

**IN THE UNITED STATES PATENT AND TRADEMARK OFFICE
BEFORE THE PATENT TRIAL AND APPEAL BOARD**

In re *Inter Partes* Review of:
U.S. Patent No. 6,913,532

For: Gaming Device Having A Re-triggering
Symbol Bonus Scheme

DECLARATION OF STACY A. FRIEDMAN

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I, Stacy Friedman, hereby declare and state as follows:

1. I have been retained as a technical consultant on behalf of Aristocrat Technologies, Inc., the petitioner in the present proceeding, and I am being compensated at my usual and customary hourly rate. I understand that the petition names Aristocrat Technologies, Inc.; Aristocrat Leisure Limited; Aristocrat International Pty Ltd. and Aristocrat Technologies Australia Pty Ltd. as real parties-in-interest. I have no financial interest in, or current affiliation with, the petitioner, real parties-in-interest, or the patent owner, which I understand to be IGT. My compensation is not dependent upon the outcome of, or my testimony in, the present *inter partes* review or any litigation proceedings.

2. I have reviewed each of the references in the following table:

Exhibit	Description
Ex. 1001	U.S. Patent No. 6,913,532 (the “’532 Patent”)
Ex. 1002	File History for U.S. Patent No. 6,913,532
Ex. 1003	U.S. Patent No. 6,491,584 (“Graham”)
Ex. 1004	U.S. Patent No. 6,648,758 (“Bennett”)
Ex. 1005	<i>World of Slots ’99</i> , Casino Journal, September 1999 (“WOS”)
Ex. 1006	INTENTIONALLY LEFT BLANK
Ex. 1009	<i>Slots For a New Millennium</i> , Casino Player (1999)
Ex. 1010	<i>Something Fishy</i> , Strictly Slots, Dec. 1998
Ex. 1011	INTENTIONALLY LEFT BLANK
Ex. 1012	John Grochowski, THE SLOT MACHINE ANSWER BOOK (1999)
Ex. 1013	<i>Latest Game Releases</i> , NewsReel, Issue One 2001

3. I understand that the application leading to the ’532 Patent was U.S. Patent Application No. 09/981,133, filed October 15, 2001. For the purposes of my

analysis, I assume the time of the purported invention to be October 15, 2001.

4. My background, qualifications, and experience relevant to the issues in this proceeding are summarized below.

I. Background and Qualifications

5. As a professional casino game designer and mathematician, I am intimately familiar with the issues and technology relating to wagering games. As shown below, I have personally designed, implemented, tested, and analyzed many games, including dozens of single- and multi-player wagering games for both Internet and land-based casinos.

6. I am the President of Olympian Gaming, LLC in Beaverton, Oregon, a position that I have held since 2001. In that capacity, I have consulted in the gaming industry regarding, among other things, game design and development, slot machine and table game mathematics, game software development, and gaming patent infringement and validity. I have over eighteen years of professional experience in developing regulated casino games, gaming mathematics, and professional software design expertise. Although I discuss my expert qualifications in more detail below, I also attach as Exhibit 1008 a recent and complete *curriculum vitae*, which details my educational and professional background.

7. In 1996, I earned my Bachelor of Arts degree in Computer Science, *magna cum laude*, from Harvard College, Harvard University, Cambridge,

Massachusetts.

8. My professional experience in the casino gaming industry started in 1998, when I joined Silicon Gaming, Palo Alto, California as a game model engineer before it was acquired by International Game Technology (“IGT”). Silicon Gaming designed and developed interactive video slot machines. As a game model engineer (mathematician), I worked on the designs of video slot games, video keno games, and video poker games; helped produce dozens of innovative new games for the Odyssey™ platform; and engaged regulatory agencies to achieve regulatory approval for the mathematics used in the games. In addition, I designed and developed game flow and storyboards for slot machines, and developed and shipped mathematical models for over 50 games. I also served as a liaison to state regulatory agencies and corrected prior errors in gaming lab submissions, which led to savings of over \$50,000 in regulatory fees. I was also responsible for managing the statistical verification and mathematical gameplay testing for Silicon Gaming’s products.

9. In 2001, I started an independent casino game design and analysis consultancy, Olympian Gaming LLC. Based on my experience designing, developing, and placing dozens of games in Las Vegas, Reno, and Atlantic City casinos, I advise Internet casino software vendors, new game inventors, and casino game manufacturers in the fields of wagering gameplay design, mathematical analysis, and statistical verification. I have also served as a subject matter expert in

many matters related to casino games or gaming technology, including over 20 cases involving gaming-related intellectual property.

10. I have invented and applied for patents on over two dozen gaming methods and systems and, together with my patent attorney and frequent co-inventor, control a patent portfolio of approximately forty issued and/or pending patents across several categories of the gaming industry. These innovations include novel table games, electronic wagering games such as slot machine and video poker games, and casino management systems. Part of my business is directed toward licensing or selling these patents, and/or partnering with other entities to develop the technologies described in these patents.

11. Based on my experience, training and qualifications, I consider myself to be an expert in the gaming field, and in particular in the field of electronic wagering games.

12. I have been asked by counsel to provide information on the knowledge and experience of a person of ordinary skill in the art (“POSA”), background on the relevant technology and industry, an explanation of the ’532 Patent from the perspective of a POSA and whether any of its claim terms are unclear or confusing, and a discussion of certain prior art references and whether they teach or suggest, alone or in combination, the features of the ’532 Patent.

II. Level of Ordinary Skill

13. It is my opinion that a POSA at the time of the alleged invention claimed in the '532 Patent would have at least three to five years of experience with designing and developing gaming device systems with electronic displays. A POSA's experience would also include working with a multi-disciplinary team including creative artists, mechanical and electrical engineers, and regulatory specialists to develop a working, approvable gaming device.

III. Background on the Slot Machine Industry

14. The history of the slot machine dates to the late 19th century when Charles Fey developed the Liberty Bell, a purely mechanical device; the name "slot machine" itself is a shortening of "nickle-in-the-slot" machine, a description of how one initiated the play.

15. Historical slot games and most modern slot machines share several basic behaviors. First and foremost is the ability to make wagers. In slot machines found in casinos, facilities for depositing funds include a coin slot, a bill acceptor, and a ticket reader. Any of those will register the amount on a credit meter to be used for wagering. Once credits have been loaded onto the machine, the player initiates a wager by pulling a handle or pressing a "bet" button. Slot machines commonly involve three or more spinning reels, where each reel contains images of different graphical symbols such as sevens, cherries, or bars. The reels are set in motion (either physically, or in the case of a video slot machine, using computer animation)

and when they come to rest, the symbols lining up on the designated “payline” are compared against a predetermined list of winning combinations called a “paytable.” If a winning combination is achieved by the player, a corresponding award is paid. When a player is finished playing and has any credits left, a cash-out functionality either distributes coins or prints a paper ticket redeemable for cash at a kiosk or teller window.

16. In modern slot machines, the motion of the reels is determined not by physics, as it was in historical slot machines like the Liberty Bell, but by a computerized “random number generator” (“RNG”) that uses a mathematical function to produce a sequence of highly unpredictable numbers. The numeric output of the RNG is converted into a number that represents a position on that reel, and the symbol(s) at and near that position will be displayed. The frequency and distribution of the symbols on the reels, as well as the winning combinations and awards in the paytable, are developed and calculated by “game designers” (mathematicians) like myself into what is known as a “game model,” which is sometimes a spreadsheet with the appropriate calculations. The arrangement of the symbols on a given reel is known as a “reel strip,” after the physical strips of plastic or paper affixed to the circumference of mechanical reels. In most video slot games, symbols are arranged onto in-memory (electronic) representations called virtual reels and are virtually “spun” in memory, allowing similar game logic to operate both a

display with a video animation of reels or a display with physical, mechanically-driven reels.

17. Video slot machines in the 2001 timeframe did not necessarily involve spinning reels and matching combinations of symbols. Such slot games are known as “reel slot games” or “reel spinning games” but other games playable include video versions of keno, poker, roulette, and blackjack.

18. Traditional slot games had a single feature or behavior: if certain symbols aligned on the payline, an award was paid. This is known as a “line pay.” Later games offered multiple paylines and various permutations of winning symbol combinations. The earliest video slot games mirrored the behavior of their mechanical forebears, but later video screen games expanded the number of reels from the typical three to five and enabled multiple paylines to be wagered upon simultaneously (with multiple credits per line). These are often called multi-line, multi-coin games. Most line pays in five-reel video slot games are read from left-to-right, so an award for “three stars” was only won when the three star symbols appeared on the first three reels on a payline. With the advent of video slot games, vendors began to experiment with alternate forms of winning combinations, including right-to-left line pays, bi-directional line pays, a “scatter pay” which provides an award when a certain number of symbols appears anywhere on the screen (rather than just on a payline), and a “line scatter,” which occurs when a

certain number of symbols appears anywhere on a payline, not necessarily adjacent.

19. In addition to creating many new forms of winning combinations, video slot vendors developed many new forms of awards. Just as the typical winning combination in most slot games is a line pay, the typical award is a fixed value. To increase player entertainment, however, game developers created other game features, such as bonus games or series of free spins, that may provide a wide range of awards rather than a fixed value. Such bonus features are often the key differentiators between games and serve to drive player loyalty and excitement. Bonus features may be “triggered” by any form of winning combination, but the most common trigger for a bonus feature is a scatter combination. There were generally two categories of bonus games: those that allow the player to pick one or more hidden values, usually interactively, and those that play out a series of automatic free spins, usually with one or more rule modifications to distinguish those free games from the normal base game (often referred to as a “primary game”).

20. A popular video slot game from the late 1990s “Polly & Roger” provides an example of many of these features. *See* Ex. 1010, 46–48. It features five video reels with three visible symbols per reel. The game also features five paylines: three paylines that are horizontal across the top, middle, and bottom symbols; one payline in a large “V” formation; and another in a large inverted “V” formation. The typical collection of line pays where 5, 4, 3 and sometimes 2 adjacent symbols on a

payline (starting at the leftmost reel) provide the fixed awards listed on the payable.

Polly & Roger also incorporates other game features, including:

- a. A scatter pay, where the Polly Parrot symbol appearing 3, 4, or 5 times anywhere on the screen (not just on a payline) awards 2, 5, or 10x the total wager, respectively;
- b. A second-screen bonus, triggered by the same 3, 4, or 5 Polly Parrot symbols, that plays a Parrot Race bonus game. This is a pick bonus where the player chooses from 1 to 3 parrots depending on the number of triggering symbols. The player's parrots each pay between 2x and 15x their total wager based on how they finish the race, and the maximum pay for three parrots finishing first, second, or third is 30x;
- c. A series of 3, 10, or 20 free-spin games, triggered by 3, 4, or 5 scattered Jolly Roger symbols, respectively. Also, during the free spins the hit frequency is increased to 70% from the base game's 36%. This was done "to make sure each player won something during the round";
- d. Also during the free spins, the Jolly Roger symbol becomes a fixed-award scatter pay rather than triggering the free spins. During a free spin, if one to five Jolly Roger symbols appear scattered on the reels, the player wins an increasing award based on the number of those Jolly Roger symbols.

21. Other games of the same era used similar combinations of game features. Some of these games not only offered a free spin bonus round but the ability to “re-trigger” those free spins during the initial set of spins. For example, Aristocrat’s popular “Queen of the Nile,” released in 1997, had a bonus feature where 3, 4, or 5 scattered Pyramid symbols awarded 15 free spins at a 3x multiplier, and achieving 3, 4, or 5 scattered Pyramids during one of those free spins would add an additional 15 free spins to however many free spins were remaining. Shown below are two screenshots taken from Aristocrat’s website (<https://www.aristocratgaming.com/games/queen-of-the-nile/>), illustrating that three scattered pyramid symbols trigger 15 free spins.





22. Aristocrat’s catalog publication from early 2001, “NewsReel” (*see* Ex. 1013, 16–17), also demonstrates a wide variety of features that were in use in video slot games at the time:

- a. Koala Mint featured a first/last reel scatter of two Koalas triggering 10 free spins with a re-trigger. *See* Ex. 1013, 16. During the free spins, the background visuals are changed and each coin symbol that appears awards a random prize between 2x and 100x the total wager. *See id.*
- b. Margarita Magic featured 10 free spins at 2x, triggered by 3, 4, or 5 scattered Drum symbols. *See id.*, 16–17. During free games, Margarita Drink symbols are collected and then, at the end of the 10 free spins, the player plays as many bonus games as the number of Drink symbols collected. *See id.* Unlike the 2x multiplier in the 10 initial free games, any bonus games were played at a 5x multiplier. *See id.* The reel strip

colors changed between the free games and bonus games to cue the player that the mode had changed. *See id.*

- c. Multidraw Free Game Poker was a video poker game, but it also offered free games. *See id.*, 16. In this case, five free hands of video poker were awarded every time a straight, flush, or full house is dealt, and additional triggering hands could re-trigger the free games. *See id.*
- d. Indian Dreaming featured a free spin round with 20, 30, or 40 free spins triggered by 3, 4, or 5 scattered Dream Catcher symbols, respectively, and in the bonus round, the wild Teepee symbol multiplies wins by up to 6x. *See id.*
- e. Rainbow Warriors featured a single respin of just reels 1, 3, and 5 when a \$ symbol appears on reels 2 and 4. *See id.*
- f. Peacock Flutter features “up to” 25 free games on scattered Jewel symbols, indicating that the number of free games is variable (likely with the number of scattered symbols that trigger), and free spins may be re-triggered. *See id.*, 17.
- g. Viking Quest triggered a Viking Horn sound on 4 or 5 scattered Dragon Ship symbols. *See id.*
- h. Dynamite Jack used 2, 3, 4, or 5 scattered Safe symbols to trigger a held-reel respin (the reels with Safes were held, the others were respun).

See id. The Safe symbol then acted as a wild symbol to evaluate pays.

See id.

23. Similarly, the 1999 “Millennium Supplement” to Casino Player magazine (Ex. 1009) had brief descriptions of dozens of new slot games (and other games), including descriptions of bonus features, trigger events, payable features, hardware characteristics, and the like. Game designers in the late 1990s and early 2000s (including myself) regularly reviewed such features—both from descriptions in magazines and from hands-on play in casinos—and would therefore have known about all of these various gaming features and understood that mixing and matching such features is a common part of game design. In fact, combining such features into an engaging overall game and “tuning” the mathematics to reach a desired payback percentage and entertaining award distribution is the primary role of a game designer/mathematician for a slot machine company. A POSA would understand the mathematical tradeoffs in game design decisions, such as the choice to offer more or fewer free spins, greater or lesser frequency of certain awards, higher or lower values for certain awards, more or fewer different features, etc. In fact, these decisions were all constrained by the basic fact that, with few exceptions, a slot machine game must theoretically pay back less than 100% of the wagers it receives. Therefore, the quantity, frequency, and value of awards or bonus features are constrained by the total payback limitation. For example, if a game is intended to pay back 95% overall,

and the base game is worth 70% by itself, there is only 25% left for any bonus feature(s).

24. The mathematical details for a particular slot machine game model is provided by game designers in a document known as a “par sheet.” In most regulated jurisdictions, par sheets are submitted to regulators for approval. Par sheets are also made available to casino operators so they can understand the mathematical features of the games they operate (or are considering operating). The format for par sheets varies from one gaming manufacturer to another, but most par sheets include at least the following information about a slot machine game:

- a. The “payback percentage,” a theoretical value representing the fraction of total dollars wagered that should be “paid back” to the player. Also known as “RTP” or “return-to-player.” Most slot machine games pay back between 90% and 96% of money wagered.
- b. In lieu of, or in addition to “payback percentage,” some par sheets list “theoretical hold,” also known as “hold percentage,” “par,” or in the table games world, “house edge.” Payback percentage and hold percentage always sum to 100%, and as a result, one can always be computed from the other.
- c. Details about the payable, including each winning combination, the amount paid, the frequency of obtaining that combination, and the

percentage contributed to total payback percentage.

- d. Details about the frequency of the symbols on each reel, as well as the specific order of the symbols on each reel (i.e., the reel strip).
- e. Details about any bonus features, how such features are triggered, the probability for each triggering combination, the rules of each feature, and their contributions to the total payback.

25. In the mid-1990s, almost coincident with the introduction of the public Internet, wagering games including slot machines were made available by “online casinos” for play using home computers connected to a data network such as the Internet. Microgaming was one of the first online casino software providers, and by 1998 its software was being used to power dozens of Internet gaming websites. When gambling over the Internet, players would either download and install a custom software client or access the remote casino using a web browser. Either way, in order to place a wager, the player first needed to establish an account at the remote casino operator and deposit funds, usually via credit card, wire transfer, or another electronic funds transfer mechanism. Once a balance was established, players could make wagers on games including reel spinning slot games, blackjack, roulette, baccarat, and keno, and the outcomes were determined usually by computerized RNGs (and sometimes by live cards or dice). Similar to the credit meter in a casino slot machine, wagered amounts in an online casino were drawn from the player’s

account balance and any winning wagers were deposited to that account. Cashing out typically required making a request to the remote casino operator and waiting, sometimes weeks, to receive a wire transfer or a paper check.

26. Much of the early Internet gaming industry was unregulated, but several years after the first online casinos began accepting wagers, regulators in some jurisdictions began approving Internet gaming systems. In January 1999, IGT invested in an Australian Internet gaming software provider called Access Systems and undertook to help Access market its Internet gaming system to operators in regulated and legalized Internet gaming markets, which at the time included Australia and certain European countries. In 2000, Silicon Gaming spun off its game development team and formed WagerWorks, a software startup similarly dedicated to developing trusted, approvable Internet gaming software. Specifically, WagerWorks would not sell its software to operators in unregulated gaming jurisdictions. In 2001, I formed Olympian Gaming, LLC in part to assist Internet gaming operators in developing slot machine games that behaved more like popular Las Vegas-style games.

IV. Overview of the '532 Patent

27. The '532 Patent (Ex. 1001) is entitled "Gaming Device Having A Re-triggering Symbol Bonus Scheme." Ex. 1001, Title. In the '532 Patent, the disclosed gaming devices are used for gambling and include, for example, video slot machines

in which a player places a wager, then “spins” virtual reels—processor-controlled animations of reel images on a video display screen—and receives awards if the reels display certain predefined combinations of symbols when they stop spinning. *See id.*, 3:57-4:11.

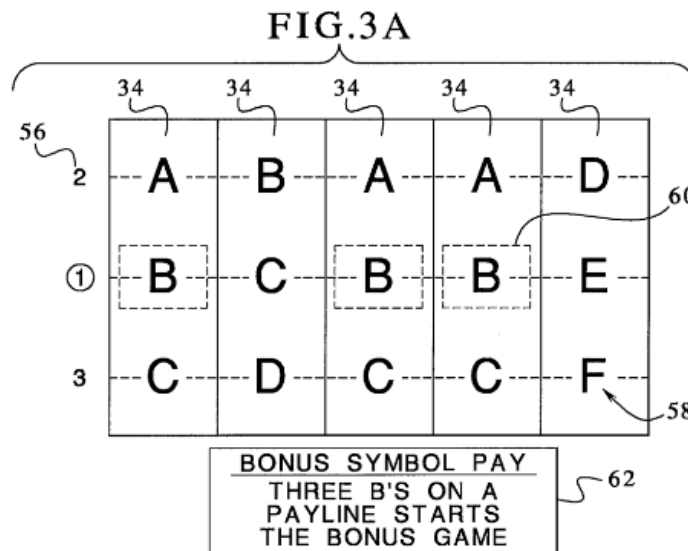
28. The initial spinning of the reels in that manner is called the “primary” game (or “base” game). *Id.*, 3:20-25. The ’532 Patent is directed to a gaming device with a primary game such as slot, poker, blackjack or keno. *See id.* The plurality of symbols and indicia displayed on the gaming device may be in mechanical, electronic, electrical, or video form. *See id.* For example, the ’532 Patent discloses slot machines that use either mechanical or video spinning reels, each of which display a plurality of symbols. *Id.*, 1:26-36. These may include bells, fruits, numbers, letters, bars or other images or symbols which often correspond to a theme associated with the slot game. *Id.*, 4:6-9.

29. As described in the ’532 Patent, prior art gaming machines also included “secondary” or “bonus” games (different from the primary game) to make the game more entertaining and enjoyable to the player. *See id.*, 1:28-36.

30. The ’532 Patent is further directed to a “re-triggering symbol bonus scheme” wherein a combination of bonus triggering symbols triggers an initial bonus game, and within that bonus game, a combination of bonus re-triggering symbols triggers a further bonus game (*i.e.*, a *re-triggered* bonus game). *Id.*, 1:26-36, 1:59-

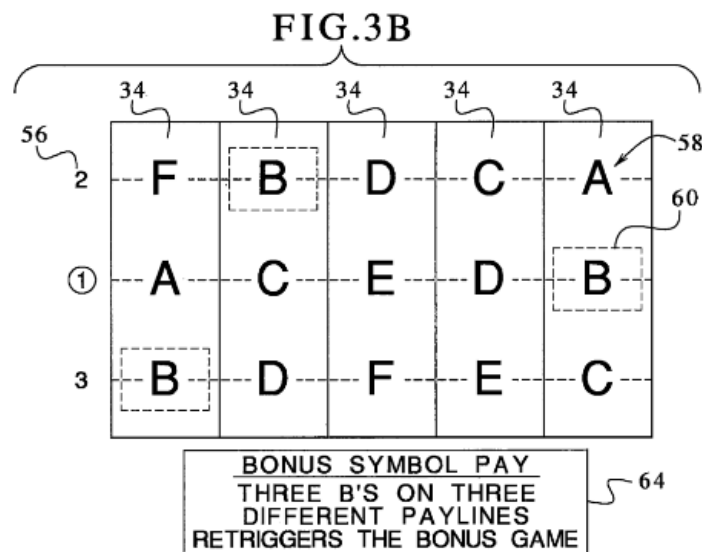
2:9. The “bonus or secondary game” is “played in addition to the base game.” *Id.*, 1:32-33.

31. Figure 3A of the '532 Patent, reproduced below, shows an embodiment of the *base game* of the alleged invention with a set of mechanical or video reels 34 having symbols 58. The appearance of certain symbols are considered a “bonus triggering combination” and are used to trigger a bonus game. *Id.*, 5:24-37. In Figure 3A, the player has obtained a bonus triggering combination of three “B” symbols (indicated by numeral 60) on activated payline 1, triggering a bonus game as indicated by bonus display 62. This type of trigger event was commonly referred to as a “line scatter.”



32. Figure 3B of the '532 Patent, reproduced below, shows an embodiment of the *bonus game* (not the base game) of the alleged invention. The bonus re-trigger occurs in the bonus game when the same symbols which triggered the bonus game in

the base game are displayed in a scattered combination on multiple paylines. *Id.*, 5:39-53. In this embodiment, the “B” symbol 60 is the bonus re-trigger symbol, and any three “B” symbols on three paylines provides the bonus re-trigger in the bonus game. *Id.* As the ’532 Patent explains, the bonus re-trigger described in Figure 3B will occur more frequently than the bonus trigger described above with respect to Figure 3A because the (initial) bonus trigger will only occur when the bonus triggering symbols are aligned along an activated payline. *Id.* The bonus re-trigger, however, will occur when the bonus triggering symbols appear anywhere on the display. *Id.* Though the language of the specification is inconsistent in this regard, the POSA would most likely understand Figure 3B to be depicting a “scatter pay” trigger rather than (as the text in Figure 3B recites) symbols necessarily “on three different paylines.” In a true scatter pay, symbols may appear anywhere on the reels, regardless of whether they line up on paylines.



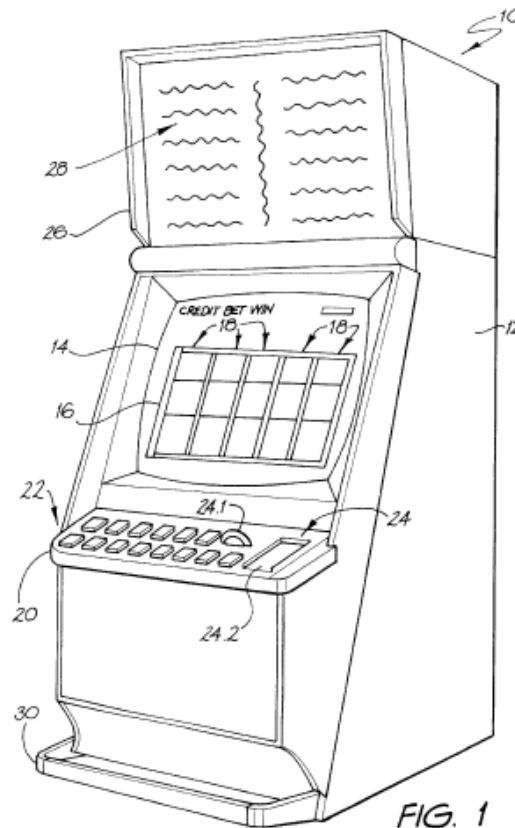
33. The claims of the '532 Patent provide a re-triggered bonus game wherein the bonus re-triggering symbol combination occurs more frequently than the (initial) bonus triggering combination. The claims of the '532 Patent can be divided into two groups based on the two different ways of increasing the frequency. Independent claims 1, 5, 7, 13, and 17 generally require that the bonus triggering event or combination occur more frequently (e.g., “more likely to occur,” “having a likelihood of occurrence which is greater,” “occurs more frequently”) in the bonus game than in the base game. Independent claim 6 requires that at least one re-trigger of the entire secondary game or at least one additional spin of the secondary game be provided to the player when less than the number of symbols required to trigger the bonus game is displayed in the secondary game. A POSA would understand that “a bonus re-trigger” in independent claim 7 refers generally to a re-triggered secondary game, not only in view of the last element of claim 7, but also because dependent claim 8 requires that the “bonus re-trigger” be selected from either “at least one re-trigger of the bonus game” or “at least one additional spin in the bonus game.”

V. Graham

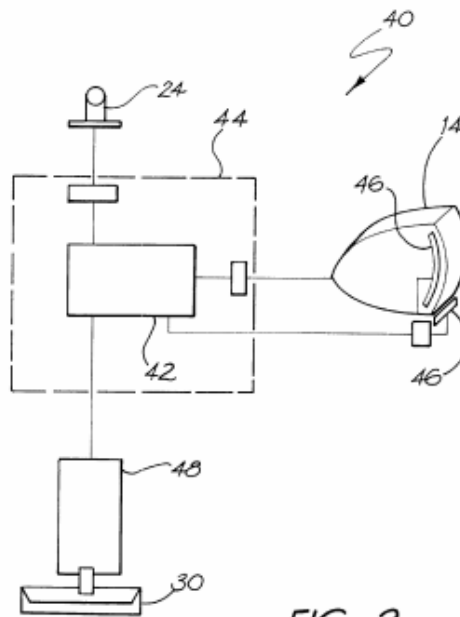
34. Graham is a United States Patent that was filed on March 29, 2001 and issued on December 10, 2002. I have been informed that Graham was considered during prosecution of the '532 Patent. Graham describes a gaming machine wherein

a “trigger condition” in the base game such as “the appearance of three scatter symbols anywhere on the display means” awards an “initial series of free games” along with a bonus feature. Ex. 1003, 1:29-45; *id.*, 2:24-25.

35. The invention of Graham relates to a “gaming machine” and “[m]ore particularly . . . to an improvement to a game played on such a gaming machine.” Ex. 1003, 1:6-9. Graham further discloses “a gaming machine having a display means and a game control means arranged to control images displayed on the display means.” *Id.*, 1:29-31. Figure 1 of Graham (reproduced here) discloses a gaming machine 10 which “includes a console 12 having a video display unit 14 on which a game 16 is played[.]” *Id.*, 2:39-42.



36. Graham further discloses that “midtrim 20 also houses a credit input mechanism 24 including a coin input chute 24.1 and a bill collector 24.2.” *Id.*, 2:46-48. A POSA would understand that Graham also describes (and shows in Figure 2, reproduced here) a “processor 42” which “forms part of a controller 44 which drives the screen of the video display unit 14 and which receives input signals from sensors 46” including “sensors associated with the bank 22 of buttons and touch sensors mounted in the screen.” *Id.*, 2:57-61. Graham also describes “a control means or control circuit 40” which includes a “processor 42” that runs “[a] program which implements the game and user interface” (as shown in Figure 2), *id.*, 2:55-57.



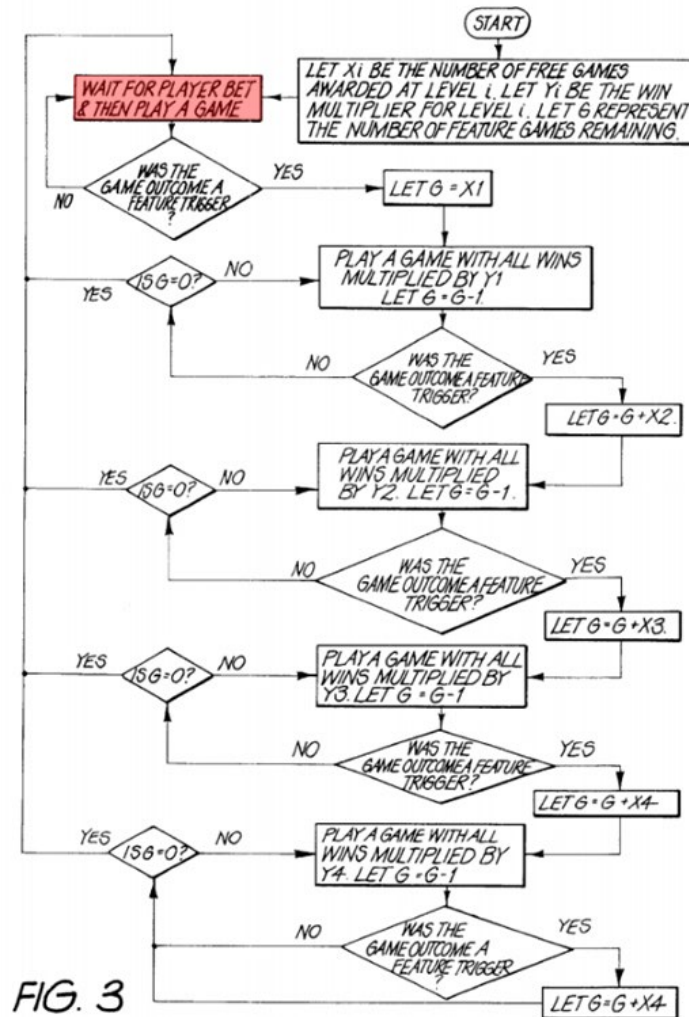
37. Graham also discloses “paytables” and “details of bonus awards, etc.” Ex. 1003, 2:50-51. A POSA reviewing Graham’s disclosure of paytables with

awards and “bank of buttons 22” would understand that the “spinning reel game” of Graham is referring to a multi-line, multi-coin slot game with multiple paylines associated with the reels. *Id.*, 2:43-45. A POSA would recognize that the bank of buttons 22 depicted in Figure 1 are often used for selecting (a) the number of paylines and (b) the number of coins wagered per payline. *Id.*, 2:44-46.

38. A POSA would understand that Graham teaches a game having a certain scheme of play that is controlled by a processor and stored in a memory device as instructions. A POSA would understand that the “program which implements the game and user interface” in Graham is stored in a memory device and executed by the processor such that the program’s instructions cause the processor to operate with a display device and an input device throughout the game. Ex. 1003, 2:55-56; *see also id.*, 2:57-67. A POSA would understand that such a game controlled by the processor could not only be implemented as a “main” or primary game, but could also be implemented as a bonus or secondary game in conjunction with a main game.

39. Graham discloses a “base game” (*i.e.* primary game) that is displayed on a video display unit 14. Ex. 1003, 2:16-17, 2:42-44, 3:7-9. Graham discloses that “any types of base games [can] be played on a gaming machine” but that “the invention would be particularly applicable in respect of spinning reel-type base games[.]” Ex. 1003, 2:18-19. Figure 3 (reproduced here and colorized to highlight

particular aspects) is a flowchart that indicates that the base game is played only upon the placing of a wager by the player. *Id.* at Fig. 3 (“wait for player bet & then play a game”).



40. A POSA would understand that a spinning reel-type base game (also referred to as a “primary” game) and bonus game (also referred to as a “secondary” game) necessarily include a plurality of game symbols. As described above (*see, e.g.*, ¶¶14–16), it was well-known at the time of the alleged invention of the ’532 Patent

that spinning reel-type games used reels and symbols. *See* Ex. 1012 at 54-55.

41. Graham discloses a bonus game having a plurality of secondary game symbols. *See* Ex. 1003, 3:5-10. The bonus game disclosed by Graham consists of a series of free plays of the spinning reel-type game. For example, Graham discloses that “ten free games are awarded in the initial series of free games.” *Id.*, 3:9-10.

42. Graham also states that a “gaming machine” can have a “game control means [that is] arranged to play a game wherein random events are caused to be displayed on the display means[.]” *Id.*, 1:29-34. A POSA would understand that the “random events” may be symbol combinations including winning symbol combinations that can result in (1) line pays or (2) scatter pays. A POSA would understand that the “bank of buttons 22” on the “midtrim 20 of the [gaming] machine 10” depicted in Figure 1 of Graham are typically used by players to select the number of paylines on which to wager, and the number of credits to wager on each payline. The feature of betting one or more credits on one or more paylines that span multiple reels was widely used by gaming machine manufacturers prior to the alleged invention of the ’532 Patent (*see, e.g.*, discussion in ¶¶18–23 above). Graham discloses “scatter symbols” which appear “anywhere on the display means[.]” *Id.*, 2:24-25.

43. The “random event” in Graham may also be a “predefined winning event” such as a “trigger condition” “which results in an initial series of free games

awarded to a player.” *Id.*, 1:33-38. The “trigger condition” in Graham can be a scatter pay: “the appearance of three scatter symbols anywhere on the display means[.]” *Id.*, 2:24-25.

44. A POSA would understand that the gaming system in Graham can trigger a bonus game with more than three scatter symbols. Nothing in Graham limits the “trigger condition” to only three scatter symbols. Therefore, if a bonus game can be triggered by the appearance of three scatter symbols “anywhere on the display means,” *see* Ex. 2:24-25, the bonus game can also be triggered by four or five scatter symbols.

45. Further, at the time of the alleged invention of the ’532 Patent, POSA understood that it was common for gaming machines to offer a bonus game upon the appearance of multiple scatter symbols. For example, Aristocrat’s “Queen of the Nile” game provided free spins bonus games upon the occurrence of three, four, or five scattered Pyramid symbols. *See* Ex. 1005 at 62. Aristocrat’s “Indian Dreaming” game provided free spins bonus games upon the occurrence of three, four, or five scattered Dream Catcher symbols. *See* Ex. 1013 at 16. VLC’s Polly & Roger awarded both a scatter pay and a pick bonus upon the occurrence of three, four, or five scattered Parrot Symbols, and awarded free spins upon the occurrence of three, four, or five scattered Jolly Roger symbols (which turned into a fixed-award scatter pay symbol during the free spins). *See* Ex. 1010, at 46-48.

46. Moreover, a POSA would understand that the secondary game triggering symbols in Graham could (and in fact do) form predetermined or designated combinations of the secondary game triggering symbols. For example, the secondary game may be triggered by predetermined or designated combinations of three, four, or more secondary game triggering symbols, and those combinations have designated (or different) quantities of symbols. It is inherent that when defining (“designating” or “predetermining”) a combination of symbols as a winning one, both the type and quantity of symbols in that combination are defined, because that information must be conveyed to the player and to regulatory authorities, and before that to the mathematicians who must analyze that combination’s probability. Graham discloses that “the trigger condition may be the appearance of three scatter symbols anywhere on the display means,” (Ex. 1003, 2:24-25) which is a designation or predetermination of both the arrangement and quantity of symbols in that combination.

47. Based on knowledge of the wide variety of bonus triggering combinations in the industry, and armed with the understanding of how defining a given combination affects its frequency, a POSA would be motivated to modify the game disclosed in Graham such that each of the designated or predetermined combinations of triggering symbols include a designated or different quantity of secondary game triggering symbols. Each combination must be specified, and one of

the most fundamental ways to differentiate one combination from another is by the quantity of symbols it requires. Scatter pay awards, for example, were generally known to pay different amounts based on different numbers of scattered symbols (*e.g.*, the Jolly Roger scatter in Polly & Roger (*see* Ex. 1010 at 46-48) paid different amounts for quantities ranging from 1 to 5 symbols). Therefore, a POSA would have been motivated to vary the number of scattered symbols to be used in combinations of triggering symbols.

48. To the extent Graham does not expressly teach configuring the designated combinations of the secondary game triggering symbols to include a different quantity of secondary game triggering symbols, a POSA would have reasons to modify Graham to meet this limitation. For example, a POSA would have been motivated to vary the quantity of secondary game triggering symbols included the designated combinations of secondary game triggering symbols in order to vary the probabilities of triggering a new secondary game. The frequency of the bonus triggering event may be manipulated by adding or removing triggering symbols from the bonus game reel strips, as disclosed in Graham, Ex. 1003, 2:59-64, and it is inherent that if the RTP or probability of triggering a bonus can be decreased by adjusting the reel strips, it can also be increased. A POSA knows there are only two ways to adjust the probability of a gaming outcome — *up or down* — and Graham's disclosure that a bonus re-trigger frequency should be modified by adjusting the reel

strips would lead the POSA to think of both types of modifications. A POSA would understand that by shortening or lengthening reels, or by adding or removing triggering symbols (both of which are routine, common tasks for a game mathematician), the frequency of a triggering combination would be increased or decreased. Such modification would be consistent with Graham's stated goal of "develop[ing] innovative game features which add interest to the games[.]" *Id.*, 1:12-15.

49. Modifying the designated combinations of the triggering symbols to include either the same or different quantities of triggering symbols comprises a choice between finite options that are squarely within the abilities of a POSA. Since Graham operates according to software instructions stored in memory, *id.*, 2:55-57, a POSA would easily modify the game via a new programming instruction, and game programming is not only within the ordinary level of skill in the art but is a common and ordinary part of game development.

50. Graham teaches that "the appearance of three scatter symbols anywhere on the display means[.]" can trigger an "initial series of free games." Ex. 1003, 2:24-25, 3:5-10. Graham explains that the "initial series of free games" may be, for example, ten free games. *Id.*, 3:9-10. A POSA reviewing Graham would thus understand that the "initial series of free games" includes a designated number of plays being *at least* one.

51. A POSA would also understand Graham to disclose a plurality of designated combinations of the triggering symbols that can *each* re-trigger the secondary game. Graham does not limit the trigger condition to only three scatter symbols. Graham's "trigger condition" can appear in both the base game and the bonus game, and a POSA would understand that three, four, or more scatter symbols may *each* be used to re-trigger the bonus game.

52. The designated combinations of the secondary game triggering symbols in Graham can be associated with a different number of plays of the secondary game. Nothing in Graham limits the number of plays of the bonus games associated with the combinations of triggering symbols to only "ten free games." *Id.*, 3:9-10. The game may be modified easily such that 3 scatter symbols may trigger 5 free spins, 4 scatter symbols may trigger 10 free spins, and so on. As has already been discussed, *see* ¶¶18–23, it was widely known that different combinations having greater quantities of scatter symbols can result in greater awards, and "more free spins" is inherently a greater (average) award than fewer free spins.

53. Moreover, at the time of the alleged invention of the '532 Patent, it was common for gaming machines to offer different numbers of free plays of the secondary game depending on the number of scatter symbols appearing on the display. For example, Aristocrat's "Indian Dreaming" game provided 20, 30, or 40 free games if 3, 4, or 5 scattered Dream Catcher symbols appeared during the base

game, respectively. *See* ¶¶18–23 (further discussion of games that incorporated this feature).

54. A POSA would have been motivated to vary the designated number of plays of the secondary game associated with the triggering symbol combinations. By doing so, players would persevere to play a particular game until they achieve a certain symbol combination that grants them a high number of plays of the bonus game. Players would continue to place wagers until they trigger a bonus game which includes a high number of free spins. Further, it is more consistent with the general notion of “less frequent combination yields greater award” to provide greater numbers of free spins on combinations that have greater numbers of triggering symbols (and therefore lower probability of appearing).

55. For a game manufacturer, it is important to find new ways to attract customers, and to encourage customers to continue playing their games once they start playing the game. Varying the designated number of plays of the bonus game associated with the triggering symbols would be consistent with Graham’s stated goal of “develop[ing] innovative game features which add interest to the games,” Ex. 1003, 1:12-15. Graham also encourages applying “numerous variations and/or modifications” to the invention as long as it does not “depart[] from the spirit or scope of the invention.” *Id.*, 4:1-5. Moreover, because each of the combinations of triggering symbols may either be associated with the same or different number of

plays of the secondary game, a POSA would easily switch between the two binary options. The two options can be reasonably defined as a small and easily traversed number of options. And a POSA would expect to successfully implement the modification in the programming of the game.

56. Graham provides a bonus game wherein the appearance of three or more scatter symbols can re-trigger the bonus game. Ex. 1003, 3:14-16. Claim 10 in Graham requires that “the trigger condition which triggers the subsequent and any further series of free games [be] the same as the trigger condition which triggered the initial series of free games.” *Id.*, 4:63-66. This means that the bonus game in Graham includes the “plurality of secondary game triggering symbols,” as required by the limitation. Further, this limitation of claim 10 in Graham implies that claim 1 in Graham does not necessarily use the same trigger condition that triggered the initial series of free games (and can therefore be different, with a potentially different probability). Thus, a POSA would understand that Graham either teaches or suggests that the re-triggering of a bonus game may have a different frequency than the initial triggering of the bonus game, and that the retrigger frequency, if it is different, must either be more likely or less likely.

57. A POSA reviewing Graham would understand that the entire secondary game may be re-triggered during play of the secondary game. Graham discloses that ten free games can be triggered in the base game with three scatter symbols. *See* Ex.

1003, 2:24-25, 3:9-10. Graham further discloses that if “during the initial series of free games, another trigger condition arises, a subsequent series of free games” is awarded. *Id.*, 1:38-40 (emphasis added). Graham later discloses that the subsequent series of free games equals “ten free games[,]” which is the same number of free games as the “initial series of free games[.]” *Id.*, 3:28-32. Because Graham discloses that both the secondary game and the re-triggered secondary game includes “ten free games[,]” Graham discloses that the entire secondary game may be re-triggered during play of the secondary game.

58. Graham states that the “trigger condition” can be “adjusted as necessary or required” by “changing the length or layout of the reel strips.” Ex. 1003, 3:59-64. Graham further explains that the “trigger frequency may decrease for at least some of the series of free games by changing the length or layout of the reel strips.” *Id.* A POSA would understand this teaching of Graham to mean that the “trigger frequency” may also increase in the bonus game compared to the base game. If it does not stay the same, the triggering frequency can be modified in only two ways: (1) increase, or (2) decrease. In other words, the triggering condition or event may either stay the same or be adjusted to become more likely to occur or less likely to occur. This modification would be desirable because players favor games that appear to provide larger or more frequent bonus payouts. And the modification would be within the ordinary skill of a POSA who is versed in making modifications via game

programming. A POSA would implement this modification in a few easy ways. For example, game designers may add or take out symbols from the bonus game reel strips. Game designers do this on a routine basis in order to adjust the frequencies of certain combinations to meet desired targets. (See discussion in ¶20 regarding Polly & Roger, modifying the bonus reels to increase the overall frequency). One way to achieve an increased frequency is to delete non-triggering symbols from the bonus game reel strips. The triggering symbols would then appear more frequently compared to the non-triggering symbols. Similarly, a POSA could add additional triggering symbols to the bonus game reel strips, allowing the triggering symbols to appear more frequently in the bonus game. In any event, the modification is within the level of ordinary skill in the art, and a POSA would readily appreciate how to achieve that increased frequency by making game design adjustments according to known techniques such as increasing or decreasing the lengths of reels, and/or adding or removing symbols from reel strips.

59. A POSA reviewing Graham would understand that the secondary game triggering event in Graham includes at least one combination of said triggering symbols because the “three scatter symbols” is a combination of triggering symbols that triggers “ten free games.” Ex. 1003, 2:24-25, 3:9-10.

60. A POSA would have been motivated to modify Graham’s secondary game re-triggering event to include a greater number of combinations of triggering

symbols than the triggering event. Because nothing in Graham limits the “trigger condition” to only three scatter symbols, a POSA would understand that in Graham, three, four, or more scatter symbols can appear “anywhere on the display means” to form a plurality of combinations of triggering symbols that trigger or re-trigger a secondary game because this was a well-known feature in the art. Ex. 1003, 2:24-25. For example, both “Indian Dreaming” and “Polly & Roger” provided a plurality of triggering combinations for bonus features, and Polly & Roger specifically uses three (3) different combinations of the Jolly Roger symbol to trigger a bonus yet five (5) different combinations of the same symbol to pay a scatter award. In view of this and the general teaching that a free-spin bonus may be re-triggered, it would be easy for a POSA to modify Graham such that while the triggering event includes only three combinations of triggering symbols (e.g., three, four, or five scatter symbols), the re-triggering event includes four combinations (e.g., two, three, four, or five scatter symbols). A POSA would have no technical difficulty implementing the modification because it would merely require changing the game rules to require only two triggering symbols to re-trigger a secondary game.

61. A POSA reviewing Graham would also understand that the secondary game re-triggering event may include at least one of the triggering symbols and less than the plurality of the triggering symbols in the combination of triggering symbols comprising the triggering event where, for example, the re-triggering event includes

three or four triggering symbols and the triggering event includes five triggering symbols.

62. A POSA would have reasons to modify Graham such that the bonus re-trigger activates a bonus re-triggering symbol in the bonus game that, when displayed in the bonus game, provides an additional bonus game to the player. Graham discloses that a bonus re-trigger may add a bonus feature to the reels, and that such a feature may include changing the definition of a symbol function to a feature trigger. *See* Ex. 1003, 1:63-2:2. The usage of term “bonus feature” in Graham is different from the term “bonus game.” *See* Ex. 1003, 1:37-40 (an “initial series of free games” is different from the “bonus feature”). Graham’s use of the term “bonus feature” indicates some change to the previous functionality of the game so as to give the player an added feature during the bonus game. For example, Graham describes “changes in the definitions of symbol functions, for example, to scatters, substitutes, bonus symbols, feature triggers, etc.” Ex. 1003, 1:67-2:4. Therefore, Graham teaches that a bonus re-trigger can activate a bonus re-triggering symbol. A POSA would be motivated to implement this feature in light of Graham’s suggestion to “develop innovative game features” that will “enhance player interest.” Ex. 1003, 1:13-15, 3:65-67. In particular, Graham suggests being flexible in the way the bonus games are structured, particularly through “numerous variations and/or modifications [that] may be made to the invention . . . without departing from the spirit or scope of the

invention[.]” *Id.*, 4:1-5. A POSA would not encounter technical difficulties in making this modification because a POSA would readily appreciate how to activate a new bonus re-triggering symbol by making game design adjustments according to known techniques such as increasing or decreasing the lengths of reels, or adding or removing symbols from reel strips. To the extent changes to the math model of the game are required, that would squarely be within the ordinary skill of a POSA. In fact, it is precisely the job of the game mathematician in the first place.

63. A POSA would have been motivated to modify Graham such that the bonus re-triggering symbol may occur more frequently in the bonus game than the bonus triggering symbols do in the base game. Graham discloses that the “trigger frequency” may be manipulated by “changing the length or layout of the reel strips.” Ex. 1003, 3:59-60. Graham further states that this can affect the “likelihood of getting a trigger condition to be adjusted as necessary or required.” *Id.*, 3:63-64. A POSA would understand that the length or layout of the reel strips is determined in part by the frequencies of the individual symbols on the reels. Further, the likelihood of occurrence of a symbol combination is determined by the frequencies of the symbols. The likelihood of occurrence of a symbol combination, also known as its “hit frequency” (*see* ¶¶20–24) is a statistic that is inherently determined and adjusted as a routine matter of course by a POSA during the game math design process. A POSA would further understand that certain triggering

symbols, such as the “bonus re-triggering symbol,” could be made to occur more frequently in the bonus game than the regular “bonus triggering symbols” by manipulating the length or layout of the reel strips. Ex. 1003, 3:59-60. A POSA would also understand that, if a bonus re-trigger symbol is added to (or activated in) the game, the frequency of that symbol is necessarily comparable to the frequency of the initial triggering symbol and it can only be equal, less than, or greater than. A POSA would choose the relative frequency of that added or activated symbol as an inherent step in the game design process.

VI. Bennett

64. Bennett is a United States Patent that was filed on July 25, 2001, and issued on November 18, 2003. Bennett discloses a spinning reel-type game played on a gaming machine. Ex. 1004, 3:28-34. Bennett notes that many games at the time were themed: “For example, a game which has Egypt as its theme, may have Cleopatra, a pyramid, a sphinx, a hieroglyph and a gold ring as picture symbols.” *Id.*, 4:12-14.

65. Bennett discloses a free spins bonus game that is triggered during play of the base game. *See* 1:29-45 (describing the bonus game and base game). The base game in Bennett is “typically a video reel game (a video simulation of spinning reels)[.]” *Id.*, 3:66-4:1. The bonus game may be triggered by the occurrence of a combination of symbols such as “a specific picture symbol on the first reel and a

different specific picture symbol on the last reel.” *Id.*, 4:15-17. In one embodiment, the feature game is triggered by the appearance of two wild symbols. *See id.*, 5:47-49.

66. Bennett is directed to providing a “a set of special indicia . . . which may have specific functions during the [bonus] game series such as acting as wild, substitute, scatter symbols or the like.” *Id.*, Abstract. Prior to the commencement of the bonus game series, “the player is allowed to select which indicia from the set of indicia has at least one of the particular functions or attributes during the feature game series.” *Id.*, 1:40-45. As described with respect to Figure 7 (reproduced here), a player choice screen is presented after the occurrence of the triggering event but prior to the commencement of the bonus games. *See id.*, 6:13-32. The player may select one of the four picture symbols 102, 104, 106, 108 to substitute for all other symbols while the free games of the feature game series are in progress. *See id.*

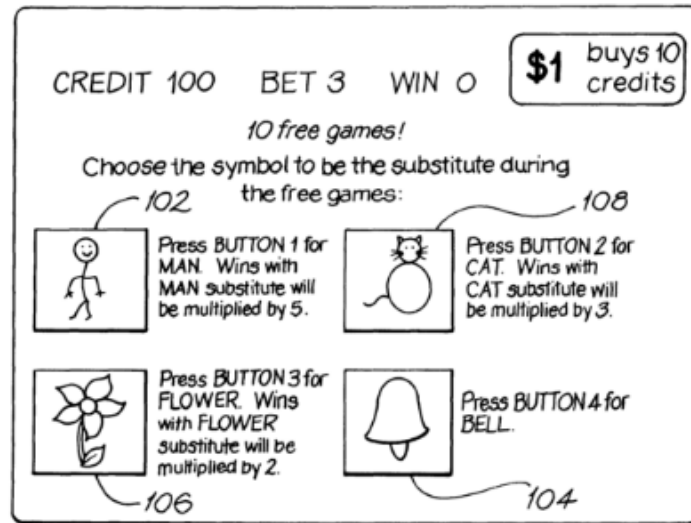


FIG. 7

67. In one embodiment of the invention, Bennett discloses that when the bonus game is triggered, “the player may choose to *add extra symbols* to the [bonus] feature games that *did not appear in the base game.*” *Id.* at 4:65-67 (emphasis added). In another embodiment, Bennett discloses that players “may alter the quantity of a certain symbol that appears on the virtual reels of the video reel game.” *Id.*, 5:1-3. Bennett therefore discloses manipulating the symbols that appear during the secondary game such that the primary game symbols and secondary game symbols are the same or different, as well as increasing or decreasing the frequency of those symbols (and therefore the frequency of combinations incorporating those symbols). All of these manipulations would have been well known to a POSA at the time of the alleged invention of the '532 Patent.

VII. WOS

68. WOS is a magazine article published in the September 1999 edition of Casino Journal magazine that describes a video slot machine game manufactured by Aristocrat called “Queen of the Nile.” Ex. 1005 at 62. WOS describes “Queen of the Nile” as follows: “‘Queen of the Nile’ is a Cleopatra-themed game with two separate bonus features. First, the Cleopatra symbol is wild and doubles any jackpot in which it lands. Second, three or more scattered Pyramid symbols send the game into 15 free spins, during which all jackpots are tripled. An interesting twist to this feature is that three or more Pyramids during free spin mode adds another 15 free spins.” *Id.*

69. The “Queen of the Nile” wagering game described in WOS was executed on a physical gaming machine. Popular gaming machines in the late 1990s included, for example, “Aristocrat’s new MVP slant-top cabinet.” Ex. 1005 at 62 (“Many of the new games [including ‘Queen of the Nile’] will be displayed for the first time in Aristocrat’s new MVP slant-top cabinet.”). A POSA would understand that this platform includes a display and input devices, and a processor with programming stored on a memory device to operate with them. A POSA would also understand that in a game such as that described in WOS, at least one processor enables the software for the game to run and would be used to control the operation of the entire game, including all in-game actions such as evaluating winning combinations, determining the associated awards, and controlling the video

display and audio functions because a POSA would understand that an electronic video gaming device is controlled by one or more processors and associated programming. Without such a processor, the electronic gaming device would not operate. A POSA would further appreciate that the “Queen of the Nile” game described in WOS was operated using videogame hardware. An electronic gaming device includes a processor which executes instructions that are stored on a data storage device. The instructions, when executed by the processor, allow for game play using the videogame hardware.

70. WOS describes “Queen of the Nile” as “a Cleopatra-themed game with two separate bonus features” including a “Cleopatra symbol [which] is wild and doubles any jackpot in which it lands.” Ex. 1005 at 62. A POSA would understand that a video slot machine game such as “Queen of the Nile” includes a primary game having a plurality of primary game symbols such as the “Cleopatra symbol[.]” *Id.* A “multiline video” game such as “Queen of the Nile” would include a spinning-reel type base game with a plurality of primary game symbols in accordance with the game’s overall theme. *Id.*

71. WOS explains that in “Queen of the Nile,” “three or more scattered Pyramid symbols send the game into 15 free spins[.]” Ex. 1005 at 62. In other words, “Queen of the Nile” includes a “secondary” or bonus game consisting of “15 free spins” that can be triggered by three, four, or five scattered Pyramid symbols.

Id. A POSA would understand that “three or more scattered Pyramid symbols” necessarily contemplates predetermined combinations of three, four, or five scattered Pyramid symbols that can trigger a secondary game. *Id.*

72. WOS further explains that during the “free spin mode” (*i.e.*, secondary game) of “Queen of the Nile,” an “interesting twist” is provided wherein “three or more Pyramids during [the] free spin mode adds *another 15 free spins.*” *Id.* (emphasis added). For example, the appearance of three, four, or five scattered Pyramid symbols can re-trigger the secondary game of 15 free spins.

73. Therefore, in “Queen of the Nile,” the entire secondary game (15 free spins) can be re-triggered at least once because the game “adds another 15 free spins” if “three or more Pyramids” appear during the bonus game.

74. Moreover, the secondary game can be re-triggered with less than all of the plurality of the secondary game triggering symbols required to trigger the initial secondary game. This is because the secondary game may be re-triggered by, for example, three or four scattered Pyramid symbols and the initial secondary game may be triggered by five scattered Pyramid symbols. This is also true if the re-triggered secondary game is triggered by three scattered Pyramid symbols and the initial secondary game is triggered by four or five scattered Pyramid symbols.

VIII. The Combination of Graham, Bennett, and WOS

75. A POSA would have been motivated to combine Graham with WOS to

provide a plurality of designated or predetermined combinations of secondary game triggering symbols where each of the designated or predetermined combinations contained different quantities of triggering symbols. WOS describes a video slot machine game manufactured by Aristocrat called “Queen of the Nile.” Ex. 1005, 62. In “Queen of the Nile,” “three or more scattered Pyramid symbols send the game into 15 free spins[.]” *Id.* A POSA would understand that the “three or more scattered Pyramid symbols” are a plurality of combinations of triggering symbols that may trigger a bonus game. *Id.* And each of the combinations contain different numbers of triggering/scatter symbols (three, four, or five scatter Pyramids, for example). Moreover, each of the combinations contain a *designated* quantity of triggering symbols. For example, “three” scattered Pyramid symbols and “five” scattered Pyramid symbols are designated quantities. And in the game programming, each of these designated quantities of triggering symbols may be configured to trigger the secondary game, and as explained before, such game programming is not only within the ordinary level of skill in the art but is a common and ordinary part of game design and development.

76. A POSA would have been motivated to combine Graham with WOS such that each of the designated combinations of triggering symbols is associated with a *designated* number of plays of the secondary game because in “Queen of the Nile,” the designated combinations of three, four or more scatter Pyramid

symbols are associated with a designated number of plays, *i.e.* 15 free spins. *See* Ex. 1005 at 62.

77. A POSA would also understand that Graham in combination with WOS discloses a plurality of designated combinations of the secondary game triggering symbols that can *each* re-trigger the secondary game. WOS teaches that “three or more Pyramids during [the] free spin mode adds another 15 free spins.” Ex. 1005 at 62. A POSA would thus understand that in “Queen of the Nile,” there can be multiple combinations of secondary game triggering symbols (*e.g.*, three, four, or five Pyramids) that can each provide “another 15 free spins” which is a re-trigger of the initial bonus games (also 15 free spins). *Id.*

78. A POSA would have been motivated to combine Graham with WOS to provide a secondary game which has a plurality of secondary game symbols including the plurality of secondary game triggering symbols. WOS teaches that “three or more Pyramids during [the] free spin mode adds another 15 free spins[,]” Ex. 1005 at 62, which shows that there may be combinations of three, four, or more triggering symbols that can re-trigger the bonus game (“15 free spins”) during the bonus game (“free spin mode”). *Id.*

79. A POSA would have been motivated to modify Graham, in view of the teachings of WOS, to re-trigger a secondary game with a designated number of secondary of triggering symbols where the designated number is at least one but less

than all of the plurality of the secondary game triggering symbols of the predetermined combination that triggered the initial bonus game. In “Queen of the Nile,” “three or more scattered Pyramid symbols send the game into 15 free spins[.]” Ex. 1005 at 62. WOS thus teaches that the number of triggering symbols to *initially trigger* a bonus game may be variable. WOS further states that during the “free spin mode” (*i.e.*, secondary game) of “Queen of the Nile,” an “interesting twist” is provided wherein “three or more Pyramids during [the] free spin mode adds another 15 free spins.” *Id.* Accordingly, WOS also teaches that the number of triggering symbols to *re-trigger* the bonus game may be variable.

80. Armed with the understanding that the number of triggering symbols required to initially trigger or re-trigger the bonus game may be variable, a POSA would further understand that the designated number of secondary game triggering symbols disclosed by WOS may be at least one but less than all of the plurality of the secondary game triggering symbols of the predetermined combination where, for example, the re-triggered bonus game is triggered by three or four scattered Pyramid symbols and the initial bonus game is triggered by five scattered Pyramid symbols. *See* Ex. 1005 at 62. This is also the case if the re-triggered bonus game is triggered by three scattered Pyramid symbols and the initial bonus game is triggered by four or five scattered Pyramid symbols. This modification would merely require a game designer to configure the bonus game to be re-triggered with more than three scatter

symbols (*e.g.*, four or five), such that the bonus game may be re-triggered with fewer scatter symbols (*e.g.*, three) than required to trigger the initial bonus game. Graham already teaches the use of “three scatter symbols anywhere on the display means[.]” Ex. 1003, 2:24-25, and there is no suggestion in Graham that configuring the game so that *additional* scatter symbol combinations trigger or re-trigger a bonus game would pose any difficulties to a POSA. Though the modifications might require changes to the game’s math model to ensure compliance with gaming regulations and to maintain profitability, a POSA would not encounter difficulties because developing a mathematical analysis is a core part of a gaming mathematician’s job. No experimentation would therefore be needed by a POSA to combine the teachings of WOS with Graham, save for the minimal mathematical analysis that is a core part of a gaming mathematician’s job. And in fact, changes to math models can make games more exciting to players.

81. A POSA would have been motivated to combine Graham and WOS to configure the secondary game re-triggering event to include a greater number of combinations of triggering symbols than the triggering event. In “Queen of the Nile,” “three or more scattered Pyramid symbols send the game into 15 free spins[.]” *Id.* WOS further teaches that “three or more Pyramids during [the] free spin mode adds another 15 free spins[.]” Ex. 1005, 62, which shows that there may be combinations of three, four, five, or more triggering symbols that can re-trigger the

bonus game (“15 free spins”) during the bonus game (“free spin mode”). *Id.* In view of WOS’s teaching that there can be multiple triggering combinations, and Graham’s teaching that “feature triggers” may be changed, Ex. 1003, 1:66-2:2, a POSA would have reasons to modify Graham such that the re-triggering event includes a greater number of combinations of triggering symbols than the triggering event.

82. In addition, a POSA would have reasons to modify Graham in view of the teachings of WOS such that the secondary game re-triggering event may include at least one of the triggering symbols and less than the plurality of the triggering symbols in the combination of triggering symbols comprising the triggering event. WOS teaches varying the number of triggering symbols to trigger or re-trigger a bonus game. WOS states that “three or more scattered Pyramids” can trigger the bonus game and “three or more Pyramids during [the] free spins mode” can re-trigger the bonus game. Ex. 1005, 62. WOS therefore discloses situations where, for example, the re-triggering event includes three triggering symbols and the triggering event includes four or five symbols. Similarly, a POSA would have reasons to modify Graham, in view of the teachings of WOS, such that there is a higher likelihood of obtaining the re-triggering event than the triggering event. Graham discloses that a “bonus feature” during the bonus game may change the “definitions of symbol functions” to “scatters . . . or feature triggers.” Ex. 1003, 1:66-2:2. WOS teaches that “three or more Pyramids during [the] free spin mode adds another 15

free spins[.]” Ex. 1005, 62. A POSA would be motivated to combine Graham with WOS such that the initial bonus game may be triggered by three, four, or five scattered Pyramid symbols, then during the bonus game, apply a “bonus feature” such that one of the definitions of a different symbol changes to the scatter Pyramid symbol. Then, the re-triggered bonus game may be triggered by three, four, or five scattered Pyramid symbols with a higher frequency. The re-triggering condition in this scenario would have a higher chance of occurring than the triggering condition.

83. A POSA would be motivated to import WOS’s teachings into Graham because game designers often draw upon the success of other games and their gameplay when developing gaming devices. In particular, game designers in the late 1990s and early 2000s (including myself) regularly reviewed old and new games on the market—both from descriptions in magazines and from hands-on play in casinos—and would therefore have known about all of these various gaming features and understood that mixing and matching such features is a common part of game design. Game designers were constantly looking for exciting gameplay options to hold the interest of players and entice players to play again. A POSA would understand that mixing and matching game features found in the industry (*e.g.*, free spins, scatter pays, wild symbols, re-triggered bonuses, and pick-bonuses) was common practice in the game design process. WOS is an excellent candidate for combining with Graham because as Casino Journal puts it, the re-triggering free

spins bonus feature in “Queen of the Nile” was considered “*interesting twist*” on existing games. Ex. 1005 at 62. The multiple trigger conditions disclosed by WOS in the form of “three or more Pyramids” may give players an indication that there is a relatively high chance of triggering the bonus game.

84. Further, a POSA would encounter little technical difficulty in modifying Graham in view of the teachings of WOS. A POSA would expect to successfully implement the “interesting twist[s]” in the programming of the game, Ex. 1005 at 62, and game programming is not only within the ordinary level of skill in the art but is a common and ordinary part of game design and development. And in fact, combining such features into an engaging overall game and “tuning” the mathematics to reach a desired payback percentage and entertaining award distribution is the primary role of a game designer/mathematician for a slot machine company.

85. A POSA would have reasons to combine Graham and Bennett such that a plurality of paylines are associated with the reels. Bennett describes, in reference to Figure 3 (below) a gaming machine “having three paylines 1, 2, 3” associated with the reels. Ex. 1004, 5:43-45. Figure 3 depicts three paylines (from the top, paylines #2, 1, and 3) that are similar to the three paylines shown in Figures 3A–6 in the ’532 Patent. Therefore, Graham in combination with Bennett would disclose a game with several paylines (at least three shown in Figure 3 of Bennett) that are associated with the reels.

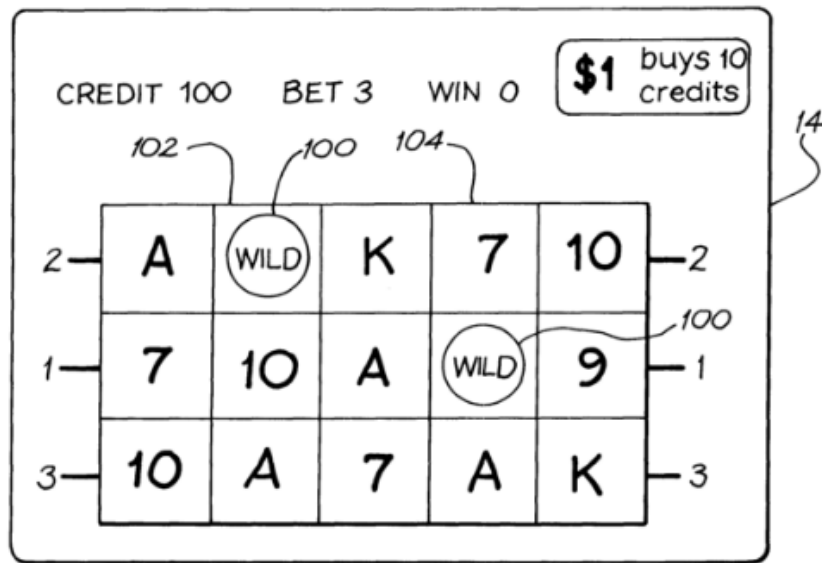


FIG. 3

86. As Graham and Bennett explain, game manufacturers' main goal is to attract new customers and retain customers. *See* Ex. 1003, 1:25-26; Ex. 1004, 1:25-26. This provides a good reason to combine the teachings of Graham and Bennett, particularly because mixing and matching game features was a common and ordinary part of game design. In particular, Bennett's teaching of using multiple paylines associated with the reels would help attract players excited by the opportunity to win multiple, simultaneous awards. Games using multiple paylines were popular prior to the critical date of the '532 Patent. *See* Ex. 1012 at 65 ("As Australian-style games with scatter awards, multiple paylines, multiple coin play per line and second screens have increased, Aristocrat has bid for increased floor space. That's natural enough, because Aristocrat can claim to be the Aussie originators Aristocrat has a line of

more than 20 slots, both on video screens and with physical reels, all with creative scatter awards and second screen bonuses.”). Such a modification would be consistent with Graham’s stated goal of “develop[ing] innovative game features which add interest to the games,” Ex. 1003, 1:12-15, and is one of the “numerous variations and/or modifications [that] may be made to the invention without departing from the spirit or scope of the invention.” *Id.*, 4:1-5. Even if a POSA would not have found Graham to be suggesting multiple paylines associated with reels in the first instance, a POSA would expect success in incorporating this well-known feature into Graham due to its successful use in other known games.

87. A POSA would have been motivated to combine Graham with Bennett such that the bonus re-trigger activates a bonus re-triggering symbol in the bonus game that, when displayed in the bonus game, provides an additional bonus game to the player. Bennett discloses that when the bonus game is triggered, “the player may choose to add extra symbols to the [bonus] feature games that did not appear in the base game.” Ex. 1004, 4:65-67. Bennett further discloses that the player may choose to “alter the quantity of a certain symbol that appears on the virtual reels of the video reel game.” *Id.*, 5:1-3. Bennett therefore suggests liberally introducing new symbols that were not originally available during the play of the base or bonus game. One such symbol may be, for example, a bonus re-triggering symbol which, when displayed in the bonus game, prompts the processor to provide an additional, re-

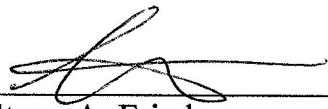
triggered bonus game to the player. As explained in more detail below, a POSA would have good reason to combine Graham and Bennett. In particular, implementing Bennett's teaching would be beneficial because, when a player obtains a new re-triggering symbol, he or she would want to continue playing the game in the hopes of re-triggering additional high-paying bonus games. Therefore, combining Graham with Bennett would be consistent with Graham's stated goal of "develop[ing] innovative game features which add interest to the game," Ex. 1003, 1:12-15. Graham also encourages applying "numerous variations and/or modifications" to the invention as long as it does not "depart[] from the spirit or scope of the invention." *Id.*, 4:1-5.

88. Modifying Graham alone or in combination with Bennett might require changes to the math model of the game (i.e. the size of the awards and the likelihood of winning them) to ensure that the game remained profitable to the operator. But designing appropriate paybacks and probabilities is squarely within the ordinary skill in the art of a POSA and precisely the job of the mathematician in the first place.

I hereby declare that all statements made herein of my own knowledge are true and that all statements made on information and belief are believed to be true; and further that these statements were made with the knowledge that willful false statements and the like so made are punishable by fine or imprisonment, or both, under § 1001 of Title 18 of the United States Code.

Dated: 9/18/2016

Respectfully submitted,

By 
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