Oct. 2, 1956 P. F. WILHEM 2,765,169

CONTROLLED BALL RELEASE FOR GAMES

Filed June 24, 1953 3 Sheets-Sheet 1

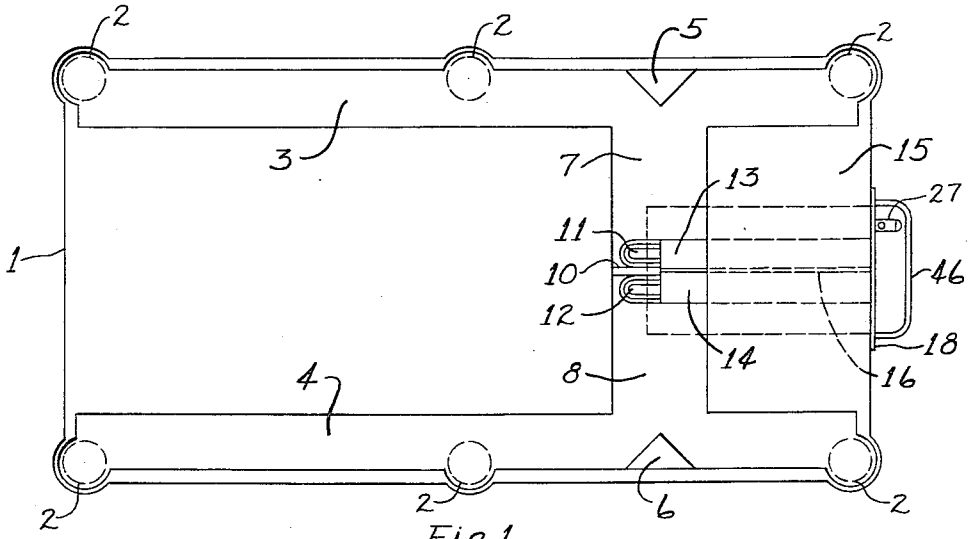


Fig. 1

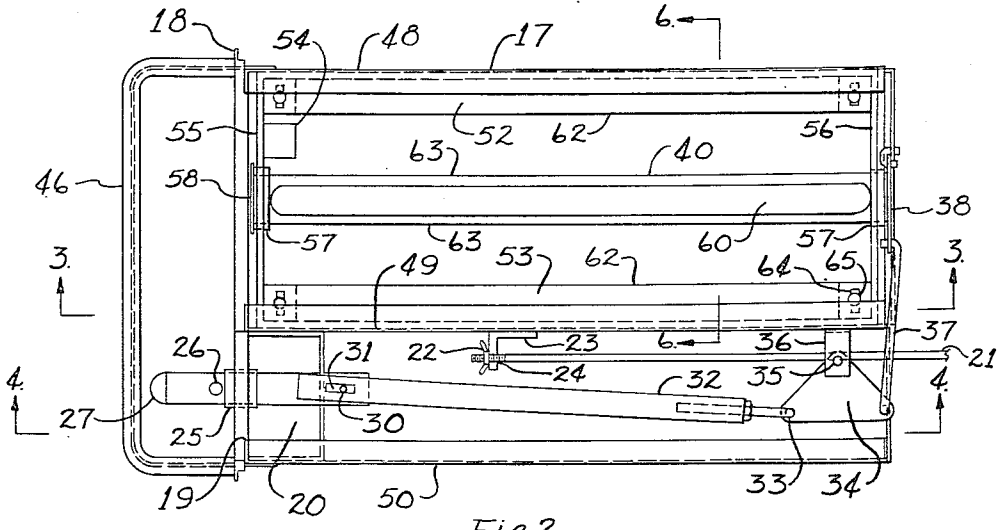


Fig. 2

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CONTROLLED BALL RELEASE FOR GAMES

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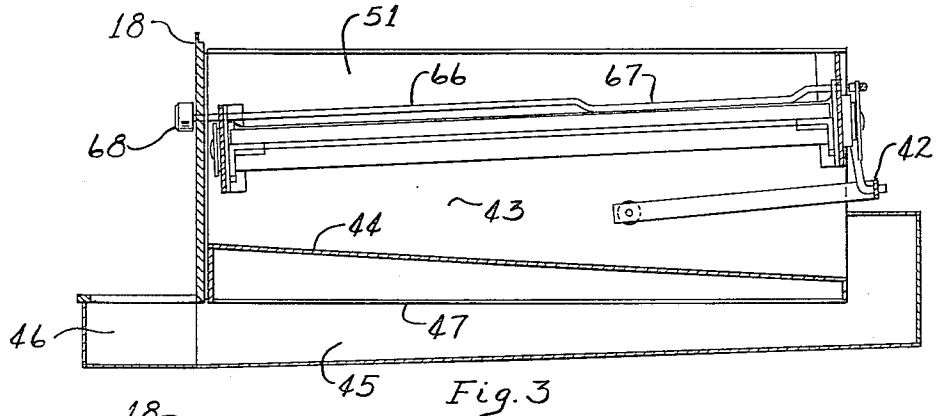


Fig. 3

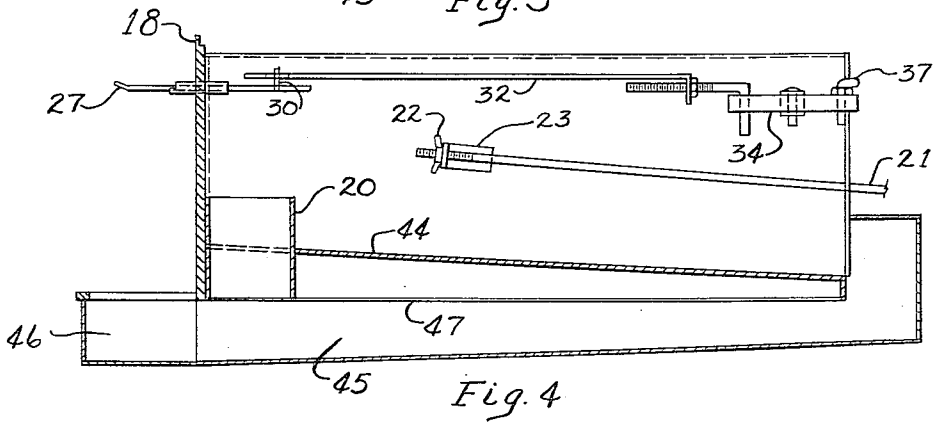


Fig. 4

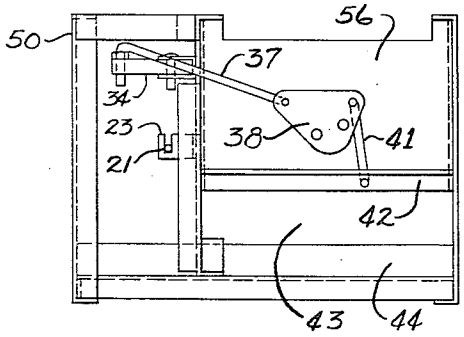


Fig. 5

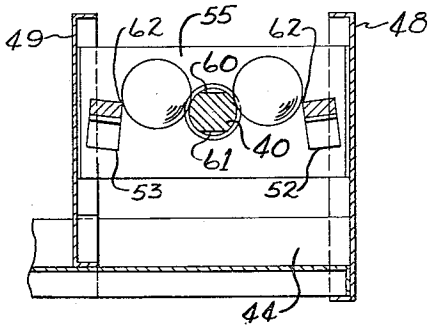


Fig. 6

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CONTROLLED BALL RELEASE FOR GAMES

Filed June 24, 1953 3 Sheets-Sheet 3

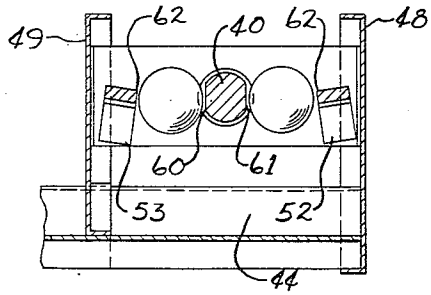


Fig. 7

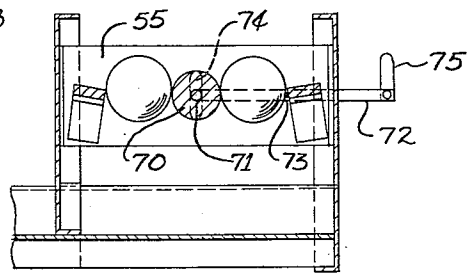


Fig. 8

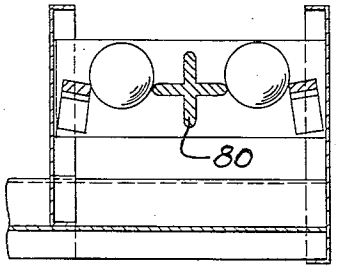


Fig. 9

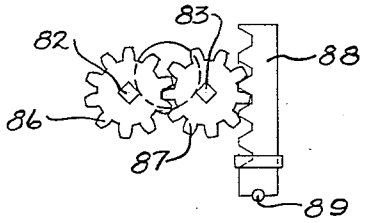


Fig. 11

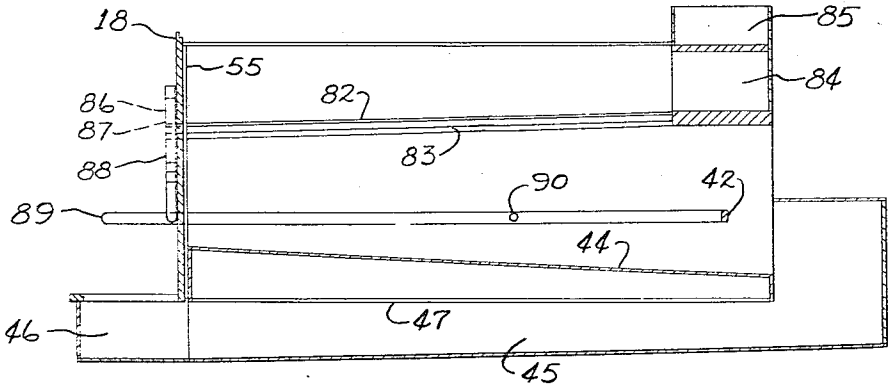


Fig. 10

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2,765,169

CONTROLLED BALL RELEASE FOR GAMES

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Application June 24, 1953, Serial No. 363,709

7 Claims. (Cl. 273—11)

This invention relates generally to games, and more particularly to games employing a series of balls that require a controlled ball release to play each successive game.

Many games requiring the use of a multiplicity of balls, such as pin ball machines and pool, are provided with different means for receiving and storing balls so that they may be automatically reclaimed by the use of a coin controlled mechanism to release the balls and permit them to be re-entered in play. However, apparatus of this character for pool, although cleverly constructed to require specific operative sequences before the balls are finally released, are not infallible and are readily bypassed or otherwise avoided by the use of unauthorized devices.

Another disadvantage of coin controlled ball release means resides in the use of spring members or other forms of biased trap doors or gates which foul owing to the nature of their use or by reason of the fact that the spring is stretched every time one or more balls are released from the trap door. Such a spring biased structure frequently fails owing to the load required on the spring when the latter is not in service.

To avoid these and other difficulties, applicant has provided a controlled ball release for games which includes the use of spaced rail members having opposed ball supporting surfaces which form a storage track. This track is mounted to receive and support a series of balls thereon. The track may be sloped in one direction and is ordinarily arranged to receive balls only at its upper end. The balls enter at the end of the track and roll directly thereon or they fall directly on the track from above and adjacent its upper end and thus become stored.

A shifting means is provided to move one of the rail members of the track relative to the other rail member, to change the relative spacing between the ball supporting surfaces on the rail members. When such shifting means is actuated, the balls are then permitted to drop from this storage position on the track to a chamber therebelow. Such a shifting means may be accomplished by employing a rod having non-round or flat surfaces which when rotated to present such surfaces at the position of the ball supporting surface, these flat surfaces provide a sufficient clearance to permit the balls to fall or pass down between the rails. Such a structure may be obtained by merely constructing surfaces on a round rod which is supported in bearings to rotate. The ball supporting surface supports the ball when the rod is in one position, but the flat surface provides sufficient clearance to drop the ball. A square rod may be employed to function in this manner. The diagonal corners of the square rod may be employed to normally support the balls. When the rod is rotated to a position where the flat of the square is vertical, then a sufficient clearance is provided relative to the opposing rail member to permit the balls to fall therethrough.

It is not necessary to always rotate the square rail

member or other rail member of predetermined configuration having a clearance and providing ball supporting surface. The same effect may be accomplished by shifting the axis of the rail either laterally or vertically in order to provide the additional clearance between the rails without embodying rotation.

Again the rails may be so disposed to provide that the balls in falling between the rails will fall progressively from one end of the track or this apparatus may be constructed to permit all the balls to fall simultaneously. The choice of these two manners of operation is one of selection, determined upon noise and other factors with relation to the game to which this apparatus is to be applied.

Again if it is desired to shorten the apparatus, a pair of stationary rail members may be provided with a movable rail member mounted therebetween, which movable rail member would be provided with some means for rotating or otherwise shifting it on its axis so that it would present a clearance in place of the ball supporting surfaces and permit the balls to drop through the storage track.

When supplying apparatus of this character with certain games such as pool, it is desirable to provide a second or additional pocket or chamber below the storage track for receiving and retaining the balls so that they may all be retained until the apparatus is completely reset and the storage rails will be set for again receiving the balls and storing the same. Such a storage chamber is formed below the storage rails and is provided with a trap door or gate. This gate is normally unlocked to open when the storage rails are in position to retain the balls but is normally locked or closed when the storage track is moved to allow the balls to drop therethrough to the lower chamber. Thus a single mechanism may be employed to operate both the shifting of the movable rail and the opening and closing of the gate as the function of these members is opposite to one another. Such a mechanical movement may be obtained by the use of bell-crank levers connecting the gate and the movable rail which is rotary, or they may be accomplished by means of levers which shift the movable rail member at the same time that the gate is closed and replace the movable rail member at the same time that it is open. This movement may be obtained initially by a rotary or by a sliding action.

Coin controlled games employ the reciprocating as well as rotary coin receiving members. The coin is placed in the pocket and the latter is moved forwardly into the machine to actuate the same. Such a rotary or sliding movement is ideal for operating a device of this character as the movement is positive.

In a sliding coin receptacle, the longitudinal movement of the lever forcing the coin into the coin control member may also be employed to operate through a connecting rod, a series of bell-crank structures for shifting the movable rail to drop the balls and close the gate. Ordinarily it is necessary to manually pull the lever back out to complete the action of the coin receptacle which resets the ball storing mechanism and releases the balls for play. Thus a coin controlled structure of this character is ideal for the control release mechanism of this invention, particularly in view of the fact that it does not require springs which are usually a source of trouble, but which can be employed to operate the mechanism of this invention with less trouble than the structures known on the market. Thus it is preferably to employ the positive action of coin control member in combination with the control ball release mechanism of this invention rather than a spring biased operating mechanism.

The object balls and the cue ball in pool or pocket billiards, are usually exactly the same size.

Prior coin operated pool tables employ a cue ball that is larger than the object balls or they use a number of cue balls that are the same size as the object balls.

This invention uses a cue ball that is smaller than the object balls.

A cue ball that is larger than the object balls, immediately on contact with the object ball, tries to climb or to shove the object ball and thus loses its English practically at the moment of contact. A cue ball the same size and approximately the same weight as the object ball hesitates momentarily on contacting an object ball. This permits transmission of some of its English to the object ball and also for its own English to take effect as the ball grips the cloth and continues its course.

When a cue ball is smaller than the object ball, it is also lighter in weight and this moment of hesitation is prolonged, thus permitting the English to work even more effectively or permits the use of less English to obtain the desired ball action.

The pool table provides ideal apparatus for displaying the improvements of the control ball release structure comprising this invention particularly when the cut ball is slightly smaller in diameter than the object balls and if one were to scratch during the playing of a game, the cue ball would proceed to the storage track and since this ball is too small to be supported thereby, it will immediately fall therethrough to the lower chamber and the gate being open at this time, the cue ball merely passes on out to a service tray where it may again be retrieved for the continuance of the game.

When the storage track is completely filled by all of the playing balls, then there is no more room to permit the cue ball to be supported directly on the rails, and if it is intentionally pocketed, it will rest upon the top of the stored balls and will not pass through the mechanism. In this way the mechanism is safeguarded against misuse by being capable of storing all the balls locked within the pool table against unauthorized use.

When a coin is inserted and the coin controlled mechanism actuated through half its cycle, all the balls are first released from the storage track to the lower chamber. When the coin control mechanism is fully operated through its complete cycle by positive force to its normal or fully retracted position, the rails are reset to again receive and store the balls and the gate releases the balls from the lower chamber and presents them for replaying. Thus a commercial pool table may be repeatedly played without the direct use of an attendant, which is a material advantage. The structure itself provides impunity against a theft or misuse by preventing the unauthorized playing of the balls. The only way that one can regain the balls without paying would be to catch them at each of the pockets and prevent them from being returned to the storage track.

Other objects and advantages appear hereinafter in the following description and claims.

Accompanying drawings show for the purpose of exemplification, without limiting the invention or claims thereto, certain practical embodiments illustrating the principles of the invention wherein:

Fig. 1 is a plan view of the base of a pool table embodying the structure of this invention.

Fig. 2 is a plan view of the structure of the invention per se as shown in Fig. 1.

Fig. 3 is a view taken along the line 3—3 of Fig. 2.

Fig. 4 is a view taken along the line 4—4 of Fig. 2.

Fig. 5 is an end elevation taken from the right end of Fig. 2.

Fig. 6 is a sectional view taken along the line 6—6 of Fig. 2.

Fig. 7 is a view similar to Fig. 6 with the movable rail in position to release the balls.

Fig. 8 is a view similar to Fig. 6 showing a modification of this invention.

Fig. 9 is a view similar to Fig. 6 showing another modification of this invention.

Fig. 10 is a sectional view of a drawer having a pair of rotary ball supporting rails.

Fig. 11 is a detailed view of the rails of Fig. 10 showing the manner in which they are rotated.

Referring to Fig. 1 of the drawings, the pool table base is indicated at 1 and is constructed to support thereabove the play surface of the pool table which is provided with the six ordinarily arranged pockets at the side and corners of the table as indicated by the dotted lines 2. The pockets 2 empty into the longitudinal runways as illustrated at 3 and 4, which slope downwardly toward the triangular shaped deflectors 5 and 6, thus the balls dropping from any one of the six pockets will roll toward the deflectors and when they strike the same, will be deflected into the transverse runways 7 and 8. The transverse runways slope downwardly to the center of the table base and are provided with a partial partition as indicated at 10. One each side of the partition in the runways 7 and 8 there are forwardly sloping troughs 11 and 12, which direct the balls to the open pockets 13 and 14. The balls may go directly into these pockets. If however, they approach the left, they enter the sloping troughs 11 and 12 and are fed to the right to the respective pockets 13 and 14.

The table support is provided with a sheeting 15 which covers the mechanism comprising the control ball release structure that is in the form of a drawer as illustrated at 17. The runways, both lateral and transverse, may also be provided with any suitable means for deadening the noise of the ball in travelling from the pocket to the control ball release mechanism 16.

Referring specifically to Figs. 2 and 3, the structure illustrated comprises a drawer 17 of any suitable material, such as wood or sheet metal, and is provided with a face plate 18 which forms a drawer stop. The drawer 17 is bodily received into a pocket at the end face of the table supporting structure as illustrated in Fig. 1. The drawer face 18 is provided with a small opening 19 to receive a small coin box 20 that may be locked in the aperture 19. The drawer 17 may be locked in place by means of the rod 21 that is secured to the table support structure and its outer end is threaded and supplied with the wing nut 22 that tightens against the face of the bracket 23 that has an upwardly open slot 24. The rod 21 is of sufficient flexibility to permit it to be raised over the bracket and dropped into the slot 24. When the wing nut 22 is securely fastened or tightened against the bracket 23, the drawer 17 is held securely within the table support structure and it cannot be removed unless the small coin box locking structure is removed from the opening 19.

The coin box 20 is disposed immediately below a coin operated control mechanism 25, and when a coin is dropped into the slot 26 and the lever 27 is moved inwardly to its innermost position, the coin will drop into the coin box 20. At this time the pin member 30, secured to the inner end of the lever 27, moves through the length of the slot 31 and engages arm 32 forcing it rearwardly and causing the latter to operate through its pivot connection 33 in the bell-crank lever 34. The latter is pivoted at 35 on the bracket 36 secured to the box 17. The bell-crank lever 34 in turn operates the transverse lever member 37 which in turn shifts the bell-crank lever member 38 that is rotatably supported by reason of the fact that it is mounted on the end of the movable rail member 40. The other end of the bell-crank lever 38 is provided with a link member 41 attached to the gate 42 that releases the balls from the lower chamber 43. When the balls are released from the storage rails, they drop to the lower chamber 43 and strike the sloping bottom 44 and travel rearwardly as shown in Fig. 3. When the gate 42 is raised the balls drop from the end of the sloping bottom 44 to the return passageway 45

which carries them forward to the delivery shelf member 46.

The structure of the drawer 17 is preferably made of sheet metal and comprises a solid bottom section 47 with three dividing or parallel side members, 48, 49 and 50. The side members 48 and 49 form the partitions enclosing the lower and upper chambers 43 and 51. The balls are stored on the parallel rails 52 and 53 in the upper chamber 51 which function in combination with the movable roller 40 to support two rows of balls. These storage rails are preferably sloped to permit the balls to roll to the drawer front 18 as indicated in Fig. 3. A stop member 54 is provided for a full set of balls and to prevent the cue ball from passing through when the game has been finished.

The ends of the drawer are supplemented by the bracket members 55 and 56 which are duplicates of each other and may be provided with flanges at their ends for welding to the sides 48 and 49. Intermediate the ends of each bracket is a sleeve bearing 57, which bearing preferably projects to the outer face of the bracket to rotatably support the movable shaft 40. As shown in Figs. 1 through 6, the shaft 40 is round and has an end plate 58 secured to one end and the bell-crank lever 38 secured to the opposite end. This plate and lever function to retain the shaft 40 in its proper position in the spaced bearings 57.

Intermediate its ends the round rail member 40 is provided with the cam or flattened surfaces such as indicated by top and bottom surfaces 60 and 61.

The diameter of the rail 40 is selected and disposed with respect to the rails 52 and 53 so that a pool object ball will be rotatably supported on the surfaces noted as the edge 62 of the rails 52 and 53 and the cylindrical surface 63 of the intermediate rail 40. In order to properly obtain this setting, the rail members 52 and 53 are adjustable by reason of the fact that they are provided with slots 64 through which their mounting screws 65 pass to enable one to properly adjust them either parallel with the cylindrical surfaces or on a variable angle therewith. But in either event, they will support the object balls. If the rails 52 and 53 are mounted at an angle relative to the cylindrical surfaces of the center rail 40, the balls will drop in consecutive order from one end to the other of the rails because of this angular relation.

Actuation of the lever 27 inwardly operates the bell-crank levers 34 and 38 and the center rail member 40 is rotated from the position shown in Fig. 6 to the position as shown in Fig. 7 where the flattened surfaces 60 and 61 provide no support for the balls allowing them to drop through the spaced rails to the sloping bottom 44.

It will be noted that a rod 66 is journaled in the members 55 and 56 and this rod toward the rear end is provided with an offset or bail as indicated at 67. The forward end of the rod extends beyond the drawer front 18 and is provided with a knob 68 for operating the same. When the balls drop down onto the parallel storage rails, there are some instances where three or more balls may accidentally jam themselves owing to the fact that the central rail 40 is common to the storage space between both side rails 52 and 53. In order to break this condition, the rod 66 is provided so that the knob 68 may be rotated and the bail 67 will disturb or otherwise raise and displace the balls if they jam at this position.

The device as illustrated is consrtucted to be substantial equipment and is capable of heavy use and abuse and will not become broken or otherwise damaged through use or misuse. The rails themselves are sufficiently heavy to receive the pounding by the balls dropping thereon and will thus not bow or fail owing to normal forces occurring in structures of this character.

As shown in Fig. 8, the central bar member 70 is not rotatable but is movable radially which in this instance is vertically. The rail 70 is provided with the shaft member 71 which rides in the slot 74 in the bracket 55 and terminates in the lever 72 pivoted at 73. The lever 72 is in turn pivotally connected to the operating member as indicated at 75. Thus when the member 75 is raised, the lever 72 swings about the pivot 73 and drops the central rail member 70 thereby releasing the balls from both positions simultaneously. The balls in this instance drop consecutively from the end of the track that is lowered.

In the structure as shown in Fig. 9, the central rail member as illustrated at 80 is rotatably mounted in the manner similar to the rail 40 shown in Figs. 1 to 6 inclusive. The cross section of rail member 80 is that of a cross. When this cross member is rotated it will raise one set of balls until it releases the same and lowers the other set of balls until they are released. However, both sets of balls are released substantially at the same time.

In the foregoing illustrations, two sets of rails are employed to store the balls. However, it is obvious that only a single pair of rails need be employed. Such a structure would assume a length of substantially twice that shown in Fig. 1 for the same number of balls. As shown in Figs. 10 and 11 the rails 82 and 83 are considerably longer and the track is loaded from a single pocket 84 at one end thereof which receives the balls from the transverse slot 85. The rails 82 and 83 are sloped toward the front face as illustrated. In this structure the bars 82 and 83 are both a square in cross section and one or both may be rotated from the front by means of the gear members 86 and 87 which are secured to the ends of the shafts 82 and 83 respectively and mesh with each other. The gear 86 is in turn actuated by the rack member 88 secured to the end of the lever member 89 which in turn is pivoted at 90. The rear end of the lever 89 forms a gate member 42 which raises to release the balls when the fore end of the lever is in its lowest position and the rails retain the balls. When the rear end of the lever 89 is down it functions as a gate and the rails dump the balls.

It is obvious from the different structures enclosed that many different forms of the same invention may be employed without deviation from the scope of this invention.

I claim:

1. A controlled ball release for games comprising a closure having side walls, brackets supported within said side walls, a pair of spaced stationary rail members mounted on said brackets to produce an upper chamber and a lower chamber, a center rail member movably mounted on said brackets between said stationary rail members to provide parallel tracks, opposed ball supporting surfaces on said rail members between the center and stationary rail members for receiving and storing two rows of balls in the upper chamber independently of the closure walls, and shifting means to move the center movable rail member in said brackets relative to said spaced stationary rail members to increase the relative spacing between the ball supporting surfaces and permit stored balls to drop therethrough.

2. The structure of claim 1 characterized in that said shifting means rotates said center rail member to shift said ball supporting surfaces relative to each other.

3. A controlled ball release for games comprising a closure having side walls, brackets supported within said side walls, spaced rail members mounted on said brackets to produce an upper and a lower chamber, said rail members having opposed ball supporting surfaces forming a storage track for balls in said upper chamber, a sloping floor in said lower chamber, a gate closing said lower chamber against the movement of balls from the lower end of said slope, and shifting means to move one rail member in said brackets relative to the other rail member to increase the relative spacing between said ball supporting surfaces and drop the balls from the upper to the lower chamber, means connected to said shifting means controlling said gate to open the same only when said ball supporting surfaces on said rail members are in position

to store balls and to close said gate when said ball supporting surfaces on said rail members are in position to drop the stored balls.

4. The structure of claim 3 characterized in that the ball supporting surfaces of said rails and the opening of said gate being gauged to pass balls of smaller diameter than the balls to be stored when the storage track is not filled.

5. A controlled ball release for games comprising a closure having side walls, spaced rail means having opposed ball supporting surfaces spaced slightly closer than the greatest diameter of the balls to be supported and forming a storage track, spaced brackets in said closure carrying said spaced rail means to receive and support balls independently of said closure walls, at least one of said rail means being of nonround cross section for at least a portion of its length, and lever shifting means to rotate the rail means with a nonround cross section to change the relative spacing between the ball supporting surfaces of said rail means to a distance greater than the greatest diameter of the balls to permit the balls stored thereon to fall between said rail means.

6. The structure of claim 5 characterized in that said ball supporting track is mounted in said brackets to slope in one direction, a single chamber adjacent the lower end of the track for receiving all of the balls entering upon said track when said rail means is rotated and a gate to hold said balls in said chamber.

7. The structure of claim 5 characterized in that both of said rail means are of nonround cross section for at least a portion of their length and mounted for rotation in said brackets to change the relative spacing between the ball supporting spaces on said rail means.

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