

July 7, 1959

N. W. O'ROURKE  
ELECTRICAL GAME APPARATUS

2,893,733

Filed Jan. 3, 1956

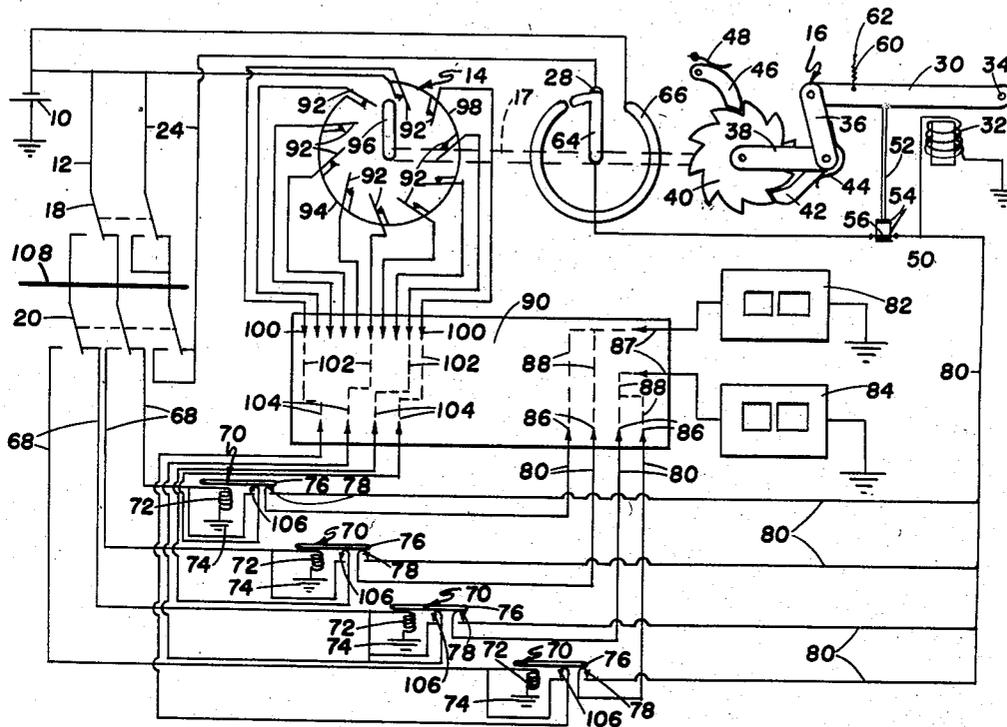


FIG. 1

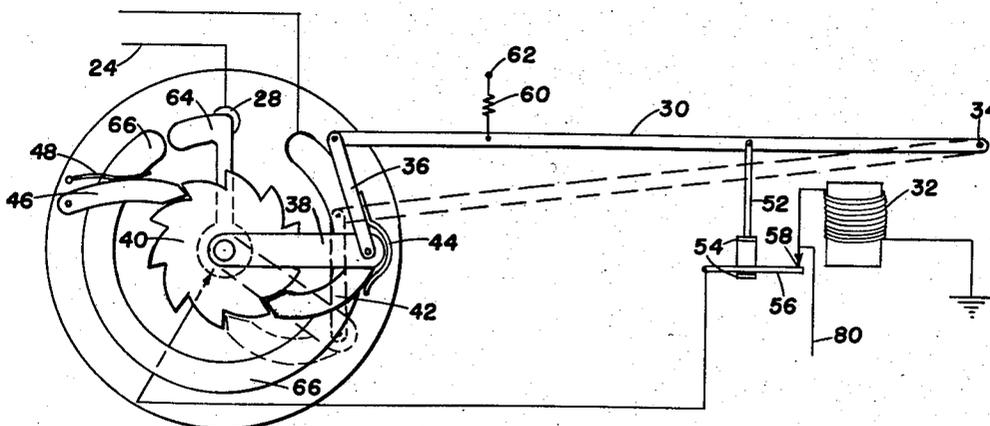


FIG. 2

INVENTOR.  
NEIL W. O'ROURKE

BY

*Knox & Knox*

2,893,733

**ELECTRICAL GAME APPARATUS**

Neil W. O'Rourke, La Jolla, Calif.

Application January 3, 1956, Serial No. 557,078

4 Claims. (Cl. 273-1)

The present invention relates generally to games and more particularly to an electromechanical, variable result game apparatus.

The primary object of this invention is to provide an apparatus for a game wherein some of the rules, in this case electrical circuits, are variable. The rules would be changed in a random manner between games in such a way as to be unknown to the players, and would be determined by them by trial and error during the course of the play. The objective would be to learn the rules as fast as possible, devise the optimum strategy, and use this information to defeat the opponent, otherwise stated, the primary object.

Another object of this invention is to provide a competitive game apparatus in which electrical score determining means is actuated as a result of individual, player-chosen positioning of switches, in the circuits operating said means, thus providing a game of general appeal and of particular interest to those having skill in applying what is known as "mixed strategy" in game theory, the changeable rules being obtained by random choice of circuit modifying means in the form of cards having what may be termed "ruling circuits" printed thereon.

Another object of this invention is to provide a game apparatus in which the scoring circuits controlled by the said switches are variable prior to any single game as by the introduction of printed circuit cards in said scoring circuits.

Another object of this invention is to provide a game apparatus in which the scoring circuits may be varied over a wide range, thus virtually preventing a player from memorizing circuit combinations and predicting the corresponding scores.

Another object of this invention is to provide a game apparatus having score tabulating counters, the counters indicating the score for each play, the players using this information to guide them in making future plays.

Another object of this invention is to provide a game apparatus which is adapted for fabrication from many different materials, so that the choice of material can be according to the dictates of availability and price considerations, the exact sizes and proportions being matters easily determined to suit particular conditions and needs.

Another object of this invention is to provide a game apparatus which is practicable and inexpensive to manufacture.

Finally, it is an object to provide an electromechanical game apparatus of the aforementioned character which is simple, safe and convenient to operate and which will give durable service in the field of entertainment.

With these and other objects definitely in view, this invention consists in the novel construction, combination and arrangement of elements and portions, as will be hereinafter fully described in the specification, particularly pointed out in the claims, and illustrated in the drawing which forms a material part of this disclosure, and in which:

Figure 1 is a diagrammatic drawing of the device showing the various circuits actuated by the switches in various positions, the stepping switch assembly and circuit

breaking switches and their connections to function as a means to provide electrical impulses to tabulating counters, the figure also indicating the arrangement of the stepping switch assembly and circuit breaking switches on a common shaft indicated in dash line.

Figure 2 is an enlarged drawing of the stepping switch assembly.

Similar characters of reference indicate similar or identical elements and portions throughout the specification and throughout the views of the drawing.

Referring now to the drawings, and specifically to the diagrammatic representation in Figure 1, the device is shown as comprising a source of electricity 10 providing current to a starting circuit 12, a breaker switch assembly 14 and a stepping switch assembly 16. The breaker switch assembly 14 and the stepping switch assembly 16 are coaxially mounted on a shaft 17.

Interposed in the starting circuit 12 are two switches 18, 20, the switch 18 hereinafter referred to as the player's switch is of the double pole, double throw type and receives the current in the starting circuit 12 and transmits the current to one pole of a triple pole, double throw switch 20, hereinafter referred to as the opponent's switch. Both the player's switch 18 and the opponent's switch 20 are of the self-neutralizing type, i.e., after contact has been made and the switches released, the contact arms of the switches return to a neutral position. It will be evident that any of the commercial types of switches may be used for this purpose.

The stepping switch circuit 24 has interposed therein two contacts of the switches 18, 20, directing current to an initial contact 28 of the stepping switch 16, regardless of the position of the switches 18, 20.

As best shown in Figure 2, an armature 30 is attracted by the coil 32, and pivots about the pivot 34, moving the link 36 downwardly. The downward motion of the link 36 rotates the arm 38 downwardly about the shaft 17, and also rotates the ratchet 40 by means of the pawl 42, which is held in contact with the ratchet 40 by the spring 44. The arm 38 is freely rotatable about the shaft 17, and the link 36 is pivotally attached between the other end of the arm 38 and the armature 30. The link 36 and the arm 38 cooperate to move the ratchet 40 downwardly about the shaft 17 and maintain the correct relationship therebetween.

A holding pawl 46 also contacts the ratchet 40, and serves to prevent reverse rotation of the ratchet 40 on the return stroke of the armature 30. Another leaf spring 48 maintains the contact between the holding pawl 46 and the ratchet 40.

The return stroke of the armature 30 is accomplished by means of the switch 50 operated by the depending arm 52, said arm 52 having spaced fins 54 contacting a frictionally pivoted contact arm 56 of a switch 58. The upwardly positioned fin 54 contacts the contact arm 56 only at the last fraction of the downward stroke, breaking the circuit to the coil 32. The upward stroke of the armature 30 is accomplished by the tension spring 60 attached between the armature 30 and a fixed point 62. The spacing of the fins 54 allows lost motion of the armature with respect to the contact arm 56 and permits the armature 30 to substantially complete the upward stroke before the lower fin 54 contacts the contact arm 56, reclosing the switch 58, it being noted that the armature 30 is indicated in Figure 2 as approximately at the top of its stroke.

The first downward stroke of the armature 30 rotates the shaft 17 and the stepping switch contact arm 64 pivotally mounted on the shaft 17, until the said arm 64 makes contact with a ring 66. The ring 66 is continuously energized by a direct lead from the battery 10 and,

once contact is made between the arm 64 and the said ring 66, the cycles of the stepping switch 16 continue until the initial contact is again reached.

The starting circuit 12 is divided into four primary circuits 68 by the switches 18, 20, one of the circuits 68 being energized for each combination of positions of the switches 18, 20. A holding relay 70 is provided in each of the primary circuits 68, each relay 70 having an electromagnetic coil 72, one pole of which is grounded as at 74. A pivoted arm 76 of the relay 70 closes the contacts 78 of a counter circuit.

The counter circuit leads 80 receive electrical impulses from the stepping switch assembly 16, being connected between the switch 58 and the coil 32, said impulses being conducted through the contacts 78 to counters 82, 84, which are grounded, completing the circuit therethrough.

Each of the four counter circuits leads 80, when the switch 50 and the corresponding relay switch 78 are closed, connects one of a set of contact points 86 and one of the printed circuits 88 so as to direct the impulses through contacts 87 to one of the counters 82, 84. The circuits 88 are printed on a card 90, and the contact points are fixed, as on the side wall of a slot in a housing for the game apparatus, so as to allow interchangeability of cards 90. These cards constitute circuit modifying means selectively insertable in the principal circuits of the device.

The number of impulses conducted to the counters 82, 84, is controlled by the breaker switch assembly 14, which comprises a plurality of normally closed breaker switches 92 positioned in a circle, as for example on a disc 94, with a breaker arm 96 mounted on the shaft 17 opening each of the switches 92 successively as the shaft 17 rotates with the ratchet 40.

A lead 98 interconnects one terminal of each switch 92, thus directing energy from the battery 10 to all of the switches. The other terminal of each switch 92 is connected to contact points 100 which may be fixed, for example, on the housing of the game apparatus so as to be engaged by portions of what have been called "ruling circuits" 102 printed on the cards 90 hereinbefore mentioned. Four ruling circuits 102 are necessary for selective connection with the contact points 104 of ruling circuit contacts 106 when the corresponding switches of the relays 70 are closed, it being remembered that the relays 70 remain closed after the switches 18, 20 are returned to the neutral position. Thus, impulses generated by the stepping switch 16 are directed to the counters 82, 84 until the breaker switch 92, directing current to the relay 70 through the printed ruling circuit 102, is opened by the breaker arm 96.

It now becomes evident that movement of the switches 18, 20 to either position, energizes one of the relays 70, which closes the corresponding contacts 78 and 106, thus energizing both a counter circuit 80 and a ruling circuit 102. Simultaneously, the stepping switch 16 is energized and makes one complete revolution, stopping when the contact arm 64 again reaches the now de-energized initial contact 28. The impulses thus produced are counted by the counters 82, 84 until the energized breaker switch 92 is opened by the breaker arm 96, thus opening the contacts 78 and 106, and preventing subsequent impulses from reaching the counters.

It will be obvious that any number of switches 92 may be used if an equal number of steps of the ratchet 40 are provided. It will also be evident that a great number of cards 90 bearing the printed circuits 88 and 102 may be used since many different combinations of circuits between the four contact points 104 and the switches 92 are possible, and further, four possible combinations of the counter circuits 88 may be printed for any given circuit 102.

The cards 90 are interchangeable and may be shuffled and chosen at random by one of the players prior to the start of a game. The chosen card 90 is then inserted

into the proper position in the device, and play may be started. Play consists in the player and the opponent simultaneously throwing their switches 18, 20 to one of the two positions. Following each play, depending on the directions the two switches 18, 20 are thrown and the arrangement of the printed circuits on the chosen card 90, a score is indicated on the score counter 82, 84, for the player and the opponent. As the play progresses the player and the opponent must attempt discovery of the scoring rules for the chosen card 90 by trial and error and use this discovered knowledge to formulate the correct mixed strategy to win.

No particular type of housing or casing for this device is mandatory, since the device may be assembled and used in many different ways. However, it is necessary that some support be provided for the contacts 86, 87, 100 and 104 when printed circuit cards 90 are used. Convenient means, diagrammatically indicated at 108 should also be provided to prevent the opposing players seeing the movement of the switches 18 and 20.

The players may arbitrarily decide as to the rules to be followed, the number of plays for one card, the total score constituting a complete game, or any other pertinent factor encountered during play.

Further description would appear to be unnecessary.

It is understood that minor variation from the forms of the invention disclosed herein may be made without departure from the spirit and scope of the invention, and that the specification and drawings are to be considered as merely illustrative rather than limiting. For example a single adding and subtracting counter can be substituted for the two counters illustrated.

I claim:

1. In an electrical game apparatus for a plurality of players: score counting means for arithmetically counting a plurality of scores, said means continuously displaying the current totals of said scores; a plurality of principal circuits connected with said counting means; multiple-choice, player-operated means for selectively connecting said principal circuits to a source of power, one of said player-operated means being available to each player; means to shield said player-operated means from observation by the other players; and circuit modifying means, to be chosen at random by the players, to modify said principal circuits and connect different principal circuits to different counting means.

2. Apparatus according to claim 1 wherein said modifying means comprises a set of relatively fixed contacts in said principal circuits, and a card having a printed circuit electrically connected with said contacts, said card being replaceable and being one of a set of cards having different printed circuits, whereby a card may be selected at random from such a set of such cards for modifying said principal circuits.

3. Apparatus according to claim 1 wherein said principal circuits include a pulse generator providing pulses to said counting means; and means to control the number of pulses reaching the score counting means for any one operation of the player-operated means.

4. Apparatus according to claim 3 wherein the number of pulses generated for each operation of the player-operated means is a constant plurality; said means to control the number of said constant plurality of pulses reaching the score counting means being responsive to said circuit modifying means.

#### References Cited in the file of this patent

##### UNITED STATES PATENTS

70	1,857,629	Epstein et al. ....	May 10, 1932
	2,599,710	Hathaway .....	June 10, 1952
	2,641,473	Statler .....	June 9, 1953
	2,665,910	Hutchins .....	Jan. 12, 1954
	2,665,914	Nicolaus .....	Jan. 12, 1954
75	2,744,188	Olsen et al. ....	May 1, 1956