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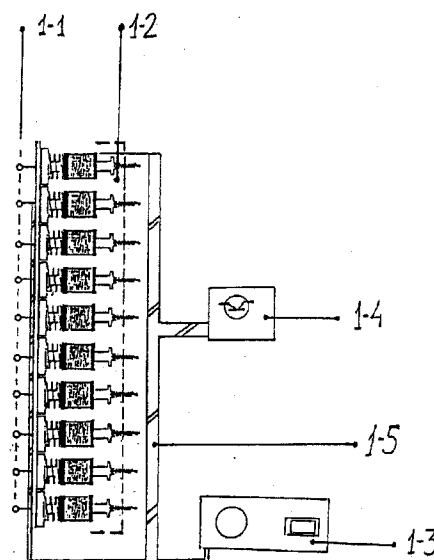
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(54) **SYSTEM AND DEVICE FOR THE REPULSION OF A TEST BALL OR CHIP IN COMPETITION AND ENTERTAINMENT MACHINES.**

(57) The system is comprised of a group of independent mechanisms (1-2) with capacity of repulsion of the chip or ball situated in its actuation zone; of a group of sensors (1-1) which may detect the presence in the control zone thereof of the test chip or ball, and may also detect the presence or absence of chip or ball in each actuation zone of said mechanisms; a group of controls (1-3) by means of which the assembly of independent mechanisms is controlled in order to cause the repulsion of the chip or ball in the case of detection of the latter in its actuation zone; and an actuation controller (1-4) for the actuation of said components of the system.



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At present, most of the existing mechanisms and devices of repulsion used for the construction of "pin-ball" or "million" machines, or any other kind of competitions, are generally provided with devices for the repulsion of the token or ball which act whether automatically by pressure of the token or ball on one of their areas, or independently from the presence or absence of the token or ball within the area of action and provoked by the player with a joystick provided in the machine for this purpose.

The device for the repulsion of the testing ball described below offers new game options for the aforementioned "pin-ball" or "million" machines or other competition machines in which it is used.

The device consists of a series of mechanisms acting independently, which affect different sections of an area of action on the ball or token, this area being a part of the board or track. Everything is arranged so that the different mechanisms which act independently can be activated in a way that they provoke a repulsion impulse on the token or ball, in the case that it is detected by a series of sensors of the device within the area of action. The device works following the orders of a system of control which, according to the indications received from a source of orders of activation, usually a series of operating controls, activates in the different independent mechanisms the automatic capacity of production of the repulsion impulse, when the presence of a token or ball is detected by the sensors in their area of action.

A device with these characteristics can be used for the construction of different and new models of "pin-ball" or "million" machines, or competitions with token or balls, in which the game is more attractive or interesting than in present machines.

The means and systems used for the realization of the different parts and elements that constitute the device described can be varied and used separately for other purposes, but perfectly fit for the realization of the device described.

All these antecedents have led to the newness of the system and device and all the characteristics referred to in this document. This device, realized as described with all the elements, can be used in different competition machines, as in the "pin-ball" machine in the lower part, designated to the impulsion of the testing ball towards the upper part, where it is possible to continue the game or to loose the ball.

A detail description of the device described as well as its functioning will follow, with reference to the attached drawings which show the device described and the constituent elements, as well as the best form of realization as an example, subject to variations which do not alter the essential features claimed herein.

Drawing n^o1 is a view from above of a device for the repulsion of a token or ball as the one described, with capacity of repulsion by the actuation of a series of mechanisms that produce a repulsion impulse when they are activated and the presence of the token or ball is detected by sensors in their area of control.

The numbers in this drawing indicate the following:

1-1: Sensors of presence, each one detecting the presence of the token or ball when it enters in their particular area of detection. In this particular case each sensor consists of an optical reader affected by the positioning of an object in their area of control.

1-2: Group of mechanisms acting independently, which produce a repulsion impulse according to the control center when they are activated and the presence or a token or ball is detected in the area of control. In this particular case the independent mechanisms use a solenoid able to produce a magnetic field in order to transmit a force over a ferromagnetic core that sends the impulse towards the exterior of the mechanism.

1-3: Group of operating controls that fulfil the function of centralization of orders or control of all the mechanisms of repulsion that are activated.

1-4: Center of control of the functioning of the device, that receives indications from the group of operating controls about which is the group of mechanisms of repulsion that are activated, and in case of receiving from the sensors a signal of the presence of the token or ball in their area of control, it allows the circulation of electric current towards the corresponding mechanism, producing a repulsion impulse in it.

1-5: Communication lines of the center of control with the operating controls or center of orders of activation of the different mechanisms, with the set of independent mechanisms and with the group of sensors or presence.

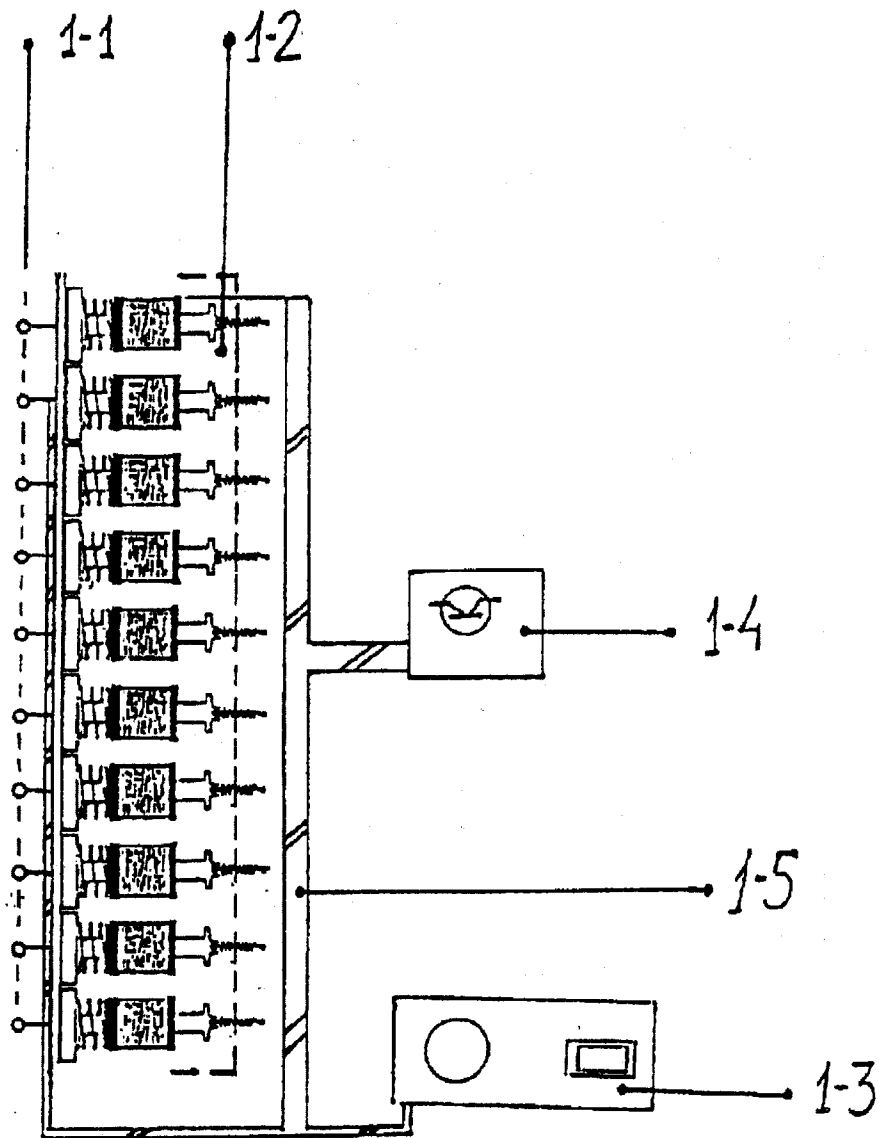
Using a device like the one described it is possible to provide different kinds of "pin-ball", "million" or other kind of competition machines with an original, new and different attraction.

With regard to the characteristics of composition of the system and device as described, the shape, materials, dimensions and all the accessory and secondary items can be varied, provided that they do not modify the essential features of the composition of the device and the preferable way of realization as described.

Reserving the right of procurement of possible Certificates of Addition, we file the following claims:

Claims

1. 'SYSTEM AND DEVICE FOR THE REPULSION OF A TOKEN OR TESTING BALL IN COMPETITION AND ENTERTAINMENT MACHINES', consisting of a group of independent mechanisms, each one with capacity of repulsion of a token or ball in their particular area of action, a group of sensors able to detect the presence of a token or ball in their area of control and able to detect the presence of a token or ball in each area of action of the mechanisms with capacity of repulsion, a center of control or group of operating controls that send orders and indicate the group of independent mechanisms selected for the repulsion of the token or ball in case it is detected in their area of action, and a control of the functioning of the aforementioned components of the system.
2. 'SYSTEM AND DEVICE FOR THE REPULSION OF A TOKEN OR TESTING BALL IN COMPETITIONS AND ENTERTAINMENT MACHINES', according to the previous claim, in which the group of independent mechanisms has the capacity of repulsion of a ball occupying any possible position within the particular areas of action of such mechanisms, provided that the mechanism has received the corresponding order of repulsion of the ball or token within its area of action.
3. 'SYSTEM AND DEVICE FOR THE REPULSION OF A TOKEN OR TESTING BALL IN COMPETITIONS AND ENTERTAINMENT MACHINES', according to previous claims, in which the selection is carried out by a control center or operating controls that indicate which is the group of independent mechanisms with capacity of repulsion selected to repulse the token or testing ball.
4. 'SYSTEM AND DEVICE FOR THE REPULSION OF A TOKEN OR TESTING BALL IN COMPETITIONS AND ENTERTAINMENT MACHINES', according to previous claims, in which it is possible to detect the presence or absence of a token or ball in the different areas of action of the independent mechanisms with capacity of repulsion, selected or not for this repulsion, by means of a group of sensors which form a part of the system.



INTERNATIONAL SEARCH REPORT

International application No.

PCT/ES 93/00038

A. CLASSIFICATION OF SUBJECT MATTER

Int.Cl.⁵ A63F7/02

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)

Int.Cl.⁵ A63F

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)

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	US,A,4058316 (MILLER) 15 November 1977 see column 2, line 56 - column 3, line 11; figure 1	1-4
A	US,A,2830819 (PEARL) 15 April 1958 see column 3, line 34 - column 4, line 6; figure 1	1-4

☐ Further documents are listed in the continuation of Box C.

☐ See patent family annex.

<p>* Special categories of cited documents:</p> <p>"A" document defining the general state of the art which is not considered to be of particular relevance</p> <p>"E" earlier document but published on or after the international filing date</p> <p>"L" document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified)</p> <p>"O" document referring to an oral disclosure, use, exhibition or other means</p> <p>"P" document published prior to the international filing date but later than the priority date claimed</p>	<p>"T" later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention</p> <p>"X" document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone</p> <p>"Y" document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art</p> <p>"&" document member of the same patent family</p>
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Date of the actual completion of the international search	Date of mailing of the international search report
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Name and mailing address of the ISA/ EUROPEAN PATENT OFFICE Facsimile No.	Authorized officer Telephone No.