

July 28, 1953

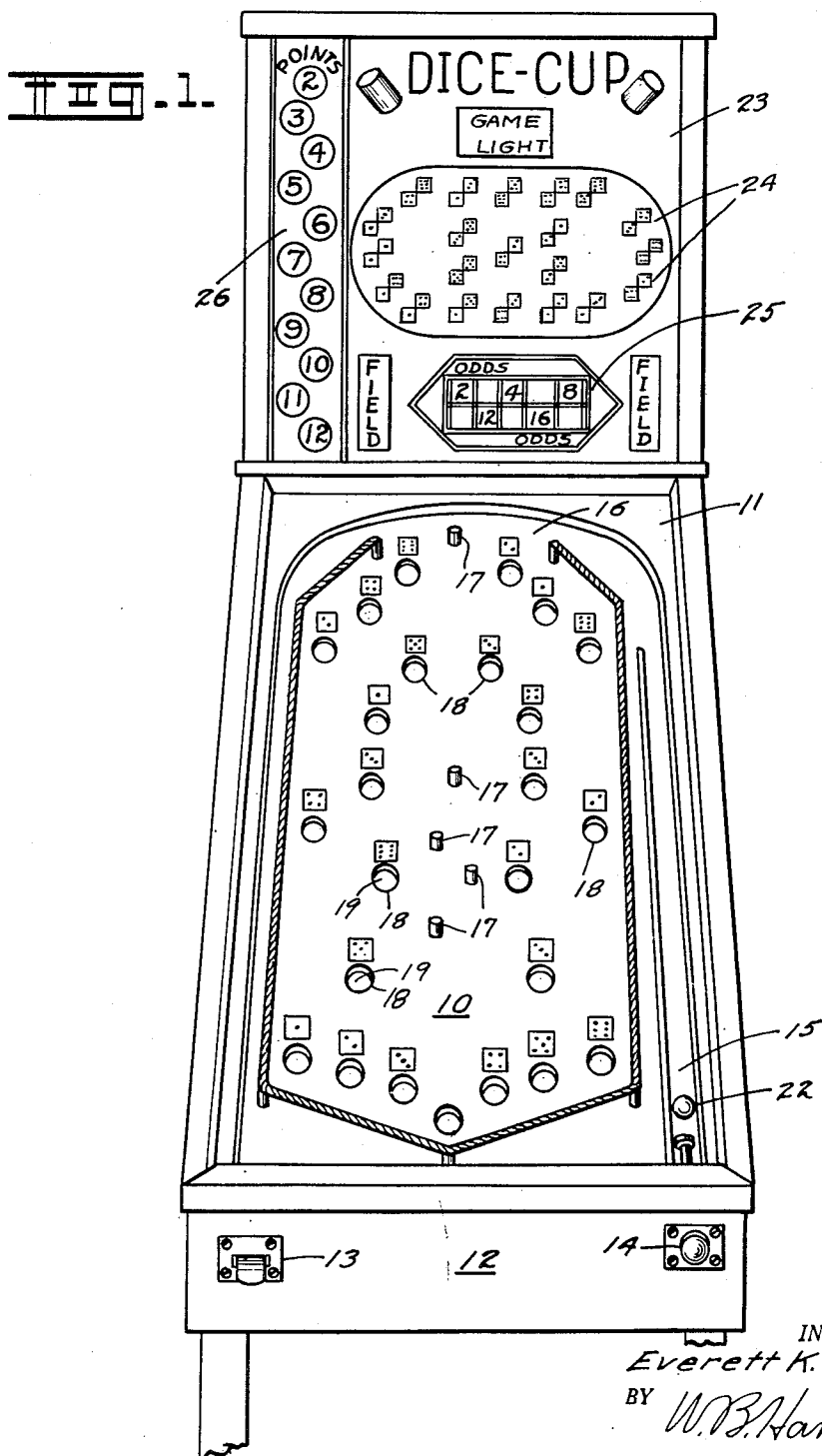
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2,646,986

MARBLE BOARD DICE GAME

Filed Aug. 26, 1949

3 Sheets-Sheet 1



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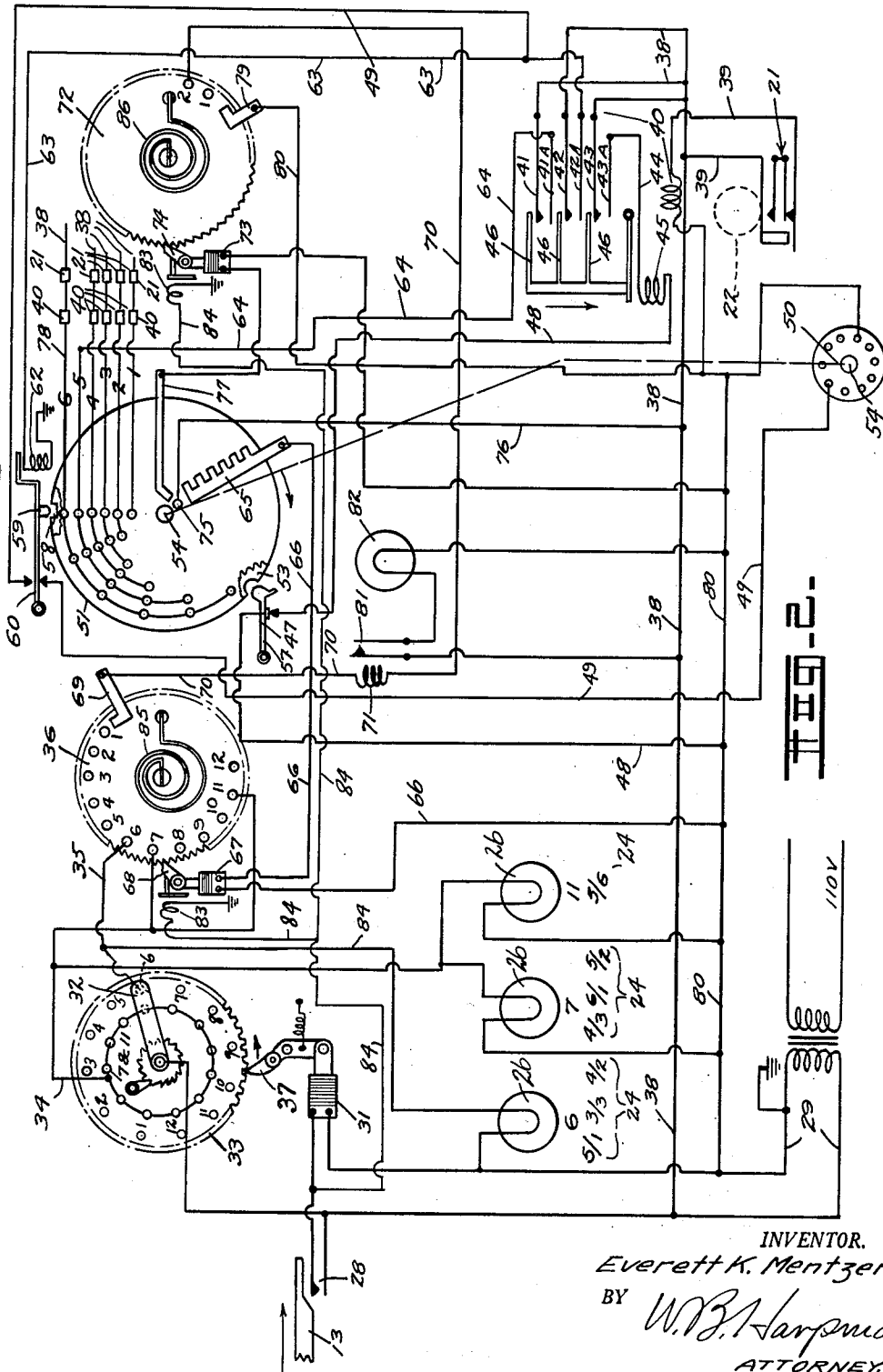
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3 Sheets-Sheet 2



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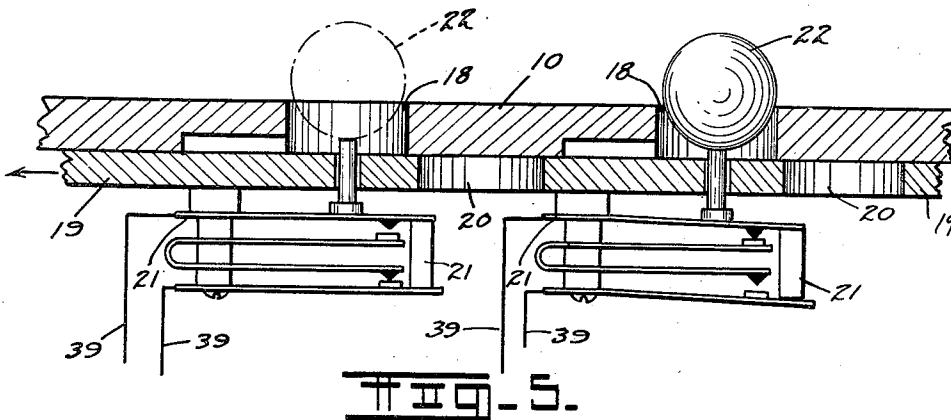
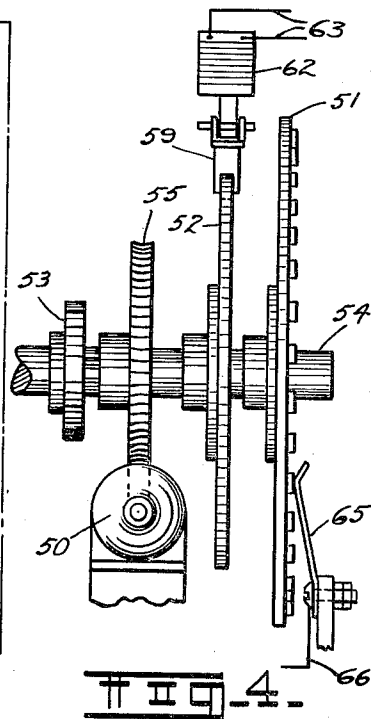
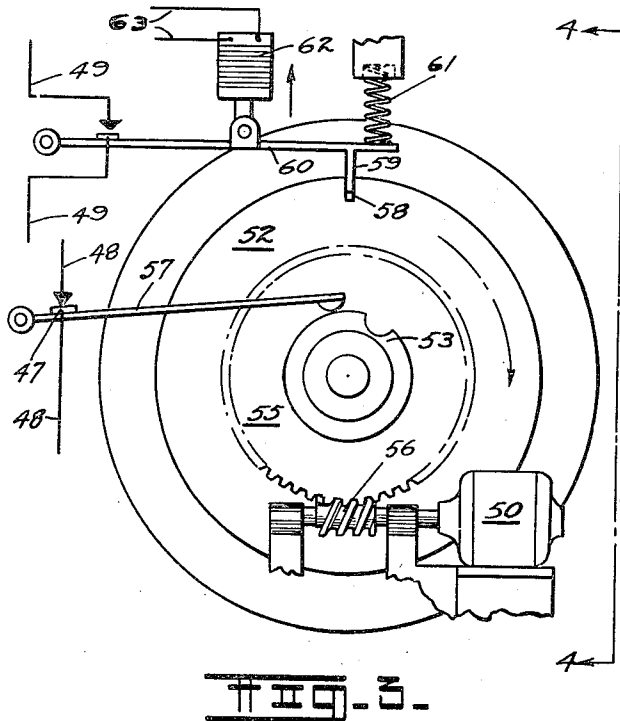
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UNITED STATES PATENT OFFICE

2,646,986

MARBLE BOARD DICE GAME

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Application August 26, 1949, Serial No. 112,489

4 Claims. (Cl. 273—121)

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This invention relates to a marble board and more particularly to a marble board having representations of a number of dice associated with a plurality of openings in the said marble board whereby the marbles upon being rolled will fall into the plurality of openings and indicate a corresponding die. Prior to such action, electrical means in the marble board will have been actuated by the operation of a controlling coin slide whereby the point to be made is established and the odds against making the point determined and the possible dice combinations set up so that the first marble rolled will represent one of the dice and the mechanism actuated by the said first marble will determine which of the remaining plurality of openings in the marble board must receive a second marble in order to make the point previously established.

The principal object is, therefore, in the provision of a marble board and suitable electrical circuit actuating mechanisms in conjunction therewith for enabling the initial action of the controlling coin slide of the game board to establish the point to be made and to determine the odds against making the point (which are variable over a series of plays), and, more importantly, to determine which of the several openings or pockets in the marble board the first and second marbles rolled must fall into in order to make the point established.

It will be understood that the game board disclosed herein enables a dice game to be played by the rolling of two marbles, the mechanism having first established the point to be made so that the position of the first marble rolled will actuate the mechanism of the board to determine which few openings on the board must receive the second marble in order that the previously established point may be made. This feature comprises the essential novelty in the device together with the electrical circuit making and actuating mechanism operated by the marbles to achieve the desired result.

The game board shown and described herein is particularly suitable for use in various establishments wherein marble boards and other game boards of the general type are employed as entertainment devices as the device may be operated for entertainment only.

With the foregoing and other objects in view which will appear as the description proceeds, the invention resides in the combination and arrangement of parts and in the details of construction hereinafter described and claimed, it being understood that changes in the precise em-

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bodiment of the invention herein disclosed can be made within the scope of what is claimed without departing from the spirit of the invention.

The invention is illustrated in the accompanying drawing, wherein:

Figure 1 is a plan view of the top and score panels of the game board.

Figure 2 is a schematic diagram of the circuit making and actuating devices and electrical circuits in conjunction therewith as employed in the game board.

Figure 3 is an enlarged detail of a portion of one of the circuit making devices illustrated in Figure 2.

Figure 4 is a side view taken on line 4—4 of Figure 3.

Figure 5 is an enlarged cross section of a pair of openings on the game board playing surface showing electrical switch means associated therewith.

By referring now to Figure 1 of the drawings it will be seen that the game board comprises a playing surface 10 preferably mounted under a protective transparent cover 11 and in a cabinet 12. The front of the cabinet 12 is provided with a coin slide 13 and a striker 14. The inner end of the striker 14 is aligned with a channel 15 at one side of the playing surface 10 so that marbles, which may be elevated (by means not shown) into the channel 15, may be moved by the action of the striker 14 in the channel 15 which, like the playing surface 10, is inclined upwardly from the front of the board to the rear of the board. The marble will thus move from front to back on the playing surface 10 in the channel 15 until it reaches a point 16 adjacent the rearmost portion of the playing surface where it will be free to roll forward over the playing surface 10. One or more bumpers 17 are provided to deflect the course of the rolling marble and a plurality of openings 18—18 are formed in the playing surface at various locations thereon and each of the openings is identified by a representation of a die.

The playing surface 10 has a slide piece 19 movably positioned immediately therebeneath and serving to prevent marbles from falling through the openings 18—18 until such time as the slide 13 is moved to move the slide piece 19 and bring a number of openings 20—20 therein into registry with the openings 18—18.

By referring now to Figure 5 of the drawings an enlarged cross sectional view of the playing board and surface 10 thereof, including the pair of openings 18—18, may be seen. It will be observed that the slide piece 19 has a plurality of

make and break switches 21 secured thereto and movable therewith and normally in registry with each of the openings 18—18 so that marbles 22 falling into the openings 18—18 will cause a momentary making and subsequent breaking of an electrical circuit connected with these switches 21. This occurs by reason of the resiliency of the U-shaped member of each of the switches 21 as the lower one of the arms thereof tends to follow the lowermost contact for a moment after the uppermost contact has been engaged by the upper arm.

By referring again to Figure 1 of the drawings and to the rearmost portion of the game board, it will be seen that an upright scoring panel 23 is provided which carries the name of the game board "Dice Cup," a representation of the various combinations of dice, generally indicated by the numeral 24, a panel 25 indicating odds, and a secondary panel 26 indicating points. The various indicia in the panels 24, 25 and 26 are normally visible by illumination as by suitable illuminating means actuated by the mechanism in the game board in accordance with the rolling of the marbles 22 and their positioning in one or two of the openings 18—18. It will be understood that two marbles 22 are used to correspond with the two dice ordinarily used in the dice game.

Still referring to Figure 1 of the drawings it will be seen that upon actuation of the coin slide 13, the board is cleared and made ready for a play. Simultaneously with the clearing of the board by the movement of the coin slide 13, circuit controlling mechanism in the board, as hereinafter described and including a master selector, determines the point to be made which is illuminated on the secondary panel 26. The possible combinations of dice to make the point thus established are also illuminated in the panel 24. One of the marbles 22 is elevated (by means not shown) into the channel 15 where it is moved by the striker 14 onto the playing surface 10. It then rolls into one of the openings 18—18 to determine, as hereinafter explained, the location in which the next marble must fall if the previously established point is to be made. In this connection it will occur to those skilled in the art that in shooting dice, 7 and 11 are always winning points along with whatever point is selected. Thus, the points 7 and 11 are always illuminated and the operation of the coin slide 13 additionally illuminates another point to be made, which other point is determined by the master selector. If, for example, the first marble rolls into one of the openings having the representation of a die with five points thereon, the mechanism of the game board is automatically actuated so that only those other openings associated with representations of other dies having indicia which, with the 5 already thrown, will total 7 or 11 or the other point determined by the master selector are energized, and a second marble rolled into an opening having the indicia 6 on the die associated therewith is thereby capable of actuating the board and the point 11 is made. If on the other hand the second marble rolls into one of the openings associated with a die number not capable of being added to the number 5 already thrown to total 7, 11 or the other point then the point is not made and the game is lost.

In order that these various results may be achieved from the rolling of the marbles 22, as just described, certain mechanisms for making

circuits and actuating circuits made are necessary.

By referring to Figure 2 of the drawings a symbolic diagram of the necessary circuit making device, means for actuating the same, and the interconnecting circuits may be seen. The coin slide 13 initiates the action and is illustrated in Figure 2 of the drawings as closing a switch 28 which connects a suitable secondary electrical circuit 29 with a solenoid 31 and a pair of solenoids 33. A double contact member 32 is connected with one of the wires of the electrical circuit 29, and is arranged to slidably engage one side of a master selector disc 33 which has a plurality of radially spaced rows of contact buttons thereon, the innermost row of circumferentially spaced buttons being connected to one another by a conductor 34. The contact buttons in the outermost row of circumferentially spaced buttons are connected by individual conductors 35, only one of which is shown in Figure 2, with a similar arrangement of circumferentially spaced contact buttons on an adding ratchet disc 36. The disc 33 comprises the master selector (heretofore referred to) and is adapted to be rotated by a pivoted pawl 37 which is actuated by the plunger of the solenoid 31.

A main circuit wire 38 is connected with one of the secondary circuit wires 29 heretofore mentioned and with conductors 39 leading to each of the plurality of switches 21 heretofore referred to as lying beneath the openings 18—18 in the playing surface 10, and which switches 21 serve to momentarily make and then break a circuit. The conductor 39 is, therefore, extended from each of the make and break switches 21 (only one is shown in Figure 2) to one of a plurality of relays 40 which includes three switch elements 41, 42 and 43. Each one of these switch elements 41, 42 and 43 is energized momentarily by the make and break action of the switch 21 as upon a marble actuating the same, as heretofore described and disclosed in connection with Figure 5 of the drawings.

The switch 41 engages a matching switch element 41A, the switch element 42 engages a matching switch element 42A and the switch element 43 engages a matching switch element 43A. The switch element 43A is connected by means of a conductor 44 with a locking solenoid 45 which, upon being energized as by operation of the relay 40 including the switch elements 43 and 43A, mechanically moves three levers 46—46 and locks the switch elements 41, 42 and 43 in engagement with the matching switch elements 41A, 42A and 43A thereby holding a closed circuit from the conductor 38 through each of the switch elements 41, 42 and 43 with their respective control devices hereinafter described.

It will thus be seen that this action occurs as a result of a momentary make and break action of the switch 21 as occasioned by the engagement therewith of the marble 22. The result of the marbles engaging one of the switches 21 is to close one of the relays 40 and energize one of the plurality of locking coils 45 whereby the momentarily closed relay switch elements of the relay 40 are held by one of the groups of levers 46 as operated by one of the locking coils 45. Thus three energized circuits are effected by the operation of the relay 40. The first of these circuits, as above mentioned as being closed by the switch elements 43 and 43A, energizes one of the locking coils 45 and

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additionally flows through a cam controlled switch 47 which establishes means for breaking the circuit through the locking coil 45 as will be hereinafter described. The second circuit established by the closing of the switch elements 42 and 42A is a circuit through a conductor 49 and through a motor 50 which is in turn adapted to rotate an adding ratchet impulse unit comprising essentially a rotatable disc 51. This unit is also shown in Figures 3 and 4 of the drawings as a three-part unit including the rotatable disc 51, a locking disc 52 and a cam disc 53. These discs 51, 52 and 53 are assembled on a common shaft 54 which is provided with a gear 55 engaging a worm gear 56 on the shaft of the motor 50.

The switch 47 heretofore referred to as comprising means for opening the circuit through the solenoid locking coil 45 is controlled by a pivoted arm 57 which rides the cam disc 53 as best shown in Figure 3 of the drawings. By referring thereto it will be observed that at one point in the rotation of the shaft 54 and hence the cam disc 53 the pivoted arm 57 will drop into the recessed portion of the cam disc 53 and thereby open the switch 47 to de-energize the locking coil 45 and permit the multiple switch elements of the relay 40 to open. The locking disc 52 on the shaft 54 has a slot 58 at one point in its periphery which is adapted to be engaged by a locking pin 59 carried on a locking arm 60 and normally spring urged by a spring 61 against the periphery of the locking disc 52.

A solenoid 62 is also connected with the locking arm 60 and adapted to elevate the same so as to hold the locking pin 59 out of registry with the locking disc 52. The solenoid 62 is connected by a conductor 63 with the switch element 42A and the solenoid 62 is thereby energized upon actuation of the relay 40 as current from the conductor 38 flows through the switch elements 42 and 42A and through the conductor 63, through the solenoid 62 and thence to one of the secondary circuit wires 29. The net result of the operation of the relay 40 and the subsequent locking of the switch elements thereof by the locking coil 45 is to energize certain contacts of the adding ratchet impulse unit on the disc 51 thereof.

For the purpose of explanation, it is assumed that the symbolic diagram comprising Figure 2 of the drawings is arranged and wired to connect one of the switches 21 to the various operating elements in accordance with a predetermined setting of the master selector disc 33 as occasioned by the initial impulse given the controlling solenoid 31 by the closing of the switch 28 when the coin slide 13 of the game board was first moved. As disclosed in Figure 2 of the drawings the solenoid 31 has moved the pawl 37 which has engaged and spun the master selector disc 33 counterclockwise until the double contact arm 32 associated therewith has established contact with one of the contacts on the outer row of circumferentially spaced contacts thereon, this row carrying the identifying numbers 1 through 12, the particular contact being energized being contact number 6. Thus, a circuit is established between the secondary electrical circuit 29 heretofore referred to and the conductor 35 heretofore referred to so that a matching contact button on the adding ratchet disc 36 is energized, the conductor 35 connecting directly therewith.

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The contact buttons numbered 7 and 11 on the adding ratchet disc 36 are also energized as these buttons are always energized on this disc as they are controlled by and connected with the conductor 34. Thus, three of the row of circumferentially spaced contact buttons, which are number from 0 through 12 for identifying purposes on the adding ratchet disc 36, are energized. This comprises the first stage of the operation of the game board as occasioned by the operation of the coin slide 13.

The second stage of the operation of the game board occurs when the first marble 22 is shot and for the purpose of explanation it is assumed that it drops into one of the openings on the playing surface 10 which is identified by one of the dice showing five spots and comprising a number 5 opening. The resulting action is the momentary closing of the corresponding switch 21 beneath the number 5 opening, the energization of the corresponding relay 40 controlled by this particular switch 21 and the establishment of the energized circuits through the conductors 48, 49 and 63 as heretofore described. As one of the conductors 49 energizes the motor 50 and starts the adding ratchet impulse unit disc 51 revolving after the solenoid 62 has been energized by the conductor 63 and has lifted the locking pin 59 out of the periphery of the locking disc 52 associated therewith, the subsequent revolving action of the contact disc 51 moves a plurality of radially spaced rows of circumferentially spaced contacts attached to the contact disc 51, the contacts of each row being electrically connected to one another.

As the marble controlling this described operation entered a number 5 opening, the relay 40 operated so that the switch elements 41 and 41A closed and an energized circuit was thereby established through a conductor 64 running from the switch 41 to a row of five circumferentially spaced contact buttons on the adding ratchet impulse unit disc 51. The rotation of this adding ratchet impulse disc 51 moves these five contacts beneath a multiple contacting finger 65 and the same thereby picks up five impulses as the five contact buttons move thereunder.

A conductor 66 connected with the contacting finger 65 conveys the five electrical impulses to a solenoid 67, the plunger of which has a pawl 68 engaging teeth on the periphery of the adding ratchet disc 36. Thus, for each of the five impulses delivered to the solenoid 67 the pawl 68 moves upwardly and rotates the adding ratchet disc 36 one step. The result of this is to move the same five steps so that a contact member 69 engages the number 5 contact button thereon and a potential circuit is established through the contact member 69, a conductor 70 and a relay coil 71.

The conductor 70 extends to a contact button on a ball counter disc 72 which is also rotated in a manner similar to the adding ratchet disc 36 by a solenoid 73 having a pawl 74 engaging ratchet teeth on the periphery of the disc 72. The solenoid 73 is energized one time for each revolution of the adding ratchet impulse unit disc 51 heretofore described by reason of a single contact button 75 thereon which is directly energized by way of a conductor 76 from the conductor 38 which is in connection with the secondary circuit 29 of the device. A contact member 77 positioned adjacent the multiple contact 65 will engage the contact button 75 once during each revolution of the unit disc 51 and thereby convey one impulse

to the solenoid 73 which in turn moves the ball counter disc 72 one position.

Simultaneously with this action and in order that the relay 40 may be reopened, the arm 57 heretofore described as engaging the cam disc 53 associated with the adding ratchet impulse disc 51 will engage the depression in the cam disc 53 and momentarily open the normally closed switch 47 in the conductor 48. The conductor 48 is the circuit conductor for the solenoid 45 which actuates the multiple lever 46 holding the switch elements of the relay 40 in closed position. The opening of this circuit by the momentary opening of the switch 47 thereby de-energizes the locking coil 45 and permits the movement of the lever 46 and the opening of the switch elements of the relay 40. Thus, all of the relays 40 are open and the game board is ready for the third stage which comprises the rolling of the second marble 22.

Upon the second marble being rolled and falling into one of the openings 18 and engaging one of the switches 21, one of the relays 40 is energized and a repetition of the previously described action occurs. Specifically, and for purposes of example, it is assumed that the second marble 22 drops into an opening 18 identified with a 6 point die, the marble 22 thus contacting one of the plurality of switches 21 and energizing one of the plurality of relays 40 and this results in establishing a circuit by way of a conductor 78 to the row of circumferentially spaced contact buttons on the adding ratchet impulse unit 51 comprising six buttons. Simultaneously with this action the solenoid 62 will be energized which will lift the latch arm 50 and the latch pin 59 from engagement with the locking disc 52 and the motor 50 will also be energized, all as previously described. The result of this operation is one more complete revolution of the adding ratchet impulse unit 51 with the result that the contact member 65 will pick up six impulses as the six contact buttons in connection with the conductor 78 pass thereunder. These six impulses will be conveyed by the conductor 66 to the solenoid 67 which in turn will move the pawl 68 six times against the periphery of the adding ratchet disc 36 thereby moving the same to bring the contact buttons on the disc 36 successively into engagement with the contact member 69, it being remembered that the action of the first marble moved the adding ratchet disc 36 to number 5 position and the action just described added six more impulses to make a total of 11. Simultaneously with this action, the contact button 75 on the adding ratchet impulse unit 51 will have passed the contact member 77 one time and transmitted one impulse to the solenoid 73 which will then move the ball counter disc 72 one additional space. This results in bringing contact number 2 thereon into engagement with a contact member 79 which is connected by a conductor 80 with the other side of the circuit line 29. The completion of this circuit energizes the solenoid coil 71, closes a relay switch 81 and lights the final game light 82, thus completing the game.

It will thus be seen that the two marbles 22 having been rolled and the first falling into an opening corresponding with a 5 point die and the second falling into an opening corresponding with a 6 point die will have made the point of 11 which was one of the points originally set up on the secondary panel 26 of the game board.

Simultaneously with the second rotation of the adding ratchet impulse unit disc 51, the cam disc 53 will have allowed the arm 57 to drop momen-

tarly and again open the switch 47 momentarily in the conductor 48. Thus, the locking coil 45 is again de-energized with the result that the levers 46 in the relay 40 are released permitting the several switch elements in the relay 40 to open.

The adding ratchet disc 36 and the final ball counter disc 72 must obviously be reset to zero position before another game can be played on the game board. Means for accomplishing this is provided in the game board and comprises a pair of solenoids 83—83 connected with the pawls 74 and 68, respectively, heretofore mentioned, and energized by a conductor 84 connected with the switch 20 and energized by the action of the coin slide 13. The action of the solenoids 83—83 is to momentarily move the pawls 68 and 74 out of engagement with the ratchet teeth on the peripheries of the adding ratchet disc 36 and the ball counter 72 so that coil springs 85 and 86 associated with these discs will return the same to zero position. The game is then ready for a complete new game as heretofore described.

It will be seen by those skilled in the art that the making of a game or failure to make a game on the game board depends initially on the chance selection of the contact 32 with respect to one of the circumferentially spaced contacts on the master selector disc 33. For example, if the master selector disc 33 is revolved so that contact 32 rests on the contact number 6, as shown in Fig. 2, the only one of the contacts on the adding ratchet disc 36 to be energized is the contact number 6, it being remembered that the contacts 7 and 11 are always energized on the adding ratchet disc 36. Thus if a marble rolls into one of the openings 18 in the game board associated with a representation of a die having a number other than 6, the resulting action of the device will be to move the adding ratchet disc to such other number, for example 3, thus positioning contact number 3 over the member 69. No further action results as the contact number 3 on the adding ratchet disc 36 was not energized by the initial action of the master selector disc 33.

Upon the rolling of the second marble, the adding ratchet disc 36 moves a number of impulses comparable with the number of the die associated with the opening into which the second marble falls. If this should be a 3, three such impulses are imparted to the ratchet disc 36 to bring the contact button 6 which was previously energized by the initial action of the master selector disc 33 into engagement with the member 69 and the hereinbefore described operation of the game light 82 then occurs as the point has been made. However, if the second marble rolls into one of the openings 18 associated with one of the other numbers, for example 1, only one impulse is imparted to the adding ratchet disc 36 which moves it so that contact number 4 thereon then engages the member 69. As contact number 4 was not energized by the initial action of the master selector disc 33 the game light 82 is not lit, but the game resets itself for subsequent play as each rotation of the rotatable disc 51 results in the movement of the arm 57 and the opening of the switch 47 which de-energizes the locking coils 45 on each of the relays 40, and permits the same to reopen.

As was hereinbefore described, the adding ratchet disc 36 and the final ball counter disc 72 are reset by the initial action of the coin slide at the beginning of each game so that the entire device is capable of re-cycling automatically.

The lamps 26 are those comprising the visual indicators of the points set up by the initial operation of the master selector disc 33, it being remembered that points 7 and 11 are always indicated, and such other indicators 24 of die combinations making these totals are connected permanently with the conductor 34 which is continuously energized as heretofore referred to. The lamps 26 indicating the points other than 7 and 11 or those other numbers capable of being added to make such other point number are illuminated by the double contact member 32 contacting one of the outer row of circumferentially spaced contacts on the master selector disc 33 as, for example, the lamp indicating the point 6 as illustrated in Fig. 2, which is connected with the conductor 35. It will be obvious that there are a plurality of lamps 26 some of which are located under the point numbers, as shown in Fig. 1, and other of which are located under the representations of the dice combinations 24—24, also shown in Fig. 1, and that they are both illuminated in accordance with the hereinbefore described operation of the device.

It will occur to those skilled in the art that it is necessary to play 2 marbles on the marble board dice game herein disclosed which marbles correspond with two dice as ordinarily used in a comparable dice game and that no complete game will be indicated by the board until both of two marbles have been played. When the point is made by the first marble, the game is lost as the device will not indicate a complete game until the second marble has been rolled. This results from the necessity of twice energizing the ball counter disc 72 and which can occur only when the two marbles are rolled.

Having thus described my invention, what I claim is:

1. In a game board for playing a dice game, said game board including an inclined playing surface having a plurality of openings therein and means for rolling a pair of marbles one at a time over said playing surface, electrical score objective indicators on said board, an adding ratchet disc in said game board having a plurality of contacts thereon, impulse operated structure for moving said adding ratchet disc, a master selector mechanism in said game board operating to establish circuits from a power source through one of said score objective indicators and to one of the contacts on the adding ratchet disc, a switch in each of said openings, a plurality of relays in said game board and energizing circuits therefor, each of which is controlled by one of the said switches, an adding ratchet impulse unit in said game board having a plurality of groups of contacts thereon, each group of contacts comprising a different number of contacts, and a plurality of circuits individually connecting each of the said relays with a power source and one of the said groups of contacts on the said adding ratchet impulse unit, each of said groups of contacts being thereby connected in circuit with said power source in response to operation of the corresponding one of said relays, and means energized through said relays for rotating the said adding ratchet impulse unit and means for establishing contact successively with said contacts of said groups on said adding ratchet impulse unit when rotating for energizing said adding ratchet disc whereby the total number of movements thereof corresponds with the number of contacts in one group on said adding

ratchet impulse unit energized by one switch and relay and whereby the said total number of movements of the said adding ratchet disc will correspond with the total number of contacts in the two groups of contacts on the said adding ratchet impulse unit energized by the said pair of marbles engaging two of the said switches, an electrically operated game indicating device and a secondary stationary contact member positioned for successive engagement with the said contacts on the said adding ratchet disc, said device being connected in circuit with said secondary contact and the first-mentioned power source, whereby said game indicating device is energized when an energized contact on the said adding ratchet disc is engaged by the said secondary stationary contact member.

2. The game board set forth in claim 1 and wherein the master selector mechanism includes a rotatable disc and means for imparting rotation thereto and the said rotatable disc having a row of circumferentially spaced contacts thereon and a fixed contact member for engaging said spaced contacts.

3. In a marble board including a playing surface having a plurality of openings therein and means for rolling a pair of marbles one at a time over said playing surface, a plurality of objective score indicating lights, an adding ratchet disc in said game board having a plurality of circumferentially spaced contacts thereon, a variable master selector mechanism in said game board operating to establish circuits from a power source through one of the said lights and to one of the said circumferentially spaced contacts on the adding ratchet disc, a switch in each of said openings, a plurality of relays in said game board and energizing circuits therefor, each of which is controlled by one of said switches, an adding ratchet impulse unit in said game board having a plurality of rows of contacts radially spaced thereon, the circuit establishing means of said selector mechanism including a plurality of conductors individually connecting the said variable master selector mechanism with the said plurality of contacts on the adding ratchet disc, a plurality of secondary conductors connecting each of said radially spaced rows of contacts on the adding ratchet impulse unit in circuit with one of said relays and a power source, each of the said radially spaced rows of contacts on the said adding ratchet impulse unit including a different number of contacts, means responsive to operation of said relays to rotate said adding ratchet impulse unit whereby one of the marbles closing the switch in one of the openings in the playing surface closes one of the said relays and energizes one of said radially spaced rows of contacts on the said adding ratchet impulse unit and rotates said adding ratchet impulse unit, a stationary contact member positioned for engagement with the said radially spaced rows of contacts on the said adding ratchet impulse unit and a solenoid actuated pawl for rotating the said adding ratchet disc and an energizing circuit connecting the said solenoid with the said stationary contact member whereby the said adding ratchet disc is rotated in steps, one for each contact in the energized row of circumferentially spaced contact members on the said adding ratchet impulse unit, a secondary stationary contact member positioned for successive engagement with the said contacts on the said adding ratchet disc, and electrical conductors in circuit with said secondary contact and the first mentioned power

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source and adapted to be connected with an electrically operated game indicating device.

4. In a marble board including a playing surface having a plurality of openings therein and means for rolling a pair of marbles one at a time over said playing surface, a plurality of objective score indicating lights, an adding ratchet disc in said game board having a plurality of circumferentially spaced contacts thereon, a variable master selector mechanism in said game board operating to establish circuits from a power source through one of the said lights and to one of the said circumferentially spaced contacts on the said adding ratchet disc, a switch in each of said openings, a plurality of relays in said game board and energizing circuits therefor, each of which is controlled by one of the said switches, an adding ratchet impulse unit in said game board having a plurality of rows of contacts radially spaced thereon, the circuit establishing means of said selector mechanism including a plurality of conductors individually connecting the said variable master selector mechanism with the said contacts on the adding ratchet disc, a plurality of secondary conductors connecting each of said radially spaced rows of contacts on the adding ratchet impulse unit in circuit with a power source and one of said relays, each of the said radially spaced rows of contacts on the said adding ratchet impulse unit including a different number of contacts, means responsive to operation of said relays to rotate said adding ratchet impulse unit whereby one of the marbles closing the switch in one of the openings in the playing surface closes one of the said relays and energizes one of said radially spaced rows of con-

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tacts on the said adding ratchet impulse unit, a stationary contact member positioned for successive engagement with the contacts of each of said radially spaced rows of contacts on the said adding ratchet impulse unit and a solenoid actuated pawl for rotating the said adding ratchet disc and a circuit connecting the said solenoid with the said stationary contact member and a power source whereby the said adding ratchet disc is rotated in steps, one for each contact in the energized row of circumferentially spaced contact members on the said adding ratchet impulse unit, an electrically operated game indicating device and a secondary stationary contact member positioned for successive engagement with the said contacts on the said adding ratchet disc, said device being connected in circuit with said secondary contact and the first-mentioned power source, whereby said game indicating device is energized when an energized contact on the said adding ratchet disc is engaged by the said secondary stationary contact member.

EVERETT K. MENTZER.

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