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(54) **Improvements relating to machines for gaming, amusement and the like.**

(57) A gaming machine wherein the player makes five selections of locations arranged in a five by five matrix of said locations. His selections are indicated by first lights in said location being illuminated. The machine runs on a random row by row sequence scan of the matrix caused by the illumination momentarily of the locations by second lights in said locations. Skill stop buttons are provided for operation when the sequence is running in horizontal, vertical and diagonal rows, the objective being to stop the sequence by the permanent illumination of the second lights coincide with the locations which have been pre-selected. The player has five tries and the greater the number of coincidences, the greater the prize.

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This invention relates to machines for gaming, amusement or the like, hereinafter collectively referred to as gaming machines in the interest of simplicity.

There are many forms of gaming machines currently in use, having various play characteristics and capabilities, but largely, each of such machines comprises the insertion into the machine of a coin or token, followed by play on the machine, and if play on the machine is successful, then the player may be rewarded by payment of coins, or tickets or by free plays of the machine.

Because of the large number of machines currently in use, there is always a demand for the introduction of new machines having new play functions to enhance the amusement and/or skill play of the machine, and the present invention relates to a gaming machine with a new functional capability.

In accordance with the present invention, the gaming machine comprises pre-select means whereby the user of the machine upon commencement of play of a game, pre-selects a number of locations from a matrix of such locations which are visible on the machine, the pre-selected ones of said locations being less in number than the total number of locations in the matrix, and during play of the machine the said matrix locations are sequentially identified in a random manner, and termination of play results in one or more of the said locations being permanently identified, the play of the machine comprising that if the permanently identified location or one of the permanently identified locations coincides with a pre-selected location, a reward is made.

Preferably, the permanent identification of the location is under the skill control of the player.

Preferably also, the sequential identification of the location, although random, is such as to enable the player to have a degree of foreknowledge as to the indication of the locations.

Typically, the matrix may comprise twenty-five locations arranged in a five-row by five-column layout, and in the play of the machine, at each selection, the user selects say five or seven of said locations. Preferably also, the same number of locations are identified at the end of the play. By this means, it will be understood that the maximum number of coincidences between selection and permanent identification is five or seven, and therefore a player can achieve five or seven "wins" or "hits", but at each play the number of wins can range from zero to five or seven. Should all selections be "hits" an extra reward may be made, and similarly if the pre-selections are in a particular array and are all "hits" a further reward may be made.

Preferably, the sequential indication of the locations is such that the locations in vertical, horizontal and diagonal rows are sequenced by the illumination of same, the randomness of the indication arising in that the said rows be selected randomnly as is the direction of indication. That is to say the respective locations in a row may be indicated from top to bottom or bottom to top, or left to right or right to left, but at least the player will have some degree of foreknowledge of when his selected locations will be indicated so that he can attempt to stop the sequence when the indicated location coincides with one of his pre-selected locations.

The machine may comprise a matrix of selection buttons comprising typically twenty-five arranged in a five-row by five-column layout.

In one embodiment, a player inserts a coin or token in a coin feed mechanism of the machine, following which he will receive an instruction to make a selection of the appropriate number for example five as indicated above. He makes his selection of five of the buttons of the twenty-five button matrix, and this has the effect of illuminating the corresponding locations of the display matrix, a first illumination source being illuminated in each of said locations which is selected.

A "wait for play" or ready plaque is illuminated. The "wait for play" lamp is extinguished. Thereafter an automatic and sequential indication of the locations takes place and the player is required to watch the sequence of indication and he tries by pushing an appropriate button to stop the sequence when an indicated location coincides with a pre-selected location. He has the same number of "tries" in each game as there are pre-selected locations. It should be noted that the machine may be provided with a "cancel" button which the user can press if he decides to change his pre-selection before commencing the game.

Preferably, the machine has three skill stop buttons, respectively for stopping horizontally, vertically and diagonally running sequences, each of said buttons being illuminated when the appropriate sequence, but only that sequence, is running.

The machine further is arranged to select, at random, one of the locations for permanent indication, should the player fail to make a "try" using the skill stop buttons after the locations have been sequenced for a predetermined time.

Each location may have a second illumination means therein which is switched on and then off as that location is illuminated in the sequential random indication. At the end of a game, in one embodiment, the pre-selected number of locations, five in this embodiment, remain illuminated giving the aforesaid permanent indications, and for each coincidence between a pre-selected indication given by the illumination of the

first illumination means as a result of the pre-selection and a permanent indication, then such coincidence constitutes one "win" or "hit" and the first and/or second illumination means in that location flashes indication a "hit". At each play the user may therefore have up to seven wins, and he may be rewarded accordingly, for example with a coin of a certain denomination or a token for each win. Each "miss" or loss is indicated by the second illumination means of the loss location being permanently illuminated until the next game.

In an alternative mode of operation, after the pre selection has been made, and operation commences, the first lamp in only one of the pre selected locations flashes and it is on this one that the player tries to stop the sequence. If he does, the first and second lamp in that location flash, repeatedly indicating a hit. If he fails, the second lamp in the location in which the sequence stops, remain permanently lit, but the first lamp therein is extinguished, indicating a miss. This is repeated for each of the pre selected locations in turn so that at the end of each game the same number as the pre selected number of locations will be illuminated, but these locations may or may not coincide with the pre selected locations depending upon the number of hits. The order of causing the pre selected locations to flash as preferably the same as that in which they were selected by the player. Each location which is a hit will have repeatedly flashing lamps whilst "miss" locations will have the second lamps only illuminated.

By operating the machine in this way, the possibility of the player accidentally scoring a hit, thereby reducing the skill factor in the play, is much reduced.

The coin mechanism may comprise a multi-play magazine, whereby the user can insert a coin to the value of the multiple of the coin for each play, so that said multiple number of plays can be effected without the insertion of any further coins. The machine may have a display window indicating the number of plays remaining available to the player, and also the number of "tries" available or remaining in each game. Also, when the player is rewarded for each win, this may be credited in a totalizing mechanism from which the player can subsequently draw, or wins may be credited as further plays of the machine. This manner of reward and totalizing is of course well known in connection with other machines.

In an alternative form of the machine which does not invoke the use of skill stop buttons, the play once commenced may be automatic, the user simply being required to start the machine. In such case, for commencing the play of the machine there may be a start mechanism which may be of the conventional one-arm bandit type involving the use of a lever which is pulled downwards to commence the play, or it may be by means of a button which is mechanically mounted so as to give the same feeling of starting the machine as is given by the swingable lever. That is to say the button may give the impression of feeling that it is moving against the resistance which suddenly releases when the machine starts.

Further, by way of effect, this machine may have a display window in which is provided a series of illumination sources which illuminate in a chasing sequence in order to give the impression of a rotating drum. It is usual to have rotating drums in conjunction with the one-arm bandit starting mechanism described above.

Finally, this machine may be provided with further buttons, namely a "hold" button, a "stop" button and a nudge up or nudge down button. The purpose of the hold button is to enable a user to hold his pre-selections for second and subsequent games if required, whilst the stop button is a single skill stop means to enable the user to stop the random sequential illumination of the display locations in an effort to achieve the maximum coincidence between the permanent illumination of the second illumination means with the pre-selected illumination of the first illumination means. The nudge up button moves the stationary illumination one location up and the nudge down button one location down. These buttons would illuminate at random and only be operable when illuminated.

The resulting machines which will be provided with the appropriate control circuitry to give affect to the above, which circuitly will be capable of design and manufacture readily by persons skilled in the art of designing control circuits or gaming machines, and the machine may also be provided with audible indicators to indicate start, stop, win and so on to add to the pleasure of playing the machine.

An embodiment of the present invention will now be described, by way of example, with reference to the accompanying drawings, wherein:-

Fig. 1 is a front perspective view of a machine according to the embodiment;

Fig. 2 is an enlarged view of the display areas of the machine of Fig. 1;

Fig. 3 and 4 are views useful in explaining the sequencing of the random illumination of the machine display matrix; and

Fig. 5 is a diagram showing the order and timing of information sent from the master board.

Referring to the drawings, the machine shown is a twin station machine and comprises an upright casing 10 of rectangular cross-section, and of relatively narrow width and depth compared to its height.

On the top of the machine is a display cabinet 11 for displaying prizes and there is provided a coin

insertion mechanism 12 into which the user places the coin for the play of the game.

On the front 14 of the casing at the top portion thereof is a display matrix 16 defining twenty-five display locations arranged in five rows and five columns as shown clearly in Fig. 2. The twenty-five display locations are represented as shown in Fig. 2 by the reference numerals 1-1 to 5-5, the first digit indicating the row, and the second digit indicating the column. The display location 16 may comprise simply a printed flat screen behind which are pocket members defining the respective locations. Each of the pocket members may house a first illumination means X and a separate second illumination means Y, whose functions will be described hereinafter.

Also on the front 14 of the machine but located under the display matrix 16 is a selection matrix 18 comprising a matrix of twenty-five select buttons arranged in five-row by five-column format similar to the display locations. Again the select buttons are identified by reference numerals 1-1 to 5-5, the first digit indicating the row, and the second digit indicating the column. The display matrix 18 is carried by a forwardly projecting housing 20.

Under the selection matrix 18 are three skill buttons 24, 26 and 28 which are respectively a vertical skill stop button 24, a diagonal skill stop button 26 and a horizontal skill stop button 28, whose functions will be described hereinafter.

The housing 20 also carries display plaques 30 and 31 for indicating the state of play of the machine and to which reference is made hereinafter. Display areas 33 and 35 indicate, during play, the number of "tries" remaining in any one game, and the number of credits or games available to the player.

Under the housing 20 is a coin pay-out tray 32, or a ticket dispenser and, by way of convenience to the user, a foot rest 34 is provided at the lower end of the front of the machine for the user's comfort. Each machine station has a player seat 37 shown.

As shown in Fig. 1, the machine is a two station unit so that two players can play at the respective stations independently of each other. When any station is not in use, there will be a random illumination, sequentially of the locations 1 - 1 to 5 - 5 of matrix 16 and if neither unit is in use, the random illumination of the units wil be synchronised and in phase so that the same locations in the respective units will be illuminated at the same time. In fact the machines are designed so that as many as required may be ganged together so that the random illumination of the matrix locations of all machines not in use are synchronised and in phase as described above.

The operation of the machine will now be described.

The use of the machine of the embodiment is based on skill.

The player selects five locations from a choice of twenty five which then flash, one at a time, at random and the player has to try to match the chosen five locations with the randomly flashing ones. This is done using the three skill-stop buttons 24, 26, 28. The locations flash in running lines of five in all directions.

If a "try" is not made by the end of a sequence then a random square is chosen on the behalf of the player.

One token/ticket is payed out for each coincidence between each pre-selected location and each skill stopped location. If there are five coincidences, then a higher pay out is possible and higher still if the coincidences are in a straight line which may be horizontal, vertical or diagonal.

Up to thirty two units (slaves) can be ganged so as to be under the supervision of a master which ensures the slaves operate in unison when not in play (and optionally when in play) to execute the same sequence of flashing illumination of the locations.

The cost per game and payouts are selectable via dil switches and the length of time a flashed location is lit is also selectable via a dil switch.

As shown the matrix 16 has twenty five locations in a 5 X 5 matrix used before the game is played to display the random run sequences, used during the game to show 1) choice of stars, 2) a winning match and 3) a miss. Each square has two outside bulbs X which are used during the random run sequence and a centre bulb Y which lights if that location has been pre-selected. All three flash if a coincidence has been made. If a coincidence is not made, the outside lights X of the location at which the sequence was stopped is illuminated.

The keypad matrix 18 is used by the player to make their choice of locations.

The plaque 30 is to prompt the player making the choice of locations. After all choices have been made the light goes out. The wait for play plaque 31 lights up and goes out one second before the random sequence starts, and is lit again when a try has been made.

The credit display 35 shows the number of games remaining. The display 35 increments when a coin is inserted (depending on coin value) and decrements when a game starts. It reads zero during the last game. In this embodiment, the maximum number of credits is nine.

Display 33 shows the number of "tries" remaining within a game. After each try or automatic random

selection by the machine the display 33 is decreased by one and before each game it is set to five. It reads zero during the last play of each game.

The player uses the skill stop buttons 24, 26, 28 to stop the flashing location on one of the pre-selected stars.

If the sequence is running diagonally in a row then the diagonal button 26 needs to be pressed in order to make a coincidence. The game is true for the horizontal and vertical directions.

As long as only one skill stop button is being pressed then:-

a) a coincidence is only made if the correct skill stop button is pressed at the moment a running sequence passes over a pre-selected location

b) a miss is only made if the correct skill stop button is pressed but at the wrong time.

c) if a try hits a selection which is not flashing it will be ignored.

If more than one skill button is pressed at the same time, the input is ignored and sequence continues as if no skill stop button had been pressed.

Each skill stop button the corresponding sequence is running on the matrix 16. For example, at the start of a vertical sequence, the vertical skill stop button 24 will light and at the end of the run it will be turned off. The same is true for the horizontal and diagonal skill stop buttons.

The random display sequence is a set of twelve running sequences of five locations.

A "running line of five" is defined by five squares in a line which flash sequentially as shown in Fig. 3.

As can be seen from the figure, the first square is switched on; after a pre-selected time it is switched off and the second square is switched on; after the same pre-selected time the second square is switched off and the third squre is switched on. This goes on until, finally, the fifth square is switched on and switched off after the same pre-selected time has elapsed. Illumination is by the outer two pulls X as hereinbefore described.

From the above, it will be seen that there are twenty four different possible running lines and each running line is given a different code and examples are given in Fig. 4.

A line code consists of two parts the first is a number from 1 to 12 the second is either an A or B. The number specifies a unique, but non-directional line and the letter indicates which direction the line must run. A complete sequence consists of a set of 12 of these codes. The entire sequence is formed by random ordering of the numbers 1 to 12 which define the row along with a random choice of A or B which define whether the sequence is up or down or from right to left.

The entire squence is arranged so that:-

(i) 12 different running lines are used

(ii) No lines are run in both directions

(iii) Each location is visited at least once

As stated herein a master board can control up to 32 units in ganged relationship.

The master board has three main functions and these are:-

(1) To calculate the random ordering of codes needed to produce the display sequence and transmit it to the slaves.

(2) To calculate and transmit to the slaves the display sequence speed may be selected via a dil switch.

(3) To calculate and transmit to the slaves a random location at the end of each display sequence (the square calculated being preferably different from the previous four sequences) in the event that the player fails to make a try before the end of the display sequence.

The master will send the above information to all of the slaves at the same time. Since the slaves act on the information as soon they receive it the master has to wait until the right time before any part of the information can be sent. This is shown more clearly in Fig. 5.

The play of a game on any unit is split into four stages namely "pre-game", "pre-select", "a play" and "pay out and reset". The functions of the stages are described hereinafter and the following shows how they interact.

Stage 1 :	Pre-game after insertion of coin or immediately after previous game with credit remaining
Loop :	Decrease the number of credits in display 35 by one. Set the number of tries in display 33 to 5
Stage 2 :	Pre-select. wait for play plaque lights up
Stage 3 :	A play. Player tries to match selections with random sequence. wait for play plaque off switches off when no tries remain
Stage 4 :	Pay out and reset

If there are any credits left then jump to loop otherwise jump to stage 1 : pre-game.

If a coin is inserted into the machine during stages 2 to 4 then provided the credit display including the inserted coin would not show over nine the display is incremented. The coin is rejected if the number of

credits would top nine.

Stage 1 : Pre-game.

The or each slave is continually running display sequences sent by the master.

After each display sequence, prior to the begining of the pause period between sequences, a single location is illuminated. This location is chosen at random by the master and is switched off at the start of the next display sequence and also is set to be different from the previous four locations illuminated.

Immediately that a valid coin is inserted the playboard is cleared but only on that machine unit, both the credit and tries 33 are set and the display sequence sent from the master are ignored.

Stage 2 : Pre-select.

The select plaque 30 is lit and then the player makes his five different choices using the keypad 18. Each choice as it is made is shown on the playboard by illumination of lights X. When the 5th location is selected the plaque 30 is switched off.

Stage 3 : A play of the game. (This stage involves five "tries").

The "number of tries" display 33 is decremented by one.

The display sequence runs and the player is given the opportunity to skill stop the flashing location onto their chosen squares. In the preferred arrangement, only one pre selected location flashes at any one time and the player has to try to stop the sequence on that location. The pre selected location flahs in turn in the order they were chosen.

The skill stop buttons 24, 26, 28 light in accordance with the directions ofthe running lines offive.

If more than one skill stop button is pressed then they are ignored. Also, the pressing of an unlit skill stop button is ignored.

As soon as a valid (illuminated) skill stop button is pressed the running line is immediately stopped and the current location remains illuminated.

If the stopped location is not a pre-selected location then it remains illuminated (i.e. a miss) and the first try is ended. Preferably, the flashing lamp in the pre selected location is extinguished.

If the stopped location is a pre-selected location which is not flashing then it is ignored.

Each hit remains flashing until the stage is ended.

The above is repeated five times to complete a game.

If during any try a valid skill stop button is not hit, the display sequence is completed and a random location is illuminated automatically. This location is set to be different from the previous 4 random locations.

If this random location coincides with a pre-selected square, which is not already flashing, then it is ignored. It remains illuminated (not flashing) if it does not coincide with a pre-selected location.

Stage 4 : Pay out and reset

A token/ticket for each flashing square is paid out. If five locations are flashing a bonus is payed out. If five locations are flashing in a straight line, horizontal, vertical or diagonal a further bonus may be paid out.

Before the next game, all the playboard location lights are switched off.

The machine is such that the number of tickets/tokens paid out is adjustable via a dil switch.

As stated herein, the machine is provided with means for generating sound at the various stages of operation of the machine, for effect.

Thus, whenever a slave is displaying a run sequence, sound is produced.

Five different notes in ascending or descending order are individually sounded with each flash in each running line of five. For example each flash in a vertical line running from the bottom of the play board to the top is accompanied by a note whose pitch is determined by the position of the flashing location within its running line. In this case the notes ascend.

The duration of the note is equivalent to the length of flash.

The table below relates each type of running line to an ascending or descending sequence of notes.

Type of line	Direction of run	Notes
Horizontal	left to right	ascending
Horizontal	right to left	descending
Vertical	bottom to top	ascending
Vertical	top to bottom	descending
Diagonal	rising	ascending
Diagonal	falling	descending

Sound during the pre-select stage.

When the pre-select light 30 comes on a beep is sounded for half a second.

Provided that the player makes a valid choice of location, a note is sounded at the moment the key pad is pressed. The duration of the note is about half a second.

The same pitch of note is sounded for each of the five pre-selections.

A beep is sounded for half a second when the wait for play light goes out.

In an alternative machine, which is more automatic, when the user makes his appropriate pre-selection, the player now starts the machine for example by pulling a handle which causes random illumination of the locations in the display matrix by virtue of the second illumination means Y.

However, the second illumination means constantly change in a random fashion during the play of the machine until the end of a pre-set time. At this point the player can therefore compare the locations which have the second illumination means illuminated, with the locations which he pre-selected to ascertain if there is one or more coincidences. For each such coincidence, the player receives a win either in the form of a coin, or ticket pay-out immediately, or a credit or an extra play or a contribution to an extra play of the machine.

Modifications of the embodiment described may be made, and it will be understood that it is not necessary that the pre-selections need to be restricted to a particular number, nor indeed that the display locations be arranged in any particular array.

Thus, in a modification the machine may be provided with further buttons, namely "nudge" buttons which enable the player to move the permanently identified location after the random illumination sequence to a position elsewhere on the matrix in an attempt to match it with a pre-selected location and produce a "win".

Preferably, in such case there shall be two nudge buttons which will illuminate when operational and be capable of moving the permanently identified location to one position up or down in the matrix.

The nudge buttons when operational shall be illuminated to indicate to the player that use may be made of them once the random illumination has stopped, said illumination and operation shall be random in relation to each play so that it will not be possible to operate the nudge buttons at every play.

When not used, the nudge buttons stay illuminated for a short period of time before the next random illumination ceases.

Claims

1. A gaming machine comprising pre-select means whereby the user of the machine upon commencement of play of a game, pre-selects a number of locations from a matrix of such locations which are visible on the machine, the pre-selected ones of said locations being less in number than the total number of locations in the matrix, and during play of the machine the said matrix locations are sequentially identified in a random manner, and termination of play results in one or more of the said locations being permanantly identified, the play of the machine comprising that if the permanently identified location or one of the permanently identified locations coincides with a pre-selected location, a reward is made.

2. A gaming machine according to Claim 1, wherein the permanent identification of the location is under the skill control of the player.

3. A gaming machine according to Claim 2, wherein the sequential identification of the location, although random, is such as to enable the player to have a degree of foreknowledge as to the indication of the locations.

4. A gaming machine according to Claim 2 or 3, wherein the matrix comprises twenty five locations

arranged in a five-row by five-column layout, and in the play of the machine, at each selection, the user selects say five or seven of said locations.

5. A gaming machine according to Claim 4, wherein the same number of locations as the pre-selected number are identified at the end of each play.

6. A gaming machine according to Claim 4 or 5, wherein the machine comprises a matrix of selection buttons comprising twenty five arranged in a five row by five column layout.

7. A gaming machine according to any of Claims 4 to 6, wherein the sequential indication of the locations is such that the locations in vertical, horizontal and diagonal rows are sequenced by the illumination of same, the randomness of the indication arising in that the said rows be selected randomnly as is the direction of indication and the player has some degree of foreknowledge of when his selected locations will be indicated so that he can attempt to stop the sequence when the indicated location coincides with one of his pre-selected locations.

8. A gaming machine according to Claim 7, wherein the machine has three skill stop buttons, respectively for stopping horizontally, vertically and diagonally running sequences, each of said buttons being illuminated when the appropriate sequence, but only that sequence, is running.

9. A gaming machine according to Claim 7, wherein the machine is arranged to select, at random, one of the locations for permanent indication, should the player fail to make a "try" using the skill stop buttons after the locations have been sequenced for a predetermined time.

10. A gaming machine comprising:

a) a matrix of the locations arranged in an array defining horizontal, vertical and diagonal rows of said location;

b) means upon commencement of play of the machine, enabling the player to pre-select a number, less than the total number, of the locations in the matrix;

c) first indication means in the locations indicating the locations pre-selected;

d) random sequencing means arranged to indicate the locations in the matrix one at a time by operating second indication means in said locations in a sequence which comprises operating the second indication means randomly row by row and when each row is being indicated the locations thereof are indicated one after the other along the length of the rows so that in one complete operation of the random sequencing means there is temporary coincidence of the first indication means of each of the pre-selected locations and the second indication means operated by the random sequencing means; and

e) skill stop means operable by the player to stop the random sequence the same number of times as the pre-selected number, each operation of the skill stop means causing the second indication means operable at that time to remain operated.

11. A gaming machine according to Claim 10, wherein the skill stop means comprises three buttons respectively operable only when the random sequencing means operates in horizontal, vertical and diagonal rows.

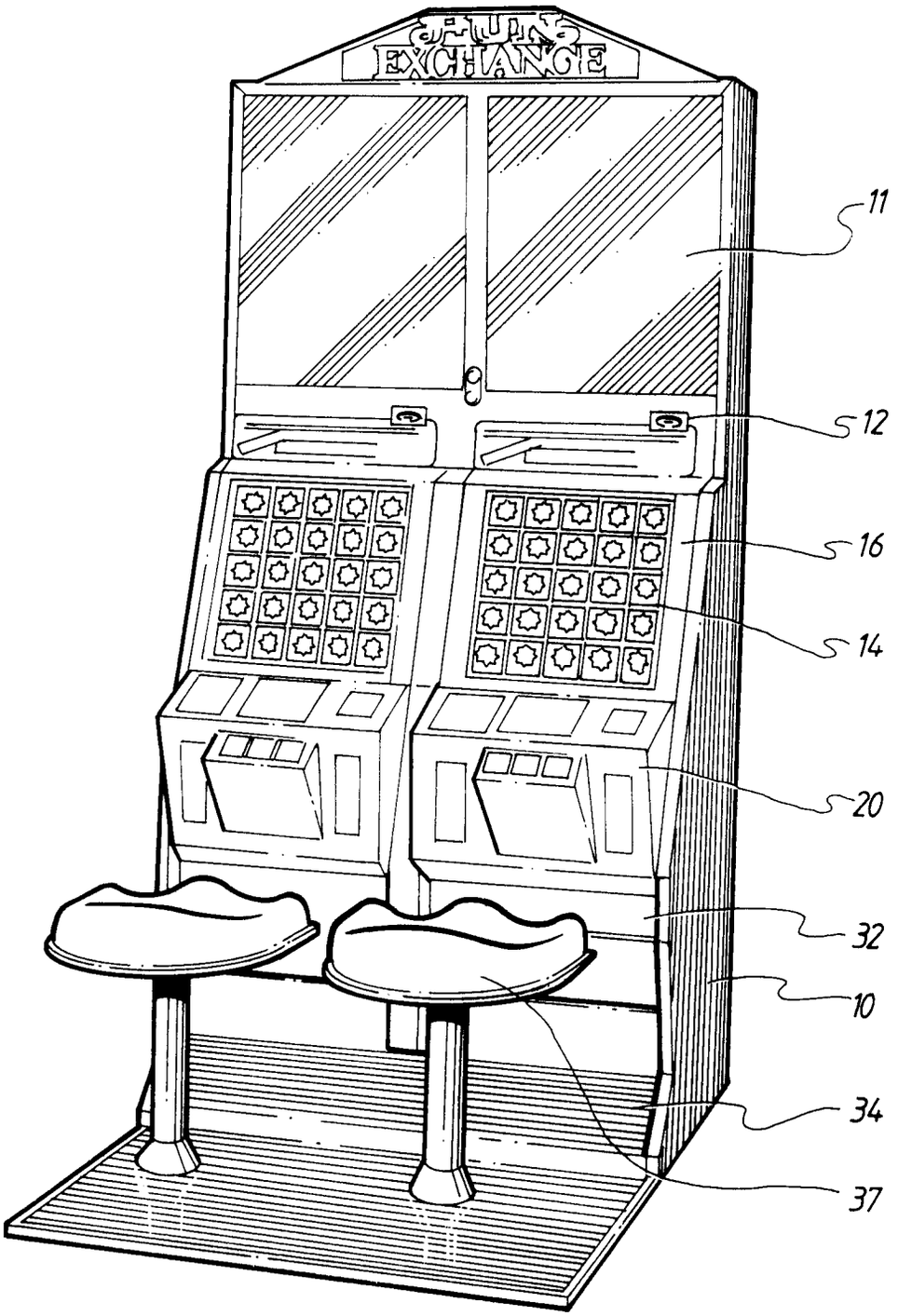

FIG.1

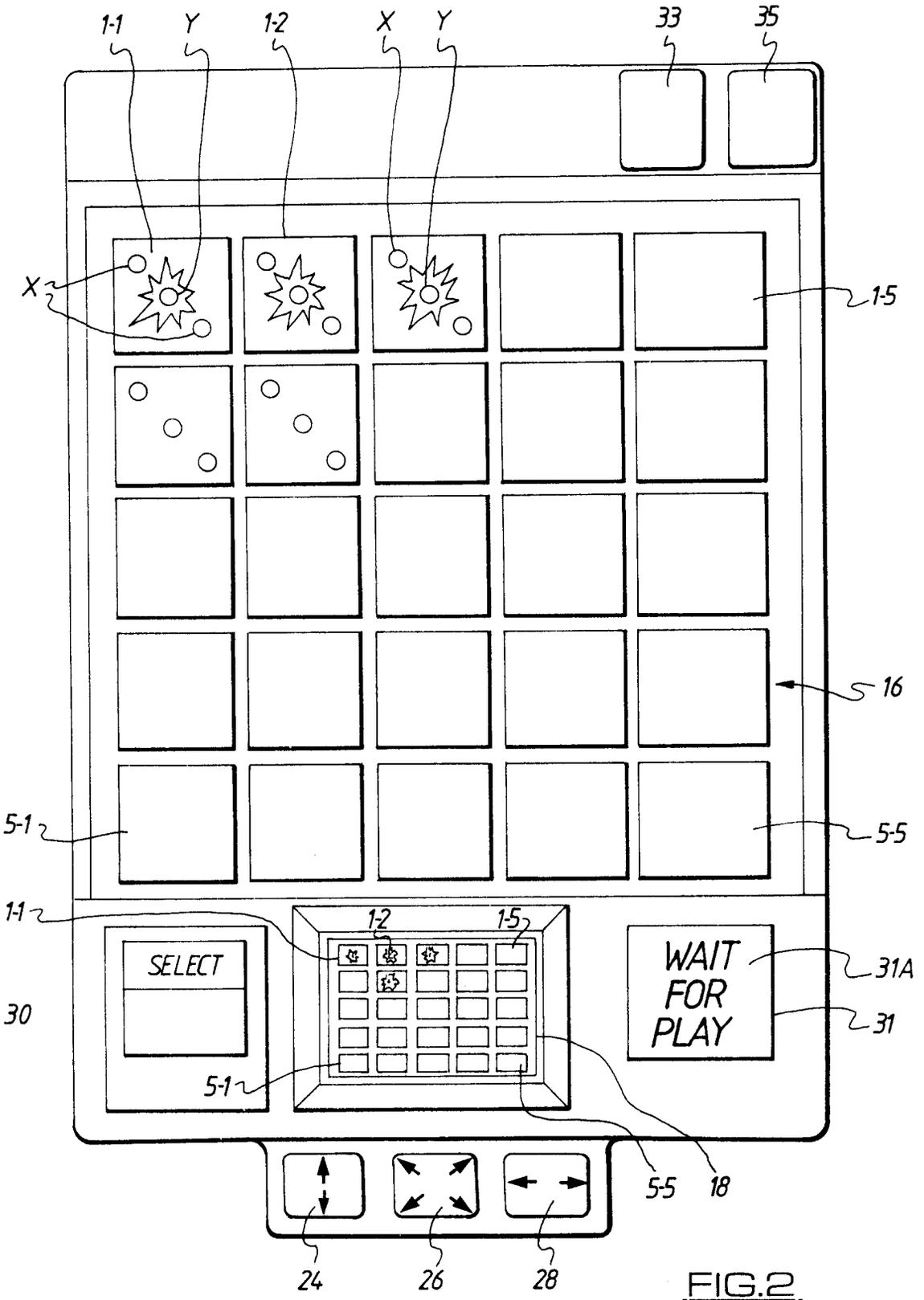
1-1
Y
1-2
X
Y
33
35
X
1-5
16
5-1
5-5
1-1
1-2
1-5
SELECT
30
5-1
WAIT
FOR
PLAY
31A
31
5-5
18
24
26
28

FIG.2

FIG.3

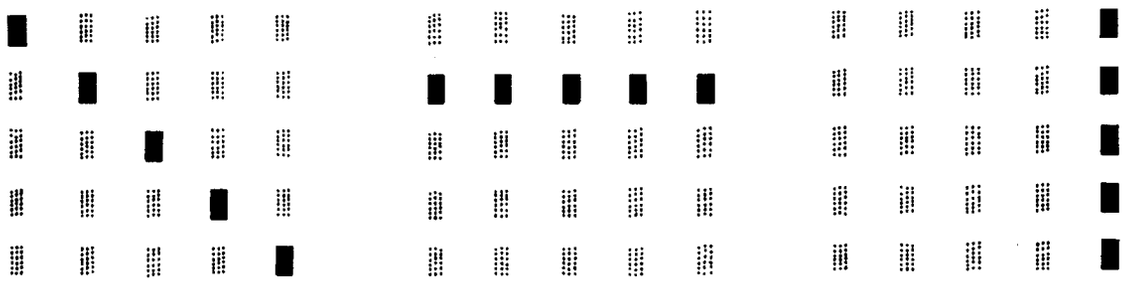

FIG.4

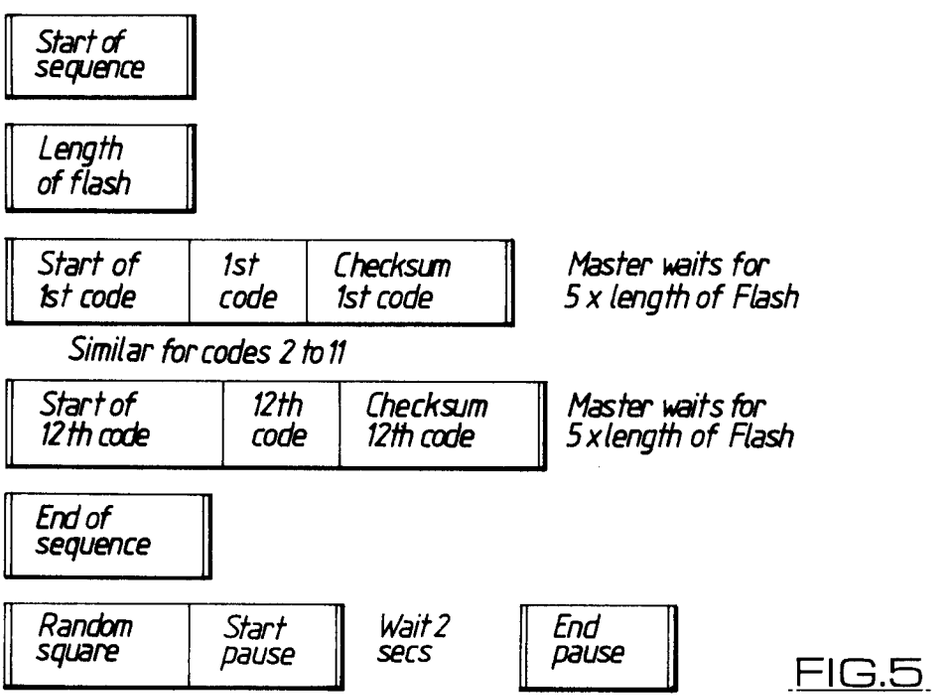

FIG.5