Feb. 26, 1935. H. KLUDAS 1,992,218

AVIATION GAME

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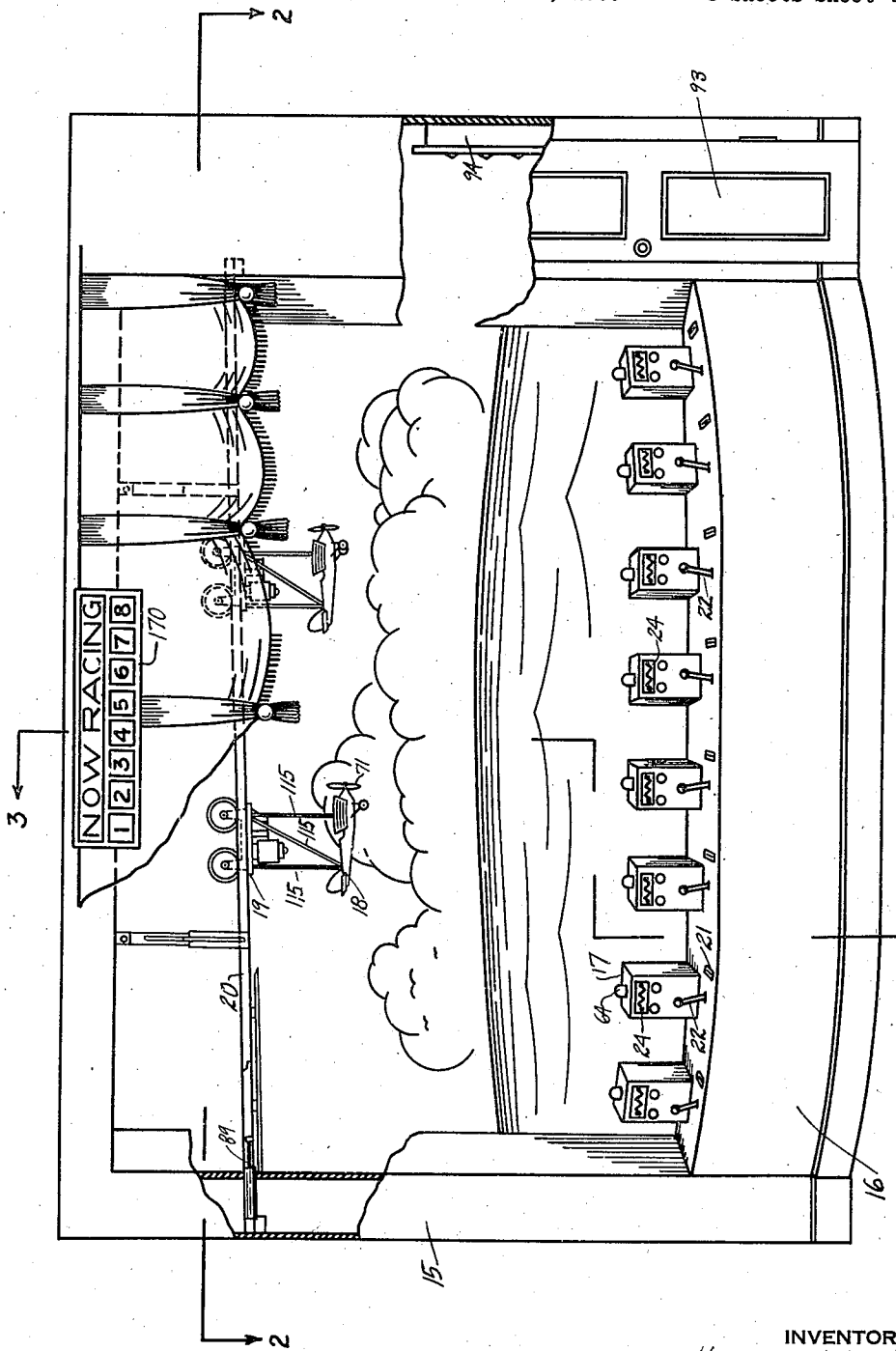

Fig. 1

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Feb. 26, 1935. H. KLUDAS 1,992,218

AVIATION GAME

Filed June 27, 1933 8 Sheets-Sheet 2

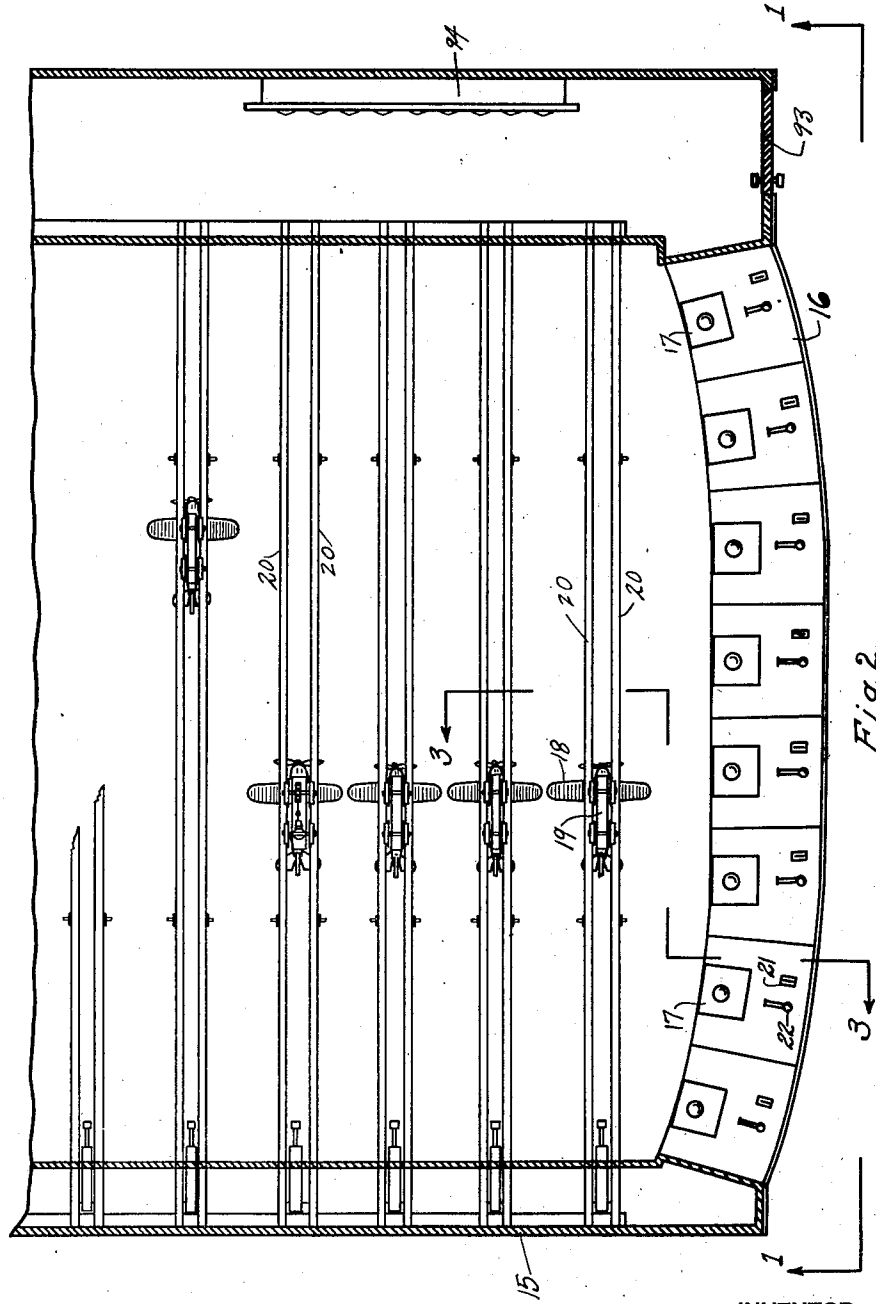

Fig. 2

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AVIATION GAME

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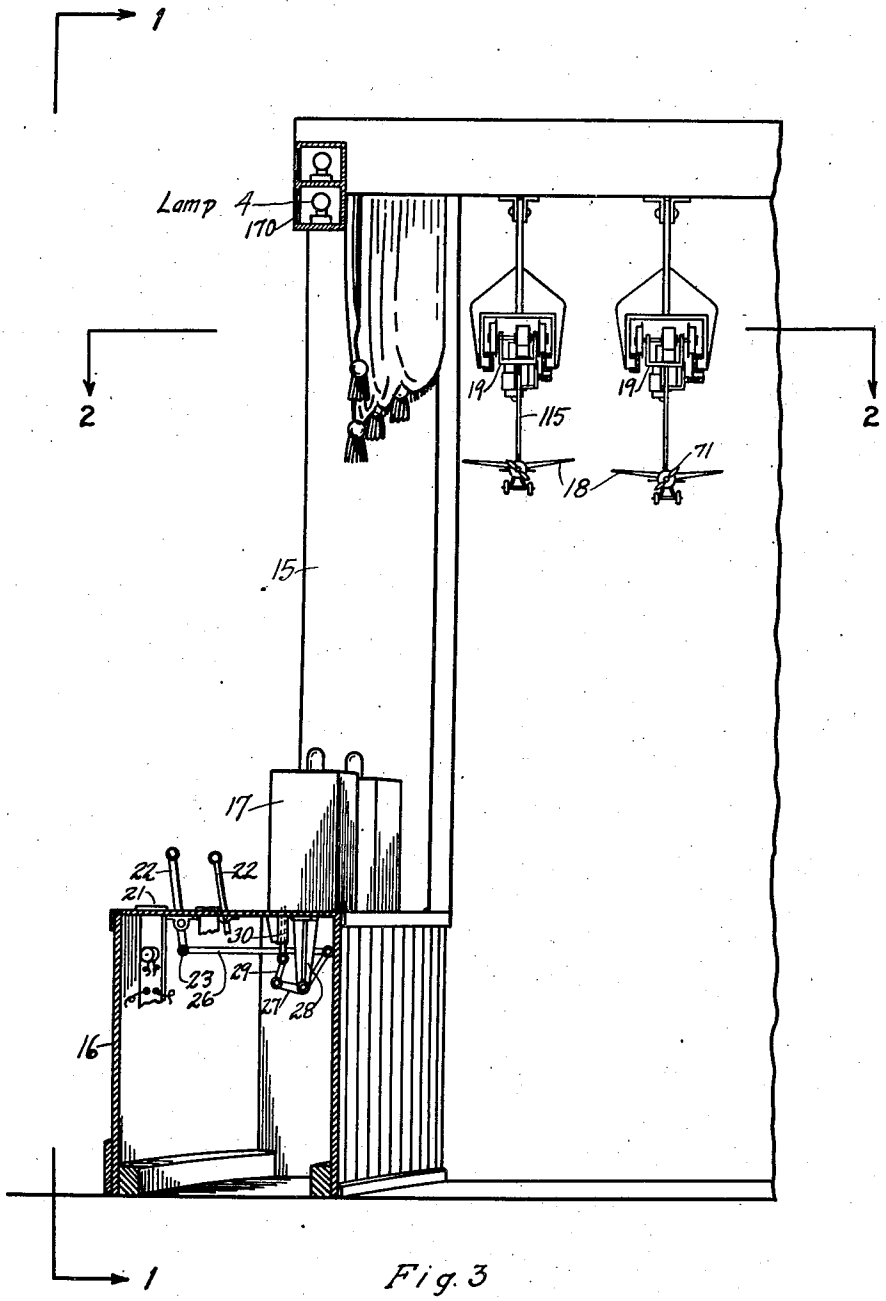

Fig. 3

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Feb. 26, 1935. H. KLUDAS 1,992,218

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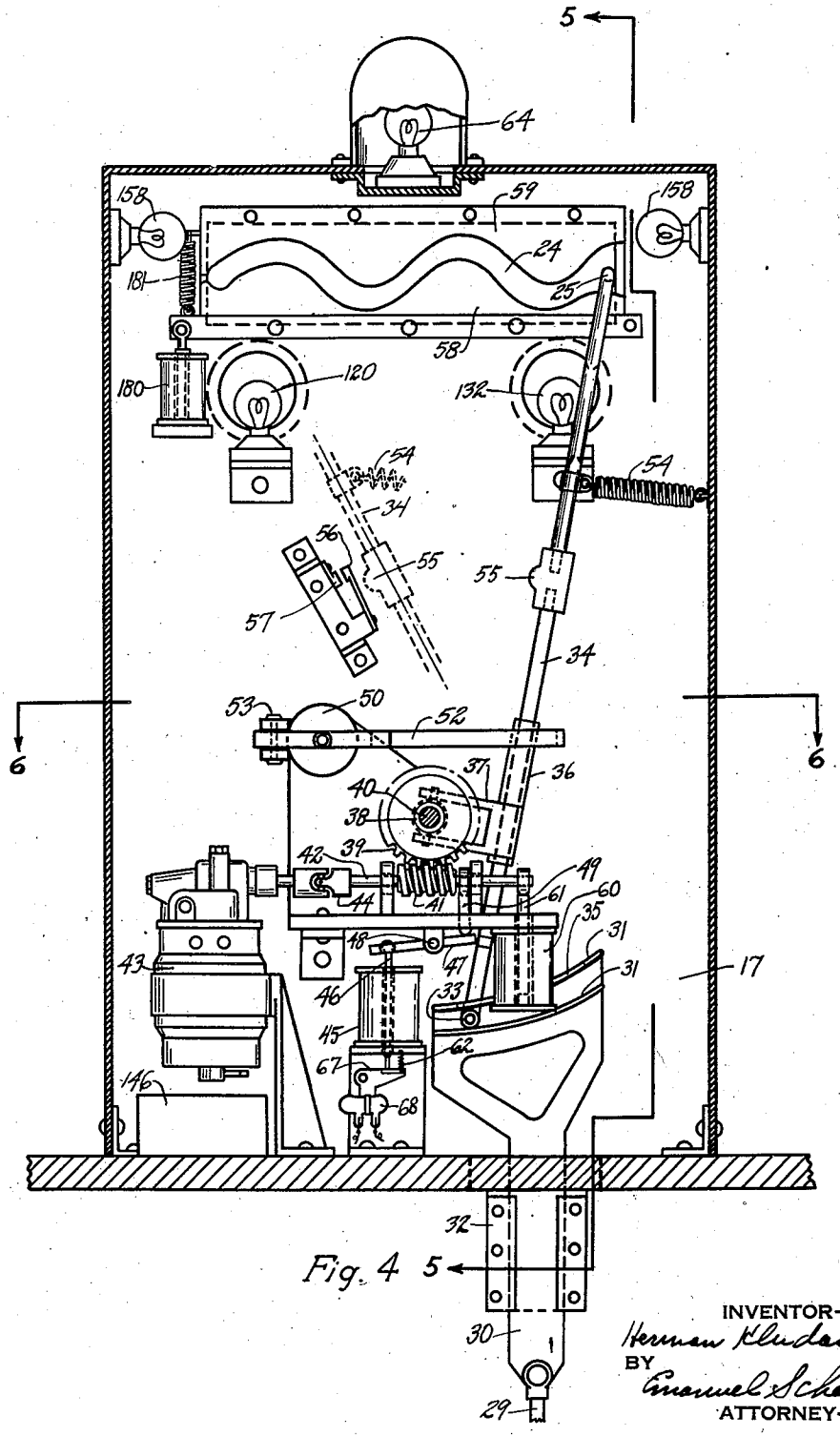

Fig. 4

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Feb. 26, 1935. H. KLUDAS 1,992,218

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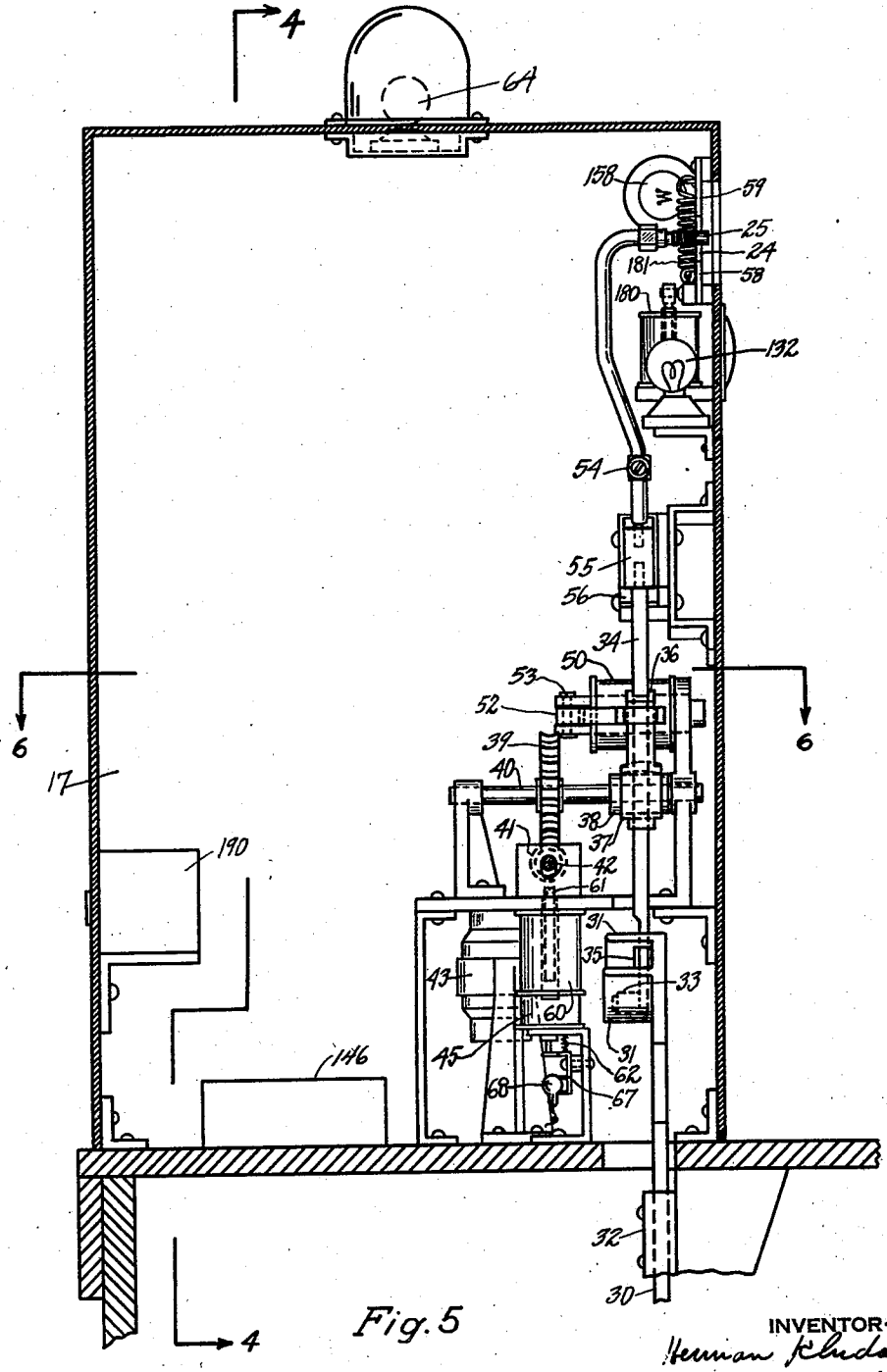

Fig. 5

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Feb. 26, 1935. H. KLUDAS 1,992,218

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Filed June 27, 1933 8 Sheets-Sheet 6

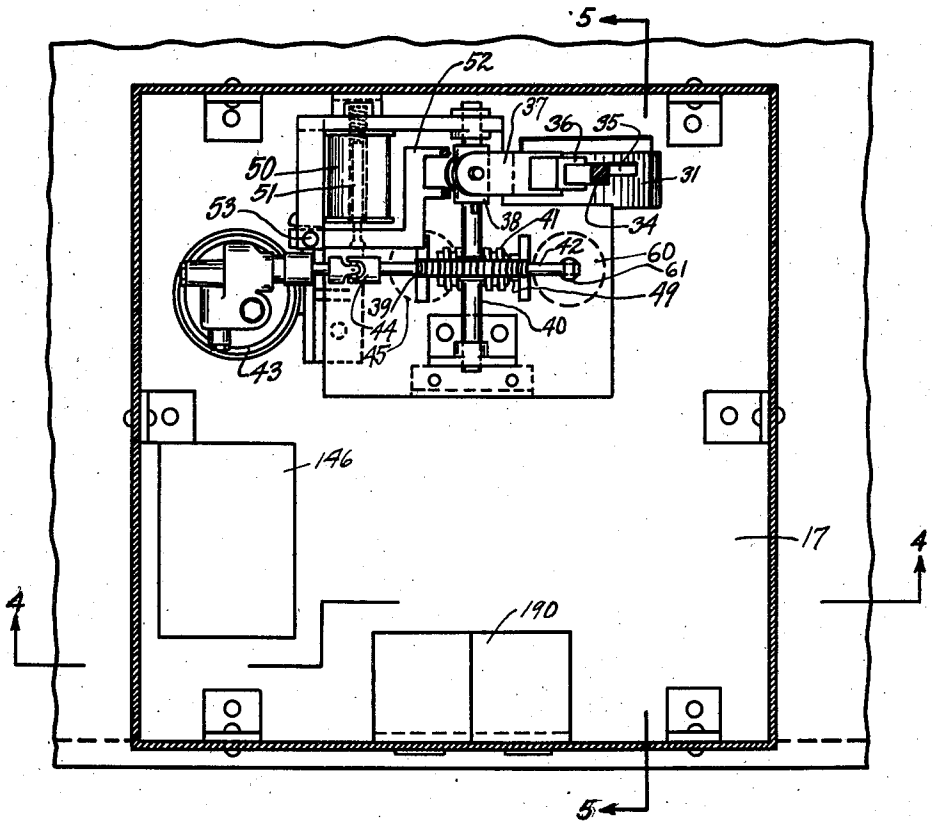

Fig. 6

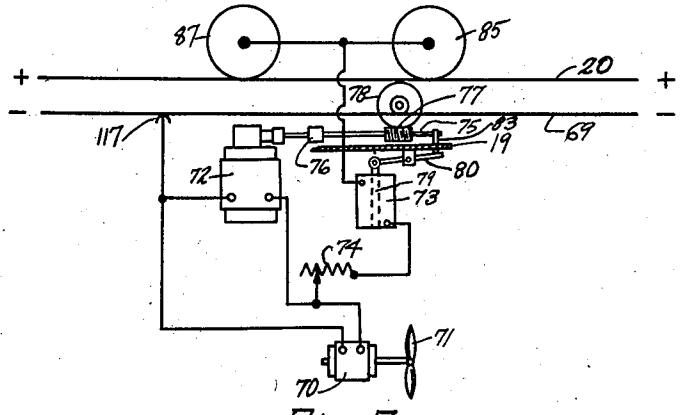

Fig. 7

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Feb. 26, 1935. H. KLUDAS 1,992,218

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Filed June 27, 1933 8 Sheets-Sheet 7

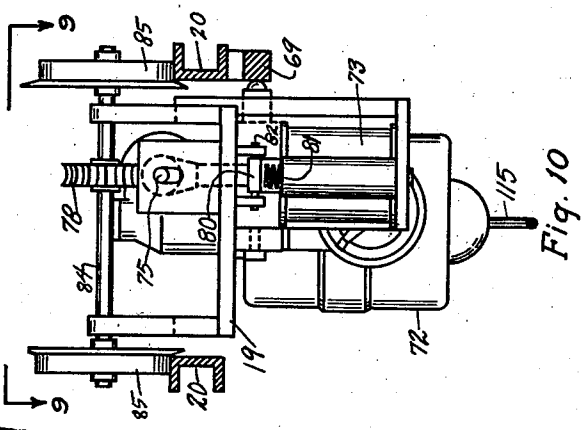

Fig. 10

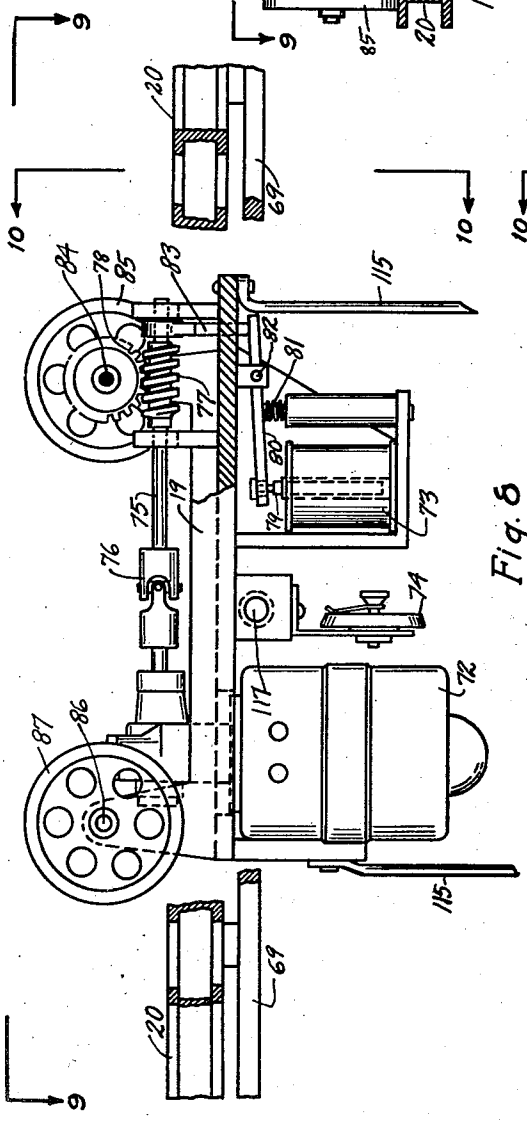

Fig. 8

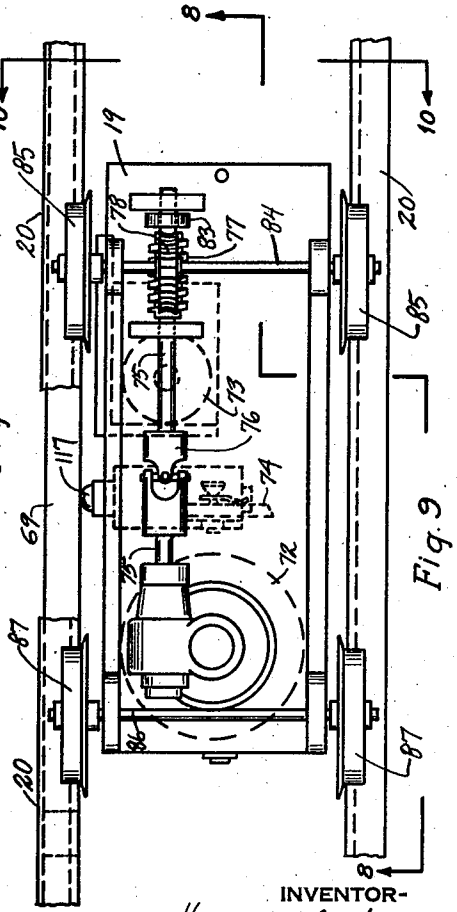

Fig. 9

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Feb. 26, 1935. H. KLUDAS 1,992,218

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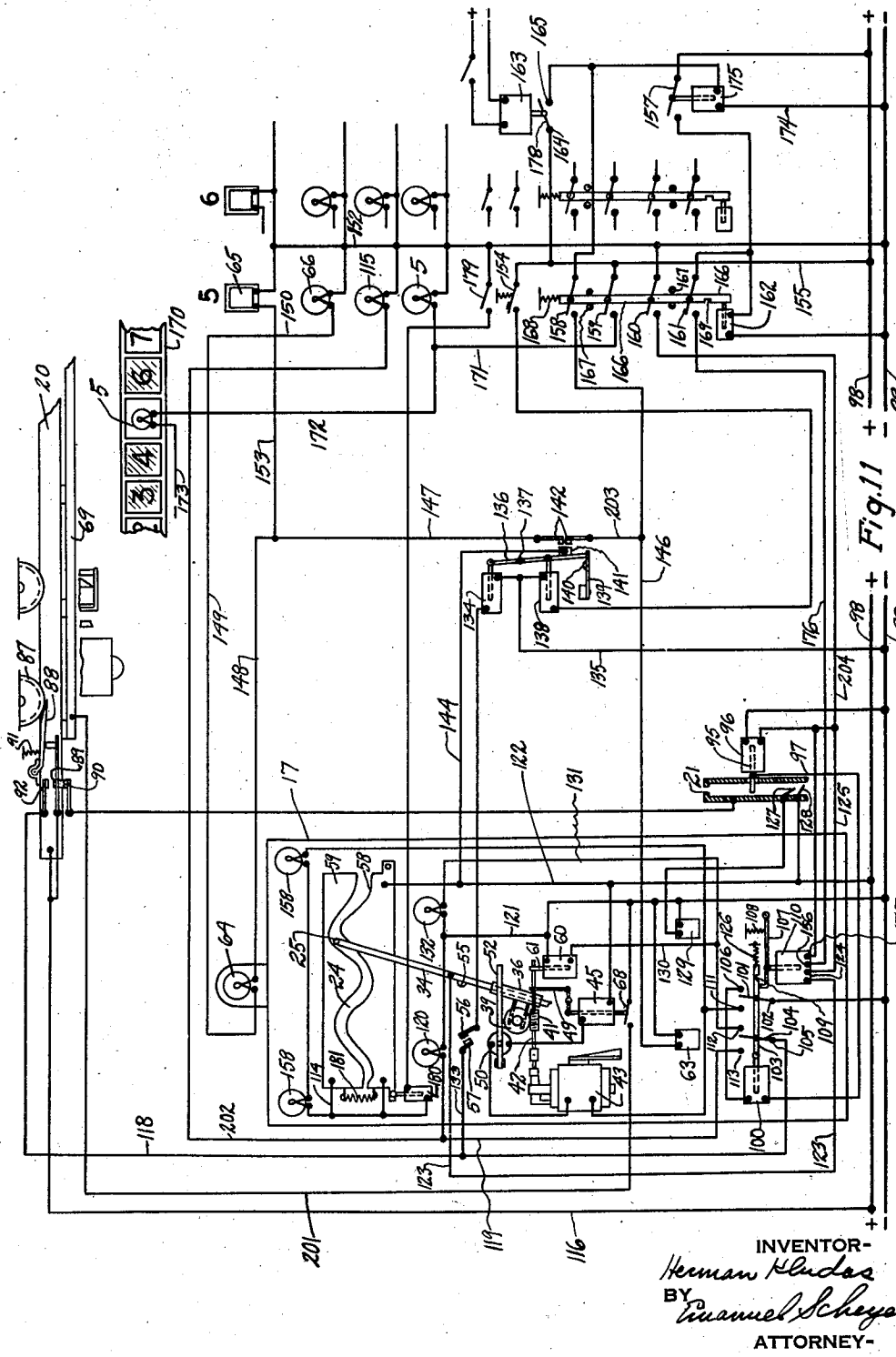

Fig. 11

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Patented Feb. 26, 1935 1,992,218

UNITED STATES PATENT OFFICE

1,992,218

AVIATION GAME

Herman Kludas, Palisades Park, N. J.

Application June 27, 1933, Serial No. 677,801

24 Claims. (Cl. 273—86)

This invention relates to an amusement device, a game of skill and of competition. It is such a game as is set up in an amusement park or at a pleasure resort, as Coney Island.

The game is played by operating a lever in such a manner, that an air plane, suspended from a carriage is controlled in its passage across a booth. One or several airplanes, can be controlled, operated by a corresponding number of players, at a corresponding number of levers.

The levers, which represent the "sticks" of airplanes, are mounted in a row along a long counter. Each lever controls the up and down motion of a pointer, which is arranged automatically to move longitudinally through a corresponding irregular slot. This slot is of wavy form, like a snake, and of varying width. Those associated with the manufacture of the game have called the slot a "snug line" and it shall be frequently so designated in this specification. If the pointer should touch either of the limiting edges of the snug line, certain electric circuits are made which allow the airplanes to return to their point of beginning. The object of the game is for a player so to guide a pointer on its way through a snug line, that said pointer passes through without touching the edges of the snug line, in which case the corresponding airplane makes a successful passage across the width of the booth.

There are provided various lights controlled in accordance with the way the game is played, which indicate to the player and the operator the status of the game.

Counting devices are provided for recording the coins or tokens deposited for playing the game and registering the number of wins made by the players.

The snug line can be varied in width by the operator in order to increase or decrease the difficulty of playing the game.

The game can be played in two ways, either as an individual game, in which the players try their skill in getting the planes across separately, or as a race game in which the first player to get his plane across wins the game and causes the planes of the losers to drop out of the race.

A time clock mechanism is provided which limits the time of each game, by throwing out the planes after a certain time in case a player fails to get his plane across.

The snug line, in a broad sense, is an insulative irregular area contained between two conductors of electricity. Many shapes of the slot may be used other than the shape shown in the drawings. In my preferred form the snug line is a slot into which the pointer enters, but it could just as well be a piece of insulating material substantially flush face with the conductors. In the latter case the pointer would ride on top of the snug line. In my preferred form the snug line is shown as a slot generally elongated longitudinally, that is along the booth, and the "stick" controls the transverse motion of the pointer. But it is within the scope of my invention to consider the snug line generally elongated transversely and the manual control of the pointer longitudinal. Further instead of the pointer moving, the machine can be constructed, from the disclosure, by one skilled in the art, to have the snug line move and the pointer stationary. In other words, it is an object of the invention to produce relative motion between the pointer and the snug line.

Whereas mention is made herein specifically, that an airplane is the body that is caused to travel, I wish it to be understood that the motion of other bodies, such as a ship can be controlled as well.

The terms coin or token are to be construed as interchangeable.

The drawings are intended to be diagrammatic, many variations being possible therefrom, without departing from the scope of the invention.

Other objects and advantages will become apparent upon further study of the description and drawings, in which:—

Fig. 1 is a front elevation of the game with part of the drapery broken away to show the rails and a carriage thereon, and with parts of the sides removed to show the construction of the sidewalls and the panel board.

Fig. 2 is a partial plan section of the game, taken along the line 2—2 of Fig. 1, omitting the drapery and certain of the runways, carriages and airplanes.

Fig. 3 is a partial vertical section of the game taken along the line 3—3 of Figs. 1 and 2, showing only portions of the coin boxes and of an adjacent control stick mechanism.

Fig. 4 is a vertical section of the control or snug line box looking toward the front of the box, and taken along the line 4—4 of Figs. 5 and 6.

Fig. 5 is a section of the control box taken along the line 5—5 of Figs. 4 and 6 omitting part of the plunger of the solenoid for withdrawing the worm from the worm wheel.

Fig. 6 is a plan section of the control box taken along the line 6—6 of Figs. 4 and 5, a portion of the yoke or lever for withdrawing the pointer from the snug line being omitted.

Fig. 7 is a part of the wiring diagram illustrating the connections at the carriage, rails and airplane.

Fig. 8 is a partial front elevation and vertical section of the carriage taken along the line 8—8 of Fig. 9 with portions of the rails shown.

Fig. 9 is a plan view of the carriage upon a portion of the rails looking along the line 9—9 of Figs. 8 and 10, a portion of one of the running rails being broken out to show the third rail below.

Fig. 10 is a section taken along the line 10—10 of Figs. 8 and 9, with the near hanger for the airplane omitted, and

Fig. 11 is the main wiring diagram, omitting the portion shown in Fig. 7 and indicating broken portions of the rails and carriage. The diagram is shown for one unit, with incomplete portions of the adjacent unit shown at the switchboard to indicate the relationship to the next unit.

A booth 15 is provided with a counter 16, upon which are mounted snug line boxes 17. An airplane 18, suspended from a carriage 19, by wires 115 is provided for each box 17. Each carriage 19, rides on rails 20, see particularly Figs. 1, 2 and 10. Adjacent each snug line box 17 is a coin slot 21, into which a player must deposit a coin or token before he can play. In front of each snug line box 17, is a stick 22, which is manipulated by the player to control the travel of his plane.

The player, by rocking stick 22 to and from the snug line box 17, controls the vertical position of pointer 25 in snug line 24, Figs. 1, 3, 4, and 5. As will be explained, when a coin is deposited in slot 21, pointer 25 automatically swings slowly from right to left as viewed in Fig. 4. Because of the irregular curvature of snug line 24, in order to keep pointer 25, as it swings, from touching the sides of the snug line, stick 22 must be rocked so as to move said pointer up and down. Should pointer 25 touch the sides of the snug line, that is either plate 58 or plate 59 before said pointer has completed its swing, certain electric circuits, as will be explained, are closed, allowing the corresponding plane 18, to roll back to its starting position under the influence of gravity, it being observed, Fig. 1, that rails 20 are inclined downwardly to the left.

Stick 22 is mounted to swing about pivot pin 23, Fig. 3. Pivotally connected to the lower end of stick 22 is a link 26. The other end of link 26 is pivotally connected to one arm of bell crank 27, which in turn is pivotally supported by bracket 28, suspended inside of counter 16. The other arm of bell crank 27 is pivotally connected to link 29, which in turn is pivotally connected to the bottom of slide 30. Slide 30 is mounted to slide in guides 32 supported from the underside of counter 16. On the top of slide 30 are formed curved flanges 31, concentric with each other, forming a guideway for roller 33 mounted on the bottom of pointer rod 34. The upper flange 31 is slotted at 35. The flattened lower part of pointer rod 34 is adapted to pass through this slot, Fig. 4 and 5. Pointer rod 34 is slidably mounted in sleeve 36, said sleeve having a bracket 37 extending therefrom. Bracket 37 is pivotally mounted on sleeve 38 which is fixed to shaft 40. Worm wheel 39 is also fixed to shaft 40. Below worm wheel 39, is a worm 41 fixed to shaft 42 and normally out of engagement with said worm wheel. Shaft 42 is driven by motor 43, through universal joint 44. When a coin or token is deposited in coin slot 21 on the counter 16, lamps 158 are lit and motor 43 is driven rotating worm 41. At the same time solenoid 45 is energized pulling down its plunger 46 and rotating lever 47 about its pivot pin 48. Lever 47 is thus caused to push up on slide 49, raising shaft 42 and throwing worm 41 into engagement with worm wheel 39. The depositing of the token in coin slot 21 also caused solenoid 50 to be energized, drawing in its plunger 51 and rotating forked lever 52 about its pivot pin 53. A spring, not shown, in the core of solenoid 50, normally holds plunger 51 out of said solenoid. This rotation of lever 52, swings pointer rod 34 to carry its pointer 25 into the snug line, pointer rod 34 swinging about its pivotal connection to sleeve 38. Continued rotation of worm 41, swings pointer 25 to the left, Fig. 4, against the tension of spring 54. By proper manipulation of stick 22, pointer rod 34 is slid substantially up and down in sleeve 36, to prevent pointer 25 from touching the sides of snug line 24 as said pointer swings under the influence of worm 41.

Should the player in guiding pointer 25 through snug line 24, cause said pointer to touch either plate 58 or 59, the current will be cut off from motor 43, solenoid 50 and solenoid 45, thereby stopping rotation of worm 41, withdrawing the pointer 25 from the snug line by the unopposed action of the spring (not shown) in the core of solenoid 50 and disengaging worm 41 from worm wheel 34. Current is sent through solenoid 60 pulling in its plunger 61 and positively and rapidly withdrawing worm 41 from engagement with worm wheel 34, this being in addition to the effect of stopping the current through solenoid 45 whose plunger 46 is normally held down by spring 62. Plunger 61 is normally spring pressed upward, a spring being inside the solenoid 60 but not shown. Lights 158 are also extinguished.

Should the player successfully guide pointer 25 through the snug line 24, pointer rod 34 swings until insulating block 55 presses spring contact 56 against fixed contact 57. Also pointer 25 is brought into contact with one of the plates 58 and 59 at the end of the snug line, producing all the effects noted in the preceding paragraph. Making contact between contacts 56 and 57 in addition operates a win counter 63, Fig. 11, causes blue win lamp 64 at the top of the snug line box 17 to light, operates a buzzer 65 located on the switch board 94, Fig. 1, 2 and 11, and causes a blue lamp 66 also on the switch board to light. Win counter 63 is located inside of casing 190, Figs. 5 and 6. Pointer 25 is flexible, so that it yields without being injured when brought into contact with plates 58 and 59.

Referring to Fig. 4, it can be seen that plunger 46 of solenoid 45 is normally held in its upper position by spring 62 which is fastened to bell crank 67. The bottom of plunger 46 is pivotally and slidably connected to bell crank 67, the details of the connection not being shown. Fixed to bell crank 67 is mercury switch 68, which in its normal position does not pass any current, but when tilted by the energization of solenoid 45, connects third rail 69 of its corresponding carriage 19, Figs. 3, 7, 8, 9, 10 and 11 to the negative side of the electric source. Running rails 20 are permanently connected to the positive side of the source. Placing third rail 69 in circuit, as will be explained in more detail hereafter, operates propeller motor 70 for revolving propeller 71, operates motor 72 and energizes sole-

noid 73. The rotation of propeller 71 is for show purposes only and plays no part in the propulsion of the airplane. Rheostat 74 is in circuit with propeller motor 71 and carriage driving motor 72 for controlling their speeds. Motor 72 is geared to shaft 75, which is separated into two parts by universal coupling 76. Fixedly mounted on shaft 75 is worm 77. Normally said worm is out of engagement with worm wheel 78. But when solenoid 73 is energized, its plunger 79 pulls down the end of lever 80, against the pressure of spring 81, said lever being pivoted at 82. The other end of said lever pushes against slidably mounted pin 83 which in turn lifts the right hand portion of shaft 75, Figs. 8 and 9, and with it worm 77 into engagement with worm wheel 78 driving the latter. Worm wheel 78 is fixed to axle 84 which carries wheels 85 fixedly mounted thereon. The other end of carriage 19 is carried by axle 86 to which are fixed wheels 87. Wheels 85 and 87 run on rails 20. Worm 77 continues in engagement with worm wheel 78 and drives carriage 19 until pointer 25 contacts with either of plates 58 and 59 due to improper control of said pointer by the player or until a win is made. Once contact is made, solenoid 45, Fig. 4, is deenergized opening switch 66 and cutting off the current from solenoid 73. This permits spring 81 to raise the left side of lever 80, Fig. 8 and allows worm 77 to disengage from worm wheel 78. Motors 72 and 71 are stopped as well. When worm 77 is separated from worm wheel 78, the carriage with its airplane runs back by gravity to its starting position, the left hand end of rails 20 as seen in Fig. 1.

When carriage 19 is at its starting position, one of wheels 87 bears down on pivoted lever 88, Fig. 11. This holds terminal 89 in contact with terminal 90. Once carriage 19 starts, wheel 87 leaves lever 88, which rises under the influence of its spring 91 into contact with terminal 92, for a purpose hereinafter specified.

A door 93 is provided, Figs. 1 and 2, for access of the operator into the booth. On the right hand wall of the booth is located a panel box 94 in which are located various control switches, lights and solenoids as will be explained.

The wiring diagram, Fig. 11, and operation of the game will now be explained for playing the individual game. In the individual game, each player operates his pointer 25 to control the travel of his plane, and plays by himself independently of other players, until he gets his plane across for a win or until he loses by having his pointer touch a side of the snug line.

The operation and wiring will be described in connection with one snug line box and its corresponding plane but it will be understood that the description applies to others as well.

When a token or coin is deposited in coin slot 21, it closes the circuit between the sides of said slot and plunger 95 of solenoid 96, said plunger being normally spring actuated to enter said slot. A wire 97 is fastened to plunger 95. Current for the operation of the game is supplied from plus feed wire 98 and minus feed wire 99 leading from a direct current generator set (not seen).

As was explained before, when carriage 19 is in its initial position, wheel 87 holds terminal 89 in contact with terminal 90. With a coin in slot 21, the current travels from positive feed wire 98 to terminal 89, to terminal 90, to the side of slot 21, through the coin, not shown, to plunger 95, through wire 97, through solenoid 100 to terminal 106, through switch 101 to terminal 102 back to negative feed wire 99. Attached to the plunger of solenoid 100 is an insulated switch bar 103, normally held by spring 126 to the right. Pivotally connected to switch bar 103 is switch 101 turning about terminal 102, and switch 104 turning about terminal 105. A pivoted lever 107 normally is held up by spring 108, forcing its hooked left end up against switch bar 103. A notch 109 is provided in switch bar 103, into which the hooked end of lever 107 snaps when solenoid 100 is energized and pulls switch bar 103 to the left. Switch bar 103 is released only when the hooked end of lever 107 is pulled down by the energization of solenoid 110, to whose plunger said lever is connected.

When solenoid 100 is energized, as just explained, switch bar 103 is pulled to the left, shifting switch 101 from contact with terminal 106 to contact with terminal 111. Switch 104 at the same time is shifted from contact with terminal 112 to contact with terminal 113 for a purpose hereinafter specified. Parts numbered 100 to 108 inclusive and 110, 111, 112 and 113 are located in casing 146 of the control box 17. Breaking the circuit between terminals 106 and 102 now deenergizes solenoid 100. Breaking the circuit between terminals 105 and 112 does nothing at this time, because terminal 92, which is connected to terminal 105, is disconnected from positive feed wire 98, by the pressure of wheel 87 on lever 88.

The closing of contact between terminals 102 and 111 by switch 101 sends current through two circuits:—(1) From positive feed wire 98, through solenoid 45, which causes worm 41 to engage worm wheel 39 in the snug line box, through solenoid 50, which causes pointer 25 to enter snug line 24, through motor 43, for driving worm 41, to terminal 111, through switch 101 to terminal 102 to negative feed wire 99. The energization of solenoid 45 also closes the circuit between the terminals of switch 68. Switch 68 has been previously described as a mercury switch, but it could just as well be a spring switch and is so shown on the diagram. (2) Starting from positive feed wire 98 to snug line plate 58 through lights 158 at the top of the snug line box, to terminal 111, switch 101, terminal 102 back to negative feed wire 99. Snug line plate 59 is also connected to this circuit by branch wire 114.

The closing of switch 68 by solenoid 45 in circuit (1) above sends current through the following circuit:—Starting from positive feed wire 98, the current flows through wire 116 to rails 20, see also Fig. 7, through solenoid 73, causing worm 77 to engage worm wheel 78, through rheostat 74 to propeller motor 70 and to motor 72 for driving worm 77, to third rail 69, through contact shoe 117, Figs. 8 and 9, through wire 201, to switch 68 back to negative feed wire 99. Then as carriage 19 starts forward, wheel 87 leaves lever 88 and breaks contact between terminals 89 and 90 and makes contact between terminals 89 and 92. Breaking contact between terminals 89 and 90 opens the circuit through the token in the coin slot and the current takes a new path from terminal 92 through wire 118 to terminal 105, switch 104 and terminal 113 and goes through two circuits, (3) and (4). In flowing through circuit (3), the current passes through wire 119 to green start light 120, in the snug line box, and thence through wire 121 to negative feed wire 99. In flowing through circuit (4), the current passes through terminal 113, wires 119 and 202, to green

running light 115 on the switch board 94 back to negative feed wire 99.

Snug line pointer 25 is now traveling through snug line 24. At this time one of two things may happen (1) snug line pointer 25 may touch either of plates 58 and 59 before it has completed its travel through the snug line or (2) snug line pointer contacts with said plates at the end of the snug line making a win.

(1) When snug line pointer touches either of plates 58 or 59 current is sent through the following circuit:— Starting from positive feed wire 98, through wire 122 to plate 58 (and through wire 114 to plate 59) through pointer 25, through pointer rod 34, through wire 123 to solenoid 110 out through terminal 124 of said solenoid, through wire 125 to solenoid 96 and from there to negative feed wire 99. When solenoid 110 is energized, the hooked end of lever 107 is withdrawn from notch 109 in switch bar 103, permitting spring 126 to pull said bar to the right and returning switches 101 and 104 into contact with terminals 106 and 112 respectively. When solenoid 96 is energized, its plunger 95 is withdrawn from coin slot 21, allowing the coin or token held up by said plunger to drop into the coin box (not shown). On its way down to the coin box, the token momentarily closes the circuit between terminals 127 and 128, this sends an impulse through token counter 129, registering the token. Token counter 129 is located in casing 190, in snug line box 17, Figs. 5 and 6. No details are shown for token counter 129, as such a counter is well known to the art. When contact is broken between terminals 102 and 111 and between terminals 105 and 113, the current is cut off from the circuits previously described when contacts were made between these pairs of terminals. What happens then is that the current is shut off from motor 43 in snug line box, worm 41 is withdrawn from worm wheel 39, pointer 25 is withdrawn from snug line 24 and pointer arm 34 is swung to its initial position by the pull of spring 54, Fig. 4. Lights 158 at the top of the snug line box go out. The motor 72 of carriage 19 is cut off, Figs. 7, 8, 9 and 10, worm 77 is disengaged from worm wheel 78 and propeller motor 70 is stopped. Green start light 120 in the snug line box goes out as does also green running light 115 on switch board 94. Terminals 102 and 106 are now connected by switch 101 and are now ready for a new game. Another token must be deposited in coin slot 21 before said terminals are used again. As carriage 19 has not as yet returned to its initial position by gravity, terminal 89 is in contact with terminal 92 and separated from terminal 90. Terminals 105 and 112 are now connected by switch 104 and current flows from positive feed wire 98, through wire 116 to terminals 89 and 92, down through wire 118, through contacts 105, and 112 and then branches off into two circuits, namely (5) and (6). In circuit (5) the current proceeds through wire 130 to solenoid 60 and back to negative feed wire 99. When solenoid 60, in the snug line box, is energized it helps retrieve worm 41 from worm wheel 39 and helps in the opening of switch 68. In circuit (6) the current proceeds from terminal 111, through wire 131 lighting red light 132 in snug line box 17 and then returns through wire 121 to negative feed wire 99. The lighting of this light indicates to the operator that the game is over and another token must be deposited in order to play again. When the carriage 19 returns to the starting point, terminals 89 and 92 are separated, breaking circuits (5) and (6).

When pointer 25 is successfully guided through snug line 24 to a win, insulating block 55, Figs. 4 and 11, on pointer arm 34 presses spring contact 56 against fixed contact 57, sending current through the following circuit, remembering that at this time the carriage 19 has not as yet returned to its initial position and separated contacts 89 and 92. Starting at positive feed wire 98, the current flows through wire 116 to terminal 89, to terminal 92, through wire 118, through wire 133, to contact 57, to contact 56, through solenoid 134, through wire 135 to negative feed wire 99.

Lever 136, which is hingedly connected at one end, to the plunger of solenoid 134, pivots about a pin 137. The plunger of solenoid 138 is also hingedly connected to lever 136. The bottom of lever 136 is engaged by plate spring 139, having thereon a rounded offset 140. When solenoid 134 is energized, the bottom of lever 136 travels to the right, snapping over offset 140, which then retains said lever in this position. Terminal 141 insulatively mounted on lever 136 is thus held in contact with double terminal 142 and is not separated therefrom until solenoid 138 is energized pulling the bottom of said lever to the left of offset 140. Solenoids 134 and 138 together with lever 136 and spring 139 are located in the enclosure 146 in the bottom of the snug line box, Fig. 4.

The making of contact between terminals 141 and 142 by the energization of solenoid 134 sends current through the following circuits:—

(1) Current flows from positive feed wire 98, through wire 122, into wire 144, to terminal 141, to terminal 142, through wires 203 and 146 through win counting mechanism 63, back to negative feed wire 99.

(2) Current flows from positive feed wire 98, through wires 122 and 144 to terminal 141 to terminal 142, through wires 147 and 148 to blue win lamp 64 on the top of the snug line box, through wires 149 and 150 to blue win lamp 66 on switch board 94, through wire 152 back to negative feed wire 99. The current also branches at the top of wire 147 into wire 153 to buzzer 65 on the switch board, through wire 152, back to negative feed wire 99. All this continues while terminals 141 and 142 remain in contact. When the operator momentarily closes switch 154 on switch board 94 solenoid 138 is energized breaking the contact between terminals 141 and 142. With switch 154 closed, the current flows from positive feed wire 98, through wire 155, through switch 154 to solenoid 138, through wire 135 back to negative feed wire 99.

The operation will now be described in the playing of the race game, which differs from the individual game in that two or more units are connected together so that when any player has successfully traversed the length of the snug line, making a win, the operation of the other units being played will be discontinued. Each player may make repeated efforts to get his plane across, starting all over again should his pointer touch a side of the snug line and his plane return to its initial position. This keeps up until one of the players makes a win, or until the time clock mechanism provided cuts short the game. To prevent stopping any unit until this occurs, solenoid 96 is shorted, as will be explained, it being remembered that when said solenoid is energized, its plunger 95 is pulled out from under the token, breaking the circuit through the walls of coin slot 21.

Solenoid 110 comprises two coils, one ending

in terminal 124 and wire 123 previously described, and one ending in terminals 156 and 177, energized in the race game. Said latter coil is used and is energized only when master switch 157, on switch board 94, is closed.

In order that a unit may be used in the race game, a coin or token must be deposited in its corresponding coin slot, and the operator sets by hand switches 158, 159, 160 and 161, on switch board 94, one set for each unit to be used in the race game. These switches are held in closed position by the engagement of the plunger of solenoid 162 with notch 169 of switch bar 166. They are released by the energization of solenoid 162, one of which is present for each unit. Each solenoid 162 is energized when master switch 157 is operated, either when the player of any unit makes a win, or when time clock 163 makes contact between terminals 164 and 165.

Switches 158, 159, 160 and 161 are insulatively connected to switch bar 166, adapted to slide up and down between guides 167. Switch bar 166 is normally held in its upper position by spring 168. The plunger of solenoid 162 is normally spring pressed outwardly, so that when switch bar 166 is pushed down by the operator, said plunger enters notch 169 and locks switch bar 166 in its lower position.

Any number of players up to 8 may race in the particular game illustrated. The number of players that may race is limited only the number of units furnished with each game, that is the number of snug line boxes, carriages, airplanes and their corresponding control mechanism. In Fig. 11, only one complete unit is shown, a few of the switches for another unit being indicated to illustrate the relationship of a second unit.

The closing of switch 159 lights a lamp in the race sign 170 and on the switch board 94, corresponding to the number of its unit. The lamp for the unit illustrated in the diagram is No. 5. When switch 159 is closed, the current flows from positive feed wire 98, through wire 155, through switch 159, through wires 171 and 172 to lamp 5 in race sign 170, and from there to negative feed wire 99, only a piece of the return wire 173 being indicated.

The closing of switch 160 shorts, solenoid 95, because the current entering it from wire 125 will find a path of lower resistance through wire 204 and switch 160 back to negative feed wire 99. With the token held in coin slot 21, when trolley wheel 87 rolls back and presses down terminal 89 into contact with terminal 90, solenoid 100 is energized, starting the action of the unit all over again.

The closing of switch 158 only becomes effective when a win is made and insulating block 55 presses spring contact 56 against fixed contact 57. When this is done, as previously explained, solenoid 134 is energized closing terminals 141 and 142. This operates win counter 63, lights blue win lamp 64 on top of the snug line box, starts buzzer 65 on switch board 94 and lights blue win lamp 66 also on said switch board. The current flows through switch 158 as follows:—Starting from positive feed wire 98, through wire 122, through wire 144, through terminals 141 and 142 through wire 203 to switch 158 to solenoid 175, through wire 174 back to negative feed wire 99. The energization of solenoid 175 closes master switch 157, which sends current through solenoid 162 pulling its plunger from notch 169 in switch bar 166, allowing said bar to rise under the influence of its spring 168. This opens switches 158, 159, 160 and 161. There is a solenoid 162 for each unit in circuit (not shown) with master switch 157. All units, therefore, have their switches 158, 159, 160 and 161 opened. Blue lights 64 and 66 and buzzer 65 are cut off by manually closing switch 154. This closing energizes solenoid 138 thereby separating terminals 141 and 142 by pulling on lever 136, which is caused to snap over offset 140 on plate spring 139. Terminals 141 and 142 are kept separated until in a new game, solenoid 134, resets lever 136.

Current passes through switch 161 only when master switch 157 is closed, and then only momentarily, as the current is also sent through solenoid 162 which opens switch 161. The current starts from positive feed wire 98 to master switch 157, through switch 161, through wire 176 to terminal 156 of solenoid 110 out through terminal 177 to solenoid 95 and back to negative feed wire 99. The energization of solenoid 110 releases switch bar 103, stopping the driving mechanism of the carriage and the driving mechanism in the snug line box. The energization of solenoid 95 allows the token in coin slot 21 to fall. This happens in all the units in operation when a win is made for any unit, as master switch 157 is connected to all units as was previously stated.

Before the race game is started timing clock 163 is started and set for a given number of minutes by the operator, after which it will close switch 178, closing contact between terminals 164 and 165, thereby causing solenoid 175 to be energized and closing master switch 157 which stops the game.

In the race game when a win is made:—

All units racing go out.

Win counter, blue light on snug line box, buzzer and blue light on panel board operate for the winning unit.

Time clock is stopped manually.

Switch 154 is closed manually stopping buzzer and putting out blue lights.

All tokens fall and are counted by token counter.

When time is up as determined by the time clock:—

All units go out.

All tokens fall and are counted by token counter.

In the race game when a pointer touches the sides of the snug line of a unit its

Pointer arm swings back for a fresh start.

Red lamp lights.

Token does not fall through.

Carriage rolls back with its airplane to starting point, separates terminals 89 and 92, puts out red light, makes contact between terminals 89 and 90 which supplies current for fresh start. This may happen many times but the machine will always start again unless time is up or one of the units makes a win.

Whenever it is desired to make the game easier to play, the width of snug line 24 can be increased by manually closing switch 179. This energizes solenoid 180, which pulls plate 58 away from plate 59 against the tension of spring 181.

Instead of using coin controlled devices for operating the various units, they may be dispensed with and the units controlled by manually closed switches. In this case a manually closed switch (not shown) is used to control the circuit between the wire 97 and the wire leading from terminal 90. Said switch takes the place of a coin

which controls the circuit between the sides of coin slot 21 and wire 97. The energization of solenoid 96 opens the switch, just as it causes the coin to drop where a coin slot is used.

The claims, wherever applicable, are to be construed as being broad enough to include the various alternatives mentioned above.

I claim:—

1. A game comprising a body adapted to travel along a predetermined path, means for effecting the motion of said body along said path, electrically conducting means having therein a generally longitudinal slot irregularly curved and of varying width, a movably mounted pointer adapted to travel through said slot, said slot being located in a place entirely away from said path, means for automatically moving the pointer along said slot, manually operable means for controlling the position of the pointer in the slot as said pointer is moved along the slot by the automatically moving means, and electrically operated mechanism for preventing said means for effecting the motion of the body from moving the body when said pointer touches a side of said slot.

2. A game comprising a body adapted to travel along a predetermined path, means for effecting the motion of said body along said path, a pair of conductors having a space between them, said space being in a location independent from that of said path, a member adapted to register with said space, a mounting for holding said member, said mounting being without connection to said body, means for automatically causing relative motion between said space and the member, manually operable means for maintaining said space and the member in register without contact between said member and either of said conductors during the relative motion caused by the automatically moving means, and electrically operated mechanism for stopping said means for effecting the motion of the body from moving the body when said member and one of said conductors come into contact.

3. A game comprising a body adapted to travel along a predetermined path, means for effecting the motion of said body along said path, a pair of conductors having a space between them, said space being located in a place away from said path, a member adapted to register with said space, a mounting upon which said member is movably supported, said mounting being independent of said body, means for automatically moving said member along said space, manually operable means for controlling the position of the member along said space as said pointer is moved by said automatically moving means, and electrically operated mechanism for stopping said means for effecting the motion of the body from moving the body when said member touches one of said conductors.

4. A game comprising a body adapted to travel along a predetermined path, means for effecting the motion of said body along said path, a pair of conductors in an entirely different location from said path, having between them a generally elongated space of wave-like form, a member adapted to register with said space, means for automatically causing relative motion between said space and the member substantially in the direction said space is elongated, manually operable means for maintaining said space and the member in register without contact between said member and either of the conductors during the relative motion caused by the automatically moving means, and electrically operated means for stopping said means for effecting the motion of the body, from moving the body when said member and one of said conductors come into contact.

5. A game comprising a plurality of bodies, each adapted to travel from one end of a path to the other, there being a particular path associated with each body, individual means for effecting the motion of each body along its path, a pair of conductors having a space between them associated with each body, said space being remote from the path associated with its body, a member for each body and unconnected thereto, adapted to register with its associated space, individual means for automatically causing relative motion between each space and its associated member, manually operable means for maintaining each space and its associated member in register without contact between either of said conductors and said member during the relative motion caused by their automatically moving means, and electrically operated mechanism for preventing the means for effecting the motion of the bodies from moving the bodies in operation at any time, when any of said bodies has reached said other end of its path.

6. A game comprising a body adapted to travel along a predetermined path, electrically controlled means for effecting the motion of said body along said path, a pair of conductors having between them a generally elongated space, said conductors being relatively movable to increase or decrease the width of the space between them, a member adapted to register with said space, means for automatically causing relative motion between said space and the member substantially in the direction said space is elongated, manually operable means for maintaining said space and the member in register without contact between said conductors and the member during the relative motion caused by the automatically moving means, and means for stopping said means for effecting the motion of the body, from causing the motion of the body when said member and one of said conductors come into contact.

7. A game comprising a body adapted to travel along a predetermined path, means for effecting the motion of said body along said path, a pair of conductors having an elongated curved space between them extending in a generally longitudinal direction, said conductors being located in a place away from said path, a member unconnected to said body adapted to register with said space, a mounting for said member enabling it to be given longitudinal motion and motion transversely to said space, means for automatically moving said member in a longitudinal direction, manually operable means for maintaining said member in register with said space by moving it transversely as said member is moved automatically in a longitudinal direction, and electrically operated mechanism for stopping said means for effecting the motion of the body from moving the body when said member touches one of said conductors.

8. A game comprising a body adapted to travel along a predetermined path, means for effecting the motion of said body along said path, electrically conducting means having a sinuous slot of varying width, said slot being located in a place away from said path, and extending in a generally longitudinal direction, a member adapted to enter said slot, a mounting independent of said body for said member enabling it to be given longitudinal motion and motion transversely in said

slot, and motion to and from said slot, means for automatically moving said member longitudinally, manually operable means for maintaining said member clear of the sides of the slot by moving it transversely as said member is moved automatically in a longitudinal direction and electrically operated mechanism for automatically withdrawing said member from said slot and for stopping said means for effecting the motion of the body from moving the body, when said member touches a side of said slot.

9. A game comprising a plurality of bodies, each adapted to travel from the beginning of a path to its end, there being a particular path associated with each body, individual means for effecting the motion of each body along its path, a pair of conductors associated with each body having a space between them, a member associated with each body and its conductors adapted to register with the space between its conductors, individual means for automatically causing relative motion between each space and its associated member, whereby the relative position of said member is changed from one part of said space to another, manually operable means for maintaining each space and its member in register during the relative motion caused by their automatically moving means, and electrically operated means for each body, effecting the return of the bodies to the beginning of their paths, and effecting the return of the members and their associated spaces to their relative positions in the former part of said spaces, when a member touches one of its associated conductors.

10. A game, as claimed in claim 9, having means for each body for causing the body to travel on its path again, and its associated space and member to have relative motion again from their relative position at the former part of said space when the body has returned to the beginning of its path.

11. A game comprising a plurality of bodies each adapted to travel from the beginning of a path to its end, there being a particular path associated with each body, electrically controlled means for effecting the motion of each body along its path, a pair of conductors associated with each body having a generally elongated space between them, a member associated with each body and its conductors adapted to register with the space between its conductors, electrically controlled means for causing relative motion between each space and its associated member, for changing the position of said member from the beginning to the end of said space, the several means for effecting the motions of the bodies and the several means for causing the relative motion being synchronized whereby all the bodies travel forward at the same speed and the position of a member at the end of its space is reached when its associated body has reached the end of its path, manually operable means for maintaining each space and its associated member in register during their relative motion, electrically operated means, for each body, effecting the return of its body to the beginning of the path associated with the body and the return of the member associated with the body to the beginning of its space, when said latter member touches one of its associated conductors, and mechanism controlling the current to the several means for effecting the motions of the bodies and the means for causing the relative motions between the several spaces and their associated members, for stopping said motions when one of said members reaches its position at the end of its associated space.

12. A game comprising a body adapted to travel along a predetermined path, electrically controlled means for effecting the motion of the body along said path, electrically conducting means having a generally elongated slot therein, said means being located in a place away from said path, a pointer unconnected to said body adapted to have relative motion with the slot while therein, means for causing said relative motion whereby the relative position of said pointer is changed from one part of the slot to another, a source of electricity, a circuit for controlling the flow of current through said means for effecting the motion of the body, and electrically actuated means, connected to said electrically conducting means, actuated, when said pointer contacts with a side of the slot, for controlling the flow of current through said circuit to stop the motion of the body.

13. A game, as claimed in claim 9, having means for each body for causing the body to travel on its path again, and its associated space and member to have relative motion again, each time the body has returned to the beginning of its path, and electrically operated mechanism for stopping the motion of the bodies in operation and the relative motion of their associated spaces and members when any of said bodies has reached the end of its path.

14. A game comprising a body adapted to travel from one end of a path to the other, means for effecting the motion of said body along said path, a pair of conductors having between them a space, said conductors being located in a space away from said path, a member adapted to register with said space, means for automatically causing relative motion between said space and the member whereby the relative position of said member is changed from one part of said space to another, manually operable means for maintaining said space and the member in register without contact between said member and either of the conductors while the relative position of said member is changing from the former part of said space to the latter part, means for stopping the motion of the body and for causing said member to have its relative position changed to said former part when said member contacts with one of said conductors, and win counting mechanism comprising numbering devices to indicate the number of games won, actuated each time to add another game won when the relative position of said member has reached said latter part without having had said member first contact with one of said conductors.

15. A game comprising a body adapted to travel from the beginning of a path to its end, means for effecting the motion of said body along said path, a pair of conductors having a space between them, said conductors being located in a place away from said path, a movably mounted member unconnected to said body adapted to register with said space, means for automatically moving said member along said space from one part to another, manually operable means for maintaining said member in register with said space without contact between said member and either of said conductors while said member moves automatically from the former part of said space to the latter, and means for effecting the return of the body to the beginning of its path and the return of said member to said former part of the space, when said member contacts

with one of said conductors before reaching said latter part of said space and when reaching said latter part of said space.

16. A game comprising a body adapted to travel from the beginning of a path to its end, means for effecting the motion of said body along said path, a pair of conductors have a sinuous space between them, said conductors being located in a place away from said path, a member unconnected to said body adapted to register with said space, means for automatically causing relative motion between said space and the member whereby the relative position of said member is changed from one part of said space to another, manually operable means for maintaining said space and the member in register without contact between said member and either of the conductors while the relative position of said member is changing from the former part of said space to the latter part, and means for effecting the return of the body to the beginning of its path and the relative motion of said space and said member whereby the relative position of said member is again at said former part of the space when said member and either of said conductors come into contact.

17. A game comprising a body adapted to travel along a predetermined path, electrically controlled means for effecting the motion of said body along said path, a pair of conductors having a space between them, said space being located in a place away from said path, a member unconnected to said body adapted to register with said space, means for automatically causing relative motion between said space and the member whereby the relative position of said member is changed from one part of said space to another, a source of electricity, a circuit for controlling the flow of current through said means for effecting the motion of the body, player operated means for trying to maintain said space and the member in register without contact between said member and either of the conductors while the relative position of said member is changing from the former part of said space to the latter, and electrically actuated means, connected to said conductors, actuated, when said member touches either of said conductors, for controlling the flow of current through said circuit to stop the motion of the body.

18. A game comprising a body adapted to travel along a path, electrically controlled means for effecting the motion of said body along said path, a pair of conductors having an irregular space between them, said conductors being located in a place away from said path, a member mounted independently of said body adapted to register with said space, electrically controlled means for causing relative motion between said space and the member whereby the relative position of said member is changed from one part of said space to another, a source of electricity, a plurality of circuits for controlling the flow of current through said means for effecting the motion of the body and the means for causing said relative motion between the member and the space, player operated means for trying to maintain said space and the member in register without contact between said member and either of the conductors while the relative position of said member is changing from the former part of said space to the latter, electrically actuated means, connected to said conductors, actuated for controlling the flow of current through said circuits to stop the motion of the body and the relative motion of said member and said space, when said member touches either of said conductors or has reached the relative position at said latter part of said space.

19. A game, as claimed in claim 17, in which said member comes into contact with a conductor when said member has reached the relative position at the latter part of said space.

20. In a game of the character described, a pair of conductors having an irregular space between them, a member suitably mounted to have both longitudinal and transverse motion with respect to said conductors enabling it to be kept in register with said space, a wormwheel attached to said member, the rotation of the wormwheel effecting said longitudinal motion, manually operable means for controlling said transverse motion, a worm mounted to rotate about its longitudinal axis and to swing into and out of engagement with said wormwheel, a motor for driving said worm, and electrically actuated means for controlling the engagement of said worm with the wormwheel and the flow of current through said motor, the touching of said member to either of said conductors controlling the flow of current through said means to actuate same to withdraw the worm from the wormwheel and to stop the flow of current through the motor.

21. In a game of the character described, a body adapted to travel along a predetermined path, a pair of conductors having an irregular space between them, a member adapted to register with said space, means for automatically causing relative motion between said space and the member, manually operable means for maintaining said space and the member in register without cintact between said member and either of said conductors during the relative motion caused by the automatically moving means, a wormwheel attached to said body, the rotation of said wormwheel effecting the motion of the body along its path, a worm mounted to rotate about its longitudinal axis and to swing into and out of engagement with said wormwheel, a motor for driving said worm, and electrically actuated means for controlling the engagement of said worm with the wormwheel and the flow of current through said motor, the contacting of said member with either of said conductors controlling the flow of current through said electrically actuated means to actuate same to withdraw the worm from the wormwheel and to stop the flow of current through the motor.

22. A game comprising a body adapted to travel along a predetermined path, electrically controlled means for effecting the motion of the body along said path, a pair of conductors having a generally elongated irregular space between them, said conductors being located in a place away from said path, a member supported independently of said body adapted to register with said space, means for causing relative motion between said space and the member whereby the relative position of said member is changed from one part of said space to another, a source of electricity, a circuit for controlling the flow of current through said means for effecting the motion of the body, and electrically actuated means, connected to said conductors, actuated, when said member contacts with either of said conductors, for controlling the flow of current through said circuit to stop the motion of the body.

23. A game comprising a counter, a plurality of control boxes mounted in a row upon said counter, each box having a pair of conductors with a generally elongated space between them,

a member adapted to register with said space and electrically controlled means for causing relative motion between said space and its member substantially in the direction said space is elongated, player operated means located adjacent each of said boxes for maintaining its space and its member in register without contact with its conductors during said relative motion, a runway located at a higher elevation than the counter, a carriage mounted for motion on said runway, a carriage and its runway associated with each box, an airplane suspended from each carriage, and electrically controlled means upon each carriage for causing it to travel forward from one portion of the runway to another, the current through said electrically controlled means of each carriage being controlled by the conductors of its associated box, whereby contact between a member and either of its conductors stops said electrically controlled means from moving their associated carriage forward.

24. A game comprising a body adapted to travel along a predetermined path, means for effecting the motion of said body along said path, electrical conducting means having a slot therein, said slot being located in a place away from said path, a member adapted to register with said slot, means for automatically causing relative motion between said slot and the member with the member in register with said slot, manually operable means for maintaining said space and the member in register without contact between said member and the sides of said slot during the relative motion caused by the automatically moving means, and electrically operated mechanism for automatically withdrawing said member from said slot when said member touches a side of said slot.

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