

June 14, 1955

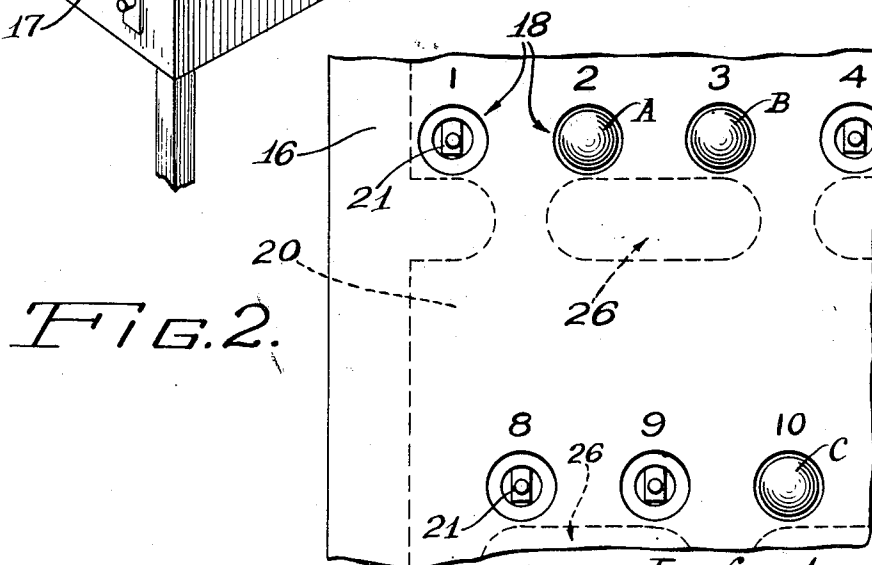
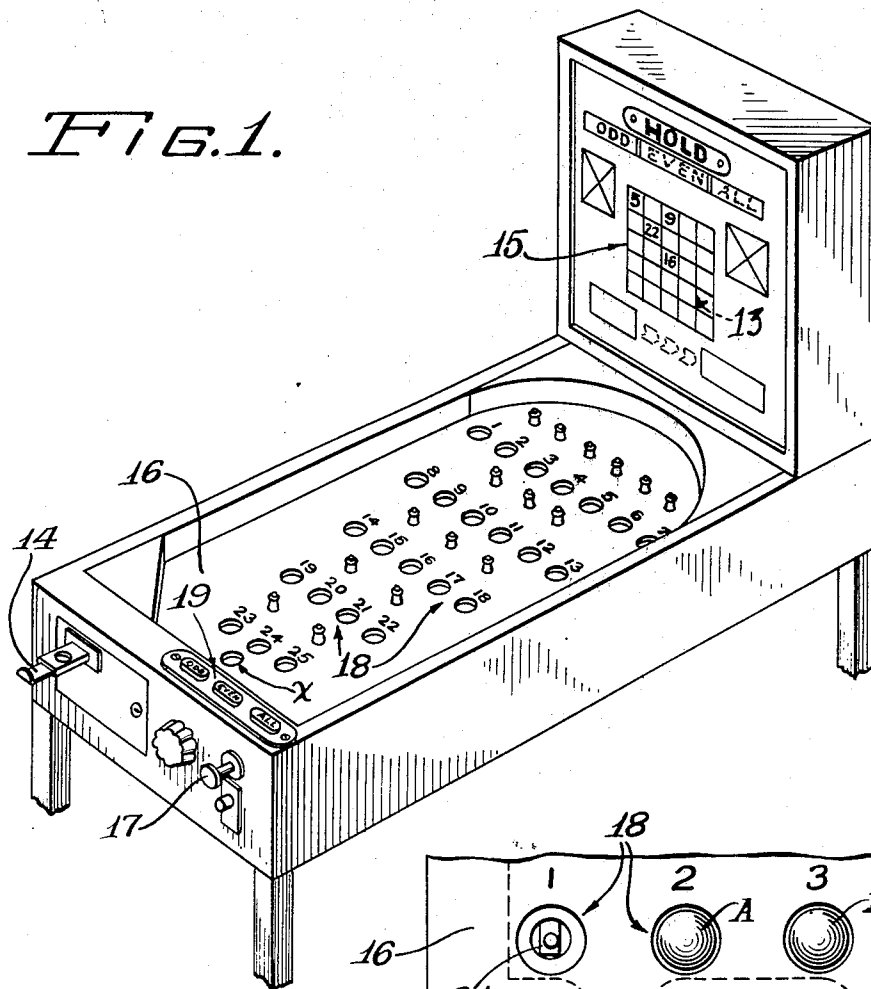
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2,710,756

SELECTIVE BALL RETURN MECHANISM

Filed Oct. 23, 1953

6 Sheets-Sheet 1



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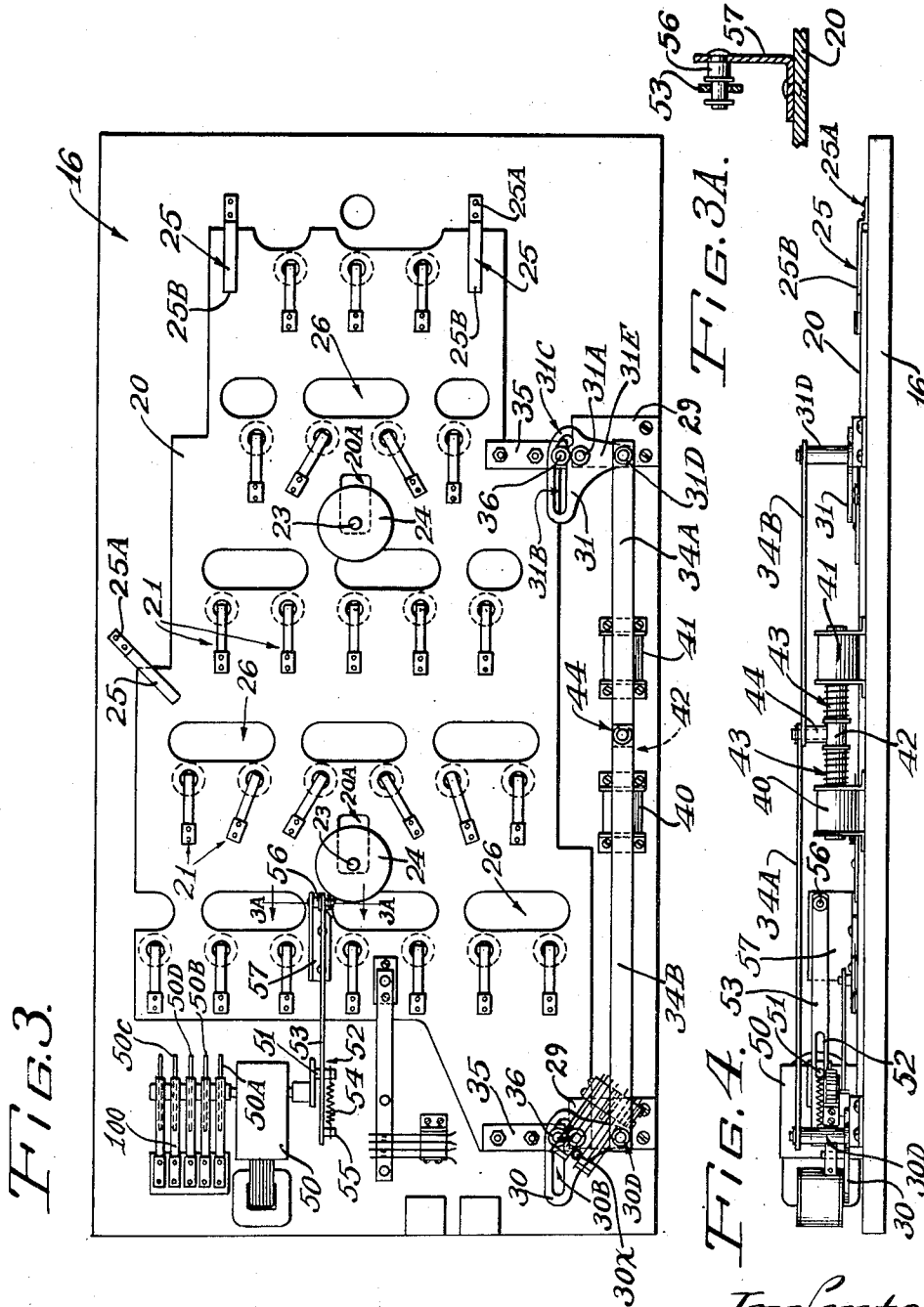
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SELECTIVE BALL RETURN MECHANISM

Filed Oct. 23, 1953

6 Sheets-Sheet 2



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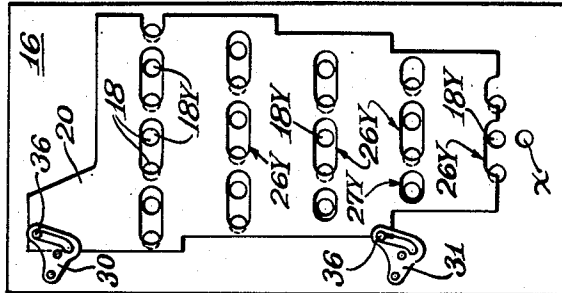
2,710,756

SELECTIVE BALL RETURN MECHANISM

Filed Oct. 23, 1953

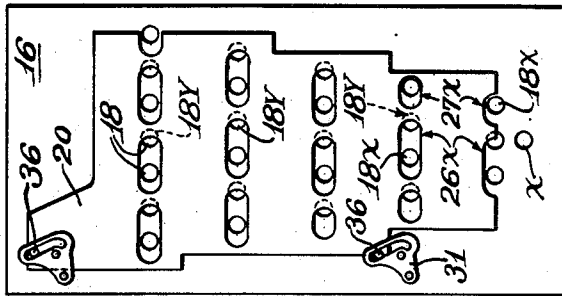
6 Sheets-Sheet 3

FIG. 5D.



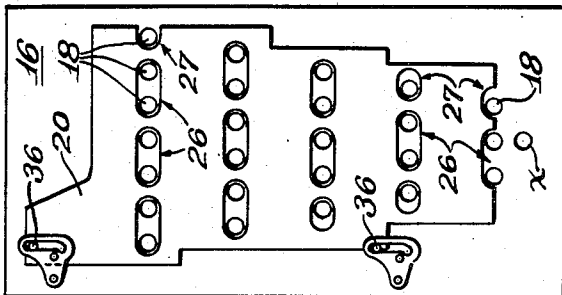
RIGHT SELECTIVE

FIG. 5C.



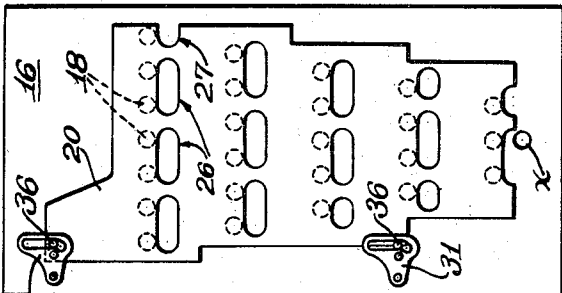
LEFT SELECTIVE

FIG. 5B.



FULL RELEASE

FIG. 5A.



NORMAL

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SELECTIVE BALL RETURN MECHANISM

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Fig. 6.

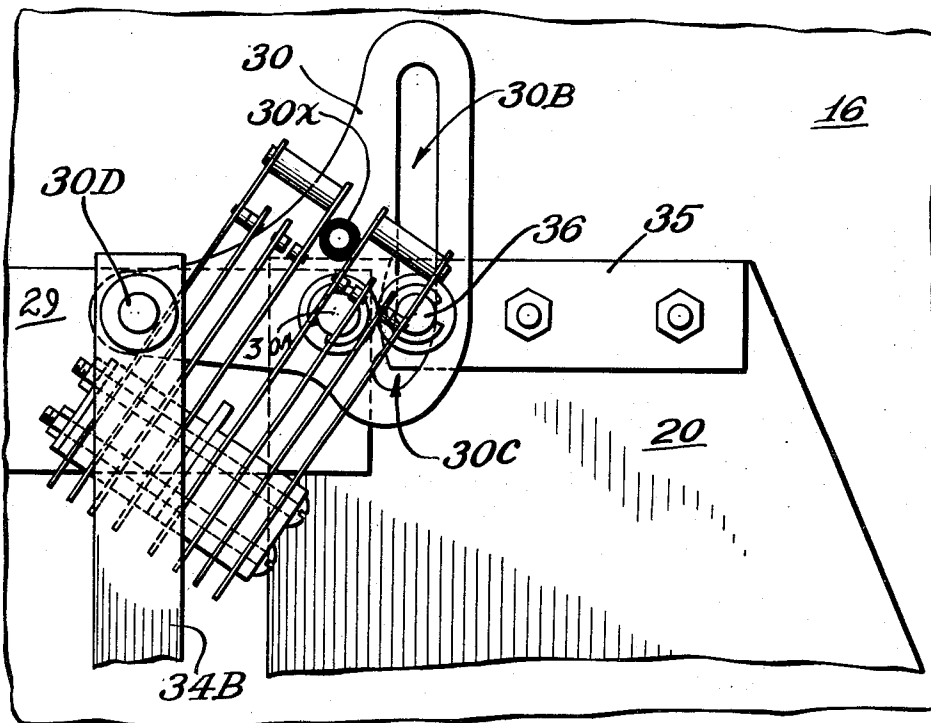


FIG. 9.

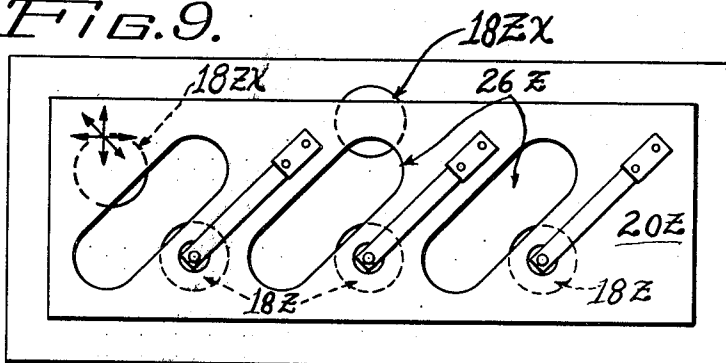


FIG. 10.

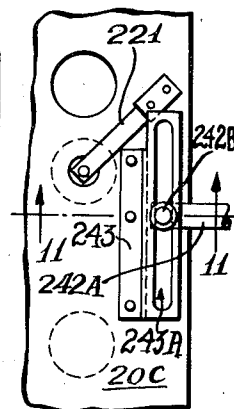
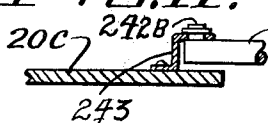


FIG. 11. 242A



2A

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2,710,756

6 Sheets-Sheet 6

FIG. 8.

The diagram illustrates a complex electrical circuit for a game machine. It features a central play area divided into three horizontal sections labeled I, II, and III. Each section contains a grid of circular elements (possibly balls or targets) and associated wiring. Section I includes components like 20A, 252, 257, 258, 260X, 260Y, 266C, and 289. Section II includes 20B, 253, 257, 258, 260X, 260Y, 266C, and 289. Section III includes 20C, 253, 257, 258, 260X, 260Y, 266C, and 289. The circuit is powered by a 215V source (215) and includes a fuse (FP) and a switch (214). It also features a 'FREE PLAY' feature (300) and a 'FREE PLAY + SELECTION FEATURE AWARD' feature (302). The circuit is controlled by ball switches (281, 282, 283) and includes a 'READY SELECT NOW' indicator (248). The diagram is signed by the inventor, Donald E. Hooker, and the attorney, Allen Livingston.

219

253

250

230

260

250D

250E

261

16x

260X

260Y

18

244

221

242A

242

242X

260X

260Y

18

244

221

258

257

253

20B

241A

241

243

241X

240X

260X

260Y

291

290

292

293

240

240A

252

20A

257

258

257

18Z

221

240X

242X

281

282

283

280

261

241X

242X

240X

270

274

275

276

277

278

279

271

272

273

274

275

276

277

278

279

280

281

282

283

284

248

READY
SELECT NOW

TO BALL SWITCHES

304

215

214

216

217

218

266C

303

300

298

299

266C

289

302

305

300

FREE PLAY

FREE PLAY +
SELECTION FEATURE
AWARD

CIRCUIT MEANS
(CONTROLLED BY BALL
SWITCHES)

FEATURE RELAY

266B

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1

2,710,756

SELECTIVE BALL RETURN MECHANISM

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Application October 23, 1953, Serial No. 387,949

18 Claims. (Cl. 273—125)

This invention relates to the improvements in ball-rolling games of the type in which balls are played into pockets open at the bottom wherein they are temporarily retained by a shuffle panel or shutter means therebeneath to be released for reuse in the game when a given round of play has been completed, the principal object being the provision of means for selectively returning or releasing only certain balls for replay while retaining others in order that a successful score, as represented by certain of the pocketed balls, may be held, while others not counting sufficiently toward a desired score are released from the pockets to be played again in an effort to improve the score.

A further object is the provision of selective ball-return means including a ball-releasing shutter plate, electromagnetically shiftable guide means for the shutter to determine its resultant direction of movement, a circuit with selectively operable switch means for the player's use to operate this guide means, and further circuit means for moving or driving the shutter so that the latter will be moved in one or another direction relative to the ball pockets to release balls in one of several possible groupings, depending upon the position of the shutter guide means as selectively determined by the player.

Further objects relate to the provision of selective ball-holding and return apparatus including shutter means and selectively operable electromagnetic means for causing the shutter means to move in various different directions to determine how many and which balls shall be released or held; and to the provision of lockout circuit means for limiting the number of selective operations permitted in a round of play of the game.

Still further objects relate to the provision of selective ball-holding and return means in the form of a shutter with selectively movable sections and actuating means for causing joint movement of all sections in a certain direction for full resetting ball return and for effecting ball-releasing movement of certain sections individually in another direction.

Still other objects relate to the provision of circuit means for effecting full resetting ball-releasing operations of the shutter means, and partial ball-releasing operations thereof, and for establishing a lockout circuit in both kinds of operation, and causing release of the lockout after each partial ball release, but not after each full ball release.

Other features relate to the shape and location of ball exits in the shutter to produce different resultant patterns of releasing registry depending upon the direction in which the shutter moves, or the number of shutter elements caused to move.

Additional objects and aspects of novelty and utility will appear as the following description proceeds in view of the annexed drawings, in which:

Fig. 1 is a fragmentary perspective view of a ball-rolling game of a type in which the novel selective ball-return means has been successfully employed;

Fig. 2 is an enlarged top plan detail of a portion of

2

the ball-playing field and certain odd and even numbered ball-scoring pockets therein;

Fig. 3 is a bottom-plan view of the ball-playing board showing the novel selective shutter panel;

Fig. 3A is a cross-sectional detail of the shuffle motor stroke arm taken along lines 3A—3A of Fig. 3;

Fig. 4 is a side elevation of the board and panel of Fig. 3 showing the electromagnetic shutter-guide positioning means;

Figs. 5A to 5D are schematic bottom plan views of the selective shutter panel in different ball-holding positions;

Fig. 6 is an enlarged bottom plan view of one of the shutter guides and associated supervisory switch means;

Fig. 7 is a circuit diagram;

Fig. 8 shows a modified form of the invention with circuit connections therefor.

Fig. 9 is a plan view of a modified arrangement of selective ball exits in a shutter;

Fig. 10 is an enlarged fragmentary plan detail of the solenoid-plunger attachment shown in Fig. 8;

Fig. 11 is a fragmentary sectional detail taken along lines 11—11 of Fig. 10.

Depicted in Fig. 1 is a ball-rolling game of the coin-controlled variety which is adapted to be conditioned for a round of play by operation of a conventional coin chute 14, the operation of which causes a certain number of balls, say five, to be released to the player by known types of mechanism (not shown) so that the player can shoot the balls one at a time onto the playing field 16 by operation of the plunger 17 in the well-known manner with the object of lodging such balls in the numbered ball pockets 18 to achieve a desired score.

Let it be assumed by way of example that a player has lodged three balls, A, B, C, in pockets #2, #3, and #10, respectively, as shown to magnified scale in Fig. 2, and also assume that he was entitled to play five balls in any round of play and that the remaining two balls in this example failed to lodge in any scoring pocket, but rolled into the special exit pocket —X— at the bottom of the board, Fig. 1.

The aforesaid balls A, B, and C, will be retained in their respective scoring pockets by a shutter panel 20, indicated in dotted lines partly in Fig. 2, and shown in its entirety in full lines in Fig. 3.

Carried on the underside of the shutter panel 20 are ball-operated switches 21, one for each ball pocket and so situated that each switch underlies its corresponding ball pocket when the shutter panel 20 is in its normal blocking or closing position, so that the lodgement of a ball in any pocket will actuate the appertaining ball switch and operate certain scoring mechanism and lights (Figs. 1, 7) in a certain manner to cause the corresponding score value to be illuminated on the score panel 15, Fig. 1.

The shutter panels in games of the type here being described are sometimes also referred to as "shuffle panels" and are commonly provided with openings which can be caused to register simultaneously with all of the ball pockets by moving the shutter panel into the proper ball-releasing position.

The game apparatus, as thus far generally described, is old and well-known in the art, particularly as regards the use of a shuffle panel slidable back and forth beneath ball pockets to trap or release the balls therein depending upon whether holes in the panel are disposed in or out of registration with the ball pockets.

According to the present invention the shuffle panel 20 (considered apart from certain guide mechanism which will be later described) is mounted beneath the ball-playing field or board 16 (Fig. 3) to shift in any direction, instead of being limited to shift only back and

forth, as was the characteristic of the old type of shuffle panel.

Such omnidirectional movement of the novel shutter panel 20 is made possible by mounting the same beneath the play field 16 by means of pins 23 on the board 16 projecting through over-size holes 20A in the shutter panel and retaining discs 24 on the pins which are still larger than the over-size holes, so that the panel can slide in any direction in a plane parallel to that of the ball playing board.

Additional guiding support for the shutter panel includes retaining fingers 25 (Fig. 3) attached as at 25A to board 16, each having a free end portion 25B offset upwardly to overlies the panel (as in Fig. 4).

The ball exit openings 26 (Figs. 2 and 3) employed in the novel shutter panel means are not of the ordinary round configuration commonly found in ball games of this class, but are of special shape to correspond with the selective ball-releasing pattern employed.

For example, two of the ball exit openings 26, as seen in Fig. 2, are elongated and respectively span the distance between at least two adjacent ball pockets Nos. 2 and 3, or 8 and 9.

It will be apparent that if the shutter 20 is shifted upwardly in Fig. 2 the especially shaped exits 26 will register with both of said ball pockets and the balls A and B therein would be permitted to drop out.

By referring to Fig. 5A, it will be seen that all ball exit openings 26, and the single openings 27, are out of register with the ball pockets; this is the normal or closed condition of the shutter in which all pockets are in ball-retaining condition.

In Fig. 5B, the shutter panel 20 has been shifted upwardly to full ball-releasing or returning position, in which all ball exit passages 26, 27 register with their respectively associated pockets and all balls trapped therein would therefore be released. This is the full ball-releasing position of the shutter which effects the return of all pocketed balls to the player when, for example, a new game or round of play is initiated.

However, the novel shutter means is selectively shiftable to positions other than the aforesaid full-release or return position for the purpose of freeing the balls from only certain pockets at the option of the player.

Consider in Fig. 5C, for instance, that the shutter panel 20 has been also selectively shifted toward the left (in these bottom views), as well as shifted in releasing operation upwardly, with the result that now certain ball exits 26X, 27X are in ball-releasing registry with certain ball pockets 18X; while some of the ball pockets 18Y are blocked.

Still another selective ball-releasing position of the shutter 20 is illustrated in Fig. 5D wherein the shutter 20 has this time been selectively shifted toward the right and also displaced upwardly, with the result that now a different set of ball pockets 18Y are in registry with the ball exits 26Y, 27Y in a new releasing position which is evidently different from that depicted in Fig. 5C.

Thus, it will now be clear that by shifting the shutter panel in one direction (e. g. upwardly) all balls can be returned; whereas a shift of the panel in additional directions (e. g. right or left) will effect release of less than all balls and those which are to be thusly released depend upon the direction of the added or selective shifting component.

Thus, a variety of possibilities is available in varying the pattern of selective ball return and holding lay-outs depending upon the location or grouping of the pockets and the exits, and the pattern is not limited to the triangular array of pockets depicted in Fig. 1.

Means for effecting the selective ball-releasing action of the shutter is illustrated in one form in Fig. 3 and includes a pair of pivoted shutter guides 30, 31 of identical construction, the right guide being described as typical and having a pivotal mounting 31A on bracket 29 on the

playing board 16 with an elongated guide slot 31B on one lever arm at one side of the pivotal mounting, and a pivotal connection 31D to an operating lever 34A on its other arm 31E on the opposite side of the pivot at 31A. The selector guide 30 is similarly interconnected with the companion operating lever 34B.

For the embodiment shown, the slot 31B (and the slot in the companion guide 30) preferably includes an arcuate component as at 31C, which prevents unwanted shifting of the shutter panel in certain positions.

Means pivotally interconnecting the shutter panel with the selector guides 30, 31, include brackets 35 (Figs. 3 and 6) attached to the shutter panel and each having a pivot pin 36 working in the slot portion of one of said selector guides.

It will be evident from inspection of Fig. 3 (which shows the neutral or non-selecting normal condition of the guide means 30, 31) that if the panel 20 is shifted upwardly, as in a full release of all balls, then the pin means 36 would have only linear movement upwardly in the guide slots 30B, 31B, so that there would be no additional motion component of selecting displacement. This same condition exists in the schematic views of Figs. 5A, 5B.

If, however, the guides 30, 31 are pivoted into the position of Fig. 5C, and the same upwardly-acting shifting force is now applied to panel 20, the pin means 36 will act as a cam in the guide slot means 30B, 31B, and provide an added motion component which also effects a leftward displacement of the shutter panel with the selective ball-releasing results heretofore mentioned.

Likewise, a different pivotal positioning of the guides 30, 31, as in Fig. 5D, will produce a compound displacement of the shutter, when the upward driving force is applied, which will cause a resultant shift of the shutter toward the right and also upwardly to position the ball exits as depicted in said Fig. 5D.

Means for pivotally shifting the guide means 30, 31, includes a pair of solenoids 40, 41 (Figs. 3 and 4), mounted with their bores in alignment to attract a common plunger assembly 42 in opposite directions against opposed normalizing springs 43 which maintain the plunger means in a normal mid-position.

A pivot stud 44 at the center of the solenoid plunger assembly connects with the two contiguous ends of the operating arms or levers 34A, 34B.

Energization of solenoid coil 40 would cause a clockwise pivoting of the guide means 30, 31, thereby slanting the elongated cam slots 30B, 31B, in the attitude depicted in Fig. 5D, so that the shutter panel 20 would assume the final releasing position shown in that figure when the necessary shifting or driving force (upward) is applied thereto, as previously explained.

Similarly, energization of the other solenoid 41 would produce a counter-clockwise pivoting of the guides 30, 31, to move the latter to the position of Fig. 5C with the consequent resultant displacement of the shutter there depicted upon application of the necessary shifting force thereto.

The driving or displacing force for shifting the shutter panel 20 into the various releasing positions shown in Figs. 5B, 5C, 5D, is preferably supplied by an electric motor 50 (Fig. 3) having a crank pin 51, working in a long slot 52 in a stroke bar 53, cooperatively with a spring 54 connected to said crank pin and a pin 55 on an end of said bar.

The opposite end of the stroke arm or bar 53 has a loose connection with a pin 56 on a bracket 57 (Fig. 3A) fixed on the shutter panel. The loose connection at 56 is sufficient to permit lateral play of the pin 56 relative to the attached end of the stroke arm so that the shutter panel can shift laterally of its long axis, i. e. up and down in Fig. 3, lengthwise or axial shifting being effected by reciprocation of the stroke arm 53 by action of the motor and crank means 50, 51, 52, 54.

Before describing the circuit means for selectively actuating the guide control solenoids 40, 41, it is pointed out that the type of game illustrated includes a special score award arrangement frequently referred to as a replay feature, which signifies in the art that the attainment of certain score values will automatically condition the game apparatus for one or more further rounds of play without the necessity of employing a coin to unlock the coin slide or control 14.

There are a number of types of free-play or replay control available for use in connection with the novel selective ball-return means herein disclosed, and since no claim of invention is made in this application to any particular form of scoring or replay means, the free-play scoring control circuits, as such, are shown only generally.

The principal object of the game apparatus and selective ball-return means illustrated in the schematic diagram (Fig. 7) is to afford the player an opportunity to hold some score value achieved in a round of play determined, for example, by shooting out all five (or other number) of the balls to which he is entitled, and to shoot additional balls in an effort to improve the held score.

A further object of the aforesaid circuit arrangement is to permit the player only a limited opportunity to hold a score, and once he has initiated a holding operation of the selective ball return means, to prevent his jamming up the mechanism or interfering with the proper return of the balls by changing the choice once the ball returning operation has begun.

To these ends the circuit means shown in Fig. 7 includes a coin-released master control means, such as a coin slide 14, and master switch means actuated thereby for conditioning the game for a round of play, together with certain free-play control means, a feature lockout circuit means limiting the player's operation of the ball-return feature to one selection, and a preview feature by means of which the player can get a visual impression of what the resultant score panel light-up would look like if he ultimately chooses to hold the odd or the even scoring balls.

Referring to Fig. 7, the player will be assumed to initiate a round of play by employing a coin to unlock the conventional master control means shown in the form of a coin slide 14, which is then pushed in to close the associated master switch means including contacts 14A and 14R.

Closure of contacts 14A connects indicated power to lockout coil 65 causing its armature contact 66 to pull up and close circuit with contact 67 and apply power from terminal 66B to the feature feed conductor 63, armature 66 also becoming mechanically locked-in by locking armature 77.

A further result of actuation of said master switch means is the closure of contacts 14R to apply starting power to reset motor conductor 99 connecting via conductors 91A to motor 50, starting the latter sufficiently to permit the cam switch carry-over contacts 130 to be closed by reset carry-over cam 50D, thereby permitting said motor to run for one full reset cycle until contacts 130 are opened again by cam 50D.

Such reset cycling of the motor 50 will reciprocate the shutter panel 20 once to release any previously trapped balls.

During the aforesaid full reset operation it should be noted that the carry-over contacts 130 open before the cam 50C transiently closes the lock-release contacts 100 (the motor having momentum for this purpose), by reason of which the coil 98 of a lockout supervisory relay is not at this time energized, so that even though the lockout pulsing switch contacts 95 are simultaneously closed along with said lockout release cam switch contacts 100 during this full reset, energization of the lockout release coil 78 will not occur, but will be effected

only upon taking a feature or selective reset as distinguished from a full game reset, as will later appear.

It will be assumed that the player shoots the allotted number (e. g. five) of balls and lodges some of them in both odd and even-numbered pockets 18 on the playfield or board 16, and that these are the pockets numbered 5, 9, 16, and 22, which numbers will be illuminated in the usual manner on the score panel 15 (Fig. 1) by corresponding lamps in the appertaining lamp bank 13 shown in Fig. 7, said lamps being respectively energized by certain ball switches 21 associated with the correspondingly numbered pockets via conductors 76 and certain bus-bar or common conductors 74, 75.

At this juncture the player may wish to utilize the holding or selective ball-return feature and must decide whether it would be more advantageous to further scoring to hold the odd or the even-numbered balls.

A special preview feature (claimed in a divisional application, Serial No. 505,091, filed May 2, 1955) is afforded by which the player can selectively extinguish the lights for the odd or even numbers on the score panel 15 (and its counterpart the lamp bank 13, Fig. 7), and visualize the resulting number pattern as an aid to making a choice to hold the odd, even, or all lighted numbers.

Referring to Fig. 7, it is assumed now that the player wishes to preview the score effect of holding the odd balls or numbers; he will push the odds button A only part way down, thereby opening the odds preview contacts 71 without, however, closing the odds hold contacts 61, these two sets of switch contacts being of the break-before-make variety.

As a result of such preview operation, the power connection from terminal 73 to the even lamps bus bar or common feeder conductor 74, will be broken at said preview contacts 71, and the even lamps 16 and 22 will be extinguished, it being understood that the energization of all lamps in the first instance is dependent upon lodging a ball in the correspondingly numbered ball pocket 18 and the consequent closure of the appertaining ball switch 21, from which operating connections are extended via cable connectors 76 for the lamps.

Having studied the visual effect of holding the existing odds score and extinguishing the even score, the player next releases the odds switch button A and pushes the even score holding switch button B partly down for a preview of the even-number pattern, thus opening preview contacts 72 (without closing the hold contacts 62) and thereby disconnecting power from terminal 73 to the common feeder conductor 75 for the odd lamps, so that only the even scoring numbers now remain illuminated.

Assume now that the player decides to hold the even numbers. By depressing button B still farther, the hold even contacts 62 will close, thereby connecting power from terminal 66B, the now closed feature relay contacts 66, 67, conductor 63, closed shutter panel safety-switch contacts 69, hold switch feeder conductor 70, said closed hold contacts 62, guide solenoid conductor 84, normally closed shutter guide supervisory switch contacts 83, return conductor 83A, to selector solenoid coil 41, and power terminal 82, thus energizing the solenoid 41 and causing the guide levers 34A, 34B, to shift downwardly with a consequent counter-clockwise pivoting of the shutter guide means 30, 31 to the condition thereof illustrated in Fig. 5C.

As an incident to the operation of the hold even button B, as described above, and the aforesaid counter-clockwise pivoting of the shutter guide 30, the switch pin 30X thereof will open the supervisory contacts 81 and disable the companion selector solenoid 40 via conductor 81A, while supervisory contacts 110 will be closed thus providing a closed circuit, to be explained hereinafter, for the holding relay coil 88 to maintain the energization of the hold even sole-

noid 41 via contact 89, conductors 87, 87A, 111, closed supervisory contact 110, loop contact 112 and solenoid conductor 83A.

The energizing voltage for solenoid 41 on conductor 83A is also applied to the holding relay coil 88 via its conductor 87A, conductor 111, closed supervisory contacts 110, loop contact 112, and solenoid conductor 83A, thereby setting up a holding circuit from power terminal 82 for both the holding relay and selector solenoid 41 at holding relay contacts 89, conductors 87, 87A, as well as a holding or cycling circuit for the shuffle motor 50 at motor contacts 90, conductors 91, 91A, to the motor, this holding circuit being maintained from power terminal 82 via conductor 94, normally closed drop-out contacts 93 of the motor drop-out or interrupter cam switch, and conductor 92.

Motor 50 now begins its single-cycle selective shuffle operation and reciprocates the shutter plate 20 to produce the requisite selective ball-return motion cooperatively with the directive cam effect of the selectively positioned guide means 30, 31, lodging the shutter resultantly in the shifted condition of Fig. 5C, which is intended to produce release of all odd numbered trapped balls, including those numbered 5, 9 in this example, since the selection was to hold the even numbers.

When the aforesaid selective ball-returning or shuffling operation is completed, the cycling drop-out cam 50A (Fig. 7) will open the interrupter or cycling drop-out switch contacts 93, thereby dropping out the holding relay so that its contacts 89, 90 are opened and the motor 50 stops.

An important incident to the foregoing feature or selective cycling operation of the motor means 50 and associated cam switch cycling means (as distinguished from a full reset cycling) is the operation of the feature lock-out means, which will prevent the player from making any further holding selections at this time.

It is recalled that when the player first actuated the master control means 14 its game-starting switch contacts 14A energized the lock-out coil 65 to attract the armature contact 66 thereof which automatically becomes mechanically locked-in behind the locking armature 77.

Energization of the lock-out release coil 78 will release the locking armature 77 and thereby disconnect the power from terminal 66B for the feature selection switch means via feed conductors 68, 70, as contact 66 falls back to normal from contact 67, thereby disabling the selector switches.

Near the conclusion of each shuffle cycle of motor 50 (as determined by drop-out contacts 93), lockout cam 50B will transiently close the normally open lockout release contacts 95, thereby pulsing, via conductors 79, 79A the lockout release coil 78, because the lockout supervisory relay contacts 96 are momentarily closed at this time to connect switch 95 with power terminal 97, owing to the simultaneous closure of cam switch contacts 100 and the fact that there is still at this moment voltage on conductor 91A from the holding relay (at 82—92—90—91), which pulses the lockout supervisory relay coil 98 before the holding relay drops out responsive to opening of drop-out cam switch contacts 93 at the end of the cycle.

Once the lockout armature contact 66 drops back to the normal condition of Fig. 7, the player cannot again avail himself of the selective ball-return feature until the master game control means 14 is further actuated.

When the shuffle cycle is concluded, as aforesaid, and the holding relay drops out with stoppage of motor 50, the selector solenoid 41, which was being held during the cycle, will also be dropped out by opening of holding contacts 89 and consequent removal of power from conductors 87, 87A, 83A, the shutter guides

30, 31 being restored to neutral condition as in Figs. 5A, 5B, by action of the solenoid spring means 43.

Had the player elected to hold the odd numbers, the operation of the device would have been substantially the same with the selective circuit control means extending the connections to energize the selector solenoid 40, instead of 41, under initial control of the hold odd switch means 61.

By depressing the switch button A (Fig. 7) part way down, the preview contacts 71 open and cut out the power to the common feeder 74 for the even lamps, leaving the odd lamps illuminated. Upon pushing the button A all the way down the hold odd contacts 61 are closed, applying power to selector solenoid 40 via conductor 80, closed shutter supervisory contacts 81 and conductor 81A, whereupon guide levers 34A, 34B are pushed upwardly to pivot the shutter guides 30, 31 clockwise so that solenoid 41 is disabled at shutter supervisory contacts 83, and the hold relay coil 88 is energized, via shutter supervisory contacts 85, loop conductor 86 and the initial solenoid operating voltage on conductor 80, the holding relay closing its own holding circuit at contacts 89 by means of which the selector solenoid 40 is also provided with holding voltage from conductor 87, closed contacts 85, and the loop 86 and closed contacts 81 to solenoid lead 81A, analogously to the operation in the preceding example.

The cycling of the shuffle motor will thereupon go forward exactly as in the previously described cycle for the hold-even operation, the cam switch ultimately breaking the motor and holding relay circuits at contacts 93, and the lockout release coil 78 being energized through cam switch contacts 95 and supervisory relay contacts 96, as before, so as to bar further feature selections until the master switch means 14 is subsequently actuated.

Should the player have pocketed both odd and even balls but desires to retain the resultant score and obtain any free plays standing to his credit, he may push the hold all switch button C (Fig. 7) and close contacts 115 to apply power from lockout relay terminal 66B, contacts 66, 67 closed, conductor 68, closed shutter safety switch contacts 69, conductor 70, said hold all contacts 115 closed, to the lockout release coil lead 79, thereby energizing the lockout release coil 78 to drop out the locked armature contact 66 and interrupt power from said terminal 66B so that no further feature-holding operations can be had at this time.

The principal result of pushing the hold all switch is to release the lockout relay and disconnect all power from the hold selection switches at lockout contacts 66—67, and to set up the free play circuit by restoring connection of the power terminal 66B to the free-play conductor 117, so that the master control means 14 can be conditioned by energization of free-play coil 118 for operation without a coin, provided, of course, that the replay relay means or coil 121 is energized at this time to close its contacts 120. Thus, no free play can be had until the lockout armature is restored to the normal position at Fig. 7.

The full reset, as distinguished from the selective resetting operations for holding odd and even balls, as in the foregoing examples, is effected by operation of the master control means 14 (whether by use of a coin or free play) to close master reset contacts 14R, thereby applying power from terminal 99A to main reset conductor 99, thence via conductor branches 91A to the motor 50, starting the latter sufficiently for the main reset cam 50D to close the reset carry-over switch contacts 130 and continue the application of power to the motor from the cam switch contacts 93 via conductor 131.

Thus, the motor will operate through a complete reset cycle by reason of a momentary starting impulse from the master reset switch means 14R and the ensuing closure of the motor starting circuit by the car-

ry-over switch contacts 130 without the holding relay means being involved at all; and at the end of this full reset cycle the motor will be stopped by opening of the carry-over cam switch contacts 130, the cam slot in cam 50D being positioned so as to break the motor circuit immediately before a full closure of supervisory cam switch contacts 95 and 100 occurs, but before the time when drop-out contacts 93 would open, the cam slot on 50D being long enough to allow for some over-travel of the motor and cams in this action while providing a safety margin before the cycling contacts 130 can close again, so that the motor does not improperly recycle itself, as might otherwise occur when the holding relay is involved on selective reset and the cycling is under control of the drop-out cam switch contacts 93 instead of carry-over contacts 130, since contacts 93 promptly reclose after the cycle is ended and such precaution is necessary to prevent recycling.

When a coin is employed to condition the master control means 14 for operation, the full resetting operation is initiated by switch means 14R; but as an incident to such operation, the master switch contact means 14A also sets the lockout circuit at 66, 67 so that in the interim it might be supposed that the hold switch means could be effectively actuated, but this is not the case because as soon as the shutter panel 20 begins to move the safety shuffle switch means 69 opens the selecting circuit and there can be no interference with the proper shuffling operation.

Only at the end of the selective reset is the lockout release coil 78 energized through closure of the cam switch contacts 95 and 100 and the lockout supervisory relay contacts 96. In a full reset, the holding relay is not involved and therefore the supervisory relay 98 is not energized, because the pulsing of cam switch contacts 100 occurs after the carry-over switch contacts 130 have opened, and therefore contacts 95 are not effective to trip the lockout release coil 78 in a full reset.

A modified form of the invention with simplified circuit means is depicted in Fig. 8, an important feature being that the shutter panel is divided into a plurality of separately shiftable sections 20A, 20B, and 20C, also designated I, II, and III, and while these sections are movable up and down as well as sideways, they have ball-releasing holes or exits arranged in offset pairs for each ball pocket 18 in the playfield or ball-rolling board 16X, the offset being such that each exit 260X, 260Y of each pair is offset at right angles to the companion exit so that in whichever of the two permitted directions of shift the shutter sections move, either up and down or laterally, one or the other exit of the appertaining pair will register with the corresponding ball pocket.

Thus, for example, in the lower shutter section I the ball pocket shown in dotted lines at 18Z has a corresponding pair of offset exits 260X and 260Y, and it will be apparent that if section I moves downwardly exit 260X will register with pocket 18Z, but if said section shifts to the right, the exit 260Y will be the one to register with pocket 18Z, and so on, for each pair of exits, each section being provided with ball-operated switches 221 for the several ball pockets, as in the arrangement of Fig. 3.

In order to simplify the drawing, only the top shutter section 20C has been provided with a full complement of ball exits, it being understood that all three sections 20A, 20B, and 20C may be identical to section 20C in this respect.

Means is provided in the modification of Fig. 8 for selectively shifting any one of the several shutter panels alone, said means including a drive solenoid 240, 241, 242 for each section I, II, III, respectively, each solenoid having a plunger means 240A, 241A, or 242A, respectively, attached to the appertaining shutter section and attracted

upon energization to shift its section toward the right (Fig. 8), spring means 244 being provided for each section to retract the same to the normal position shown when the drive solenoids are deenergized.

Assuming the player initiates a round of play in the game apparatus schematically depicted in Fig. 8 by depositing a coin to actuate a conventional coin switch and close the contacts 214 thereof, so as to apply power from terminal 215 to pull up the master control relay 216, thereby closing contacts 217 of the latter and applying power from terminal 218 via conductor 219 to start the shuffle motor 250, a cycling and holding circuit for said motor is at once set up by closure of cam switch carry-over or cycling contacts 230 by the appertaining cycling cam 250D, which will permit the motor drive shaft to make one revolution so that said cam can again open the cycling contacts to drop out the motor.

The shuffle motor will reciprocate the common reset stroke arm 253 during the aforesaid cycle and jointly move the several shutter panel sections I, II, III downwardly until all of the full reset exits such as 260X register with their respective ball pockets and release any balls trapped therein, the panel sections being jointly returned by the stroke arm to the normal, ball-blocking or holding positions shown in Fig. 8 at the conclusion of the reset cycle.

In order to permit the several shutter sections to shift independently sidewise or laterally for selective ball return, as distinguished from jointly and longitudinally for full or reset return, each section is coupled loosely in a lateral sense to the stroke crank arm 253 by means of a long pin 258 passing somewhat freely through the arm and seated in a pair of laterally spaced brackets 257 attached to the shutter and flanking the arm. A spring 252 pulls the end of the stroke arm to hold it yieldably aligned lengthwise.

At the conclusion of the aforesaid reset cycle just before motor 250 stops, lockout cam switch contacts 260 are closed by cycling cam 250E and power applied via conductor 261 to energize the lockout relay coil 265, thereby pulling its armature contact 266, which becomes mechanically locked-in by locking armature 277, so that power will be applied from terminal 266B at a feature award relay via conductor 266C, closed lockout contacts 266, 267, and selector feed conductor 268, to render the selector switch means operable in accordance with the corresponding illumination of a "ready" lamp 248 when the player shall have operated certain ball switches in accordance with any desired scoring scheme (e. g. the aligned number-illuminating arrangement of Figs. 1 and 7) to cause a conventional scoring circuit means 300, designated in Fig. 8, as the "Selection feature award circuit means," to operate a feature relay and close its contacts 289 and thereby apply power from terminal 266B via conductor 266C to the lockout relay armature contact 266, as aforesaid.

Assuming that the player has played a number of balls, some of which have lodged in pockets of each of the shutter sections I, II, III, the "ready" lamp signals that he may now resort to the selective hold and return feature and cause the pocketed balls in a selected one of the groups or sections to be returned while the remaining balls will continue to actuate their respective ball switches and hold the corresponding score lamps illuminated.

Each of the selector or shutter solenoids is connected through a corresponding selector switch means to be energized from the common feature feeder conductor 268, the latter connecting in a chain circuit first to selector contact 269 of selector switch I, which is normally closed with its normal contact 270 looped to the contact 274 of the next switch, the normal contact 275 of which is in turn looped to the contact 281 of the next or section III switch.

Closure of selector switch I breaks the selector chain circuit at 270 and closes contact 269 with contact 271

to apply operating power to solenoid 240 via conductor 240X.

Closure of selector switch II breaks the selector switch chain at its contact 275 and closes contact 274 with contact 276 to apply operating power to solenoid 241 via conductor 241X, and neither of the remaining selector switches can be effectively operated at this time because of the open chain circuit, as aforesaid.

Closure of selector switch III closes contact 281 with contact 282 to apply operating power to solenoid 242 via conductor 242X for which purpose the chain circuit must remain unbroken at switches I and II so that the latter cannot be effectively operated if selector switch III is to be operated.

Additional release contacts on each of the three selector switches I, II, III, immediately actuate the lock-out release means to remove power from the selection feeder conductor 268, this being effected at switch I by closure of its contacts 272 and 273, applying operating power via conductor 284 to the lock-out release coil 278.

In like manner, operation of either of the selector switches for sections II and III also releases the lock-out by applying operating power through their respective release contacts 279—280 or 282—283, to conductor 284 to energize the lock-out release coil 278, as aforesaid.

Upon selective energization of any of the solenoids 240, 241, 242, as aforesaid, the corresponding shutter panel I, II, or III will shift toward the right into ball-releasing position, and since the effective closure of the selector switch contacts may be brief owing to the manner in which the player operates the switch as well as the ensuing prompt release of the lockout relay means, a form of carry-over switch is provided for each solenoid to assure full-stroke operation thereof, each shutter panel being provided with a pass-over switch connected to shunt the operating circuit of the corresponding selector switch as soon as the shutter panel moves slightly from normal position and to open the pass-over switch as the solenoid approaches the end of its driving stroke, the shutter panel causing only idle operation of the switch upon return to normal position.

For example, the pass-over holding switch for shutter panel I includes a pair of contacts 290, 291, the former connecting to power and the latter connecting to selector switch conductor 240X. Roller means 292 on contact 290 is transiently engaged by a projecting member 293 on the appertaining shutter panel as the latter advances from normal to ball-releasing position, but on the back stroke the shutter has no effective influence on the pass-over switch. The other shutter panels II and III each have identical, full-stroke, pass-over switches respectively including shunting contacts 295 and 296 for the appertaining solenoids. If desired, operating relays may be connected for operation from each of the solenoid operating conductors 240X, 241X or 242X to actuate the corresponding solenoids and remove the current load from the corresponding selector switch contacts where the several shutter panels are heavily burdened with miscellaneous game equipment and might require heavy driving solenoids. The long coupling pins 258 permit the free lateral shifting of the shutter panels independently of the joint-release stroke arm 253; and the several solenoid armatures such as 242A (Figs. 10 and 11) are provided with roller means 242B working in elongated slots 243A in brackets 243 on the several shutter sections I, II, III, thereby permitting the joint, vertical full-releasing of the said sections with respect to the laterally-projecting solenoid plungers.

Should the player have any free plays credited or set up by award means 300, the coil 298 of the free play relay will be energized via conductor 299 from the score search switch means 302, thereby closing free play relay contacts 303 to connect power to the free play switch, so that the player may push the button "F. P." and close free play contacts 220 to energize the coil 216 of the

master control relay, thereby initiating a full reset by pulsing the motor 250 via conductor 219, with the ensuing resetting shuffle of all of the shutter sections and locking up of the lockout relay at the end of the cycle, as heretofore described, for a coin-controlled operation of the game.

The form of master coin-control switch, free play switch, and relay means 214, 220; and 216, 217, shown in Fig. 8, may be substituted for the master coin and free play control means 14, 14A, 14R, 118 of Fig. 7, as will be apparent to those skilled in the art; and any suitable power source may be employed in the circuits of Figs. 7 and 8, the use of power terminals designated positive and negative being merely a convention to simplify the circuit diagrams by eliminating numbers of conductors.

While full release could be effected by energizing all of the selector solenoids 240, 241, 242 simultaneously, the resultant current loading might be excessive or objectionable even where relays are interposed on the respective energizing circuits for the several solenoids, and the use of motor means 250 for effecting full reset is preferred.

A modified arrangement of selectively positioned ball exit shutter openings is portrayed in Fig. 9 wherein the usual ball pockets 18Z are employed in an alignment such as employed in the panel 16 of Figs. 1, 2, 5A—5D, or board 16X of Fig. 8, and a shutter panel 20Z has elongated exit openings 26Z positioned at one side of the pockets to extend at an angle to the axis of alignment thereof by reason of which the movement of the shutter downwardly from the normal ball-blocking or holding position of Fig. 9 will cause a registration of the exits with all pockets 18Z to free all balls in the latter; and movement of the shutter in still different directions, to the right or to the left, will also produce a ball-releasing registration from certain of the pockets located at the right and left sides thereof, all of the balls being released in the shift to the right, but less than all of the balls being released in the leftward shift, from which it will become apparent that the ball pockets 18Z can be arranged in a variety of possible patterns relative to the elongated, angularly positioned exit or drop-out openings 26Z to afford different partial releasing patterns responsive to reciprocation in the direction of the arrows at the upper left of Fig. 9. For example, an upward shift of the shutter means 20Z in Fig. 9 would produce a different releasing pattern from that produced by either the leftward or downward shift if additional pocket such as pocket 18ZX were located upwardly of pockets 18Z. The score lamp arrangement in panel 15 and in the lamp bank 13 and the associated "Free play award means" for controlling the "Replay relay," described in view of Fig. 7, as well as the "Free play and selection feature award circuit means" 300, described in view of Fig. 8, may be of the type disclosed in the copending application of Walter M. Burnside, Serial No. 292,561.

I claim:

1. In a ball-rolling game of the type including ball pockets normally closed by a movable shuffle member having ball exits adapted to be registered with said pockets by movement of the shuffle member from closing to releasing position, improvements comprising, to wit: a shuffle member mounted for movement in any direction in a plane beneath said pockets, and having ball exits so situated that movement of the shuffle member to one particular position will register a ball exit with each said pocket to release all balls therefrom, and movements of the shuffle member in various other predetermined directions will cause ball-releasing registry of certain of said exits with certain pockets less in number than the total number of pockets and differing in identity for each of said various directions; together with shifting mechanism and selective control means therefor which is operable for selectively moving said shuffle member in any of said various directions to effect release of balls

from said certain pockets and also operable to effect movement of the shuffle member to said particular position to register an exit with each one of said pockets for release of all balls which may be lodged therein.

2. In a ball-rolling game, apparatus for selectively releasing balls from open-bottom pockets in a ball-rolling board, and comprising: shutter panel means movable in different directions in a plane close beneath said pockets, selectively operable panel-shifting means with cooperative selecting control means for selectively moving said panel means in any of said different directions into and out of corresponding ball-releasing positions, said shutter panel means including ball-blocking means and ball-passage means in predetermined spatial arrangement thereon and so located relative to each other and to said pockets that in a predetermined normal position of the panel means ball-blocking means is positioned beneath each pocket to prevent escape of any balls therein, while in the several different selecting positions aforesaid, ball pockets at least some of which are different in identity for each of said positions will have in registry therewith ball passage means permitting escape therefrom of any ball lodged therein, whereby all balls are released in one of said releasing positions, less than all of said balls are released in the remaining releasing positions, and at least some of the pockets from which balls are released in any one of the aforesaid remaining releasing positions are different pockets from those involved in any other said remaining position.

3. In a ball-rolling game of the type having a ball-rolling board with ball pockets adapted to be opened and closed by a shutter panel movable in a plane beneath said pockets, improvements comprising, namely: shutter panel means mounted to move in several directions to different selected positions in a plane beneath said pockets; shifting mechanism operable to move said shutter means selectively in any of said several directions from and back to a normal position; said shutter panel means having ball exit openings positioned in predetermined locations with respect to the location of said ball pockets such that in said normal position none of said exit openings is in registry with any ball pocket, but in at least two different selected positions of the shutter panel means other than said normal position, certain different ball pockets will have one of said exit openings in registry therewith whereby balls pocketed in some, but not all, of the pockets will be released selectively, depending upon to which of the selected positions the shutter panel means is moved; said shutter panel means having still another shifted position away from normal position in which there is an exit opening in registry with each ball pocket whereby all pocketed balls will be released, together with control means operatively associated with said shifting mechanism for effecting selective operations of the latter as aforesaid.

4. In a ball-rolling game, selective ball-releasing means for a play field having scoring pockets with drop-out openings for releasing the balls lodged therein, said releasing means comprising a shutter panel mounted for movement in any direction in a plane to selected positions beneath said pockets and having ball exits positioned therein for ball-releasing registration with different groups of said pockets dependently upon movement of said panel into any one of said selected positions from a normal retaining position in which none of said exits is in registry with any said pocket; a particular one of the selected positions registering with all pockets to release all balls; and electromagnetic mechanism and selective control means cooperable therewith for moving said panel into any of said selected position.

5. For a ball-rolling game having a play field with a plurality of ball drop-out openings therein, selective ball return means comprising, namely: a shutter panel mounted to shift from a normal position in any direction in a plane beneath said drop-out openings and hav-

ing ball exits arranged in positions for registration in shifted positions with different drop-out openings as a result of moving said panel into any of several certain selected positions, and selective actuating mechanism with selectively operable control means therefor controlled manually for moving said panel from said normal position into any of said selected positions and back again to said normal position.

6. In ball game apparatus, an approximately horizontal ball-rolling board with ball drop-out pockets there-through; shuffle means mounted for movement in several directions in a plane beneath said pockets from a normal position to any one of several releasing positions; said shuffle means including ball-supporting means adapted to underlie all of said pockets in said normal position to retain a ball in any said pocket, and having ball passages spaced apart and from said supporting means such that in one of said releasing positions a ball passage underlies each ball pocket whereby to release all pocketed balls, and in a second of said releasing positions certain pockets, less in number than all of said pockets, have a ball passage positioned thereunder to free balls therefrom, and in at least another and third of said releasing positions still others of said pockets, less in number than all of the same and differing in identity, at least in part, from said certain pockets, likewise have a ball passage positioned therebeneath to free balls therefrom, together with electromechanical means selectively operable for moving said shuffle means into any of said selective positions; and circuit means for selectively actuating said electromechanical means.

7. In a ball-rolling game of the type having a ball playing field with open-bottomed ball scoring pockets and ball-holding and releasing means movable into and out of ball-supporting position beneath said pockets to retain or release pocketed balls, improvements as follows, namely: ball-supporting means with ball exit passage areas therein mounted for movement beneath said pockets into and out of a plurality of different positions in which said exit areas have different ball-supporting relationships therewith, and in a first one of which relationships balls are supported in some but less than all of the pockets; and in another and second one of which relationships balls are supported in a number including several, but less than all, of the pockets, the pockets in said last-mentioned number not all being identical with those in the first-mentioned one of said relationships; and in still another and particular one of which relationships balls are not supported in any of said pockets; together with electromechanical means and player-controlled actuating switch means and circuit connections for the same with said electromechanical means for selectively moving the ball-supporting means into certain of said ball-supporting relationships to the pockets in operating cycles each of which begins with an operation of said electromechanical means for moving the ball-supporting means into said particular one of the relationships with the ball pockets, and which cycle is subsequently and positively concluded by selective operation of the electromechanical means to produce movement of the ball-supporting means into either the first- or second-mentioned of said ball-supporting relationships.

8. In a ball-rolling game of the class described having shutter-controlled ball drop-out pockets, ball-retaining and releasing shutter means mounted to move in any direction in a plane into a plurality of ball-releasing positions relative to said pockets in each of which balls are released from different groupings of ball pockets, and mechanism including electric motor-drive and shutter-directing means operable for selectively moving said shutter means into any of said releasing positions and selectively operable control circuits for actuating said motor-drive and shutter-directing means.

9. Apparatus according to claim 6 and further characterized in that said circuit means includes normally

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ineffective selector switch and circuit means operable when rendered effective to selectively actuate said electromechanical means to move the shuffle means into any of said releasing positions excepting said one position thereof for releasing all balls; master game starting switch means and circuit connections controlled thereby for conditioning said apparatus for a round of play and effecting operation of said electromechanical means to move the shuffle means to said one releasing position for release of all pocketed balls, and to condition said selector switch and circuit means for effective operation as aforesaid; normally ineffective lockout switching means having a set and a lockout condition and automatically set for subsequent lockout operation dependently upon each operation of said master switch means in conditioning the game for play as aforesaid, in order that the lockout switching means may be subsequently operated in lockout condition under control of said selector switch and circuit means in selecting operation of the latter for the purpose of disabling said selector switch and circuit means against more than one selecting operation until said master switch means shall be subsequently operated to initiate still another round of play; and connections controlled by each operation of said master switch means for establishing a circuit for said lockout switching means to actuate the latter into the lockout condition as aforesaid, responsive to said selector-switch operation of the latter, whereby to disable the selector switch means for the purposes and in the manner aforesaid.

10. In a game apparatus employing balls or like playing pieces played into ball-receiving score areas and releasably retained therein by ball-restraining and releasing means, improvements in selective ball-releasing means comprising, to wit: ball-restraining and releasing means mounted for movement in a plurality of directions relative to said score areas into and out of relation to a ball therein to restrain or permit departure of a ball therefrom, movement of said restraining and releasing means in a first direction permitting departure of balls from all said areas, and movements of said restraining and releasing means in at least two additional and differing directions into releasing positions each permitting departure of balls from certain groups of said areas either of which contains less than the total number thereof and each of which includes at least one said area which is not included in the other said group; together with means moving the restraining and releasing means selectively, as aforesaid.

11. In a ball-rolling game having a playing field with ball drop-out openings therein into which balls are played, selective ball-holding and releasing means comprising: a plurality of shutters each having ball exits therein and all mounted beneath said field to shift jointly or individually in several directions in a single plane beneath said field to dispose the exits therein respectively into and out of ball-holding or ball-releasing relation to appertaining pockets, movement of all said panels in a first direction producing registration of an exit with each pocket to free all balls; movement of individual panels in a different direction producing registration of exits therein with certain ball pockets to free any balls therein; common drive mechanism operably connecting with all said panels to move the same jointly in said first direction to free all balls; and selectively operable mechanism for moving said panels individually in said different direction for the purpose set forth.

12. In a ball game apparatus, in combination, a playfield having a plurality of out-pockets for balls and arranged in predetermined groupings in which the out-pockets are arbitrarily designated by odd and even numbers respectively; shutter means mounted to move into and out of a plurality of positions and having ball exits disposed to register with all said out-pockets in a first position of the shutter, and to register respectively with said even or said odd numbered pockets respectively in

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one of each of two other positions of the shutter, and to stand out of register with all pockets in still another position, together with power-actuated driving and selective guiding means for moving said shutter means into any of said positions; and player-actuated control means for selectively operating said driving and guiding means to effect movement of the shutter into and out of any of said positions.

13. In a ball-rolling game having a plurality of ball pockets opened and closed by a shutter; selective shutter mechanism comprising shutter means mounted to move relative to said pockets in a plurality of directions contained within its plane; a driving motor for said shutter means; means drivingly coupling said motor with the shutter means and normally operable to exert a driving effort upon the shutter means acting yieldingly to move the latter in a particular normal direction; and means including a guide cooperable with said shutter means and movable selectively into a plurality of positions in at least two of which it exerts a directionally different movement-altering action upon said shutter means changing said normal direction of movement thereof; said shutter means having ball-exit passage formations arranged in spaced relation thereon in a predetermined pattern related to the spatial arrangement of said ball pockets such that movement of said shutter means in said normal and altered directions will respectively bring exit passages into and out of exit registration with one of a plurality of sets of said pockets, one of said sets including all of the pockets and each of the other said sets including less than all of the pockets and at least one pocket not included in any said other set, together with player controlled selecting mechanism for selectively moving said guide and actuating said driving motor.

14. In a ball-rolling game, a playfield with a plurality of out-pockets opened by a shutter having ball-exit passages positionable in and out of registration therewith, improvements comprising: selective ball-return means including shutter means having exit passages as aforesaid and mounted for movement in a plurality of directions contained within a plane beneath said playfield; electrically controlled drive means operatively connected with said shutter means and selectively operable to exert a displacing effort thereon in any of a plurality of directions to reciprocate the shutter means back and forth in any of said directions between a normally closed position and a full-release position in a certain direction in which full-release position all of the exit passages thereof are each registered with a ball pocket, and in a certain different direction an exit passage is registered with each one of a first set of said pockets numbering less than all of the same; and in still another different direction an exit passage is registered with each one of a second set of said pockets likewise numbering less than all of the same and also containing at least some pockets not included in the set pertaining to the first-mentioned different direction; together with selecting circuit means connected for operation to actuate said electrically-controlled drive means selectively to produce reciprocation as aforesaid in any of said directions.

15. In a ball-rolling game of the type played with a plurality of balls which can be variously lodged in any of a plurality of outpockets in which said balls are releasably retained by shutter means shiftable from a normal retaining position, improvements comprising: selective ball-releasing apparatus including shutter means shiftable in any of a plurality of different directions from said normal position to any of a plurality of different positions relative to said outpockets, one certain position reached by movement of the shutter means in a first direction releasing the totality of pocketed balls; and at least two selectively different positions of the shutter means reached by movement thereof in directions differing each from the other and from said first direction,

respectively producing release of pocketed balls less in number than the totality thereof and differing in identity at least in part as to the pockets from which they are released in each instance.

16. In a ball-rolling game, selective ball-return apparatus including ball-retaining and releasing shutter means mounted beneath a playing field having outpockets respectively characterized by some predetermined arbitrary scoring significance and disposed at predetermined locations thereon, said shutter means being constructed to shift in a plurality of different directions from a normal home position to any of a corresponding plurality of selected positions, said shutter means having ball-exit portions situated in predetermined spatial array relative to each other and to said outpocket locations so as to register with none of said outpockets in said home position; to register with all of said outpockets in a certain one of said selected positions; and to register with some but less than all of said outpockets in at least one other of said selected positions; means for selectively shifting said shutter means into and out of said positions, together with score indicating means, and ball-actuated score control means operatively associated with at least some of the outpockets appertaining to each selected position and interconnected with said indicating means for actuating the latter responsive to the presence of a ball in any of said appertaining outpockets, whereby said shifting means may be selectively operated by the player to effect release of all pocketed balls or to release pocketed balls from outpockets appurtenant to a certain selected position for which the score significance indicated as aforesaid may be deemed undesirable, while retaining balls in other outpockets appurtenant to another selected position for which the indicated score significance may be deemed more desirable.

17. In a ball-rolling game to be played with a plurality of balls and having a playing panel with a plurality of shutter-controlled ball-retaining areas arranged in predetermined locations thereon, the combination of improved selective ball-retaining and releasing means comprising: shutter means mounted beneath said panel to be selectively and directionally shifted into any of a plurality of different selected ball-releasing or retaining positions and having a plurality of ball-release areas situated in predetermined spatial relationship to each other and to said retaining-area locations, and registering with the latter differently in each of said selected positions so as to effect release of any retained balls

from all said retaining areas in one of said positions, and to release retained balls from some but less than all of the retaining areas in at least one more of said selected positions, and to retain all balls lodged in said retaining areas in still another of said selected positions; together with score-control means positioned relative to at least some of the ball-retaining areas appertaining to each of said selected positions and respectively actuated by a retained ball lodged in the appurtenant retaining area; score register means operably controlled by said score-control means; and mechanism operable selectively to shift said shutter means into any of the selected positions aforesaid.

18. In a ball-rolling game having a score-register means, selective ball-return apparatus including a ball-retaining and releasing shutter structure mounted beneath a playing field which has outpockets in a certain array thereon, said shutter structure being mounted to slide and shift diversely in a plurality of directions from a fully closed condition to any of a plurality of different selecting conditions, and having ball exit areas situated in a predetermined spatial array relative to each other and to said outpocket array to register differently with the outpockets depending upon which selecting condition the shutter structure occupies, the registration in one of said selecting conditions being with all of said outpockets, and with some but less than all of the outpockets in another of said selecting conditions, and with none of said outpockets in said fully closed condition, at least some of the outpockets appertaining to each of said selecting condition having operatively associated therewith a ball-operated score-control device, said devices each having operative interconnection with said score register means for actuation of the latter responsive to ball-operation of any of said control devices by a ball retained in the appurtenant outpocket, together with selectively operable means for shifting said shutter structure directly between said fully closed position and any of said selecting positions.

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