Sept. 14, 1937. H. G. BREITENSTEIN 2,093,162

GAME OF SKILL

Filed March 7, 1934 4 Sheets-Sheet 1

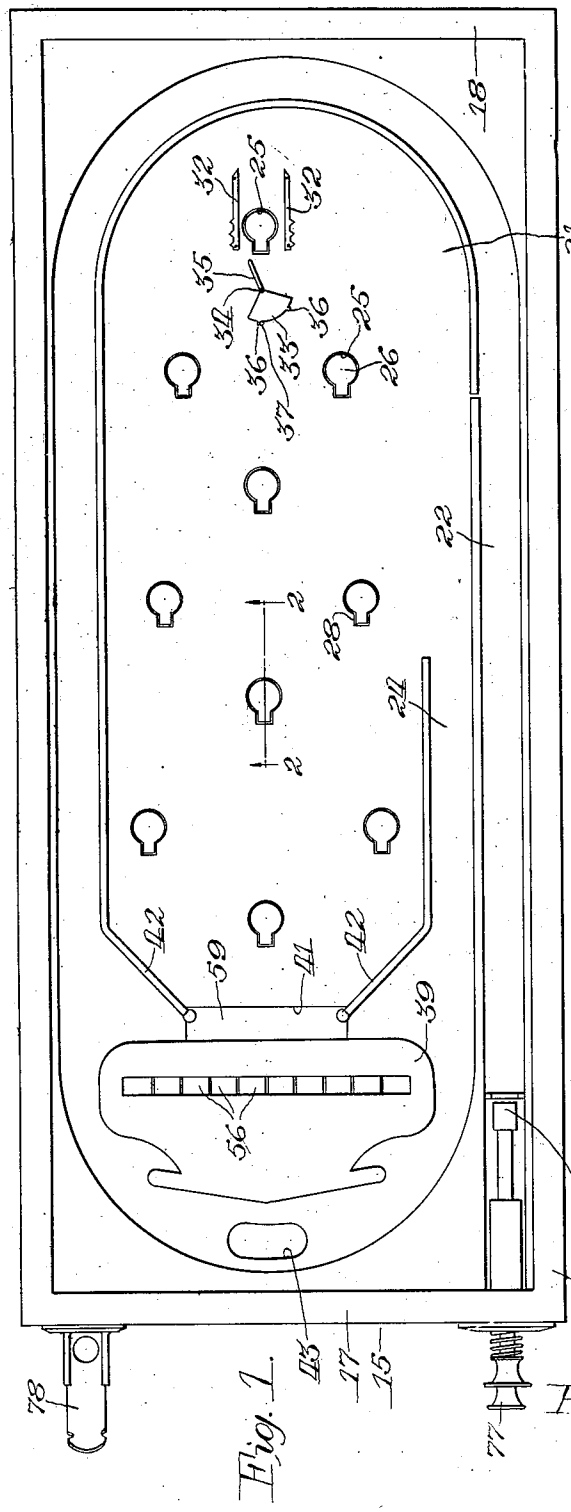


Fig. 1.

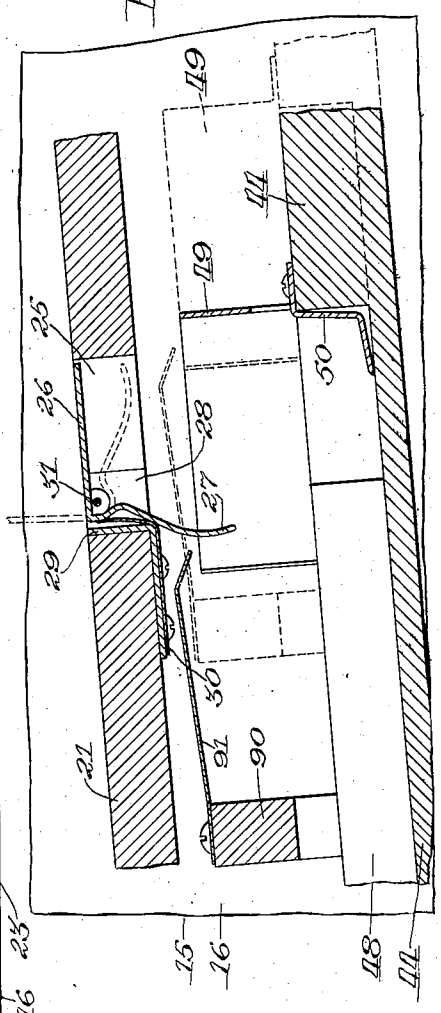


Fig. 2.

Inventor
Herbert G. Breitenstein
By Paul O. Pippel
Atty.

Sept. 14, 1937. H. G. BREITENSTEIN 2,093,162

GAME OF SKILL

Filed March 7, 1934 4 Sheets-Sheet 2

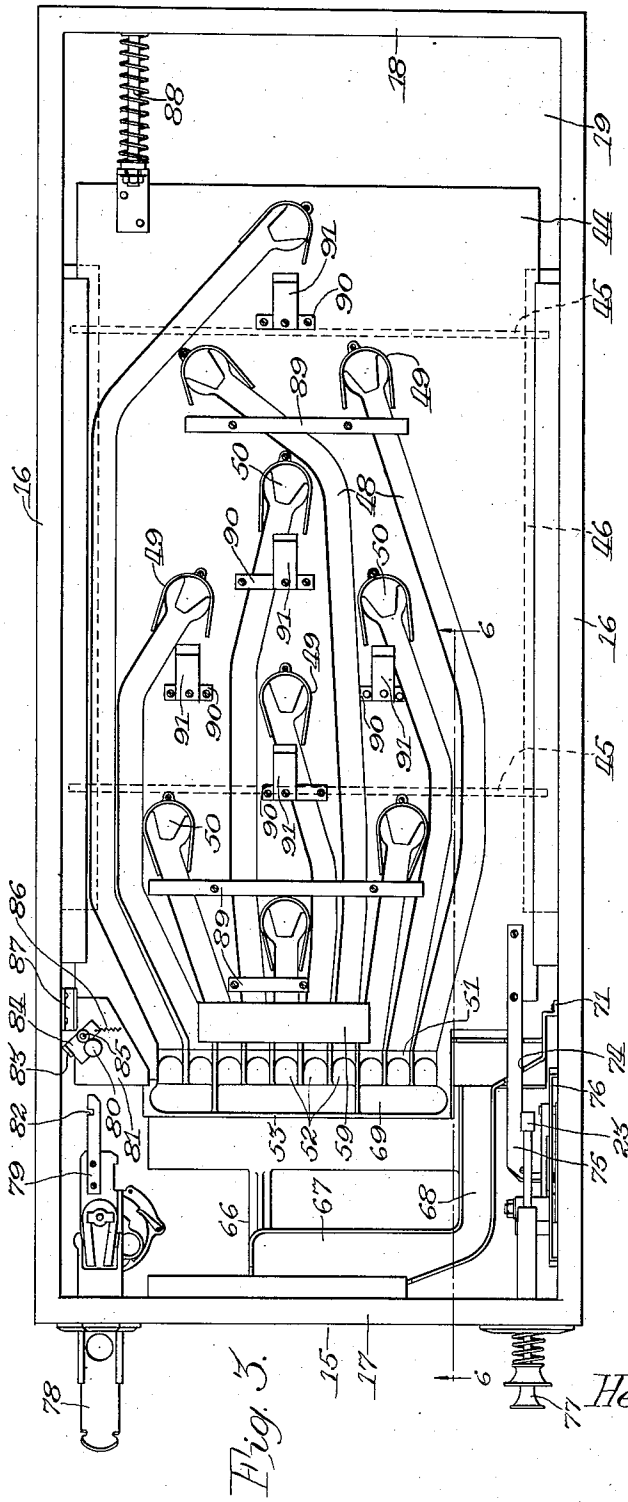


Fig. 3.

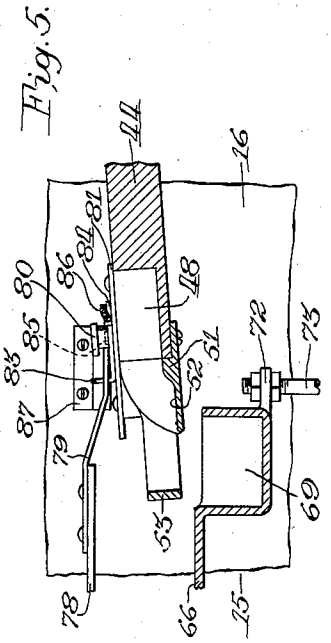


Fig. 5.

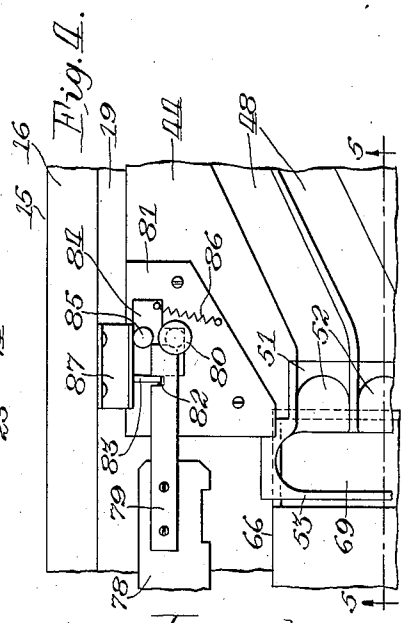


Fig. 4.

Inventor
Herbert G. Breitenstein
By Paul O. Pippel
Atty.

Sept. 14, 1937. H. G. BREITENSTEIN 2,093,162

GAME OF SKILL.

Filed March 7, 1934 4 Sheets-Sheet 3

Fig. 6.

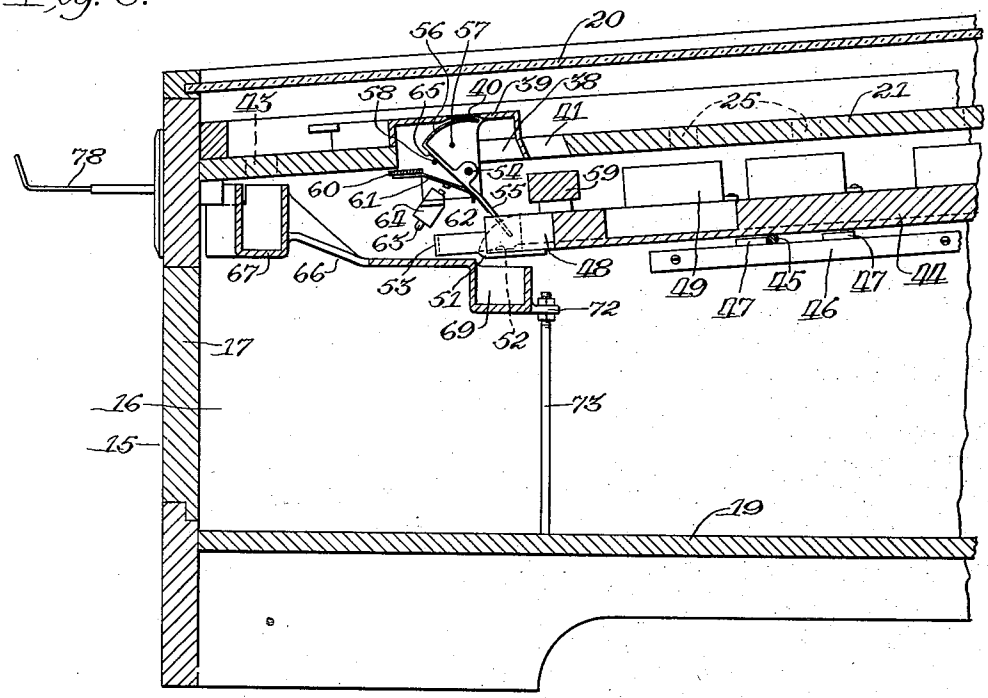
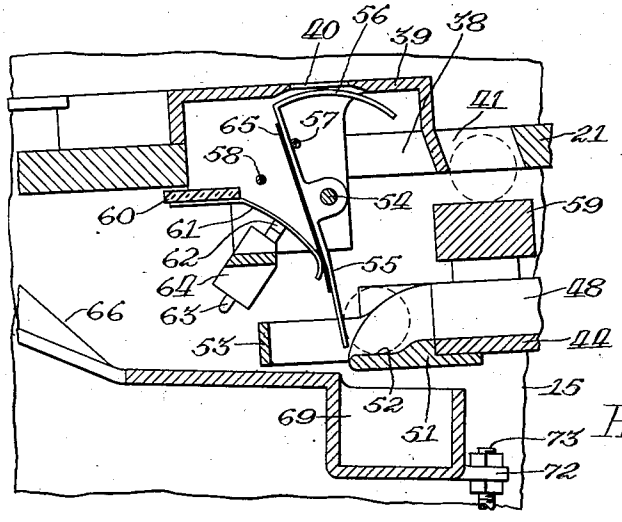
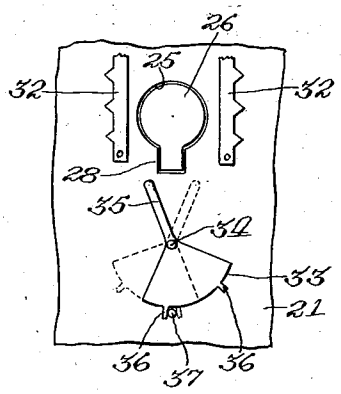


Fig. 8.

Fig. 7.





Inventor
Herbert G. Breitenstein
By Paul O. Pippel
Atty.

Sept. 14, 1937. H. G. BREITENSTEIN 2,093,162

GAME OF SKILL

Filed March 7, 1934 4 Sheets-Sheet 4

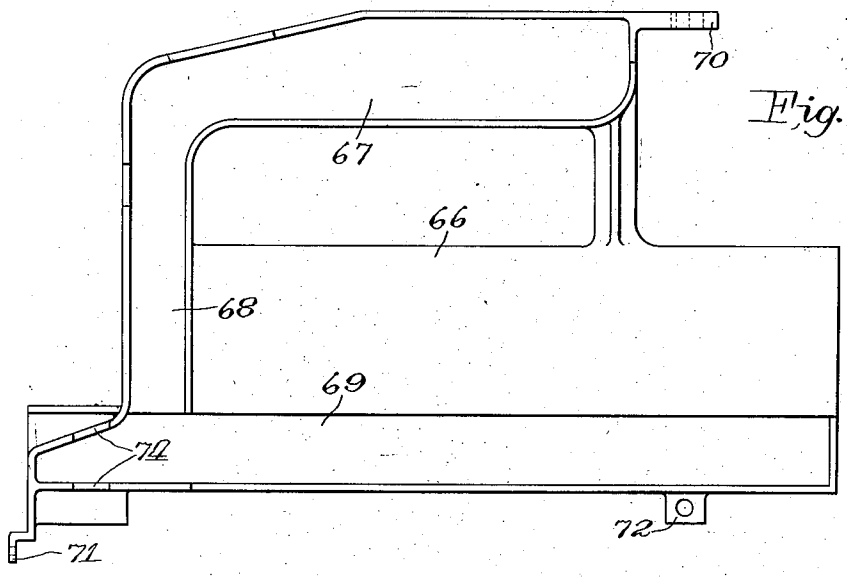
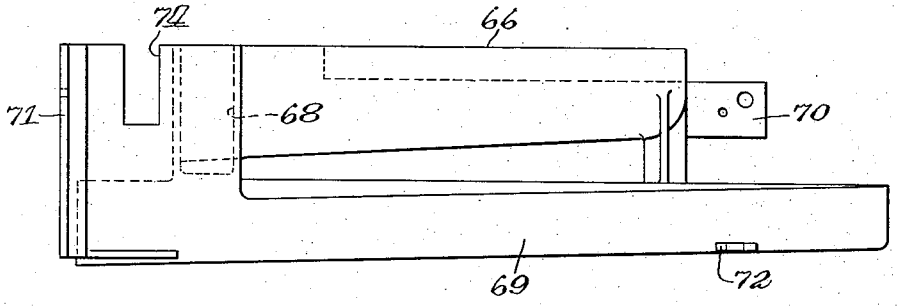


Fig. 9.

Fig. 10.



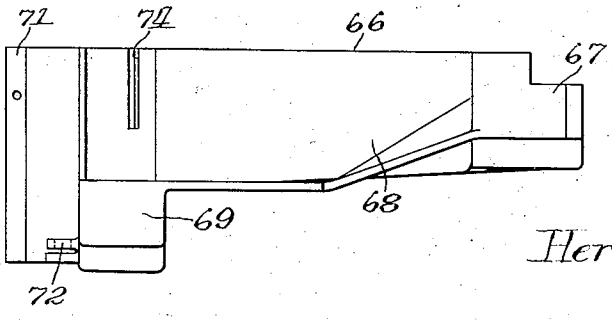


Fig. 11.

Inventor
Herbert G. Breitenstein
By Paul O. Pippel
Atty.

Patented Sept. 14, 1937

2,093,162

UNITED STATES PATENT OFFICE

2,093,162

GAME OF SKILL

Herbert G. Breitenstein, Chicago, Ill., assignor to Raymond T. Moloney, Chicago, Ill.

Application March 7, 1934, Serial No. 714,477

11 Claims. (Cl. 273—121)

My invention relates to improvements in a game of skill of the type comprising an inclined playing board provided with holes through which properly projected balls drop to be trapped. Generally it relates to structural features that will improve and enhance the play and operation of the game.

Among the objects of the invention it is desired to provide an improved ball trapping structure after the balls pass through the target holes.

It is also an object to provide an improved ball return means for the ball projector.

Further, it is an object to provide an improved ball switch on the playing board to make the play more interesting.

Still another object is to provide a coin released game in which novel features are present to prevent unauthorized release of the game for play when an improper coin is used in an effort to release the mechanism. Another object is to provide means to register the score values of balls played through the holes.

Other important objects will become apparent as the disclosure is more fully made.

Briefly, these desirable objects are attained in a practicable form of the invention herein chosen for purposes of illustration, in which the game comprises a box containing an inclined playing field or board provided with a predetermined number of targets in the form of holes through which properly projected balls fall when projected one by one thereover by a shooter located at one side of the board. Below the main board is a second panel or board provided with alleys to direct trapped balls to registers which are operated by the balls to indicate score values. To prevent more than one ball from going through the same hole, each hole is provided with a normally open trap door that is automatically closed by the ball passing through the hole. A novel ball switch is mounted on the upper end of the play board to deflect the balls hitting the same. The under panel includes a ball accumulator, and the panel is slidably mounted to be pushed by the coin release slide to free the balls from the accumulator and direct them into a trough that leads them to a lifter for moving the balls one at a time into position in front of the ball shooter. The sliding panel includes structure for preventing unauthorized play or release of the balls when the coin slide is improperly manipulated. So much of the brief description will suffice in giving a general idea of the mechanism, which is particularly illustrated in the accompanying sheets of drawings, wherein:

Figure 1 is a general plan view of the game, showing the top board and register panel;

Figure 2 is an enlarged, side sectional view of the trap door for the target holes, as seen along the line 2—2, shown in Figure 1, looking in the direction of the arrows;

Figure 3 is a general plan view of the interior mechanism as seen when the top play board is removed;

Figure 4 is an enlarged fragmentary detail plan view of a saftey device cooperable with the coin chute release;

Figure 5 is a detail side view, partly in section, of the structure shown in Figure 4 and as seen along the line 5—5 appearing in that figure, and looking in the indicated direction;

Figure 6 is a side sectional view of the rear end of the game as seen along the line 6—6 appearing in Figure 3, looking in the direction of the arrows;

Figure 7 is an enlarged side sectional view of the register mechanism as seen in Figure 6;

Figure 8 is an enlarged plan view showing in detail the ball switch;

Figure 9 is a plan view of the ball chute casting;

Figure 10 is a side view of the same casting; and,

Figure 11 is an end view of the same part.

Looking to Figures 1 and 6 it will be seen that the game is housed in a generally rectangular box 15 having side walls 16, a front wall 17, a rear wall 18, and a floor 19. The top of the box is closed by a glass panel 20 and immediately therebelow is mounted a play field or board 21 which is inclined from the rear to the front so that balls will gravitate downwardly thereover in a well known manner.

The board 21 has a ball projection passageway 22 ovally arranged thereon so that balls shot by a projector 23 will travel around the periphery of the field and emerge at 24 onto the field. Said field is provided with ten holes 25, in the present embodiment of the invention; each hole being closed by a trap door or pad 26 as shown in Figure 2 when a ball drops therethrough.

As shown in Figure 2 the pad or door 26 is circular and each one includes a substantially right angularly extended trip leg 27 which is curved properly to receive the ball engaging the same. Further the board 21 rearwardly of each hole 25 is notched as at 28, which notch is lined with a metal liner 29 to the underside of which

is secured a flat spring 30 that has an upwardly extending portion which presses against the leg 27. Said liner 29 carries a pivot pin 31 for pivotally mounting the trap door. In Figure 2 the dotted lines show the normal position of the hole 25 with the door 26 open. The spring 30 yieldingly locks the door in open position. When a ball drops into the hole, the ball which preferably is a steel ball, engages the curved trip leg 27 to overcome the spring pressure and rock the leg downwardly to the full line position shown, thereby closing the hole 25 as the pad 26 is pulled down to horizontal position. The spring 30 is now operative yieldingly to lock the door in its hole closing position.

The improved ball switch appears in Figure 1 at the top of the board and a detail plan view thereof is shown in Figure 8. As shown in these figures the upper or topmost hole 25 is bounded by parallel guide bars 32 between which a ball must roll to drop into that hole. After said hole has been played once the hole is closed by its door 26 and thereafter succeeding balls passing between the guides 32 must engage the ball switch now to be described.

This switch is shown at 33 located on a pivot pin 34 on the board 21 just below the top hole 25. It embodies an arm 35 extending forwardly of the pin 34 and a sector shaped portion rearward of the pin, said sector having two spaced stops 36 to engage a stop pin 37 on the board 21. As shown in Figure 8 when a ball passes the closed top hole 25 it is deflected by the obliquely disposed arm 35 to engage the sloping shoulder of the sector to deflect the ball to the right in the full line position of the switch shown in Figure 8. The weight of the ball thus causes the switch to be flipped to the dotted line position shown so that the next ball to engage the switch would be deflected in an opposite direction. The stops 36 and pin 37 limit the pivotal movement of the switch and keep it always in proper position relative to the hole and its guides 32. By this switch means the play is made more interesting as it deflects balls encountered thereby first to one side of the board and then to the other side.

As appears in Figures 6 and 7 the lower end of the board 21 is formed with a relatively large transverse opening 38 closed by a register plate or panel 39 having a transverse sight opening 40 formed therein. A portion of the opening 38 is left uncovered in rear of the plate 39 to leave a transverse ball drop opening 41 which, as shown in Figure 1, is designed to receive spent balls that happen to miss the main holes 25. Suitable rails 42 serve to guide the spent balls to said opening 41. At the extreme lower end of the board 21 is a free play opening 43. If a ball falls thereinto, it is returned to the lifter for a repeated shot.

Below the main or play board 21 is another inclined board 44 as shown in Figures 3 and 6, sloped in substantial parallelism with the upper board 21 and spaced a sufficient distance therebelow to permit balls to drop clear through and free of the upper board. This board 44 is slidably carried for endwise movement, or in the direction of its length, on several roller rods 45 arranged transversely thereunder, said rods having their ends mounted on rails 46 secured to the side walls 16 of the box. These rods are free to roll on the rails within limits determined by stops 47. In this manner the slide panel 44 is carried in the box.

Under each hole 25 is arranged in the panel 44 the terminal end of an alley 48, there being ten alleys as shown best in Figure 3, one for each hole 25. Each alley has its terminal end under a hole 25 delineated by a vertical U-shaped wall member 49 (see also Figure 2), each member 49 including a pressed out tongue to form a chute 50. The wall member 49 makes certain that a dropping ball coming through a hole 25 will be directed into its alley 48, and the chute 50 serves to impart initial momentum to the ball to start it moving down its alley 48.

The lower end of the slidable panel board 44 terminates under the register plate 39, said lower edge having connected to it a transverse bar, or ball accumulator tray member 51 formed with a series of ten pockets 52 alined respectively with the lower ends of the ten alleys 48. Rearwardly spaced from the tray bar, and formed as an integral part thereof is a transverse loop or bail element 53 for a purpose later to be made known.

Looking now to the register devices shown in Figures 1 and 7, it will be seen that the plate 39 has depending end walls which carry a transverse pivot shaft 54 to which are pivotally connected intermediate their ends, the legs 55 of a transversely spaced series of ten register segments 56 movable under the sight opening 40, each of said segments on its top surface carrying a number to correspond to the number value given to the hole 25 with which it is associated.

The legs 55 extend downwardly some distance and into a pocket 52 so that a ball rolling off the end of an alley 48 lodges or presses against the leg to pivot the segment 56 into view position under the slot 40. The fore and aft pivotal movement of the registers is limited by a front transverse wire rod 57 and a rear transverse wire 58. When the register is stopped in its forward, or indicating position, the ball which operated it comes to rest in the adjacent pocket 52 for temporary storage. All balls played through the holes 25 are thus accumulated on the pocketed tray bar 51.

Adjacent the bar 51 the board 44 carries a transverse ball stop bar 59 just under the slot 41 so that balls falling into the same seat themselves on the bar where they are trapped and held from falling into the pockets 52. Thus these balls cannot operate the registers. See Figure 7.

The ball operated register devices are made to close contacts for electrical circuits, not shown, to actuate a reward dispensing mechanism, also not shown. Such contact mechanism, as shown, best in Figure 7, comprises a transversely disposed, insulated plate 60 carried by the register plate 39 under the board 44. This plate carries a series of ten spaced spring fingers 61, one for each register, and each finger carrying a contact electrode 62 normally gapped away from (see Figure 6) ten respective contacts 63 mounted in a cross bar 64 also carried by the end walls of the register panel 39. An insulated pad 65 separates the legs 55 from the spring fingers 61. It now can be seen that when a ball pushes a register into indicating position, its leg 55 also moves a spring 61 to engage the associated contacts 62, 63 to establish a circuit for any suitable electrically operated auxiliary mechanism, such, for example, as a reward pay off dispenser.

As shown in Figures 6, 9, 10 and 11, there is an improved ball routing and chute structure, which comprises an integral casting generally designated 66. The integral member includes a transversely extending runway 67 to receive free play

balls dropping through the hole 43. The runway slopes to and communicates with a forwardly extending chute 68 which directs the balls to the lower end of a transversely inclined main ball chute 69, said latter chute being located below the accumulator tray pocket bar 51. As shown in Figure 6 there is then a pair of spaced chutes 67, 69 arranged in substantial parallelism and at different levels, with a communicating runway between them at one end. The chute casting has apertured ears 70 for fastening to the front wall 17; 71 for fastening to the right hand wall 16 adjacent the shooter 23; and, lastly, an ear 72 for mounting on a post 73 carried on the floor 19 as shown in Figure 6.

Adjacent the ear 71 the walls of the runways 68 and 69 are provided with a vertical slot 74 through which may move a hooked arm 75 secured to the sliding panel 44 as seen in Figure 3. A ball lifter 76 of any conventional design is pivotally mounted on the right hand wall 16 and is operable by a pusher 77 to elevate balls one by one from the lower end of the chute 69 to a position above the board 21 in front of the shooter 23, all in a manner well understood in this art. The hooked arm 75 at times engages the lifter to move a portion thereof into position across the lower end of the ball chute 69 to prevent the balls from rolling to the lifter.

As has been described the alley panel 44 is slidably mounted on rollers. Said panel is so moved by a coin operated slide 78 which has an extension 79, as best appears in Figure 4 to abut a post 80 on a corner plate 81 secured to the board 44. The slide 78 is of the kind which can only be moved in, part way, if a spurious magnetic coin is used, such part way movement bringing the end of the extension up to the post but not permitting enough push to be transmitted thereto to completely slide the panel. When this occurs a slot 82 in the extension engages a vertical boss 83 on a pivoted lever 84, mounted on the pivot 85. A spring 86 normally holds the lever 84 as shown in Figure 3 so that a part way movement causes the same to engage a guide 87 on the adjacent wall which pivots the lever inwardly against the pull of the spring to move the boss 83 into the slot 82 for positively locking the slide to the panel so that no amount of jiggling the parts will permit any further sliding inward of the panel when a spurious coin is used. All that can be done is to permit the slide 78 to retract for removal of the spurious coin. A spring 88 pushes the panel 44 forward in the direction of the front wall to normal position and, at the same time the lever 84 guides past the guide 87 until it is free therefrom, whereupon the spring 86 is operative to restore the latch to normal position as seen in Figure 3.

When an authentic coin is used in the slide 78, of course, it can then make a full complete stroke, the slot 82 latching the boss 83; but the extension can push through on the post 80 to carry the panel 44 its maximum movement.

Several cross bars 89 are appropriately mounted on the panel 44 above the alleys 48 to engage the legs 27 of the doors 26 for moving the closed doors to open position as the panel is moved rearwardly when releasing the game for play.

Five of the doors 26 are controlled by a different mechanism which comprises five bars 90 on the panel 44, each bar carrying a forwardly extending light, flat spring 91. See also Figure 2. These springs 91 constitute a cheat proof feature to prevent improper play of the game and particularly improper closing of the contacts 61, 63 to work the pay off mechanism, as will be described in the summary to this specification.

We will assume, in describing the operation, that the game has been played and that most of the ten balls are accumulated on the tray 52, and some are lodged on the bar 59 under the slot 41. This is the starting position as shown in Figures 3 and 7 with the alley panel 44 pushed forward toward the wall 17 by the spring 88. To release the game for play a coin is placed in the slide 78 which thereupon is pushed in, or ahead, causing the extension 79 to engage the post 80 to move the panel rearward toward the wall 18. Such movement of the panel 44 carries the pockets 52 ahead to the position shown in Figure 5 where the lodged balls are free to roll down the inclined bottoms of the pockets and to drop into the chute 69. At the same time the bar 59 moves back away from under the slot 41 so that any balls thereon also gravitate into the chute 69.

At the same time the bail 53 engages the legs 55 of the registers 56 to pivot them toward the left as viewed in Figure 7 which sets the segments 56 in non-indicating position. This also gaps apart the contacts 61, 63. The cross bars 89 and light springs 91 engage the downwardly extending legs 27 of the doors 26 to move the latter to open position. At the same time the panel carries the arm 75 with it into a position to move the ball lifter 76 to close off the lower end of the inclined chute 69 which prevents the balls for the time being from moving into the path of the ball lifter 76.

When the coin slide 78 is freed the spring 88 is instantly operative to return the panel 44 forward in the direction of the wall 17. As the panel so moves, the arm 75 moves with it so that the balls on the chute 69 can now pass freely into position to be raised one by one into position in front of the shooter 23. Thus, play is begun, the balls moving around the oval track 22 and emerging at 24 onto the play board 21 down which the balls gravitate to the holes 25. As a ball drops through a hole, it closes the door 26 in the manner described, so that in a single play cycle one ball only can drop through a hole.

The ball then drops into an alley 48 on the lower board 44 down which it rolls to engage the leg 55 of a segment 56 to set the same, and the contacts 61, 63. Having done this the ball comes to rest in the pocket 52 which it has entered. Some balls may pass through the hole 41; and, if so, they lodge on the bar 59 to be taken out of play. A ball dropping into the hole 43 enters the chute 67 for return to the lifter for a repeat play. Eventually all of the balls are either on the bar 59 or lodged in the several pockets 52. When all ten balls have been played the game is over and the parts must be released by another coin in the slide 78. The indicators 56 moved into scoring position register the values of the balls trapped.

The ball switch 33 operates in the manner already described to deflect the balls to the right or left to make the play more interesting.

The operation of the trigger lock for stabilizing the panel 44 when a spurious coin is used, has also been heretofore explained.

Unscrupulous players sometimes try to manipulate the game in a false manner to make it pay out the maximum reward by causing a ball to lodge in each one of the ten holes 25. They do this by holding the slide 78 in its "in" position, thus holding the panel 44 also in against the push of the return spring 88. By getting the

balls all up on the playing field they tilt the table and cause balls to lodge in all holes **25**. In the present game arrangement five of the balls can be lodged in five of the holes because when the panel **44** is so held the cross bars **89** are directly under their associated holes and serve to support the balls. These five holes are not reward pay off holes so no harm is done. However, as to the remaining five holes **25** they constitute the pay off holes and under these we find the light leaf springs **91** which cannot support the steel balls and permit them to drop through, and down their alleys **48** to the chute **69** where they are kept from further play by the obstructor portion of the lifter **76** which is moved into operative position as the panel **44** is being held in. Such trickery thus serves no purpose and all the player can do is to release the slide **78** and permit the spring **88** to push the panel **44** to its normal forward position.

From this disclosure it can now be seen that various related improvements have been made in a game of the type described which achieve all of the desirable objects heretofore recited.

It is the intention to cover all such changes of the disclosed embodiment which do not depart from the spirit and scope of the invention, the same being defined in the appended claims.

What is claimed is:

1. The combination of an inclined board having holes therethrough down which balls may gravitate to the holes, of a second inclined board under the first board, said second board having alleyways whose ends at one end terminate substantially under the respective holes, and U-shaped walls carried on the second board and respectively surrounding the terminal ends of the alleyways to guide the balls dropped through the holes into alleyways, said walls including a chute to impart momentum to the balls.

2. The combination of an inclined board having holes therethrough down which balls may gravitate into the holes, of normally open doors for the holes, means controlled by balls dropping in the holes to close the doors, a second inclined ball receiving board under the first board, rollers for slidably mounting the second board, door opening members on the second board, and means to slide the second board to cause the members to open the doors.

3. The combination of an inclined board having holes therethrough down which balls may gravitate into the holes, of normally open doors for the holes, means controlled by balls dropping in the holes to close the doors, a slidably mounted ball receiving panel under the board, and means on said panel to open the doors when the panel is slid, certain of said means comprising members movable under the holes and constructed to allow balls to drop through the holes onto the panel.

4. The combination of an inclined board having holes therethrough down which balls may gravitate into the holes, of normally open doors for the holes, means controlled by balls dropping in the holes to close the doors, a slidably mounted ball receiving panel under the board, and means on said panel to open the doors when the panel is slid, certain of said means comprising spring elements movable under the holes but permitting balls to drop through the holes to the panel.

5. The combination of an inclined board having holes therethrough down which balls may gravitate into the holes, of normally open doors for the holes, means controlled by balls dropping in the holes to close the doors, a slidably mounted ball receiving panel under the board, and means on said panel to open the doors when the panel is slid, certain of said means comprising cross bars movable under certain holes and adapted to support balls lodged in the associated holes, and certain other of said means comprising flat springs also movable under certain holes and adapted to let balls pass through the associated holes onto the panel.

6. A game of the class described comprising an inclined board provided with holes through which balls may drop that are projected over the board, a slidably mounted inclined panel under the board provided with passageways to lead balls to the lower end of the panel, means to accumulate most of the balls at the lower edge of the panel, a ball routing device at the lower end of the panel and under the lower end of the board, said device comprising an integral member having a pair of substantially parallel transverse inclined ball receiving chutes, a ball lifter, one of said chutes leading the balls to the lifter, said member including a passageway between the two chutes, and means to slide the panel to release the accumulated balls and cause them to drop into one of said chutes.

7. A game of the class described comprising an inclined board provided with holes through which balls may drop that are projected over the board, a slidably mounted inclined panel under the board provided with passageways to lead balls to the lower end of the panel, a pocketed cross bar at the lower edge of the panel to accumulate the balls played through the holes, a ball routing device at the lower edge of the panel adjacent the accumulator and under the lower end of the board, said device comprising a pair of spaced substantially transverse inclined ball chutes with a communicating ball runway therebetween, a ball lifter, one of said chutes leading the balls to the lifter, and means to slide the panel to release the balls from the accumulator bar and cause them to drop into one of the chutes, the other chute receiving spent balls from an opening in the board to be routed through the communicating ball runway to the other chute leading the balls to the lifter.

8. The combination of a board having a hole therethrough to receive a ball projected thereto, a normally open door for the hole including means operated by a ball falling through said hole to close the door, a movable panel under the board to receive a ball dropping through said hole, and means under said hole and carried by the panel and constructed to receive but allow a ball to drop through the hole onto the panel, said means serving when the panel is moved to move the door to hole closing position.

9. The combination of a board having a hole therethrough to receive a ball projected thereto, a normally open door for the hole including means operated by a ball falling through said hole to close the door, a movable panel under the board to receive a ball dropping through said hole, and a light, flat, substantially horizontal spring carried on the panel under the hole, said spring being too weak to support a ball falling through the hole onto the panel, but being strengthened in the direction of its length, whereby when said panel is moved said spring acts to move the door to hole closing position.

10. A game having an inclined board formed with alleys down which balls may roll, a pocketed

tray carried at the lower edge of the board, a transverse loop formed with the tray, a plurality of legs pivoted intermediate their ends and extending toward the pockets, said legs being moved from one position to another when balls lodge in the pockets, said board being shiftable to cause release of the balls from the pockets and the loop to engage the legs to move them to their former positions.

11. In a game apparatus, the combination of: a member providing a playing surface and having ball exit openings therein; a plurality of inclined ball runways arranged below and each in communication with a predetermined number of said exit openings; a closure member associated with each of said exit openings and actuated by balls passing therethrough into said runways to close said exit openings; a magazine receiving balls from the lower ends of said runways; means for elevating balls one at a time from said magazine to said playing surface; score-indicating members arranged at the lower ends of said runways and movable into score indicating position by balls passing down said runways; means cooperating with said score-indicating members and with said runways to retain balls at the lower ends of said runways and said score-indicators in score-indicating position; means for moving all said runways as a unit so as to release balls held thereby for return to said magazine; means operated by the said movement of said runways for resetting all of said closure members into open position so as to open said exit openings; and means adjacent said indicators for returning the said score indicators to their initial positions after the said movement of said runways.

HERBERT G. BREITENSTEIN.