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(54) **Control system for gaming machines**

(57) A fruit machine has at least one randomly available feature by which the player can adjust the positions of the reels in addition to the normal spin, and so increase the chances of a

win in that game. In order to stabilise the machine's win/loss ratio, a comparison is continuously made between the money or tokens paid in and that paid out in occasional prizes. When the balance tends in favour of the machine winning more than a given amount, the availability of the feature is increased, and vice versa.

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SPECIFICATION

Control system for gaming machines

This invention relates to gaming or amusement-with-prizes machines, particularly those commonly known as fruit machines. These have a number of reels or drums, or equivalents such as endless bands, which are spun and stop in a random manner to reveal a combination of symbols in display windows. Certain combinations result in prizes, usual monetary, being awarded. Such machines will be referred to as 'of the kind described.' To add interest to such machines, many now offer randomly available 'features' in which the reels can be controlled to some extent by the player. For example, there may be a 'hold' feature in which one or more of the reels can be prevented from spinning, or a 'nudge' feature in which the reels can be indexed forwards or backwards one symbol position at a time. In the hands of a skilled player familiar with the machine judicious use of these features does increase the chances of a win as compared with a casual player, although over a lengthy period the pay-out percentage averages out.

Microprocessors have now been introduced to control fruit machines, and this has led to more complex games than offered by their electromechanical counterparts.

It is the aim of this invention to take further advantage of a microprocessor's capacity and to 'smooth out' the fluctuations in average percentage pay-out due to discrepancies in players' skills. In other words, if a machine were played regularly by casual and unskilled players they would be offered more feature games, and thus better chances of a win, than those offered to a skilled player having a prolonged session on the machine.

According to the present invention there is provided a control system for a gaming or amusement-with prizes machine of the kind described and having at least one feature, comprising means for registering each unit of money or its equivalent paid in as a first value and accumulating said values, means for registering each unit of money or its equivalent paid out as a second value greater than the first value and subtracting it from the accumulated first values, means for comparing the running total (the sum of first values less the sum of second values) with a predetermined figure, and means for altering the percentage incidence of said feature according to the comparison, said percentage rising if the running total is above said figure and vice-versa.

Preferably there will be a series of predetermined figures, and when the running total is between one pair the percentage incidence of the feature will be at one level. When the running total exceeds that range and moves into a higher one (indicating that pay-ins are moving further ahead of pay-outs) the feature can be made more common and thus the chances of a win are increased. These may continue to increase as the running total moves further from the first mentioned range. Corresponding adjustments are made if the running total falls or goes negative. After a time the percentage payout of the machine will stabilise at a value equal or very close to:

$$\frac{\text{the first value}}{\text{the second value}} \times 100$$

For example, if the first value is 80 and the second value 100, the percentage payout over hundreds of games will average 80% and will stray from that figure only very marginally.

Generally, the adjustment of incidence will be applied to one feature only, even though the machine may offer more. However, it would be possible to adjust more than one feature, either simultaneously (making both, if there are two, rarer or commoner) or in alternation according to the range in which the running total falls.

The reckoning of a running total and a comparison with set values is easily accomplished by a microprocessor, as is the control of the proportion of feature games.

As an example, the following table illustrates a group of games in a prolonged sequence, the first and second values being 80 and 100, as mentioned above, with the intention of averaging an 80% payout. The pay-in unit is 5p and this is registered as +80. Payouts are in multiples of 10p, so that a 40p win is indicated by 4 in the central column. However, that is 8 x 5p and so from the running total there would be subtracted 800, giving a net loss of 720. This occurs in game No. 1505, and as a result the feature availability percentage drops from 6.2% to 6.0%. The actual occurrence of a feature is not indicated. The third column shows in shorthand form the symbols giving rise to a winning combination.

Game Number	Percentage Feature Availability	Winning Combination.	Payout awarded in 10p. units.	Total Unit Wins	Payout Percentage.	Running Total Register
1501	62			597	79	+680
1502	62			597	79	+760
1503	63			597	79	+840
1504	63	BE	1	598	79	+720
1505	62	BE	4	602	80	+0
1506	60			602	79	+80
1507	60			602	79	+160
1508	60			602	79	+240
1509	61	GR	10	612	81	-1680
1510	53			612	81	-1600
1511	54			612	81	-1520
1512	54	BE	1	613	81	-1640
1513	53			613	81	-1560
1514	54			613	80	-1480
1515	54			613	80	-1400
1516	54			613	80	-1320
1517	55			613	80	-1240
1518	55			613	80	-1160

CLAIMS

1. A control system for a gaming or amusement-with-prizes machine of the kind described and having at least one feature, comprising means for registering each unit of money or its equivalent paid in as a first value and accumulating said values, means for registering each unit of money or its equivalent paid out as a second value greater than the first value and subtracting it from the accumulated first values, means for comparing the running total (the sum of first values less the sum of second values) with a predetermined figure, and means for altering the percentage incidence of said feature according to the comparison, said percentage rising if the running total is above said figure and vice-versa.
2. A system as claimed in claim 1, wherein there is a series of predetermined figures defining different ranges between adjacent pairs of figures, and the percentage incidence of the feature is set at different levels according to which range the running total lies in, the higher the range the higher the level.
3. A system as claimed in claim 1 or 2, for any machine having more than one feature, wherein any adjustment or incidence is applied to two or more features.
4. A system as claimed in claim 3, wherein the adjustment is made to two features simultaneously.
5. A system as claimed in claims 2 and 3, wherein the adjustment is made in alternation according to the range in which the running total falls.
6. A control system substantially as hereinbefore described.