Sept. 16, 1952 M. HUBER 2,610,618

BALL HURLING DEVICE FOR SIMULATED BOWLING

Filed Dec. 29, 1950 2 SHEETS--SHEET 1

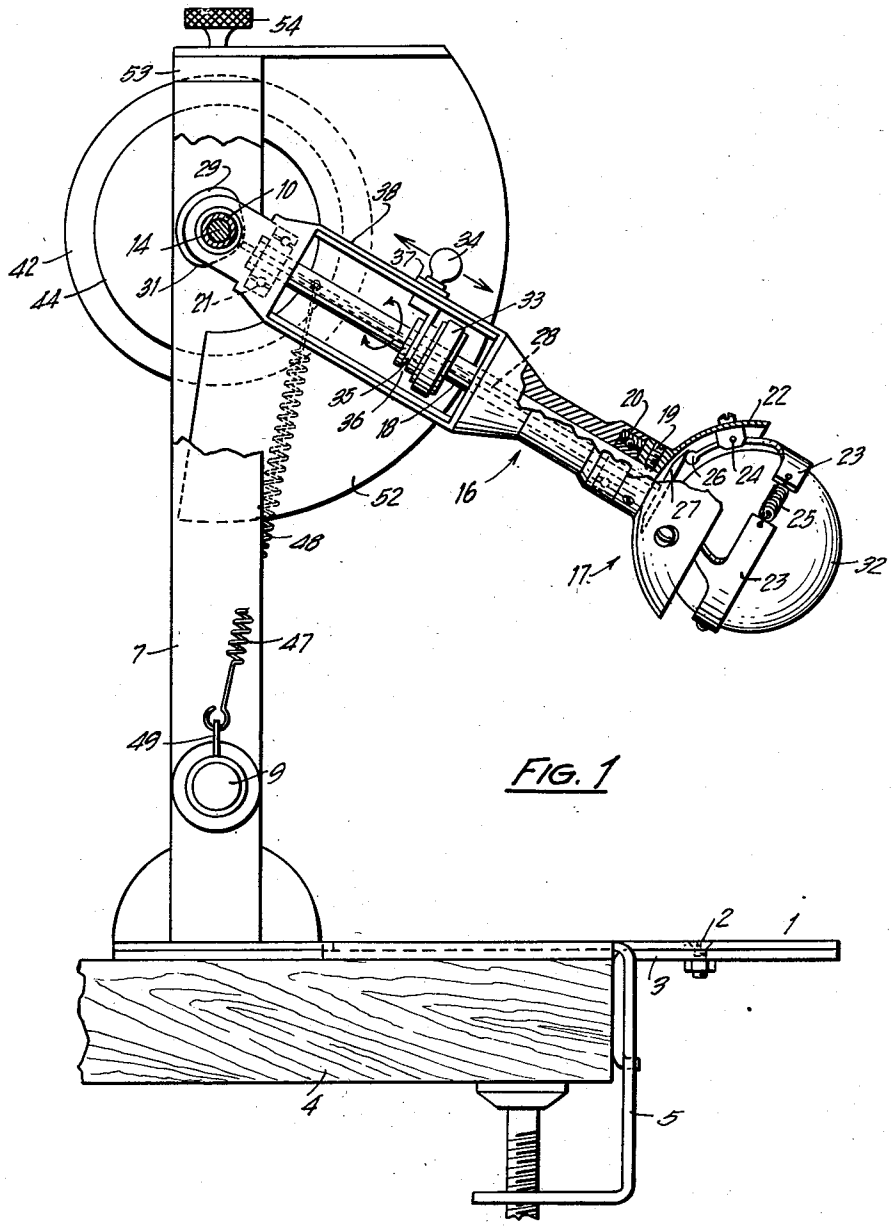


FIG. 1

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BALL HURLING DEVICE FOR SIMULATED BOWLING

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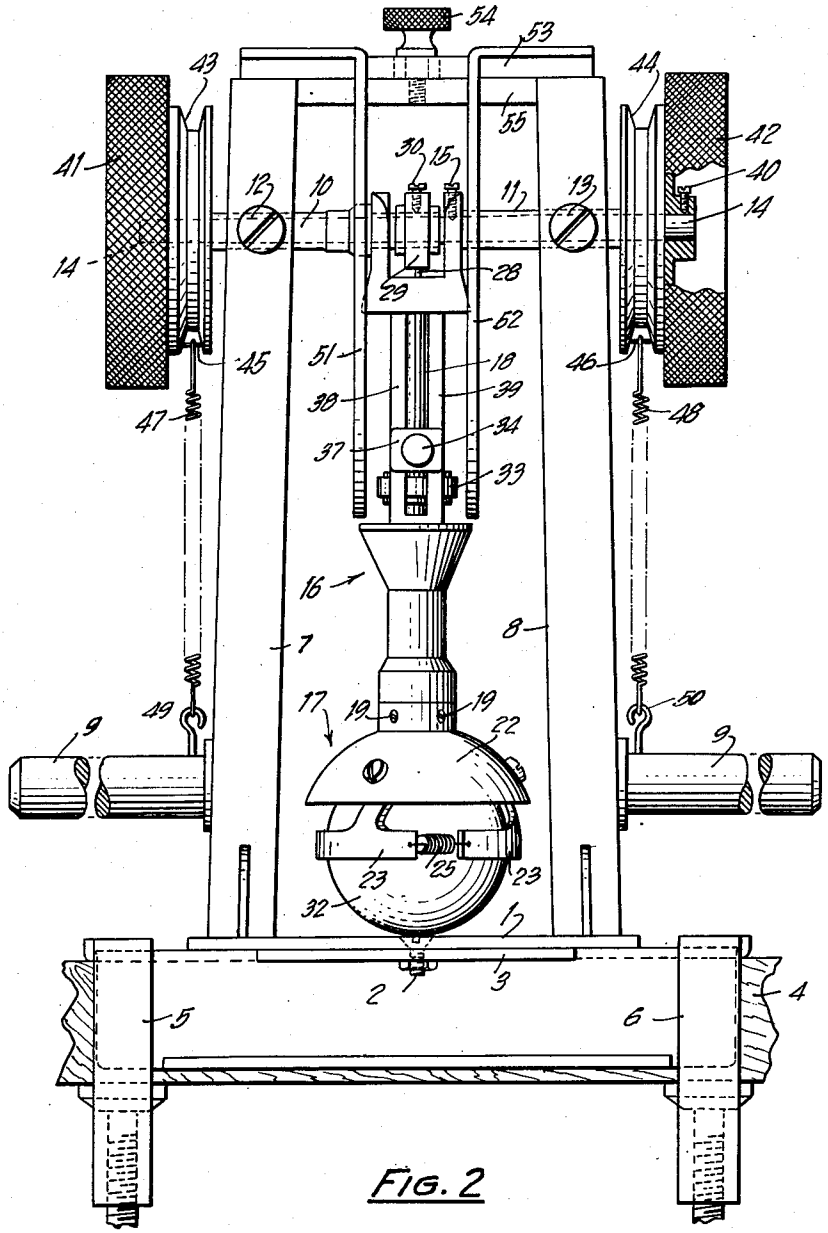


FIG. 2

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2,610,618

UNITED STATES PATENT OFFICE

2,610,618

BALL HURLING DEVICE FOR SIMULATED BOWLING

Martin Huber, Munich, Germany

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10 Claims. (Cl. 124—7)

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My invention relates to games and particularly to a toy bowling game. More specifically, it relates to an apparatus for hurling or throwing a toy bowling ball or the like.

One of the objects of the invention is to provide a device of this character for hurling a toy bowling ball, and which is provided with means for imparting a spinning movement to the ball in either of two directions, at the option of the operator, whereby the ball will travel in a path which curves either to the left or to the right as the operator may choose. Another object is to provide a device of this character in which the rate of the spinning movement imparted to the ball may be varied, whereby the degree of curvature of the path thereof may be varied. Another object is to provide such a device in which the velocity at which the ball is hurled may be varied at the option of the operator. A further object is to provide a device in which the direction in which the ball is hurled may be varied and the speed at which it is hurled may also be varied by using either the right or the left hand of the operator.

I accomplish these objects by means of the novel elements and the combinations and arrangements thereof described below and illustrated in the accompanying drawings in which—

Fig. 1 is an elevation view of my device with certain portions broken away and showing it clamped to a table or board forming the alley along which the ball is thrown; and

Fig. 2 is a right hand view of the device, as shown in Fig. 1, with the movable ball-hurling element in substantially a vertical position.

Referring to the drawing—

My device comprises a base plate 1 which is pivotally connected at 2 to an underlying plate 3 which is adapted to be secured to a table top 4, or the like, by clamps, such as shown at 5 and 6.

The base plate 1 carries two spaced upright members 7 and 8, each of which is provided on the outer side thereof near the bottom, with a hand grip 9 by means of which the base plate 1 and the uprights 7 and 8 may be swung about the pivotal connection 2 with either the right or the left hand of the operator. Mounted in sleeve bearings 10 and 11 which are secured in the uprights 7 and 8, respectively, by means of screws 12 and 13, is a horizontal shaft 14 which is freely rotatable in said bearings. Secured to the shaft 14 by means of the set screw 15 (see Fig. 2) is a pendulous element represented generally by the numeral 16. This element carries at its lower

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end a ball gripping means represented generally by the numeral 17 which is secured to a hollow shaft 18 by means of a set screw 19 (see Fig. 1). The shaft 18 extends axially of the pendulous element and is rotatably mounted in the bearings 20 and 21 (see Fig. 1).

The ball gripping element 17 comprises a hollow, spherical dome or shell 22 having three arcuate ball gripping members 23 pivotally mounted therein, as shown at 24 in Fig. 1. These elements are adapted to grip the ball in a zone extending slightly below the equatorial zone thereof and are yieldingly held in contact with the ball by means of the connecting helical tension springs 25. The gripping members 23 have extensions 26 disposed on the opposite sides of their pivotal connections 24 which are in contact with a circular disc 27. The disc 27 is connected to a push rod 28 extending through the hollow shaft 18 and which, at its upper end, is adapted to cooperate with the cam 29 secured to the sleeve bearing 10 by means of the set screw 30. The tension of the springs 25 normally maintains the upper end of the rod 28 in contact with the surface of the cam 29. The cam 29 is provided with at least one high point or zone 31 and, when the end of the rod 28 rides up and upon this zone, the disc 27 depresses the extensions 26 of the ball-gripping means and effects an opening movement of said means against the tension of the springs 25 to release the ball. The position of the high point 31 of the cam may be adjusted by loosening the set screw 30, turning the cam on the sleeve 10 and tightening the set screw to hold it in adjusted position.

In order to impart a spinning motion to the ball 32 so that it will traverse a curved path after it is delivered from the hurling mechanism, I have provided a means for rotating the hollow shaft 18 in its bearings. This means comprises a friction wheel 33 which is slidable longitudinally on the shaft 18 by means of the knob 34 having the forked lever 35 thereon which rides in a collar 36 on the wheel 33. A flat spring 37 frictionally engages the frame members 38 and 39 to hold the wheel 33 in any position to which it is moved. It is understood, of course, that the friction wheel 33 is drivingly connected to the shaft 18 by means of a spline or otherwise.

Fixed to the ends of the shaft 14 by means of set screws 40 (see Fig. 2) are knurled knobs 41 and 42 having pulleys 43 and 44, respectively, secured thereto. Connected to the pulleys 43 and 44 by means of pins 45 and 46 which are vertically disposed below the axis of the shaft 14

when the pendulous carrier 16 is vertical, are tension springs 47 and 48, the other ends of which are shown as fixed to the handles 9 by means of the hooks 49 and 50. These springs normally but yieldingly hold the pendulous carrier 16 substantially vertical. The two knobs 41 and 42 are provided so that they may be manipulated conveniently by either the right or the left hand of the operator to turn the shaft 14 and swing the pendulous carrier 16 back into a position such, for example, as that shown in Fig. 1. If the knob by which the carrier is swung into the position shown in Fig. 1 is released after the springs 47 and 48 have been stretched to the desired degree, they will impart a rapid forward swinging movement of the carrier which will carry it past the dead center, and the springs will then function as a brake to bring the carrier back to its normal vertical position after a few oscillations. When the carrier is released and the ball 32 is practically at the level of the table top or board to which the device is attached, the upper end of the push rod 28 will ride up upon the high point 31 of the cam 29 which will force the push rod 28 downwardly and the disc 27 downwardly against the extensions 26 of the ball gripping means. This will spread the gripping elements 23 apart and release the ball.

With the parts of the device positioned as shown in Fig. 2, the path of the ball will be straight. However, if it is desired to have the ball traverse a curved path, a spinning movement may be imparted thereto by moving either the arcuate plate 51 or the arcuate plate 52 into running contact with the frictional wheel 33 and clamping it in such a position. By reference to Fig. 2, it will be noted that the arcuate plates or discs 51 and 52 are fixed to a base 53 which rides on top of the uprights 7 and 8. This base 53 may be slid either to the right to bring plate 51 in contact with the friction wheel, or to the left to bring plate 52 into such contact, by first loosening the knurled clamping screw 54, which is threaded into the cross member 55 connected between the uprights, and thereafter tightening the screw 54 to hold the plate in adjusted contact with the wheel 33.

Referring to Fig. 1, it will be apparent that, when the friction wheel 33 is positioned near the outer peripheral edge of the disc 52 and is in contact with said disc, it will roll thereon through a comparatively long path when the pendulous element swings and thereby impart a rapid spinning movement to the ball gripping means and the ball therein. If it is desired to impart a slower spinning movement to the ball, the friction wheel 33 may be slid upwardly and to the left, as viewed in Fig. 1, by means of the knob 34, so that it will be nearer the axis of the shaft 14 about which it revolves. Thus, when the pendulous element swings, the wheel 33 will roll through a shorter arc and impart a slower spinning movement to the ball than when in the position shown in Fig. 1.

While I have described my invention in its preferred embodiment, it is to be understood that the words which I have used are words of description rather than of limitation and that changes, within the purview of the appended claims, may be made without departing from the true scope and spirit of my invention in its broader aspects.

What I claim is:

1. In a device for hurling a toy bowling ball, the combination with a pendulous element comprising a pendulous shaft having ball-gripping means affixed to the lower end thereof; of means forming a horizontal axis from which said element is suspended and about which said element may swing freely; bearings in said element in which said shaft is freely rotatable; a spring cooperating with said element and normally maintaining it and said shaft substantially vertical but adapted to impart a rapid swinging movement to said element when said element is manually swung out of its normal position and then released; a wheel fixed to said shaft; manually movable means at one side of said shaft and normally spaced from said wheel presenting a surface on which said wheel may roll when in contact therewith, and adapted, at the option of the operator, to be moved into frictional contact with said wheel for automatically imparting a spinning movement to said wheel, said shaft, said ball gripping means, and a ball held in said gripping means during said rapid swinging movement of said element after the release thereof; and means for automatically releasing said ball from said gripping means at a predetermined instant.

2. The structure set forth in claim 1 together with manually adjustable means for varying the rate of spinning movement imparted to said ball.

3. In a device for hurling a toy bowling ball, the combination with a pendulous element comprising a pendulous shaft having ball-gripping means affixed to the lower end thereof; of means forming a horizontal axis from which said element is suspended and about which said element may swing freely; bearings in said element in which said shaft is freely rotatable; a spring cooperating with said element and normally maintaining it and said shaft substantially vertical but adapted to impart a rapid swinging movement to said element when said element is manually swung out of its normal position and then released; a wheel fixed to said shaft; manually movable means presenting plane surfaces on opposite sides of said shaft normally in spaced relation to said wheel but on either of which said wheel may roll when in contact therewith adapted, respectively, at the option of the operator, to be selectively moved into frictional contact with said wheel for automatically imparting a spinning movement in either direction to said wheel, said shaft, said ball gripping means, and a ball held in said gripping means, in either direction, at the option of the operator, during said rapid swinging movement of said element after the release thereof; and means for automatically releasing said ball from said gripping means at a predetermined instant.

4. The structure set forth in claim 3 together with manually adjustable means for varying the rate of spinning movement imparted to said ball.

5. In a device for hurling a toy bowling ball, the combination with means for gripping said ball; of means for pendulously supporting said gripping means to swing freely about a horizontal axis; a spring cooperating with said pendulous means, and normally holding it substantially vertical, for imparting a rapid swinging movement to said gripping means when said pendulous means is manually swung out of its normal position and then released; means for automatically releasing said ball from said gripping means at a predetermined point in the swinging movement thereof; a first means cooperating with said pendulous means for automatically imparting a spinning movement in one direction to

said gripping means and a ball therein during said rapid swinging movement of said pendulous means; a second similar means for automatically imparting a spinning movement to said gripping means but in a direction opposite that imparted thereto by said first means; and manually operable means for selectively putting said first and second spin-imparting means into and out of operation, respectively.

6. The structure set forth in claim 5 together with manually adjustable means for varying the rate of spinning movement imparted to said ball.

7. In a device for hurling a toy bowling ball, the combination with means for gripping said ball, of a pendulous shaft having said gripping means affixed to the lower end thereof; a horizontal shaft; means including bearings, in which said pendulous shaft is freely rotatable, for suspending said pendulous shaft to swing freely on said horizontal shaft; a spring normally holding said pendulous shaft substantially vertical but adapted to impart a rapid swinging movement thereto when said pendulous shaft is manually moved out of its normal position and then released; a friction wheel mounted on said pendulous shaft intermediate the ends thereof for rotating the same; a plate having a plane surface parallel to the axis of said pendulous shaft and normally in laterally spaced relation to said wheel, a mounting for said plate adapting it to be moved into and out of frictional contact with said wheel to provide a surface on which said wheel may roll during a swinging movement of said pendulous shaft automatically to impart a spinning movement to said gripping means and a ball held thereby; and means for automatically releasing said ball from said gripping means at a predetermined point in the swinging movement thereof.

8. The structure set forth in claim 7 in which said friction wheel is slidably mounted on said pendulous shaft, and said device is provided with manually operable means for sliding said wheel on said shaft and holding it in slid position; whereby to vary the rate of spinning movement imparted to said gripping means and said ball.

9. In a device for hurling a toy bowling ball, the combination with means for gripping said ball, of a pendulous shaft having said gripping means affixed to the lower end thereof; a horizontal shaft; means including bearings, in which said pendulous shaft is freely rotatable, for suspending said pendulous shaft to swing freely on said horizontal shaft; a spring normally holding said pendulous shaft substantially vertical but adapted to impart a rapid swinging movement thereto when said pendulous shaft is manually moved out of its normal position and then released; a friction wheel mounted on said pendulous shaft intermediate the ends thereof for rotating the same; a pair of plates disposed on opposite sides of said shaft and normally in spaced relation to said wheel providing surfaces on either of which said wheel may roll during a swinging movement of said pendulous shaft when brought in contact therewith automatically to impart a spinning motion to said gripping means and a ball held thereby; and manually operable means for moving either of said plates into and holding it in contact with said wheel.

10. The structure set forth in claim 9 in which said friction wheel is slidably mounted on said pendulous shaft, and said device is provided with manually operable means for sliding said wheel on said shaft and holding it in slid position; whereby to vary the rate of spinning movement imparted to said gripping means and said ball.

MARTIN HUBER.

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