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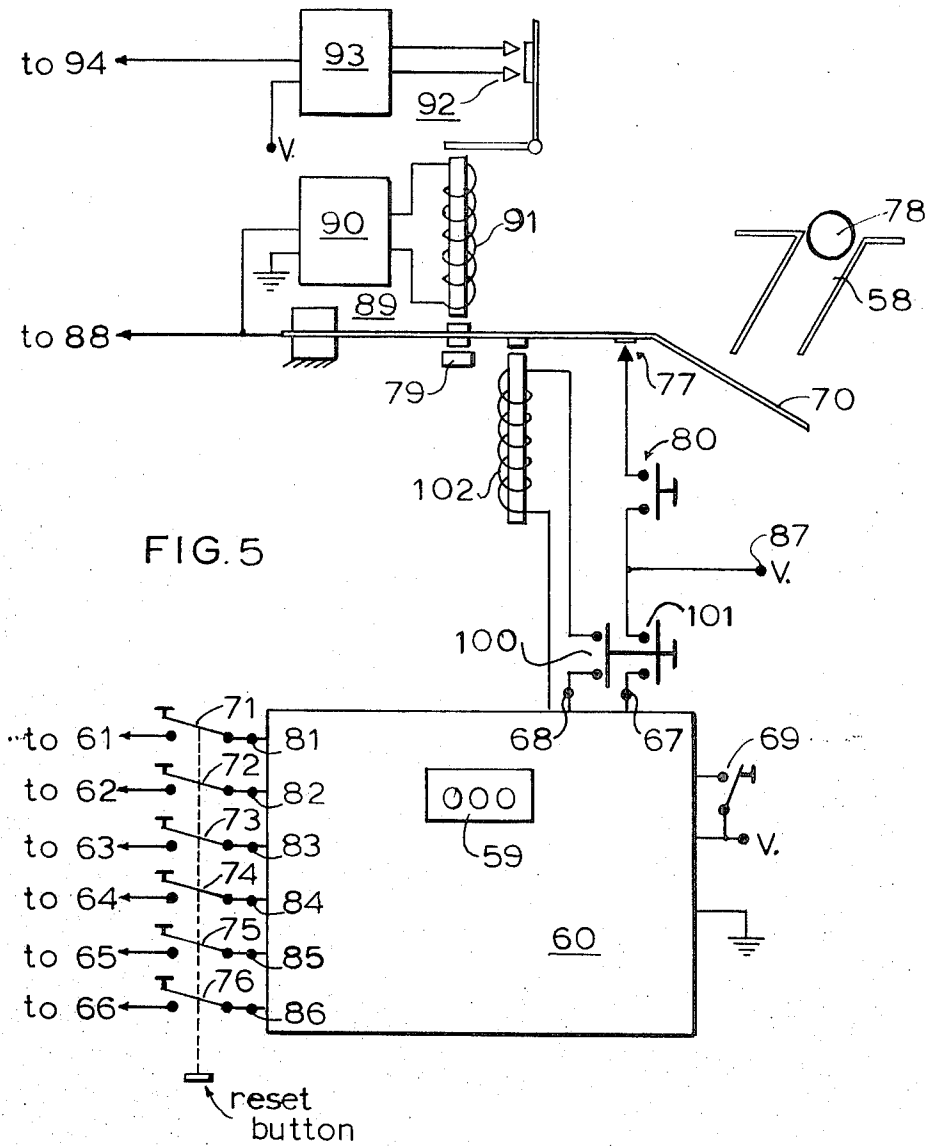
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GAME OF CHANCE APPARATUS

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2 Sheets-Sheet 2



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GAME OF CHANCE APPARATUS
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5 Claims

ABSTRACT OF THE DISCLOSURE

The game of chance apparatus displays a player's score in the form of arrays of spots similar to the showing of the upturned face of a die. In the present invention an array of spots indicating a player's score is made visible by emissions of light therefrom and the number of spots in a given array will be a function of an angular relationship between a pair of light masks. Associated therewith is an array of light responsive elements which detect and transmit a score to a data handling unit wherein a display of spots is compared with a player's predicted display and whether or not such prediction has materialized.

SUMMARY OF THE INVENTION

The invention herein includes the use of a score display and signal transmitter assembly designed to display spots of light so as to resemble the upturned face of a die and transmit data corresponding thereto to control circuitry wherein a determination is made as to whether or not the display represents a winning score. An assembly includes light masking means in which a mask is provided with predetermined arrays of window means, the mask being rotatable and supported intermediate a source of light and a score display and transmitter unit. Magnetic positioning means is incorporated in the assembly so as to establish angular relationships between masking means thereof corresponding to at least six different die displays. The use of two or more score display assemblies and a data handling unit will permit the playing of such games as craps, chuck-a-luck, etc., for amusement.

An object of the various games possible utilizing the concepts of this invention is to permit a player to bet that a particular score will be made by means of a particular switch adjustment and then effect a rotating of light masking means by inserting a coin, for example, in the control circuitry portion of the apparatus. A further object is to display the score a player has made and if the score displayed is the one the player had bet on making it is an object of the invention to show the winning and thereupon allow the player to continue the game without having to insert a coin.

Since there are many different scores possible using either one, two or more display assemblies the odds against making them are almost as numerous. It is therefore an object of this invention to have the apparatus inform the player of such odds and include them in the winning accordingly.

These and other features and objects will best be understood from the following description when read in connection with the drawings hereof.

BRIEF DESCRIPTION OF DRAWINGS

FIG. 1 is a showing of the various parts included in the score display and transmitter assembly;

FIGS. 2a and 2b show, respectively, the display surface of the score display and transmitter unit and an opposite surface thereof;

FIG. 3 shows a surface of a rotatable mask portion of the assembly which is adjacent the surface of the unit in FIG. 2b;

FIG. 4 is a schematic diagram of an array of light responsive elements included in the transmitter unit; and

FIG. 5 is a diagram of a data handling unit of the invention.

DETAILED DESCRIPTION OF THE INVENTION

The showing of the assembly in FIG. 1 includes the score display and transmitter unit 10, the rotatable mask 12, an electromotor 14, and first and second portions 16 and 18 of a light source. The unit 10 will also be referred to as a masking means having a first surface 11 and a second surface 13 and window means 15 extending there-through from said first surface to said second surface. An assembly 17 of light responsive elements or cells is also included in the unit 10 wherein six cells 1 through 6 appear as six windows in the first surface 11. These cells are shown also in FIG. 4, schematically, as photodiodes 1 through 6. The mask 12 is rotated in relation to the unit 10 by the electromotor 14 about a common axis 19, and may be rotated in the direction of arrow 20. Six magnetic elements N are shown supported in the mask 12 and six similar magnetic elements S are shown supported in the unit 10, each of which may be ceramic disc magnets, for example. Any one of six angular relationships may be established between the light masking means of the mask 12 and the light masking means of the unit 10, and these angular relationships will coincide with the alignment of a point of reference 30 of the mask 12 with any one of the six positions 31, 32, 33, 34, 35 and 36 shown in FIG. 2a. The system of N and S magnets are utilized in establishing the six angular relationships.

The surface 11 of the unit 10 is also shown as having therein window means 15 which extend therethrough to the surface 13. The mask 12 includes two individual arrays of window means extending therethrough from the first surface 21 to the second surface 22. One array is identified as windows 41, 42, 43, 44, 45 and 46 and the other array is identified as windows 51, 52, 53, 54, 55 and 56. When the reference point 30 of the mask 12 assumes a position 36 the windows 46 will permit the passage of light through six of the window means 15 and thereupon present six die spots at the surface 13; when the point 30 assumes a position 35 the windows 45 will permit five spots at the surface 13 to be illuminated, and so on. Also when the reference point 30 assumes a position 36 the window 56 will permit the passage of light to the cell 6 of the array 17; when the point 30 assumes a position 35 the window 55 will permit the passage of light to the cell 5 of the array 17, and so on. The portion 16 of the light source illuminates windows 41 to 46 and the portion 18 illuminates windows 51 to 56.

Although a light source is illustrated as being comprised of a first portion 16 and of a second portion 18 the latter, for example, may be positioned so as to illuminate the entire window means of the mask 12. If design requirements of the unit 10 make it necessary to utilize thickness dimensions between the surfaces 11 and 13 which do not lend themselves to the use of openings as window means 15, each of these openings will have included therein light guide means 15a for conducting light from the first surface 11 to the display surface 13. And although a system of six N and S magnets have been illustrated, one N magnet in combination with six S magnets, or, one S magnet in combination with six N magnets will allow any one of the six different relationships to be established following a momentary energizing of the electromotor 14, however, the use of magnetic elements as shown is preferred.

Each of the diodes 1, 2, 3, 4, 5 and 6 are connected in series with a resistor element 9 between a voltage terminal 7 and ground. A photoelectric output from each of the diodes is coupled through a capacitor element 8 to signal pulse output terminals 61, 62, 63, 64, 65 and 66. Refer-

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ring now to FIG. 5, the data handling unit therein includes signal pulse add and subtract circuit means shown in block diagram form and identified as register 60, having signal pulse add terminals 81, 82, 83, 84, 85 and 86, a subtract terminal 67 and a signal registration voltage output terminal 68. Score display coincidence switch means including normally open switches 71, 72, 73, 74, 75 and 76 are connected, respectively, between the diode output terminals 61 through 66 and the add terminals 81 through 86. A coin, or otherwise mechanically, operated switch bar 70 having electrical contacts 77 will allow these contacts to be closed by the weight of a coin 78 thereagainst and held closed by means of a magnet 79. When in this position the contacts 77 and a closing of a switch 80 will extend a voltage on a terminal 87 to a terminal 88 of the electromotor 14 as a means of changing the angular relationship between the mask 12 and the unit 10. A time delay relay 89 with circuit means 90 will energize the coil 91 after one second time delay, for example, and thereby deenergize the electromotor 14 by magnetically pulling the switch bar 70 away from the magnet 79, thus opening contacts 77. The energized coil 91 will have also effected a closing of switch contacts 92 and thereby energize a second time delay pulse circuit 93. After a predetermined time, ten seconds for example, an electrical pulse from the circuit 93 will be extended to the terminal 94 of the light source 18 allowing a flash of light therefrom to illuminate the window means adjacent the assembly 17 of light responsive elements.

When in operation a player will close one of the switches 71 to 76, by pressing a button of said switch for example, and thereby bet on the number of die spots to be displayed after inserting a coin 78 in the slot 58. If the button of switch 73 has been pressed the player will be betting that three die spots will be displayed on the surface 13. If, after the motor has been energized, one of the six angular relationships established between the mask 12 and the unit 10 did not coincide with a display of three spots, then the cell 3 will not be exposed to light from the source 18 upon energization thereof. But if the mask 12 did assume a position whereby three spots are displayed, then cell 3 will be exposed to light through the window means 53 in the mask 12, effecting a signal pulse corresponding to three spots and allowing the signal to enter the register 60 through the closed switch 73. Based on the odds against making a three spot display the winning accordingly will have been entered in the register 60 and shown on a counter 59. By means of a switch 69, for example, a voltage may be used to return the count to zero, or, a voltage within the register 60 will be applied to the terminal 68 whereupon the player will use the presence of this voltage to continue playing instead of using a coin 78. The player will then press so as to close switch contacts 100 and 101 effecting, respectively, the energizing of an electromagnetic coil 102, repeating the game as though a coin 78 has been inserted, and entering a voltage from the terminal 87 into the register to account for the playing of the game in this manner.

Circuitry or mechanisms called for in the blocks 60, 90 and 93 are well known in the art and set forth in numerous logic handbooks and computing devices texts.

Although the unit 17 shows all of the cells therein as being supported at but one position in relation to the placement of each window means 51 through 56, respectively, at one of six different angular positions, it should be understood that each of the window means 51 through 56 could be placed in but one position relative to placing each of the cells, respectively, at one of the six different angular positions. And although the light responsive cells 1 through 6 are symbolized as diodes they may of course be understood as being other forms of light responsive means such as PN junction or NPN junction phototransistors, photoconductor cells, photodiodes, etc. It is also recognized by the inventor hereof that the invention lends itself to the use of two or more assemblies 10 and thereby

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utilize more than but a single die score display so as to extend the game herein to two dice craps or five dice chuck-a-luck, for example. The unit 10 may then become a table-top and the register 60 extended so as to handle data from two or more light responsive cell units 17.

It should be understood by those skilled in the arts pertaining to the construction and operating possibilities of the present invention that the embodiments described herein are illustrative only and that the invention includes such other modifications and equivalents as may be seen by those skilled in the arts, but still being within the scope of the appended claims.

I claim:

1. Means for utilization in a game of chance apparatus:

- (a) a light source;
 - (b) a score display and signal transmitter assembly including an array of light responsive cells and first and second light masking means for presenting from one to at least six spots of light on a display surface thereof and for transmitting therefrom signals corresponding, respectively, to each of said presentations of light spots;
 - (c) said first masking means being intermediate a first surface of said second masking means and said light source and means for changing the angular relationship between said first and second masking means about a common axis thereof including an array of at least six magnetic elements supported by one of said masking means and at least one magnetic element supported by the other of said masking means for allowing any one of at least six different angular relationships to be established between said first and second masking means;
 - (d) said second masking means including said display surface on a side thereof opposite said first surface and having window means therethrough for conducting light from said first surface to said display surface;
 - (e) said first masking means having a plurality of individual and predetermined positioned window means therethrough for allowing the passage of light from said source through the window means thereof and through the window means of said second masking means to the display surface thereof and presenting thereat one or more of said spots of light, the number of spots presented corresponding to a predetermined one of said angular relationships established between said first and second masking means;
 - (f) said array of cells including at least six individually light responsive cells supported respectively at six different radial positions in relation to said common axis;
 - (g) said first masking means being intermediate said light source and said array of cells and having included therein at least six predetermined positioned window means for allowing the passage of light from said source to each said cell selectively and coincident with each said angular relationship, each said cell upon the passage of light thereto effecting the transmitting of a signal pulse corresponding to the number of spots being presented on said display surface.
2. The invention as set forth in claim 1 wherein said window means of the second light masking means for allowing the passage of light therethrough to said display surface includes
- (h) light guide means extending from said first surface to said display surface.
3. The invention as set forth in claim 1 additionally including
- (i) electromotor means for effecting said changing of the angular relationship between said first and second masking means.
4. The invention as set forth in claim 3 additionally including

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- (j) signal pulse add and subtract circuit means presenting signal pulse add terminals, a subtract terminal and a signal registration voltage output terminal;
- (k) score display coincidence switch means intermediate said add terminals and signal output terminals of said array of cells for allowing said circuit means to register a predetermined signal pulse from said array;
- (l) a source of voltage;
- (m) first and second ON switch contacts, each having contact closure means, connected in series between said voltage and said electromotor means for effecting energization thereof and thereupon changing the angular relationship between said first and second mask means;
- (n) mechanical means for effecting a closure of said first ON switch contacts and extending said voltage to said electromotor means upon a closure of said second ON switch contacts;
- (o) electromagnetic means including switch means for extending voltage thereto from said signal registration voltage output terminal for effecting a closure of said first ON switch contacts and extending said voltage to said electromotor means upon closure of said second ON switch contacts, and means for extending voltage from said source to said subtract terminal;
- (p) second electromagnetic means and voltage delay circuit means for effecting an opening of said first ON switch contacts and second voltage delay circuit means for energizing said light source and effecting said transmitting of a signal pulse from a cell of said array corresponding to one of said angular relationships and allowing said pulse to be connected to one of said add terminals through said coincidence switch means.
5. Die score display and transmitter means for utilization in game of chance apparatus including:
- (a) a light source;
- (b) a plurality of light responsive elements each having output terminal means and extending an electrical

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- output signal to the terminal means upon an exposing thereof to light from said source;
- (c) score display means presenting first and second surfaces and having a predetermined array of window means extending therethrough between said surfaces, the second surface presenting spots to which light will be conducted so as to represent an upturned face of a die;
- (d) light masking means, rotatable about an axis thereof, intermediate said source and said light responsive elements having a plurality of window means therethrough for allowing the passage of light from said source to said elements, and intermediate said source and said first surface having a plurality of window means therethrough for allowing the passage of light from said source to said array of window means;
- (e) angular position control means for allowing said light masking means to assume one of at least six different angular positions in relation to said light responsive elements and said score display means upon rotation thereof, each said angular position being related to a passing of light to predetermined ones of said elements and said window means resulting, simultaneously, in the display of a die score on said second surface and the extending of an output signal corresponding thereto to said terminal means depending upon which of said angular positions is assumed.

References Cited

UNITED STATES PATENTS		
2,334,440	11/1943	Ragan ----- 273—142 H
2,891,338	6/1959	Palamara ----- 273—142 A UX
3,059,346	10/1962	Swimmer et al. --- 273—142 B X
3,298,114	1/1967	Marsh, Jr. ----- 35—4
3,645,532	2/1972	McNaney ----- 273—142 A

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