July 9, 1963 E. L. FISCHER 3,096,981

BALL SEPARATOR AND RETURN MECHANISM

Filed July 13, 1961 3 Sheets-Sheet 1

Fig. 1

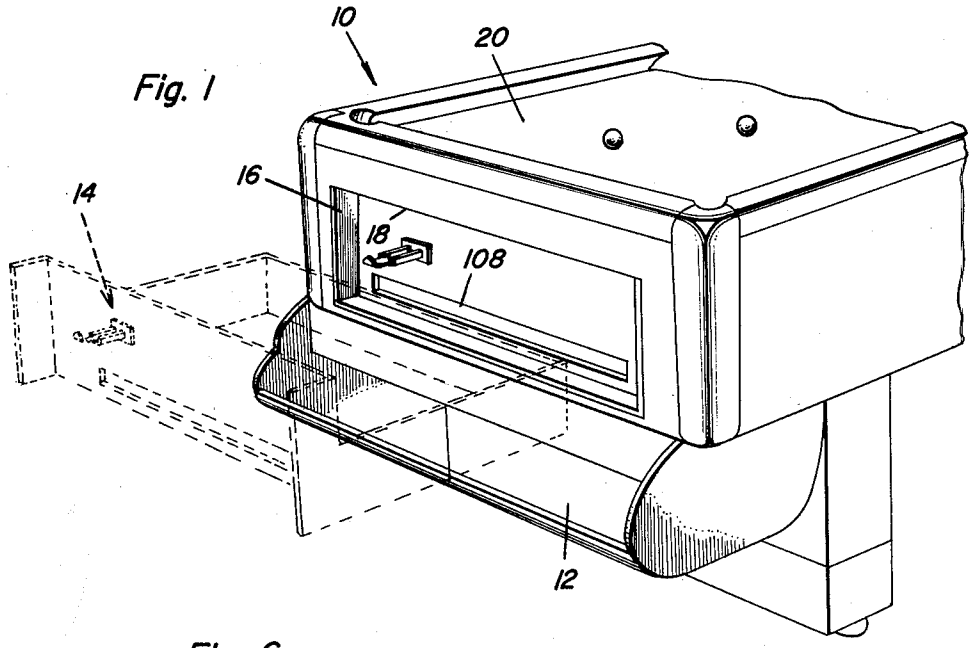


Fig. 6

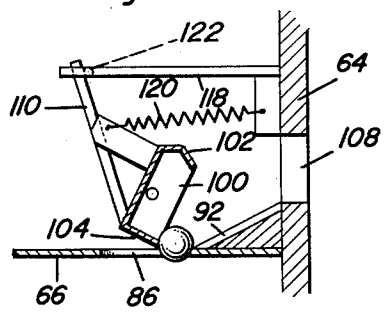
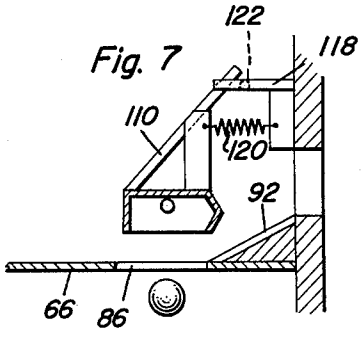


Fig. 7



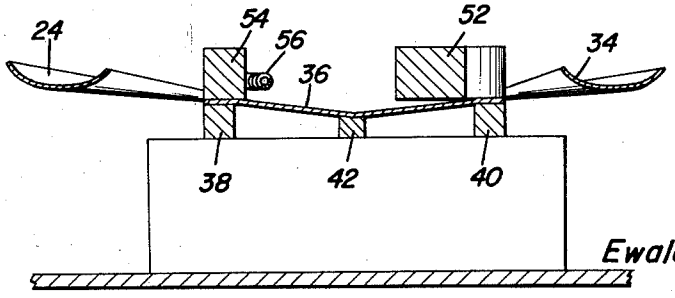


Fig. 5

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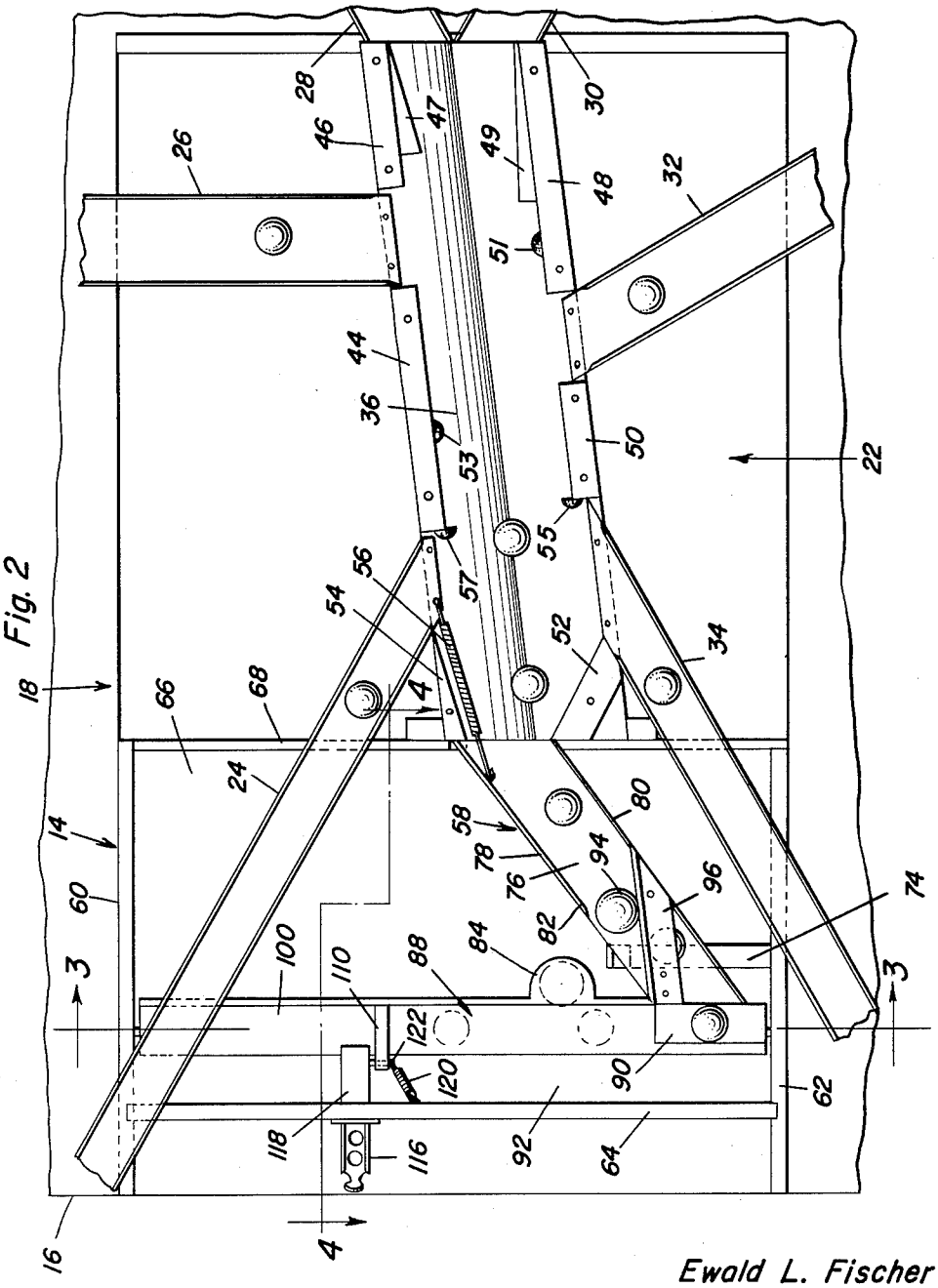
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BALL SEPARATOR AND RETURN MECHANISM

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Fig. 2



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BALL SEPARATOR AND RETURN MECHANISM

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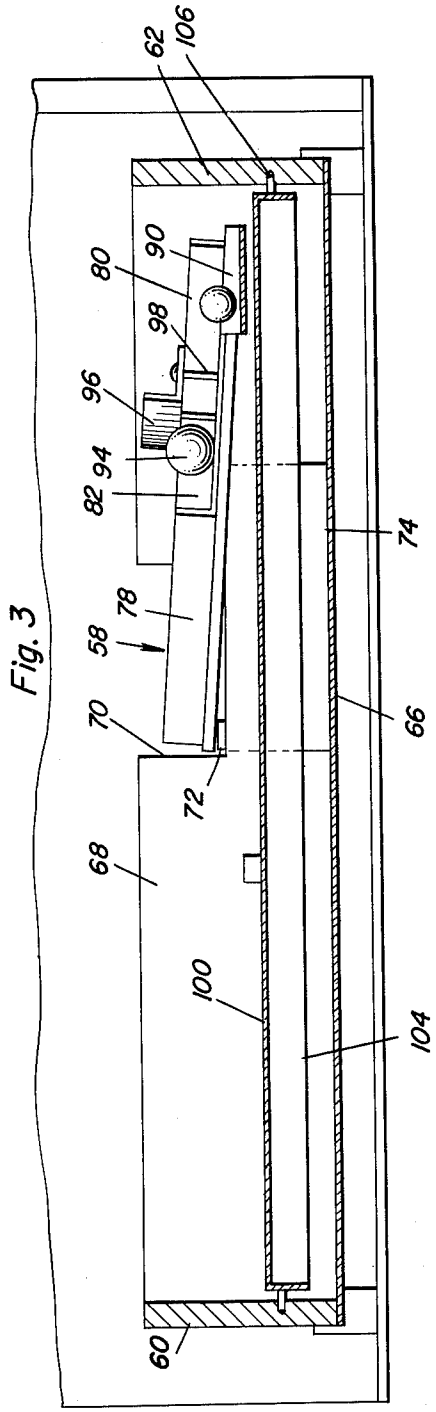


Fig. 3

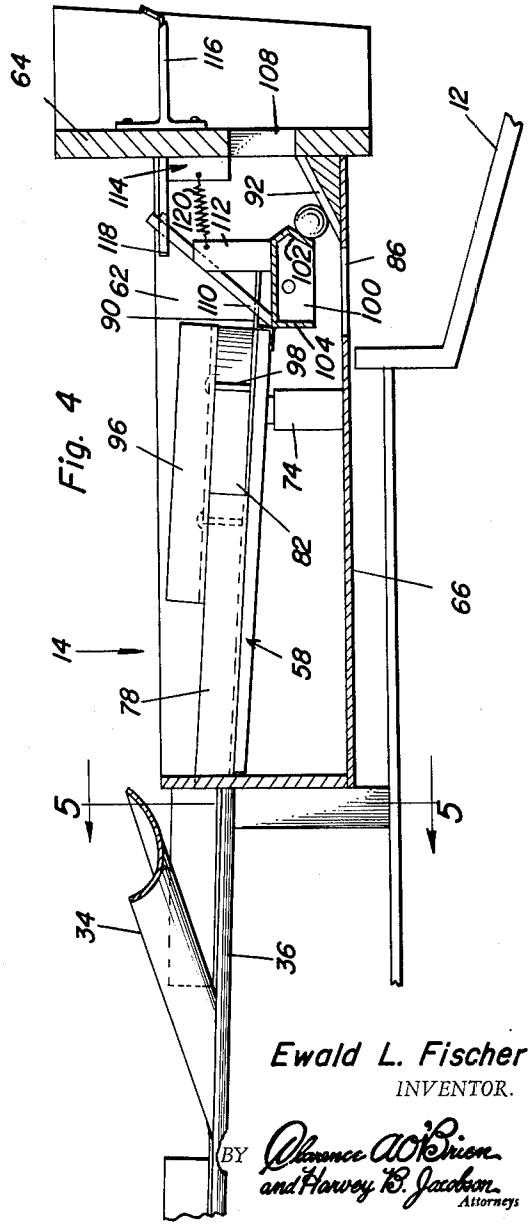


Fig. 4

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BALL SEPARATOR AND RETURN MECHANISM

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6 Claims. (Cl. 273—11)

This invention relates to a coin-operated mechanism for pool game tables or the like for controlled supply of return balls and free return of the cue ball.

A primary object of the present invention is to provide a coin-operated mechanism easily installed within a pool game table for the purpose of providing a foolproof coin-controlled return ball release and at the same time free return of the cue ball should the cue ball be dropped into a pool table pocket.

Another object of the present invention is to provide a return ball separating device which is operative because of the larger size of the cue ball from that of the uniform sized numbered balls, to deflect the travel of the cue ball only for free return to the delivery shelf at one end of the pool table. The numbered balls on the other hand are delivered to a coin-controlled gate mechanism without obstruction or deflection. The arrangement thereby results in mechanism occupying less space and which reduces travel of both the numbered balls and the cue ball, also rendering the return of the cue ball faster than comparable mechanisms heretofore utilized for separating the numbered balls from the cue ball.

An additional object of the present invention is to provide a return ball mechanism for pool tables or the like in which jamming is prevented and by means of a simpler construction resulting in more reliable operation, easier maintenance and repair.

A still further object of the present invention is to provide a controllable return ball mechanism that features a novel ball gate release mechanism which is more foolproof in operation.

These together with other objects and advantages which will become subsequently apparent reside in the details of construction and operation as more fully hereinafter described and claimed, reference being had to the accompanying drawings forming a part hereof, wherein like numerals refer to like parts throughout, and in which:

FIGURE 1 is a partial perspective view of one end of a pool game table showing the installation of the ball separator and return mechanism of the present invention.

FIGURE 2 is an enlarged partial top plan view of a breakaway portion of the pool game table at one end thereof illustrating the ball separator and return mechanism of the present invention.

FIGURE 3 is a sectional view taken substantially through a plane indicated by section line 3—3 of FIGURE 2.

FIGURE 4 is a sectional view taken substantially through a plane indicated by section line 4—4 in FIGURE 2.

FIGURE 5 is a partial sectional view taken substantially through a plane indicated by section line 5—5 of FIGURE 4.

FIGURE 6 is a partial sectional view of a portion of the mechanism as illustrated in FIGURE 4 shown however in another position.

FIGURE 7 is a partial sectional view similar to that of FIGURE 6 but showing the mechanism in another operative position.

Referring now to the drawings in detail, it will be observed that the ball separator and return mechanism of the present invention is installed at one end of a pool game table generally referred to by reference numeral 10. The table 10 is of the usual construction including a delivery shelf 12 into which the return balls are discharged by means of the ball separator and return mechanism of the present invention a portion of which is mounted within a removable drawer 14 as shown by dotted lines in FIGURE 1. The end 16 of the table 10 is therefore provided with an opening 18 within which the drawer 14 is received and through which the drawer is removable for repair purposes. The table 10 otherwise is of conventional design and includes the top 20 with pockets located at each of the corners and intermediate the opposite longitudinal sides of the table for playing the game in the usual manner. There are accordingly provided a plurality of numbered balls of a uniform and predetermined size as well as a cue ball which in the present case is of a larger size than the numbered balls.

Referring now to FIGURE 2, it will be observed that the drawer 14 containing a portion of the mechanism of the present invention cooperates with additional structure generally referred to by reference numeral 22, located within the opening 18 rearwardly of the drawer 14. The structure 22 comprises a return ball receiving channel assembly to which a plurality of ball chutes 24, 26, 28, 30, 32 and 34 are connected at different angles, said ball delivery chutes being connected to the respective pockets of the pool table 10. The return ball receiving channel assembly 22 is therefore formed by a V-bottom member 36 so that the return balls will collect therewithin and proceed single file toward the end 16 of the pool table. The bottom channel member 36 is therefore inclined downwardly toward the end 16, and is supported by block members 38, 40 and 42 as more clearly seen in FIGURE 5. Disposed between the outlet ends of the ball delivery chutes 24 through 34, are side wall members 44, 46, 48 and 50. The return balls delivered to the receiving channel assembly 22 are therefore confined to the channel assembly and travel toward the outlet end thereof at which point there are located a pair of deflectors 52 and 54 forming a restricted outlet. Mounted in parallel spaced relation to the deflector 54, is a spring deflector 56. The spring deflector 56 is thereby arranged to prevent wedging of two balls at the restricted outlet end of the receiving channel assembly by causing rebounding of the contacting balls. Inlet return ball directing elements 47 and 49 also project inwardly from walls 46 and 48 while shock absorbing rebound rubber grommet elements 51, 53, 55 and 57 are mounted in spaced relation along the channel assembly 22. Accordingly, the return balls are delivered single file and without jamming or damage to the inlet end of a return ball passage assembly generally referred to by reference numeral 58.

Referring now to FIGURES 2, 3 and 4, it will be observed that the return ball passage assembly 58 is disposed at an incline both laterally toward one side of the drawer 14 and downwardly toward the end 16 of the tables. The drawer is formed by a pair of parallel side members 60 and 62, a front panel member 64, a bottom member 66 and a rear side member 68 within which is located an opening 70 as more clearly seen in FIGURE 3 for receiving the inlet end of the return ball passage assembly 58. The passage assembly 58 is maintained as its proper inclined position by means of supporting block members 72 and 74, the block member 72 being located in the recess opening 70 of the rear wall 68 while the supporting block member 74 is mounted on the bottom 66 of the drawer 14. The passage assembly 58 therefore includes a bottom member 76 and side walls 78 and 80. A side wall opening 82 is formed in the side wall 78 adjacent the outlet end of the passage assembly 58, which opening 82 is in alignment with a cue ball return opening 84 located in the bottom member 66 of the drawer 14 as more clearly seen in FIGURE 2. The opening 84 is the cue ball return opening which communicates with a transverse longitu-

dinal outlet 86 formed in the bottom member 66 for the purpose of delivering all of the return balls to the delivery shelf 12 as more clearly seen in FIGURE 4. A controllable gate mechanism generally referred to by reference numerals 88 is therefore positioned in blocking relation above the outlet opening 86. Return balls are delivered to the forward side of the gate mechanism 88 from the outlet end of the passage assembly 58 by means of an extension member 90. A surface 92 downwardly inclined toward the outlet 86 is therefore formed on the forward side of the gate mechanism 88 which is also slightly inclined downwardly toward the side 60 of the drawer 14, upon which surface the return balls are stored and blocked by the gate mechanism 88 from entry into the outlet opening 86. It will however become apparent, that only numbered balls are delivered to the forward side of the gate mechanism 88 inasmuch as their travel is unobstructed through the return ball passage assembly 58.

The cue ball 94 on the other hand, which is of larger diameter than the numbered balls is prevented from traveling toward the outlet extension 90 by means of a divider member 96. The divider member is mounted across the top of the passage assembly 58 adjacent the outlet end thereof and at an angle thereto by means of a plurality of bolt members 98. The cue ball 94 is thereby prevented from traveling under the divider member 96 with the numbered balls and is deflected out through the opening 82 in the side wall 78. The cue ball so deflected enters the cue ball return opening 84 and then proceeds through the outlet 86 to the return delivery shelf 12 for immediate return. It is therefore significant to note, that the distance of travel for both the cue ball and numbered balls are substantially the same with the travel for the numbered balls being unobstructed through the passage assembly 58. The less frequently present cue ball on the other hand is obstructed in its travel through the passage assembly 58 by being deflected into the return opening 84.

The numbered balls as hereinbefore indicated are collected and stored on the inclined surface 92 preparatory to release by the gate mechanism 82. As more clearly seen in FIGURES 3 and 4, the gate mechanism includes a U-shaped gate member 100 having a forward downwardly depending side 102 and a rearwardly depending side 104 extending transversely between the sides 60 and 62 of the drawer 14. The gate member 100 is pivotally mounted by pivot pins 106 in the drawer sides 60 and 62. Accordingly, when the gate member 100 is in its position as illustrated in FIGURE 4, the numbered balls will be blocked from entering the outlet 86 by the stop side 102 of the gate member 100. The numbered balls resting on the surface 92 may therefore be viewed through a transverse elongated window opening 108 in the front panel member 64 of the drawer. Referring now to FIGURE 6, it will be observed that when the gate member 100 is pivoted in a counterclockwise direction, the numbered balls are received within the gate member 100 and held in a position preparatory to release thereof through the outlet 86 when the gate member 100 is subsequently returned to its original position as illustrated in FIGURE 7. Control of the gate 100 is therefore effected by means of a control arm 110 that is fixed to the gate member and inclined with respect thereto. A supporting brace member 112 may be provided for the control arm 110. A coin-controlled actuating mechanism is therefore provided for cooperation with the control arm 110. The coin-operated mechanism generally referred to by reference numeral 114 includes a coin chute 116 projecting forwardly from the front panel member 64 on the drawer into which the proper coins are inserted enabling the plunger device 118 to be moved inwardly to its full extent against the bias of the spring 120 whereupon the projecting pin 122 on the plunger 118 engages the control arm 110 in order to pivotally displace the gate member 100 from the position illustrated in FIGURE 6. However, the return balls are not released until the plunger 118 is again withdrawn outwardly to its full extent as illustrated in FIGURE 7. Release of the balls by the gate mechanism 88 as intended is therefore insured.

From the foregoing description, operation and utility of the coin-controlled return mechanism will be apparent. It will therefore be appreciated that the return balls are delivered to the controllable gate mechanism 88 through a novel arrangement whereby the more frequently travelling numbered balls traverse a passage of reduced length without obstruction for delivery to the gate mechanism. The less frequently delivered cue ball on the other hand is deflected for free return in a rapid manner by virtue of its enlarged size. The simplicity of the mechanism and the reduced space that it occupies may therefore be conveniently assembled within a removable drawer 14 that cooperates with the fixed portion 22 to produce a non-jamming smoothly operating ball separator and return mechanism.

The foregoing is considered as illustrative only of the principles of the invention. Further, since numerous modifications and changes will readily occur to those skilled in the art, it is not desired to limit the invention to the exact construction and operation shown and described, and accordingly all suitable modifications and equivalents may be resorted to, falling within the scope of the invention as claimed.

What is claimed as new is as follows:

1. A ball return mechanism for pool game tables or the like comprising, an elongated V-bottom ball receiving channel sloping longitudinally downward toward a delivery shelf located at one end of the table, said elongated V-bottom ball receiving channel receiving return balls from different angles and directing said balls single file toward the delivery shelf, an inclined ball return passage having a flat bottom and two upstanding sides, said return passage secured to the lower end of the ball receiving channel, a pair of deflectors mounted at the lower end of the ball receiving channel, said deflectors converging toward the ball return passage so as to insure the single file introduction of the balls into the ball return passage, and a spring deflector mounted in parallel spaced relation to one of the first mentioned deflectors to prevent wedging of the balls at the lower end of the ball receiving channel between the pair of deflectors.

2. A ball separator and return mechanism for pool game tables or the like comprising, an elongated V-bottom ball receiving channel sloping longitudinally downward toward a delivery shelf located at one end of the table, said elongated V-bottom ball receiving channel receiving return balls from different angles and directing said balls single file toward the delivery shelf, an inclined ball return passage having a flat bottom and two upstanding sides, said return passage secured to the lower end of the ball receiving channel, a pair of deflectors mounted at the lower end of the ball receiving channel, said deflectors converging toward the ball return passage so as to insure the single file introduction of the ball into the ball return passage, a spring deflector mounted in parallel spaced relation to one of the first mentioned deflectors to prevent wedging of the balls at the lower end of the ball receiving channel between the pair of deflectors, divider means spanning the ball return passage at a height so as to allow the free passage therethrough of balls of a predetermined size, balls of a larger size being deflected toward one of the upstanding sides of the return passage, said one side having an opening therein in alignment with a return opening communicating with the delivery shelf, and a control gate means mounted above the delivery shelf and extending transversely of the table with one end in communication with the lower end of the return passage for receiving said balls of a predetermined size, said control gate means comprising pivotally mounted stop means confining said balls, spring means biasing said stop means to a confining position, coin-operated

actuator means releasably engageable with the stop means for movement thereof to release the balls into the delivery shelf, and a rearwardly and downwardly inclined surface forward of said stop means and slightly transversely inclined from the return passage, said stop means in its confining position, being of generally inverted channel shape and including a forward wall rearwardly inclined and spaced from the inclined surface a distance so as to confine said predetermined size balls therebetween, and a rear wall of a size so as to confine said balls substantially between said walls upon upward and rearward pivotal movement of said forward wall, said balls being released upon subsequent forward pivotal movement of said forward wall.

3. The combination of claim 1 including a plurality of ball chutes secured to the elongated ball receiving channel at longitudinally spaced points therealong for introduction of the return balls into the elongated channel at spaced points so as to prevent jamming of the balls within the channel.

4. A ball separator and return mechanism for pool game tables or the like comprising, an elongated ball receiving channel sloping longitudinally downward toward a delivery shelf located at one end of the table, said elongated ball receiving channel receiving return balls from different angles and directing said balls single file toward the delivery shelf, an inclined ball return passage secured to the lower end of the ball receiving channel, divider means spanning the ball reutrn passage at a height so as to allow the free passage therethrough of balls of a predetermined size, balls of a larger size being deflected toward one side of the return passage, said one side having an opening therein in alignment with a return opening communicating with the delivery shelf, a control gate means mounted above the delivery shelf and extending transversely of the table with one end in communication with the lower end of the return passage for receiving said balls of a predetermined size, said control gate means comprising pivotally mounted stop means confining said balls, spring means biasing said stop means to a confining position, coin-operated actuator means releasably engageable with the stop means for movement thereof to release the balls into the delivery shelf, and a rearwardly and downwardly inclined surface forward of said stop means and slightly transversely inclined from the return passage, said stop means in its confining position, being of generally inverted channel shape and including a forward wall rearwardly inclined and spaced from the inclined surface a distance so as to confine said predetermined size balls therebetween, and a rear wall

of a size so as to confine said balls substantially between said walls upon upward and rearward pivotal movement of said forward wall, said balls being released upon subsequent forward pivotal movement of said forward wall.

5. A ball return mechanism for pool game tables or the like comprising, a ball receiving channel sloping longitudinally downward toward a delivery shelf located at one end of the table, said ball receiving channel receiving return balls from different angles and directing said balls single file toward the delivery shelf, and a control gate means mounted above the delivery shelf and extending transversely of the table with one end in communication with the lower end of the ball receiving channel for receiving said balls, said control gate means comprising pivotally mounted stop means confining said balls, spring means biasing said stop means to a confining position, actuator means releasably engageable with the stop means for movement thereof to release the ball into the delivery shelf, and a rearwardly and downwardly inclined surface forward of said stop means and slightly transversely inclined from the lower end of the ball receiving channel, said stop means in its confining position, being of generally inverted channel shape and including a forward wall rearwardly inclined and spaced from the inclined surface a distance so as to confine said balls therebetween, and a rear wall of a size so as to confine said balls substantially between said walls upon upward and rearward pivotal movement of said forward wall, said balls being released upon subsequent forward pivotal movement of said forward wall.

6. A ball return mechanism for pool game tables or the like comprising a ball receiving channel sloping longitudinally downward toward a delivery shelf located at one end of the table, said ball receiving channel receiving return balls from different angles and directing said balls single file toward the delivery shelf, an inclined ball return passage secured to the lower end of the ball receiving channel, a pair of deflectors mounted at the lower end of the ball receiving channel, said deflectors converging toward the ball return passage so as to insure the single file introduction of the balls into the ball return passage, and a spring deflector mounted in parallel spaced relation to one of the first mentioned deflectors to prevent wedging of the ball at the lower end of the ball receiving channel between the pair of deflectors.

References Cited in the file of this patent

UNITED STATES PATENTS

1,938,265	Thomas	Dec. 5, 1933
2,574,363	Wilhem	Nov. 6, 1951