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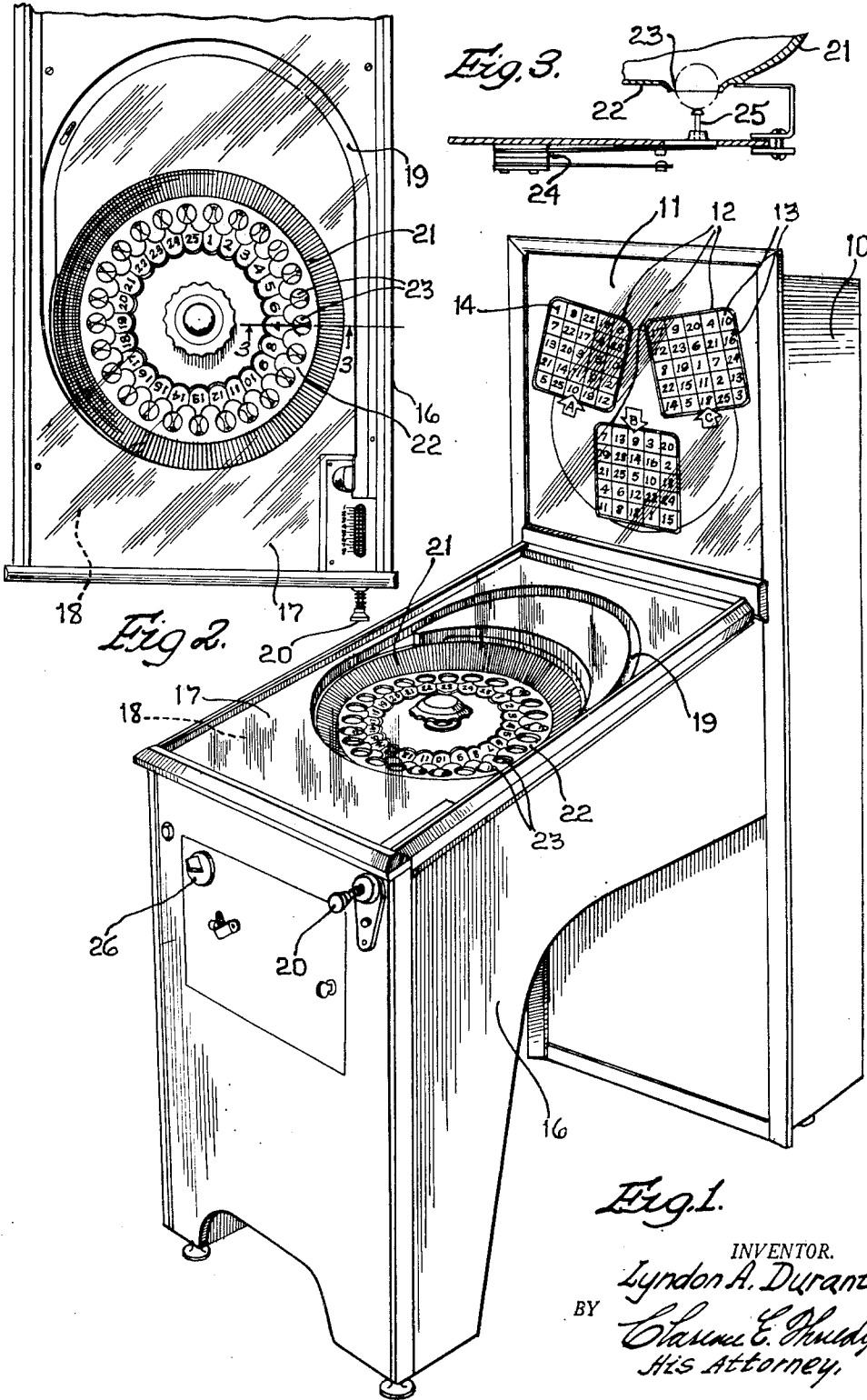
L. A. DURANT

2,618,486

ELECTRICAL INDICATING PIN BALL DEVICE

Filed July 28, 1951

2 SHEETS—SHEET 1



*Fig. 1.*  
 INVENTOR.  
 Lyndon A. Durant  
 BY *Charles E. Shady*  
 His Attorney.

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2 SHEETS—SHEET 2

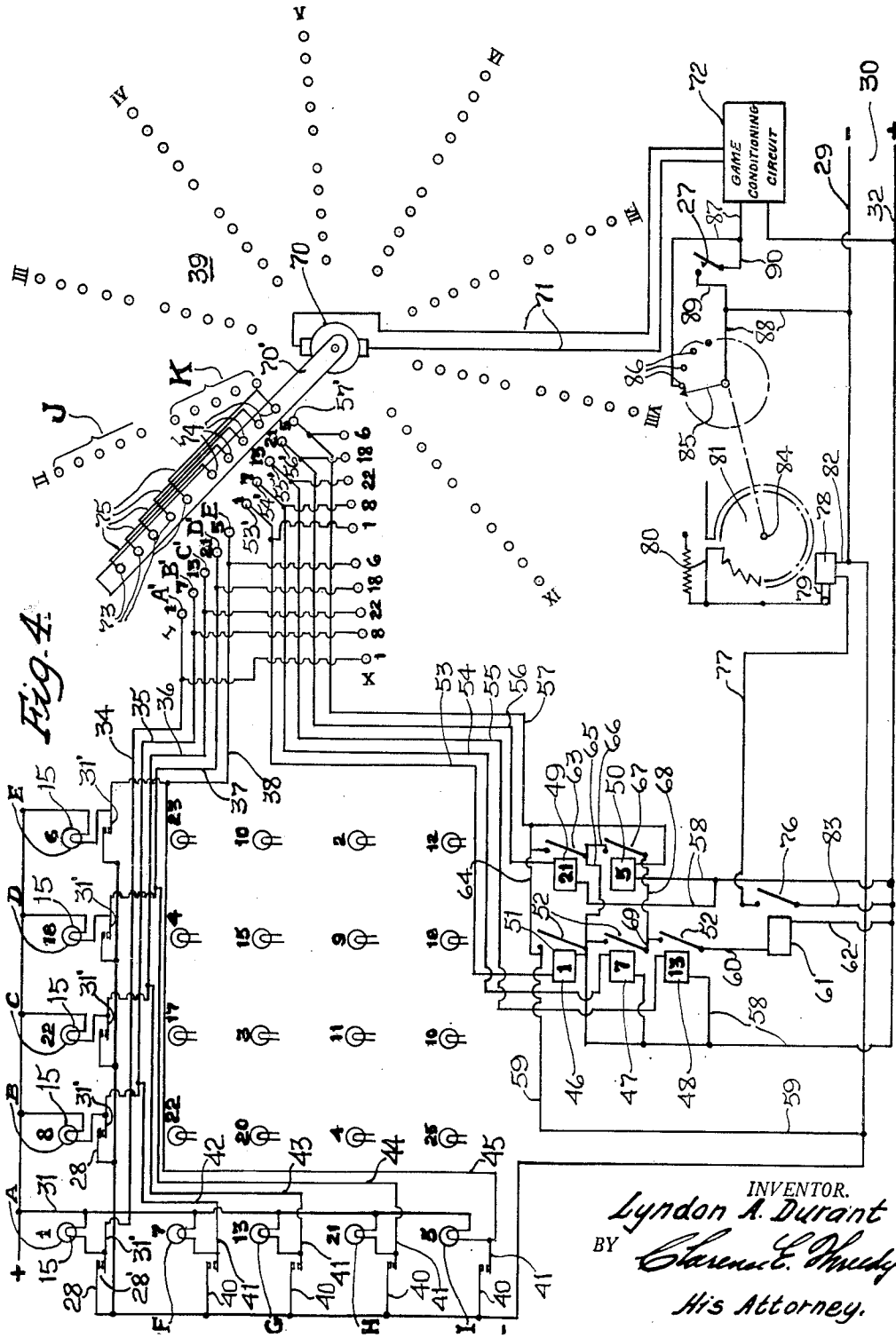


Fig. 4.

INVENTOR.  
*Lyndon A. Durant*  
BY *Charles E. Shady*  
His Attorney.

# UNITED STATES PATENT OFFICE

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## ELECTRICAL INDICATING PIN BALL DEVICE

Lyndon A. Durant, Chicago, Ill., assignor to General Patent Corporation, Chicago, Ill., a corporation of Illinois

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2 Claims. (Cl. 273-121)

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This invention relates to amusement game apparatus and more particularly to a game apparatus which embodies a plurality of electrical indicators preferably in the form of incandescent lamps and arranged in a manner such that certain groups or sets of indicators must be energized in order to entitle the player to an award which, in the present instance, is the privilege of the player to replay the game without additional cost to him.

It is the object of this invention to provide a game apparatus of the character described and embodying the above characteristics, in a manner such that the maximum amusement will be afforded to the player while permitting the game apparatus to be manufactured at an economical cost.

Another object of the invention is to provide an amusement game apparatus having a plurality of units of indicators, with the indicators of each unit arranged in a group and corresponding in number with ball pockets of each having a ball-actuated switch electrically connected with a scanning device, whereby when certain indicators which are adjacent to each other are energized by the closing of their respective ball switches, such switches will in turn effect energization of secondary relays, which, when energized, will close their respective switches and in turn effect energization of a master relay for purposes more fully herein set forth.

Another and equally important object of this invention is the provision in an amusement game apparatus of a plurality of indicators in an electric circuit including a scanning motor, controlling a game conditioning circuit and effective to energize the game conditioning circuit when certain of the indicators which are arranged in adjacent relation with respect to each other are energized.

Other objects will appear hereinafter.

The invention consists in the novel combination and arrangement of parts to be hereinafter described and claimed.

The invention will be best understood by reference to the accompanying drawings showing the preferred form of construction, and in which:

Fig. 1 is a perspective view of a game apparatus embodying my invention;

Fig. 2 is a top plan view of the same;

Fig. 3 is a fragmentary sectional detail view taken substantially on line 3-3 of Fig. 2;

Fig. 4 is a symbolic circuit embodied in the invention.

While my invention may be embodied in amuse-

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ment game apparatuses of a form other than that shown in the drawings, it is to be understood that the form shown in the drawings is substantially for illustrative purposes.

In this connection, the amusement game apparatus includes a vertical cabinet 10 within which are arranged the instruments for effecting operation and score indicating of the game. This cabinet 10 has a front wall 11, the greater area of which is opaque. The areas defined by the squares 12 are translucent and are each divided into squares 13, with each square designated by a number 14. To the rear of these squares are arranged indicators 15. In the present instance these indicators 15 are in the form of incandescent lamps. Each square 12 comprises a unit consisting of a group of such indicators.

Extending from this cabinet 10 is a horizontal cabinet 16 including, beneath a transparent top 17, a play or game board 18 having a runway 19 through which balls are projected by a projector 20 of any conventional construction. The runway 19 terminates into a bowl 21 having a bottom wall 22 provided with a plurality of openings 23 arranged circumferentially with respect to each other. In each of these openings 23 is a switch 24 comprising an actuating pin 25 which closes the switch when a ball is positioned thereon. These openings 23 correspond in number to the number of indicators in each of the units 12, and the openings are indicated by numerals corresponding to the numerals indicating the indicators of each unit 12.

A suitable coin chute 26 of any approved construction is associated with the cabinet 16 and is adapted to deliver a coin for closing a coin switch 27 of any approved construction and which coin switch is symbolically illustrated in Fig. 4.

In Fig. 4, I have illustrated a circuit embodying the invention. For the purpose of brevity and clarity I have illustrated the upper row of indicators 15 and the left-hand row of such indicators in the circuit, it being understood that the remaining rows of indicators are connected in circuit with a scanning motor to be hereinafter described and their respective ball switches, in the same manner as the upper row and the left-hand row of indicators 15.

As before indicated, each indicator has a corresponding ball-actuated switch 24. Each of these switches has one side 23' connected by a conductor wire 28 to the negative side 29 of a power source 30. The other side 31' of each switch is connected to one side of its respective indicator, the other side of such indicator being

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connected by conductors 31 to the positive side 32 of the power source 30.

The sides 31' of each of the ball switches of the indicators A, B, C, D and E of the indicators 15 by conductors 34, 35, 36, 37 and 38 are connected respectively to contacts A', B', C', D' and E' of a scanning device symbolically indicated and generally indicated at 39 in Fig. 4 of the drawings.

These indicators A to E inclusive are arranged respectively to the rear of the squares designated by numerals "1," "8," "22," "18" and "6." The side 40 of each of the ball switches for the indicators F, G, H and I of the indicators 15 is connected by the conductor wire 28 to the negative side 29 of the power source. The other side 41 of each of these switches by the conductors 42, 43, 44 and 45 are connected to the contacts B' to E', respectively, through the conductors 35 to 38, respectively.

A group of secondary relays 46, 47, 48, 49 and 50 are included in the circuit illustrated in Fig. 4. Each of these relays includes a coil 51 and a switch 52 actuated thereby. Each of the coils of the relays 46 to 50 by conductor wires 53 to 57 inclusive is connected to contacts 53' to 57' inclusive of the scanning device 39. The opposite sides of these relays by conductors 58 are connected to the positive side 32 of the power source 30.

The switches of relays 46, 47 and 48 are connected in series with one side of the switch 52 by a conductor 59 connected to the negative side 29 of the power source 30. The side 60 of the relay switch 52 of the relay 48 is connected to a master relay 61 in turn connected by a conductor 62 to the positive side 32 of the power source 30.

One side of the relay switch 63 of the relay 49 is connected by conductors 64 and 59 to the negative side 29 of the power source. By a conductor 65 the other side of this relay switch 63 is connected to the corresponding side of the switch of the relay 46. This side of the switch 63 is connected to one side 66 of the relay switch 67 of the relay 50. The other side of this relay switch 67 by a conductor 68 is connected to the side 69 of the switch of the relay 47.

The scanning device 39 includes a motor 70 connected by conductors 71 to a game conditioning circuit 72 symbolically illustrated in Fig. 4. This scanning device 39 includes two groups J and K of contacts. The number of contacts in group J corresponds to the number of indicators of each unit 12, as do the contacts of group K.

The motor 70, which is continuously operated during the playing of the game, includes a scanning arm 70' having a group of wiper contacts 73 and a second group of wiper contacts 74, with the contacts of group 73 connected by conductors 75 with the contacts of group 74. These contacts are adapted to engage the stationary contacts comprising the group of contacts J and K.

The switch 76 of the master relay 61 has one side connected by a conductor 77 to the coil 78 of a solenoid, the plunger 79 of which operates a step-up dog 80 of a ratchet wheel 81. The opposite side of this coil 78 is connected by a conductor 82 to the negative side 29 of the power source 30. The other side of the switch 76 by conductor 83 is connected to the positive side 32 of the power source. The shaft 84 of the ratchet wheel 81 carries a wiper arm 85 adapted to successively engage contacts 86. These contacts 86 by a conductor 87 are connected in circuit with the game conditioning circuit 72.

The wiper arm 85 has electrical connection

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with the shaft 84, the latter being connected by a conductor 88 to the negative side 29 of the power source. The coin controlled switch 27 has one side connected by conductor 89 to the conductor 88, while the other side of this switch is by a conductor 90 connected to the conductor 87.

The operation of the game apparatus is as follows:

Assuming that a ball is projected through the runway 19 and finds lodgment in the hole opposite the numeral "1," such ball will close the ball-actuated switch within that hole and thereby effect energization of the indicator "A" which bears the numeral "1" (Fig. 1). This ball-actuated switch will remain closed until the game is completely played. Assuming that the next two balls projected lodge in holes bearing the numbers "7" and "13," the closing of their respective ball-actuated switches will energize the indicators "F" and "G," respectively bearing the numbers "7" and "13."

The motor 70, which is continuously operating by reason of the game conditioning circuit, having been energized by the coin switch 27, will move the scanning arm 70' into contact with contacts A', B', and C' and thereby, through the conductor 75, connect these contacts with the contacts 53', 54' and 55'. When this takes place, the relays 46, 47 and 48 will be energized to close their respective switches 52. Upon closing of these switches 52, the master relay 61 will be energized and close its switch 76. The closing of this switch 76 will energize the coil 78 to effect advancing the ratchet wheel one step, moving the wiper arm 85 into contact with the first contact 86. When this takes place, the game conditioning circuit 72 is automatically conditioned for replay without the necessity of closing the coin-actuated switch 27. The game may be replayed as long as the wiper finger 85 is in contact with one of the contacts 86. Assuming that a ball instead of lodging in the opening bearing the numeral "1," lodges in the opening bearing the numeral "5": In this case the ball will close the switch within the opening bearing the numeral "5" and energize the indicator light having a like numeral. Under this assumption, the balls now are lodged in the openings bearing the numerals "7" and "13" and "5." As these openings are not arranged adjacent to each other, the secondary relay switches will not complete a circuit to the master relay 61, and therefore the ratchet wheel 81 will not be advanced one step.

In other words, in order for the master relay 61 to be energized, it is necessary that three adjacent ball-actuated switches 24 be closed by balls entering the openings within which the switches are located. If this does not take place, the secondary relays will not effect energization of the master relay 61. By this arrangement, an award of a free play of the game may be effected by the closing of three adjacent openings in any one horizontal or vertical row of indicators.

Thus, the object in the playing of the game is to deposit the ball in openings bearing numerals which appear adjacent to each other in any unit of the squares 12 bearing those numerals. Unless this takes place, the game conditioning circuit will not be conditioned for the playing of a free game.

While I have shown in each row of indicators, five indicators, it is to be understood that there may be more than five in each row, and while I have illustrated three units of indicators, it is to

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be understood that there may be any number of such units.

While I have illustrated and described the preferred form of construction for carrying my invention into effect, this is capable of variation and modification without departing from the spirit of the invention. I, therefore, do not wish to be limited to the precise details of construction set forth, but desire to avail myself of such variations and modifications as come within the scope of the appended claims.

Having thus described my invention, what I claim as new and desire to protect by Letters Patent is:

1. An amusement game apparatus in which there is a plurality of lamps, a power source, a circuit connecting the lamps in parallel with respect to each other and with the power source, a ball-actuated switch in said circuit for each of said lamps, a scanning motor, a scanning arm rotatable by the motor, a plurality of stationary contacts, a plurality of contacts on said arm and movable by said arm into contact with said stationary contacts, a circuit connection between the stationary contacts and one side of said ball switches, a master relay including a coil and a switch actuated by said coil, one side of said master relay coil connected with one side of the power source, a plurality of secondary relays, each having a coil and a switch actuated by said coil, the coils of said secondary relays connected to said secondary contacts and to said power source, certain of said secondary relay switches being connected in series to the other side of said master relay coil, the remaining secondary relay switches being connected in series with each other and each in series with certain of said first-mentioned certain secondary relay switches, a game conditioning circuit in circuit with said motor, and a circuit connection between the game conditioning circuit and the switch of said master relay.

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2. An amusement game apparatus in which there is a plurality of lamps, a power source, a circuit connecting the lamps in parallel with respect to each other and with the power source, a ball-actuated switch in said circuit for each of said lamps, a rotatable scanning arm, means for rotating said arm, a plurality of stationary contacts, a plurality of contacts on said arm and movable by said arm into contact with said first contacts, a circuit connection between the stationary contacts and one side of said ball switches, a master relay including a coil and a switch actuated by said coil, one side of said master relay coil connected with one side of the power source, a plurality of secondary relays, each having a coil and a switch actuated by said coil, the coils of said secondary relays connected to said secondary contacts and to said power source, certain of said secondary relay switches being connected in series to the other side of said master relay coil, the remaining secondary relay switches being connected in series with each other and each in series with certain of said first-mentioned certain secondary relay switches, a game conditioning circuit in circuit with said motor, and a circuit connection between the game conditioning circuit and the switch of said master relay.

LYNDON A. DURANT.

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