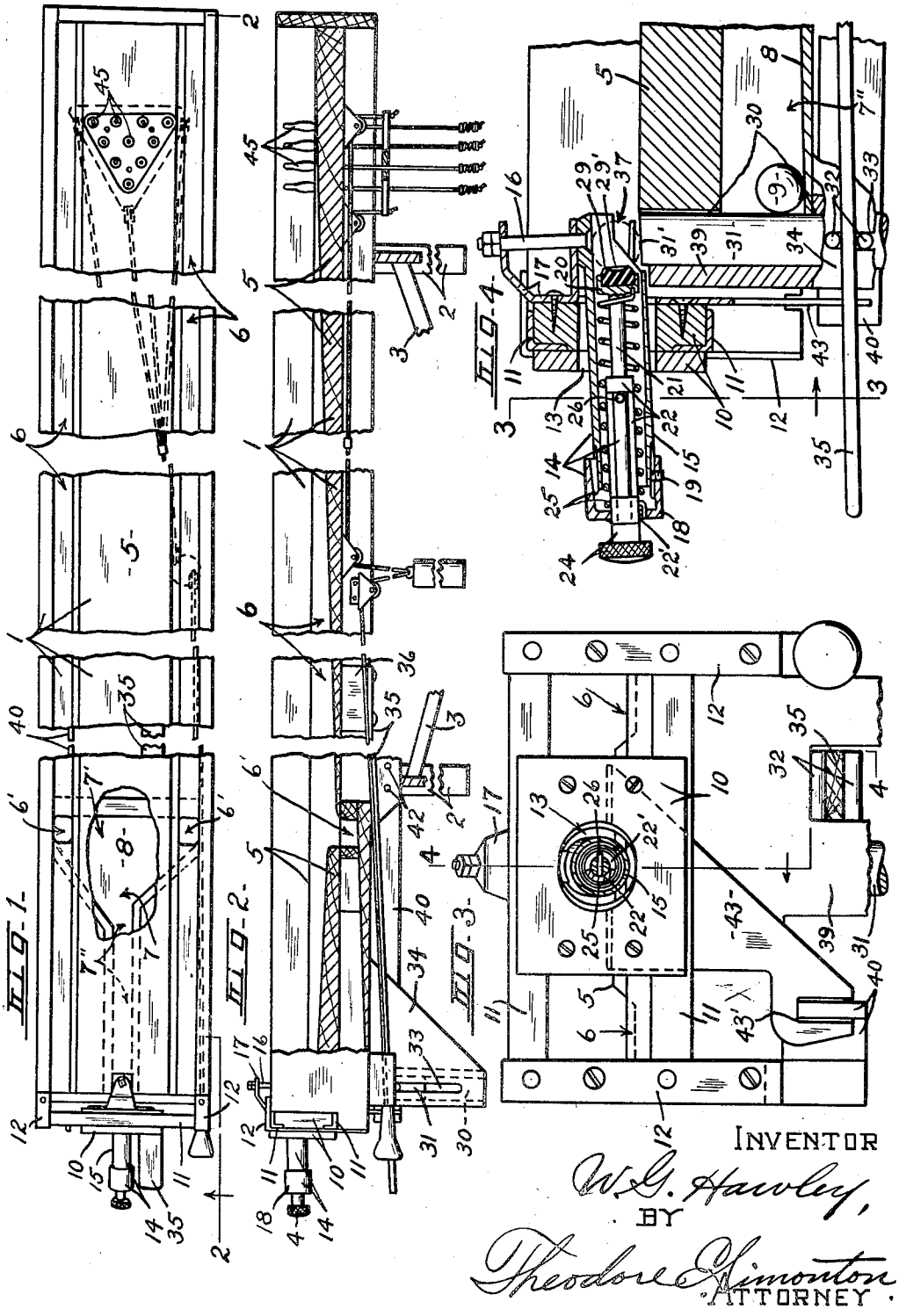
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GAME APPARATUS

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GAME APPARATUS

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11 Claims. (Cl. 273—129)

This invention relates to improvements in a game apparatus and pertains more particularly to a portable or miniature bowling game adapted to be used in the home, the club and various places of amusement. The instant application is a division of my co-pending application Serial Number 60,083 filed January 21, 1936.

An object of the invention is to provide a game of the above mentioned class with an improved mechanical means for actuating or propelling a missile constituting a portion of the apparatus.

Another object of the invention is to provide novel means for bringing the missile into operative relation with the actuating or propelling means.

Other objects and advantages pertaining to the structure of the device and to the form and relation of the parts thereof will more fully appear from the following description taken in connection with the accompanying drawing in which:

Figure 1 is a top plan view of a game embodying my invention and illustrating intermediate portions thereof broken away.

Figure 2 is a vertical sectional view partly in elevation taken substantially in the plane of the line 2—2, Figure 1.

Figure 3 is a transverse sectional view taken on line 3—3, Figure 4.

Figure 4 is a detail vertical sectional view of the forward end portion of the game board or table taken in the plane of the line 4—4, Figure 3.

The device as illustrated in the drawing, comprises a portable game board or table 1 of the rectangular shape of a bowling alley and which is supported upon suitable legs 2 reinforced by braces 3. The board or table 1 comprises a longitudinally extending centrally located alley bed 5 and side gutters 6 which are inclined from opposite ends of the board or table 1 downwardly to a position a relatively short distance from the forward end of the table, as illustrated in Figure 2 where each gutter is provided with a vertical portion 6' in communication with a runway 7 arranged at the forward end of the table beneath the alley bed 5. The runway 7, as shown in Figure 1, is provided with a tapered portion 7' communicating with the gutter portions 6' and a relatively narrow channel portion 7'' which extends forwardly from the tapered portion 7' to the forward end of the table 1 in a plane substantially midway between the sides of the alley bed 5. The bottom or floor 8 of the runway 7 is inclined downwardly from the rear end thereof to the forward end of the table for guiding the missile, as a bowling ball 9, from the gutter portions 6' to the forward end of the table.

A carriage 10, positioned at the forward end of the table 1, is slidably mounted upon a pair of angle guide bars 11 arranged in vertical parallel spaced relation transversely of the table and which have the ends thereof secured in any suitable manner to corresponding end brackets 12 secured to the end of the table 1, one at either side thereof. The carriage 10 is of less width than the distance between the brackets 12 so as to permit a predetermined amount of movement of the carriage laterally of the table. The carriage 10 is provided with a central opening 13 which extends transversely therethrough for the reception of a projector 14.

The projector 14 comprises a tubular case 15 of less diameter than the opening 13 and which extends beyond opposite sides of the carriage 10. The inner end of the case 15 terminates over the alley bed 5 and is secured to a pivotal spindle 16 which extends upwardly therefrom through aligned apertures provided in a U-shaped bracket 17 secured to the upper portion of the carriage 10. The opposite end of the case 15 is provided with a cap 18 which may be removably secured in any suitable manner as by one or more set screws 19 to the case 15 to prevent relative axial and rotary movement of the case and cap. The interior of the tubular case 15 is of sufficient diameter to readily receive the missile 9 therein and has mounted therein a plunger 20 having a plunger rod 21 mounted for axial and rotary movement in a guide sleeve 22 fixedly secured in any suitable manner as by spot welding, soldering or the like, to the cap 18 and which projects some distance from the cap 18 into the case 15. The rod 21 extends outwardly beyond the cap 18 and sleeve 22 and has secured thereto in any suitable manner a finger knob 24 by which the plunger may be manually operated.

A coil spring 25 is mounted upon the plunger rod 21 and guide sleeve 22 intermediate the plunger 20 and cap 18 for actuating the plunger axially in one direction. This spring has one end thereof secured to the plunger 21 and the other end secured to the cap 18 in the manner illustrated in Figure 4 for yieldingly maintaining the plunger against rotary movement. That is, the spring 25 functions to yieldingly maintain the plunger against rotation relative to the housing 15, and if the plunger is thus rotated as by hand against the action of the spring, the spring will return the plunger to its initial position by rotating the same upon the plunger being released

in the reverse direction to that produced by hand irrespective of the direction in which the plunger was initially rotated. The plunger rod 21 is provided with a pin 26 which extends outwardly from one side of the rod into an elongated slot 22' formed in one side of the guide sleeve 22 intermediate the ends thereof as shown in Figures 3 and 4 for limiting the rotary movement of the rod and the plunger 20. The inner end of the plunger 20 is recessed and has secured in said recess an end tip 29 composed preferably of rubber or other resilient material. The exposed end of the tip 29 is slightly concave as at 29' to correspond to the curvature of the peripheral surface of the ball 9 for frictionally engaging said surface for the purpose of transmitting any rotary movement of the plunger produced by the spring 25 to the missile or ball 9 during the projection of the ball for a purpose presently described.

At the forward end of the table 1 is provided a vertically disposed cylindrical opening 30 of slightly greater diameter than the ball 9 and which extends downwardly from the upper surface of the alley bed 5 to some distance below the table 1 as illustrated in Figures 2 and 4. This opening 30 is arranged in substantially co-axial alignment with the pivotal spindle 16 when the carriage 10 is in its normal position and is in communication with the forward end of the channel portion 7'' of the runway 7. In the opening 30 is slidably mounted a lifting or feeding plunger 31 which is of sufficient length to extend from the upper face of the bed 5 downwardly to a position beneath the channel 7'' and has secured to the lower end portion thereof a pair of pins 32 spaced axially of the plunger 31 and which extend laterally from the plunger through an elongated slot 33 provided in the side wall 34 of the opening 30 as shown in Figures 2 and 4. The pins 32 project some distance beyond the wall 34 and receive therebetween an actuating spring 35.

The spring 35, in this instance is a flat bar shaped member arranged beneath the table 1 and has the inner end thereof secured to a block 36 secured to the lower face of the alley bed 5 some distance from the forward end of the table 1 as shown in Figure 2. The forward end of the spring extends a short distance beyond the pins 32 and end of the table 1 in convenient position to be engaged by the player for moving the plunger 31 downwardly. The plunger is thus moved downwardly against the action of spring 35 to align the upper end thereof with the bottom 8 of the channel 7'' whereby the missile or ball 9 will roll upon the upper end of the plunger so that as said plunger is returned to its normal uppermost position, the missile or ball will be elevated thereby into operative alignment with the alley bed 5 and projector 14.

The alley bed 5 is designed to be maintained in substantially a level or horizontal position while the case 15 of the projector 14 is mounted on the carriage 10 in slightly inclined relation to the upper surface of the bed 5 as illustrated in Figure 4. The forward end portion of the case 15 has the lower side wall thereof cut away as at 37 to receive the ball 9 carried by the plunger 31 into the interior thereof. While the plunger 20 is so mounted in the housing 15 that the tip 29 will be maintained in slightly outward spaced relation to the plane of movement of the plunger 31 so that as the ball or missile 9 is elevated by the plunger 31 into alignment with the bed 5, said ball or missile may roll into contact with the tip 29. This movement of the ball toward the plunger is effected by the upper end 31' of the plunger 31 which is slightly inclined relative to the horizontal so as to provide a smooth, substantially continuous surface over the opening 30 from the interior of the case 15 to the upper surface of the alley bed 5 when the plunger 31 is in its normal uppermost position. Furthermore, the inclined end 31' of the plunger assists in maintaining the ball 9 in engagement with the plunger during the elevation of the ball due to the fact that the ball is caused to roll thereby into contact with the front wall 39 of the opening 30 and maintained in such position until the plunger is returned to its normal position.

It will now be observed that when the spindle 16 is in co-axial alignment with the plunger 31, the ball or missile 9 will always be brought by said plunger to a position within the case 15 irrespective of any angular position the case 15 may assume about the spindle 16 as a pivot. In order to normally maintain the spindle 16 in co-axial alignment with the plunger 31, I have provided a spring member 40 which, like the spring member 35, is a substantially flat bar member and is arranged edgewise beneath the game board 1. The spring 40 is secured at its inner end as at 42 to one side of the game board while the outer end of the spring extends beneath the guide bars 11 and rides in a slot 43' provided in a pendant arm 43 secured at its upper end to the carriage 10. The relation of the arm 43 and spring 40 is such that when the spring is in its normal position, the carriage 10 will be maintained substantially midway between the end brackets 12 with the spindle 16 in co-axial alignment with the plunger 31.

The bowling pins 45 used with the table 1 may be of conventional or any other suitable construction. Furthermore the pins 45 may be positioned upon the alley bed 5 at the end thereof opposite the projector 14 in any suitable manner to bring them into playing relation with the projector. That is, the pins 45 may be placed in playing position on the alley bed by manually manipulating the pins in the usual manner or by the aid of a suitable pin resetting device as illustrated in the drawing. However, as the particular manner of resetting the bowling pins after having been knocked over by the bowling ball forms no part of the present invention, it is believed that further description of this feature is unnecessary and will therefore be dispensed with.

It will now be observed from the foregoing description that the missile or ball 9 may be actuated in much the same manner as on the large, regulation size bowling alley. This is primarily due to the universal positioning of the projector 14 which may be swung about the axis of the spindle 16 to obtain any desired angular relation thereof to the bowling alley bed and the pins 45 mounted thereon. Furthermore, the projector may be moved laterally of the alley bed 5 by sliding the carriage 10 in one direction or the other from the normal position along the guide bars 11 against the action of the spring 42. As soon, however, as the carriage 10 is released by the operator the spring 42 will function to return the carriage and, therefore, the projector 14, to the normal position in a plane substantially midway between the sides of the bowling alley bed 5 with the spindle 16 in co-axial alignment with the plunger 31.

After a ball 9 has been propelled by the projector plunger 29, another ball may be brought into operative relation with the projector by the operator simply pressing downwardly upon the forward or free end of the spring 35 until the upper end 31' of the plunger 31 registers with the upper surface of the bottom 8 whereupon the ball 9 will roll upon the upper end of the plunger due to the inclination of the bottom 8 and end 31' of the plunger. As the spring 35 is then released, the plunger will be raised by the action of the spring until the uppermost pin 32 engages the wall at the upper end of the slot 33 whereupon the upper end 31' of the plunger will align with the upper surface of the bed 5 and the ball will be maintained in operative alignment with the plunger 29. As the plunger 29 is moved axially outwardly by the operator against the action of the spring 25, the spring may be also tensioned circumferentially by the operator rotating the plunger through the medium of the finger knob 24 in one direction or the other. It will be obvious that when the spring 25 has been so tensioned that as the plunger is released, the spring will produce a corresponding rotary movement of the plunger which will be transmitted to the ball 9 by the engagement of the tip 29 with the ball, and thereby produce a spinning of the ball around the horizontal axis thereof simultaneously with the projection of the ball whereby the ball will have a greater degree of lateral movement than that normally obtained when the ball is merely rolled forwardly upon the engagement thereof with an object such as a bowling pin, thereby obtaining an effect similar to the effect produced when Englishing the ball with a cue.

When one or more of the bowling pins 45 have been knocked down by a ball 9, the pin or pins may be reset in proper relation with the bowling alley bed and with each other in any suitable manner.

Although the construction and operation of the device shown and described, are particularly simple, practical and efficient, it is evident that various changes may be made in the detailed construction without departing from the spirit of the invention as set forth in the appended claims.

I claim:

1. In a game of the class described, a projector comprising a case, a manually operated plunger mounted for both reciprocative and rotary movements in said case, and a spring for moving said plunger axially in one direction, said spring being secured to the plunger and to the case whereby said spring may be placed under torsional tension for rotating the plunger during said axial movement thereof in the manner and for the purpose set forth.

2. In a game apparatus, a projector comprising a supporting member, a plunger operatively connected with the supporting member for both axial and rotary movements with respect thereto, and means including a spring coacting with said support rendered effective by axial and rotary movements of the plunger from a normal position to a retracted position for moving said plunger axially to return the same to the normal position and for rotating said plunger during said axial movement thereof for the purpose set forth.

3. In a game apparatus, a projector comprising a case, a plunger mounted in said case for both axial and rotary movements, means connected with the plunger whereby said plunger may be manually moved axially from a normal extended position to a retracted position within the case and also rotated on its axis in one direction, and means including a torsional spring connected with the plunger and with the case rendered effective by said axial and rotary movements of the plunger upon the latter being manually released for producing axial and rotary movement of said plunger in directions reverse to the directions of said first mentioned axial and rotary movements to return the plunger to said normal extended position, whereby a ball projected by said plunger will be simultaneously rotated thereby in a direction substantially normal to said direction of projection.

4. A game apparatus as in claim 3 having a supporting surface for maintaining a ball in co-operative relation with the projector, said supporting surface and the direction of axial movement of the plunger being inclined to the horizontal whereby the ball will follow the plunger during said movement thereof from the normal extended position to the retracted position.

5. A game apparatus as in claim 3 wherein the projector is mounted for lateral movement relative to the axial movement of the plunger whereby the direction of projection of the ball may be varied.

6. A game apparatus as in claim 3 wherein means connected with plunger and with the case co-act to limit the rotary movement of the plunger.

7. A projector for a game board comprising a case inclined relative to the horizontal, a plunger mounted in said case for both reciprocative and rotary movements, said plunger being adapted to be manually moved rearwardly into said case, and mechanical means operatively connected with the plunger and with the case and rendered effective by rearward axial and rotary movements of the plunger for simultaneously producing forward axial movement and rotary movement of the plunger about its axis when said plunger is manually released at the end of its rearward stroke.

8. A projector for a game board comprising a supporting member, a plunger operatively connected with the supporting member for both axial and rotary movements from a normal forward position to a retracted set position, and means for moving the plunger from the forward to the retracted position, and mechanical means operatively connected with the plunger and with the supporting member rendered effective by said axial movement of the plunger from the forward to the retracted position and by rotary movement thereof about its axis for simultaneously producing forward axial movement and rotary movement of the plunger about its axis to return said plunger to said normal position.

9. In a game apparatus, a missile projector, and supporting means for said projector including a pivotal member so arranged that the projector may swing laterally, said projector having a missile receiving aperture and said pivotal member being so located adjacent said missile receiving aperture that the position of said aperture is substantially unaffected by the swinging movement of said projector.

10. In a game apparatus, a missile projector, and supporting means for said projector comprising a carriage movable into and out of a predetermined normal position, means connecting

the projector to the carriage including a pivotal member so arranged that the projector may swing laterally with respect to said carriage, said projector having a missile receiving aperture associated therewith and said pivotal member being so located adjacent said missile receiving aperture that the position of said aperture is substantially unaffected by said lateral swinging movement of said projector.

11. A game apparatus as in claim 10 having actuating means operatively connected with the carriage for yieldingly maintaining said carriage in said normal position.

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