

Oct. 8, 1940.

F. G. NICOLAUS

2,216,957

GAME APPARATUS

Filed April 7, 1939

3 Sheets-Sheet 1

Fig. 1.

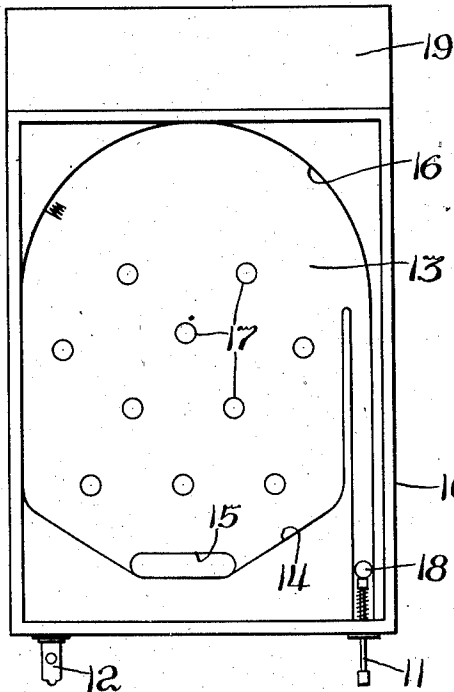


Fig. 2.

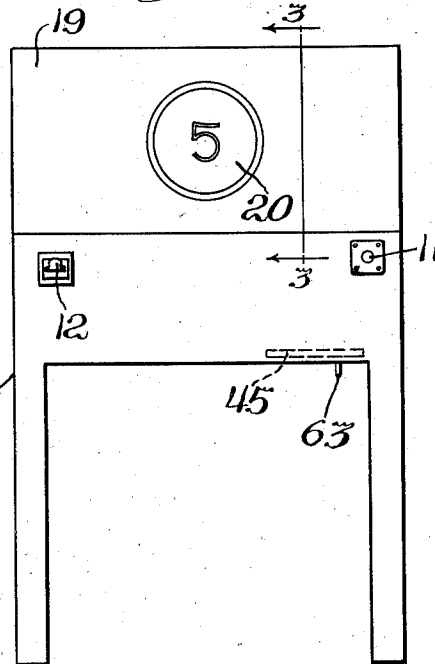
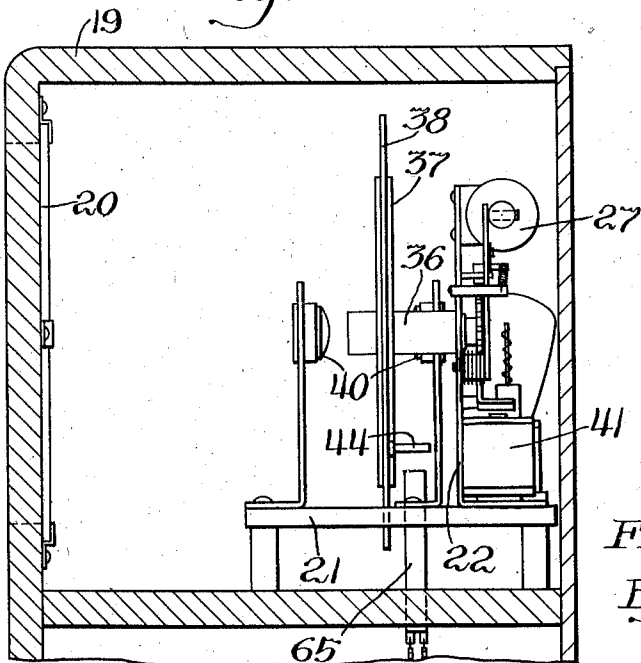
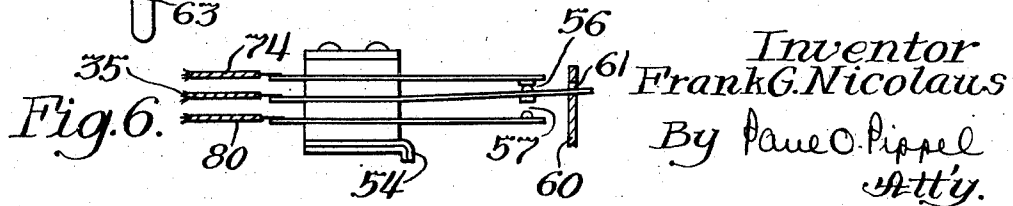
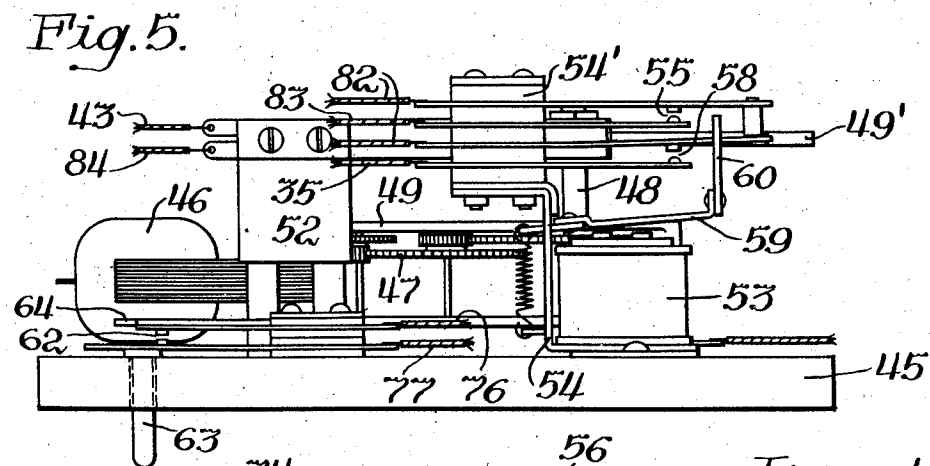
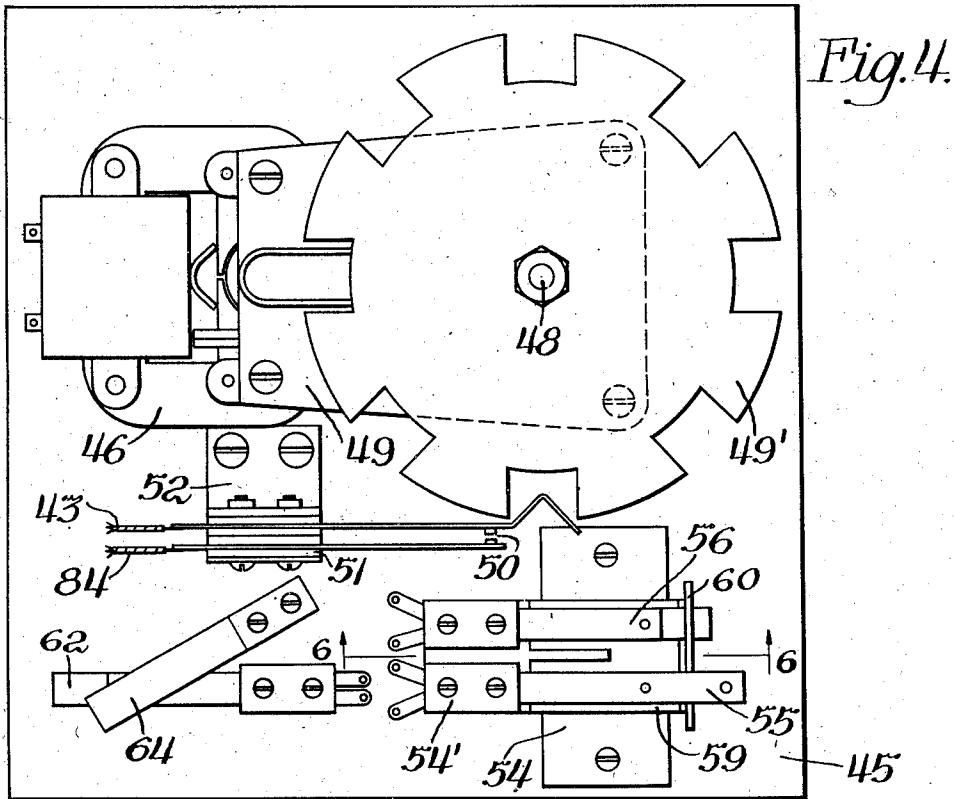
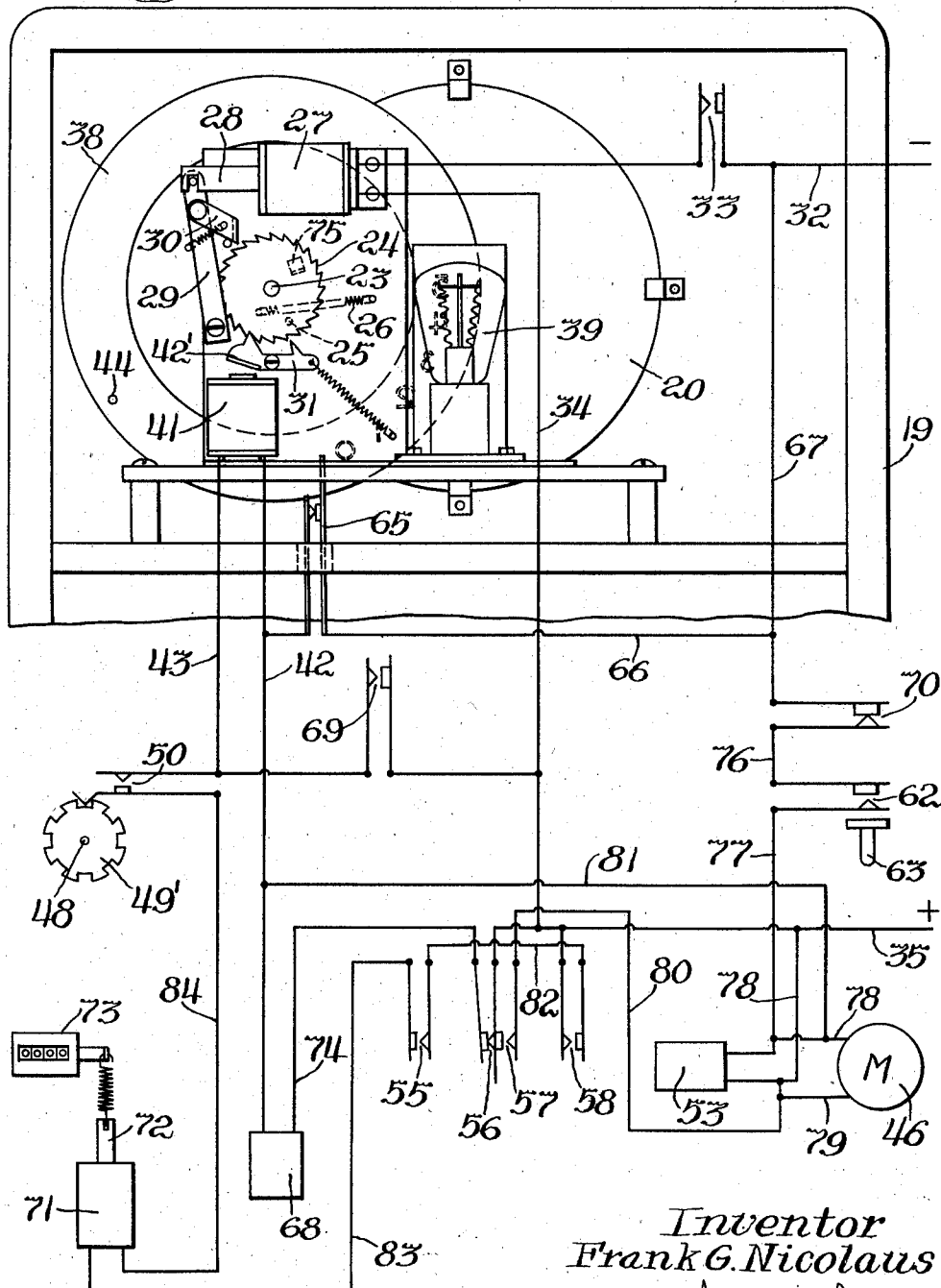


Fig. 3.



Inventor
Frank G. Nicolaus
By Paul O. Pippel
Att'y.





UNITED STATES PATENT OFFICE

2,216,957

GAME APPARATUS

Frank G. Nicolaus, Chicago, Ill., assignor to Raymond T. Moloney, Chicago, Ill.

Application April 7, 1939, Serial No. 266,563

7 Claims. (Cl. 273—118)

The invention relates to a coin or check freed game, such as a pin ball game, in which is included means to indicate so called "free plays" won upon the achievement of certain predetermined high scores in the playing of the game. When such free plays are won it has been customary for the player to operate the coin chute and use up his free plays by playing the game. Since it usually takes a coin or check of equivalent five cent value to operate the slide, the player in accordance with skill displayed in playing of the game, thus is enabled to save expense in the cost of further playing the game and satisfying his desire for amusement or pastime. It may happen that a player having achieved a certain number of free plays may not have the time available to play them off, so to speak, and it is therefore his desire and right to be reimbursed by the location owner of the game in a corresponding number of five cent pieces or checks of equivalent value which the player may at some other and convenient time use in playing the game. When such credits are given the player the number of free plays so cashed in should be recorded by a counter included in the game, and means should be made available to the player or location owner to reset the machine to a zeroized or starting position with no unused free plays showing to some other and subsequent player of the machine.

Accordingly, in a game, such as a pin ball game, it is the primary object of the invention to provide an improved free play means.

Another object is to provide a coin slide freed, pin ball game, or the like, having a free play indicator with associated means enabling the indicator to be zeroized either by playing the free games won by using the coin slide without a coin therein, or by a manual reset control which latter also causes operation of a counter to keep a record of the number of unused free plays cashed in.

Another object is to provide a simple and effective electro-mechanical system for carrying out the above objects.

Other objects will become apparent to those skilled in this art as the disclosure is more fully made.

In carrying out these important objects according to the present disclosure, a pin ball game is used, the same having a table carrying obstacle switches in a circuit. When a certain number of these obstacle switches are ball closed to achieve a high score, then thereafter with other closing of the ball bumped switches "free plays"

are won. Such free plays are indicated by a step up indicator so that the player may see how many free plays are available to him. The game is released for play by the usual coin freed slide so that each free play won and so indicated represents a coin or check of the value of the coin used in operating said coin slide. These indicated free plays may be used by the player by operating the coin slide without inserting a coin therein and for each free play so used in playing the game a reset means is operative to step back the indicator toward zeroizing position where it eventually arrives when all free plays are so used. When the zero position is reached the circuit set up is broken and thereafter the coin slide can not be operated unless a coin is present therein.

It may be that a player does not have time or desire to play off free plays won and that instead he wishes to cash in his free plays by taking the value thereof in coins or checks usable some other time in playing the game. The improved circuit thus includes a manual control used to reset the free play indicator to zero position and for each step back of said indicator a counter operates to count the free plays not used in playing the game as such information is of value to the game owner in determining earnings. When the zero position is reached by the indicator the circuit is made inoperative and a coin must again be used in the slide to free the game. Thus there is provided, a step up circuit and two releaser circuits, the latter two optionally usable as described. Safety features are provided so that the coin slide position in or out determines which optional reset circuit may be used. So much will suffice for the present, the improved structure being fully disclosed in one practicable form in the accompanying sheets of drawings wherein:

Figure 1 is a top plan view of a typical pin ball game;

Figure 2 is a front elevational view of the same game or as viewed from the player end and showing the free play indicator;

Figure 3 is a side view, partly in section through the free play indicator structure as viewed from the line 3—3 of Figure 2;

Figure 4 is an enlarged plan view of a control unit used in the reset circuit;

Figure 5 is an end elevational view of the unit shown in Figure 4;

Figure 6 is a detail side view, partly in section, of a switch, taken along the line 6—6 of

Figure 4, looking in the direction of the arrows; and,

Figure 7 is a rear elevational view of the free play indicator unit along with a diagram showing the electrical control circuits and elements therein.

In Figure 1 a typical pin ball game is shown having a supported cabinet 10, the front or player's end of which carries a ball projector 11 and a coin slide 12 to release the game parts for play in the well known manner. The cabinet carries a table 13 sloped slightly from the horizontal. A piece 14 forms a guide at the low end of the table so that balls will eventually gravitate into a pocket 15 in the well known way. An arch piece 16 forms a ball guide at the upper or high end of the table and the latter carries in suitable spaced relation the desired number of normally open obstacle switches 17 intended to be closed by a ball 18 rolled onto the table by the projector 11 in the usual way.

The cabinet includes at its rear end an upright housing extension 19 having positioned in its front face, a translucent screen 20 onto which will be light projected the number of free plays won in the playing of the game as will later be described.

The projector unit per se forms no part of the present invention and generally comprises a support 21 carried in the housing 19 behind and suitably spaced from the screen 20. As seen in Figures 3 and 7 a bracket 22 on the support carries a shaft 23 on which is a ratchet wheel 24 carrying a stop pin 25 and having one end of a spring 26 connected to the wheel 24 and the bracket 22. The bracket 22 carries a solenoid 27 having a movable core 28 pivotally connected to an arm 29, in turn carrying a spring pulled pivoted pawl 30 to operate the ratchet wheel 24 two steps at a time clockwise as viewed in Figure 7 every time the device 27 is energized. A spring pulled pivoted dog 31 carried on the bracket 22 prevents accidental retrograde movement of the ratchet wheel and as the latter is stepped up it will be understood that the spring 26 will be placed under tension.

The device 27 is in circuit with an electric wire 32 from a suitable source of energy, the said wire having therein a suitable normally open switch 33 which may be the same as the obstacle switches 17 or one that will be closed at the desired time by step up means not shown as the result of scoring achievements caused by ball closing of the switches 17. Suffice it to say that by whatever means the switch 33 is closed it causes operation of the device 27 and the ratchet wheel 24. A wire 34 leads from the other side of the device 27 to the other main lead 35 to the source of energy.

The shaft 23, or the wheel 24, as desired turns a hub 36 on the opposite side of the bracket 22, said hub carrying a large wheel structure 37 including a rim portion 38 having free play numerals in sequence, such as 1, 2, 3, 4, etc., cut thereinto as shown in Figure 7. An optical system including a light source 39 and lenses 40 is aligned with the rim portion 38 so that the numbers therein may be projected onto the screen 20 to be read or viewed from the front side thereof in an obvious manner.

The support 21 also carries an electromagnet 41 and a head part 42' on the dog 31 acts as its armature. Wires 42 and 43 lead from the device 41 into the circuit to be described. The rim portion 38 carries a pin 44 for a purpose later to appear.

A control unit as shown in Figures 4 and 5 is provided, the same comprising a support 45 which may be positioned in the cabinet 10 in the place indicated in dotted lines in Figure 2. Carried on said support 45 is an electric motor 46 having a train of reduction gears 47 driven therefrom, the latter turning an upright shaft 48, which carries and drives a horizontally disposed wheel 49', having its periphery notched to provide wide teeth as shown. The gears 47 and shaft 48 are suitably supported on a plate 49. This notched wheel is positioned proximate a normally open blade switch 50 and serves to open and close the latter. Said switch 50 is carried in an insulated block 51 by a bracket 52 on the support 45.

The support 45 also carries in an upright position an electromagnet 53 adjacent which is a bracket 54 carrying an insulator block 54' for mounting four spring blade contact switches 55, 56, 57 and 58, arranged in side by side pairs. The coil 53 has a spring pulled armature 59 pivotally mounted in the bracket 54 and the free end of the armature carries an upright plate 60 having a slot 61 therein to receive the long blade between switches 56 and 57 as shown.

A push button switch 62 is provided and is operated by an exterior push button 63 and a bracket 64 is provided for the said switch to abut against, when it is flexed by the button 63. A normally closed control switch 65 is disposed in a cross wire 66 between wires 42 and a wire 67 going to the main lead 32. When the wheel rim 38 is in its zero position the pin 44 engages the long leg of the switch 65 and holds it open, and conversely when the wheel rim 38 is stepped up to show free plays, then the pin 44 moves away from the switch 65 and causes the latter to close.

The coin slide 12 is of the usual type having a spring pressed dog to lock same against sliding movement when no coin is inserted thereinto. In the taking of free plays to play same off, no coin is necessary to be used and therefore an electromagnetic means 68 is provided to cause release of the coin slide dog to enable the slide to be used without a coin.

When the coin slide is in its "in" position it serves to hold closed a normally open switch 69 and when the slide is in its "out" or retracted position it serves to hold closed a switch 70.

A solenoid 71 having a movable core 72 is also in the circuit to cause operation of a conventional counting mechanism 73 every time the releaser 41 operates as the result of a circuit established only by the push button 63. The various circuits and operation will now be described.

First, there is a step up circuit to cause operation of the device 27 when the switch 33 is closed to operate the wheel 38 from the ratchet means 24, 29 described. Every time switch 33 is closed current flows through wire 32, switch 33 to device 27; then back through wire 34 and out wire 35.

Second, when the game play is over and free plays are recorded on screen 20 it is desired to take the free plays by playing the game and using slide 12 to release the game without using coins in the slide. It will be remembered that the switch 65 is closed now that the pin 44 has left the said switch. Thus current flows from wire 32, through wire 67, wire 66, past switch 65 and into one side of the releaser coil 41 by way of wire 42. The circuit to the device 68 is complete by way of wire 35, normally closed switch 56 and a wire 74, wire 42, across switch 65, through wires 66, 67 to lead 32. Thus the device 68 is energized

to cause the slide 12 to be released or unlocked. The player can now push in the slide, which action causes switch 70 to open, but switch 69 closes. Thus current may flow from device 41, through wire 43, switch 69, wire 34 and thence to wire 35. The releaser coil 41 is thus energized to attract dog 31 to let the energized spring 26 pull the ratchet wheel 24 and display wheel 38 step back one tooth step, the latter function being governed by the shape of the teeth on the dog 31 in an obvious manner. In this way all free plays indicated may be successively used up in playing the game and when a stop 75 on the bracket 22 is abutted by the pin 25 on the ratchet wheel 24 then the wheel 38 is in its zeroized position with the pin 44 holding switch 65 open to break the circuit. When the second circuit described in this paragraph is operative it will be noted that the motor 46, and counter 73 are not operative.

The third circuit to be used is created as an alternative when the push button 63 is used. In this condition the motor 46 must turn to operate the notched wheel 49'; the relay coil 53 must be energized to open switch 56 and close switches 55, 57 and 58; the device 68 must not be energized since the coin slide 12 is not to be unlocked, and the solenoid 71 must operate the counter 73 for every step back of the ratchet wheel 24 which means that the magnet 41 must also be energized at the proper time.

Thus when the push button 63 is held closed current flows through wires 32, 67, switch 70 as the slide 12 is in its normal retracted position. Then current goes through a wire 76, switch 62, a wire 77 and by a tap 78 to one side of the motor 46, the wire 77 going into one side of the relay 53 as shown in Figure 7. A wire 78' leads from the other side of the relay 53 to the main line 35. The motor has an out lead 79 that connects to wire 78' so that the relay 53 and motor 46 are in parallel and operate together. A wire 80 leads to one side of the switch 57 and the wire 35 has leads to one side of each switch 58 and 56 as shown. With the relay 53 energized the armature structure 60 causes switch 56 to be opened while switches 55, 57 and 58 are closed. Switch 70 remains closed; the motor 46 and relay 53 being energized, and current flows through wires 32, 67, switches 70 and 62 and wire 77 and the relay 53 and motor 46. By means of wire 80 current goes through switch 57 back to wire 35. In this manner the motor 46 and relay 53 remain energized.

Current also flows from wire 35 through the switch 58, a wire 82, switch 55, a wire 83 into the solenoid 71 and out of the solenoid by a wire 84 to one side of the switch 50. As the notched wheel 49' is turning slowly by the motor 46 and reduction gears 47, the switch 50 is closed and the current passes to wire 43 and electromagnet 41, thence back by way of the wire 42, switch 65, and wires 66, 67 to wire 32. Thus, when switch 50 is closed the releaser means 41, 31 causes the spring 26 to pull back the ratchet wheel 24 and wheel 38 one tooth step and at the same time the solenoid 71 operates the counter 73 once to record a free game not played or cashed in. Since the motor 46 keeps turning, the cam wheel 49' keeps closing and opening the switch 50 until the ratchet wheel 24 is completely stepped back to bring the wheel 38 back to its zeroized or initial starting position at which time the pin 44 abuts the switch 65 and opens it, whereupon the complete circuit is automatically opened and held so, thus deenergizing the motor 46 and relay 53. It

follows now that the switches 55, 57 and 58 are opened and switch 56 is again closed. The game and circuit are now set in a starting position. The push button 63 must be held in to keep switch 62 closed until all unused free plays are clicked off and recorded on the counter 73 at which time a zeroized and reset to initial starting position is achieved for all parts.

From the above detailed description it can now be appreciated that an improved game apparatus and free play control means for games has been provided to achieve the objects heretofore recited.

It is the intention to cover all changes and modifications of the example disclosed which do not in material respects constitute departures from the spirit and scope of the invention.

What is claimed is:

1. For a game apparatus having a circuit and a normally open switch closable at times when "wins" are determined in the playing of the game, the apparatus including a rotary free play indicator with electromagnetic means to step same up as the above switch is closed, a control system embodied in the circuit including an electromagnetic releaser to zeroize the indicator step by step, a motor in the circuit, rotary circuit making and breaking means driven by the motor and operatively associated with a switch in the circuit to open and close same to cause energization and deenergization of the releaser, and a manually controlled switch in the circuit operable to establish the circuit for keeping the motor running so long as said latter switch is held closed and while the indicator is returned to its zeroized position.

2. For a game apparatus having a circuit and a normally open switch closable at times when "wins" are determined in the playing of the game, the apparatus including a rotary free play indicator with electromagnetic means to step same up as the above switch is closed, a control system embodied in the circuit including an electromagnetic releaser to zeroize the indicator step by step, a motor in the circuit, rotary circuit making and breaking means driven by the motor and operatively associated with a switch in the circuit to open and close same to cause energization and deenergization of the releaser, a manually controlled switch in the circuit operable to establish the circuit for keeping the motor running while the indicator is being returned to zeroized position, and a normally closed switch in the circuit opened by means on the indicator when the latter reaches zero position to open the circuit and stop operation of the operative parts therein.

3. For a game apparatus having a circuit and a normally open switch closable at times when wins are determined in the playing of the game, the apparatus including a rotary free play indicator with electromagnetic means to step same up as the above switch is closed, a control system embodied in the circuit including an electromagnetic releaser to zeroize the indicator step by step, a motor in the circuit, rotary circuit making and breaking means driven by the motor and operatively associated with a switch in the circuit to open and close same to cause energization and deenergization of the releaser, a manually controlled switch in the circuit operable to establish the circuit for keeping the motor running so long as said latter switch is held closed and while the indicator is returned to its zeroized position, a counting mechanism, and an electromagnetic

operating means in the circuit for said mechanism operable conjointly with the releaser to count free plays not used.

4. For a game apparatus having a circuit and
 5 a normally open switch closable at times when
 wins are determined in the playing of the game,
 the apparatus including a rotary free play indi-
 10 cator with electromagnetic means to step same
 up as the above switch is closed, a control system
 embodied in the circuit including an electromag-
 netic releaser to zeroize the indicator step by
 15 step, a motor in the circuit, rotary circuit making
 and breaking means driven by the motor and
 operatively associated with a switch in the circuit
 to open and close same to cause energization and
 deenergization of the releaser, a manually con-
 20 trolled switch in the circuit operable to estab-
 lish the circuit for keeping the motor running so
 long as said latter switch is held closed and while
 the indicator is returned to its zeroized position,
 a counting mechanism, an electromagnetic oper-
 ating means in the circuit for said mechanism
 operable conjointly with the releaser to count
 25 free plays not used, and a normally closed switch
 in the circuit opened by means on the indicator
 when the latter reaches zero position to open the
 circuit and stop operation of all operative parts
 therein.

5. For a game apparatus releasable by a coin
 30 slide, the apparatus having a circuit and a nor-
 mally open switch closable at times when wins
 are determined in the playing of the game, the
 apparatus further including a rotary free play
 indicator with electromagnetic means in the cir-
 35 cuit to cause stepping up of the indicator as the
 switch is closed, an electrical control system in-
 cluded in the circuit to zeroize the indicator step
 by step, separate operator controlled means op-
 tionally usable to cause resetting of the indicator
 40 to zero position, and control switches in the sys-
 tem governed by the position of the coin slide to

determine which optional means is operable to
 effect zeroizing of the indicator.

6. For a game apparatus releasable by a coin
 slide, the apparatus having a circuit and a nor-
 mally open switch closable at times when wins
 are determined in the playing of the game, the
 apparatus further including a rotary free play
 indicator with electromagnetic means in the
 circuit to cause stepping up of the indicator as
 the switch is closed, an electrical control system
 10 included in the circuit to zeroize the indicator
 step by step, two separate operator controlled
 means either of which is optionally usable to
 cause resetting of the indicator to zero position,
 two control switches in the system governed re-
 15 spectively by the "in" or "out" position of the
 coin slide to determine which means is to be
 effective in zeroizing of the indicator; and means
 to make the entire system ineffective when the
 indicator reaches zero position.

7. For a game apparatus releasable by a coin
 slide, the apparatus having a circuit and a nor-
 mally open switch closable at times when wins
 are determined in the playing of the game, the
 apparatus further including a rotary free play
 25 indicator with electromagnetic means in the cir-
 cuit to cause stepping up of the indicator as the
 switch is closed, an electrical control system in-
 cluded in the circuit to zeroize the indicator step
 by step, two separate operator controlled means
 30 either of which is optionally usable to cause re-
 setting of the indicator to zero position, two con-
 trol switches in the system governed respectively
 by the "in" or "out" position of the coin slide
 to determine which means is to be effective in
 35 zeroizing of the indicator; and means in the sys-
 tem operative to register each reset step of the
 indicator when the optional control governed by
 the "out" position of the slide is used.

FRANK G. NICOLAUS.