

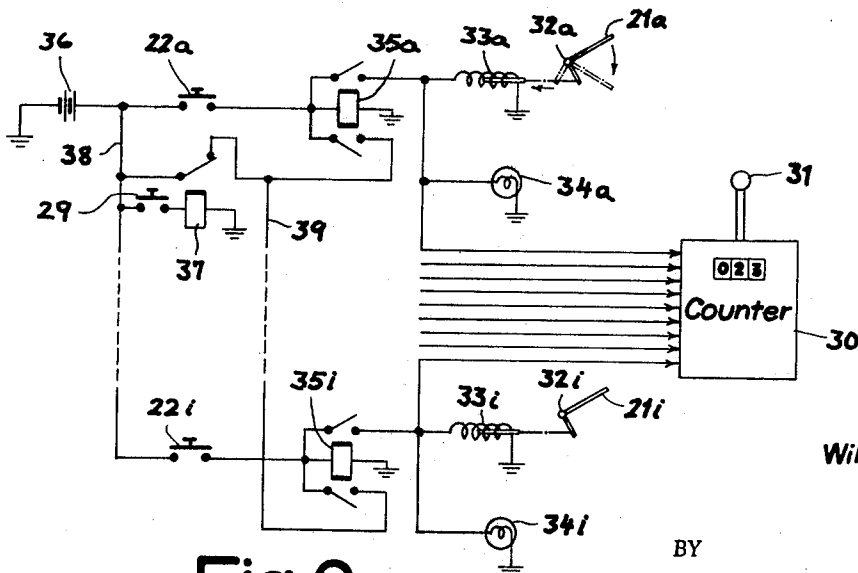
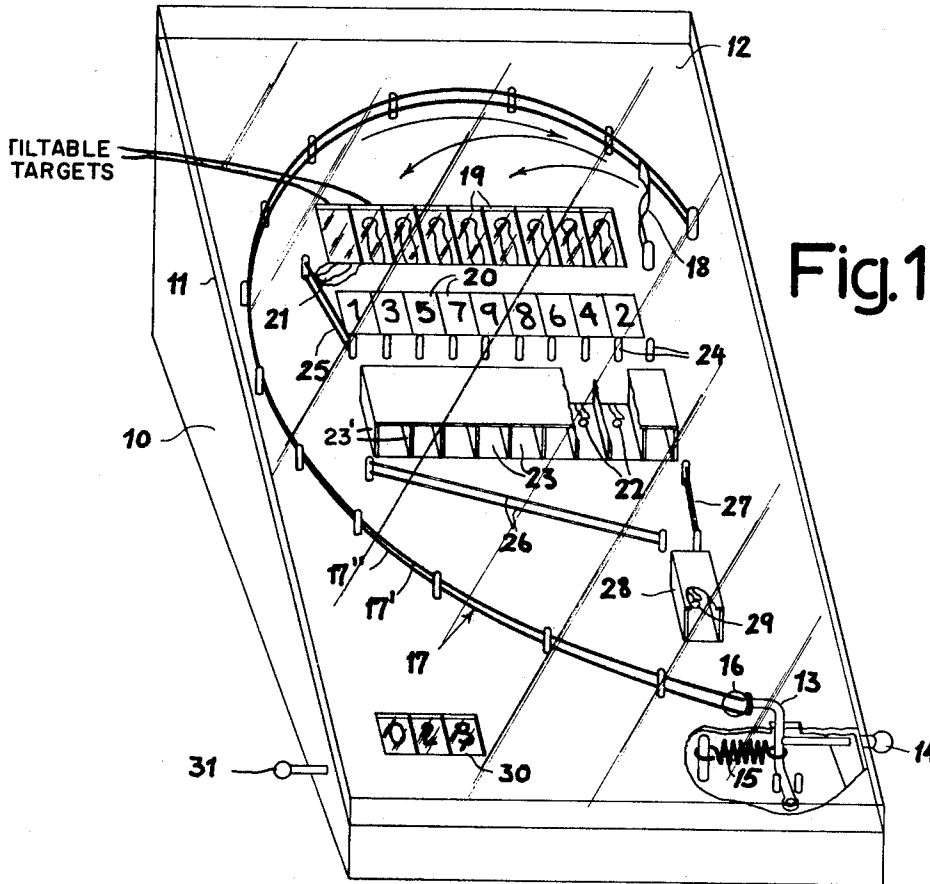
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## SIMULATED BOWLING GAME

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## SIMULATED BOWLING GAME

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9 Claims

## ABSTRACT OF THE DISCLOSURE

Pinball machine simulating a bowling game, with a set of bowling-pin symbols pivotally disposed beneath an inclined platform for tripping upon the ball dropping into a corresponding pocket, different symbols signifying different numbers of pins overturned.

My invention relates to an amusement device in the form of a pinball machine wherein a ball is projected by a launcher toward the top of a platform from which it may descend over a variety of paths, depending upon the initial velocity imparted to the ball.

An object of this invention is to provide an amusement device of the character described which offers novel effects to stimulate the interest of the player.

A more particular object is to provide a pinball machine which simulates, to a certain degree, a conventional bowling game.

An amusement device according to my invention includes in its inclined platform a plurality of windows, generally 9 or 10 if the device is to stimulate a nine-pins or ten-pins game, beneath which a set of targets are tiltably positioned; pockets respectively aligned with these windows contact contacts which can be individually tripped by the ball to set in motion a tilting mechanism for the associated target, simulating the overturning of a bowling pin. To accentuate the similarity with a bowling game, and to increase the challenge to the player, the targets may be individually associated with different numerical values representing the number of pins supposedly overturned; these values may be recorded on a counter having a register visibly mounted on the platform.

In accordance with another feature of my invention, a common switch is provided to restore the tilting mechanism to normal upon the descent of the ball from the level of the pockets to a lower portion of the platform on its way to the launcher. I also prefer to provide guide rails in the form of a pair of parallel wires spaced in a direction normal to the platform, the distance between these wires being less than the diameter of the ball; a rail of this description may curve about an area including the windows and pockets and may be associated with a resilient reflecting finger disposed at the end of the guide path, this finger extending between the two wires and serving to return an oncoming ball in the general direction of the pockets.

The invention will be described in greater detail hereinafter with reference to the accompanying drawing in which:

FIG. 1 is a perspective view of a pinball machine embodying the invention; and

FIG. 2 is an accompanying circuit diagram.

The machine shown in FIG. 1 comprises a box 10 containing the electromechanical elements described hereinafter with reference to FIG. 2, this box being topped by an inclined platform 11 which forms a playing surface and is overlain by a transparent lid 12. A

launcher 13 has a handle 14 accessible from the outside, advantageously at the right-hand side of the box, this launcher being retractable against the force of a spring 15 within the box to impel a projectile, i.e., a ball 16, upwardly along a guide rail 17 comprising two vertically spaced wires 17', 17'' whose distance is less than the diameter of ball 16. Rail 17 curves around the upper platform 11 and meets a spring finger 18 adapted to intercept an oncoming ball and to return it toward the middle of the board, just above a set of windows 19 aligned with respective signaling lamps 20. Beneath each window 19, of which there are nine in the illustrated embodiment, there is disposed a simulated bowling target 21 tiltably positioned for a downward swing away from the vicinity of the corresponding window, this swing being initiated by respective projectile-actuated contacts 22 disposed in associated pockets 23 which are defined by ball-guiding walls 23' at a level below that of windows 19 and the signal lamps 20. Upstanding pins 24 of wire or other elastic material serve to deflect a descending ball from locations aligned with the guide walls 23', additional guide rails 25, 26, 27 being provided for channeling the ball toward the intervening channels or pockets and thereafter directing it into a further pocket 28 containing a switch 29. A numerical register 30 on platform 12 forms part of a counter adapted to be reset by a knob 31.

In FIG. 2 I have illustrated part of an electromechanical system designed to trip two of the bowling-pin-shaped targets 21a, 21i representing the first and the last target of the row. These pins are fulcrumed on respective axes 32a, 32i and are anchored to the cores of associated solenoids 33a, 33i which are energizable, in parallel with light bulbs 34a, 34i of luminous signals 20, by contacts of respective relays 35a, 35i. A source of operating current has been designated diagrammatically as a battery 36.

A further relay 37 is energizable via switch 29 from a bus bar 38 to which the windings of relays 35a . . . 35i are connected by way of respective contacts 22a . . . 22i in pockets 23 (FIG. 1).

Counter 30 has a set of nine inputs respectively energizable by relays 35a . . . 35i; these inputs serving to step the counter by different increments as represented by the numerical values indicated in FIG. 1 at the signal lamps 20. Thus, a passage of the ball through the central pocket 23 will trip a contact serving to register the number "9" while tilting the middle target 21 to indicate that it has been scored, at the same time lighting the corresponding lamp 20.

In the operation of the pinball machine shown in FIG. 1, the player pulls the handle 14 to operate the launcher 13 which lets the ball 16 ascend along rail 17, usually with enough momentum to carry the ball to the deflecting blade 18 whence it reverts toward the middle of the board for descending through one of the pockets 23 unless an excessive launching force causes the descent to occur along the rail 17. Deflectors 24 may let the ball bounce back several times before it passes between them into a pocket 23, e.g. the one containing the contacts 22a of FIG. 2. In that event the relay 35a is energized and locks over its holding armature to an auxiliary bus bar 39 normally carrying the same voltage as main bus bar 38; the working armature of relay 35a operates the solenoid 33a to tilt the target 21a downwardly, into the position illustrated in dot-dash lines, as also seen in FIG. 1. Lamp 35a lights at the same time while counter 30 is stepped to add the number "1" (this being the numerical value associated with target 21a) to the amount already stored there.

The system remains in this position until the ball 16 has worked its way downwardly between rails 26 and 27 to pocket 28 where it closes the switch 29 and momentarily energizes the relay 37 which removes operating

voltage from auxiliary bus bar 39, thereby releasing the relay 35a and extinguishing the lamp 34a with resultant return of target 21a to its normal elevated position. This cycle may thereafter be repeated with a new operation of launcher 13.

If the ball had traversed the pocket containing contacts 22i, relay 35i would have operated to reverse the target 21i with registration of a "2" on counter 30.

To reset the counter to zero at the beginning of each game, the player operates the button 31.

The counter 30 could also be operated subtractively by reducing an initially preset amount in accordance with the numerical value pertaining to a target hit by the ball. A similar counter may be used to register the number of launches under the control of handle 14. A counter-controlled switch, not shown, may de-energize the bus bar 38 or otherwise stop the game after attainment of a certain score or completion of a predetermined number of plays.

I claim:

1. A pinball machine comprising in combination: an inclined playing surface with a plurality of windows flush with said playing surface; a plurality of simulated bowling targets tiltably positioned beneath said windows; a projectile movable on said playing surface; a plurality of guiding means for said projectile disposed on said playing surface and aligned with said windows, each of said guiding means having a projectile-actuated contact; launching means for propelling said projectile onto the playing surface on a path such that the projectile passes over one of said targets and then actuates one of said contacts; and electromechanical means for so connecting said contacts with corresponding targets that the actuation of a contact by a projectile will tilt a target to indicate it has been scored.

2. A machine as defined in claim 1 wherein the number of said targets is at least nine.

3. A machine as defined in claim 1, further comprising switch means positioned below the level of said contacts and guide means for directing said projectile

from any of said contacts to said switch means, said electromechanical means being responsive to operation of said switch means by said projectile for restoring said targets to a normal position.

4. A machine as defined in claim 1 wherein said guiding means include an array of upstanding pins positioned on said platform above the level of said contacts with sufficient separation to clear said projectile.

5. A machine as defined in claim 1, further comprising a set of signaling lamps respectively positioned adjacent said windows and connected for selective energization by said contacts concurrently with the operation of said electromechanical means.

6. A machine as defined in claim 1, further comprising indicator means on said playing surface responsive to the tripping of said contacts for displaying different numerical values upon the tilting of respective targets.

7. A machine as defined in claim 1 further including auxiliary guiding means comprising a curved rail extending from said launching means to an upper region of the playing surface above the level of said windows.

8. A machine as defined in claim 7 wherein said projectile is a ball and said rail includes a pair of parallel wires spaced in the direction normal to the playing surface by a distance less than the diameter of said ball.

9. A machine as defined in claim 8, further including a resilient deflecting finger disposed at an end of said rail and extending between said wires for returning the ball moving therealong.

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