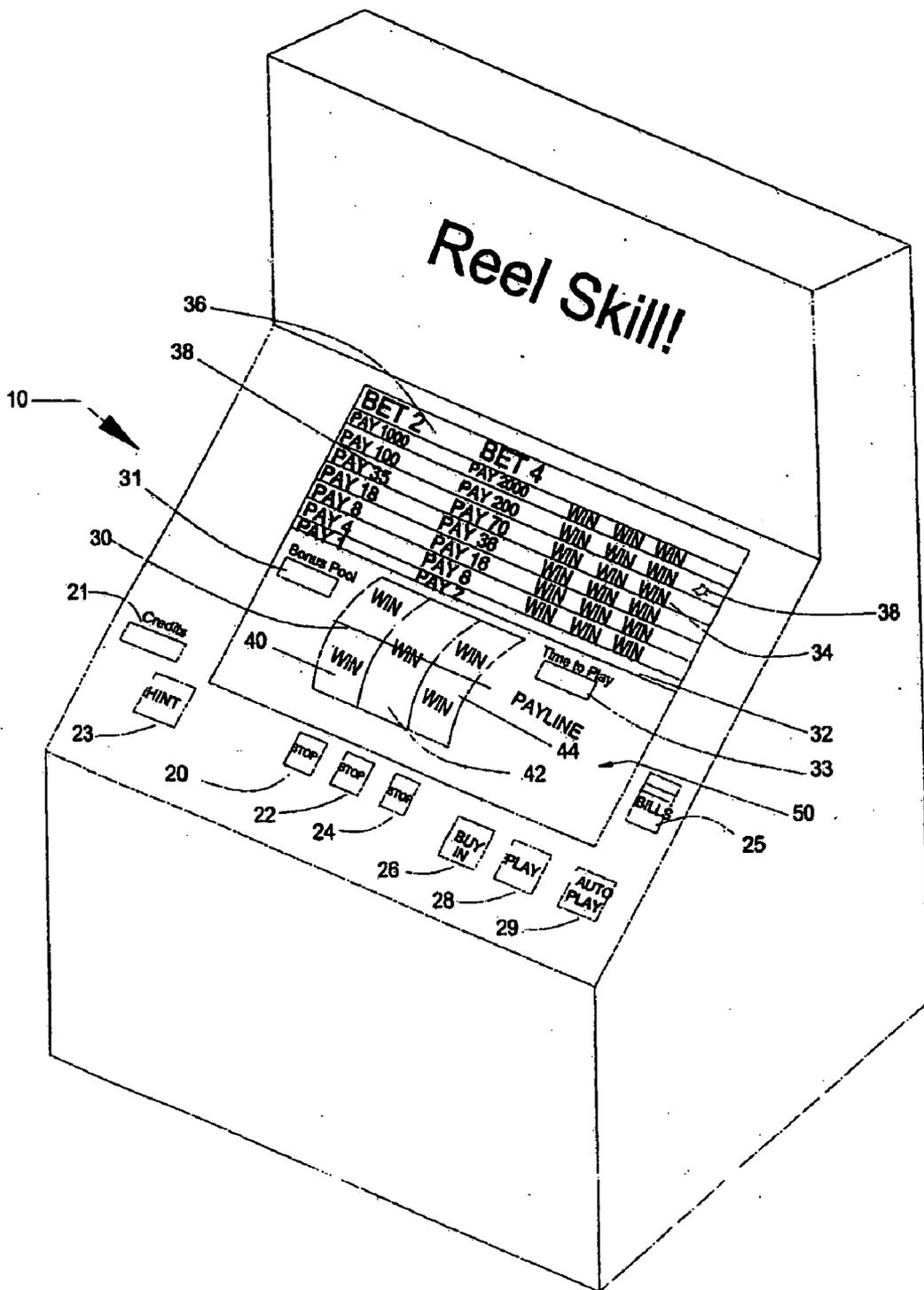


FIG. 1

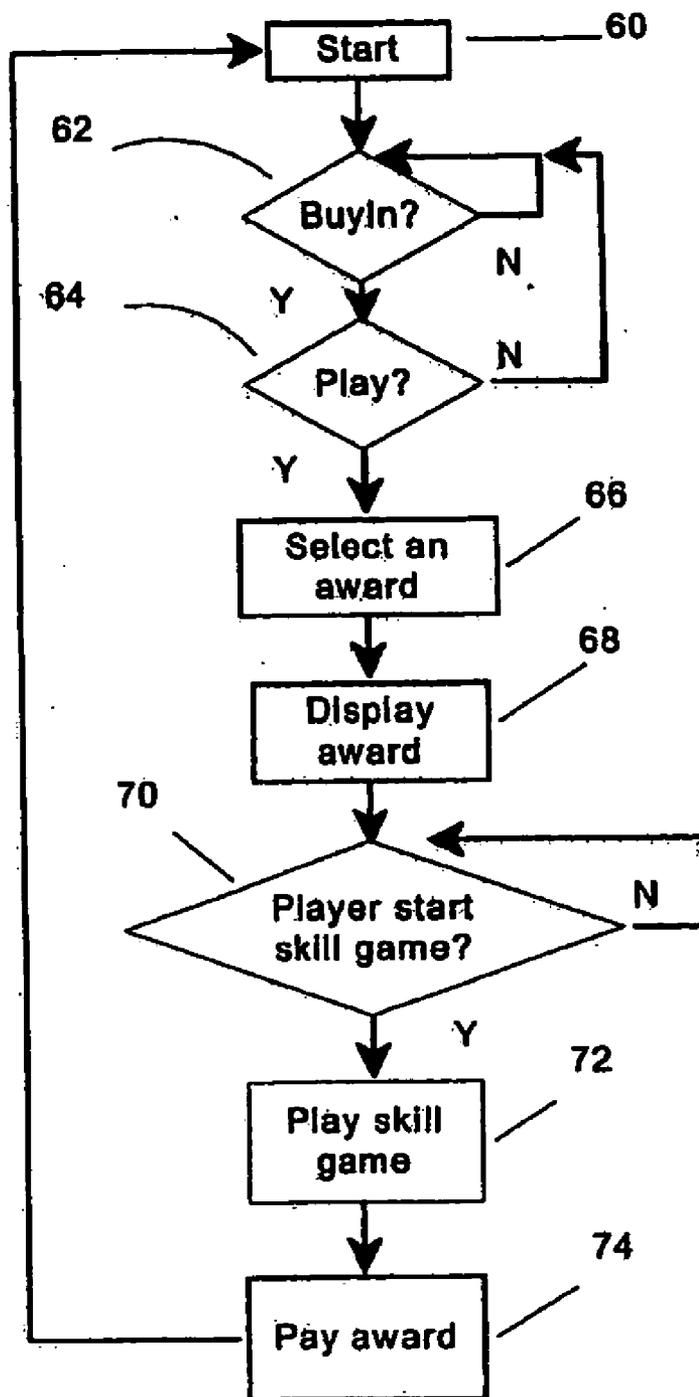


FIG. 2

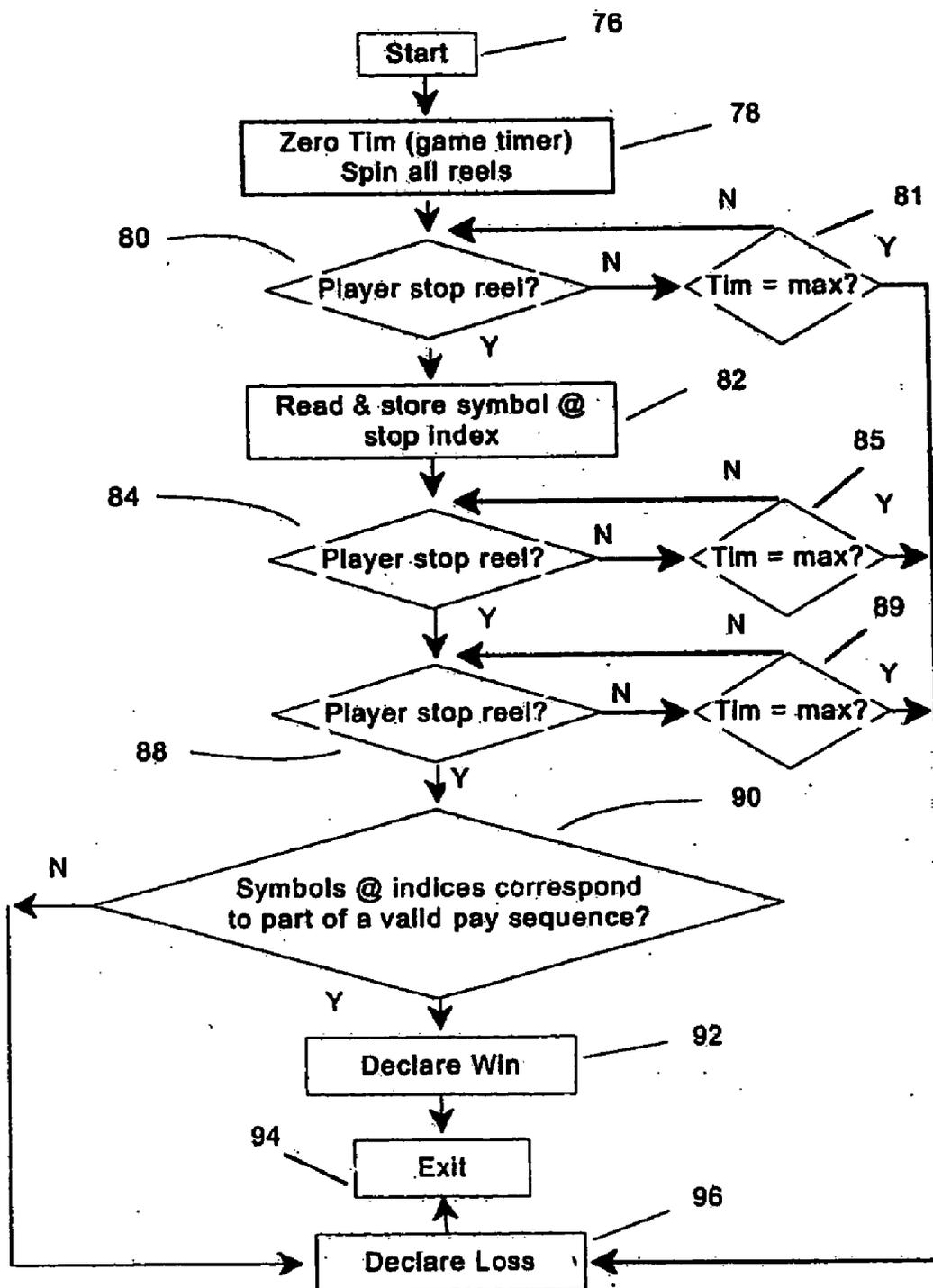


FIG. 3

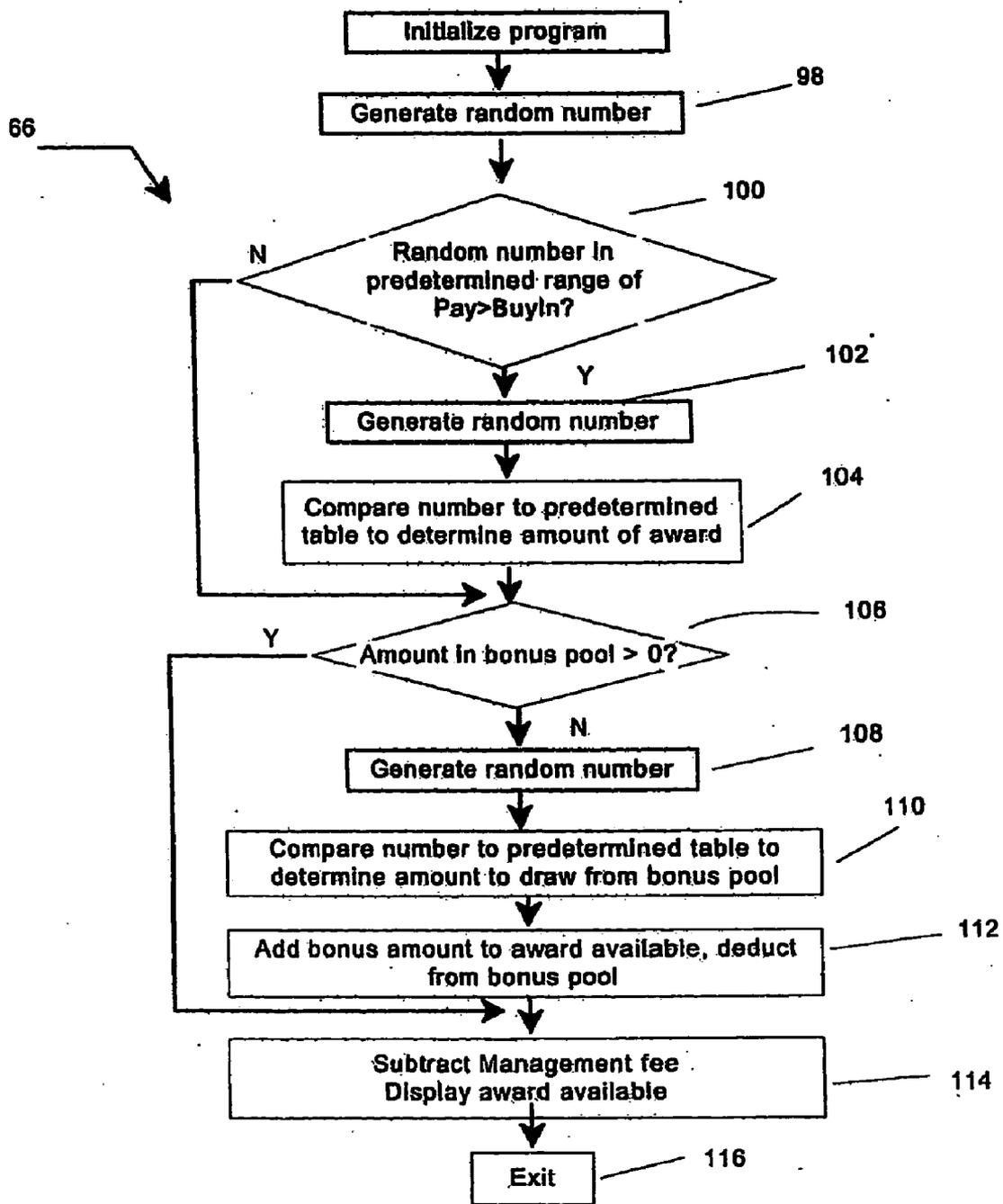


FIG. 4

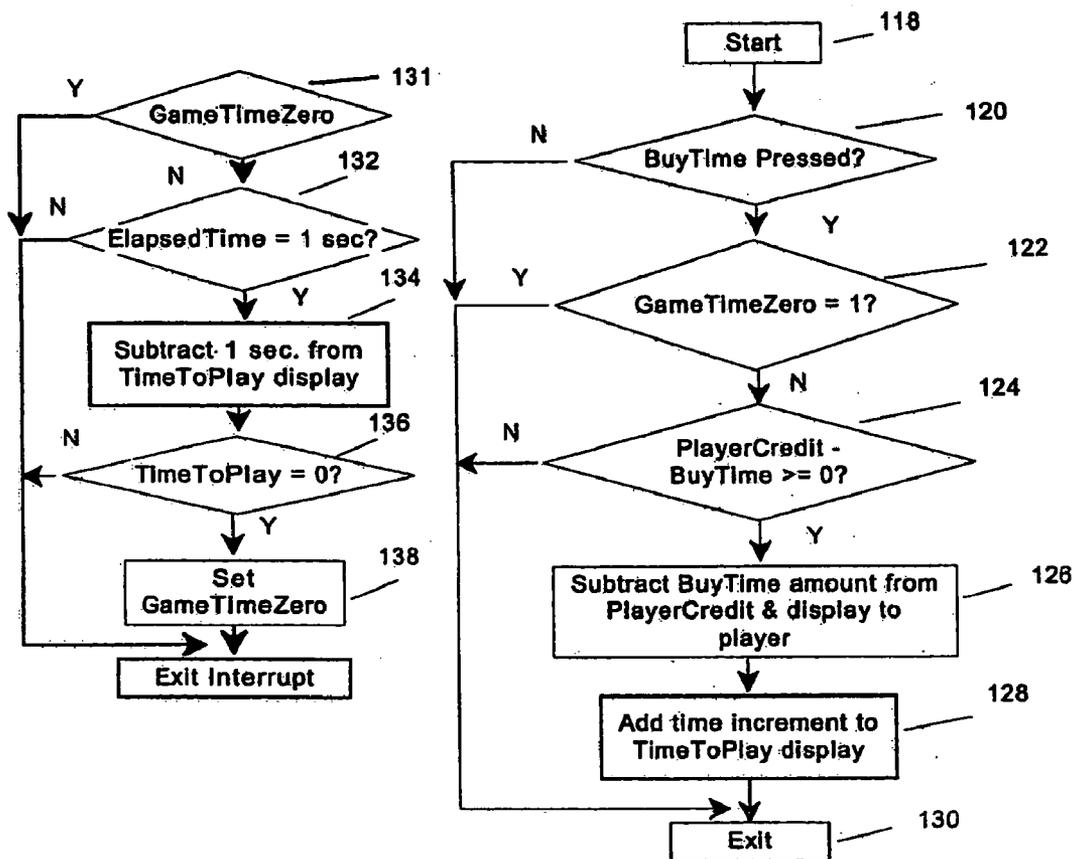


FIG. 5

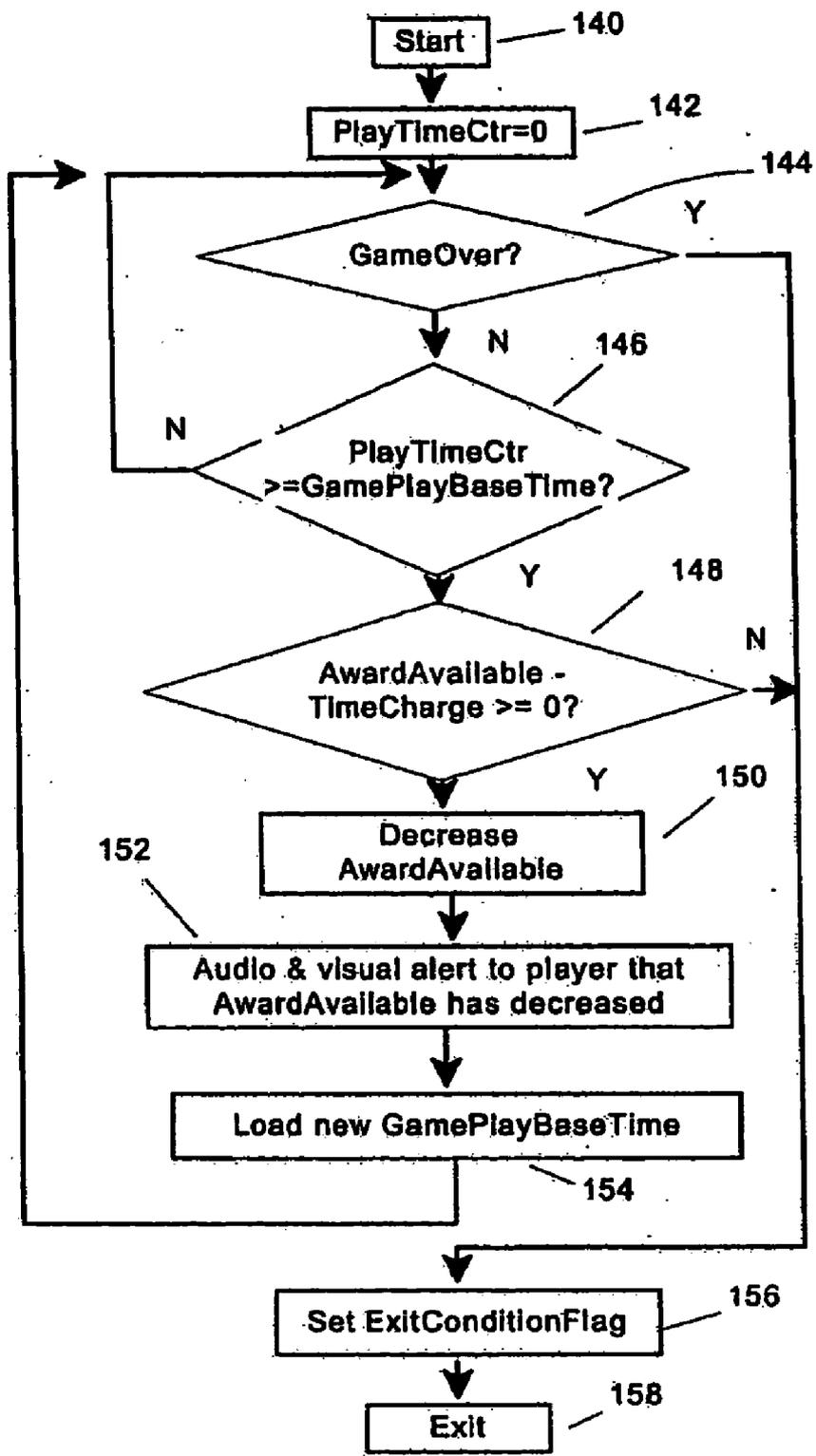


FIG. 6

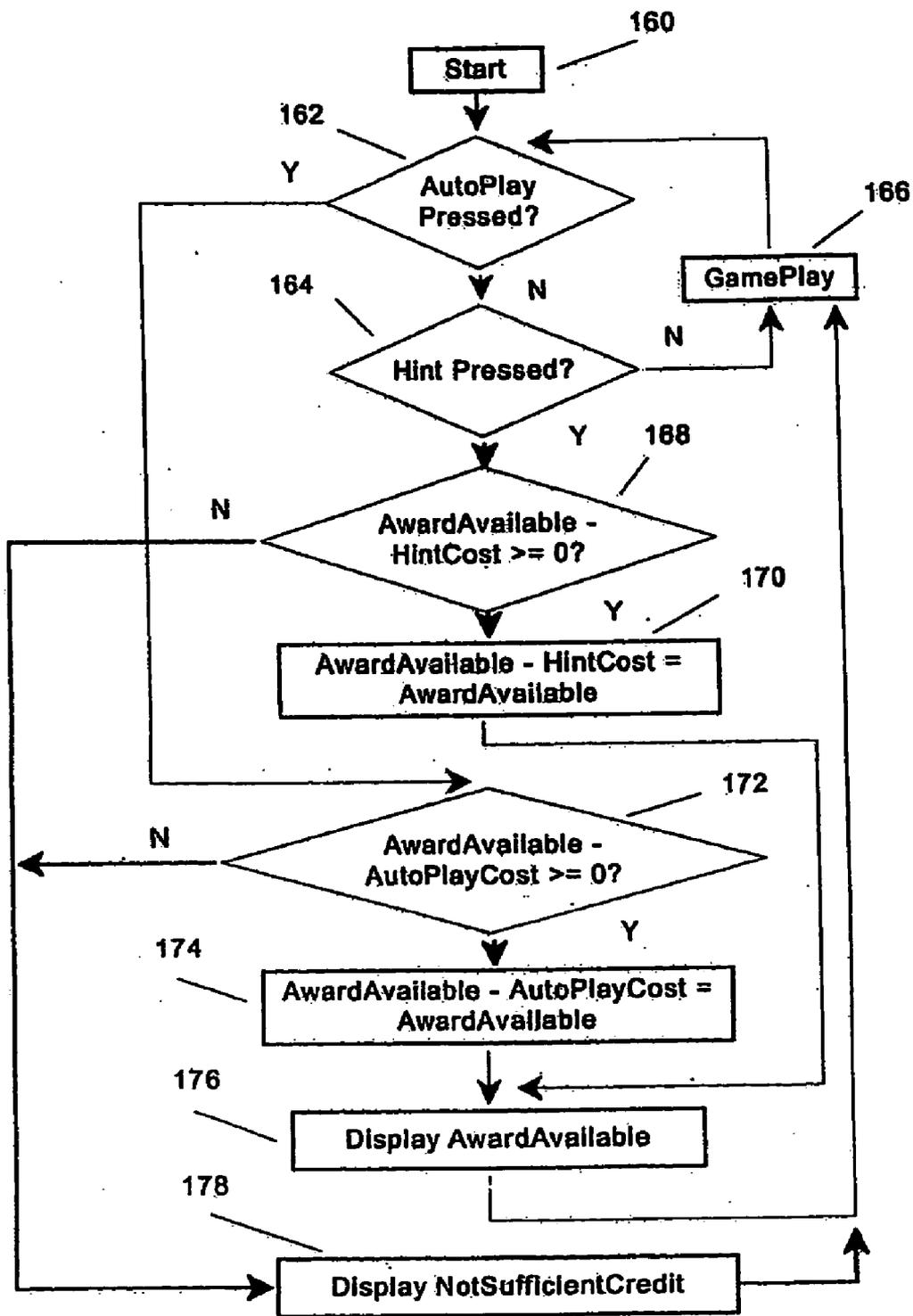


FIG. 7

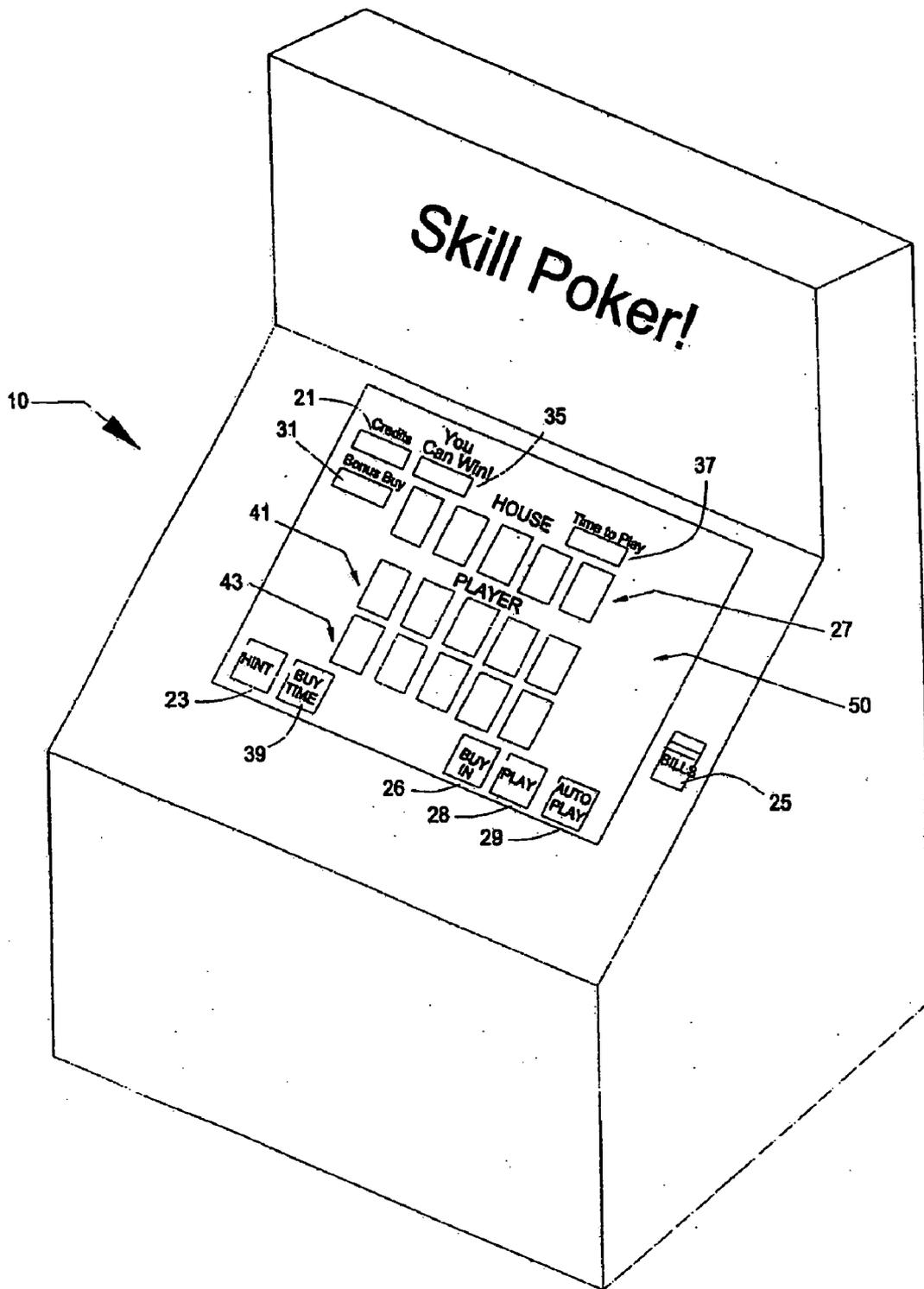


FIG. 8

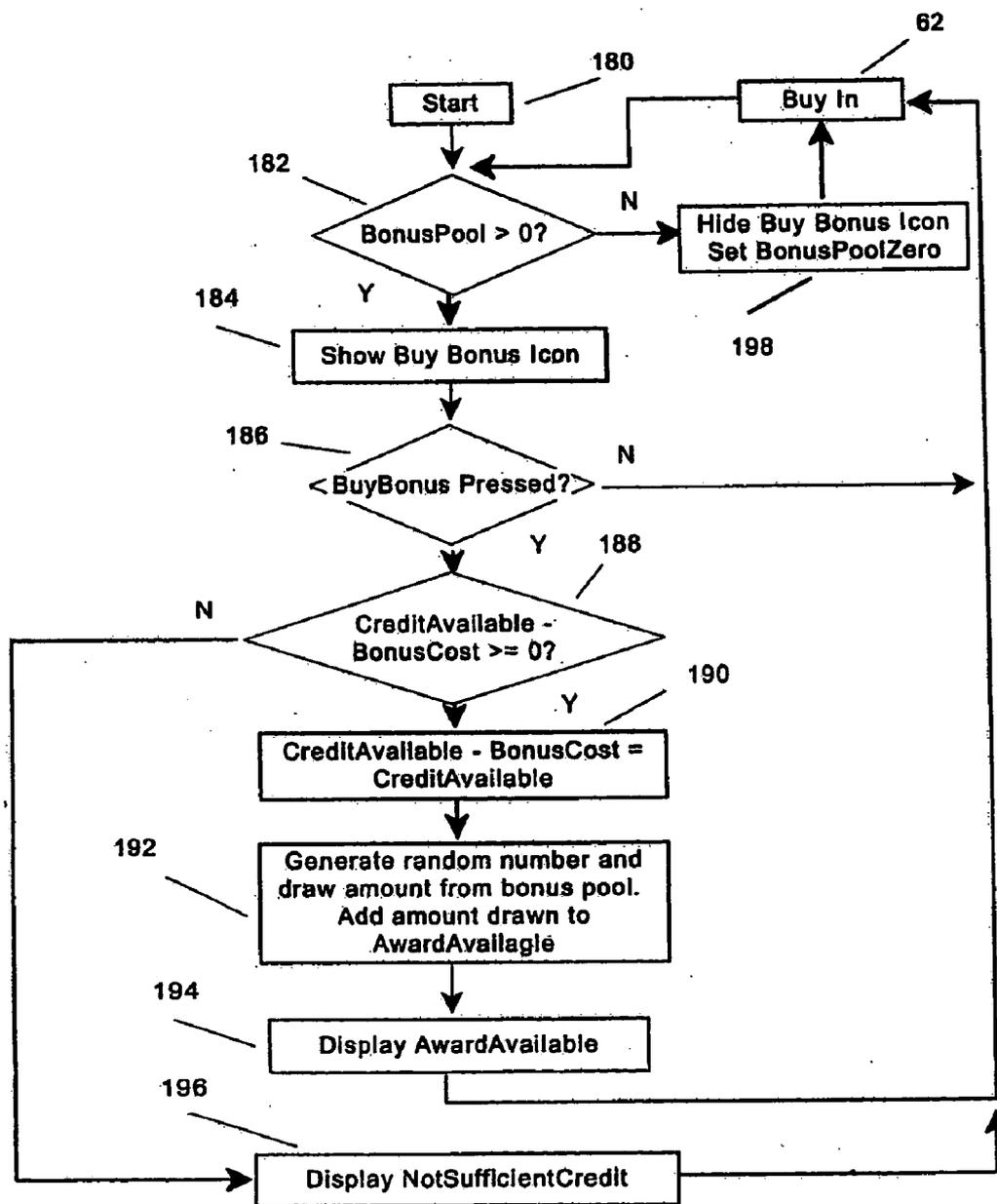
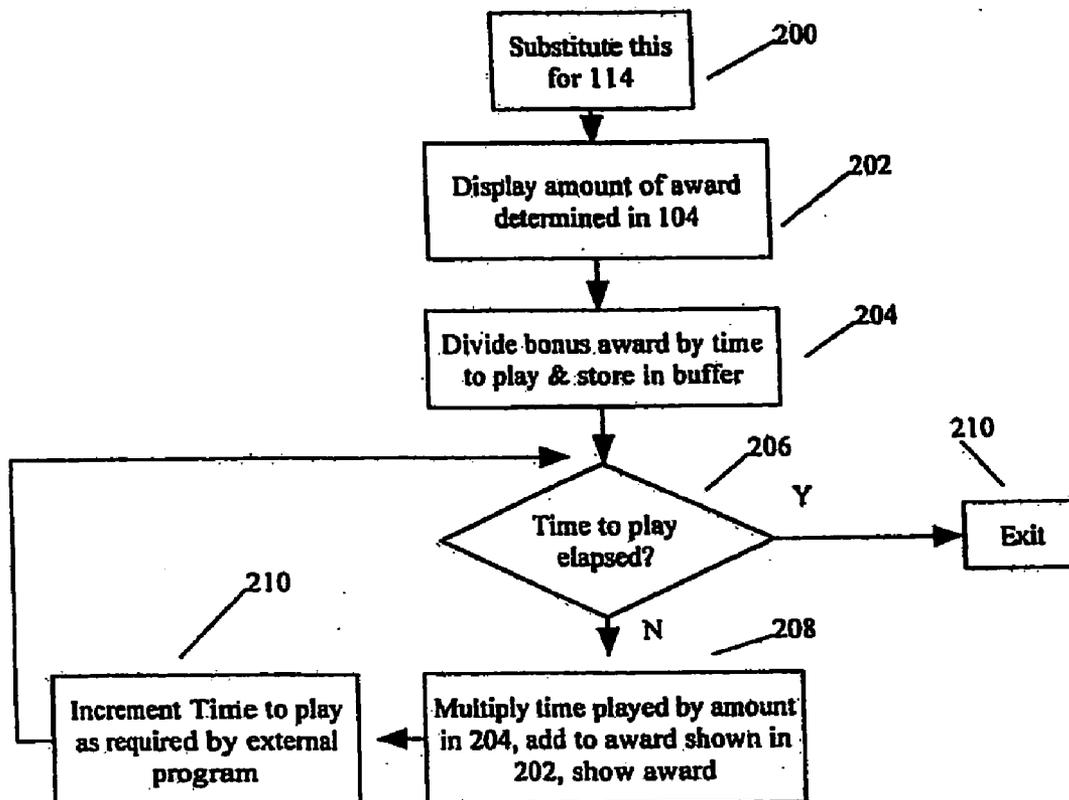


FIG. 9

FIG. 10



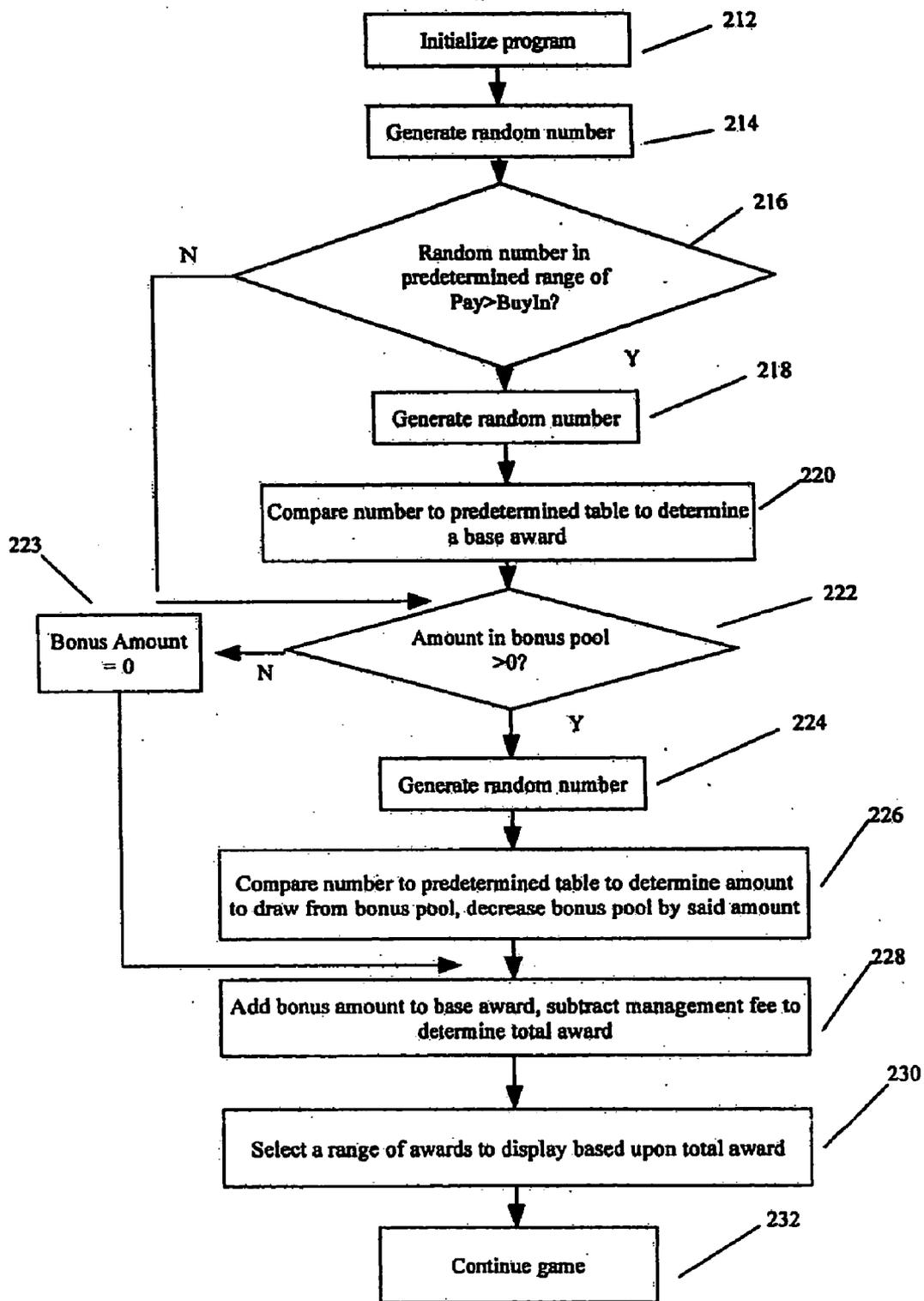
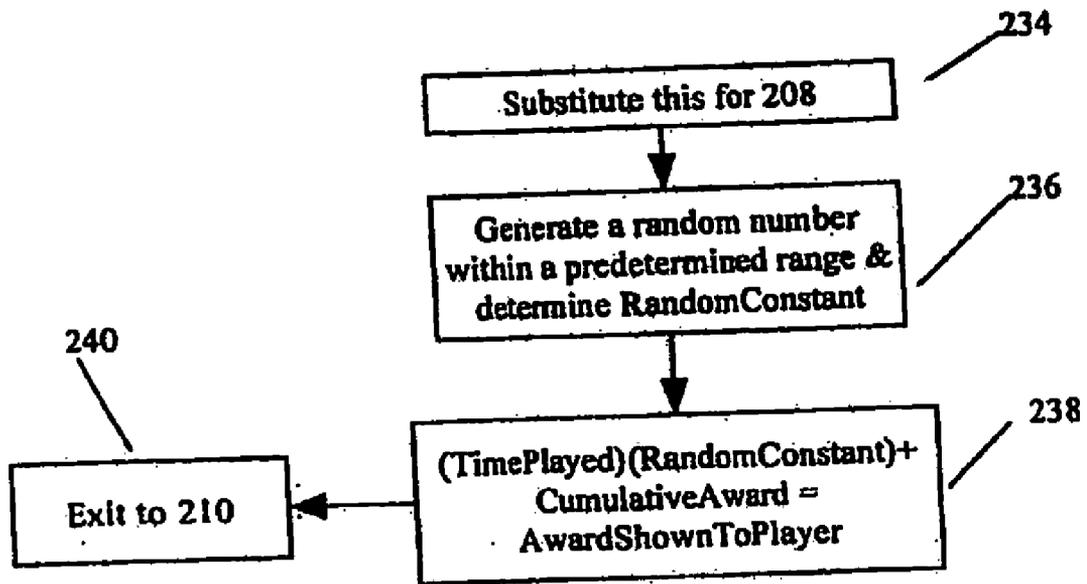


FIG. 11

FIG. 12



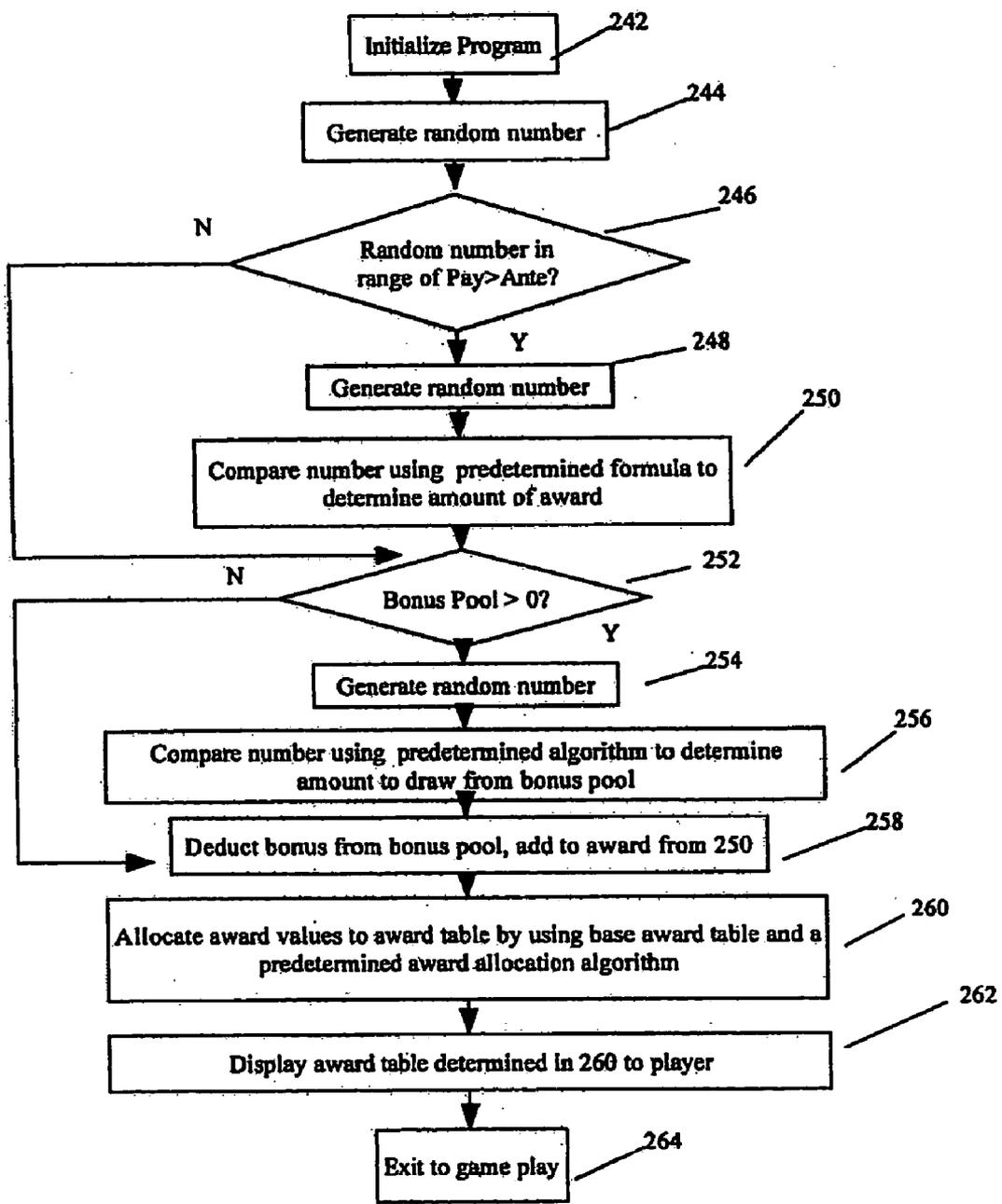
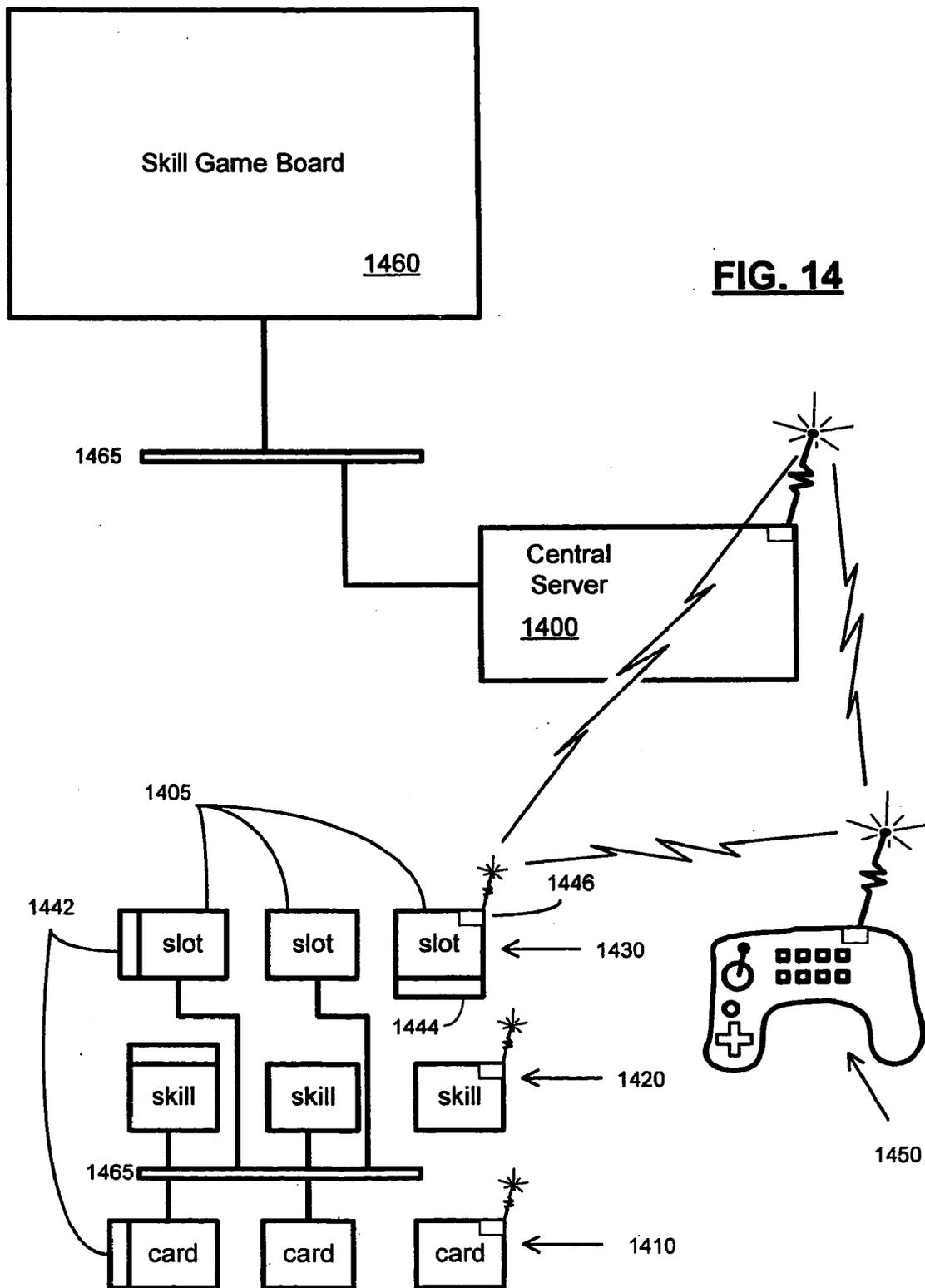


FIG. 13



METHOD AND APPARATUS FOR SKILL GAME PLAY AND AWARDS

CROSS REFERENCE

[0001] This application is a Continuation In Part of U.S. patent application Ser. No. 10/125,975, filed Apr. 19, 2002 and entitled SYSTEMS AND METHODS FOR SKILL GAME AWARDS.

COPYRIGHT NOTICE

[0002] A portion of the disclosure of this patent document contains material which is subject to copyright protection. The copyright owner has no objection to the facsimile reproduction by anyone of the patent document or the patent disclosure, as it appears in the Patent and Trademark Office patent file or records, but otherwise reserves all copyright rights whatsoever.

BACKGROUND OF THE INVENTION

[0003] 1. Field of Invention

[0004] The present invention relates to gaming devices and particularly to skill games. The present invention also relates to systems and methods for providing awards to players of skill games, and more particularly, to systems and methods for providing awards to players of skill games where the awards are selected, based upon various factors, prior to playing the skill game.

[0005] 2. Discussion of Background

[0006] Casino gaming has offered games of chance that can be played upon a machine for many years. Generally and typically said gaming machines employ some method of randomly selecting a game result and presenting it to a player. In the U.S.A., a distinction has been made at the level of the Federal Government as to whether a gaming apparatus generates game outcomes based upon a random selection or whether player skill can influence game outcome to some degree. Games that depend solely upon random selection for generation of game outcomes are classified as Class III and those in which player skill can influence game outcome may otherwise be classified as not being subject to regulation. Said classification is a regulatory matter, but can have very significant economic ramifications. For example, Class III gaming may be relegated to casinos and Indian Tribes that have suitable compacts with state governments. Class III gaming is highly regulated and requires large economic resources in order to comply with regulations in operation and reporting. Class II gaming or games of skill may, however, be currently permitted upon any Indian reservation whether or not an agreement exists with the state in which they are located and reporting and compliance with regulation is considerably simplified.

[0007] Skill games may be classified as non-regulated games, but award to a player must depend to some degree upon player skill. A significant risk to an operator exists if game outcome depends entirely upon player skill as a very skillful player can win every game with disastrous economic results for the operator. If game outcome is made to depend upon skill in such manner that skill level is beyond the bounds of normal human competence then said game outcome essentially becomes a process of random selection, the game is classified as Class III, and is not permitted to be

legally operated in a Class II venue. The aforesaid is very important and has been the subject of many court actions.

[0008] Several gaming machines that allow skill games to be played currently exist. Most of said gaming machines depend upon a video representation of a spinning reel and require a player to stop certain symbols at a given position in order to accomplish a winning result. The aforesaid method depends upon player skill to influence a game outcome, but in nearly all cases number of symbols is huge and/or speed at which symbols are presented to a player is much greater than can be expected to be processed within even the boundaries of superhuman capabilities. If game outcome can be influenced by normal human capabilities the operator of said game is in danger of losing money. Unfortunately the outcome of a game that uses aforesaid method is more or less a random process and the operator of said game is violating statutes if it is to be operating as a skill game.

[0009] A considerable market exists in the U.S. for a method of implementing a gaming device that allows an operator to maintain a profit and player skill to significantly influence award to a player.

SUMMARY OF THE INVENTION

[0010] The present inventor has realized the need for improved presentation and display of skill games.

[0011] The present invention provides a method of implementing a skill game that employs random selection, mystery pay and reflexive pay determination. The present invention applies these principles in a manner and sequence that is unique and makes an exciting skill game play while staying within the boundaries of skill game regulations.

[0012] It is established that an operator of a game has a right to a profit that may be gained from players playing said game. This may be termed a management fee and generally and typically is derived from player's losses of games played. In a Class III game the management fee or "operator hold" is derived from player losses based upon stochastic outcome of random game results generated by said Class III gaming apparatus. In a skill game of the present invention, game outcome is determined primarily by player skill, but an award that can be won for successful completion of a skill game is randomly selected prior to game play. A predetermined portion of a player wager may be deducted for management fee.

[0013] In the gaming machine industry, an award that is based upon or determined by machine profitability or "machine hold" may be termed a reflexive pay and is generally and typically not permitted due to its use to reduce player win amount. Reflexive pay is normally used in gray area games to forcefully decrease player win until machine hold is greater than or equal to a predetermined amount. In the present invention, reflexive pay is used to increase amount of award to a player rather than decrease it. In the present invention, if machine hold is greater than a predetermined amount said excess machine hold is placed in an adjustment pool that can be used to increase player awards. A portion of the excess machine hold is randomly selected and added to a randomly selected award a player can win thus increasing the potential payout amount and keeping machine hold within predetermined boundaries; this process

is not a mystery pay, but is applied in the present invention to act to adjust machine hold downward and to increase player enjoyment.

[0014] The skill game method of the present invention is comprised of numerous processes. The aforesaid processes are employed in manners that are novel and unique. Certain methods of crafting a skill portion of an entire game that are not in normal and general usage will be described later.

[0015] An embodiment of the method of the present invention may be summarized generally as follows:

[0016] 1) Player pays a buy-in amount to allow him to play a game.

[0017] 2) Apparatus generates a randomly selected award amount for the current game that a player may win by successfully completing a game of skill.

[0018] 3) Apparatus generates a randomly selected amount that is to be added to the award amount generated in (2) if an amount greater than or equal to said randomly selected amount exists in an adjustment pool. Add the amount so determined to award amount generated in (2) and subtract the amount from the adjustment pool.

[0019] 4) Display total award amount that can be won by successfully completing a skill game by a player.

[0020] 5) Begin a game of skill that can be completed successfully by an average person. If said game of skill in (5) is completed successfully by a player, pay the displayed award amount. If the game of skill is not completed successfully, so indicate and player loses amount of buy-in.

[0021] A second method of skill game play may be described as:

[0022] 1) Player pays a buy-in amount to allow him to play a game.

[0023] 2) Apparatus generates a randomly selected award amount for the current game that a player may win by successfully completing a game of skill.

[0024] 3) Apparatus determines if amount returned to players over multiple games is less than a predetermined amount. If said amount returned to players is less than said predetermined amount then reduce skill requirements to complete a predetermined game of skill. If the amount returned to players is greater than or equal to the predetermined amount then provide no adjustment to said skill requirements to complete a predetermined game of skill.

[0025] 4) Display total award amount that can be won by successfully completing a skill game by a player.

[0026] 5) Begin a game of skill that can be completed successfully by an average person.

[0027] 6) If said game of skill in (5) is completed successfully by a player, pay the displayed award amount. If the game of skill is not completed successfully, so indicate and player loses amount of buy-in.

[0028] Thus, in a broad sense, the present invention provides a method of playing a skill game by at least one player. The method includes paying, by the player, a buy-in fee and

selecting an award, the player plays the skill game and is provided the award if he successfully completes the skill game.

[0029] A skill game comprises, for example, a gaming apparatus that comprises means for a player to buy into a game with anticipation that he can successfully complete a game of skill, means for generating and displaying game progress and outcome and means for paying a predetermined award to a player based upon results of game outcome. Means for generating and displaying game progress generally and typically is a microcomputer running a predetermined program that algorithmically realizes a method previously outlined. Said algorithmic process may comprise means for accepting a current player buy-in, generating an award amount for said current buy-in that a player can win upon successful completion of a skill game, generating a secondary amount from an adjustment pool and adding to the award amount generated, displaying a sum of the previously calculated award amount and said secondary amount, and beginning a game of skill that may be successfully completed by an average person. The gaming apparatus comprises means for evaluation of successful completion of said game of skill, comprises means for displaying results of said evaluation, and comprises means for payment of a previously displayed award due a player upon satisfactory completion of the game of skill.

[0030] The method described above is different from general and typical skill games in that an award amount is calculated for each buy-in from which a management fee may be subtracted. Generally and typically an award amount is predetermined and fixed for completion of a skill game and said skill game is made to be extremely difficult to successfully complete. The skill game described in the present invention does not rely upon a player not being able to successfully complete the game of skill and therefore does not require that the game be nearly impossible to complete successfully by a person of average capability. Additionally, if machine hold exceeds a certain threshold amount in the present invention, provision is made to make said threshold amount available to players for awards. The skill game in the present invention can be made reasonably simple for an average player to successfully complete since operator profit is assured by management fee and means of subtracting said fee for each game. Player award is assured by the aforesaid and randomly drawing amounts from the adjustment pool to supplement calculated award amounts for successful completion of each game adds an element of excitement and, additionally, assures that payback to players will always be a guaranteed amount.

[0031] Portions of the invention as embodied in either a device or method may be conveniently implemented in programming on a general purpose computer, or networked computers, and the results may be displayed on an output device connected to any of the general purpose, networked computers, or transmitted to a remote device for output or display. In addition, any components of the present invention represented in a computer program, data sequences, and/or control signals may be embodied as an electronic signal broadcast (or transmitted) at any frequency in any medium including, but not limited to, wireless broadcasts, and transmissions over copper wire(s), fiber optic cable(s), and co-ax cable(s), etc.

BRIEF DESCRIPTION OF THE DRAWINGS

[0032] A more complete appreciation of the invention and many of the attendant advantages thereof will be readily obtained as the same becomes better understood by reference to the following detailed description when considered in connection with the accompanying drawings, wherein:

[0033] FIG. 1 is a perspective view of a skill game apparatus;

[0034] FIG. 2 is a flowchart representation of basic operation of a skill game described in the invention;

[0035] FIG. 3 is a flowchart representation of a spinning reel game operation according to the present invention; FIG. 4 is a flowchart representation of a means of selecting an award to a player according to the present invention;

[0036] FIG. 5 is a flowchart representation of an interrupt timer according to an embodiment of the present invention;

[0037] FIG. 6 is a flowchart representation showing a method of allowing a player to purchase more time to complete a game according to the present invention;

[0038] FIG. 7 is a flowchart representation of a method of allowing a player to purchase aid to successfully complete a skill game according to the present invention; FIG. 8 is a perspective view of another skill game apparatus described in a preferred embodiment;

[0039] FIG. 9 is a flowchart representation of a program running on a microcomputer that allows a player to manually buy into a bonus pool;

[0040] FIG. 10 is a flowchart of a process according to an embodiment of the present invention;

[0041] FIG. 11 is a flow chart illustrating a process of generating awards according to an embodiment of the present invention;

[0042] FIG. 12 is a flow chart illustrating award display, time to play increments, and cumulative award processes according to an embodiment of the present invention;

[0043] FIG. 13 is a flow chart illustrating award generation and interactions with a bonus pool according to an embodiment of the present invention; and

[0044] FIG. 14 is a drawing of skill games and a central computer according to various embodiments of the present invention.

DESCRIPTION OF THE PREFERRED EMBODIMENTS

[0045] Referring now to the drawings, wherein like reference numerals designate identical or corresponding parts, and more particularly to FIG. 1 thereof, there is illustrated a perspective view of a gaming machine 10. Said gaming apparatus may be comprised of a game display 50, and means for player interaction with a game played upon the gaming apparatus. Said game display may comprise mechanical or video means of showing game progress and results to a player and may indicate requirement for player decision and input. Generally and typically the gaming apparatus is controlled by a microcomputer running a program to present a particular game to a player. Using FIG. 1 as an example, a player buys credits that may be used to

purchase play upon gaming apparatus 10 and said credits that may be used to purchase play are shown to a player upon credit display 21. A player buys a game play by means of pressing button 26 and initiates game play by means of pressing button 28. A management fee is deducted from the amount paid by a player to play a game and an award that said player will win upon successful completion of a game of skill is generated by a random selection algorithm and is shown on pay table 36. In a particular game shown in this example, reels 40, 42 and 44 upon which are superimposed symbols—begin to rotate. Said rotation may be a mechanical rotation or a representation thereof. Successful completion of said game of skill is, in this example, by means of stopping winning symbols superimposed upon the reels in such a manner that said winning symbols are directly beneath winline 30 and correspond in arrangement to a payline that was previously selected by an algorithm running on a microcomputer, in this example said payline is indicated by icon 38. Successful completion of the game of skill results in a player having credits added to the total 21 and unsuccessful completion of the game of skill results in a player losing the entire amount of his buy in to play the game.

[0046] Turning now to FIG. 2, which is a flowchart representation of the aforesaid process and may be representative of a program running on a microcomputer controlling a game on gaming machine 10, program begins at 60 where initialization of said program is performed. The program proceeds to step 62 where a determination is made as to whether a game has been purchased and the amount of purchase a player desires to make, after which program proceeds to step 64 to check if a player wants to begin game play. If game play is not selected, program proceeds back to 62 to allow a player to increase the amount of buy in and also the amount of potential award. If game play is desired, program proceeds to 66 where an award is generated in accordance with a random selection procedure and said award is displayed to a player in step 68. At step 70 the program waits to start a skill game that is possible to complete with an ordinary amount of skill. The program proceeds to step 72 at which said game of skill is played by a player and any award due is paid at step 74 after which the program returns to 60 and is ready for a new game.

[0047] Turning now to FIG. 4, which is a flowchart representation of a program running on a microcomputer for purpose of generating an award available to a player after said player has purchased a game and has signified that game play is desired. The method presented here is one of many random pay determinations that could be used and is as presented in U.S. Pat. No. 5,380,008. Another method of generating an award to a player is as described in U.S. Pat. No. 6,053,813. Program begins at 97 where constants such as seed are recovered and said process is initialized. At step 98 a random number is generated and said random number is checked at 100 to see if it falls within a predetermined range. If the random number generated is not within bounds of said predetermined range, the process continues to step 106. If the random number generated is within bounds of the predetermined range, the process continues to 102 where a second random number is generated. Said second random number generated is compared to a predetermined table of values or ranges of values at 104 and a determination of an award is made. The process continues to 106 where a determination as to amount of available credits in a bonus

pool is made. If available credit in said bonus pool is not greater than zero, the process continues to **114**, if available credit in the bonus pool is greater than zero, the process continues to **108** where a random number is generated, continues to **110** where said random number generated at **108** is compared to a predetermined range of values to determine an amount to draw from the bonus pool. The amount drawn from the bonus pool is deducted from the bonus pool and the amount drawn from the bonus pool is added to the award available to a player at **112**. An award, minus management fee, available for successful completion of a game of skill that is presently being played is displayed at **114**. Process continues to **116** where it exits.

[0048] Turning now to **FIG. 3**, which is a flowchart representation of a program running on a microcomputer operating gaming apparatus **10**, said program may be a skill game portion of a spinning reel representation of a 3 reel slot machine on display **50**. The flowchart represents skill game play and as such may be contained within block **70** of **FIG. 2**. Program begins at **76** and continues to **78** where physical reels or a representation thereof begin to rotate simultaneously with setting a count-up background timer cumulative count to zero. The program continues to **80** where it pauses waiting for a stop indication from a player, said stop indication may be by means of a player depressing switch **20**, **22**, or **24** or by other means such as pressing a representation of a switch on a touch panel covering a video monitor. Program continues to **81** to see if said background timer has accumulated time greater than or equal to maximum time allowed to complete the skill game. If the background timer's cumulative count has not exceeded maximum time allowed to complete the skill game, the program continues back to **80** to wait for the player to stop a reel. If the reel is stopped, the program continues to **82** where it reads reel position and relates said reel position to a symbol that is beneath winline **33**. Said symbol directly beneath said winline is used as the basis for a payline **38** in award table **36** and all subsequent symbols for the remaining two reels must be stopped beneath the winline and be in order and of proper value as shown in **38** to allow successful completion of the skill game. Program continues to **84** where it checks to see if the player has attempted to stop one of two reels still rotating. At **85** a check is made to see if a background timer has accumulated time greater than maximum time allowed to complete the skill game. If a predetermined time has not been exceeded, the program returns to **84** to wait for the player's reel stop command. Upon receiving a reel stop command at **84**, the program proceeds to **88** to check to see if the player has attempted to stop the remaining rotating reel. At **89** a check is made to see if a background timer has accumulated time greater than maximum time allowed to complete the skill game. If a predetermined time has not been exceeded, the program returns to **88** to wait for the player's reel stop command. Upon receiving a reel stop command at **88**, the program proceeds to **90** to compare the position of each stopped reel to payline **38** in award table **36**. If the position of each stopped reel compares exactly to an allowed sequence as shown in **38**, the program proceeds to **92** where successful completion of the skill game is indicated to the player and an award is credited to the player's account. The program exits game play at **94**. If the position of each stopped reel does not compare to an allowed sequence as shown in **38**, the program proceeds to **96** where it is indicated to the player that the skill game was not

completed successfully and the entire cost of the game is deducted from the player's account at **96**. The program exits game play at **94**.

[0049] Turning now to **FIG. 5**, which is a flowchart representation of method of selecting time allowed to play a game according to the present invention, the program begins at **118** where any required initialization is performed and proceeds to **120** where a check is made to determine if a player has pressed a button allowing purchase of additional time to complete a skill game. If said button has not been pressed, the program continues to **130** where it exits. If the button requesting purchase of additional time to complete said skill game has been pressed, the program continues to **122** where a determination is made as to whether a predetermined time to complete the game of skill has been exceeded and, if not, program continues to **124**. If the predetermined time to complete the skill game has expired, the program proceeds to **130** where it exits. At **124** the program checks the player's account to determine that a charge for time can still be allowed and if the amount in the player's account minus charge for additional time to play the skill game is greater than or equal to zero, the program continues to **126** where a charge for additional time to play the skill game is deducted from the player's account, the program continues to **128** where the additional time to play the skill game is added an internal TimeToPlay register and is also displayed to the player; the program exits at **130**. If, at **124**, there are not sufficient funds in the player's account to allow him to buy extra time to play the skill game, the player is notified of such and the program continues to **130** where it exits.

[0050] Also illustrated in **FIG. 5** is a flowchart representation of a background timer that typically runs under timer interrupt. Said background timer may be used for many purposes, but is illustrated here as a timer of the time allowed to play the skill game. Generally and typically timer tics are divided into small units and are accumulated in a register. At **131** a determination is made as to whether a memory flag called GameTimeZero is at a logic one or zero; if GameTimeZero is at logic one program continues to **139** where it exits the interrupt routine, if GameTimeZero is at logic zero, program continues to **132**. At **132** a determination is made as to whether said register has accumulated a sufficient number of timer tics to correspond to a 1 second interval, if not, the timer exits interrupt at **139**. If a 1 second interval is indicated, the program continues to **134** where a time period of 1 second is subtracted from a TimeToPlay register and displayed on a TimeToPlay display to the player. The program continues on to **136** where it compares the value in the TimeToPlay register to zero and if not zero, the program continues to **139** where it exits interrupt. If the TimeToPlay register is zero, the program continues to **138** where a register flag, GameTimeZero, indicating that game time has expired is set and the program exits interrupt at **139**.

[0051] Turning now to **FIG. 6**, which is a flowchart representation of a program running on a microcomputer contained within game apparatus **10**, said program provides for automatic deduction from an available award to a player as a predetermined time allowed for playing a game of skill is exceeded. Program begins at **140** where initialization of memory locations is performed. Said program continues to **142** where a memory location that accumulates time taken to complete a skill game is initialized to zero time. The

program continues to **144** where a determination is made as to whether said game of skill has been completed by a player and if the game of skill has been completed, the program continues to **156**, where a memory location is updated to reflect conditions existing at time of exit and the program continues to **158** where it exits. If, at **144**, the game of skill has not been completed by a player the program continues to **146** to determine if a predetermined time to play the game of skill has been exceeded; if not, the program returns to **144**. If said predetermined time to play the game of skill has been exceeded, the program continues to **148**, where a determination is made as to whether the award available to the player is greater than or equal to a predetermined amount to be charged as a penalty for exceeding a predetermined time allotted to complete a game of skill; if the amount of award available minus a charge for a time increment is greater than or equal to zero, the available award to said player is decreased by a predetermined amount at **150**, the program continues to **152** at which an audio and visual indication is given to the player that the award available has been decreased and the program continues to **154** where an adjusted time allowed to complete the game of skill is loaded; program then proceeds to **144**. If, at **148**, the award available minus a charge for a time increment is not greater than zero, the program continues on to **156** where a memory location is updated to reflect conditions existing at time of exit and the program continues to **158** where it exits.

[0052] Turning now to **FIG. 7**, which is a flowchart representation of a program running on a microcomputer contained within game apparatus **10**, said program provides for a method of allowing a player to buy advice to complete a game of skill from a program running on said microcomputer. Program begins at **160** where registers may be initialized and proceeds to **162** at which a determination is made as to whether a player has selected an auto play feature, if auto play is not selected, program proceeds to **164** to determine if game hint feature is selected and, if not, program proceeds back into a main game program at **166** from whence it proceeds to **162**. If, at **162**, a player selects said auto-play feature, the program proceeds to **172** where determination is made as to whether an award available to the player for successful completion of a game of skill minus an amount that will be assessed against said award for cost of auto-play is greater than or equal to zero and if not greater than or equal to zero, the program proceeds to **178** where the player is informed that sufficient credit does not exist to allow auto-play and then on to **166**. If, at **172**, sufficient credit exists to allow auto-play, the program proceeds to **174** where an amount assessed for auto-play is deducted from the award available, the program proceeds to **176** where the award available is displayed to the player and then to **166** to continue game play. If, at **164**, the player has indicated that a hint is desired to complete the skill game, the program proceeds to **168**, where determination is made as to whether an award available to the player for successful completion of a game of skill minus an amount that will be assessed against said award for cost of a hint is greater than or equal to zero and if not greater than or equal to zero, the program proceeds to **178**; if aforesaid inequality results in a solution greater than or equal to zero, the program continues to **170** where an amount assessed for a hint is deducted from the award available, the program proceeds to **176** where the award available is displayed to the player and then to **166** to continue game play. Auto-play allows a program running on

a microcomputer controlling the game to make a single selection that will result in the best solution for the point in the game cycle at which auto-play is applied; hint allows the player to make a decision or to give the player an advantage to complete the game at a point in the game cycle at which hint is applied.

[0053] Turning now to **FIG. 9**, which is a flowchart representation of a program that may be running on a microcomputer to provide for a player-elected buy-in to an award from a bonus pool, said program begins at **180** where initialization may be performed. The program continues to **182** where a determination that an amount in said bonus pool is greater than zero and if greater than zero, proceeds to **184** where an icon beneath a touch screen is shown to the player to allow purchase of a portion of the bonus pool; if a decision is made by the player to purchase a randomly selected portion of the bonus pool at **186**, the program continues to **188** where a determination is made as to whether the player has sufficient credit to afford a cost of purchasing a portion of the bonus pool. If the player's credit is not sufficient, the program continues to **196** where the player is informed that sufficient credit does not exist and then to **62**, where buy-in decisions are performed. If, at **188**, the player has sufficient credit to purchase a portion of the bonus pool the program continues to **190** where the cost of purchasing a portion of the bonus pool is deducted from the player credit available and then on to **192** where a random number is generated to determine a portion of the bonus pool to allot to the player during the present game and the amount of said portion of the bonus pool is added to the award available to the player for completion of the skill game. The portion of the bonus pool that is determined for the player at **192** will always be greater than zero, this is important as the buy-in to the bonus pool is then a transaction rather than a chance. Program continues to **194** where the award available to the player is displayed to him on **35**; program continues to **62**. At **182**, if the bonus pool is not greater than zero, the program continues to **198**, where the bonus icon is hidden from the player and a computer memory flag called BonusPoolZero is set to signal to the main program that offering of bonus pool buy-in by a player should not be allowed; program continues to **62**. If, at **186**, the player elects not to purchase a portion of the bonus pool the program continues to **62**.

[0054] In a preferred embodiment, gaming apparatus **10** may comprise any well-known electronic gaming apparatus controlled by a microcomputer or microcontroller. A method of choosing a random game outcome as taught in U.S. Pat. No. 5,380,008 and as shown in a flowchart in **FIG. 4** is employed here. Another method of choosing a random game outcome is as described in U.S. Pat. No. 6,053,813. For purposes of simplicity in illustration, assume the following: skill game is a three-reel multiplier type game, 50% management fee is deducted from each coin played. Calculations are for a single coin played, but since said game is a multiplier said calculations will apply to multiple coin plays and awards. The following demonstrates that a skill game requiring an average level of human dexterity and skill to complete incorporating the principles of the current invention can return a profit to an operator of a game.

Payline 1	Pay 2	Hit Frequency = 0.1500
Payline 2	Pay 5	Hit Frequency = 0.0300

-continued

Payline 3	Pay 10	Hit Frequency = 0.0100
Payline 4	Pay 20	Hit Frequency = 0.0010
Payline 5	Pay 50	Hit Frequency = 0.0004

SUMMATION OF HIT FREQUENCY = 0.1940 AND 1-(HIT FREQUENCY) = 0.80860

[0055] The above predicts that about 1 game out of every 5 games played will result in a payline award to a player; to collect said payline award, said player must successfully complete a game of skill. A 50% management fee implies that for a single coin played that 50% of said coin played would be credited to an operator of a game. If a player plays 1 coin and is to be paid two coins, actual payback to said player is $2 \text{ coins} - (1 \text{ coin})(0.50) = 1.50 \text{ coins}$. Also, if a player draws the equivalent of a losing game on a conventional slot machine for which he would generally be paid nothing, said player would be paid $1 \text{ coin} - (1 \text{ coin})(0.50) = 0.50 \text{ coins}$ upon successful completion of a game of skill. If the player does not successfully complete said game of skill, then no award is returned and credited to the player's account.

[0056] Payline1

$$P.C. = (\text{Payline Hit Frequency})(\text{Number of Coins Paid} - \text{Management Fee}) / (\text{Number of Coins Played})$$

$$PC1 = (0.150)(2 - 0.5) = 0.22500$$

[0057] Payline2

$$PC2 = (0.030)(5 - 0.5) = 0.13500$$

[0058] Payline3

$$PC3 = (0.01)(10 - 0.5) = 0.09500$$

[0059] Payline4

$$PC4 = (0.001)(20 - 0.5) = 0.01950$$

[0060] Payline5

$$PC5 = (0.0004)(50 - 0.5) = 0.01980$$

[0061] Total P.C. = 0.49430. To account for the games that do not have a payline pay, calculate $(1 - \text{Total Hit Frequency})(\text{Number of Coins Paid} - \text{Management Fee}) = (0.80860)(1 - 0.5) = 0.4043$. Total return to a player with this game is $0.49430 + 0.4043 = 0.89860$, which indicates that approximately 89.86% of the coins played will be returned to players over a large number of plays. If it is assumed that an operator of a game desires a 95% return to players, which is a generally acceptable value, then $95\% - 89.86\% = 5.14\%$ is available to be placed into a bonus pool. Additionally, any skill games not completed successfully by players will contribute to the amount retained and any total return to players less than a predetermined value may be placed into a bonus pool to be employed to enhance awards.

[0062] If P.C. is less than a predetermined amount, it may be distributed to players by numerous means. A random means of accomplishing distribution of excess machine hold that employs a method as described in U.S. Pat. No. 6,053, 813 for a game is as follows:

[0063] Assume the same random number generation and filter constants as described in aforesaid patent, the digital filter has a passband of 1 through 9; the range of random numbers generated is 1 through 37, the sequential count of random numbers that must pass through the filter passband

in a sequence to obtain an award from the bonus pool is indicated below. The count of random numbers generated and presented to the filter input for each game will be 6.

Sequential Count of numbers within passband	Percent of Bonus Pool (Bonus)
0	0%
1	8%
2	10%
3	12%
4	15%
5	20%
6	35%

[0064] A set of random numbers is generated after possible award amount for a game is calculated. Depending upon the sequential count of numbers within the filter passband as given above, a percentage of the bonus pool is allocated and summed with said possible award amount previously calculated. Process is:

[0065] 1) Calculate an award amount for present game.

[0066] 2) Generate a second set of random numbers and calculate a percentage of the bonus pool to be allocated to game. This is labeled "Bonus".

[0067] 3) Multiply decimal equivalent of Bonus by bonus pool amount to obtain an integer value. This is the Bonus Adder.

[0068] 4) Subtract Bonus Adder from bonus pool amount and store value obtained in the bonus pool.

[0069] 5) Sum Bonus Adder with possible award amount calculated and display amount that can be won to player.

[0070] 6) Begin skill game.

[0071] As an example, assume that the bonus pool value = 100, possible award amount = 2, and 3 random numbers generated are sequentially within the filter passband for bonus calculation. The calculation is $(100)(0.12) = 12 = \text{Bonus Adder}$. The new bonus pool value = $100 - 12 = 88$. Player is shown that he can win $(\text{possible award amount}) + \text{Bonus Adder} = 2 + 12 = 14 \text{ coins}$. If a bonus pool buy-in decision is offered to a player, the minimum portion of the bonus pool that will be randomly selected will always be greater than zero.

[0072] In another preferred embodiment, which may be a video skill game presentation that employs a touch screen for player input and which appears to a player as a video representation of a traditional spinning reel slot machine, there exist a plurality of paylines 38 comprising a paytable 36 and which may have values as predetermined by desired hit frequency and payback percentage to players (P.C.), but which are shown for purposes of illustration as follows:

Payline #	Symbols on winline to win	Pay (coins or credits)
1	Any CH	2
2	Any two CH	5
3	Any 3 Bars	5

-continued

Payline #	Symbols on winline to win	Pay (coins or credits)
4	Bar Bar Bar	10
5	CH CH CH	20
6	5Bar 5Bar 5Bar	50
7	SP SP SP	>50

[0073] The word CH is an abbreviation for cherry and the word SP is an abbreviation for special symbol, which may be a custom logo, or any other symbol that is different from symbols referenced in the paytable above. Game presentation to a player is similar to FIG. 1. Initially all paylines in 36 are hidden from a player and an attraction message may be shown explaining how to play the skill game. Said player inserts currency at 25 and, after currency has been authenticated, credits corresponding to said currency inserted are displayed at 21 and may be used by the player to buy a skill game by means of pressing a buy-in button or icon 26. When 26 is pressed, a microcomputer controlling 10, performs a calculation that may be as in flowchart in FIG. 4 to determine an award available to the player which may be paid upon the player successfully completing a skill game. Upon determining said award available, paylines in the paytable shown above that are less than or equal to the award available are displayed to the player. Reels 40, 42, 44 appear to rotate and the player must stop them by means of buttons or icons 20, 22, 24 in accordance with a sequence shown in a payline number, within a predetermined time shown on 33 and, with symbols shown in a selected payline number chosen by the player, directly beneath winline 30 in order to claim an award displayed at said payline selected by the player. Additionally, the first symbol that is stopped beneath the winline by the player will determine the payline with which the remaining symbols must correspond in order to win the award indicated by said payline. As an example, after player buy-in and prior to start of the skill game, a random number generated at 102 and compared to a predetermined table in computer memory at 104 indicates that an award available to a player should be 5 coins. A display of paylines on paytable 36 will be:

Payline #	Symbols on winline to win	Pay (coins or credits)
1	Any CH	2
2	Any two CH	5
3	Any 3 Bars	5

[0074] Reels 40, 42, 44 appear to spin and the player must stop them with symbols beneath winline 30 within time allotted as displayed upon 33 in order to win the award available as indicated by the payline. If, in a first case, if the player stops a reel with a cherry (CH) icon beneath winline 30, he can win at least 2 coins minus management fee; if a subsequent reel is stopped with a cherry icon beneath 30, then the player can win 5 coins minus management fee. If the player stops one reel with a bar or 5Bar beneath 30, he may proceed to stop the remainder of the reels with a bar or 5Bar beneath 30 and he will win 5 coins or credits minus management fee as stated on payline 3. If the player stops a

reel with a bar or 5Bar beneath 30 and then stops a reel with a symbol other than a 5Bar or bar beneath 30 and then stops the remaining reel with a cherry (CH) beneath 30, he will win 2 coins or credits minus management fee; if the remaining reel is stopped with any symbol other than a bar, 5Bar or cherry beneath 30 and the second reel stopped is not stopped with a bar or 5Bar or cherry beneath 30, the player has zero added to his credit account.

[0075] If the amount of the award available to the player is determined to be the buy-in amount minus management fee, a single payline as shown below may be shown:

Payline #	Symbols on winline to win	Pay (coins or credits)
1	Any CH	1

[0076] The player must still complete the skill game successfully in order to be paid the buy-in amount minus management fee. If the skill game is not completed successfully no award of any amount is returned to the player. Total number of different symbols or icons upon reels may be four as may be seen from the paytable. In a version of the preferred embodiment all reels may present an identical presentation and that may be aforesaid four symbols alternating, separated by a blank space and repeated twice. A reel would then appear as CH, Blank, Bar, Blank, 5Bar, Blank, SP, Blank, CH, Blank, Bar, Blank, 5Bar, Blank, SP, Blank. It is not required that different numbers of symbols be included upon each reel in order to weight game outcome, though different combinations of symbols included upon each reel may affect return of awards to players and must be included in game hold calculations.

[0077] In another example of aforesaid game, after player buy-in and prior to start of the skill game, a random number generated at 102 and compared to a predetermined table in computer memory at 104 indicates that an award available to a player should be 5 coins. Additionally let a bonus amount of 20 credits be drawn from the bonus pool at 110 and this amount is added to the 5 credits determined to be the previous award available. Total amount of credits that may be won by the player is 25 as calculated at 112 and is shown to the player by showing a paylines as follows:

Payline #	Symbols on winline to win	Pay (coins or credits)
1	Any CH	2
2	Any two CH	5
3	Any 3 Bars	5
4	Bar Bar Bar	10
5	CH CH CH	25

[0078] In order to win the maximum award the player must stop all three reels with a cherry directly beneath winline 30. If the player stops the first reel with any symbol but a cherry beneath winline 30, the maximum amount of credits he can win upon successful completion of the skill game is 10 (Bar Bar Bar). The features of buy time and auto-play may still be made available to the player in this

preferred embodiment. Hand-eye coordination and reaction time are the elements of skill tested in the aforesaid game.

[0079] A second method of distributing excess winnings of a skill game apparatus, if P.C. is less than a predetermined amount, may be by means of stopping several reels of a reel type game at winning symbols and leaving a single reel to be stopped at a winning symbol by a player. Said method has an effect of making a skill game very simple to complete and is in accordance with a second method of bonus distribution to a player previously described.

[0080] In yet another preferred embodiment, which may be a video skill game presentation that employs a touch screen for player input, it is assumed that there exist a plurality of tables of predetermined winning playing card hands in computer memory from which to choose. Said video skill game is played upon a game apparatus 10 in FIG. 8 controlled by a microcomputer. In the preferred embodiment a hand consists of 5 cards and the skill game is conducted in accordance with rules associated with a poker game. Only a card suit and spots are shown on cards employed in the game and no number indicating card value is shown; only spots and faces are shown. The skill game has an arbitrary 15-second timer in which it must be completed or player loses the game, said 15-second timer may be adjusted by an operator of the game apparatus and a player is shown remaining time to complete the skill game on display 37. A player purchases credits to play a game on 10 by inserting currency into acceptor 25 and amount of credits available to play games is displayed to said player on credit display 21, display to the player 50, is preferably a video display overlaid by a transparent touch screen which may be manufactured by MicroTouch. Said touch screen allows buttons and icons to act as buttons to be shown beneath the touch screen and touching an icon may effect a switch closure. Consequently icons may be placed at various positions on the video display and have switches associated with said icons in a manner that is very simple to understand. Play of the skill game is in accordance with the flowchart shown in FIG. 2. The player decides to play the skill game and purchases a game by pressing icon 26, credits are deducted from the player's credits and credits remaining to the player are shown on 21. When the player indicates that he desires to play the game of skill, which he may do by pressing 28, game play begins as indicated in 64. An award that may be won by successful completion of the game of skill is displayed to the player at 35; said award is determined randomly by a program running on a microcomputer controlling game apparatus 10 and may be in accordance with a flowchart shown in FIG. 4. The award available to the player will be won by him at successful completion of the skill game. Additionally, a management fee is subtracted from each coin the player submits to purchase a skill game; multiple purchases of the same game may be made with a corresponding increase in the award available to be won upon successful completion of the skill game. The skill game preferably proceeds as follows:

[0081] 1) Generate a random number and employ said random number to choose a particular table of winning hands from said plurality of winning hands in computer memory. Generate a second random number and pick a particular winning hand based upon said second random number generated. Said particular winning hand is the house hand and is shown face-down (card backs up) 27.

[0082] 2) Randomly choose 5 cards by generating random numbers and choosing card values that have been predetermined to be associated with said cards. Said 5 cards selected comprise one part of the player's hand and are not yet shown.

[0083] 3) A program running on the microcomputer controlling the game chooses a second hand of 5 cards for the player that is guaranteed to beat the house hand. The program running on the microcomputer then makes five pairs by drawing a card from each individual player hand drawn in step 2 and step 3. Shuffle each pair and present them to the player as in FIG. 8, at 41 and 43. All cards are still face-down.

[0084] 4) Presentation will now be:

H1	H2	H3	H4	H5	House Hand
P1U	P2U	P3U	P4U	P5U	Player Upper Hand
P1L	P2L	P3L	P4L	P5L	Player Lower Hand

[0085] 5) The house hand 27 is turned face-up for view by the player for a predetermined time period that may be adjusted by the operator of the game apparatus, 1.5 seconds is default predetermined time period and then the house hand is turned face-down to prevent the player from further visual reference to card values in the house hand.

[0086] 6) P1U and P1L are turned face up for view by the player. The player chooses P1U or P1L to keep. The card the player does not keep is removed from view and the remaining card, P1, is turned face-down again.

[0087] 7) Continue as in step 6 for remainder of the player's 4 card pairs. The cards remaining after said selection process are the player's hand. Presentation will now be:

H1	H2	H3	H4	H5	House Hand
P1	P2	P3	P4	P5	Player Hand

[0088] 8) The player's hand and the house hand are turned face up to show the player the winning hand; said winning hand is determined by rules common to a poker game. The microcomputer can determine if the winning hand is the player's hand or the house hand; if the player's hand is the winning hand, then the player has completed the game of skill successfully and the award available at 35 is credited to the credit account and shown to the player at 21. Memory and pattern recognition is the element of skill tested in the aforesaid game.

[0089] 9) At steps 6 and 7 above, the player may require some help to complete the skill game. He can purchase help to complete the game by pressing auto-play button 29 or hint button 23. Pressing the auto-play button will result in the microcomputer selecting the best selection from a pair of cards for which a selection must still be made by the player. Each press of the auto-play button will result in said process repeating for a pair of cards; there is a cost to the player associated with auto-play. Pressing the hint button may result in the house hand being turned face-up for view for a predetermined time period after which it is turned face

down, may display both cards in a pair from which one card is remaining to chosen or both. The hint process has a cost associated to the player. A flowchart for the auto-play and hint processes is shown in **FIG. 7**. Additionally, if the player desires to purchase more time to complete the skill game he may purchase an increment of time by pressing **39**. A predetermined time increment is added to **154** and a new time to complete the skill game is shown on display **37**. Because there is a cost to the player to gain extra time to complete the skill game, there may be a deduction from the award available for the current game, or the player credits available or both. Updated values are shown to the player on **21** and **35**. A feature of the skill game just described may be to automatically adjust every random award generated from the bonus pool of excess machine hold funds or a choice may appear to allow the player to choose to have the game draw a bonus award at the time the player chooses to buy-in to play a game. A flowchart representation of a program running on a microcomputer to allow a player award to participate in a bonus pool is shown in **FIG. 9**.

[0090] A second method of distributing excess winnings of a skill game apparatus utilizing the card game previously described, if P.C. is less than a predetermined amount, may be by means of randomly showing elements of the house hand or by showing the house hand for a long time period. Said actions have an effect of making a skill game very simple to complete and is in accordance with a second method of bonus distribution to a player previously described.

[0091] It should be noted that the preceding discussion discloses a method of implementing a game of skill upon any computer controlled gaming apparatus and may be adapted to devices including display types and actuation devices different than those described herein. A person skilled in the art will see many other games and implementations that employ the methods disclosed herein. For example, the skill game may actually be a table game or variation thereof, such as, for example, blackjack, craps, poker, etc. Additionally, the award may comprise, for example, merchandise, gift certificates, complimentary meals, complimentary lodging, etc.

[0092] As noted above, the skill game method of the present invention is comprised of numerous processes. It is the manner in which aforesaid processes are employed that makes the present invention novel and unique. Further, certain methods of crafting a skill portion of an entire game that are also unique and novel will be described later.

[0093] In one embodiment, the method of the present invention may be described generally as follows:

[0094] 1) Player pays a buy-in amount to allow him to play a game.

[0095] 2) Apparatus generates a randomly selected award amount for the current game that a player may win by successfully completing a game of skill.

[0096] 3) Apparatus generates a randomly selected amount that is to be added to the award amount generated in (2) if an amount greater than or equal to said randomly selected amount exists in an adjustment pool. Add the amount so determined to award amount generated in (2) and subtract the amount from the adjustment pool.

[0097] 4) Display total award amount that can be won by successfully completing a skill game by a player.

[0098] 5) If a player decides not to play the game of skill then return the buy-in amount paid to play the game after a predetermined period of time or alternatively by player indicating to the game apparatus that it is not desired to play the game. If aforesaid option is chosen, the next game bought by a player is forced to offer the same award amount for successful completion of the game of skill as the game that was not previously played. This prevents a player from refusing a game with the hope that the next randomly chosen award will be greater than the present award offered, and allows a graceful way for a person to opt out of playing the game and gaming regulators will probably like this. This step, step 5), is optional.

[0099] 6) Begin a game of skill.

[0100] 7) If said game of skill in (5) is completed successfully by a player, pay the displayed award amount. If the game of skill is not completed successfully, so indicate and player loses amount of buy-in.

[0101] Although other steps may also be optional, step 5 is noted as being optional. Some skill game operators may not want to provide a player the option to leave a game after the award is generated. In one embodiment, the level of skill is adjusted to an appropriate level (e.g., to a level matching a possibly varying federal guideline or standard for skill games).

[0102] In one embodiment, the level of skill required to successfully complete the skill game is the level of skill found in an average person. However, the level of skill may be increased by any amount. In one embodiment, the level of skill is an above average skill, and in other embodiments, the level of skill is below average. Already described is a method for adjusting the award pool to provide higher payouts to players when the pool exceeds a predetermined threshold. In one embodiment, instead of increasing player payout, the level of skill required to successfully complete the game is adjusted consistent with the award pool. For example, if as the award pool grows, the level of skill required to successfully complete the skill game is reduced and vice versa.

[0103] In one embodiment, regardless of the level of skill required to successfully complete the skill game, the outcome of the skill game is not a function of chance but relies substantially on the player's skill.

[0104] By means of using one or more processes of the present invention, many popular games of chance can be transformed to games of skill while still maintaining player appeal that made them popular as games of chance. In one embodiment, to change any game of chance into a game of skill, the house advantage or opposing player advantage is weighted in favor of a player of a skill game apparatus in such a manner that a person of ordinary skill can be reasonably expected to complete the game in a winning manner. In another embodiment, criterion employed to determine whether a game is a game of skill is that the outcome of said game is substantially determined by player skill.

[0105] An example of allowing a popular game of chance to be played as a game of skill on a gaming apparatus may

be illustrated using the popular casino game of chance generally known as 21 or Blackjack. Generally and typically, the object of said game is for a player to obtain a higher total card count than a dealer, which sometimes may be known as the house; said card count may not exceed 21. Cards are assigned values as follows:

[0106] 1) Aces may be given a value of 1 or 11 as desired by a player.

[0107] 2) All other face cards have a value of 10.

[0108] 3) Any card other than a face card has the value printed upon it.

[0109] A gaming apparatus may generate a random number that is assigned to a specific card in a card deck for purposes of playing 21. Each time a card is requested a random number is generated and compared to a set of predetermined rules to select a card to be shown. After each game is played, bounds upon said random number for purposes of selecting a specific card are reset to predetermined initial values; said action corresponds to shuffling a card deck after each game is played. When played upon a gaming apparatus a player may make a wager after which a card is dealt face up to said player and another card is dealt face up to the dealer, which may be the gaming apparatus. Another card is then dealt face up to the player and a second card is dealt face down to the dealer. Said second card dealt face down to the dealer may be known as the "hole" card. If the dealer's face up card is a 10 count or an ace and the hole card is an ace or a 10 (natural 21), the total card count is 21 and the player loses his wager if the player's card count is less than 21. If the player also has a card count of 21 his wager is returned to him and the game is complete. If the dealer does not hold a natural 21 the player makes a decision as to whether to request a card be issued to him or not. If the player holds a natural 21, he wins the game and whatever is shown upon the award card is paid to him. If the player does not hold a natural 21 he must decide if he wants to request another card, which will be counted according to aforesaid rules as part of the player's total. A player may continue to request cards until he feels that his total is greater than the dealer's total or that his total will be greater than 21 if another card is added to his total. If a player's card count exceeds 21 after a card is requested the amount of the player's wager is lost. When a player feels that he does not desire any more cards to be added to his total he may so indicate to the game apparatus by means of pressing a switch or performing a predetermined action that is interpreted to mean that the player is done requesting cards. The dealer's hole card is turned face up thus exposing all the dealer's cards. If the dealer's card count is equal to 17, 18, 19, or 20 the dealer cannot draw a card and if the player's card total is greater than the dealer's card count an award is paid to the player. If the dealer's card count is 16 or less, the dealer must draw a card and continue to draw cards until the dealer's card count is 17 or greater after which no more cards may be drawn. If the dealer's card count and the player's card count are equal, the player is returned the amount of his wager, if the dealer's card count is greater than the player's card count the player loses his wager, and if the player's card count is greater than the dealer's card count the player is paid a predetermined award.

[0110] If a player knows the aforementioned rules of the game of 21 it is played more as a game of skill rather than

as a game of chance. Increasing the skill aspects may be accomplished by showing the dealer's hole card to the player. Showing the dealer's hole card may be done for a brief period of time, by placing an icon on the card, similar to "marking" a card or in some other manner to indicate to the player the value of the dealer's hole card. Outcome of the game is then determined substantially by a player's skill and the game may be classified as a skill game depending upon jurisdictional rules.

[0111] Although an element of skill and/or ability affects the outcome of a game of 21, and particularly multiple games using the same card deck, various techniques may be utilized to reduce or nullify chance aspects of the game so that the player's skill becomes increasingly important in whether or not the game is completed successfully. Examples include any one or more of showing the hole card, providing probabilities of the hole card being an Ace, Face, or hi/lo number card, probabilities of the draw card, etc. The technique is to provide the player with enough resources to effect a desired amount of skill requirement to successfully complete the game. Carrying these techniques to the extreme, all chance is removed from the game. In one embodiment, the number and type of techniques utilized is just enough so that the game is classified under a desired regulation (e.g., a skill game gaming apparatus). The techniques may be adjusted or reprogrammed to meet any regulatory changes or reclassify the game under a different regulation. In one embodiment, the skill game specifically includes an adjustment mechanism to meet changing regulatory skill requirements.

[0112] Similarly the game of poker may be played as a skill game by indicating to the player the hand or portion of a hand of the opposing player. Said action will allow outcome of a game to be determined substantially by a player's skill.

[0113] Generally and typically a spinning reel slot machine has been played as a skill game by allowing a player to attempt to stop each spinning reel in such a manner that predetermined indicia are beneath a win line. Another method of playing a spinning reel slot machine as a skill game is to automatically stop all reels at predetermined locations and allow a player to decide whether to increase his buy-in prior to stopping a final rotating reel in its rotational cycle based upon an icon or symbol briefly shown to the player that indicates where the final rotating reel will stop. If the principles described in the present invention of randomly selecting an award by means of well-known stochastic algorithms are employed an operator is still guaranteed a profit.

[0114] In one embodiment, a spinning reel "slot" machine is set up to randomly determine a player's potential winnings, then, in order to collect the winnings, a separate skill game must be successfully completed. In one embodiment, the player plays multiple slot machine games, accumulating potential winnings, and then plays a skill game to determine if the combined potential winnings are won. In one embodiment, the player is required to earn a minimum total potential winnings prior to playing the skill game. In one embodiment, the skill game is played on the slot machine (e.g., stopping spinning reels at a precise point) or may be played on a separate device. In one embodiment, the slot machine game is, for example, networked or otherwise in communi-

cation with a separate device that operates the skill game. For example, a player may earn potential winnings on a slot machine and then play a skill game on a “big board” **1460** to win or lose the potential winnings. In one embodiment, the game played on the big board is controlled by player activatable controls **1444** on the “slot” machine. In another embodiment, the player controls skill game play on the big board via a wireless handheld unit **1450** in direct communication with the big board or through a transmitter/receiver **1446** located on the slot machine.

[0115] Many games of chance can be played as games of skill by indicating to the player an advantage a gaming establishment or gaming apparatus typically enjoys and utilizing the principles described in the present invention.

[0116] Turning now to **FIG. 11**, which is a flowchart representation of a program running on a microcomputer for purpose of generating an award available to a player after said player has purchased a game and has signified that game play is desired. The method presented here is one of many random pay determinations that could be used, for example, as presented in U.S. Pat. No. 5,380,008. Another method of generating an award to a player is as described in U.S. Pat. No. 6,053,813. Program begins at **212** where constants such as seed are recovered and the process is initialized. At step **214** a random number is generated and said random number is checked at **216** to see if it falls within a predetermined range. If said random number generated is not within bounds of said predetermined range, the process continues to step **222**. If the random number generated is within bounds of the predetermined range, the process continues to **218** where a second random number is generated. Said second random number generated is compared to a predetermined table of values or ranges of values at **220** and a determination of a base award is made. The process continues to **222** where a determination as to amount of available credits in a bonus pool is made. If available credit in the bonus pool is not greater than zero, the process continues to **228**, if available credit in the bonus pool is greater than zero, the process continues to **224** where a random number is generated, continues to **226** where said random number generated at **224** is compared to a predetermined range of values to determine an amount to draw from the bonus pool after which the amount drawn from the bonus pool is deducted from the bonus pool. The amount drawn from the bonus pool is added to the base award available to a player at **228** and a management fee is subtracted which results in a total award amount. Said total award amount is compared to a table of predetermined award amounts to determine a range of awards to display to a player at **230**. The process continues with normal game play at **232** and may be integrated into various games. As an example, said range of awards may be presented as an award table for a slot machine as in **36, FIG. 1**. For successful completion of a skill game as shown in **FIG. 1**, a player would be required to stop reels **40, 42** and **44** with indicia or reel symbols beneath winline **30** in a predetermined combination in order to win an award as indicated as being available in said award table. If an award table is specified as a result of a decision at **230** to be displayed to a player:

Win 40	7	7	7
Win 20	PL	PL	PL

-continued

Win 10	CH	CH	CH
Win 2		Any CH	

[0117] Then a player would be required to stop said reels in a manner such that all indicia indicate a “7” that are beneath winline **30** within a time period allotted for game play. If aforesaid action is accomplished, said player would be paid 40 credits. If the player is capable of stopping any reel with a cherry (CH) symbol beneath said winline, then the player is awarded 2 credits; if the player is not capable of stopping indicia in any combinations as listed in said award table shown above or, if time allotted to play a game expires, the player loses his entire buy-in amount. Aforesaid process provides a method of playing a traditional slot machine type game as a skill game by selecting a range of awards allowed for each game rather than a single award or by selecting a single award and dividing it into a range of awards according to some predetermined set of rules. All principles of the present invention for selecting the range of awards are still followed and an operator of a game is guaranteed a profit taken over a large number of games played.

[0118] Turning now to **FIG. 10**, which is a flowchart representation of a method a indicating an award to a player according to the present invention. Program begins at **200**, which allows substitution of program flow described in **FIG. 10** for step **114** of **FIG. 4**, continuing on to **202**, an award amount previously determined at **104** in **FIG. 4** is displayed to said player. At **204**, a bonus amount determined at **110** is divided by time allotted to play a game and result of said division is stored as a variable in computer memory. Program flow continues to **206** where a check is made as to whether time to play has elapsed, and if time remains to play a game continues to **208** where time that has elapsed in game play is multiplied by said variable stored at **204** and added to amount of award determined at **202** to form a cumulative award that is displayed to the player. Program flow continues to **210** where an internal counter in computer memory is incremented to keep track of time to play a game and continues on to **206**. At **206**, if time to play is greater than or equal to a predetermined value, program flow continues to **210** where an exit is made back to normal game program flow. Program flow just described has an effect of continually increasing an award a player can earn by successfully completing a game of skill, but encouraging said player to wait until time is nearly elapsed for playing said game of skill before attempting to successfully complete the game of skill. The player may be awarded a cumulative amount shown at **208** for successfully completing the game of skill and any amount that could have been potentially awarded had the player successfully completed the game of skill after more time had elapsed is credited to gaming apparatus hold amount. Aforesaid process creates some excitement for the player and adds to player enjoyment.

[0119] Turning now to **FIG. 12**, which is a flowchart representation of another preferred embodiment of displaying and paying an award to a player, program flow begins at **234**, which may be substituted for **208** of **FIG. 10**. Program flow continues to **236** where a random number is generated

within a predetermined range and used in a predefined formula to determine a random constant. At **238**, said random constant is used in a predefined formula to calculate a cumulative award shown to said player. In the example shown at **238**, elapsed time since game play began is multiplied by the random constant and added to a cumulative award amount to arrive at an award amount shown to the player; many other formulas could be used. Program then continues to **240** where it exits to program flow **210** shown in **FIG. 10**. The process described in **FIG. 12** has an effect of continually increasing the award the player can win, but with the increases in award amount appearing in an unpredictable or random fashion.

[0120] In another preferred embodiment a casino game generally known as Caribbean Stud may be implemented as a game of skill. Caribbean Stud when played as a casino game generally and typically has the following rules:

- [0121]** 1) Play of a game starts with a player placing an ante bet.
- [0122]** 2) Said player receives 5 cards face down.
- [0123]** 3) A dealer receives 5 cards, 4 of which are face down and one of which is face up.
- [0124]** 4) The player may either raise or fold after step 3.
- [0125]** 5) If the player raises he must bet twice the ante bet in step 1.
- [0126]** 6) If the player folds he loses his ante bet of step 1.
- [0127]** 7) After step 4, said dealer exposes all dealer's cards.
- [0128]** 8) The dealer must qualify to play by having at least an ace and a king.
- [0129]** 9) If the dealer does not qualify in step 8, an ante bet pays even money and a raise bet is pushed or returned to the player.
- [0130]** 10) If the dealer qualifies in step 8, the player's hand is compared to the dealer's hand and evaluated as a poker hand.
- [0131]** 11) If the dealer has the higher hand in the comparison in step 10, the player loses both ante bet and raise.
- [0132]** 12) If the dealer and the player have equal hands in the comparison in step 10, both ante bet and raise bet are returned to the player.
- [0133]** 13) If the player has a higher hand than the dealer in the comparison in step 10, the player is paid in accordance with an award table which may be, for example, (as with all the tables provided herein, specific pays, odds, or other data is exemplary):

Hand held by player	Pay
Royal Flush	100:1
Straight Flush	50:1
Four of a kind	20:1
Full House	7:1

-continued

Hand held by player	Pay
Flush	5:1
Straight	4:1
Three of a kind	3:1
Two pair	2:1
Pair	1:1
Ace/king	1:1

[0134] As an example, a player holding a royal flush and beating the dealer's hand would be paid 201 times his original ante bet since an ante bet is 1, to continue to play after cards are dealt requires that two times the ante bet be wagered. The award to the player at 100:1 would be $(2 \times 100) + 1 = 201$ times the player's original bet. The amount retained by an operator of a Caribbean Stud played as a game of chance is 5.22% if the above award table is employed.

[0135] Caribbean Stud as described previously as a casino game may be implemented as a game of skill according to the present invention as outlined in the following description:

- [0136]** 14) Play of a game starts with a player placing an ante bet.
- [0137]** 15) Said player receives 5 cards face down.
- [0138]** 16) A dealer receives 5 cards, 4 of which are face down and one of which is face up. Card that is face-up is highest value card in dealer's hand.
- [0139]** 17) Dealer's next highest value card is exposed to the player for a predetermined period of time.
- [0140]** 18) The player may either raise or fold after step 17.
- [0141]** 19) If the player raises he must bet twice the ante bet in step 14.
- [0142]** 20) If the player folds he loses his ante bet of step 14.
- [0143]** 21) After step 18, said dealer exposes all dealer's cards.
- [0144]** 22) The dealer must qualify to play by having at least an ace and a king.
- [0145]** 23) If the dealer does not qualify in step 21, an ante bet pays 1:1 and a raise bet is pushed or returned to the player.
- [0146]** 24) If the dealer qualifies in step 21, the player's hand is compared to the dealer's hand and evaluated as a poker hand.
- [0147]** 25) If the dealer has the higher hand in the comparison in step 24, the player loses both ante bet and raise.
- [0148]** 26) If the dealer and the player have equal hands in the comparison in step 24, both ante bet and raise bet are returned to the player.
- [0149]** 27) If the player has a higher hand than the dealer in the comparison in step 24, the player is paid in accordance with an award table which may be:

Hand	Buy0	Buy1	Buy2	Buy3
Royal Flush	60:1	30:1	15:1	5:1
Straight Flush	30:1	15:1	7.5:1	3.5:1
Four of a kind	10:1	8:1	4:1	2:1
Full House	4:1	2:1	1:1	1:1
Flush	3:1	1:1	1:1	1:1
Straight	2:1	1:1	1:1	1:1
Three of a kind	2:1	1:1	1:1	1:1
Two pair	2:1	1:1	1:1	1:1
Pair	1:1	1:1	1:1	1:1
Ace/king	1:1	1:1	1:1	1:1

[0150] In the table above in step 27, Buy_x (where x is 1, 2 or 3) refers to a buy-a-peek at the dealer's hand. Initially the player knows two of the dealer's cards, which are the highest value cards in the dealer's hand. If the player wants to see any more than the two cards in the dealer's hand of which he knows the value he can select a card and buy-a-peek at said card at which time the value of the card selected is revealed to him. This must be done at step 18 of the game play description. The player is warned that this will reduce any potential award and a copy of the new award table is shown to him along with a message to confirm that he really wants to buy-a-peek. If he so confirms, the award table will change to the new award table as indicated above under buy_x and this will be shown as the award table for the remainder of the game or until the player buys another peek. A player may choose to look at all of the cards in the dealer's hand by continually selecting buy-a-peek. Any win that a player receives may be subject to subtraction of an operator's fee. If the cards held in the player's hand are not capable of beating the cards in the dealer's hand as evaluated by poker rules, the player's original ante bet is returned to the player and the game retains the raise bet made by the player in step 18 of the game description. The amount retained by an operator of a Caribbean Stud played as a game of skill is 9.72% if the above award table is employed and Buy0 is only considered.

[0151] Yet another embodiment of playing Caribbean Stud as a game of skill on a gaming apparatus is to consider the preceding description and to modify the pay table generation in step 27 in accordance with principles described in the present invention. In the preceding preferred embodiment, an operator is not guaranteed a profit. A profit may be guaranteed to an operator and a game of skill may be realized by using a base award table and modifying values in said base award table according to an award allowed for each game that is determined by well-known probability calculations. The base award table as modified is presented to a player as the award table for a game. The award table shown to a player may be different for each game. Turning now to FIG. 13, which is a flowchart representation of a program means for generating an award table for Caribbean Stud as a skill game to present to a player, variables for a program are initialized at 242 and the program proceeds to 244 where a random number is generated. Program continues to 246 where a determination is made as to whether said random number generated in 244 is within a predetermined range to allow a base award that is greater than an award of a player's ante bet. If the random number is not within said predetermined range, program continues to 252; if the random number is within the predetermined range, program

continues to 248 where a second random number is generated. Program continues to 250 where a determination of amount of a base award is made according to a predetermined algorithm and program continues to 252 where determination of amount in a bonus pool is made. If said amount in said bonus pool is greater than a predetermined value, program continues to 254 where a random number is generated after which program continues to 256 where said random number is used in a predetermined algorithm to determine an amount to be drawn from the bonus pool. Program continues to 258 where said amount to be drawn from the bonus pool is subtracted from the bonus pool amount available and the amount drawn from the bonus pool is added to the base award determined at 250 to determine an amount of total award that could be allowed to a player. Program continues to 260 where an award table is calculated by means of a predetermined algorithm; program continues to 262 where said award table is displayed to a player and then on to 264 where program flow exits to game play.

[0152] A method of calculation of award table at 260 of FIG. 13 may be as follows utilizing an award table for Caribbean Stud as shown at step 13 previously:

[0153] 1) Assign total award that can be won by a player for successfully completing a Caribbean Stud game of skill to a top pay, which would be the award amount for a royal flush.

[0154] 2) Assign all other values in said award table in proportion to the top award allowed as listed by the proportion in the pay table in step 13.

[0155] As an example of the method just outlined assume that total award allowed for a game is determined to be 150. An award table presented to a player would be:

Hand held by player	Pay
Royal Flush	150
Straight Flush	75
Four of a kind	30
Full House	10.50
Flush	7.50
Straight	6
Three of a kind	4.50
Two pair	3
Pair	1.5
Ace/king	1.5

[0156] Yet another method of creating an award table is to assign a portion of an entire amount held in a bonus pool to the highest award in said award table and proportionately assign award values as done above, but beginning with the second award line. As an example assume a bonus pool value of 1000 and a total award allowed for a game of 200. Assign 50% of said bonus pool amount to the highest award in the award table. Using the award table of step 13 as a basis, the award table presented to a player would be:

Hand held by player	Pay
Royal Flush	500
Straight Flush	200

-continued

Hand held by player	Pay
Four of a kind	80
Full House	28
Flush	20
Straight	16
Three of a kind	12
Two pair	8
Pair	4
Ace/king	4

[0157] If the player wins the highest award, the bonus pool is reduced to 500, which still leaves a bonus pool amount for future games. In the last two examples of generating an award table an operator of a game is guaranteed a profit as shown in a prior description of the present invention.

[0158] In one embodiment, the present invention is adapted to run from a central server. For example, central server 1400 operates one or more different skill games as described herein and sends instructions implementing the skill games to one or more gaming machines 1405. The gaming machines 1405 are, for example, grouped according to type of game (e.g., row(s) of card games 1410, row(s) of slot games 1430, etc.).

[0159] In one embodiment, the present invention may be run as a finite deck game. In a finite deck, a set of game outcomes is generated and is packaged as a data set. The game is then played in an individual machine or on a server. Rather than the game being generated on the fly as we describe here, the game result is read and the game is shown to the player—similar to a slide show. The first method shown of playing Caribbean Stud as a skill game illustrates how a game of chance can be turned into a game of skill by removing a portion of the advantage the house normally enjoys (by showing a second card in the dealer’s hand). An operator is not guaranteed a profit, however, over time, calculations will show that statistically, the operator will eventually profit. The second method guarantees that the operator makes a profit.

[0160] The casino game generally known as Caribbean Stud may be implemented as a game of skill. Caribbean Stud when played as a casino game generally and typically has the following rules:

- [0161] 1) Play of a game starts with a player placing an ante bet.
- [0162] 2) Said player receives 5 cards face down.
- [0163] 3) A dealer receives 5 cards, 4 of which are face down and one of which is face up.
- [0164] 4) The player may either raise or fold after step 3.
- [0165] 5) If the player raises he must bet twice the ante bet in step 1.
- [0166] 6) If the player folds he loses his ante bet of step 1.
- [0167] 7) After step 4, said dealer exposes all dealer’s cards.

[0168] 8) The dealer must qualify to play by having at least an ace and a king.

[0169] 9) If the dealer does not qualify in step 8, an ante bet pays even money and a raise bet is pushed or returned to the player.

[0170] 10) If the dealer qualifies in step 8, the player’s hand is compared to the dealer’s hand and evaluated as a poker hand.

[0171] 11) If the dealer has the higher hand in the comparison in step 10, the player loses both ante bet and raise.

[0172] 12) If the dealer and the player have equal hands in the comparison in step 10, both ante bet and raise bet are returned to the player.

[0173] 13) If the player has a higher hand than the dealer in the comparison in step 10, the player is paid in accordance with a predetermined award table that is displayed to the player.

[0174] Consider the Caribbean Stud game previously described. Probabilities of a player obtaining a particular hand are well known and, since theoretical returns are generally calculated by Monte Carlo simulation, may vary slightly from calculation to calculation. A raise bet (RaiseBet) is commonly fixed at an amount of twice the ante bet (AnteBet). Pay to player is calculated as (PayTablePay)(RaiseBet [expressed in units of ante bet])+AnteBet. As an illustration, if a player holds a hand of 3 of a kind and game pay table indicates he should be paid 3; he will receive an award of 7. Previous calculation assumes original ante bet is 1 and a raise bet is twice said ante bet, yielding (RaiseBet=2)(PayTablePay=3)+(AnteBet=1)=7. Return to said player for a winning hand as indicated by said pay table is (PayTablePay)(Pwin) where Pwin is probability of the player obtaining a predetermined hand. If the player folds he receives a negative return and if the dealer wins, the player also receives a negative return. With all winning and losing combinations taken into account, the return to the player is predicted to be approximately -5% which signifies that over a large number of games played, the player will lose 5% of monies wagered. A calculation of theoretical rate of return to player for a raise bet equal to 2 is shown in the table below.

Hand	Pay	Probability	Return	RaiseBet
Ace/King	1 3	3 0.000928	0.00278514	2
Pair	1 3	3 0.116626	0.34987941	
2 Pair	2 5	5 0.024482	0.1224117	
3 of a Kind	3 7	7 0.011751	0.08225966	
Straight	4 9	9 0.002198	0.01977849	
Flush	5 11	11 0.001097	0.01206161	
Full House	7 15	15 0.000834	0.01251015	
4 of a Kind	20 41	41 0.000142	0.0058261	
Straight Flush	50 101	101 7.87E-06	0.00079487	
Royal Flush	100 201	201 8.4E-07	0.00016884	
Ante Only		1 0.227385	0.22738482	
Push		0 1.61E-05	0	

-continued

Hand	Pay	Probability	Return	RaiseBet
Fold	-1	0.477745	-0.47774524	
Dealer Wins	-3	0.136786	-0.41035887	
Total			-0.05224332	

[0175] Now consider the previous Caribbean Stud game with a player holding the same hand as previously held (3 of a kind), a payable pay of 3, but with the RaiseBet set at 1.6375 times AnteBet and AnteBet=1. The pay to the player would now be 5.9125 and is calculated as (3)(1.6375)+1= 5.9125. With a Pwin for this hand equal to 0.01175138, the theoretical return to a player for this case is 0.069480034. If calculations are performed for all possible combinations of cards, with the RaiseBet set at 1.6375 times AnteBet, the overall return to the player is calculated to be -8.43%. By limiting the amount of the RaiseBet allowed by a player the operator profit has been increased by approximately 3.4%.

-continued

Hand	Pay	Probability	Return	RaiseBet
Ante Only	1	0.227385	0.22738482	
Push	0	1.61E-05	0	
Fold	-1	0.477745	-0.47774524	
Dealer Wins	-4	0.136786	-0.54714516	
Total			0.03617462	

[0177] If a game is constructed utilizing a combination of a game with a RaiseBet=2 and a game with a RaiseBet=3, a game resulting in a return to player with bounds of ±3.6% and -5.2% can be constructed depending upon percentage of each game played over a sample cycle. If a random selection is performed at beginning of each game and a determination is made to allow a RaiseBet=2 for 41% of games played and a RaiseBet=3 for 59% of games played, theoretical return to player is -0.000077; which is nearly a break even game. A

Hand	Pay	Probability	Return	RaiseBet		
Ace/King	1	2.6375	2.6375	0.000928	0.002448602	1.6375
Pair	1	2.6375	2.6375	0.116626	0.307602315	
2 Pair	2	4.275	4.275	0.024482	0.104662004	
3 of a Kind	3	5.9125	5.9125	0.011751	0.069480034	
Straight	4	7.55	7.55	0.002198	0.016591956	
Flush	5	9.1875	9.1875	0.001097	0.010074186	
Full House	7	12.4625	12.463	0.000834	0.01039385	
4 of a Kind	20	33.75	33.75	0.000142	0.004795875	
Straight Flush	50	82.875	82.875	7.87E-06	0.000652226	
Royal Flush	100	164.75	164.75	8.4E-07	0.00013839	
Ante Only			1	0.227385	0.22738482	
Push			0	1.61E-05	0	
Fold			-1	0.477745	-0.47774524	
Dealer Wins			-2.6375	0.136786	-0.36077384	
Total					-0.08429482	

[0176] By means of allowing a RaiseBet greater than twice the AnteBet, the profit to the operator can be made negative. In the table shown below the RaiseBet is 3 times AnteBet. Theoretical return to player is approximately 3.6% and an operator would lose money in operating said game.

Hand	Pay	Probability	Return	RaiseBet		
Ace/King	1	4	4	0.000928	0.00371352	3
Pair	1	4	4	0.116626	0.46650588	
2 Pair	2	7	7	0.024482	0.17137638	
3 of a Kind	3	10	10	0.011751	0.1175138	
Straight	4	13	13	0.002198	0.02856893	
Flush	5	16	16	0.001097	0.01754416	
Full House	7	22	22	0.000834	0.01834822	
4 of a Kind	20	61	61	0.000142	0.0086681	
Straight Flush	50	151	151	7.87E-06	0.00118837	
Royal Flush	100	301	301	8.4E-07	0.00025284	

break-even game in itself is not generally desirable from the standpoint of a game operator, however it may be combined with other games to achieve a result that is profitable to an operator and also to create a game that enhances player enjoyment. This also serves as an illustration as to how games with a positive and negative return to player can be combined to create a game with desired characteristics. If an operator of a game desired a 3% theoretical hold or 97% return to a player, he could allow a Raise Bet=3 for 25.0599% games played and a RaiseBet=2 for 74.9401% of games played. Said game would have a theoretical hold of 3.009%. An adjustment in award table values for a percentage of games played can also be used to determine a desired return to player or a combination of adjustment of award table values and RaiseBet amount adjustment can also be used to determine a desired return to a player. All aforementioned adjustments can be applied at the beginning of each game and displayed to the player as the game proceeds.

[0178] A break-even game can be used to enhance player excitement and enhance a game of skill that has already been described by Mathis. As an example, consider a reel type slot game or a video representation of a reel type slot game

wherein a player buys a game of skill, a stochastic calculation is made to calculate an award that can be won upon successful completion of said game of skill, said award is displayed to said player and the player indicates to the game that he desires to commence the game of skill. The game of skill begins and consists of a plurality of rotating reels or representation thereof with the criterion for successful completion being the player stopping said rotating reels upon a predetermined index within a predetermined time period. If the player does not successfully complete the game of skill the amount of buy-in is retained by the game and the game is over. If the game of skill is successfully completed the player is given a choice as to whether to collect the award due him or to play a break-even game which could be the previously described break-even Caribbean Stud game. A break-even game can add excitement since awards greater than buy-in can be won. A player has an equal chance of winning the highest award each time he plays said break-even game. The break-even game outcome is determined by probability, which may or may not disqualify classification of the game as a skill game depending upon jurisdictional guidelines. Any winnings due the player from the break-even game are added algebraically to his credit total and the game returns to the starting display of the reel type slot skill game.

[0179] A process in which a game of skill may be enhanced by a break-even game or even a game that is not favorable to the player may be described as follows:

[0180] 1) Craft a game of skill that may be completed by a person of ordinary ability and use said game of skill as the entry to another game that may be determined by stochastic means.

[0181] 2) When a player satisfies predetermined criteria for completion of the game in skill in 1, allow a choice as to whether to collect an award or play a second game which may be a break-even game the outcome of which is determined by stochastic means.

[0182] 3) Algebraically add any credit won in 2 to the player's credit total and return to a predetermined point in the game cycle.

[0183] Another method of creating a game of skill is illustrated by the following example:

[0184] Consider the game of Caribbean Stud originally described, the parameters of which are repeated below and the method of game play as previously described.

Hand	Pay	Probability	Return	RaiseBet
Ace/King	1 3 3	0.000928	0.00278514	2
Pair	1 3 3	0.116626	0.34987941	
2 Pair	2 5 5	0.024482	0.1224117	
3 of a Kind	3 7 7	0.011751	0.08225966	
Straight	4 9 9	0.002198	0.01977849	
Flush	5 11 11	0.001097	0.01206161	
Full House	7 15 15	0.000834	0.01251015	
4 of a Kind	20 41 41	0.000142	0.0058261	
Straight Flush	50 101 101	7.87E-06	0.00079487	

-continued

Hand	Pay	Probability	Return	RaiseBet
Royal Flush	100 201 201	8.4E-07	0.00016884	
Ante Only	1	0.227385	0.22738482	
Push	0	1.61E-05	0	
Fold	-1	0.477745	-0.47774524	
Dealer Wins	-3	0.136786	-0.41035887	
Wins				
Total			-0.05224332	

[0185] Change the rules the game so that a fold costs the player his original ante and a win by the dealer results in the original ante being returned, but the game retains the raise. The pay table has been modified from the pay allowed for a Pair and 2 Pair. If a player begins a game and decides he does not want to continue he is charged 1 credit which is the amount of his ante. The outcome of the game is still determined by stochastic means, so if the dealer wins, the game returns the original ante to the player to compensate for circumstances outside of the control of the player. The game just described results in a theoretical return to the operator of 5.6% and a calculation table for this game is shown below.

Modified Pay Table

Hand	Pay	Probability	Return	RaiseBet
Ace/King	1 3 3	0.000928	0.002785	2
Pair	0.5 2 2	0.116626	0.233253	
2 Pair	1.5 4 4	0.024482	0.097929	
3 of a Kind	3 7 7	0.011751	0.08226	
Straight	4 9 9	0.002198	0.019778	
Flush	5 11 11	0.001097	0.012062	
Full House	7 15 15	0.000834	0.01251	
4 of a Kind	20 41 41	0.000142	0.005826	
Straight Flush	50 101 101	7.87E-06	0.000795	
Royal Flush	100 201 201	8.4E-07	0.000169	
Ante Only	1	0.227385	0.227385	
Push	0	1.61E-05	0	
Fold	-1	0.477745	-0.47775	
Dealer Wins	-2	0.136786	-0.27357	
Wins				
Total			-0.05657	

[0186] The RaiseBet amount could be decreased to allow an increase in pay for a Pair and/or 2 Pair. Using the same rules as before this results in a theoretical return to the operator of a game of 3.3%. A calculation is shown in the next table.

Hand	Modified Pay Table			Probability	Return	RaiseBet
	Pay					
Ace/King	1	2	2	0.000928	0.001857	1
Pair	0.75	1.75	1.75	0.116626	0.204096	
2 Pair	2	3	3	0.024482	0.073447	
3 of a Kind	3	4	4	0.011751	0.047006	
Straight	4	5	5	0.002198	0.010988	
Flush	5	6	6	0.001097	0.006579	
Full House	7	8	8	0.000834	0.006672	
4 of a Kind	20	21	21	0.000142	0.002984	
Straight Flush	50	51	51	7.87E-06	0.000401	
Royal Flush	100	101	101	8.4E-07	8.48E-05	
Ante Only			1	0.227385	0.227385	
Push			0	1.61E-05	0	
Fold			-1	0.477745	-0.47775	
Dealer Wins			-1	0.136786	-0.13679	
Total					-0.03303	

[0187] A process in which a game of skill may be created from a casino game may be described as follows:

[0188] 1) Identify game states wherein a losing game may be generated by stochastic means and in which said means are outside of any control of a player.

[0189] 2) Allow deduction of a reasonable operator's fee for any game states identified in (1) above. Return a player's original buy-in or original buy-in minus operator's fee for any game states identified in (1).

[0190] 3) Adjust the game award table to allow a reasonable return to an operator.

[0191] The process just described still allows for a game outcome that is determined by stochastic means, but outcomes that are beyond control of a player's skill are minimized. A game may be comprised of numerous individual games from which a selection is made by a predetermined algorithm in such a manner as to insure a desired theoretical operator retention amount.

[0192] In one embodiment, a game according to the present invention may be comprised of numerous individual games. For example, the previous description of determining a break-even game may be utilized.

[0193] In another preferred embodiment, a Caribbean Stud game is constructed by randomly selecting from parameter tables below said parameter tables allowing a RaiseBet of 2, 1.6375 and 3. If a predetermined percentage of games is randomly allowed to have a RaiseBet of 2 for 45% of games played, a RaiseBet of 1.6375 for 29% of games played and a RaiseBet of 3 for 26% of games played, then an operator would retain 3.978% of monies played taken over a large number of games.

Hand	Pay			Probability	Return	RaiseBet
Ace/King	1	3	3	0.000928	0.00278514	2
Pair	1	3	3	0.116626	0.34987941	
2 Pair	2	5	5	0.024482	0.1224117	
3 of a Kind	3	7	7	0.011751	0.08225966	
Straight	4	9	9	0.002198	0.01977849	
Flush	5	11	11	0.001097	0.01206161	

-continued

Hand	Pay			Probability	Return	RaiseBet
Full House	6	13	13	0.000834	0.01084213	
4 of a Kind	18	37	37	0.000142	0.0052577	
Straight Flush	50	101	101	7.87E-06	0.00079487	
Royal Flush	100	201	201	8.4E-07	0.00016884	
Ante Only			1	0.227385	0.22738482	
Push			0	1.61E-05	0	
Fold			-1	0.477745	-0.47774524	
Dealer Wins			-3	0.136786	-0.41035887	
Total					-0.05447974	

[0194]

Hand	Pay			Probability	Return	RaiseBet
Ace/King	1	4	4	0.000928	0.00371352	3
Pair	1	4	4	0.116626	0.46650588	
2 Pair	2	7	7	0.024482	0.17137638	
3 of a Kind	3	10	10	0.011751	0.1175138	
Straight	4	13	13	0.002198	0.02856893	
Flush	5	16	16	0.001097	0.01754416	
Full House	7	22	22	0.000834	0.01834822	
4 of a Kind	18	55	55	0.000142	0.0078155	
Straight Flush	50	151	151	7.87E-06	0.00118837	
Royal Flush	100	301	301	8.4E-07	0.00025284	
Ante Only			1	0.227385	0.22738482	
Push			0	1.61E-05	0	
Fold			-1	0.477745	-0.47774524	
Dealer Wins			-4	0.136786	-0.54714516	
Total					0.03532202	

[0195]

Hand		Pay	Probability	Return	RaiseBet	
Ace/King	1	2.6375	2.6375	0.000928	0.002448602	1.6375
Pair	1	2.6375	2.6375	0.116626	0.307602315	
2 Pair	2	4.275	4.275	0.024482	0.104662004	
3 of a Kind	3	5.9125	5.9125	0.011751	0.069480034	
Straight	4	7.55	7.55	0.002198	0.016591956	
Flush	5	9.1875	9.1875	0.001097	0.010074186	
Full House	7	12.4625	12.463	0.000834	0.01039385	
4 of a Kind	20	33.75	33.75	0.000142	0.004795875	
Straight Flush	50	82.875	82.875	7.87E-06	0.000652226	
Royal Flush	100	164.7500	164.75	8.4E-07	0.00013839	
Ante Only			1	0.227385	0.22738482	
Push		0	1.61E-05	0		
Fold		-1	0.477745	-0.47774524		
Dealer Wins		-2.6375	0.136786	-0.36077384		
Total				-0.08429482		

[0196] Previous examples have been illustrated with a Caribbean Stud game. Some of the principles in those examples that are in accordance with those of the present invention include:

- [0197] 1) Select an award table and game parameters that set a lower bound of amount played returned to a player.
- [0198] 2) Select an award table and game parameters that set an upper bound of amount played returned to a player.
- [0199] 3) Select as many award tables and game parameters as desired that set an amount played returned to player that are between upper bound and lower bound as stated in 1 and 2 above that result in a game to a player or that are required to allow a desired fineness of adjustment in overall amount returned to a player.
- [0200] 4) Randomly select from the previous set of games determined in (3) above according to a predetermined statistical algorithm that presents game parameters to a player in a proportion that will guarantee a desired return to an operator of a game.

[0201] The present invention includes various modifications and enhancements to any of the above described processes. Depending upon the game, certain variations can be fun to play and may give a player a feeling that he has more control over game outcome than a regular game of chance. In one embodiment, a skill game of the present invention is turned into a regular casino game by means of either charging a 100% operator fee for each game played or by increasing the operator fee much above that anticipated for a skill game. The operator fee is, for example, increased and a range of percentages of the original buy-in could be charged for each game played. Further, for example, a specific value could be chosen within said range of percentages by means of a random selection process. While the above may point regulators in a direction that would remove the game from under a skill game classification, it is provided as an available option, and various casinos or other establishments may want to have a few games of this nature on the gaming floor.

[0202] In various embodiments, the present invention credits player losses (unsuccessful attempts to complete a

game of skill) to the bonus pool and then drawing randomly from that to augment stochastically calculated awards. Alternatively, the unsuccessful attempts may be credited in part to the bonus pool, part to the operator, and part to a third party cause (e.g., local or national charity). The game itself might include a designation as, for example, "Toys for tots benefit game," where a percentage of lost skill games are donated to the charity.

[0203] Although the present invention has been described herein with reference to specific games (e.g., slots, 21, Caribbean Stud, poker, etc.), the devices and processes of the present invention may be applied to many other games, including all traditional casino games, arcade games, and video games.

[0204] In one embodiment, a row of games (e.g., row of skill games 1420) are skill games that are readily distinguishable from a slot machine or Class II device. The skill games 1420 may run an entirely different regime for skill games compared to the above described teachings. The skill games 1420, are, for example, dual player stations, or player stations that are networked with each other and that may also be networked to player stations at remote locations. In various embodiments, these games are distinguished from other skill games in appearance and in that the outcome of the games are based on player skill relative to a competing players skill.

[0205] Skill games displayed and/or played via the big board 1460 are decided based on any combination of a number of factors, including: An extra fee paid by a player; the number of players actively participating in a particular skill game; length and/or point of game play; and stakes of a particular skill game. For example, a randomly generated award for a skill game may have been a jackpot \$1,000,000 prize. Such an event would likely preempt any other skill game currently being displayed and take precedence (or gain a portion of the big board) and be displayed on the big board. In another example, if a large number of players were playing the skill game, and particularly if the game was nearing completion, then this game would likely have priority to show the final portions of the game. A control panel would allow a floor manager to select a particular game for display on the big board (e.g., a celebrity comes into the

casino, and the floor manager put the celebrity on the big board). In one embodiment, game play stations or machines have cameras (skill game cams), and, the big board may include a portion for displaying pictures or video of skill game users from the skill game cam while simultaneously displaying the game being played (e.g., skill game cam picture-in-picture (PIP) over, or in a corner of, the skill game being displayed on the big board).

[0206] In one embodiment, the skill game is implemented such that the player competes against another player or a group of players compete against each other rather than against a level of skill required by the skill game itself in order to successfully complete the skill game. For example, the skill game is implemented in a gaming machine having a two-player station or the game is set up such that players alternate between use of a single player station during game play. In another example, via a network coupled to a gaming machine, a player can compete against any number of additional players on the same floor or at remote locations.

[0207] In one embodiment, the multi-player games operate such that a buy-in, wager, or other investment is made by a first player. A second player and any additional players make a similar buy-in, wager, or other investment. The first player and the second player(s) are matched by any number of methods. For example, information about available players may be broadcast to various skill game machines or playing stations. The information may include, for example, name, age, skill level (e.g. a skill level maintained by the skill game such as an overall ranking). The information may also include a photo that may for example be snapped by a camera mounted to a skill game player playing station.

[0208] The information is, for example, broadcast to various other skill game machines or playing stations and a prospective skill game player may for example look through a list and select a player. Alternately, the skill game includes a function to match prospective skill game players having attributes that would make the game more competitive.

[0209] In one embodiment, a skill level indication is maintained in a player database. The skill level indication is, for example, an overall ranking compared to other players of the skill game, or a general categorization of skill level such as a numeral ranking 1-5. In one embodiment, a handicap is calculated based on past skill game performances and when two skill game players are matched, the handicap is utilized to equalize the skill game players such that the less skilled player is provided some sort of advantage that levels the competitive playing field between disparate skill levels of the players.

[0210] After the buy in, wager, or other investment by the skill game players, a random award is determined for winning the skill game. After the random award is determined, the skill game then commences. The winning skill game player takes the prize. Alternatively, the prize is divided based on the result as it relates to each player. For example, the prize is divided into proportion to a number of points scored by each of the skill players and then awarded to each player. Thus, for example, in one embodiment, a group of any number of skill game players that are either matched or otherwise agree to play together compete for a prize, and each of the skill game players can finish the game with each earning a portion of that prize. And, the skill game may also be set up (e.g. via user choice or by how the

particular game operates) such that the winning skill game player, or highest scoring skilled game player, takes all.

[0211] In one embodiment, the multi player skill game operates with no automation. And players take an active role in the play of the game. In one embodiment, some skill is required of the player such that a player having no skill would not take any portion of the prize or have any chance of winning the game.

[0212] In one embodiment, the skill games are not based in whole, or in part, on class 2 type machines. And, in one embodiment "side games" are not allowed. Although it is possible that a skill game playing station or machine could be styled or designed such that it resembles a slot machine or a class 3 device, in other embodiments, the skill game playing is or machine is readily distinguishable from a slot machine or class 3 device. In those embodiments, the skill game playing station or machine does not resemble a slot machine in each of: the play of the skill game, the appearance, the speed of play, and graphics of the skill game playing station or machine.

[0213] In describing preferred embodiments of the present invention illustrated in the drawings, specific terminology is employed for the sake of clarity. However, the present invention is not intended to be limited to the specific terminology so selected, and it is to be understood that each specific element includes all technical equivalents which operate in a similar manner. For example, when describing a central computer and networked game console (e.g., FIG. 10) it should be understood that any arrangement of computing devices and communications may be utilized to implement the present invention, and, any other equivalent device having an equivalent function or capability, whether or not listed herein, may be substituted therewith. Furthermore, the inventor recognizes that newly developed technologies not now known may also be substituted for the described parts and still not depart from the scope of the present invention. All other described items, including, but not limited to consoles, game strategies, displays, processing devices, award pool management, bonus pool management, etc. should also be consider in light of any and all available equivalents.

[0214] Portions of the present invention may be conveniently implemented using a conventional general purpose or a specialized digital computer or microprocessor programmed according to the teachings of the present disclosure, as will be apparent to those skilled in the computer art.

[0215] Appropriate software coding can readily be prepared by skilled programmers based on the teachings of the present disclosure, as will be apparent to those skilled in the software art. The invention may also be implemented by the preparation of application specific integrated circuits or by interconnecting an appropriate network of conventional component circuits, as will be readily apparent to those skilled in the art based on the present disclosure.

[0216] The present invention includes a computer program product which is a storage medium (media) having instructions stored thereon/in which can be used to control, or cause, a computer to perform any of the processes of the present invention. The storage medium can include, but is not limited to, any type of disk including floppy disks, mini disks (MD's), optical discs, DVD, CD-ROMS, CDRW±,

micro-drive, and magneto-optical disks, ROMs, RAMs, EPROMs, EEPROMs, DRAMs, VRAMs, flash memory devices (including flash cards, memory sticks), magnetic or optical cards, MEMS, nanosystems (including molecular memory ICs), RAID devices, remote data storage/archive/warehousing, or any type of media or device suitable for storing instructions and/or data.

[0217] Stored on any one of the computer readable medium (media), the present invention includes software for controlling both the hardware of the general purpose/specialized computer or microprocessor, and for enabling the computer or microprocessor to interact with a human user or other mechanism utilizing the results of the present invention. Such software may include, but is not limited to, device drivers, operating systems, and user applications. Ultimately, such computer readable media further includes software for performing the present invention, as described above.

[0218] Included in the programming (software) of the general/specialized computer or microprocessor are software modules for implementing the teachings of the present invention, including, but not limited to, retrieval of user inputs, wager collections, game of chance and game of skill operations, calculating awards, bonuses, and play time, coordinating between different game consoles, preparing logs of game play, adjusting paybacks, adjusting skill levels required to successfully complete and game skill, and the display, storage, or communication of results according to the processes of the present invention.

[0219] The present invention may suitably comprise, consist of, or consist essentially of, any of element (the various parts or features of the invention, and their equivalents as described herein. Further, the present invention illustratively disclosed herein may be practiced in the absence of any element, whether or not specifically disclosed herein. Obviously, numerous modifications and variations of the present invention are possible in light of the above teachings. It is therefore to be understood that within the scope of the appended claims, the invention may be practiced otherwise than as specifically described herein.

What is claimed and desired to be secured by Letters Patent of the United States is:

1. A method, comprising the steps of:
 - accepting a wager from a player;
 - randomly generating a prize within a predetermined range of prizes after accepting the wager;
 - initiating a skill game with the player after generating the award value; and
 - awarding the prize to the player upon successful completion of the skill game.
2. The method according to claim 1, wherein the skill is played against another player.
3. The method according to claim 2, wherein the skill game is implemented in a gaming device that is readily distinguishable from a slot machine or gaming device.
4. The method according to claim 3, wherein the game is devoid of automation.
5. The method according to claim 1, wherein the randomly generated prize comprises a cash award.

6. The method according to claim 1, wherein the randomly generating a prize comprises a credit added to the player's skill game account.

7. The method according to claim 1, wherein the skill game comprises a card game.

8. The method according to claim 1, wherein the skill game comprises a card game and the method further comprising the step of displaying probabilities of at least one card not visible to a player during regulation play of the card game.

9. The method according to claim 1, wherein said step of displaying comprises displaying probabilities related to house face down cards.

10. The method according to claim 1, wherein the number of cards having displayed probabilities is based on an amount of skill required to successfully complete the skill game.

11. The method according to claim 1, wherein the amount of skill required to successfully complete the skill game is based on one of State and Federal regulations.

12. The method according to claim 1, wherein an outcome of the skill game is based substantially on the player's skill.

13. The method according to claim 1, wherein:

the method is embodied in a set of computer instructions stored on a computer readable media;

said computer instructions, when loaded into a computer, cause the computer to perform the steps of the method.

14. The method according to claim 11, wherein said computer instruction are compiled computer instructions stored as an executable program on the computer readable media.

15. The method according to claim 1, wherein:

the steps of accepting a wager and randomly generating a prize are performed on a device comprising a casino style slot machine; and

the step of initiating and playing a skill game are performed on a second device other than the device accepting the wager and randomly generating a prize.

16. The method according to claim 15, wherein the second device comprises a big board.

17. A method comprising the steps of:

identifying an established game of chance; and

altering the game of chance to provide a player an amount of control over the outcome of the game of chance.

18. The method according to claim 17, wherein said step of altering the game of chance maintains an original look and feel of the game of chance.

19. The method according to claim 17, wherein the amount of control provided comprises statistics regarding chance events in the game of chance.

20. The method according to claim 17, wherein the amount of control provided alters the game of chance such that the outcome of the game is substantially determined by the player's skill.

21. The method according to claim 17, wherein the amount of control provided alters the game of chance such that a player playing the altered game of chance according to rules of the game and all relevant information provided by the game, will, over time, statistically, win the game.

- 22. A method comprising the steps of:
 identifying an established game of chance;
 altering the game of chance to provide a player an amount of control over the outcome of the game of chance; and
 adding a prize mechanism configured to randomly determine an award for successfully completing the altered game of chance after accepting a wager and prior to playing the altered game of chance.
- 23. The method according to claim 22, wherein the traditional game of chance is a card game.
- 24. The method according to claim 23, wherein the step of altering comprises altering the card game of chance to show face down cards.
- 25. The method according to claim 22, wherein the step of altering comprises providing clues to chance events in the game.
- 26. The method according to claim 22, wherein the traditional game of chance comprises Caribbean stud.
- 27. The method according to claim 22, wherein the amount of control converts the traditional game of chance into a skill game.
- 28. The method according to claim 27, wherein awards not collected due to unsuccessful completion of the game are added to a prize pool that is stochastically awarded to players of subsequent games.
- 29. A skill game, comprising:
 a game initiator configured to accept a wager and then randomly determine a prize for successfully completing the skill game;
 a gaming device configured to play the skill game after wager acceptance and prize determination;
 wherein the skill game is a traditional game of chance modified such that a player has control over the outcome of the game.
- 30. The skill game according to claim 29, wherein the outcome of the game depends substantially on the player's skill in playing the game.

- 31. The skill game according to claim 29, wherein the outcome of the game is such that if the player plays according to an objective analysis of information provided to the player during the skill game, the player will win more times than losing.
- 32. The skill game according to claim 29, wherein the skill game is a card game incorporating face down cards and modifications comprising information about the face down cards.
- 33. The skill game according to claim 29, wherein the modifications further comprise a player option to purchase additional information about the face down cards.
- 34. A skill game, comprising:
 a game initiator configured to accept wagers from a plurality of game players and then randomly determine a prize for successfully completing the skill game;
 a gaming device configured to play the skill game among the plurality of players after acceptance of the wagers and after random prize determination;
 wherein the gaming device implements the skill game such that the players compete against each other and that the players must take an active role in play of the skill game in order to prevail.
- 35. The skill game according to claim 34, wherein the skill game is implemented in a machine that does not resemble a slot machine in play, appearance, speed of play, and graphics.
- 36. The skill game according to claim 34, wherein play of the skill game is devoid of automation.
- 37. The skill game according to claim 34, wherein the player and other individuals win prizes unrelated to Class II machines.

* * * * *