

(19)



Europäisches Patentamt

European Patent Office

Office européen des brevets



(11)

EP 0 836 874 B1

(12)

EUROPEAN PATENT SPECIFICATION

(45) Date of publication and mention
of the grant of the patent:

22.05.2002 Bulletin 2002/21

(21) Application number: **97914325.2**

(22) Date of filing: **21.03.1997**

(51) Int Cl.7: **A63H 18/00**, A63H 18/12

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

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

(54) **DEVICE FOR RECORDING AND REPRODUCING SPEEDS APPLICABLE TO MINIATURE
VEHICLE COMPETITION ASSEMBLY**

VORRICHTUNG ZUM AUFZEICHNEN UND WIEDERGABE DER GESCHWINDIGKEIT VON
MINIATUR FAHRZEUGEN

DISPOSITIF D'ENREGISTREMENT ET DE REPRODUCTION DES VITESSES DE VEHICULES
MINIATURES

(84) Designated Contracting States:
DE GB

(30) Priority: **22.03.1996 ES 9600691**

(43) Date of publication of application:
22.04.1998 Bulletin 1998/17

(73) Proprietor: **Winkler International, S.A.**
2449 Luxembourg (LU)

(72) Inventor: **DOMINGO GARCIA, Ignacio**
E-28003 Madrid (ES)

(74) Representative: **Manresa Val, Manuel et al**
Rambla de Catalunya, 32,2o 2a
08007 Barcelona (ES)

(56) References cited:
DE-A- 2 833 159 **ES-A- 2 004 161**
US-A- 3 467 311 **US-A- 4 247 107**

Note: Within nine months from the publication of the mention of the grant of the European patent, any person may give notice to the European Patent Office of opposition to the European patent granted. Notice of opposition shall be filed in a written reasoned statement. It shall not be deemed to have been filed until the opposition fee has been paid. (Art. 99(1) European Patent Convention).

EP 0 836 874 B1

Description

OBJECT OF THE INVENTION

[0001] 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.

[0002] 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.

[0003] 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

[0004] 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.

[0005] 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.

[0006] 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.

[0007] 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.

[0008] 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.

[0009] 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.

[0010] 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.

[0011] US-A-3467311 discloses a model car racing apparatus in which one or more model cars are selectively controllable to race at various speeds against another car that is moving at a fixed speed. The apparatus is of the closed-path slot track type wherein power to conductive rails associated to various tracks is under the control of selectively variable means. The improvement comprises, in combination, securing means associated with said selectively variable means for one of said tracks to maintain the power to that track at a preset level; and an insulating layer disposed in covering relationship to a section of one of the conductive rails of said preset-level fed track. The insulating layer is generally located adjacent the entrance portion to a curve on the raceway so as to decrease the speed of the car on said curve. Said model car racing apparatus provides for the competition against a machine-controlled car.

DESCRIPTION OF THE INVENTION

[0012] 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.

[0013] 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.

[0014] 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.

[0015] 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.

[0016] 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.

[0017] 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.

[0018] 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.

[0019] 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.

[0020] 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.

[0021] When two vehicles are placed at the starting line in order to start the race, the button for starting is pressed for the count-down 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.

[0022] 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.

[0023] The system may optionally have a screen for tracing 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

[0024] In order to complete the description that is be-

ing 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

[0025] 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 incorporation 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').

[0026] 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 converters (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.

[0027] 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.

[0028] 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.

[0029] 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.

[0030] 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.

[0031] The materials, shape, size and arrangement of the elements will be susceptible of variation.

Claims

1. Device for recording and reproducing speeds applicable to a miniature vehicle competition assembly, said assembly being of the type comprising at least two guiding lanes (2, 2') fed with electric current, miniature vehicles provided with means to be guided on said lanes and for pick-up the electric current therefrom, machine-controlled means to apply electric power to at least part of one lane (2') and user-controlled means to selectively apply variable electric power to the other(s) lane(s) (2), said device comprising a series of analog/digital converters (1) for being associated to each lane (2, 2'), said converters being prepared to transform the voltage sequences corresponding to the speeds of the vehicles on the lanes for defined time intervals into digital signals and to send said digital signals to a CPU (3) which processes the received signals and stores the processed data in a permanent storing memory (4), an outlet control unit (5) being coupled to said CPU (3) for reproducing on said one of the lanes (2) the recorded voltage sequences corresponding to a fastest turn or another proportional sequence according to a definite algorithm causing the movement of a vehicle on this lane (2) with speeds proportional to the voltage applied in each moment, against which vehicle the player(s) can compete(s) with another/other vehicle(s) on said other(s) lane (s) (2').
2. Device according to claim 1, **characterized in that** a passing detector (6) is incorporated to each lane (2, 2') on the finishing line which inform the CPU (3) when a complete turn has been performed in order to process the data received from the analog/digital converters (1) **in that** turn, and send a signal to the system for taking a new sequence of data corresponding to the following turn.
3. Device according to claim 1, **characterized in that** current detectors (7) are associated to each lane (2, 2') to detect a lack of electric current in the lane due to a stop in applying current from said user-controlled means or the vehicle gone off the lane (2, 2') and to send a signal to the CPU (3) in order to restart

the take of a new data sequence.

4. Device according to claim 1, **characterized in that** a feeding control unit (8) is included for the player's lane(s) (2') comprising a relay allowing the user-controlled means to feed that lane(s) (2) upon the starting count-down completed, at which time the stored voltage sequence is sparked off by the CPU (3) on the machine-controlled lane (2) for the reference vehicle.
5. Device according to claim 1, **characterized in that** associated to the CPU (3) are a display (9) whereon data relating to at least the number of completed turns, passing times are displayed, and a keyboard (10) for entering regulation data about at least training turn number.

Patentansprüche

1. Geschwindigkeitsaufnahme- und -wiedergabevorrichtung zum Einsetzen in einer Miniaturfahrzeug-Wettfahrtanordnung vom Typ bestehend aus mindestens zwei stromversorgten Führungsbahnen (2, 2'), Miniaturfahrzeugen die mit Mitteln zu deren Führung entlang der genannten Bahnen und zur Stromabnahme aus den letzteren ausgestattet sind, maschinengesteuerten Mitteln zur mindestens abschnittweisen Kraftversorgung einer Bahn (2') und benutzergesteuerten Mitteln zur wahlweisen und veränderlichen Kraftversorgung der anderen Bahn bzw. Bahnen (2), wobei die genannte Vorrichtung eine Reihe von Analog-Digitalumsetzern (1) umfaßt die jeweils zu jeder entsprechenden Bahn (2, 2') zugeordnet sind, wobei die genannten Umsetzer zur Umsetzung der den Fahrzeuggeschwindigkeiten auf den Bahnen für definierte Zeitintervalle entsprechenden Spannungsfolgen in Digitalsignale sowie zur Sendung der genannten Digitalsignale zu einer die erhaltenen Signale verarbeitenden und die verarbeiteten Daten in einem Festspeicher (4) speichernden Zentraleinheit (CPU) (3) vorbereitet sind, wobei eine Ausgabe-steuereinheit (5) mit der genannten CPU (3) zur Wiedergabe auf der genannten eine der Bahnen (2) der einer schnellsten Rundfahrt bzw. einer anderen Proportionalfolge nach einem bestimmten Algorithmus entsprechenden, aufgenommenen Spannungsfolgen gekoppelt ist und dadurch die Bewegung eines Fahrzeugs auf dieser Bahn (2) mit der in jedem Augenblick angelegten Spannung entsprechenden Geschwindigkeiten verursacht, wobei der bzw. die Spieler mit einem anderen Fahrzeug bzw. mit anderen Fahrzeugen auf der bzw. den genannten anderen Bahn bzw. Bahnen (2') gegen diesen Fahrzeug wettfahren können.

2. Vorrichtung nach Anspruch 1, **gekennzeichnet durch** die Zuordnung eines Durchfahrtdetektors (6) zu jeder Bahn (2, 2') auf der Ziellinie zur Benachrichtigung der CPU (3) nach Vervollständigung einer kompletten Rundfahrt zwecks Verarbeitung der von den Analog-Digitalumsetzern (1) aus in dieser Rundfahrt erhaltenen Daten und zwecks Zusage eines Signals zum System zur Aufnahme einer neuen, der nächsten Rundfahrt entsprechenden Datenfolge. 5
3. Vorrichtung nach Anspruch 1, **gekennzeichnet durch** die Zuordnung eines Stromdetektors (7) zu jeder Bahn (2, 2') zur Erfassung einer Stromlosigkeit in der Bahn wegen einer Einstellung der Stromversorgung aus den genannten benutzergesteuerten Mitteln bzw. eines aus der Bahn (2, 2') herausgesprungenen Fahrzeugs und zur Sendung eines Signals zur CPU (3) zwecks Restart der Aufnahme einer neuen Datenfolge. 10
4. Vorrichtung nach Anspruch 1, **gekennzeichnet durch** die Einschließung einer Versorgungssteuereinheit (8) für die Spielerbahn bzw. -bahnen (2'), wobei diese Versorgungssteuereinheit ein Relais umfaßt, das den benutzergesteuerten Mitteln es erlaubt, nach Vervollständigung des Rückwärtszählens zum Start die Bahn bzw. die Bahnen (2) zu versorgen, wobei in diesem Augenblick die gespeicherte Spannungsfolge von der CPU (3) an die maschinengesteuerte Bahn (2) für den Referenzfahrzeug abgegeben wird. 15
5. Vorrichtung nach Anspruch 1, **gekennzeichnet durch** die Zuordnung zur CPU (3) von einer Anzeigevorrichtung (9) zur Anzeige von sich mindestens auf die Anzahl vervollständigter Rundfahrten und auf die Durchfahrtszeiten beziehenden Daten und einer Tastatur (10) zur Eingabe von sich mindestens auf die Anzahl Training-Rundfahrten beziehenden Daten. 20

Revendications

1. Dispositif pour enregistrer y reproduire des vitesses applicable à un ensemble de compétition de véhicule miniature, cet ensemble étant du genre comprenant au moins deux voies de guidage (2, 2') alimentées en courant électrique, des véhicules miniature pourvus de moyens pour les guider sur ces voies et pour en recevoir le courant électrique, des moyens contrôlés par une machine pour fournir du courant électrique au moins à une partie d'une voie (2') y des moyens contrôlés par l'utilisateur pour fournir de façon sélective un courant électrique variable à/aux autre/s voie/s (2), ce dispositif comprenant une série de convertisseurs analogiques/nu-

mériques (1) pour être associés à chaque voie (2, 2') ces convertisseurs étant préparés pour transformer les séquences de tension correspondant aux vitesses des véhicules sur les voies pour des intervalles de temps définis en signaux numériques et pour envoyer ces signaux numériques à une unité centrale (3) qui traite les signaux reçus et enregistre les données traitées dans une mémoire d'enregistrement permanent (4), une unité de contrôle de sortie (5) étant reliée à cette unité centrale (3) pour reproduire sur cette voie (2) les séquences de tension enregistrées correspondant à un tour plus rapide ou à une autre séquence proportionnelle conformément à un algorithme entraînant le mouvement d'un véhicule sur cette voie (2) avec des vitesses proportionnelles à la tension appliquée à chaque moment, le(s) joueur(s) peut/peuvent faire une compétition de ce véhicule avec un autre/d'autres véhicule/s sur cette/ces voie/s (2').

2. Dispositif conformément à la revendication 1, **caractérisé en ce qu'un** détecteur de passage (6) est incorporé à chaque voie (2, 2') à la ligne d'arrivée qui informe l'unité centrale (3) lorsqu'un tour complet a été fait afin de traiter les données reçues des convertisseurs analogiques/numériques (1) dans ce tour, et envoie un signal au système pour prendre une nouvelle séquence de données correspondant au tour suivant.
3. Dispositif conformément à la revendication 1, **caractérisé en ce que** des détecteurs de courant (7) sont associés à chaque voie (2, 2') pour détecter un manque de courant électrique dans la voie dû à un arrêt d'application de courant de ces moyens contrôlés par l'utilisateur où à ce que le véhicule est sorti de la voie (2, 2') et envoyer un signal à l'unité centrale (3) afin d'effectuer la reprise d'une nouvelle séquence de données.
4. Dispositif conformément à la revendication 1, **caractérisé en ce qu'une** unité de contrôle d'alimentation (8) est comprise pour la/les voie/s du joueur (2') comprenant un relais qui permet que les moyens contrôlés par l'utilisateur alimente cette /ces voie/s (2) lorsque le compte à rebours de départ est terminé, à ce moment-là la séquence de tension enregistrée est déclenchée par l'unité centrale (3) sur la voie contrôlée par la machine (2) pour le véhicule de référence.
5. Dispositif conformément à la revendication 1, **caractérisé en ce que**, relié à l'unité centrale (3) se trouve un afficheur (9) qui affiche les données concernant au moins le nombre de tours effectués, les temps de passage, y un clavier (10) pour introduire les données de régulation concernant au moins le nombre de tours d'entraînement.

