



(19)

Europäisches Patentamt

European Patent Office

Office européen des brevets



(11)

EP 0 836 874 A1

(12)

EUROPEAN PATENT APPLICATION

published in accordance with Art. 158(3) EPC

(43) Date of publication:

22.04.1998 Bulletin 1998/17

(51) Int. Cl.⁶: **A63H 18/00, A63H 18/12**

(21) Application number: 97914325.2

(86) International application number:
PCT/ES97/00074

(22) Date of filing: 21.03.1997

(87) International publication number:
WO 97/35648 (02.10.1997 Gazette 1997/42)

(84) Designated Contracting States:
DE GB

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(30) Priority: 22.03.1996 ES 9600691

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(54) DEVICE FOR RECORDING AND REPRODUCING MINIATURE VEHICLE SPEEDS

(57) The device is comprised of a series of analog-digital converters (1) associated to rail tracks (2,2') on which the vehicles can circulate, a central processing unit (3) (CPU), a non temporal storage memory (4) and an output control unit (5). The user adjusts the device to the recording mode and runs one vehicle through the rail track by using a manual control. The converters (1) digitalize de voltages corresponding to the different speeds of the vehicle during one circuit lap and send the data to the CPU (3) in order to store the data in the memory (4). In the reproduction mode, the CPU (3) controls the unit (5) so as to reproduce in one rail track (2) the stored sequence of voltages. Thereby, the user can run one vehicle controlled by her/him, and complete against another vehicle controlled by the device.

Description**OBJECT OF THE INVENTION**

The present invention consists of a device which is applicable on the track of a popular game with miniature vehicles guided through lanes located in a circuit formed by different sections, the sections being of the type which are fed by electric power providing variable voltages which define the variable speed of the vehicle on the track.

The device has the object of digitalizing the running of the vehicle commanded by the player, recording in memory the different voltages associated to the speeds when the vehicle is passing, recorded according to the defined time intervals that will correspond to the different vehicle positions along the track.

Likewise it is the object of the invention to reproduce this sequence of voltages on one of the lanes of the track on which the vehicle is placed adopting the speeds associated to this sequence of voltages and against which the player or players will compete with another/other vehicle/s in another/other lane/s.

BACKGROUND OF THE INVENTION

The miniature vehicle competition games on track which simulate real races in the circuit are one of the games of the greatest acceptance among the children and youth.

Precisely the competition game in the circuit is widely extended in which the vehicles are guided through lanes fed by variable voltage regulated by a button which likewise defines the variable speed of the vehicle.

The game is basically oriented to the competition between two or more players, having the tracks as many lanes as players are participating in the game, each one of them guiding its vehicle trying to beat the opponent.

This type of game is widely spread at competition level, carrying out races between amateurs, who install large circuits with multiple sections and lanes, in which some considerable sophisticated levels are achieved, either in the preparation of the miniature vehicles used in the race or of other elements that take part in their operation.

When the player does not find an opponent to compete with, the game is less exciting and then one of the options of the player may consist of limiting himself to improve the passing speeds through the section of the circuit optimizing the time record per turn.

It is also possible, in this situation, the development of a device that allows the player to compete against a vehicle controlled by the machine with the object of promoting the competitiveness.

This device can be spread both at amateur players level who pretend to have fun when they do not find a person to compete with or, in high competition, being an

improvement means for the time records for improving the passing per turn in the training, or simply for competing against the machine.

DESCRIPTION OF THE INVENTION

The present invention gives an answer to the expectations in the mentioned development by means of a recording and reproduction device of the speeds applicable to the game of racing of miniature vehicles guided through lanes and fed by electric current, which purpose is the recording of the voltages previously applied by the player with its button on the lane in which the vehicle of reference is circulating along the circuit in the different sections of the circuit and according to a sequence of small time intervals, and the subsequent reproduction of this sequence of voltages in one of the lanes that will be materialized in a sequence of speeds of the vehicle of reference against which the player competes with another vehicle located in another lane.

The device is formed by a series of units or elements associated to the driving lanes of the track on which the miniature vehicles are circulating, units which are connected to a CPU in which the treatment of the data recorded are instantly carried out thereof and of the data recorded in the permanent storage memory, from which the corresponding voltage signals are similarly emitted on the lane of the track in which the vehicle of reference is located.

More precisely, the device is equipped with some digital-analogical converters associated to each one of the lanes which digitalize the voltage signals recorded each certain predetermined constant time intervals, voltage signals which correspond to the different positions of the speed button of the vehicle for the different circuit sections.

These signals recorded and transformed by the converters are afterwards treated by the CPU which stores in the permanent storage memory the voltage sequences corresponding to each one of the turns which are made during a continuous session of data recording, only remaining as reference in memory the sequence of corresponding voltages to the turn which is made in the least recorded possible time, erasing the sequence of longest previously recorded time.

Likewise, each one of the lanes incorporates associated some passing detectors on the finishing line which record the time used in each turn and account for the number of turns.

The device has current passing detectors coupled to each one of the lanes which notify the CPU when one of the vehicles is out of the track or when the button is not being activated, placing to zero the measuring of sequence of voltages and restarting the system for a new recording of data from the start.

Associated to the CPU we find an outlet control which feeds one of the lanes in which the sequence of voltages is reproduced corresponding to the least time

recorded of a turn, being this sequence the one that is assimilated by the vehicle of reference of variable speeds along the circuit during the turns of the race with the vehicle of the player or players.

The system has the possibility of carrying out a treatment of the sequence of recorded voltages according to an algorithm that modifies them with proportional values to the ones which have been stored, reproducing this modified sequence in the vehicle guided by the system according to the level of programmed speed.

The sequence transmitted by the outlet control to the lane, can be modified during the race at the time in which the vehicle wherewith the player is participating records less time than the vehicle of reference commanded by the device, then the control transmits that new sequence of speed to the vehicle of reference which will run the following turns according to this time sequence, that will make a new time record to be beaten by the vehicle/s of the player/s, if we are dealing with a track with different lanes.

When two vehicles are placed at the starting line in order to start the race, the button for starting is pressed for the countdown in each one of the tracks until reaching zero, at that time the relay is activated which allows the feeding and operation of the button of the track where the user is running, simultaneously the starting control unit starts to apply voltage values on the track of the car governed by the system.

The device has a tracer in which it is shown the data times for the turn, number of turns and likewise it has available a keyboard for the introduction of data in relation to the number of training turns and other data.

The system may optionally have a screen for tracking the race, with speeds or voltages by passing section, allowing the checking of the evolution of the vehicles in each circuit section.

DESCRIPTION OF THE DRAWINGS

In order to complete the description that is being carried out and with the purpose of helping to a better understanding of the characteristics of the invention, the present specification is accompanying the drawing, as integral part thereof, with only one figure wherein by way of illustration and not by limitation it has been represented a diagram of blocks in which the elements which form the device object of the invention are shown.

PREFERRED EMBODIMENT OF THE INVENTION

At the sight of the diagram it is verified that the object of this invention, in relation to a recording and reproduction device of the speeds applicable to a competition game of miniature vehicles guided through lanes fed by electric current, is designed in order to play against a vehicle commanded by the machine according to a sequence of speeds associated to a sequence of voltages previously recorded, standing out the incor-

poration of a series of digital analogical converters (1) associated to the lanes (2, 2') of the track which transform the sequence of voltages corresponding to the speeds of the vehicles on the track for some given time intervals and are digitalized sending them to a CPU (3) which deals with the received data, storing them in a permanent storing memory (4) and has coupled an outlet control unit (5) through which are reproduced on the lane (2) the sequence of voltages recorded corresponding to the fast turn or other proportional sequence according to a definite algorithm, producing the movement of a vehicle in this lane (2) with speed directly proportional to the voltage in each moment, against the one that competes the player/s with another/other vehicle/s placed on another/other lane/s (2').

The device incorporates in association with each one of the lanes (2, 2') some passing detectors (6) on the finishing line which indicate to the CPU (3) when a complete turn is performed with the purpose of handling the data received by the digital analogical convertors (1) in that turn, which are stored in the permanent storing memory (4) if they correspond to a faster turn than the one of reference, likewise indicating such detectors (6) the signal so that the system records a new sequence of data corresponding to the following turn.

Likewise the device incorporates some current detectors (7) associated to each one of the lanes (2, 2') which detect the lack of current in one of the lanes for stopping the button or starting of the vehicle of the lane (2, 2'), sending the signal of restarting for the new data sequence.

On the other hand, the device has a feeding control unit (8) of the lane of the player that has a relay which allows to feed the lane after the count-down for the starting of the race and allows the functioning of the button of the user, setting off at the same time on the lane of the vehicle of reference commanded by the CPU (3) the sequence of voltages through the outlet control (5) producing the subsequent displacement of the vehicle.

The system has associated a data tracing screen (9) in relation to a number of turns, passing times and other data, and a keyboard (10) for entry of training number of turns regulating data and others.

It is not considered necessary to make more extensive this description so that any expert in the subject understands the scope of the invention and advantages derived thereof.

The materials, shape, size and arrangement of the elements will be susceptible of variation provided that they do not alter the essential part of the invention.

The terms in which this specification has been described will be always taken in a wide and not limitative sense.

55 Claims

1. Device for recording and reproduction of speeds applicable to a competition game of miniature vehi-

cles guided through lanes fed with electric current, designed to play against a vehicle commanded by the machine according to a sequence of speeds associated to a sequence of voltages previously recorded, essentially characterized in that it incorporates a series of digital analogical convertors (1) associated to the lanes (2, 2') of the track which transform the sequence of voltages corresponding to the speeds of the vehicles on track for some defined time interval and digitalizing and sending them to a CPU (3) which deals with the received data, they are recorded in a permanent storing memory (4) and has available a coupled outlet control unit (5) through which the recorded sequence of voltages corresponding to the fast turn or another sequence proportional according to a definite algorithm are reproduced on the lane (2), producing the movement of a vehicle in this lane (2) with proportional speed to the voltage in each moment, against which the player/s compete/s with another/other vehicle/s located in another/other lane/s (2').

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2. Device for recording and reproduction of speeds applicable to a game of competition of miniature vehicles guided through lanes fed with electric current according to the previous claim characterized in that it incorporates, associated to each one of the lanes (2, 2'), some passing detectors (6) on the finishing line which inform the CPU (3) when a complete turn has been performed with the object of treating the data received by the digital analogical convertors (1) in that turn, and send the signal so that the system can record a new sequence of data corresponding to the following turn.

3. Device for recording and reproduction of speeds applicable to a game of competition of miniature vehicles guided through lanes fed by electric current according to claim 1 characterized in that it incorporates some current detectors (7) associated to each one of the lanes (2, 2') which detect the lack of current in one of the lanes by stopping the button or outlet of the vehicle of the lane (2, 2'), sending the signal of restarting for the new sequence of data.

4. Device for recording and reproduction of the speeds applicable to a competition game of miniature vehicles guided through lanes fed by electric current according to claim 1 characterized in that it incorporates a feeding control unit (8) of the lane of the player that has a relay which allows to feed the lane after the count-down of the starting of the race and allows the functioning of the button of the user, producing at the same time the sequence of stored voltages on the lane of the vehicle of reference commanded by the CPU (3).

5. Device for recording and reproduction of the speeds applicable to a competition game of miniature vehicles guided through lanes fed by electric current according to claim 1 characterized in that it has available associated to the CPU (3) a data tracing screen (9) in relation to the number of turns, passing times and other data, and a keyboard (10) for the entry of training number of turns regulation data and others.

INTERNATIONAL SEARCH REPORT

International application No.

PCT/ES 97 / 00074

A. CLASSIFICATION OF SUBJECT MATTER

IPC6 A63H18/00, A63H18/12

According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)

IPC6 A63H, B60L, A63L

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practicable, search terms used)

CIBEPAT, EPODOC, PAJ, WPI, ECLA

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
A	DE 2833159 A (HERMANN NEUHIERL) 7 February 1980 (07.02.80) See claim 1; pages 5-7; figure I	1-5
A	US 4247107 A (JAY SMITH y otros) 27 January 1981 (27.01.81) See columns 1 to 5	2-5
A	US 3467311 A (DONALD E. ERNST) 16 September 1969 (16.09.69) See column 1, lines 50-61	1
A	ES 2004161 A (JUAN BASAS RIBA) 16 December 1988 (16.12.88) See columns 1 and 2	2, 5

 Further documents are listed in the continuation of Box C. See patent family annex.

* Special categories of cited documents:

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"&" document member of the same patent family

Date of the actual completion of the international search

10 June 1997 (10.06.97)

Date of mailing of the international search report

11 June 1997 (11.06.97)

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