

[72] Inventor **Vincenzo Menotti**
Via Valerio Laspro 7, 84100 Salerno, Italy

[21] Appl. No. **748,739**

[22] Filed **July 30, 1968**

[45] Patented **June 1, 1971**

[32] Priority **Aug. 10, 1967, June 7, 1968**

[33] **Italy**

[31] **31334/67 and 37547/68**

2,048,944 7/1936 Munro et al. 273/121X

2,093,162 9/1937 Breitenstein 273/121

2,237,746 4/1941 Perks 273/121

2,610,059 9/1952 Koci 273/121

3,404,888 10/1968 Lally et al. 273/121

FOREIGN PATENTS

778,746 3/1935 France 273/121

Primary Examiner—Anton O. Oechsle
Assistant Examiner—Theatrice Brown
Attorney—Marshall & Yeasting

[54] **SURFACE BALL GAME WITH OPPOSITELY INCLINED PLAYING SURFACES**
15 Claims, 9 Drawing Figs.

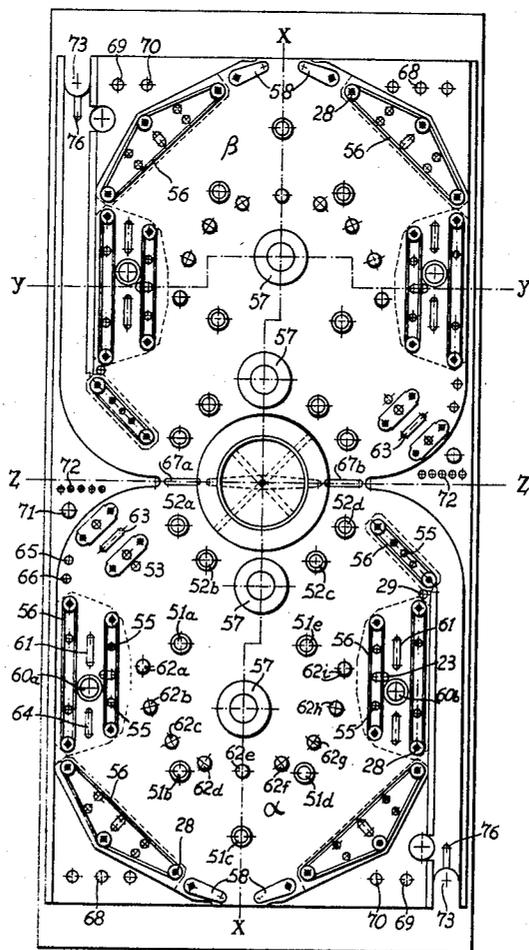
[52] U.S. Cl. 273/86,
 273/121, 273/122, 273/124, 273/125

[51] Int. Cl. A63f 9/14,
 A63b 37/00

[50] Field of Search 273/123 A,
 124 A, 125 A, 122 A, 121 A, 121 D, 120 A, 119 A,
 118 A, 86 B, 86 R

[56] **References Cited**
UNITED STATES PATENTS
 2,025,823 12/1935 Radtke 273/121

ABSTRACT: An electromechanical game consisting of two play fields, sloped in opposite directions, in which are provided holes, doors and bumper elements, in addition to electrical devices; on each field a ball is moved around by gravity or by mechanical impacts, conferred to it by the player, with said bumper elements, in order to hit determined targets for marking points. The players play one at a time, and each of them has the possibility of capturing the ball being played by the opponent, increasing the number of the balls at his disposal. The scores computed by a differential adder are indicated by toy cars which run on circular paths in a simulated race.



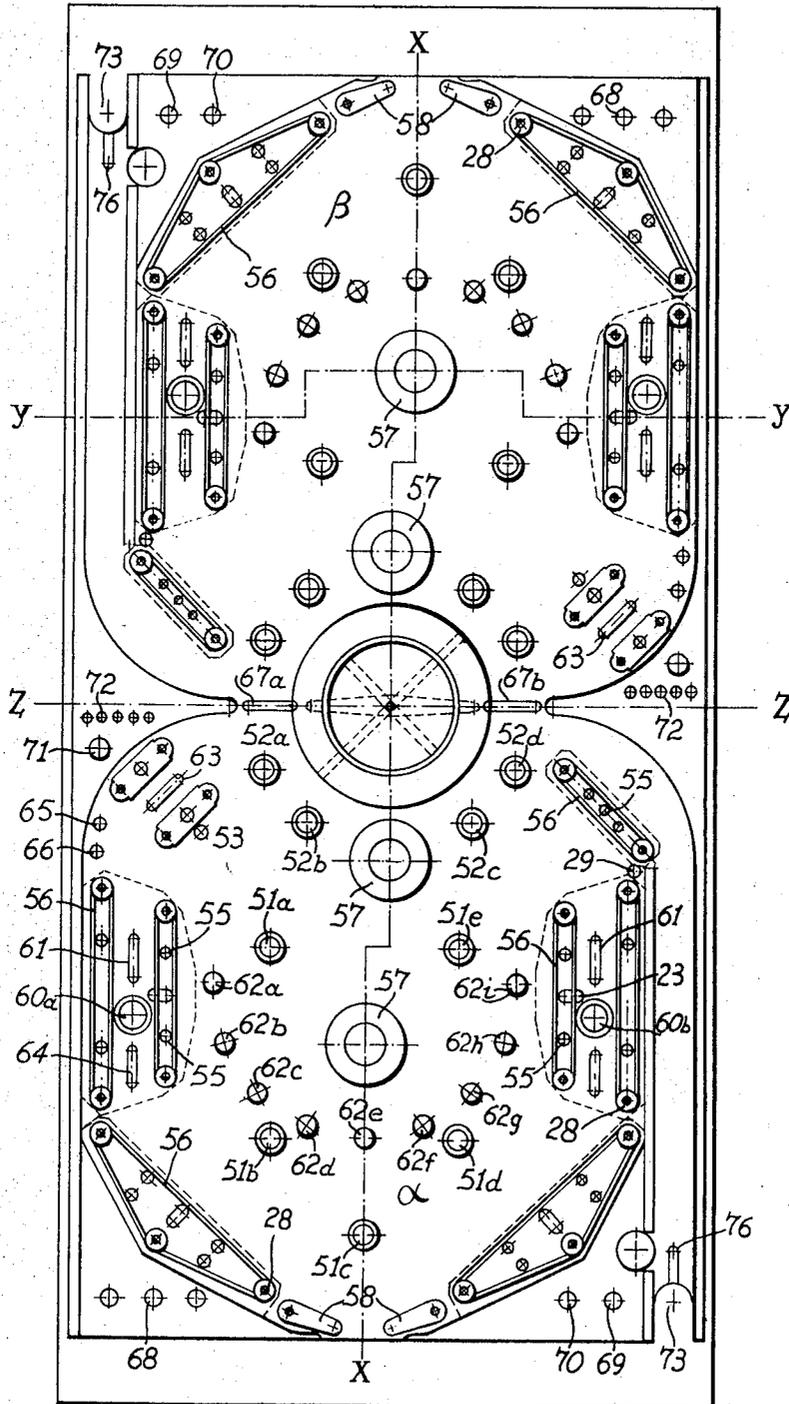


Fig.1

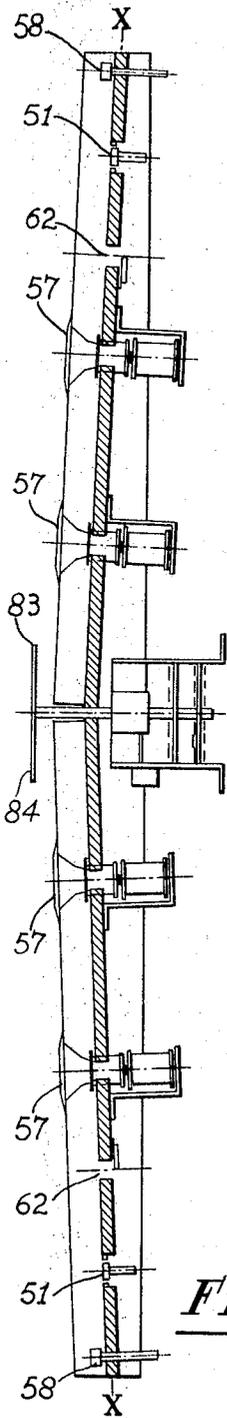


Fig. 2

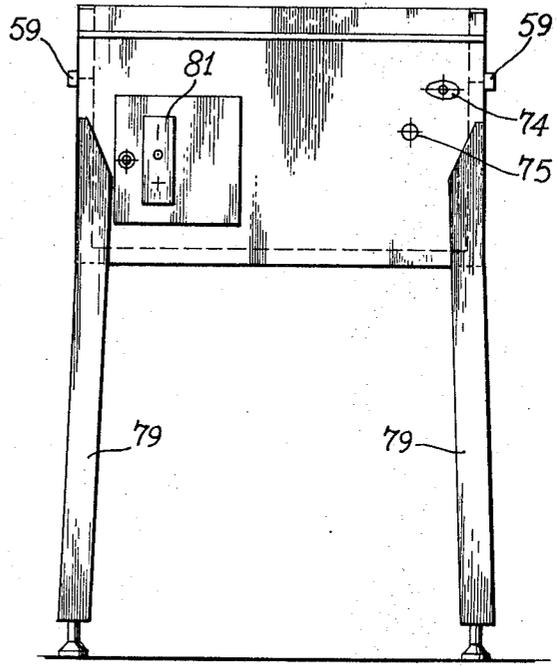


Fig. 7

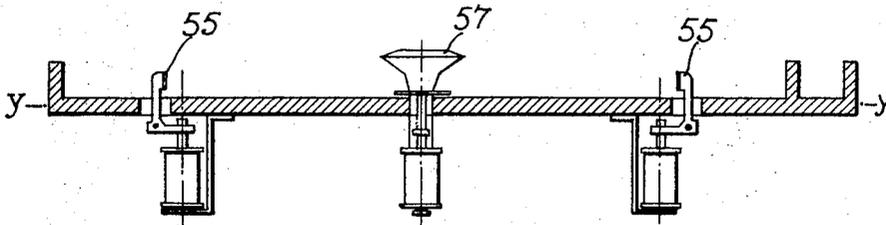


Fig. 3

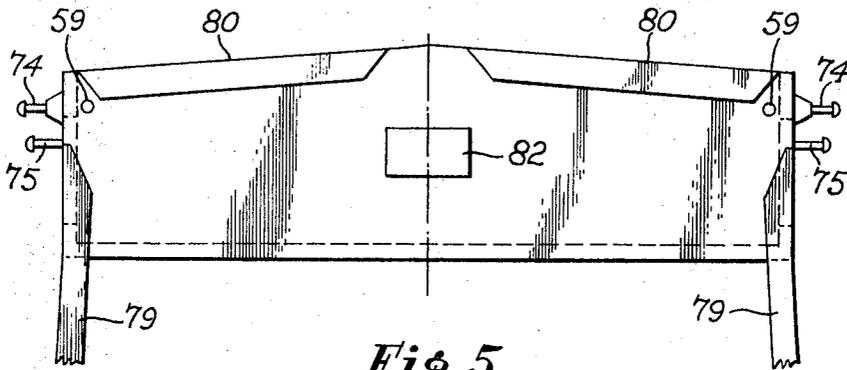


Fig. 5

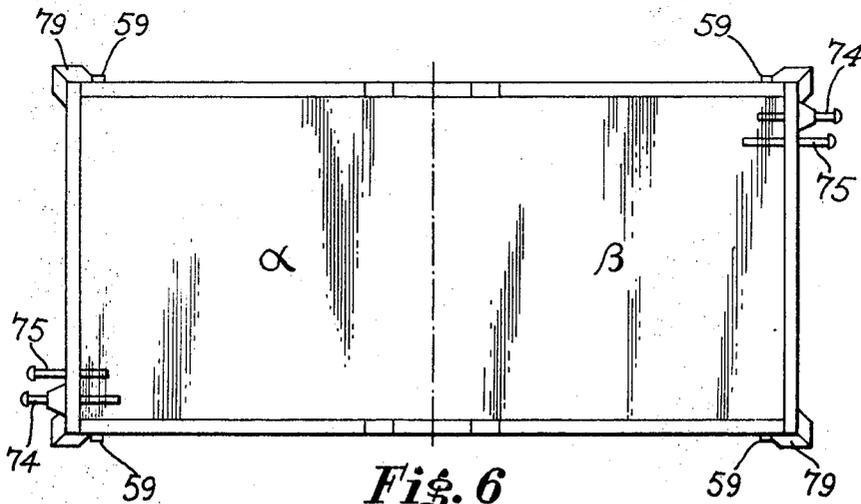


Fig. 6

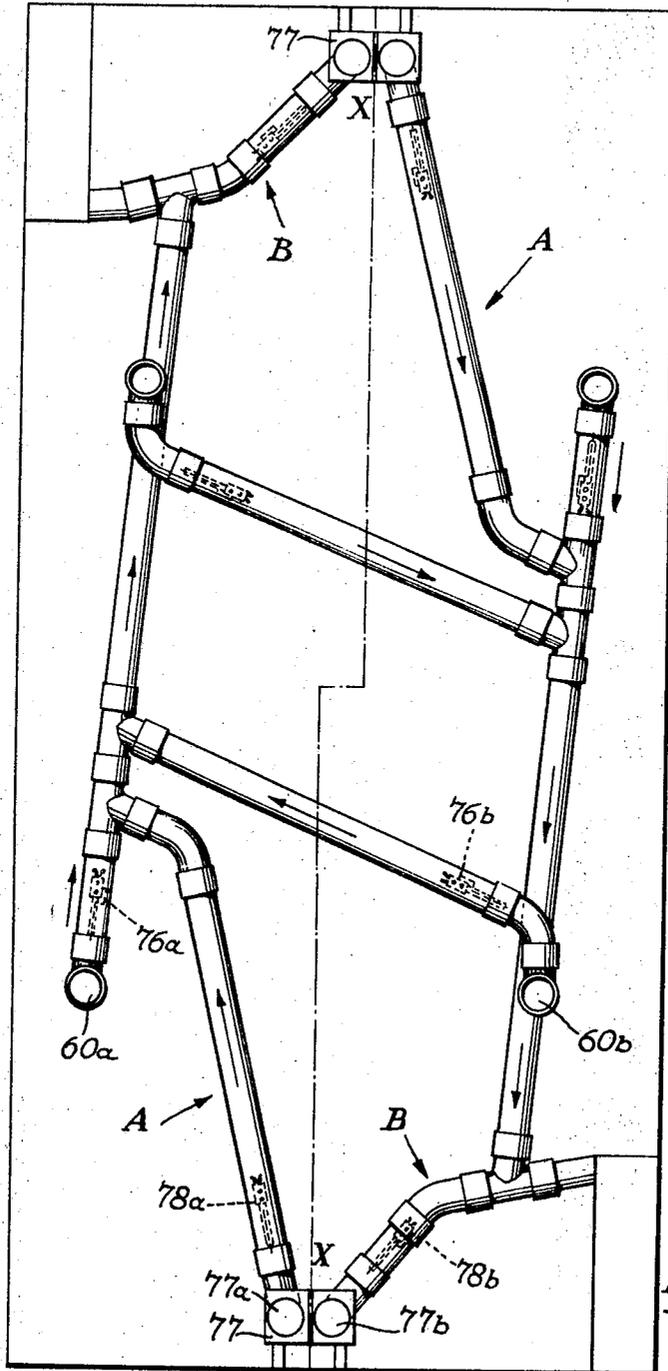
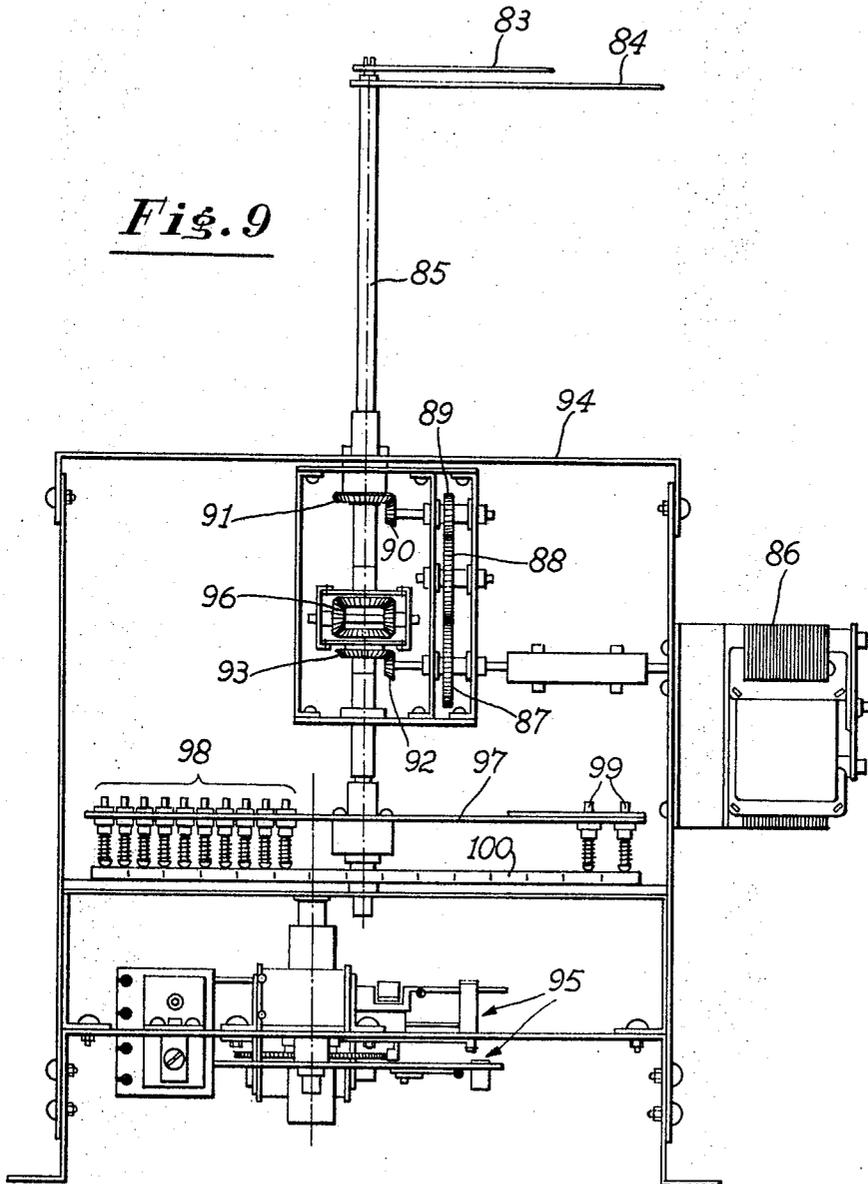


Fig. 9



SURFACE BALL GAME WITH OPPOSITELY INCLINED PLAYING SURFACES

BACKGROUND OF THE INVENTION

In general, the provided electrogame according to the present invention makes use almost exclusively of the ability and rapidity of reflexes of the player and in this way eliminates the opposition between the player and the machine, as is the case with the apparatus known under the name of "flipper," in which the winning is rather based on luck than on the ability of the player. Although said apparatus distinguishes itself from the "flipper" by the fact that the participation of the player during the course of the game is not limited to a passive attendance at events regulated by hazard, but concerns itself with volitive and positive acts which impress on the game the course conferred to it successfully by the player with his will and capacity, the apparatus of the present invention maintains all the most apparent and attractive characteristics of the "flipper." In fact it displays the combination of lights and movements and the combination of shapes and colors which, although they do not constitute its essential parts, in the same way as they do not constitute the essential parts of the "flipper," do constitute, however, the only common external characteristics of the two devices and recall the fundamental attention of the player and, at the same time, give him an appealing satisfaction in the use of the apparatus.

SUMMARY OF THE INVENTION

This invention refers to an electromechanically operated game, suitably assembled to obtain various possibilities of scores and situations. More particularly, the invention relates to a game which, due to its prevailing electrical parts, both from the constructive as well as from the functional point of view, will called hereafter "electrogame," without the intention to give an identifying name to the device of the present specification.

The fundamental characteristic of the apparatus according to the present invention consists in the fact that its use does not constitute an aim but a means with which two players or even four players, can prove their capacity in a competition of reflexes and alertness.

The general object of the present invention is to provide an apparatus for playing through which the players are in mutual competition and, more particularly, consists in the deposition of elements and parts and in the organization of events by which such a competition is made possible. The electromechanical game or electrogame of the present invention, consists of two fields inclined in opposite directions, each of which is associated with one player and on which a small ball is moved round by gravity and by mechanical impacts conferred to said ball by the player with suitable means which will be described hereunder. The displacements effected by the small ball on said surface are directed towards the purpose of operating suitable apparatus, marking certain points or scores to the advantage of the player to whom the field is associated on which the ball operates. On the lower portion of each inclined field there is an outlet opening through which the ball will pass after its operating cycle, if the player does not succeed in keeping it in the field. The two inclined fields, situated at the opposite sides of the electrogame are identical and therefore the two players will behave in the same manner with respect to this part of the game.

What characterizes fundamentally the electrogame of the present invention is that in each field are provided two holes and besides between one field and the other are provided two communication doors which in general have the purpose: to enable one player to capture with a positive action the ball with which the opponent is playing in order to incorporate it into the number of balls at his disposal with which to play.

This operation of capturing is arranged in a way that this does not occur automatically; and more precisely, once the ball finds itself in certain positions, determined by chance or by an error of the opponent, a player can, with a positive and

able action, capture this ball. As can be seen in the following, the player who, once certain conditions have arisen, wishes to capture the ball must show his ability because the operation is not automatic but controlled, and the operation of the capturing device or finally the opening of the hole or the door must take place within precise limits of time in order to be effective.

As will be described in the following, the player, who, with the balls received to play with and those he has been able to capture from his opponent, will have the higher score and the greater number of points is the winner of the game.

A characteristic of the electrogame of the present invention consists in the fact that the score reached, instant by instant by the two players is not represented numerically but by the relative positions of two toy cars one with respect to the other, positions which are determined by a differential adder. This characteristic is of remarkable advantage, as it makes it possible to convert a simple enumeration of points or an annoying and arid counting into a relative movement of two vehicles in a simulated competition in which the winning vehicle indicates also the winning player of the game.

The alignment of the two toy cars is effected automatically at the beginning of the game by the insertion of one or two tokens, or coins as will be explained in the following. As already mentioned the points marked by the ball during the game are not counted and expressed in a numerical manner and, therefore, the players do not know the total number of the points marked in their favour, and this is within the provisions of the electrogame because, since there is a game to play in which the players are opposed to each other, there is the necessity to know only the relative situations of the scores of the two players. This is the function of the two toy cars. However, the progress of the game is not only expressed as relative positions of the two toy cars, but also in a certain sense quantitatively, by the lighting up of two series of lights, one for each player, which are switched on in succession after a certain number of points and, in practice, every certain arc of a circle covered by the toy cars, namely 72° , i.e. one-fifth of a circle.

A general characteristic of the electrogame consists finally in the fact that it is presented in a pleasant shape and with such material that it is suitable to be installed not only in bars or recreation clubs, but also in lounges and studies and can be harmonized with the style of furniture of any environment, both frivolous and austere.

Further characteristics and objects of the present invention can be seen from the following detailed specification of one embodiment of the electrogame, in connection with the attached drawings which, however, have to be considered only as an example for the purpose of illustration and no restriction can therefore be applied to the many ways and modifications to which the embodied electrogame can be subjected.

BRIEF DESCRIPTION OF THE DRAWINGS

FIG. 1 shows a top plan view of the two opposed inclined surfaces which form the field of the game, with all the possible scoring indication and regulation arrangements symmetrically situated on said surfaces;

FIG. 2 shows a section taken along the longitudinal broken line X-X of FIG. 1;

FIG. 3 shows a sectional view taken along the broken line Y-Y of FIG. 1;

FIG. 4 shows a block diagram of the electrical circuit for the various operating functions, marking and lighting of the electrogame of the invention;

FIG. 5 shows a side elevation view of the assembly of the framework of the electrogame, with certain parts omitted;

FIG. 6 shows a plan view of the assembly of the framework of the electrogame, with certain parts omitted;

FIG. 7 shows a front view of the assembly of the framework of the electrogame;

FIG. 8 shows a network of tubular conduits incorporated in the electrogame in order to let the ball pass at various points from one surface to the other, and

FIG. 9 shows an elevation view of the differential adder device.

DETAILED DESCRIPTION OF THE INVENTION

With reference to the figures and particularly to FIG. 1, 2 and 3, of the attached drawings it can be seen that the playing surface is divided into two opposed symmetrical parts α and β , inclined in opposite directions with respect to the central transversal line Z-Z indicated in FIG. 1 in dot-and-dash line so that the ball tends to return to the edge where the player is. The two opposed parts are specular images of one another; therefore, all elements which are present on one part can be found also on the other even though this is not expressly indicated.

On each surface there are contacts for the marking of points when the ball passes over them and precisely two groups of contacts marking the points, a first group comprising five contacts indicated with the numbers 51a, 51b, 51c, 51d, 51e, of which each supplies a point or score and, a second group, comprising four contacts indicated with the numbers 52a, 52b, 52c, 52d, of which each supplies five points. There is also provided one target 53 to which a point-marking contact is associated which, when the target is hit by the ball, supplies five points. The contacts which have been listed do not constitute a unique means for the marking of points; in fact also the contacts placed in 55 can give points. It is evident that the number and the layout of contacts which permit marking of points are not a distinguishing characteristic of the present invention and there can be provided different layouts and different numbers of such contacts.

In order to extend the time of travel of the ball on the field, so that it has the possibility to mark a greater number of points, there are provided spring elements 56 and mushroom-shaped members 57 and the player has the possibility to positively push back the ball when it reaches within the radius of action of impacting devices consisting of bumper elements 58, controlled by pushbutton 59 which can be seen from FIGS. 5, 6 and 7.

Normally closed holes 60a and 60b which constitute escape ports for the ball are provided on each surface, and said holes are provided with closures which normally are in a position to close the holes, but which can be opened by control to capture the ball in order to make it pass from one player to the other, by operating the same pushbuttons 59 which serve to operate the bumper elements 58. This is possible because the players play alternately and therefore while on one side of the field the pushbuttons 59 are used to operate the bumper elements 58, the pushbuttons which operate the bumper elements each side of the field also are used to open the holes 60a on the other side of the field and 60b and, as will be seen, the doors 67a and 67b. The opening of the holes 60a, 60b does not occur by simply operating the pushbuttons 59 without time limits, but will occur only when a pushbutton 59 corresponding to a hole 60a or 60b is operated while the ball is passing over a contact 61 located adjacent to the hole on the high side thereof. This will prove the readiness of the reflexes of the player. As can be seen in fact the holes 60a, 60b are situated within a channel through which the ball can pass. Before the holes are located the synchronization contacts 61 for the opening of the holes which, while they are closed by the passing of the ball, establish a precisely limited time within which the functioning of the pushbuttons 59 has to be effected for the opening of the holes 60a, 60b. The opening of the holes 60a, 60b is effected by means of a relay, however, the relay does not trip if there is not applied at the same time an impulse generated by the closing of the contacts 61 by the passage of the ball, and an impulse generated by the operation of the pushbuttons 59. The pushbuttons 59 do not give a succession of impulses or a prolonged impulse if they are pressed for a certain period, but only an impulse at the moment of pressure. It is possible, however to press these pushbuttons 59 several times in order to generate a series of impulses. In order to limit the number of

impulses to be used and to stimulate to a greater extent the promptness of the player, the total number of impulses available has been set to be nine, and the availability of impulses is shown on the surface of the game by the lighting up of nine lamps 62a, 62b, 62c, 62d, 62e, 62f, 62g, 62h, 62i, which are turned off as the available impulses are used.

Not even this number of nine impulses available to capture the ball from the opponent constitutes a distinct characteristic of the electrogame of the present invention because the number of such impulses can vary to more or less according to desire, maintaining at the same time their purpose which is to stimulate, as stated above, the promptness of the reflexes of the player to apply the impulse in the proper moment to set up a coincidence between the impulses which will energize the relay for opening the hole.

In order that the ball may not be found too easily in a position to be captured, especially in the first moments in which it is launched in the field, in front of the entry of the channel in which is provided the hole 60a, there is provided another small channel at the center of which there is a contact 63 which, when closed by the passage of the ball, disables the mechanism for opening the closures of the holes 60a and 60b, in such a way that the ball, although passing over the contact 61 and the hole 60a or 60b, cannot be captured and therefore remains normally in the game. Under these circumstances, the ball, after having passed over the contact 61 and the closed hole 60a or 60b, passes over the contact 64 which reenables the mechanism for opening the closure of the hole 60a or 60b, permitting its possible capturing at its successive passage, under the condition, however, that the ball does not pass again through the channel containing the contact 63.

In order to make the game more attractive and to make more visible the possibility or the impossibility for the ball to pass through the hole 60a or 60b, there are provided two lamps 65 and 66, the first of red color and the second of green color. The lamp 66 of green color is lit when the ball passes over the contact 63 and indicates, like the traffic lights which regulate the automobile traffic, that the ball can freely pass through the channel. The red colored light 65 is lit when the ball passes over the contact 64 which reenables the mechanism for opening the closures of the holes 60a and 60b and indicates that, passing through the channel, the ball is liable to be captured.

Besides the opening of the holes 60a and 60b, the ball can be captured by opening the doors 67a and 67b, so as to pass directly from one field to the other. For the opening of the doors 67a, 67b no coincidence or synchronization is needed, since they are opened with the pushbuttons 59 and are maintained open by timing apparatus for a predetermined period of time after the impulse generated by operation of a pushbutton 59 which causes the opening of the doors, after which the doors close automatically. It has to be noted that also in each door opening there is an oscillating gate, the vibrations of which are dampened by the effect of gravity, which, when passed by a captured ball, reverses the sense of counting of the differential adder. It is evident, in fact that the ball passes these doors only in the case that it is captured and, therefore, the score is to be computed in favor of the other player.

Before examining the operation and the internal structure of the electrogame, it may be useful to point out the features of the other elements which appear in FIG. 1. Three white lights 68, indicate the number of balls the player has at his disposal. As can be seen in the following, the lamps are lit as the balls are played, however every lit lamp indicates a ball played out of those available at the beginning and if the player uses a ball captured from the opponent, no lamp is lit, once said ball has terminated its game cycle.

The lamp 69 indicates the presence of a ball in the ball tower.

In order that the player may not modify the path of the ball by shaking the apparatus or even tilting it, a special "antishock" contact is provided which switches off the apparatus, interrupting the operation of the whole device. In this case a lamp 70 lights up, which is situated near lamp 69.

As has already been stated and as will be explained in more detail in the following, the electrogame of the present invention permits a quantitative indication of the advantage obtained by the player by the switching on of a series of lights, and precisely five lamps, for each of the two parts. First of all, as soon as one of the two players gains an advantage, one lamp of advantage 71 is lit and as his advantage increases and precisely at each fifth of revolution of his toy car of the differential adder, one of the five lamps 72 is lit. In this way the switching on of all five lights of a player indicates that his toy car has obtained a full revolution of advantage, i.e. it has lapped the other toy car and it is not possible to gain a greater advantage. In practice it has been noted that this event is occurring rather seldom. In the case of lapping, the acquired advantage is 250 points.

With reference to FIGS. 5, 6 and 7 it can be seen that the ball is introduced into the game by a port 73 for the launching of the ball (FIG. 1) by means of a small piston 75 for lifting the ball and a piston 74 for launching the ball. While the ball runs along the launching channel, it operates a contact 76 of reversal, which reverses the function of the pushbuttons which open the holes or operate the bumper elements 58, so that the two adjacent pushbuttons will operate the bumper elements 58 of the adjacent field and the two remote pushbuttons will function to open the closures of the escape ports of the adjacent field, and besides the operation of the contact 76 by contact with the ball reverses the sense of indication of the differential adder.

Having thus examined the events which occur when the ball is in play, it will now be in order to examine what happens when the ball is being captured or terminates its normal play cycle. For this purpose, reference is made in particular to FIG. 8 which illustrates the internal network of conduits for the transfer of the ball from one to the other field of the game. Also this network of conduits is obviously made of two symmetrical parts and what is stated for one is, therefore, valid for both parts.

It should be noted first of all that from the holes 60a, 60b the ball is directed towards the starting point of the opposed field, from where the player who has captured the ball can reinsert it into the game, by operating the pistons 75 and 74. The arrows that can be seen in the conduits indicate the direction of the passage of the ball or, in practice, the slope of the conduits, since the transfer of the balls from one part to the other occurs because of the effect of gravity. In the conduits corresponding to the holes 60a, 60b, there are contact couples 76a, 76b which are operated of course by the passage of the balls and have the function to control the closing of the holes.

It should also be noted that the top-open chamber 77 is provided, at its bottom, with two holes 77a, 77b and a distribution flap (not shown) which permits the ball to be directed towards the branch A or B of the conduit network. It is evident that, when the ball is in the game on the field, the distribution flap of the chamber 77 of this field is situated in such a way that the ball is being directed into branch A so that, at the end of its game cycle, it is put at the disposal of the opponent, as can be seen following the path of the arrows. When the distribution flap of a field is situated for directing the ball into the branch A, the distribution flap of chamber 77 of the opponent's field is situated for directing the ball into the branch B. It can be understood in fact that if a player succeeds in capturing the ball from his opponent, he has to have still the availability of the ball and therefore, it has to be directed into branch B which brings it to the starting point. It should be stated that the contacts 76a and 76b have the function to inhibit the operation of the antishock contact during the interval of time in which the ball runs along the internal channels, in order to avoid that, on the contrary, the ball remains blocked in the interior, which would necessitate the opening of the apparatus for its recovery.

In the conduits A and B there are provided contact couples 78a, 78b which are obviously operated by the passage of the ball and have the function to control the counter of the balls which regulates the switching on of the lamps 68 (FIG. 1).

The entire network of transfer conduits is situated under the two game fields α and β but does not extend much in height, a slight slope being sufficient to permit the ball to run with ease from one end to the other of the electrogame. This permits the building of the electrogame in question almost as a table, as shown in FIGS. 5 and 7, which rests on legs 79. The upper part of the surfaces of the game is covered with a glass sheet 80, in order to protect the underlying mechanisms from dust and tampering and besides there are provided on the side a bell 82 and on the front part a box 81 for the tokens.

With regard to the box 81 for the tokens, it has to be emphasized that it is possible to start the apparatus, i.e. to supply power to all circuits, by the insertion of one or two tokens, according to choice of the manager of the apparatus, who, by operating a suitable changeover switch, may choose one or the other way of starting, to meet particular requirements of a commercial kind. As will be explained in the description of the electric circuit, the insertion of a single token or two tokens, according to the position of the selector switch, resets the indicators of the differential adder, i.e. carries out the alignment of the two toy cars.

Now reference should be made to FIG. 9 which shows a side elevation view of the differential adder. It consists of two indicators 83 and 84 mounted on two coaxial spindles of which, of course, only the external one 85 is visible. The two indicators are rotated by a motor in the same direction, which drives the outer spindle 85 through the gear train 87, 88, 89 and the two crown gears 90 and 91 with axes at 90°. The motor drives the inner spindle by two crown gears 92 and 93 identical to the crown gears 90 and 91 respectively. A consideration of essential importance is that the two indicators 83 and 84 are keyed on said coaxial spindles, as is evident, but the indicator 83 has a shorter length than indicator 84, so that although their peripheral speeds differ, their angular speeds must result the same. For this purpose gear 88 is identical to gear 87 so that the indicators rotate in the same direction, while the gear ratio between the elements 88 and 89 is 2:1. In this way the two indicators 83 and 84 do not change their relative positions during the course of rotating motion. The frame 94 on which the motor 86, the shafts and all the annexed devices are mounted is fixedly secured to the framework of the electrogame.

It will now be explained how the variation of the score of the players will be carried out. With number 95 is designated in general the arrangement by which the various hits of the ball obtained on the surface of the game are converted into rotation increments. The arrangement 95 is based on already known concepts, as a step motor or a ratchet gear, however what is important to point out is that between the inner spindle and the outer spindle 85, a differential gear 96 is placed, and therefore a variation of rotation of one of the spindles is converted into a variation in the opposite direction of the other spindle. It now appears evident that if the increments of rotation, determined by the hits are applied to a spindle, such increments will be converted into a variation of the relative positions of the two indicators. Therefore, if at the ends of the two indicators the two toy cars are fixed and it is assumed that no hits are obtained, the two toy cars give the impression to carry out a race and to proceed side by side or anyhow in relatively constant position, however, as soon as hits are effected, they are converted into angular increments of one of the two toy cars, which will be converted in turn into a variation of the relative positions giving the impression that one of the toy cars is overtaking the other. Obviously the opposite will occur when the sense of counting will be inverted.

On the same axle of the coaxial spindles is attached a disc plate 97 on which ten contact elements are arranged, indicated as a group with 98, and two contact elements indicated with 99. All these contact elements 98 and 99 may effect a sliding contact with conveniently shaped strips of a printed circuit, placed on the plate 100. The contacts 98 are effective for the switching on of the lamps 72 (see FIG. 1) which indicate the amount of the advantage reached by a player with respect to the other, while the contacts 99 serve for the switching on of two lamps 71 (see FIG. 1) which light

up as soon as a player has an advantage. In this connection it should be recalled that the lamps 72, indicating the amount of the advantage, light up only one after the other every fifth of a revolution of advantage, i.e. every 50 points of advantage.

At the end of a game the relative positions of the two toy cars or, generally, the two indicators, indicate the winner of the game; the alignment of the two indicators is effected, as already mentioned, automatically following the insertion of a token, which starts a cam motor which is the same as those normally used but with a third cam added, furnished with a greater number of teeth, which generates reset impulses with higher frequency. In this way a very reduced resetting time is obtained, which results in the reduction of waiting times and as a matter of fact in a more convenient management of the apparatus.

In order to further the understanding of the operation of the electrogame according to the invention, reference has to be made to FIG. 4 in which is shown a block diagram of the entire circuit of the apparatus. With block 1 is indicated the supply transformer which supplies a group of fixed lamps included in block 2 and supplies circuit 3 of the token box, which by means of a device 4 is capable of making the token box work with one or two tokens, according to a regulation effected with the switch 5, and puts into operation the circuit 6 of the motor for alignment of the indicators of the differential adder. After having obtained the alignment of the indicators, the adder by means of an energizing device 7, supplies power to the various circuits for operating the apparatus.

With block 8 are indicated the contacts which give one point, placed on the surface of the game, which control the advance of the indicators of the adder, the circuit of which is contained in block 10. The advancement is effected step by step for one indicator or for the other according to the position of the reversing device contained in block 9. The actuation of the reversing device of block 9 is effected by the passage of the ball over contact 76 (see FIG. 1) or through door 67a and 67b, as has already been mentioned. The contacts which give 5 points, represented by block 11, control by means of a cam motor, indicated by block 12, the advancement of the adder 10 in one or the other direction in the same way as the contacts which give one point, however for 5 points instead of one point. The indicators of the adder moving in one or the other direction, cause the lighting up of the advantage lamps, indicated in block 13, relative to the field of the player who has an advantage. The antishock contacts provided in block 15, act on the deenergizing device of the apparatus, indicated in block 17, when the electrogame is subject to excessive shocks. It should be noted that there is provided a disabling device, indicated in block 16, which prevents the actuation of the contacts of block 15 when the ball is not on the fields of the game and that, in case the apparatus is turned off because of excessive shocks, the relay of the antishock contact provides power to obtain the automatic return of the ball towards the side of the token box. The disabling device of block 16 is controlled by block 22 which relates to the contacts operated by the fall of the ball into the chambers 77 or the holes. Block 18 which contains the contacts for the progress of the ball counter, placed under the conduits and operated by the passage of the ball, causes the advancing of the ball counter provided in block 19 and the turning on of the lamps which indicate the number of already played balls (block 20), except for the ones which have been captured. It causes also the reversal of the distributing flaps of the chambers (block 21) and, when the last ball is played, it acts on turning off device of the apparatus contained in block 17.

Block 23 relates to the pushbuttons placed on the sides of the casing, which pushbuttons by means of a reversing device provided in block 24, controlled simultaneously with the one of block 9, operate the bumper elements designated symbolically by block 25 or the counter 26 of impulses and, by means of the coincidence block 27, permit the opening of the capturing holes for the balls, the arrangement of which is contained in block 29, when the right pushbutton is pressed in coin-

cidence with the passing of the ball over the contacts of block 27. Block 28 indicates the device which prevents the opening of the hole when the ball passes over contact 63 (FIG. 1). The first passage over the release contacts, 64 restores the possibility of the opening of the holes. Block 28 and block 27 determine also the turning on of the green and of the red lights 65 and 66, respectively, in FIG. 1, in order to indicate the possibility of impossibility for the ball to pass over the hole without being captured.

The left pushbutton, which also acts through the impulse counter of block 26, operates the circuit 30 for opening the doors which remain open for a predetermined time and then close automatically.

The impulse counter of block 26 has the function, as already mentioned, to limit the number of attempts which can be made to open the holes or the doors and controls the circuit 31 for the switching off of lamps 62 of the surface of the game.

Having thus described what is believed to be one of the preferred embodiments of the present invention, it will become evident to those skilled in the art that variations and modifications can be applied regarding the particulars of constructions and the details of operation without departing from the scope and the spirit of this invention.

Thus, by way of example only, it should be understood that the number of contacts marking the score can be varied, or the number of available impulses to open the doors and the holes, or also their arrangement, and so on without these variations changing the system of the game as is defined in the attached claims.

What I claim is:

1. An electromechanical game with two fields sloping in opposite directions, targets arranged in each field, at least one impacting device operable by a player for propelling a ball toward the targets in each field, and an outlet for the ball at the lower end of each field, wherein the improvement comprises at least one escape port for each field, having a closure which normally is in a position to close the escape port, and mechanism operable by an opposing player located at one end of one field for opening the closure of the escape port in the other field in order to capture the ball, each field being separately enclosed to prevent the ball from escaping from the field except through the outlet and the escape port.

2. An electromechanical game according to claim 1 wherein each field is provided with a manually controlled mechanism which has two alternative modes of operation, and which in one mode acts to operate an impacting device for propelling a ball toward the targets in that field, and in the other mode operates to open the closure of an escape port to allow a ball to escape from the other field.

3. An electromechanical game according to claim 1 wherein the escape port for each field is in the form of a hole having a closure which normally is in a position to close the hole, and which when opened allows the ball to fall into the hole.

4. An electromechanical game according to claim 3 wherein a contact is arranged in each field adjacent to the escape port hole, on the high side thereof, and the closure of such escape port hole is opened when the mechanism operable by an opposing player is operated in synchronism with the passage of the ball over such contact.

5. An electromechanical game according to claim 3 wherein a contact is arranged in each field, spaced from the escape porthole on the high side thereof, which upon passage of the ball over the contact operates a device which disables the mechanism for opening the closure of such escape port hole, and a further contact is arranged in each field adjacent to such escape porthole on the low side thereof, which upon passage of the ball over the contact reenables the mechanism for opening the closure.

6. An electromechanical game according to claim 5 wherein a signal lamp is provided for each field, for illumination when the mechanism for opening the closure of the escape porthole is disabled, and a further signal lamp is provided for each field, for illumination when the mechanism for opening the closure is enabled.

7. An electromechanical game according to claim 3 wherein a network of conduits is provided beneath the surfaces of the fields, for conducting the ball from one field to the other whenever the ball enters an outlet and whenever the ball enters an escape porthole, and the conduits are provided with contacts adjacent to the outlets which are connected to a ball counter, and a contact adjacent to each escape porthole which effects the reclosing of the closure of the adjacent escape porthole.

8. An electromechanical game according to claim 1 wherein the escape port for each field is in the form of a door between the fields which is normally closed, and which when opened allows the ball to escape from one field into the other.

9. An electromechanical game according to claim 8 wherein timing apparatus is provided for maintaining the door between the fields open for a predetermined time after the mechanism operable by an opposing player is operated to open the door.

10. An electromechanical game according to claim 1 wherein a differential adder is provided, which controls two indicators mounted on two coaxially rotatable spindles for indicating the score reached instant by instant by the two players.

11. An electromechanical game according to claim 10 wherein a motor is provided, having gear transmissions which

drive the two indicators at identical angular speeds in the absence of a score.

12. An electromechanical game according to claim 10, wherein a differential mechanism connected to one of the spindles is provided for converting the score into increments of rotation of one of the spindles relative to the other.

13. An electromechanical game according to claim 12 wherein apparatus is provided for driving the two indicators continuously at identical angular speeds, with their relative positions adjusted by the increments of relative rotation produced by the differential mechanism.

14. An electromechanical game according to claim 10 wherein a lamp is provided for each field, for illumination as soon as a leading score has been attained in that field, and a plurality of additional lamps are provided for each field for illumination in succession to indicate successive increments of the score.

15. An electromechanical game according to claim 14 wherein contacts are mounted on the two coaxially rotatable spindles for controlling the illumination of the lamps in accordance with the relative positions of the indicators mounted on the spindles.

25

30

35

40

45

50

55

60

65

70

75