

March 23, 1937.

B. E. MILLS

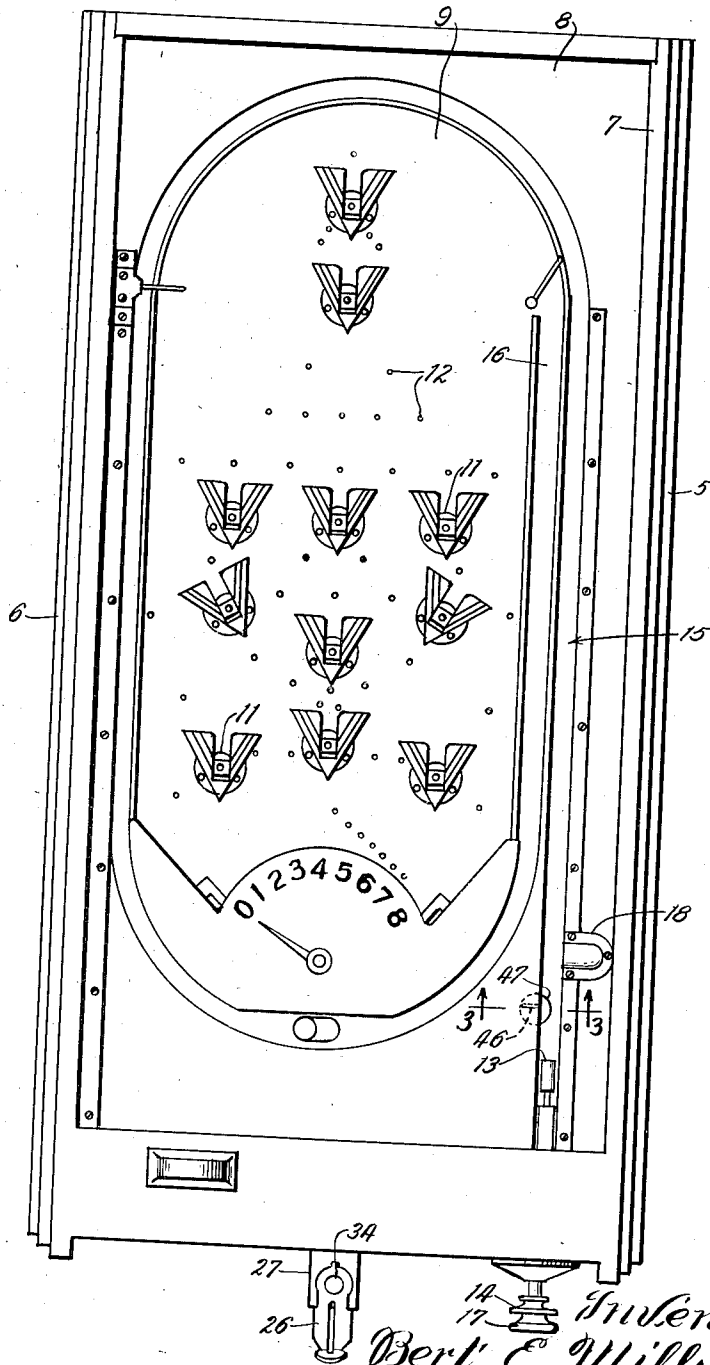
2,074,512

BALL STOP MECHANISM FOR PIN GAME APPARATUS

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2 Sheets-Sheet 1

Fig-1



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Fig-2

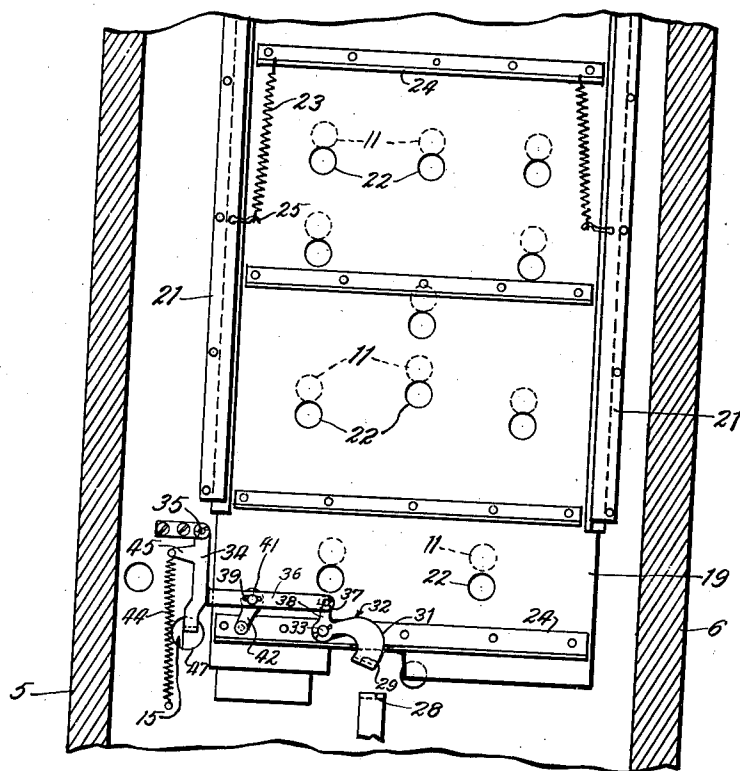
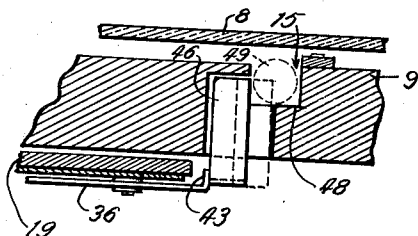


Fig-3



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UNITED STATES PATENT OFFICE

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BALL STOP MECHANISM FOR PIN GAME APPARATUS

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6 Claims. (Cl. 273—121)

This invention relates to pin ball game apparatus of the type wherein there is provided a playing board having openings therein for receiving balls which have been projected over the surface of the board, the played balls being held in the board openings by a movable gate member or panel which is adapted to be shifted by the operator from a normal obstructing position to a position which allows the balls to fall through the board openings, the balls so released being conducted to an elevating device by which they are lifted to a point where they may again be projected over the board.

In games of this type the gate member is usually arranged to be shifted to ball releasing position by manually operated coin-controlled mechanism, which may consist of a coin slide and suitable means for operatively connecting the slide with the gate member.

The object of the present invention is to provide in a pin game apparatus of the character referred to, a ball stop device which is operative upon movement of the gate member to ball releasing position to hold a ball which has been lifted to the playing board away from the projecting mechanism so long as the gate member remains in ball releasing position, thereby preventing play of the game until said gate member is returned to its normal obstructing position.

Other objects and advantages of the invention will be apparent from the following detailed description, taken in connection with the accompanying drawings wherein I have shown the preferred form in which I have thus far contemplated applying the principles of the invention.

Referring to the drawings:

Fig. 1 is a plan view of a pin ball game apparatus having the improved ball stop mechanism embodied therein;

Fig. 2 is a fragmentary plan and sectional view showing the stop mechanism and a portion of the ball releasing gate member or panel associated therewith, the view being taken looking upwardly from beneath the table; and

Fig. 3 is a fragmentary sectional view through the stop mechanism, the section being taken on line 3—3 of Fig. 1.

The construction of pin game apparatus with which the novel stop mechanism is adapted to be used is well known in the art and I shall therefore describe such apparatus only in sufficient detail to give an understanding of its relation to the improved stop mechanism. The pin table includes side frame members 5 and 6, and a top wall 7, the latter including a glass panel 8

through which the operator may view a playing board 9 positioned immediately therebelow. In accordance with the usual construction of games of this type the playing board 9 is provided with a series of openings 11 through which a ball which has been directed to the upper end of the board may pass provided it is not deflected by pins 12, it being understood that the board 9 is inclined downwardly so that a ball will roll from the upper end of the table downwardly toward the openings 11. A ball is projected onto board 9 by a plunger 13 which is slidably mounted in the front wall of the table frame near one edge thereof, said plunger being provided with a knob 14 which may be grasped by the operator to pull the plunger forwardly against suitable spring tension. The ball is driven by the plunger 13 onto the playing board along a channel 15, which in the embodiment shown, completely circles the board, terminating in an inner channel which directs the ball to the upper end of the board, from whence it may roll downwardly toward the openings 11. If a ball fails to fall through one of the openings 11, it will roll to the lower end of the board where it will pass through suitable openings therein (not shown), and, regardless of which of the openings the ball passes through, it is conducted to a point beneath the playing board from whence it is lifted by an elevating device (not shown), which is actuated by a manually operated plunger 17, the ball moving upwardly along a guideway (not shown) from a point beneath the board into channel 15, the upper end of said guideway being closed by a cap piece 18 which directs the ball into said channel 15 at a point above plunger 13.

A gate member or panel 19 (Fig. 2) is positioned immediately below playing board 9, said panel being slidably supported between guide strips 21 which are secured to playing board 9. A series of openings 22 are provided in panel 19 to correspond to the openings 11 in playing board 9. In the normal position of the parts, which is the position shown in Fig. 2, openings 22 in panel 19 are out of alignment with openings 11 in board 9, the panel 19 being held in this position by coil springs 23 which are connected at one end to a cross bar 24 carried by panel 19, the opposite ends of said springs being secured to hooks 25 which project inwardly from guide strips 21.

With the parts positioned as shown in Fig. 2, it will be apparent that a ball which has been directed into one of the openings 11 will remain in said opening until panel 19 is moved rearwardly to bring the openings 22 into registration with the

openings 11. This movement of panel 19 is accomplished from a coin slide 26 which is mounted in the front wall of the table frame, being slidably supported in the latter by a guide bracket 27. The inner end of coin slide 26 is bent upwardly as indicated at 28 (Fig. 2), said upwardly bent portion being adapted to engage a flange 29 which projects upwardly from an arm 31 of a bell crank 32, the latter being fulcrumed on a pin 33 which depends from one of the cross bars 24. When a coin is placed in an opening 34 (Fig. 1) formed in coin slide 26, the latter may be shoved inwardly through a full stroke to carry the inner end portion 28 thereof against the flange 29 on bell crank 32. The counter-clockwise turning of bell crank 32, viewing Fig. 2, caused by engagement of the inner end of the coin slide with flange 29 is limited by means presently to be described so that inward movement of said slide will result in panel 19 being moved rearwardly against the tension of springs 23, thereby bringing openings 22 into alignment with openings 11. With openings 22 thus brought into alignment with openings 11, a ball retained in one of the latter is free to fall through panel 19 from whence it rolls to the elevating mechanism (not shown).

The ball stop mechanism forming the subject matter of the present invention is designed to prevent return of a ball to a position where it may be projected over the board by plunger 13 during the time when panel 19 is retracted so that the openings 22 therein register with the openings 11. If the operator does not release coin slide 26 after having pushed it inwardly through a full stroke, panel 19 will be held with the openings 22 in registration with the openings 11 so that a ball could be played continuously without further operation of the coin control mechanism. My improved stop mechanism prevents this continuous operation under the conditions stated by holding a ball which has been lifted to the playing board away from plunger 13 so long as openings 22 are in registration with openings 11.

In the embodiment shown this stop mechanism comprises a lever 34 (Fig. 2) which is fulcrumed at one end on a pin 35, the latter being fixedly secured in board 9, and a link 36 which is pivoted at 37 to an arm 38 of bell crank 32. Link 36 is provided intermediate its ends with a slot 39 which receives a pin 41, the latter being carried by an arm 42 which is fixedly secured to cross bar 24. The free end of link 36 is bent upwardly, as indicated at 43 (Fig. 3), said upwardly bent portion engaging the edge of lever 34, these parts being yieldingly held in the position shown in Fig. 2 by a coil spring 44 which extends between an arm 45 of lever 34 and a fixed point on the frame. The free end of said lever 34 carries a ball stop arm 46 which projects upwardly into a cylindrical opening 47 formed in playing board 9. As shown in Fig. 3, the opening 47 in board 9 laps channel 15 and extends somewhat above the bottom wall 48 of said channel, stop arm 46 projecting above the bottom wall 48 a distance equal to approximately the radius of a ball 49 resting in said channel 15.

The operation of the stop mechanism is as follows: With panel 19 positioned in its normal ball retaining position, as shown in Fig. 2, the operator, after placing a coin in the opening 34 of slide 26, pushes inwardly on the latter, this operation causing the inner end portion 28 of said slide to strike the flange 29 on bell crank 32, the latter being thereupon pivoted in counter-clock-

wise direction, viewing Fig. 2. This movement of bell crank 32 carries link 36 to the left, viewing Fig. 2, until pin 41 engages the end of slot 39 to limit further movement of link 36 and bell crank 32. Bell crank 32 being thus brought to the limit of its movement in a counter-clockwise direction, further inward movement of the coin slide brings panel 19 to the position where openings 22 register with openings 11, a ball in one of said last mentioned openings being thus released as hereinbefore explained. The movement of link 36 to the left from the position shown in Fig. 2, which is caused by engagement of the inner end of the coin slide with bell crank 32, pivots lever 34 to the left, viewing Fig. 2, to carry ball stop arm 46 from the position shown by the solid lines in Fig. 3 to the position shown by the dotted lines in said figure. When said stop arm is in the solid line position shown in Fig. 3, it clears chute 15 so that a ball emerging into said chute from beneath cap piece 18 (Fig. 1) is free to roll downwardly against the end of plunger 13. However, when said arm 46 is in the dotted line position shown in Fig. 3, which is the position assumed when the coin slide has been pushed inwardly to the end of the stroke, the upper end of said arm 46 projects into channel 15 and prevents a ball which has been lifted into said channel from rolling downwardly against plunger 13. As panel 19 moves rearwardly, the upwardly bent portion 43 of link 36 slides along the edge of lever 34 to hold the latter in ball obstructing position until said panel 19 is permitted to return to the position shown in Fig. 2 by release of the coin slide. As soon as the coin slide is removed from bell crank 32, coil spring 44 pivots lever 34 in a counter-clockwise direction, viewing Fig. 2, to move the latter to the non-obstructing position shown by the solid lines in Fig. 3. The stop mechanism thus prevents a ball which has been returned to the board from rolling down channel 15 into engagement with plunger 13 so long as panel 19 is in a position in which it will release a played ball from one of the openings 11.

The foregoing detailed description has been given for clearness of understanding only, and no unnecessary limitations should be understood therefrom, but the appended claims should be construed as broadly as permissible in view of the prior art.

What I regard as new and desire to secure by Letters Patent is:

1. In a pin ball game, the combination with a playing board having openings therein through which a ball may pass, a projector on the board, and means for returning a played ball to the board in position to be struck by the projector, said means including a gate member movably supported beneath the board and normally held in position to prevent passage of a ball there-through, and manually operable means for moving said gate member to ball releasing position, of means operated by said gate member moving means and including a ball obstructing element movable by said last mentioned means into the path of the ball on the board for holding a ball, which has been returned to the board, away from the projector while said gate member is in ball releasing position.

2. In a pin ball game, the combination with a downwardly inclined playing board having openings therein through which a ball may pass, a projector on the board, and means for returning a played ball to a point on the board in advance of the projector, said means including a gate

member movably supported beneath the board and normally held in position to prevent passage of a ball therethrough, and manually operable means for moving said gate member to ball releasing position, of means operated by said gate member moving means for holding a ball, which has been returned to the board, away from the projector while said gate member is in ball releasing position, said holding means including a movable stop arm positioned between the projector and the point on the board at which a ball is returned thereto, means for holding said arm out of the path of a ball rolling down the board toward the projector when said gate member is in obstructing position, and means for moving said arm into the path of a ball rolling toward the projector when said gate member is moved to ball releasing position.

3. In a pin ball game, the combination with a downwardly inclined playing board having openings therein through which a ball may pass, a projector on the board, and means for returning a played ball to a point on the board in advance of the projector, said means including a gate member movably supported beneath the board and normally held in position to prevent passage of a ball therethrough, and manually operable means for moving said gate member to ball releasing position, of means operated by said gate member moving means for holding a ball which has been returned to the board, away from the projector while said gate member is in ball releasing position, said holding means including a lever fulcrumed below the board, a stop arm supported on said lever and projecting upwardly therefrom onto the board at a point between the projector and the point on the board at which a ball is returned thereto, means for holding said lever and stop arm out of the path of a ball rolling down the board toward the projector when said gate member is in obstructing position, and means for pivoting said lever to carry said arm into the path of a ball rolling toward the projector when said gate member is moved to ball releasing position.

4. In a pin ball game, the combination with a downwardly inclined playing board having openings therein through which a ball may pass, a projector on the board, and means for returning a played ball to a point on the board in advance of the projector, said means including a gate member movably supported beneath the board and normally held in position to prevent passage of a ball therethrough, and manually operable means for moving said gate member to ball releasing position, of a ball stop device for holding a ball, which has been returned to the board,

away from the projector while said gate member is in ball releasing position, said device including a movable stop arm, means for holding said arm out of the path of a ball rolling down the board toward the projector, and means actuated by the gate member moving means for shifting said stop arm into the path of a ball moving toward the projector when said gate member is moved to ball releasing position.

5. In a pin ball game, the combination with a downwardly inclined playing board having openings therein through which a ball may pass, a projector on the board, and means for returning a played ball to a point on the board in advance of the projector, said means including a gate member movably supported beneath the board and normally held in position to prevent passage of a ball therethrough, and manually operable means for moving said gate member to ball releasing position, of a ball stop device for holding a ball which has been returned to the board away from the projector while said gate member is in ball releasing position, said device including a movable stop arm, means for holding said arm out of the path of a ball rolling down the board toward the projector, and means carried by the gate member and positively actuated by the gate member moving means for shifting said stop arm into the path of a ball moving toward the projector when said gate member is moved to ball releasing position.

6. In a pin ball game, the combination with a downwardly inclined playing board having openings therein through which a ball may pass, a projector on the board, and means for returning a played ball to a point on the board in advance of the projector, said means including a gate member movably supported beneath the board and normally held in position to prevent passage of a ball therethrough, and manually operable means for moving said gate member to ball releasing position, of a ball stop device for holding a ball which has been returned to the board away from the projector while said gate member is in ball releasing position, said device including a movable stop arm, means for holding said arm out of the path of a ball rolling down the board toward the projector, means actuated by the gate member moving means for shifting said stop arm into the path of a ball moving toward the projector when said gate member is moved to ball releasing position and for holding said arm in said path while said member remains in such position, and means for returning said gate member to ball holding position.

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