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54 **Gaming and amusement machines.**

57 In a fruit machine (1) which has rotatable reels (2) separate flat panel graphic display screens (3 and 4) are provided respectively alongside and above the reels (2). The displays on the screens (3 and 4) are controlled by a central control unit (6) which receives its instructions from an 'artwork scene' store (8) containing several different artwork programs thereby enabling different artwork to be displayed on the machine without changing the screens (3 and 4). The artwork may be displayed on the screens by means of one of the following; a cathode ray tube, an electro-luminescent display, a vacuum fluorescent display, a gas discharge display, or a liquid crystal display.

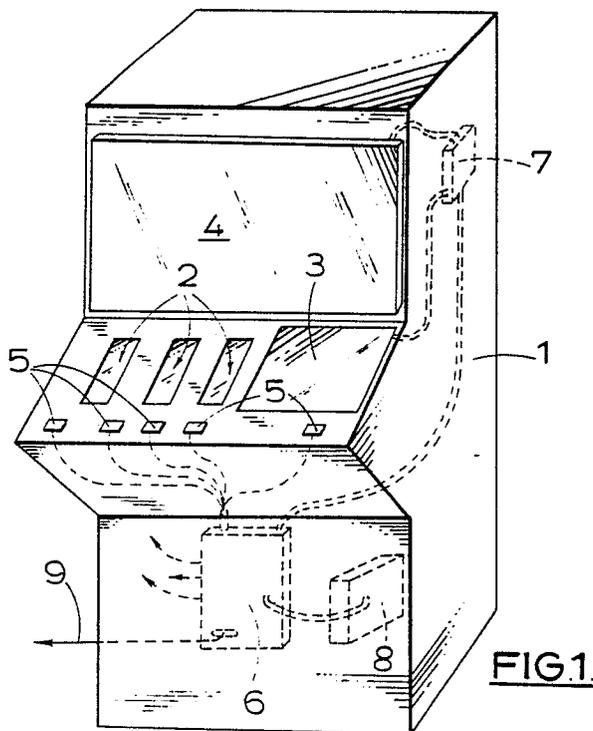


FIG.1.

EP 0 253 584 A2

GAMING AND AMUSEMENT MACHINES

This invention relates to gaming and amusement machines of the kind commonly known as fruit machines, in which, following the insertion of a coin or token or the release of a credit, a number of reels (usually three or four) carrying symbols on their peripheries are set spinning and allowed to come to a halt at random. If one of a number of preselected combinations of symbols on the different reels is obtained on a pre-determined line or lines (the 'win' line), a prize is awarded.

Such machines usually have the reels rotating on a common axis and the 'win' line is visible through a window in the front of the cabinet machine. Alongside and/or above the window is a display panel, usually of glass, having screen-printed on it the details of what combinations of symbols will result in wins, and what the values of those wins are.

Over the years numerous 'features' have been developed, that is to say, further steps which are optional or are awarded at random or as prizes, following the usual initial game. For example the player may be given chances to nudge or to hold reels and when he is awarded a win he may be given at random the chance to gamble the win, or part of it, on a 'double-or-quits' basis. There may be 'trails' or 'ladders' leading to further prizes or jackpots. The details and instructions about all these are printed on the glass display panel which, as a consequence, often occupies the entire upper part of the front of the machine above the reels. Behind the display panel are numerous lights, not only to stimulate interest by flashing on and off and to indicate options available, but also lighting up in sequence to simulate an object travelling, for example in a 'cat-and-mouse' feature. There may be thirty, forty or many more lamps behind the glass panel, all switching on and off in accordance with the various features. It is known to build machines which are of the same basic construction inside but of which the glass display panel is selected from one of a number of different panels with the artwork designed according to the game for which the machine is to be set up.

It is also known, indeed it was first proposed by us in an earlier Patent Specification, to replace the actual mechanical rotating reels with a simulation of such reels in the form of a two-dimensional display on a screen, in particular on the screen of a cathode ray tube. The display on the tube can depict the symbols in colour individually at selected areas, changing from one symbol to another without moving, but preferably they appear to move from top to bottom of the screen in lines, in a true depiction of a rotating reel.

Before this it was known to obtain the equivalent of reels in the form of a so-called 'Panoscope' display, in which a number of individual small ground-glass screens are arranged in an array, e.g. three rows of three, and have images of symbols thrown onto them by optical projection from behind.

In all those machines however, regardless of whether the reels were mechanical or were simulated by a Panoscope display or on a video screen, the display panel containing the information, instructions and features, if not simply in painted form (in early machines), has been in the form of a glass panel, with the artwork colour-printed on the back and with lamps behind it. Certain of the changing information, e.g. numbers, has been imparted to the player by the use of a limited number of alphanumeric or purely numeric characters on a seven-segment LED display or a 14-or 16-segment vacuum fluorescent display.

Such a display involves certain restrictions, not least on the area which is illuminated, simply because of the thermal load of the numerous lamps. Mechanical constraints on the artwork limit what can be depicted, and the active features may only involve a small proportion of the total display area at any given time.

The aim of the invention is to overcome these restrictions. According to the invention there is provided in a fruit machine at least one separate display area (as opposed to the reels or a reel display area which simulates spinning reels) which is in the form of a two-dimensional electronic display screen. Although it could in the form of the screen of a cathode ray tube, i.e. a video display, this would involve very substantial bulk which could not easily be accommodated and in practice we prefer some other form of electronic display, such as a matrix containing a multitude of individually addressable points.

This would contain substantially all the information, features and instructions which hitherto were in the form of fixed artwork on a glass panel in conjunction with numerous lamps and/or LEDs. The chief advantage is that the maker of the machine then has total flexibility in what he puts in his artwork and can change it at will, not only by inserting in the machine the appropriate hardware in the form of PROMs, ROMs, discs or tape controlling the scanning of the display area, but even in a given machine several programs can be stored simultaneously and used at will. Thus even within a given game the entire 'artwork' can be wiped clean and replaced by fresh artwork with a different layout and different features. This has the further

advantage that the display of a feature which would normally occupy only a small area of an 'artwork scene' showing several features on the display screen can be expanded in a subsequent artwork scene to occupy a considerably larger area, possibly to fill the whole display screen, when, for instance, that feature is made available to the player.

A further advantage is the elimination of the thermal load involved in numerous filament lamps. The lights connected with the various features are now simply part of the matrix display.

Current commercially available matrix displays are of limited size and so it may be necessary to employ two or more panels to obtain the required area, but the technology is improving all the time. If necessary, not all the 'artwork' used will be in the form of a matrix display, and there could still be some, for example the outer areas, in the form of conventional fixed painted or screen-printed glass panels.

The display technology could be in one of several forms, i.e. a cathode ray tube (although generally too bulky), electro-luminescent, vacuum fluorescent, gas-discharge, liquid crystal etc, and could be in monochrome or colour.

The present invention will now be described, by way of example only, with reference to the accompanying drawings in which:-

Figure 1 is a diagrammatic perspective view of a fruit machine embodying the invention; and

Figures 2 and 3 are front views of a flat panel graphic display area of the fruit machine of Figure 1 showing two different artwork scenes.

The fruit machine shown in Figure 1 comprises a housing 1 having three rotatable reels 2, first and second separate display areas 3 and 4 respectively alongside and above the reels 2, and a number of switch buttons 5, by means of which a player controls operation of the machine. In contrast to previously known fruit machines in which the display areas would normally be in the form of glass panels bearing fixed artwork in conjunction with numerous lamps and/or LEDs, the display areas 3 and 4 are in the form of flat panel graphic displays i.e. two-dimensional electronic display screens.

Within the machine housing 1, a central machine control unit 6, as well as controlling the reels 2 and their associated buttons 5, also controls the flat panel graphic displays 3 and 4 via a display interface unit 7 and receives its instructions from programs stored in an 'artwork scene' store 8. There may, as indicated, also be an external line 9 from the control unit 1 to an external store, allowing new programs to be loaded when desired.

The flat panel graphic display area 4 of Figure 2 displays an 'artwork scene' including three different features; a 'ladder' feature 10, a 'gamble' feature 11 and a 'nudges' feature 12. During play

of the machine each of the features 10, 11 and 12 will, on occasions, be made available to the player. When one of the features, for instance the nudges feature 12, is made available the artwork scene store 8 is programmed to change the artwork scene on the flat panel graphic display area 4 in order to display that feature in greater detail as shown in Figure 3 in which the display of the 'nudges' feature 12 is expanded to occupy virtually the whole of the flat panel graphic display area 4.

Claims

1. A gaming or amusement machine (1) which has either a number of reels (2) carrying symbols on their peripheries and which reels, following insertion of a coin or token or the release of a credit, are set spinning and allowed to come to a halt at random, or which has a reel display area which simulates such spinning reels, characterised in that the machine (1) has at least one separate display area (3,4) which is in the form of a two-dimensional electronic screen.

2. A gaming or amusement machine according to claim 1 characterised in that the separate two-dimensional electronic display area (3,4) comprises a matrix containing a multitude of individually addressable points.

3. A gaming or amusement machine according to claim 1 or claim 2 characterised by means for displaying artwork scenes on the separate display area (3,4) which comprises one of the following: a cathode ray tube, an electro-luminescent display, a vacuum fluorescent display, a gas-discharge display or a liquid crystal display.

4. A gaming or amusement machine according to any one of the preceding claims characterised in that the display on the separate two-dimensional electronic display area (3,4) is controlled by a machine control unit (6) in accordance with one of a number of different artwork programs stored within an artwork scene store.

5. A gaming or amusement machine according to claim 4 characterised in that the machine control unit (6) and the artwork scene store (8) are both housed within the machine (1).

6. A gaming or amusement machine according to claim 4 characterised in that the machine control unit (6) is housed within the machine (1) and connected to an external artwork scene store.

7. A gaming or amusement machine according to any one claims 4 to 6 characterised in that the display of a feature (12) in one artwork scene is expanded to occupy a greater area of the two dimensional electronic display area (4) in a subsequent artwork scene.

