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(54) Title  
**Gaming Machine with runs of symbols**

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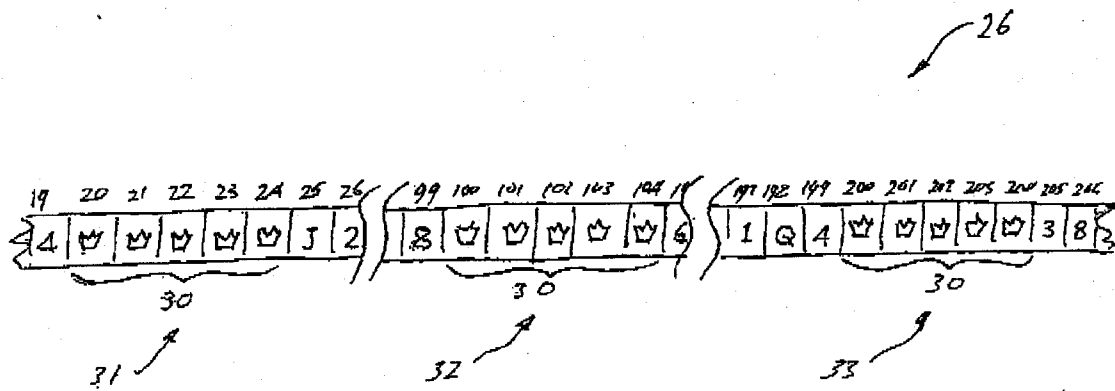
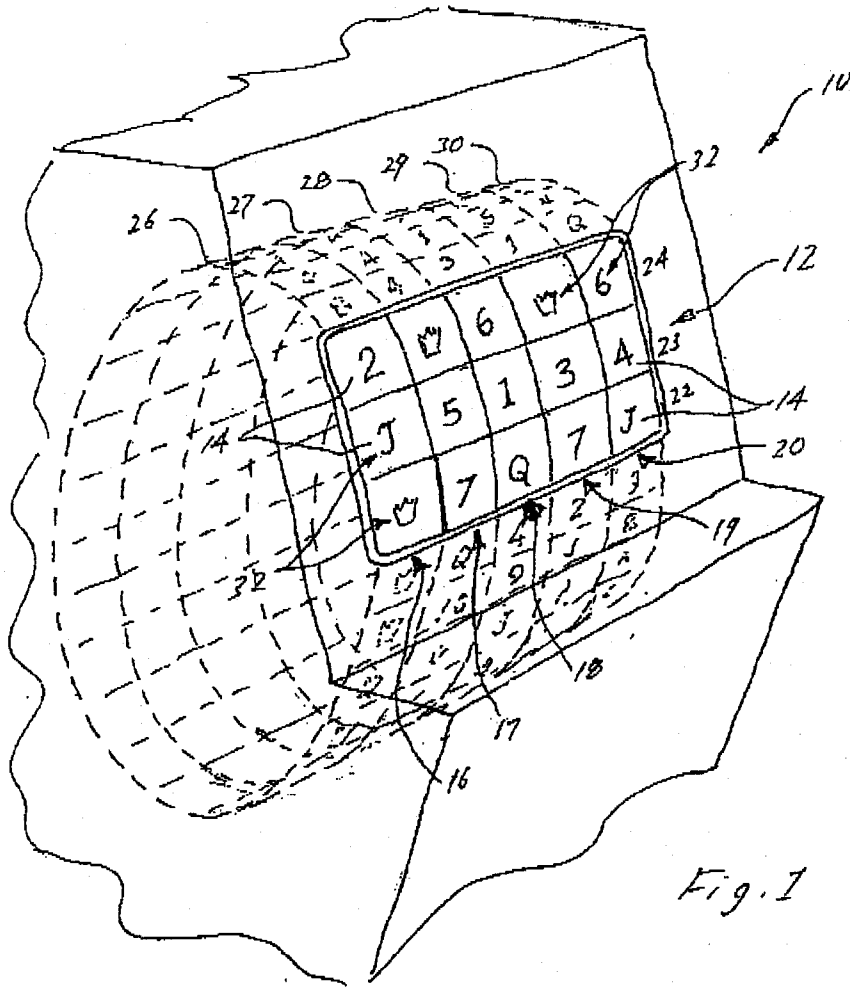
**ABSTRACT**

A gaming machine arranged to display a matrix of symbol  
containing elements; each column of said matrix  
comprising a portion of a simulated rotatable reel of  
5 said symbol containing elements; and wherein each of said  
symbol containing elements of at least one consecutive  
run of said symbol containing elements of at least one  
said reel is caused to display an identical symbol.

2005232302 11 Nov 2005

2005232302 11 Nov 2005

1/7



2005232302 11 Nov 2005

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Regulation 3.2

**AUSTRALIA**

**Patents Act 1990**

**COMPLETE STANDARD PATENT APPLICATION**

Invention Title:

**GAMING MACHINE WITH RUNS OF SYMBOLS**

The invention including the best method of performing it known to us is described in the following statement:

Our Ref: 052039

**GAMING MACHINE WITH RUNS OF SYMBOLS**

The present invention relates to gaming machines for the playing of games of chance and, more particularly, to special features of games or feature games which may be offered on such machines.

**BACKGROUND**

Gaming, or poker machines, have become a major source of amusement and diversion in such places as clubs, hotels and casinos in many parts of the world.

Traditionally such machines were mechanical devices where a number of reels marked with a plurality of numbers or symbols could be made to spin randomly by the application of some mechanical input. If the subsequent patterns of numbers or symbols displayed on the reels, when these returned to a rest state, corresponded to predetermined patterns, the machine would provide a prize or payout. Generally such gaming machines have come to be regulated by government authorities as to their number and in the manner in which the machines must return a percentage of the monetary turnover to the players.

The introduction of electronics, computers and electronic graphical displays, has allowed a continual increase in the complexity and variations of gaming machines, games and displays while maintaining the basic concept of the traditional machine. Nevertheless, in some

jurisdictions at least, government regulations effectively restrict the degree of variation which may be incorporated in games played on coin-freed machines.

Machines and games therefore that offer novel and stimulating variations on the basic game theme and environment, yet comply with these restrictions are eagerly sought by the gaming industry and there is consequently intense competition between machine manufacturers to innovate.

Games based on simulated rotatable reels typically display a matrix of elements each of which displays a symbol. Predetermined patterns of symbols, if displayed after the reels are spun and come to rest, may then award a prize to the player of the game. Typically also, the symbols are arranged in the elements of a reel so that adjoining elements do not display the same symbol.

An exception to this is found for example in Australian Patent Application number 2004203045 (Aristocrat Technologies Australia Pty Ltd), in which arrangements are envisaged where two special symbols may occur adjacent one to the other.

A similar exception is found in Australian Patent Application number 2002301067 (Stargames Corporation Limited), in which a specific symbol and the number of its occurrences in the display at the conclusion of a game sequence, is determinant of a win. As indicated in Fig. 2

of the specification, two such symbols may appear in adjoining elements of a reel.

Both these examples of the prior art allow for only a single predetermined or special symbol to take up such adjacent positions on a reel.

It is an object of the present invention to address or at least ameliorate some of the above disadvantages.

#### **BRIEF DESCRIPTION OF INVENTION**

Accordingly, in a first broad form of the invention, there is provided a gaming machine arranged to display a matrix of symbol containing elements; each column of said matrix comprising a portion of a simulated rotatable reel of said symbol containing elements; and wherein each of said symbol containing elements of at least one consecutive run of said symbol containing elements of at least one said reel is caused to display an identical symbol.

Preferably, said identical symbol is selected by a game controller from a subset of available symbols.

Preferably, each symbol of said subset of symbols is assigned a probability of selection.

Preferably, said matrix of elements is comprised of five columns and three rows of elements.

- 5 -

Preferably, said at least one said reel is a first left-most reel.

Preferably, each element of said first left-most reel other than elements of said at least one consecutive run of elements is populated by a random selection of said available symbols.

Preferably, said game controller selects one potential win element from each said reel.

Preferably, a prize is awarded to a player of a game on said gaming machine if a predetermined arrangement of said potential win elements is displayed on a pre-defined payline of said matrix of elements when a game sequence is concluded.

Preferably, elements of each of reels two, three, four and five are populated with a default random selection of said available symbols.

Preferably, each symbol of at least one pre-defined consecutive run of said elements of each of said reels two, three, four and five is adapted for potential modification from said default random selection of available symbols to a said identical symbol.



Preferably, said identical symbol is that symbol populating said consecutive run of elements of a leftwardly adjoining reel.

Preferably, said modification from said default random selection occurs within any one of said reels two, three, four or five, if a said win element of a preceding reel coincides with a said element of a consecutive run of elements of said preceding reel.

Preferably, each said reel, which includes said at least one consecutive run of identical symbols, is pre-spun at a relatively slow rate when a game sequence is initiated.

Preferably, all symbols of all elements of at least one said reel are identical.

Preferably, said gaming machine is a single display stand-alone gaming machine.

Preferably, said gaming machine is a stand-alone gaming machine provided with an upper secondary display.

Preferably, said gaming machine is one of a plurality of gaming machine linked to a progressive jackpot controller.

Preferably, said elements are N-sided elements; where N is a variable and values of N include N=1.

Preferably, said values of N include 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19 and 20.

Preferably, said N-sided elements are regular hexagons.

5 In a further broad form of the invention there is provided a method for increasing probability of a winning outcome on a gaming machine; wherein said winning outcome is determined by pre-defined arrangements of symbols displayed in a matrix of elements comprising portions of  
10 simulated rotatable reels; said method including the steps of:

(a) arranging at least one of said simulated rotatable reels with at least one consecutive run of elements displaying an identical symbol;  
15 said identical symbol selected from a subset of available symbols,

(b) a game controller randomly selecting one element from each one of said simulated rotatable reels as a potential win element.

20 Preferably, said matrix of elements comprises three rows and five columns of said elements; said columns comprising portions of said rotatable reels.

Preferably, said identical symbol is selected from a look-up table of said subset of available symbols.

Preferably, said at least one of said simulated rotatable reels is a first left-most reel.

5 Preferably, all said elements of said reels, except said at least one consecutive run of elements displaying said identical symbol on said first left-most reel, display randomly selected symbols from said available symbols.

10 Preferably, reels other than said first left-most reels are each provided with at least one potential consecutive run of elements adapted for modification from said randomly selected symbols to a said identical symbol.

15 Preferably, said modification from said randomly selected symbols within said potential consecutive run of said reels other than said first left-most reel, occurs if said potential win element of a leftwardly preceding reel falls within a said consecutive run of elements of  
20 said leftwardly preceding reel.

In yet a further broad form of the invention there is provided a method of implementing a game of any one of

claims 1 to 27 on a gaming machine; said method including the steps of:

(c) providing said gaming machine with a control module; said module including a microprocessor, a working memory and a data storage device connection means,

(d) writing program code to said data storage device,

(e) connecting said data storage device to said control module.

In still a further broad form of the invention there is provided media for storing enabling digital code for playing games according to any of claims 1 to 28; said media comprising solid state data retaining devices including, read only memory (ROM) and erasable programmable read only memory (EPROM), compact flash cards and PCMCIA cards; said media further including disc-based storage devices.

#### BRIEF DESCRIPTION OF DRAWINGS

Embodiments of the present invention will now be described with reference to the accompanying drawings wherein:

- 10 -

Figure 1 is a partial view of a gaming machine with a display showing a matrix of elements and symbols comprising portions of simulated rotatable reels,

Figure 2 is a schematic representation of the elements and symbols of portions of the first or left-most rotatable reel of Fig. 1,

Figure 3 is a schematic representation of an "inner reel" or look-up table,

Figures 4A to 4C are schematic representations of portions of the reel of Fig. 2 and of the adjoining second reel for a particular game situation,

Figures 5 and 6 show examples of the display of Fig. 1 during play of a game using hexagonal elements,

Figure 7 is a schematic representation of a control module, input keyboard and display for implementing the game embodiments of Figs. 3 to 9,

Figure 8 is a perspective view of a stand-alone gaming machine with a single display unit,

Figure 9 is a front view of a stand-alone gaming machine with a main display and a secondary display unit,

Figure 10 is a perspective view of a number of the gaming machines of Figs. 8 or 9 when linked to a progressive jackpot system.

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**DETAILED DESCRIPTION OF PREFERRED EMBODIMENTS****First Preferred Embodiment**

2005232302 11 Nov 2005

With reference to Figs. 1 and 2, a gaming machine 10 is provided with a display 12, showing portions of a number of adjoining simulated rotatable reels 26 to 30. Each reel is divided into a given number of elements, for example 256 elements. In this example, when rotatable reels 26 to 30 are at rest, the display shows a matrix of elements 14 in five columns, 16 to 20 and three rows, 22 to 24, so that each column comprises a three-element portion of the respective simulated rotatable reel. Each element 14 of simulated rotatable reels 26 to 30 is arranged to display a symbol 32. With some exceptions, as explained below, the sequence of symbols within the elements of a reel remains fixed for all games played.

A game controller (not shown) pre-selects at random, at the initiation of a game sequence, a potential win element for each reel from the set of elements. That is, the game controller predetermines which element, and therefore which symbol, will be displayed in a pay line position at the end of a game sequence, and may therefore contribute to a winning outcome.

In this first preferred embodiment of the invention, at least one reel, the first left-most reel, is arranged to have at least one run of an identical symbol in each of a

- 12 -

number of consecutive elements. The arrangement is shown schematically in Fig. 2 where portions of the left-most reel 26 are shown in strip form and, for example, a run of kings (crown symbol) is arranged for display in runs of five consecutive elements 30 at three locations 31 to 33 respectively. The three runs of consecutive elements in this example are elements 20 to 24, 100 to 104 and 200 to 204, within the 256-element length of the strip. In this preferred embodiment, the number of elements in a run and the location of the consecutive run or runs within the strip are predetermined and remain constant for each game played on the machine. The identical symbol which populates these consecutive run or runs of elements may be considered as one of a set of "inner reel" symbols.

The game controller (not shown) determines the identical symbol to be displayed in each consecutive element of the run or runs of consecutive elements in which the symbol is to be shown. The selection of the identical symbol is through a notional rotation of an "inner reel" shown as a strip of elements and symbols in Fig. 3. This "inner reel" is in effect a look-up table and is not displayed, but its simulated rotation and "coming to rest" determines which symbol will populate the run or runs of consecutive elements of the left-most reel.

- 13 -

2005232302 11 Nov 2005

The symbols of the "inner reel" or look-up table from which the selection is made, are a sub-set of the set of symbols displayed in the remaining non-"inner reel" elements of the left-most reel. Thus, where the symbols are those of a suit of cards, the "inner reel" symbols may be those of the Ace, King, Queen and Jack, sometimes called the trump or court cards (correct?). The look-up table could also include a "wild" or "scatter" symbol. As previously noted, the arrangement or ordering of the symbols in the elements of the reel, other than the consecutive run or runs of elements, remain constant for every game, only the selection of the identical symbol from the look-up table is performed anew for each new play of a game.

The symbols 36 of the look-up table 34 need not all have the same probability of selection but may be assigned a hierarchy of probability. Thus for example, those symbols for which a winning combination confers on the player of a game a relatively higher value prize, such as the ace and the king, may have an inversely proportional probability of being selected as an "inner reel" symbol.

The reels are now spun as normal. The player will notice the run or runs of identical symbols passing through the display 12 for each revolution of the left-most reel 26, thereby providing a heightening of interest, since the



odds of a winning arrangement of symbols appearing on a pre-defined pay line in the matrix at the conclusion of the game sequence will be increased.

#### **Second Preferred Embodiment**

5           In a second preferred embodiment of the invention, the second reel, that is the second reel from the left in this example, may also be modified to include at least one run of consecutive elements displaying the same "inner reel" symbol as that used to populate the elements of the  
10 consecutive run or runs of the left-most reel. As for the first, left-most reel, the number and location of the consecutive elements of the potential run or runs within the strip of elements forming the simulated reel, is predetermined and remains constant.

15           Prior to modification, all the elements of the second reel (and likewise those of the third fourth and fifth reel) are randomly populated with symbols from the set of available symbols. Unless modification is triggered in the manner explained below, the ordering of these symbols  
20 within the elements of the reels remains constant for every game;- only those symbols of the potential run or runs being displaced should a modifying event occur.

The populating of the potential "inner reel" elements of the second reel, and of any subsequent reels, is

- 15 -

2005232302 11 Nov 2005

dependent on the potential win element for the first, or preceding reel, which was randomly selected by the game controller, lying within a run of consecutive elements of that reel. For example if, as shown in Fig. 4A, in the 5 left-most reel 26, which has consecutive runs comprising the elements as numbered in the First Preferred Embodiment above, the potential win element selected is element number 103, the second reel 27 will be modified. Second reel 27 in this example has two potential runs 40 and 41 of 10 consecutive "inner reel" elements, element numbers 83 to 87 and 191 to 195 respectively, which in a default state are randomly populated from the set of available symbols as shown in Fig 4B. However, because the selected potential win element 103 of reel 26 falls within run 32, the 15 potential "inner reel" elements 83 to 87 and 191 to 195 of reel 27 are replaced with the same identical symbol as used for the consecutive run or runs of the left-most reel 26 as shown in Fig 4C.

20 A player will now discern a bias of symbols, (in our example crown symbols), in both the first, left-most, and second reels as these are spun during the play of a game. The effect is clearly an increase in the probability of a winning combination of symbols appearing along a pre-defined pay line within the matrix and consequently a

- 16 -

raised level of interest in the outcome of the game for the player.

The same process of populating potential "inner reel" elements with the "inner reel" symbol of the preceding reel, may be sequentially applied to the third, fourth and fifth reels. As described for the second reel, the modification of a succeeding reel depends on the selected potential win element of the preceding reel falling within a run of "inner reel" elements of that reel.

#### 10 **Third Preferred Embodiment**

In at least one preferred form of this embodiment, a player is made aware of the populating of one or more consecutive runs of the left-most reel with the identical symbol. This may be done prior to the main game sequence, for example, by a slower pre-spin of only the left-most reel. If any further reels are so populated, each may be pre-spun sequentially.

The displayed game rules and experience will alert a player to the fact that the potential winning element for a given reel is positioned somewhere within the run, or one of the runs of consecutive elements populated with the identical symbol if the second and any subsequent reels are also pre-spun to display a run or runs of that symbol. The player will appreciate that the probability of a winning

2005232302 11 Nov 2005

combination occurring increases with each additional reel which is pre-spun to display its run or runs of elements with the same symbol.

#### Fourth Preferred Embodiment

5       The above described embodiments may be applied to a main game of a gaming machine or to a feature game offered as a result of some triggering event in a main game.

10       In a preferred embodiment of the invention as adapted for a feature game, the number of elements comprising a run of identical "inner reel" symbols and the number of such runs in any given reel is not constant but may be determined in a number of ways. Thus, in at least one preferred embodiment, the number of elements comprising a run may be a function of the amount of a bet placed by the  
15       player on the main game which triggered the feature game, or as a function of accumulated throughput of bets over a given time period. In one special case, all the elements of the first left-most reel may be populated by the same "inner reel" symbol.

20       Likewise, the number of runs in a given reel may be a function also of the betting pattern preceding the conferring of the feature game or alternatively, may be a function of the particular triggering event of the main game which led to the feature game.

**Fifth Preferred Embodiment**

2005232302 11 Nov 2005

The elements comprising the matrix of elements of any of the above described embodiments may be of conventional rectangular configuration, but in at least one preferred 5 embodiment the delineation of an element, that is, the boundary defining the field containing a symbol, may be any N-sided figure, where N may take the value 1 (thus a circular field) or any value from 3 to 20. In at least one preferred form of N-sided element, as shown in Figs. 5 and 10 6, the elements 50 are hexagon shape for the value of N=6.

**Game Implementation**

Any of the above described embodiments may be implemented on any gaming machine or group of gaming machine provided with a control module. As shown in Fig. 7, 15 a control module 60 is provided with a microprocessor 62 and working random access memory (RAM) 64. The program code driving any of the described embodiments may be introduced into the control module 60 by connection of a data storage device 66. The device may take any of a number of forms, 20 such as read only memory (ROM), erasable read only memory (EPROM), Compact Flash Card, PCMCIA card and the like. Alternatively, control module 60 may incorporate a hard disc drive to which the code may be written via a suitable input device.

25 Control module 60 acts to implement appropriate elements of the program code according to inputs from a

user keyboard 68 and outputs video imagery to at least a main display module 70.

### **1. Stand-alone Gaming Machines**

5 As shown in Fig. 8, any of the above described embodiments for use on electronic display gaming machines may be incorporated into a stand-alone gaming machine 100 provided with a single display unit 112. In this implementation of games according to the invention, both  
10 main games and feature games (if offered) are displayed on the single display unit.

### **2. Stand-alone Gaming Machines with Secondary Display Unit**

In a further preferred embodiment of the invention as  
15 shown in Fig. 9, a stand-alone gaming machine 120 is provided with a secondary display unit 125 as well as a main display unit 122. In this embodiment the main game played on the primary display unit may take the form of either the first or second preferred embodiments described  
20 above. It is then a triggering event in the main game which offers a player a feature game as described in the third preferred embodiment above.

### **3. Gaming Machines Linked to Progressive Jackpot System**

In yet a further preferred embodiment of the invention  
25 as shown in Fig. 10, a plurality of gaming machines 300 are arranged side by side in a line or arc so as to allow each

of the players (not shown) of the machines to view a common  
jackpot prize display unit 313. Each individual machine 310  
is provided with at least a main game display unit 315 for  
the playing of a main game according to the above described  
5 first and second embodiments

Each of machines 310 of the embodiment illustrated in  
Figure 7 is electronically linked to a jackpot control  
module 311 which monitors the volume of play on each of the  
linked machines and displays an incrementing jackpot value  
10 312 determined according to the combined volume of play on  
the linked machines.

A win of the jackpot prize may be triggered by  
specific outcomes of either a main game or of a feature  
game. If the jackpot trigger is dependent on an outcome of  
15 the feature game, players on adjoining machines may be made  
aware by means of the common display that a potential  
triggering of the jackpot is to commence on the machine  
offered the feature game, thus adding interest for all the  
players.

20 It will be appreciated that the linked machines may  
form part of Local Area Networks (LAN) or Wide Area  
Networks (WAN).

- 21 -

**CLAIMS**

1. A gaming machine arranged to display a matrix of  
symbol containing elements; each column of said  
matrix comprising a portion of a simulated rotatable  
5 reel of said symbol containing elements; and wherein  
each of said symbol containing elements of at least  
one consecutive run of said symbol containing  
elements of at least one said reel is caused to  
display an identical symbol.
- 10 2. The gaming machine of claim 1 wherein said identical  
symbol is selected by a game controller from a subset  
of available symbols.
3. The gaming machine of claim 2 wherein each symbol of  
said subset of symbols is assigned a probability of  
15 selection.
4. The gaming machine of any one of claims 1 to 3 wherein  
said matrix of elements is comprised of five columns  
and three rows of elements.
5. The gaming machine of any one of claims 1 to 4 wherein  
20 said at least one said reel is a first left-most reel.
6. The gaming machine of claim 5 wherein each element of  
said first left-most reel other than elements of said



at least one consecutive run of elements is populated by a random selection of said available symbols.

7. The gaming machine of any one of claims 2 to 6 wherein said game controller selects one potential win element  
5 from each said reel.

8. The gaming machine of claim 7 wherein a prize is awarded to a player of a game on said gaming machine if a predetermined arrangement of said potential win elements is displayed on a pre-defined payline of said  
10 matrix of elements when a game sequence is concluded.

9. The gaming machine of any one of claims 2 to 8 wherein elements of each of reels two, three, four and five are populated with a default random selection of said available symbols.

15 10. The gaming machine of claim 9 wherein each symbol of at least one pre-defined consecutive run of said elements of each of said reels two, three, four and five is adapted for potential modification from said default random selection of available symbols to a  
20 said identical symbol.

11. The gaming machine of claim 10 wherein said identical symbol is that symbol populating said

consecutive run of elements of a leftwardly adjoining reel.

12. The gaming machine of claim 10 or 11 wherein, said modification from said default random selection occurs within any one of said reels two, three, four or five, if a said win element of a preceding reel coincides with a said element of a consecutive run of elements of said preceding reel.

13. The gaming machine of any one of claims 1 to 12 wherein each said reel, which includes said at least one consecutive run of identical symbols, is pre-spun at a relatively slow rate when a game sequence is initiated.

14. The gaming machine of any one of claims 1 to 13 wherein all symbols of all elements of at least one said reel are identical.

15. The gaming machine of any one of claims 1 to 14 wherein said gaming machine is a single display stand-alone gaming machine.

16. The gaming machine of any one of claims 1 to 14 wherein said gaming machine is a stand-alone gaming machine provided with an upper secondary display.

17. The gaming machine of any one of claims 1 to 16 wherein said gaming machine is one of a plurality of gaming machine linked to a progressive jackpot controller.

5 18. The gaming machine of any one of claims 1 to 17 wherein said elements are N-sided elements; where N is a variable and values of N include N=1.

19. The gaming machine of claim 18 wherein said values of N include 4, 5, 6, 7, 8, 9, 10, 11, 12, 13,  
10 14, 15, 16, 17, 18, 19 and 20.

20. The gaming machine of claim 18 or 19 wherein said N-sided elements are regular hexagons.

21. A method for increasing probability of a winning outcome on a gaming machine; wherein said winning  
15 outcome is determined by pre-defined arrangements of symbols displayed in a matrix of elements comprising portions of simulated rotatable reels; said method including the steps of:

20 (a) arranging at least one of said simulated rotatable reels with at least one consecutive run of elements displaying an identical symbol; said identical symbol selected from a subset of available symbols,

(b) a game controller randomly selecting one element from each one of said simulated rotatable reels as a potential win element.

22. The method of claim 21 wherein said matrix of  
5 elements comprises three rows and five columns of said elements; said columns comprising portions of said rotatable reels.

23. The method of claim 21 or 22 wherein said  
10 identical symbol is selected from a look-up table of said subset of available symbols.

24. The method of any one of claims 21 to 23 wherein  
said at least one of said simulated rotatable reels is a first left-most reel.

25. The method of claim 24 wherein all said elements  
15 of said reels, except said at least one consecutive run of elements displaying said identical symbol on said first left-most reel, display randomly selected symbols from said available symbols.

26. The method of claim 24 or 25 wherein reels other  
20 than said first left-most reels are each provided with at least one potential consecutive run of elements adapted for modification from said randomly selected symbols to a said identical symbol.

2005232302 11 Nov 2005

27. The method of claim 26 wherein said modification  
from said randomly selected symbols within said  
potential consecutive run of said reels other than  
said first left-most reel, occurs if said potential  
5 win element of a leftwardly preceding reel falls  
within a said consecutive run of elements of said  
leftwardly preceding reel.

28. A method of implementing a game of any one of  
claims 1 to 27 on a gaming machine; said method  
10 including the steps of:

- (a) providing said gaming machine with a control  
module; said module including a microprocessor,  
a working memory and a data storage device  
connection means,
- 15 (b) writing program code to said data storage  
device,
- (c) connecting said data storage device to said  
control module.

29. Media for storing enabling digital code for  
20 playing games according to any of claims 1 to 28; said  
media comprising solid state data retaining devices  
including, read only memory (ROM) and erasable  
programmable read only memory (EPROM), compact flash

cards and PCMCIA cards; said media further including  
disc-based storage devices.

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DATED: 11 November 2005

**KONAMI AUSTRALIA PTY LTD**

by their Patent Attorneys:

**WALLINGTON-DUMMER**

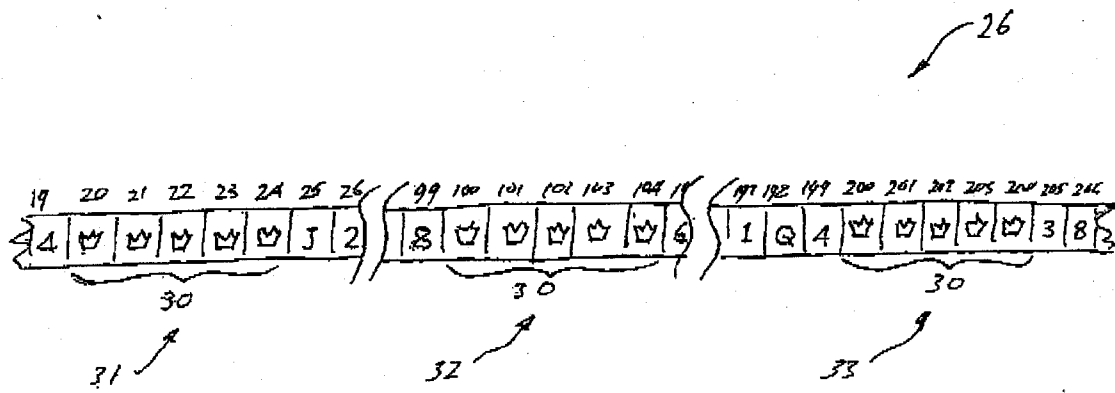
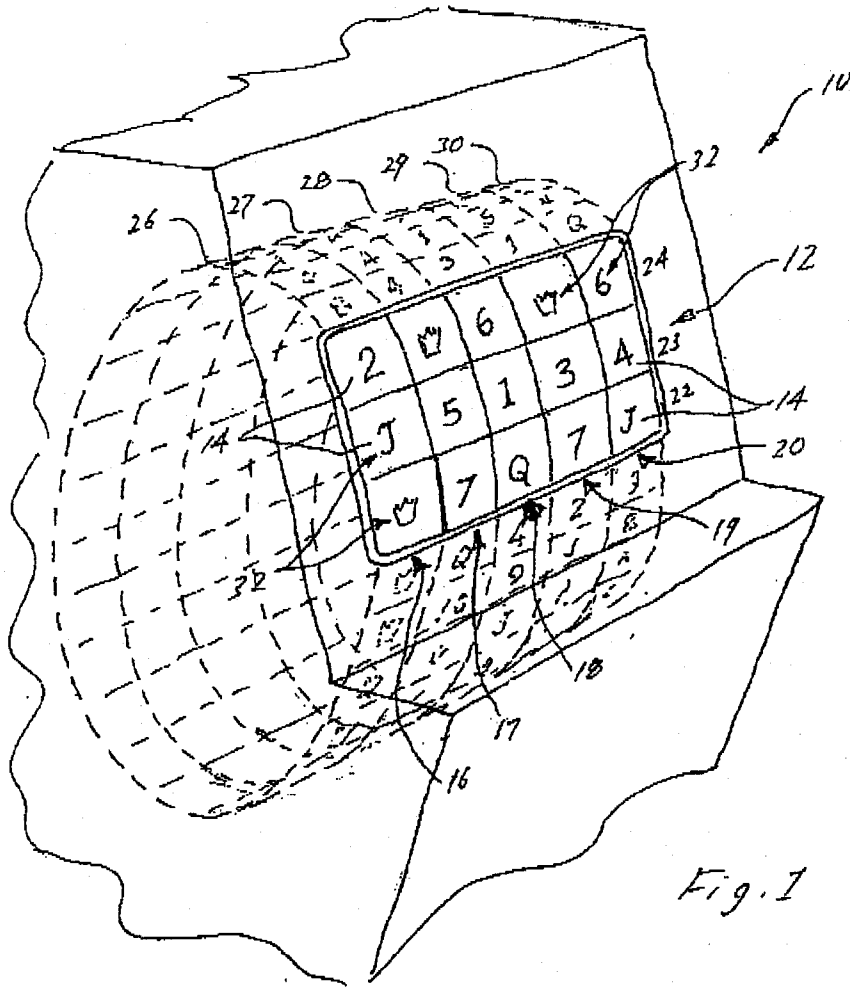
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2005232302 11 Nov 2005

2005232302 11 Nov 2005

1/7



2005232302 11 Nov 2005

2/7

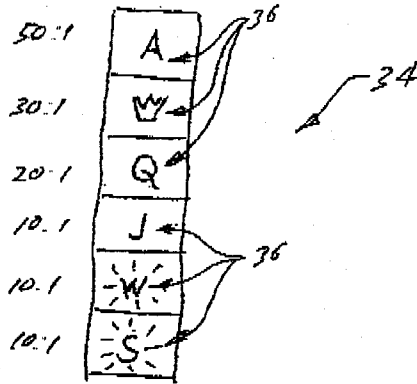


Fig. 3

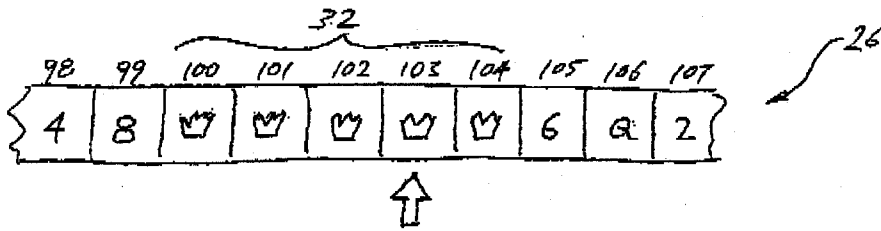


Fig. 4A

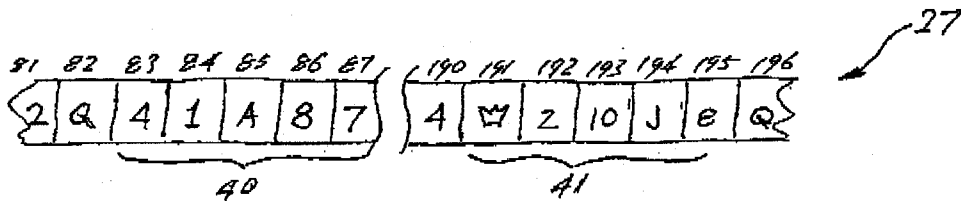


Fig. 4B

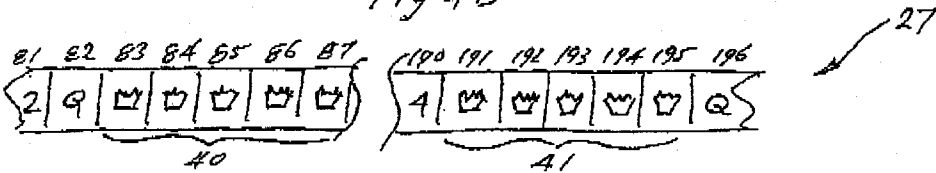


Fig. 4C



2005232302 11 Nov 2005

3/7

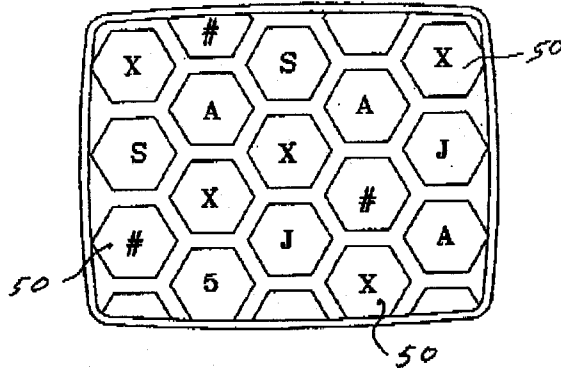


Fig. 5

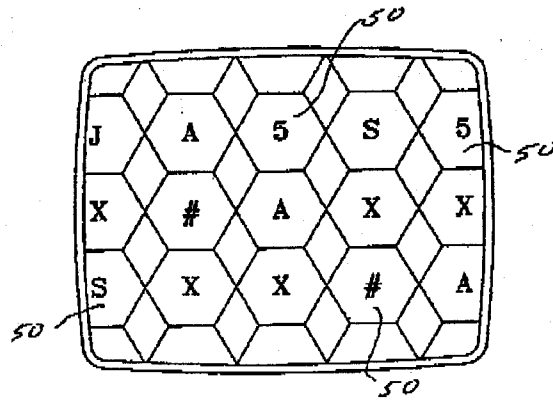


Fig. 6

2005232302 11 Nov 2005

4/7

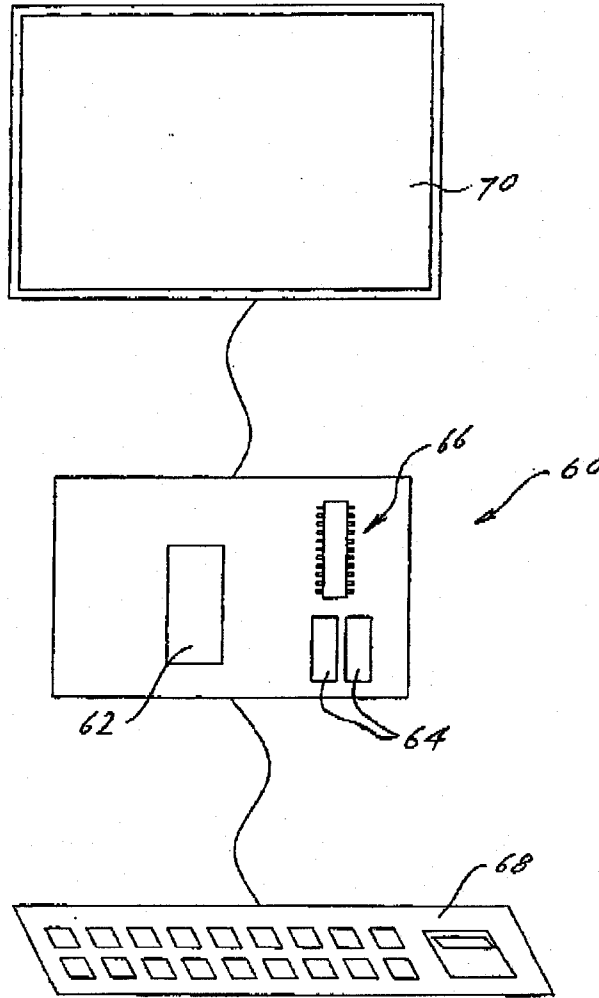


Fig. 7

2005232302 11 Nov 2005

5/7

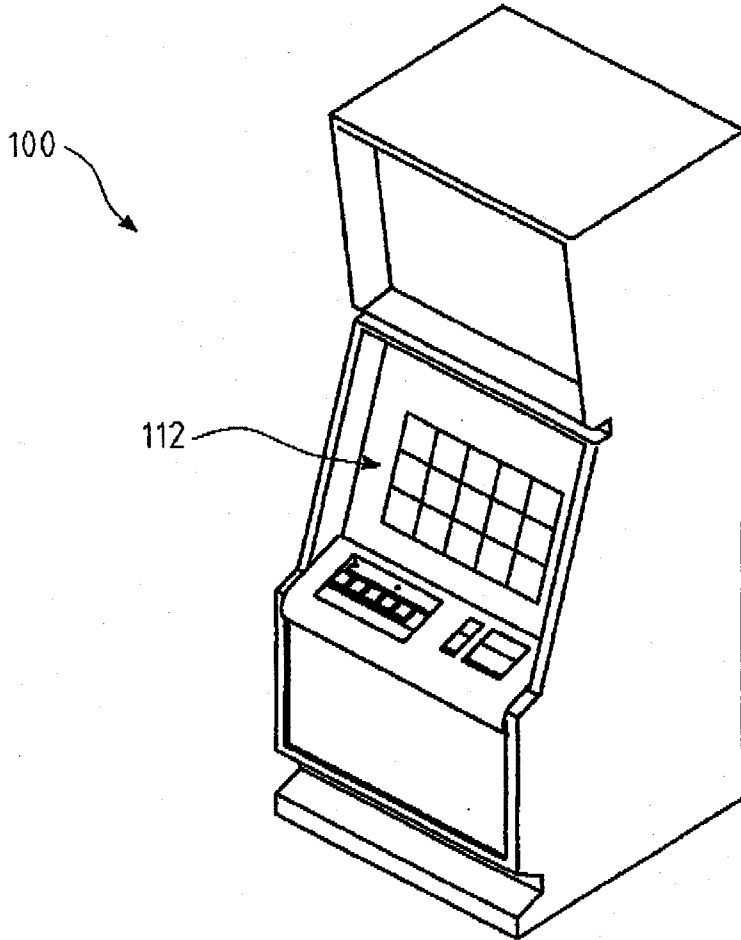


Fig. 8

2005232302 11 Nov 2005

6/7

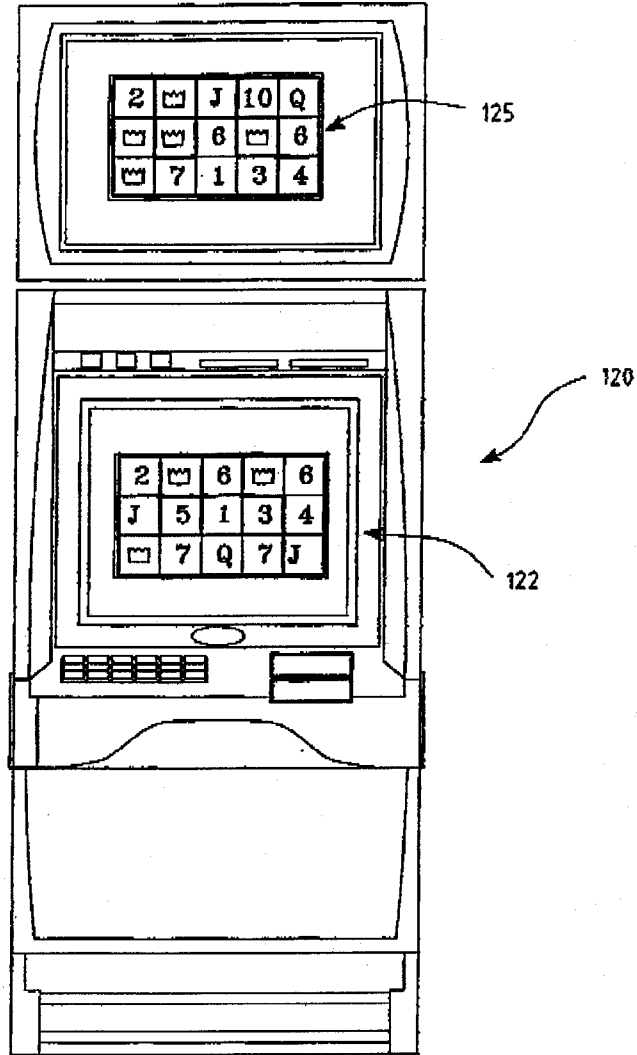


Fig. 9

2005232302 11 Nov 2005

7/7

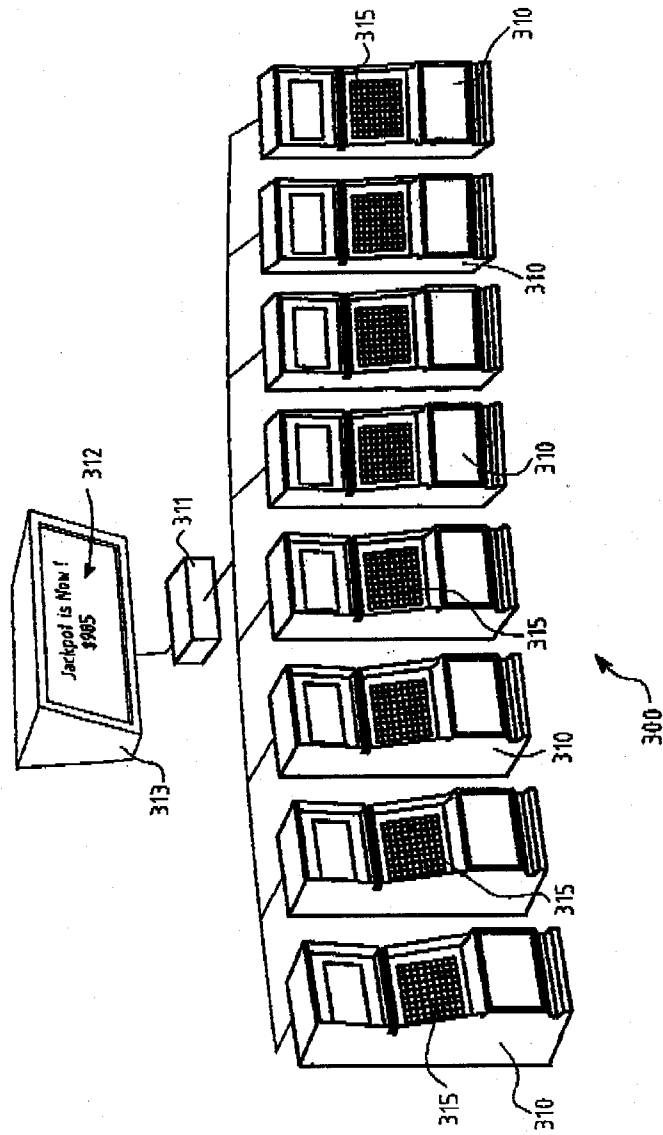


Fig. 10