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[54] **BOARD GAME APPARATUS**

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[52] **U.S. Cl.** ..... **273/131 A;** 273/131 K; 273/134 B; 273/138 A; 273/1 E

[51] **Int. Cl.** **A63f 3/00**

[58] **Field of Search** 273/131, 134

[56] **References Cited**

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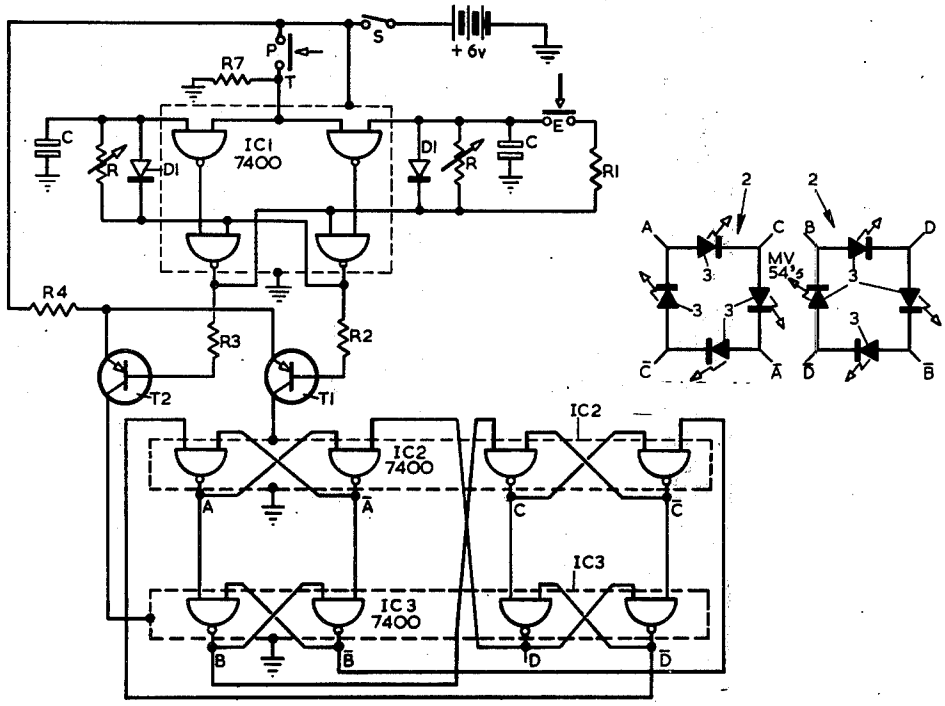
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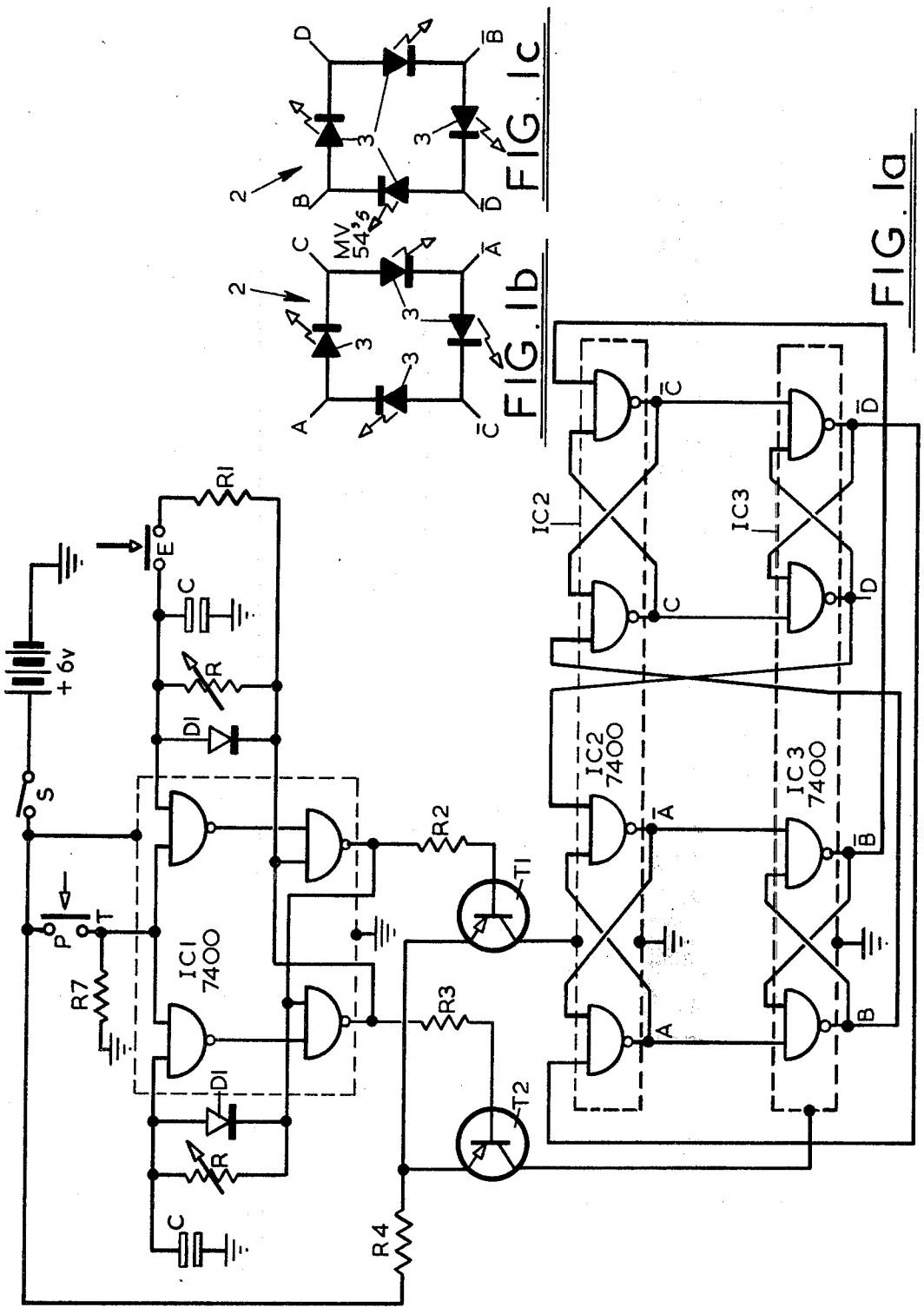
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[57] **ABSTRACT**

Means for playing a board game in which the players move counters over a board, the means including an electronic device automatically indicating a number of different instructions one at a time in rapid succession, a stop-go switch being provided to enable a player to stop the device with a desired instruction being indicated so that by exercising his skill the player can be successful in the game by obtaining a series of desired instructions. Means may be provided for a competing player to interfere by changing the instruction indication at random.

8 Claims, 4 Drawing Figures




FIG. Ic
FIG. Ib
FIG. Ia
MV 5436
+6v
S
P
T
E
R1
C
R
D1
IC1 7400
R7
R2
R3
R4
T1
T2
IC2
IC3
IC2 7400
IC3 7400
A
B
C
D

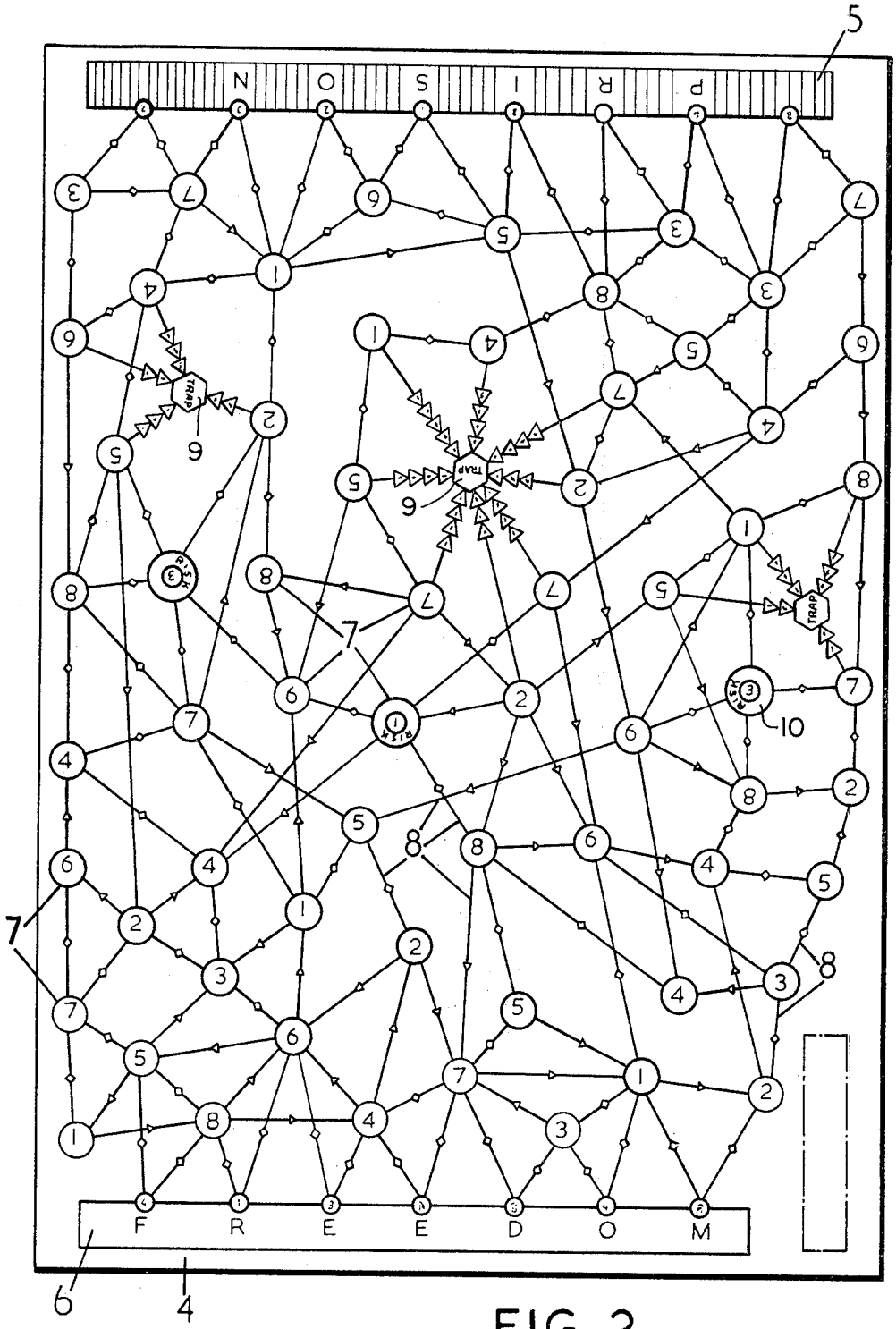


FIG. 2

BOARD GAME APPARATUS

This invention relates to board games and in particular to a board game where the success of a player in that game is dependent on the speed of the player's reactions.

According to the present invention there is provided means for playing a board game in which the players move counters over a board, said means including a device having electronic circuitry, an array of indicators and a stop-go switch connected to the electronic circuitry which is, in turn, connected to said array and arranged to con trol the array so that the array indicates respective instructions one at a time in automatic succession during operation of the device, said stop-go switch being operable by a player to halt the automatic instruction indication by said array so that the array will hold indicated an instruction dependent upon when the player operates the stop-go switch.

Preferably there is provided with the device a board having depicted on it a number of stations or areas including at least one start position and one finish position, the other areas or stations providing a plurality of combinations forming routes by which a counter may be moved in steps from the start position to the finish position, the successive instructions indicated by the device to a player determining successive steps of a route for a counter starting from the start position.

An embodiment of the present invention will now be described, by way of example only, with reference to the accompanying drawings in which:

FIG. 1*a* is a circuit diagram of the electronic means for controlling an array of lights forming indicators of a device according to this invention;

FIGS. 1*b* and 1*c* are respective circuit diagrams illustrating the connections of two sets of lights forming the array to the electronic means shown in FIG. 1*a*; and

FIG. 2 is a plan view of a board used in playing one form of game in which the device shown in FIG. 1 can be used.

Referring to the drawings means for playing a game comprise a device having electronic means for controlling an array 2 of lights 3 in the form of light emitting diodes, and a board 4 having a start position 5 and a finish position 6 between which are distributed areas or stations 7 and a plurality of lines 8 indicating possible paths of travel between stations. Each station has an associated number corresponding to one of the lights 3 so that a player whose counter is upon one of the stations and who obtains an instruction from the array 2 in the form of a number between 1 and 8 must move his counter to another station having the number corresponding to his instruction if this is possible by travelling along only one of the lines radiating from his present station. If no such route is possible, the player keeps his counter where it is for that turn.

In the illustrated example the start position 5 represents a "prison" from which some players are to escape and the finish position 6 represents "freedom" from which the other players, acting as "policemen", start and proceed to move into stations 7 in such a way as to intercept the escaping "prisoners". Capture of a prisoner takes place when the counter representing the prisoner is on the same station as one of the "police" counters. Various "TRAP" stations 9 are provided which serve to "capture" prisoner counters which land on them. Various scoring systems may be adopted to determine a winner. Also various "RISK" stations 10 are provided where a player may land and then has to take a risk, for example, by having to operate the instruction indicating device when the array 2 is covered to conceal the lights 3 from him.

Referring to FIG. 1*a* the electronic means include a multivibrator comprising four interconnected NAND gates formed as a conventional integrated circuit ICI to which are connected two delay circuits each comprising a capacitor C having one plate connected to earth, a presetable resistor R and a diode D1. One of the delay circuits is additionally provided with a series arrangement of a resistor R1 and a push button switch E connected in parallel with the resistor R of the delay circuit. It has to be noted that the multivibrator is so arranged that it can stop with its outputs in either of the two possible combinations of states.

The integrated circuit ICI has two outputs connected via respective resistors R2 and R3 to respective bases of transistors T1 and T2. Each of these transistors has its emitter connected via a common resistor R4 to the positive terminal of a 6 volt supply.

The collectors of the transistor T1 and T2 are connected to respective conventional integrated circuits IC2 and IC3 each containing four NAND gates. The NAND gates of each of the circuits IC2 and IC3 are arranged as two bistables each comprising a pair of interconnected NAND gates. The signals received from the collectors of the transistor T1 and T2 provide effective clock pulses for the circuits IC2 and IC3 respectively. The circuits IC2 and IC3 provide eight output signals A, $\bar{A}$, B, $\bar{B}$, C, $\bar{C}$, D, $\bar{D}$, which are connected to the array of lights 3 in the manner illustrated in FIGS. 1*b* and 1*c*.

The outputs of the bistables in the integrated circuit IC2 or IC3 are connected to the inputs of respective associated ones of the bistables in the circuit IC3 or IC2, respectively, to form a series connected loop of bistables. The outputs A $\bar{A}$, B $\bar{B}$, and C $\bar{C}$, are all connected in the same way to their associated succeeding bistables in the series but the outputs D $\bar{D}$ are connected the opposite way around to the NAND gates forming the A $\bar{A}$ bistable. Thus, as will be clear to one skilled in the art, it will be require a total of eight clock pulses from transistors T1 and T2 to produce the eight different combinations of outputs from the integrated circuits IC2 and IC3.

The electronic means are powered by a battery connected via an ON-OFF switch S and the multivibrator is set into operation by means of a push button stop-go switch P which con nects the positive terminal of the battery to an input terminal T of the multivibrator. When the switch P is open the terminal T is earthed via a resistor R7.

In operation, after the switch S has been closed to connect the power supply to the electronic means the stop-go switch P is closed to set the device in cyclic operation. The multivibrator starts to cycle to produce two pulsed outputs having an even mark-space ratio and being almost 180 degrees out of phase, with the small overlap determined by the reaction time of the integrated circuit IC1.

The outputs from the multivibrator trigger the transistors T1 and T2 which deliver their respective clock pulse signals to the circuits IC2 and IC3. Thus the circuits IC2 and IC3 are switched ON and OFF alternately so that one of the lights 3 is lit in the arrangements

shown in FIGS. 1*b* and 1*c* alternately. When the switch P is then opened the cyclic operation ceases and a light 3 is left in its lit condition. Which of the lights is so left depends on when the switch P is opened.

Which of the lights 3 is lit depends on the Boolean values that can be ascribed to the outputs A, $\overline{A}$, B, $\overline{B}$, C, $\overline{C}$, D, $\overline{D}$, at any one time, i.e. if (using positive logic)- the output A has Boolean value 1 and the output C the value 0 then the diode between the outputs A and C will light. In this latter situation it is clear that the outputs $\overline{A}$ and $\overline{C}$ have values 0 and 1 respectively so that none of the other light-emitting diodes shown in FIG. 1*b* can light because of their diode properties, i.e., all the other, unlit diodes are reverse biased. None of the diodes shown in FIG. 1*c* is lit at the same time as the diode between the outputs A and C because the integrated circuit IC3 is switched OFF for almost the entire time that the circuit IC2 is ON since, as mentioned above, there is an almost 180 degree phase shift between the signals from the transistors T1 and T2. The small overlap, also mentioned above, is sufficient for the cyclic operation of the integrated circuits but is too small to be apparent in the lighting up of the diodes.

It will be clear to one skilled in the art that the cyclic operation is such that all the lights 3 will light in predetermined succession during one cycle. Thus it will be possible for a player to memorize the lighting order of the lights and if his reactions are quick enough he can obtain a favourable instruction using his skill in operating the switch P to stop the cyclic operation at an instant when a selected light 3 will remain lit.

A further element of skill is exercisable by the player's opponent since, by operation of the switch E, he can vary the mark-space ratio of the outputs from the circuit ICI. When the switch E is closed the delay characteristics of the multivibrator circuit arrangement are altered since one of the delay circuits then has resistor R1 connected into its circuit. The rules of the game can provide for permission for the opponent to operate the switch E only in particular circumstances.

If the players find that the cyclic operation is too slow they can speed it up by suitable adjustment of the resistors R. By suitable adjustment of resistors R the mark-space ratio can be biased to give uneven lighting periods of the two sets of lights 3.

Clearly the electronic means shown in FIG. 1*a* can be modified. One example of such modification is to replace the circuit IC1 by a similar circuit capable of greater power output so that the transistors T1 and T2 can be omitted and the outputs of the first integrated circuit can be connected directly to the circuits IC2 and IC3. Also the lights 3 may be incandescent bulbs but this would use considerably more power than the light-emitting diodes.

What we claim is:

1. Means for playing a board game in which the players move counters over a board, said means including a device having electronic circuitry, an array of indicators and a stop-go switch connected to the electronic circuitry which is in turn connected to said array and arranged to control the array so that the array indicates respective instructions one at a time in automatic succession during operation of the device, said stop-go switch being operable by a player exercising his skill to halt said automatic instruction indication by said array so that the array will hold indicated an instruction dependent upon when the player operates the stop-go switch, said means further including a board on which is illustrated a plurality of stations so interconnected as to form a series of routes whereby at least one counter can be moved in at least one step from a first station to a second station and successive steps can be shown by successive instructions indicated by said device to the player so that the latter can move his counter over the board along a route dependent on the player's skill in operating the stop-go switch.

2. The means of claim 1 wherein said indicators are light-emitting diodes.

3. The means of claim 1 wherein said electronic circuitry includes a multivibrator and automatic switching means connected to the array, the multivibrator being connected so as to control the switching means and said stop-go switch being connected so as to control the multivibrator.

4. The means of claim 3 wherein the array of indicators comprises two separate and associated groups, the multivibrator having two outputs and the automatic switching means comprising two logic circuits having respective inputs and sets of outputs, the inputs being respectively connected to the two outputs of the multivibrator, the sets of outputs of the logic circuits being respectively connected to the two groups of indicators, the logic circuits being interconnected so that each of them produces a cyclically recurring sequence of combinations of logic outputs, the associated group of indicators being arranged so that any one of the sequence of combinations activates only one of the indicators.

5. The means of claim 4 wherein two outputs of the multivibrator are arranged to provide respective alternating logic signals which are substantially 180 degrees out of phase so that said switching logic circuits operate substantially alternately.

6. The means of claim 5 wherein means are provided for presetting the mark-space ratio of the two output signals of the multivibrator and an interference switch and associated circuit are connected into the multivibrator circuit and are operable to change the preset mark-space ratio in a predetermined manner, whereby operation of the interference switch by one player can disturb the timing of the occurrence of an instruction required by a player operating said stop-go switch.

7. The means of claim 1 wherein some of said stations are marked "TRAP" from which the counter cannot be moved and some of the possible routes terminate in said "TRAP" stations.

8. The means according to claim 1 wherein some of said stations are marked "RISK" and some of the possible routes pass through said "RISK" stations.

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