

July 6, 1937.

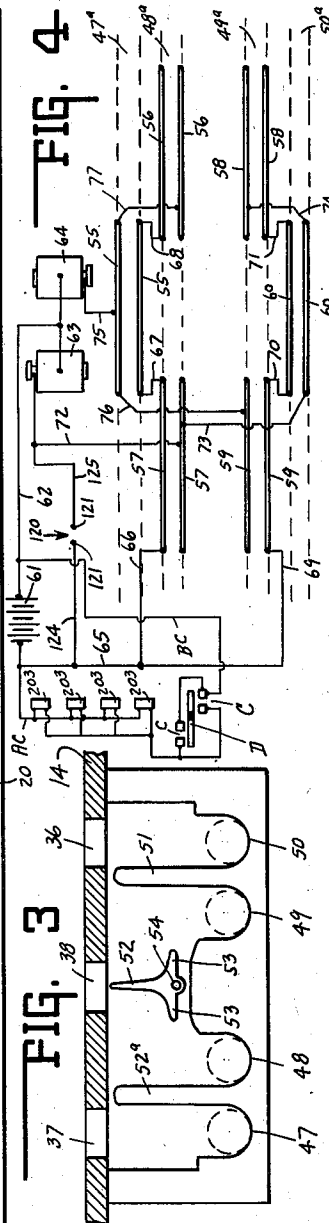
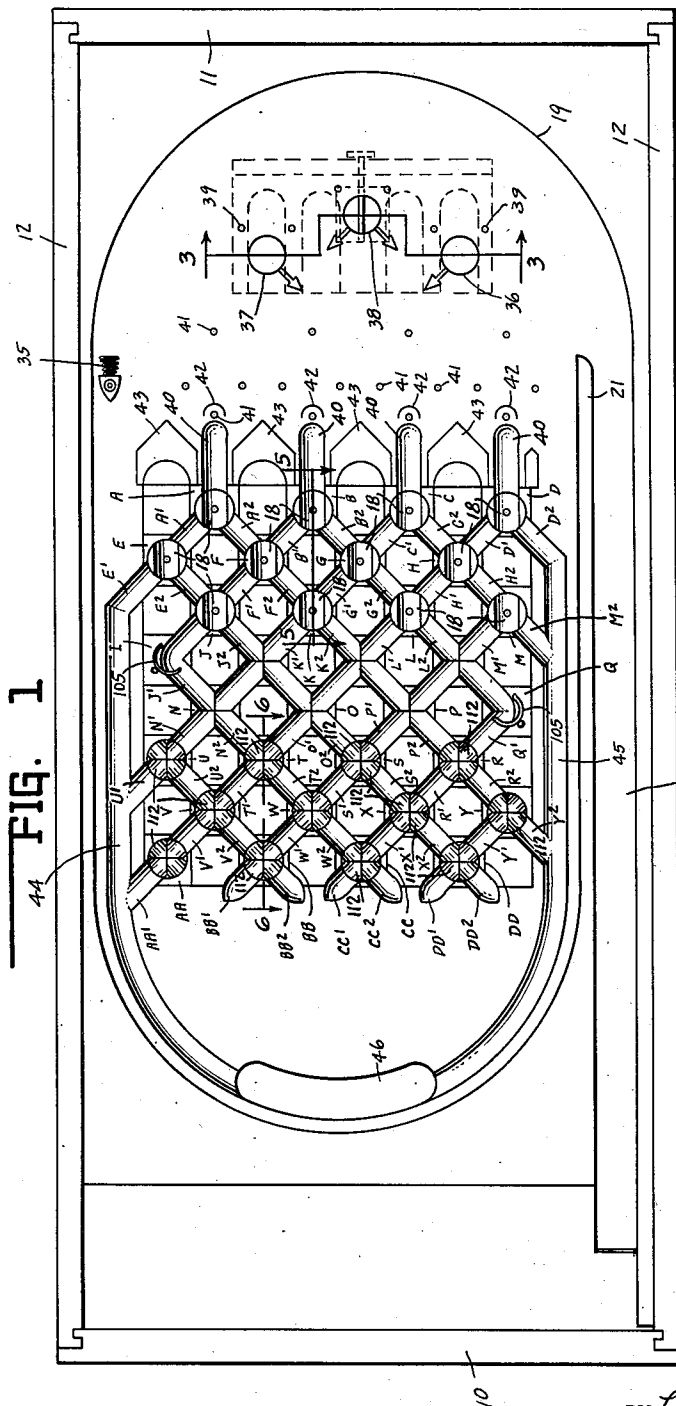
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2,086,327

CHECKERBOARD TYPE PIN GAME

Filed June 7, 1935

4 Sheets-Sheet 1



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CHECKERBOARD TYPE PIN GAME

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4 Sheets-Sheet 2

FIG. 2

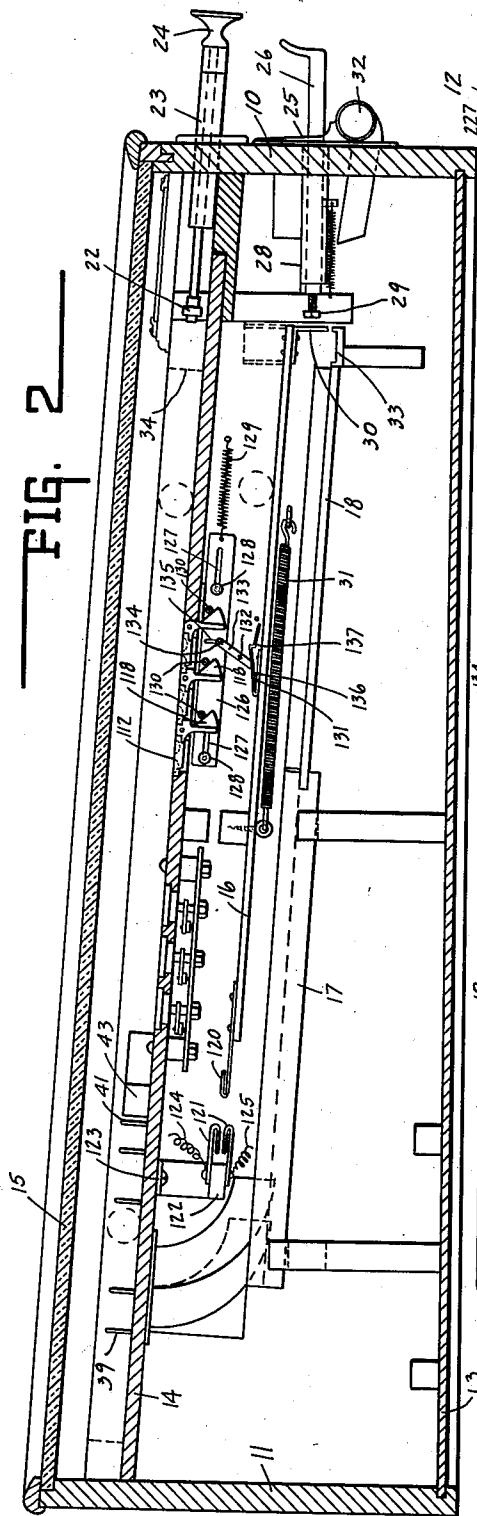


FIG. 10

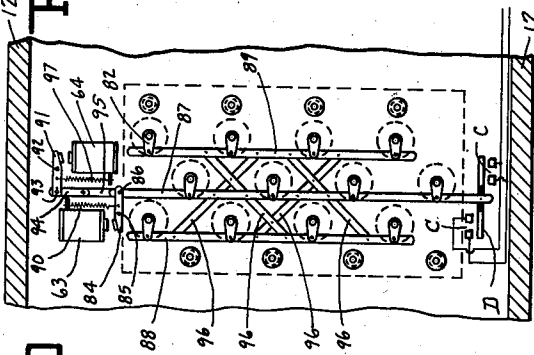
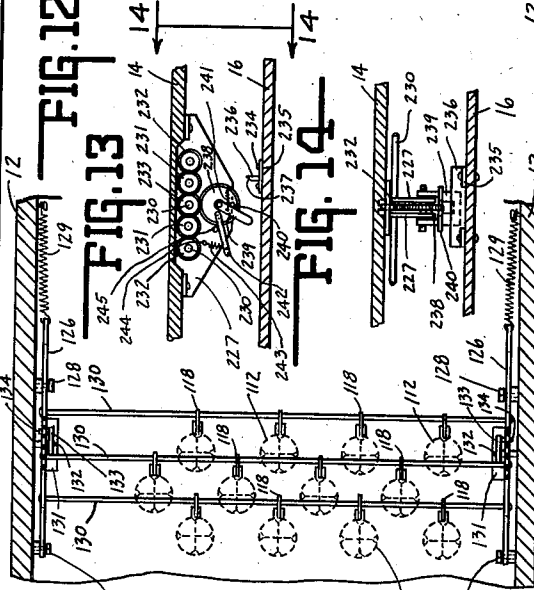


FIG. 11



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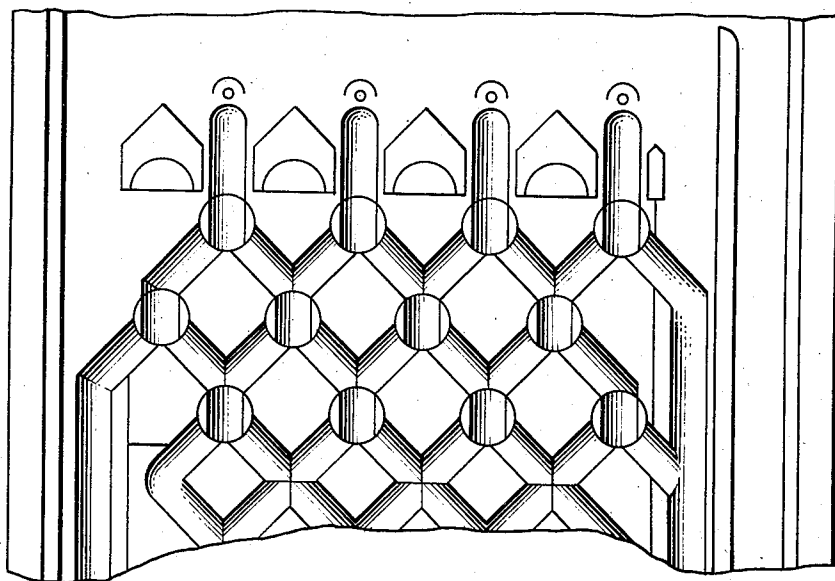
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CHECKERBOARD TYPE PIN GAME

Filed June 7, 1935

4 Sheets-Sheet 4

FIG. 16



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UNITED STATES PATENT OFFICE

2,086,327

CHECKERBOARD TYPE PIN GAME

Jacob P. Hameetman, Chicago, Ill.

Application June 7, 1935, Serial No. 25,484

21 Claims. (Cl. 273—121)

This invention relates to a game apparatus of the type popularly known as a pin game in which a ball is propelled over the surface of an inclined game board having openings or traps through which the ball may fall. A number of pins project from the surface of said board for ball engagement and the ball is thus directed into certain openings or channels, as the case may be.

If the initial force imparted to the ball is sufficient, the ball engages a bumper and rebounds. If insufficient, the ball follows its normal trajectory and enters an opening or passageway, as the case may be.

The object of this invention is to produce a novel and attractive game of this general character but with this addition, that whereas in most pin games the ball passage and subsequent action are all the matter of luck, in this instance, the game combines luck and skill and an element of mental planning determining strategic play and position to "beat" the game. In other words, there is an element of selective control present and available for the player to utilize and which the player must utilize in order to obtain the maximum scoring possible with the game.

This invention briefly is an adaptation of the pin game to a checker board or similar arrangement and for that purpose, the checker board or similar area constitutes the major portion of the ball playing area. Briefly, the operation of the game is as follows:

The ball is discharged with sufficient force in the customary manner and by the customary means into the playing area. If the force is sufficient, the ball engages the bumper and is deflected toward the top and center of the board and then rolls by gravity down the inclined playing surface. In the event the force is insufficient, the ball rolls directly down from the central portion of the playing area toward the bottom of the board.

At the top of the board are positioned three holes protected by certain obstruction pins, the one to the right being one for left action and the one to the left being for right action, and the central one being for dual action, right or left, as the case may be and then left or right, alternating with each ball passing through same.

Associated with these holes are certain track circuits and an action ball so utilized is returned for further playing. Any ball which does not enter the action hole enters the secondary playing area and the object of the game is to advance the balls from station to station along the checker

board or like area in diagonal fashion from the upper end of the board to the bottom end of the board or king or final row. Four uppermost playing stations of the checker board area are so arranged that the ball is trapped at the entrance to the first row or discharges to the waste area and is lost for further play. If trapped for further playing it cannot advance until an action ball has passed into one of the action holes.

Each of the upper three rows of playing stations includes directional tracks for directing the ball to either the right or left as determined by the action ball and it requires three individual action balls or one dual action and one single action ball to free the playing ball so that it can advance to the third from the bottom king row, whence it passes through an opening and this closes the opening so that a subsequent ball can pass over the closed opening. Thus, it requires at least three balls to pass through three successive openings in the lower three rows of the checker board area before the final row opening is closed which represents the crowning of a king.

Certain hazards are included in the game so that if a ball is directed to either the right or the left at an inopportune time, the ball is lost and wasted. Twelve or fifteen balls may be employed. It will thus be observed that both skill and luck are required, to wit, skill in selecting the proper action hole to play for so that one of the playing balls is not lost by being diverted to the wasted area and so that if possible, the maximum amount of advancement of the playing ball can be obtained. For example, if the double action of one play was left and then right and the playing ball is so positioned that another double action right and left would waste a playing ball, the player must remember which way the last action of the dual action occurred and not play for dual action if that would waste a playing ball but try to play for the appropriate single action.

There is also an element of mental skill or planning involved which is called to action upon the completion of each ball played either into playing field or action holes. To successfully beat the game requires a planned procedure, as the game progresses, changing and calling for decisions with each play.

After the play has been completed by the exhaustion of all balls, the number of king rows which are closed represent the number of so-called winning balls. After the play has been completed, the insertion of another coin first re-

leases all balls trapped on the upper playing area of the checker board and they run down to the three lower rows of openings and discharge therethrough or pass beyond the same to the reservoir collector. Thereupon, all of the previously closed three lower row closures are automatically returned to the open position for subsequent closing in the subsequent new play. All balls are then trapped in a magazine and are presented one at a time in any conventional manner to the impulse device which, as before stated, is of conventional character. The coin is required to clear the board and return all balls to the magazine.

The full nature of the invention will be understood from the accompanying drawings and the following description and claims.

In the drawings, Fig. 1 is a top plan view of a device embodying the invention, the ball supplying control, the impact device and the coin receiving mechanism being omitted.

Fig. 2 is an elongated central sectional view through the device.

Fig. 3 is an enlarged sectional view taken on line 3—3 of Fig. 1 and in the direction of the arrows.

Fig. 4 is a diagrammatic wiring diagram of the control track arrangement.

Fig. 5 is an enlarged vertical sectional view and may be considered as taken on line 5—5 of Fig. 1.

Fig. 6 is a similar view and may be considered as taken on line 6—6 of Fig. 1.

Fig. 7 is an enlarged elevational view of one of the constructions shown in Fig. 5 and is taken at right angles to said figure.

Fig. 8 is a top plan view of one of the tiltable closures illustrated in Fig. 6 and in the closed position.

Fig. 9 is an enlarged top plan view of a directional retarder illustrated at the right and left hand sides of the checker board area intermediate the top and bottom thereof in Fig. 1.

Fig. 10 is a bottom plan view of the actuating mechanism associated with the three rows of directional, turn-table members illustrated in Figs. 1, 5 and 7.

Fig. 11 is a bottom plan view of one form of control mechanism for tilting all of the three rows of closure members shown in Figs. 1, 6 and 8.

Fig. 12 is a view similar to Fig. 11 and of a modified form of control mechanism.

Fig. 13 is a view taken at right angles to Fig. 12 and illustrates the mechanism for selective tilting at the proper time of the three king row closures and into open position.

Fig. 14 is a sectional view of the same mechanism taken at right angles to Fig. 13.

Fig. 15 is an elevational view similar to Fig. 7 and of a modified form of the invention.

Fig. 16 is a top plan view of the upper half of a modified form of playing area.

In the drawings 10 indicates the lower end, 11 the top or upper end and 12 the two sides of a container having the bottom closure 13, a playing board 14 inclined relative to the bottom closure 13 and the playing board is protected by the glass 15 or the like, in a conventional manner.

Positioned in spaced relation beneath the playing board is an underboard 16 and beneath the same is a track structure support 17 and 18 to

which reference will be had more fully hereinafter.

Associated with the playing board is the border 19, the upper curved portion of which forms a path for the projected ball to follow. The ball is projected from the channel 20 provided by a partition member 21 through the impact member 22 slidably associated as at 23 with the lower end 10. Member 22 terminates in the finger piece 24 which, when pulled toward the player and then released to a spring—not shown—causes the member 22 to engage the ball and catapult it out of the channel 20 with the desired force. Any form of impact catapult device may be provided, there being many standard forms available.

Also supported by the lower end member 10, is a coin mechanism including a supporting member or bracket 25 which slidably supports a coin receiving member 26. The coin is received by the member 26 and is forced inwardly and the coin thereupon engages a slidable member 28 which herein is shown provided with an adjustable contact member 29 for engaging a depending portion 30 carried by the underboard 16. The underboard by means of the spring 31 is normally constrained toward the lowered position but is forcibly moved therefrom by said engagement of members 29 and 30 when the member 26 with a coin therein is forced inwardly. After the member 26 has been forced inwardly and the underboard has been moved upwardly to the full extent of the movement possible and then is returned by the spring 31, the coin passes downwardly and outwardly until it is exposed as at 32 and subsequent coins are successively exposed. Thereafter the coin passes into the coin box within the container.

The numeral 33 indicates a channel or magazine, as it were, which receives all of the balls at the proper time when the machine is reset for play by the insertion of a nickel or suitable coin or for all of the action balls which are to be returned for replay. A suitable transfer device, not shown, is provided which will transfer a ball from the magazine 33 to the channel 20 immediately ahead of the plunger 22 and these are successively supplied to the channel through the opening 34.

The ball which has been projected by the plunger 22 from the channel 20, if having sufficient speed, engages the bumper 35 and is thereupon forced upwardly and centrally into the upper playing area toward the action holes. The right hand hole in the playing board is designated by the numeral 36 and will secure left hand action. The left hand hole 37 is arranged to provide right hand action. The intermediate and uppermost hole 38 is arranged to secure dual action, right and left or left and right, respectively, alternating with each ball played through said hole, as the case may be, through the instrumentality in each instance of the action ball subsequently closing an appropriate circuit for operating a control device. These holes are suitably protected by guard pins 39.

The main body portion of the playing board is herein shown laid out as a checker board with the usual number of stations. The object of the game is to advance playing balls diagonally to the king row without the unnecessary loss of a playing ball and through the instrumentality of an action ball.

In alignment with each of the entrance stations

of the checker board is a channel 40 protected by suitable guard pins 41 and by guard members 42. For securing directional travel of the ball, a guide block 43 prevents the ball from advancing into any other but the entrance block or station. If the ball does not enter one of the channels 40 but passes downwardly along the side of the playing board below the bumper 35 or alongside the partition 21, the ball engages in the channel 44 or 45, respectively, which terminates in a reservoir opening 46 that permits the balls to pass to either collect in the reservoir and be retained therein until the end of the play or permits them to discharge to a trapping device so they are held out of subsequent play until the machine is reset by the insertion of another coin. This portion of the mechanism is conventional and well understood, and no further description need be supplied therefor.

All balls are alike as to size and the designation "action", "playing", "free" and "waste" refers to the function of the ball.

Herein the entrance playing stations have been designated by the letters "A", "B", "C" and "D" and each is connected by channels A1, A2, B1, B2, C1, C2, and D1 to the next playing squares E, F, G and H. Channel D2 is an upper continuation of channel 45. Channel E1 is a continuation of channel 44. Channels E2, F1, F2, G1, G2, H1 and H2 all discharge to the respective playing stations J, K, L and M. Leading to the left of station J is a right angle passage or groove J1. Leading to the right is a similar one J2 and these two join at the station N. Similarly leading from the station K are angular channels K1 and K2 joining at the station O. Also leading from the station L are channels L1 and L2 of the same character joining at the station P. Channel M1 leads to the station Q and is continued to the station R. Associated with the station I and with the station Q are directional retarders to which reference will be had later and which are illustrated in Fig. 9.

Passage M2 is a branch of the passage 45. The next to the last row has playing stations V, W, X and Y. The king row stations are designated by letters AA, BB, CC and DD, while the third row from the bottom has its playing stations designated by letters R, S, T and U, reading from right to left. Passage U1 is a branch of passage 44. Passage AA1 is a branch of the same. Likewise, passage Y2 is a branch of passage 45. Passage N1 leads from station N to station U. Passages N2 and O1 lead to station T. Passages O2 and P1 lead to station S. Passages P2 and Q1 lead to station R. Passage U2 leads from station U to station V. Passage T1 also leads thereto. Passages T2 and S1 lead to station W. Passages S2 and R1 lead to station X, while passage R2 leads only to station Y. Passage V1 leads to station AA in the king row. Passages V2 and W1 lead to station BB in the king row. Passages W2 and X1 lead to station CC in the king row. Passages X2 and Y1 lead to station DD in the king row. Leading from king row station BB are the passages BB1 and BB2. From the station CC are the passages CC1 and CC2. From the square DD are the passages DD1 and DD2. These discharge balls, when the passages are completely closed, which enter the king row and into the lower playing area of the board; whence, they are subsequently discharged either directly to the reservoir 46 or discharge into the passages 44 and/or 45 and thence to the reservoir. These balls are wasted, that is, they cannot be replayed.

Positioned beneath the playing board 14 and

adjacent the holes 36, 37 and 38 is a suitable ball receiving structure having the track portions 47, 48, 49 and 50, 47 and 48 being spaced apart by the partition 52a and tracks 49 and 50 being spaced apart by the partition 51. See Fig. 3.

Positioned in registration with the opening 38 is a tiltable device having an elongated upper portion 52 and two arm portions 53, said device being pivoted as at 54 and being of such a character that it, when engaged by a ball passing through the opening 38, will be tilted right or left, depending upon how the initial ball engages member 52. The ball as it leaves the guiding portion 53, tilts the member on the pivot 54 so that the next ball will pass into the other channel or track, whereupon it, engaging the opposite arm, will tilt the member 52 for opposite ball travel for the subsequent ball. Thus, a pair of balls passed through opening 38 in succession will be diverted either to track 48 and then track 49 or track 49 and then track 48.

Communicating with each of the respective track portions 47, 48, 49 and 50, are the tracks 47a, 48a, 49a and 50a. Positioned in each of these four tracks are suitable electrical contacts. In track 47a are the spaced contacts 55. Positioned in track 48a are the pairs of spaced contacts 56 and 57. Positioned in track 49a are the pairs of spaced contacts 58 and 59. Positioned in track 50a are the spaced contacts 60. These are metallic contacts. They are spaced just far enough apart so as to offer no obstruction to the rolling of the ball in the track and yet the metallic ball completes the circuit across the two contacts.

Reference will now be had to Fig. 4. The numeral 61 indicates a suitable source of electrical energy, such as dry cells and the like, which may be conveniently placed near the upper end and below the playing board and in the container. They are not shown in Fig. 2.

A wire 62 is branched and connects to one solenoid 63 and to another solenoid 64. Another line 65 from the source of energy connects by the branch 66 to one track contact 57, in turn connected by the line 67 to a track contact 55, in turn connected by the line 68 to the track contact 56. Another branch 69 of the line 65 connects to one of the track contacts 59, in turn connected by the line 70 to the track contact 60 and connected in turn by the line 71 to one of the track contacts 58. The aforesaid is "common" to either solenoid.

A line 72 is connected to one terminal of the solenoid 63 and connects to the other track contact 57, in turn connected by line 73 to the other track contact 60, in turn connected by line 74 to the other track contact 58. This completes the circuit for solenoid 63. A line 75 from the other terminal of the solenoid 64 connects to the other track contact 55, in turn connected by line 76 to the other track contact 59. The other track contact 55 is connected by the line 77 to the other track contact 56.

Any action ball which falls through opening 37 falls into track 47, rolls down trackway 47a and closes the circuit through the contacts 55 to energize the solenoid 64. A ball which falls through opening 38 and if it is deflected by the tiltable member 52 to track 48, rolls down track 48a and first closes the circuit across contact 56 which energizes solenoid 64 and then closes the circuit across contacts 57 which energizes solenoid 63. If the ball is deflected by member 52 into track 49, it rolls down track 49a, first closing

the circuit across contacts 58 to energize solenoid 63 and then closes the circuit across contacts 59 to energize solenoid 64. In other words, the two solenoids in each instance are energized in succession but depending upon which way the ball is deflected, the sequence of energization is determined as aforesaid. If the ball passes through opening 36 it rolls down track 50a, closes the circuit across contacts 60 to energize solenoid 63.

All the balls, it will be understood, which fall into the trackways are called "action balls" and they run the complete length of the trackways, and are discharged to the playing magazine for replay purposes so that the action ball is not lost to play, whereas waste balls are lost to play. Playing balls, if advanced to the three lower king rows by closing the openings in the playing stations U to Y and AA to DD, inclusive, preferably are lost to play after they have served their function. Any playing ball, of course, which discharges from playing station U, AA and Y through passages U1, AA1 and Y2, are lost to play. Also, any ball which passes over a closed opening in squares BB, CC and DD is lost to play.

Reference will now be had to Figs. 5, 7, 8 and 10 as well as Fig. 2. Each of the playing stations A to H and J to M, inclusive, is provided with a circular opening 78 which is enlarged as at 78a. A supplementary board or base 79 is suitably secured in spaced relation to the playing board 14 as at 80. An oscillatable or turn-table member 81 having the ball passage or groove portion 81a is nested in the opening 78—78a and projecting downwardly therefrom is the stem 81b, and rigid therewith is an arm 82.

The lower end 81c of the stem 81b is aligned in an opening 79a in the base 79 and the projecting end 81d of the stem mounts a suitable retainer structure 83. Thus, when the arm 82 is moved to the right or left, the turn-table member 81 with its ball groove 81a is turned 45° to the right or left, as the case may be, or to the right and left or left and right, depending upon whether right action, left action or right and left or left and right action is obtained through the action ball closing the proper circuit, or circuits, of the solenoids.

Reference will now be had to Fig. 10. In this figure, one solenoid 63 is provided with an armature 84 pivoted at 85 and pivotally connected at 86 to a bar 87. Two other bars 88 and 89 are parallel thereto and all of said bars 87, 88 and 89 are connected by means of the arms 82 of the respective turn-table members 81 for securing the desired directional 45° turning or turning. A spring 90 normally constrains the mechanism toward neutral position.

Another armature 91 for solenoid 64 is pivoted as at 92 and is pivotally connected as at 93 to a link 94, in turn pivotally connected by link 95 to bar 87 as at 86. When the solenoid 64 is energized, lever 91 or the armature is drawn toward the solenoid and it moves the rod 87 in the direction of the solenoid; thus, turning all of the arms 82 of the respective turn-table members 81. This is because the three bars 87, 88 and 89 are suitably connected together by the cross-tie bars 96. When the solenoid 63 is energized, the bar 87 is caused to move in a direction opposite that just mentioned, which serves to turn each of the members 81, 45° from the neutral or central position. Also shown in Fig. 10 is the spring 97. The two springs 90 and 97 are balanced so that the mechanism always is returned

to the neutral position after the respective solenoid is deenergized.

Whenever it is desired, a positive ball releasing means is provided and herein the same is illustrated in Figs. 5 and 7. In such figures, the member 81 is shown provided with a wall or recess 98 and a pin 99 is rotatably and slidably mounted therein. The pin 99 carries a projecting arm 100 which is vertically slidable in the slot 101 in the stem extension 81b of the member 81.

A cam 102 of dual character is mounted by means of the plate portion 103 and screws 104 to the base 79. As the arm 82 is rotated in one direction or the other, depending upon which solenoid is energized, the rotation of member 81 and the member 99 therewith and by reason of the projection 100 engaging cam 102 and lying in slot 101, causes member 99 to project into the groove or passage 81a. Said member 99 and the initiation of the directional member of the arm 82 is sufficient to start the trapped playing ball rolling from one playing station to the next playing square or station.

The playing ball which has been held in a playing station in the last of three upper rows, then released by the groove 81a being aligned with the diagonal passage leading from that station, rolls down the aligned passage to the next turning member or to a waste channel or to the lower three rows of playing station having openings. The timing is such that by the time the ball reaches the next station, the turning member 81 will have its pin 99 projected into the path of the ball and serve as a stop, even if the track itself does not serve sufficiently as a stop. It will, of course, be understood that the amount of momentum that the ball acquires in moving from one playing station to the next, which playing stations are provided with turning members, is very slight so that the time sequence is not a factor if the duration of energization is properly determined.

In the event dual action is obtained—see Fig. 4—the playing ball is passed by the first action from, let us say, one of the uppermost playing stations to another playing station in the second row and either to the right or left, unless the playing ball has passed along passage D2. Then, when the second energization occurs by reason of the dual action arrangement, the playing ball continues its travel but if it has traveled to the right the first time, this time it travels to the left.

It may so happen that either by single action or dual action, two playing balls are released from the third row for unobstructed travel toward one side of the board or the other and should that occur, then the ball running down passage-way J1 or Q1 engages a retarding construction in the form of a delayed acting device. It temporarily retards the ball having the angular path so that the ball having the straight path can proceed to the next station and function. In other words, there will be no interference between playing balls.

One form of this device is shown in Fig. 9. It consists of the U-shaped element 105 pivoted as at 106 and the shaft 106 extends through the playing board 14 and on its lower end carries an arm 107 which is normally constrained by means of spring 108 anchored as at 109 to the under-surface of the playing board 14 to normally constrain the U-shaped member 105 into the receiving position. When the playing ball passes down

passage Q1, it engages the U-shaped member and in opposition to the spring tilts the member so that in its final position, as shown by the dotted line, the ball is released from the U-shaped member and proceeds down the track Q1 at substantially right angles to its previous direction of movement. Following release of the ball so temporarily trapped, spring 108 returns the U-shaped member 105 or retarder to its original position for subsequent operation.

It will be apparent up to this point the first requisite is to position a playing ball in one of the passages 40 and then to utilize action balls to advance the playing ball, or balls, from playing station to playing station in successive rows until the ball rolls into passages N1, N2, O1, O2, P1, P2 or Q1. Any playing ball passing into these passages immediately passes through an opening in the third lowermost row of playing stations and by passing through that opening, the ball closes the opening for the subsequent passage of other playing balls. As stated, in the preferred form of the game these closure closing balls are wasted. They may, however, be returned for replay. A separate reservoir in that instance, which discharges to the playing magazine, will be necessary instead of discharging to the waste ball magazine.

Reference will now be had to Figs. 6, 8 and 11. Each of the playing stations of the three lowermost rows includes an opening 111 enlarged as at 111a. A circular closure 112 includes two grooves or ball passages which cross each other as at 112a. An ear 113 is pivotally supported by pivot member 114 supported in turn by the spaced ears 115 of the member 116 secured as at 117 to the under surface of the playing board 14. The ear 113 is extended as at 118 to form a counterweight and the upper portion of the ear is laterally enlarged as at 119 to form a ball engaging area. The playing ball, as it rolls into the aforesaid opening, engages the portion 119 and the added weight of the ball is sufficient to tilt the closure 112 on its pivot 114 and as the ball drops through the opening 111, the closure 112 closes the opening in the playing station. It is to be understood the counterbalanced portion 118 is just sufficient to balance the closure, the additional weight of the ball being sufficient to overbalance the same. It is also to be understood that the closures 112 when positioned in normally open position, are approximately 3° beyond the vertical.

A playing ball which has been progressively advanced across the board to the third lowermost row when it drops through the opening, tilts the closure therefor to close the opening and provides a complete passage to either passage U1 or to the appropriate playing station V to Y, inclusive. A second ball so advanced, if it passes over a closed opening, then closes a second opening in the second lowermost row. A third ball, all of these being playing balls, if it is released by an action ball from the third lowest row of the turning member provided playing stations, rolls down and closes the opening in the king row unless it passes down the passage Y2, whereupon it is wasted.

The object of the game, as before stated, is to close all four openings in the lower king row. This can only be done by the player bearing in mind the sequence of action when dual action is obtained or desirable and by the player playing for right or left hand action as the case may be, so as to divert the balls for single action from discharging through any one of the passages E1,

U1, AA1, Y2, M2 and D2 to the waste ball reservoir. Upon exhaustion of all free balls the player has finished the play provided by the coin.

In the aforesaid, action play refers to a ball passing through one of the openings 36, 37 or 38. A playing ball is one which is advanced across the board. A waste ball is one that may have heretofore been a playing ball or a ball which has passed directly to the waste reservoir by means of the passage 44 or 45. A waste ball in a certain form of the invention may also be a playing ball which has been successively advanced through the first three rows and then has been utilized for closing one of the openings in the lower three rows, providing these particular playing and closing balls are not utilized for replay. If they are utilized for replay instead of being removed from the play, then they are free balls. The action balls being returned for replay are termed "free balls". All balls at the start of the play naturally are free balls—that is, available for play.

After the exhaustion of all free balls, certain of the lower three rows of openings will be closed and it is entirely possible that certain balls will be trapped in the upper three rows of playing squares of the checker board. These balls remain on the board until the next game. Upon the insertion of the coin in the coin member aforesaid, the underboard 16—see Fig. 2—is caused to move upwardly or toward the upper end of the compartment. The upper end of said board carries a switch member 120 and the same at the end of the upward movement of the underboard bridges contacts 121, carried by the support 122, in turn supported by the playing board as at 123. This closes a circuit through one of the solenoids to position the turning members in releasing relation. Thereupon all of the playing balls trapped on the upper three stations of the checker board are released and roll down the board. Herein line 124 is connected to line 65 and the line 125 is connected to line 72, the two lines being bridged by the switch member 120 for clearing the upper board.

After all the balls that were trapped in the upper three rows of playing stations on the checker board have passed downwardly, they will have closed certain of the openings in the lower three rows of playing stations. When the member 26 is released, the spring 31 becomes operative to return the under board to its original position and this returning movement is utilized to open all of the openings of the three lower rows playing stations provided with closures.

One form of mechanism therefor includes a pair of plates 126 which are provided with slots 127 in which are mounted headed pins or guides 128 suitably secured to the side of a support member carried by the under board or directly by the sides 12. In the present invention, the latter type of mounting is illustrated in Fig. 11. Each plate 126 is normally constrained by a spring 129 to the retracted position. Three rods 130 extend from plate to plate. They lie to the right—see Fig. 2—of the counterweight portions 118 of the closures. Thus, the closing rods 130 do not interfere with the individual closing of any opening by the respective closure 112.

On the upper surface of the underboard at each side thereof, is secured a yielding or spring cam 131. Pivotally supported on the side 12, as at 132, is a lever 133 which carries at its upper end a pin 134 that rides in a vertical slot 135 in the plate 126. The lower end of the lever is tapered as at 136. As the board moves upward

toward the forward end of the initial clearing action, the spring cam 131 is ineffective upon the lever 133. On the return movement, however, the end 136 of the lever 133 engages the offset portion 137 of the spring cam member 131 which tilts counterclockwise the lever 133 on its pivot 132—see Fig. 2. This moves the plate 126 toward the upper end 11, which moves, since both plates are similarly actuated, the three opening rods 130 in a similar direction and at the end of the movement, which is near to the return of the underboard to the initial position shown in Fig. 2, all of the rods have tilted all of the closures into open position, as shown in Fig. 6. Then the springs 129, when the underboard comes to rest in the position shown in Fig. 2, returns the rods 130 to the position shown in Fig. 2 but leaves all the closures in the open or upward tilted position, as shown in Fig. 6.

In Figs. 12 to 14, inclusive, a modified form of the last mentioned construction is illustrated and in said figures, 12 indicates the sides of the container, 14 the playing board, 16 the under board. In this form of the invention, the closures are of the same character as previously indicated. The three closing rods 230 adjacent each counterbalance, are offset as at 230a. Each of the rods is pivotally supported by a bracket or plate 226 and by spaced plates 227 suitably secured to the underside of the playing board as at 228 and 229, respectively.

Between the two spaced plates 227 are pivotally supported a pair of idler gears 231 which mesh with the end gears 232 carried by the two outside rods 230 and the main gear 233 carried by the intermediate rod 230. The under board has secured to it at 234 the plate 235 with an upward projection 236 which has an inclined face 237. Plate 227 also pivotally supports a segmental gear 238 and coaxial with the gear is an arm 239. A pin 240 is carried by the segmental gear.

A spring 241 normally draws the arm 239 into engagement with the stop 240. On the upward movement or movement to the left in Fig. 2 of the underboard, the projection 236 tilts the arm 239 clockwise and due to the cam face 237 permits the member 236 to pass therebeneath and beyond.

Upon the return movement due to the spring 31, the member 236 engages the arm 239 and tilts the arm counterclockwise until it picks up the segmental gear 238 by engaging the pin 240 thereof, whereupon the arm and the pin rotate counter-clockwise together. This counterclockwise rotation causes the segmental gear to engage in meshing relation with the gear 233 to rotate all of the gears and in this manner the rods 230 are rotated so their offset portions are caused to rotate the counterbalance portions 118 of the closure 112 in a clockwise direction until all the closures are fully tilted into the open position, slightly over center. Approximately at the end of this movement, the lever arm 239 is released from the actuating member 236 and following that release, the rods 230 are returned to the original position so that their offset portions will not interfere with the subsequent individual closing movement of the closures and thus prevent individual closing of the openings. Rigid with gear 238 is an arm 242 which is connected to one end of a returning spring 243 anchored at its opposite end to a plate 227 as at 244. Arm 242 normally engages stop 245 carried by plate 227. In the underboard initial move-

ment no rotation of gear 238 is permitted because of stop 245. Segmental gear 238 is rotated upon reverse underboard movement in opposition to spring 243 and when members 236 and 239 are disengaged near the end of the underboard, return movement of spring 243 returns segmental gear 238 and all rods 230 to non-interfering position. As stated, the form of the invention shown in Figs. 2 and 11 is the preferred form, because it is the simplest form.

In Fig. 15 is illustrated a modified form of ball impeller. Numerals of the one hundred series similar to those found in Fig. 7 refer to similar parts.

In this form, the turntable 181 has the passageway 181a therein and a depending stem 181b with a lower threaded end 181a exposed by underboard 179. The turntable is mounted in opening 178 in playing board 114. Arm 182 is actuated by member 183 for turning member 181 to the right or left from neutral position. The assembly is retained by the nut 183. In this instance, bore 198 extends entirely through member 181 and the lower exposed end of pin 199 is contactable by member 202 when actuated to project the pin into ball engagement for imparting acceleration to the playing ball trapped on and by the turntable. Stem 181b includes slot 201 from which projects member 200 connected by spring 201a to member 182. Solenoid 203 when energized raises member 202 to elevate pin 199. When deenergized tension spring 201a returns pin 199 to nested position. Member 202 returns by gravity.

The circuit wires AC and BC—see Fig. 4—are arranged to be connected to the source of energy 61 by multiple switch DC being closed by movement of member 87—see Fig. 10. Each pin 199 has its own solenoid and all are simultaneously energized. In Fig. 4 only one row of four solenoids is illustrated. The other two rows would be similarly connected.

In Fig. 16 is illustrated a modification of the three upper rows of playing stations, turntables and modified passages. In Fig. 1 passages 40 to the first row are centrally positioned relative to each entrance playing station and each diagonal passage therebeneath is directed from corner to corner. In this form of the invention each diagonal passage enters the diagonally arranged next lower playing station at the center position but leaves the upper station as before—to wit, at the corner. In Fig. 16, for clearance, the outlines of the stations are omitted.

While the invention has been set forth in considerable detail in the foregoing specification, it is to be understood the same is illustrative and not restrictive in character.

Various modifications of the structure have been illustrated and described and others have been referred to. Also various modifications and methods or styles of play have been suggested and all such modifications are considered to be within the broad scope of the invention, reference being had not only to the appended claims but to a pin game combining luck and skill, as exemplified by the aforesaid disclosure, wherein selective directional play can be obtained and must be borne in mind in order to obtain the maximum score. The chief feature consists in the combination of this selective directional play and the advancement step by step, all through the utilization of action balls.

The invention claimed is:—

1. In a ball game, the combination with an in-

clined playing board, a plurality of balls, and an impact member for the balls, of a playing area on the board and having diagonally arranged playing stations arranged in a plurality of rows, certain of said stations having openings therein for ball passage, tiltable closures for said openings and operable by ball engagement to close the same, turn-table members operatively associated with certain other playing stations for directional diversion of a ball from one turn-table provided station to either of two diagonal stations in the next lower row, and means for selectively turning said turn-table.

2. A device as defined by claim 1, characterized by the addition of means operable by another ball for automatically operating said turning means to advance a ball from one playing station to another.

3. In a ball game, the combination with an inclined playing board, a plurality of balls, and an impact member for the balls, of a playing area on the board and having diagonally arranged playing stations arranged in a plurality of rows, turn-table members for a plurality of playing stations in one row, means connecting the turn-table members for simultaneous turning of all connected turn-table members, and means for actuating said connecting means for turning said turn-tables to the right or left, each turn-table having a ball track thereon diametrically positioned relative to the same, said turn-table members directionally diverting a ball from one turn-table provided station to either of two diagonally playing stations in the next lower row.

4. In a ball game, the combination with an inclined playing board, a plurality of balls, and an impact member for the balls, of a playing area on the board and having diagonally arranged playing stations arranged in a plurality of rows, turn-table members operatively associated with a plurality of playing stations in each row of a plurality of successive rows, each turn-table having a diametrically positioned ball passage for directional diversion of a ball from one turn-table provided station to either of two diagonally positioned turn-table provided playing stations in the next lower row, means for selectively turning all turn-tables to the right or left, and means for selectively actuating said turning means.

5. In a ball game, the combination with an inclined playing board, a plurality of balls, and an impact member for the balls, of a playing area on the board and having diagonally arranged playing stations arranged in a plurality of rows, turn-table members operatively associated with a plurality of playing stations in each row of a plurality of successive rows, each turn-table having a diametrically positioned ball passage for directional diversion of a ball from one turn-table provided station to either of two diagonally positioned turn-table provided playing stations in the next lower row, means for selectively turning all turn-tables to the right or left, and means for selectively actuating said turning means, said selective turning means being ball operable for turning in succession the turn-table members in opposite directions from the normal position.

6. In a ball game, the combination with an inclined playing board, a plurality of balls, and an impact member for the balls, of a playing area on the board and having diagonally arranged playing stations arranged in a plurality of rows, turn-

table members operatively associated with a plurality of playing stations in each row of a plurality of successive rows, each turn-table having a diametrically positioned ball passage for directional diversion of a ball from one turn-table provided station to either of two diagonally positioned turn-table provided playing stations in the next lower row, means for selectively turning all turn-tables to the right or left, and means for selectively actuating said turning means, said selective turning means being successively operable by a plurality of balls, each last mentioned ball operatively turning in succession the turn-table members in opposite directions from the normal position and each successive turning means actuating ball similarly operatively turning said turntable members, the initial turning thereof being in the same direction.

7. In a ball game, the combination with an inclined playing board, a plurality of balls, and an impact member for the balls, of a playing area on the board and having diagonally arranged playing stations arranged in a plurality of rows, a plurality of playing stations in a plurality of successive rows having openings therein for ball passage, a suitable closure for each opening, each closure in the upper row having a ball passage on the upper surface thereof and tiltable to closed position by ball passage through the opening, the closure upon closing by a preceding ball providing a pathway for a succeeding ball to pass over the opening, and means normally in non-interfering position relative to the closure closing movement and adapted for movement to simultaneously tilt all closed closures to the open position.

8. In a ball game, the combination with an inclined playing board, a plurality of balls, and an impact member for the balls, of a playing area on the board and having diagonally arranged playing stations arranged in a plurality of rows, a waste ball reservoir below the playing area, a passage leading thereto in the face of the board, turntable members operatively associated with certain playing stations for directional diversion of a ball from one turn-table provided playing station to either of two diagonal playing stations in the next lower row, a passage leading from the first mentioned passage to one of the turn-table provided stations, whereby the turn-table when turned into predetermined position registering with the last mentioned passage diverts a ball from the playing area to the waste ball reservoir.

9. In a ball game, the combination with an inclined playing board, a plurality of balls, and an impact member for the balls, of a playing area on the board and having diagonally arranged playing stations arranged in a plurality of rows, a waste ball reservoir below the playing area, a passage on the board communicating therewith, a passage leading from one side playing station to the passage, an opening in said last mentioned playing station, and a tiltable closure for said opening and ball operable into closed position and having a ball passageway on the upper surface thereof and registering with the second mentioned passage for diversion of a second ball to the waste ball reservoir after a previous ball has closed the opening.

10. In a ball game, the combination with an inclined playing board, a plurality of balls, and an impact member for the balls, of a playing area on the board and having diagonally arranged playing stations arranged in a plurality of rows, turn-

passageways leading from station to station in successive rows, one of said passages being directed downwardly and outwardly toward the side of the playing area and thence inwardly and downwardly therefrom, another passageway parallel to the first mentioned portion of the last mentioned passage way and intersecting the last mentioned portion of the first mentioned passageway, means for temporarily retaining playing balls on playing stations at the upper ends of said passage ways and simultaneously movable to release the balls for passage way travel, and ball retarding means operatively associated with the first mentioned passageway at the turn thereof and normally constrained to ball receiving position and movable by the ball into ball releasing position for temporarily retarding the movement of the ball in the angular passage such that the last mentioned ball arrives at the intersection after a ball in the second mentioned passageway has passed the intersection.

11. In a ball game, the combination with an inclined playing board, a plurality of balls, and an impact member for the balls, of a playing area on the board and having diagonally arranged playing stations arranged in a plurality of rows, a ball passage in each station and leading to adjacent stations in the next lower row, a ball impeller normally nested in the passage of the playing station last mentioned, and ball operable means for projecting the ball impeller from nested to ball engaging position to initiate movement of the retained ball for it to move to a station in the next lower row.

12. In a ball game, the combination with an inclined playing board, a plurality of balls, and an impact member for the balls, of a playing area on the board and having diagonally arranged playing stations arranged in a plurality of rows, turn-table members operatively associated with a plurality of playing stations in each row of a plurality of successive rows, each turn-table having a diametrically positioned ball passage for directional diversion of a ball from one turn-table provided station to either of two diagonally positioned turn-table provided stations in the next lower row, a ball impeller normally nested in the turn-table passage for ball acceleration to the next playing station, means for selectively turning all turn-tables to the right or left, and means operable in said turning for projecting the ball impeller into ball engaging position in the turn-table passageways.

13. In a ball game, the combination with an inclined playing board, a plurality of balls, and an impact member for the balls, of a playing area on the board and having diagonally arranged playing stations arranged in a plurality of rows, turn-table members operatively associated with a plurality of playing stations in one row, each turn-table having a diametrically positioned ball passage for directional diversion of a ball from one turn-table provided station to either of two diagonally positioned playing stations in the next lower row, diagonally positioned passageways leading from one playing station to another, a ball impeller for each turn-table provided station and normally nested in the diametrical passage for ball acceleration, and means selectively turning all turn-table members to the right or left and automatically projecting all ball impellers into ball engaging position in the diametrical passageways.

14. In a ball game, the combination with an inclined playing board, a plurality of balls, and an

impact member for the balls, of a playing area on the board and having diagonally arranged playing stations arranged in a plurality of rows, said playing board having a pair of "action" openings, turn-table members operatively associated with certain playing stations for directional diversion of a playing ball from one turn-table provided station to either of two diagonal stations in the next lower row, means connecting all of said turn-table members for simultaneous movement, and ball operable means in juxtaposition to each of said holes for selectively operating said turning means.

15. In a ball game, the combination with an inclined playing board, a plurality of balls, and an impact member for the balls, of a playing area on the board and having diagonally arranged playing stations arranged in a plurality of rows, said playing board having a single opening for dual "action", turn-table members operatively associated with a plurality of playing stations in a plurality of successive rows, each turn-table having a diametrically positioned passage for directional diversion of a ball from one turn-table provided station to either of two diagonal stations in the next lower row, means connecting all of said turn-table members together for simultaneous movement, and ball operable means in juxtaposition to said dual "action" opening and operatively connected to said turn-table connecting means for successively turning all turn-tables in one direction, and after a predetermined interval in the opposite direction, said turn-tables being operatively constrained toward neutral position.

16. A device as defined by claim 15, characterized by the ball operable means including a pair of means for actuating the turn-table actuating means, each pair of means being adapted to successively actuate the turn-table actuating means in opposite directions in succession, one being arranged for right and left hand turning and the other being arranged for left and right hand turning, and the addition of an "action" ball diverter adjacent the dual action opening for automatically diverting an "action" ball to one of said pairs of means and ball conditioned for automatically diverting a successive "action" ball passed through the opening to the other of said pair of means.

17. A device as defined by claim 15, characterized by the ball operable means including a pair of means for actuating the turn-table actuating means, each pair of means being adapted to successively actuate the turn-table actuating means in opposite directions in succession, one being arranged for right and left hand turning and the other being arranged for left and right hand turning, and the addition of an "action" ball diverter adjacent the dual action opening for automatically diverting an "action" ball to one of said pairs of means and ball conditioned for automatically diverting a successive "action" ball passed through the opening to the other of said pair of means, said playing board having a pair of "action" openings, and means in juxtaposition to each of said last mentioned holes and operatively associated with the turn-table turning means for selectively actuating the same, one of said last mentioned juxtapositioned means securing right hand turning of the turn-tables and the other securing left hand turning of the turn-tables.

18. A device as defined by claim 15, characterized by said playing board having a pair of "ac-

tion" holes, and the addition of means in juxtaposition to each of said last mentioned pair of holes and operatively associated with the turn-table turning means, one of said last mentioned 5 juxtapositioned means being arranged to turn the turn-tables to the right and the other being arranged to turn the turn-tables to the left.

10 19. In a ball game, the combination with an inclined playing board, a plurality of balls, and an impact member for the balls, of a playing area on the board and having diagonally arranged playing stations arranged in a plurality of rows, a waste ball reservoir near the bottom of said board, a ball passage leading from each of the 15 lowermost playing stations toward the waste reservoir, each lowermost playing station having an opening therein, a suitable closure for each opening and tiltable to closed position by ball passage through the opening, said closure having 20 a ball passage on the upper surface thereof and registering with the first mentioned passage when the closure is in closed position for diverting a second ball to the waste ball reservoir, and means for returning all of the closed closures to open 25 position.

20. In a ball game, the combination with an inclined playing board, a plurality of balls, an impact member for the balls and a coin receiving means, of a playing area on the board and having 30 diagonally arranged playing stations arranged in a plurality of rows, turn-table members operatively associated with certain playing stations in an upper row for directional diversion of a ball from one turn-table provided station to either of 35 two diagonal stations in the next lower row, cer-

tain of said stations in a lower row having openings therein for ball passage, tiltable closures for said opening and operable by ball engagement to close the same, means operatively associated with the coin receiving means and normally constrained toward one position and movable by the 5 coin receiving means into another position, means for turning said turn-table members near the end of the last mentioned movement of the coin receiving means for releasing all balls retained on the turn-table provided squares, and means operable by said means operatively associated with the coin receiving means and near the end of the return movement due to the constraint for tilting 10 all of the closed closures into open position for resetting the playing board for new play following release of all balls from the playing area. 15

21. In a ball game, the combination with an inclined playing board, a plurality of balls, and an impact member for the balls, of a playing area 20 on the board having diagonally arranged playing stations arranged in a plurality of rows, passageways leading from playing square to playing square in successive rows, certain of said passageways intersecting at playing stations, passageways to and from side playing stations being 25 angularly directed, and the lowermost passage way thereof intersecting one of the certain passageways whereby a ball in the angular passageway is sufficiently retarded relative to a ball in the passageway so that ball interference at the 30 intersection is prevented when two balls are simultaneously released from travel in the last mentioned passageways.

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