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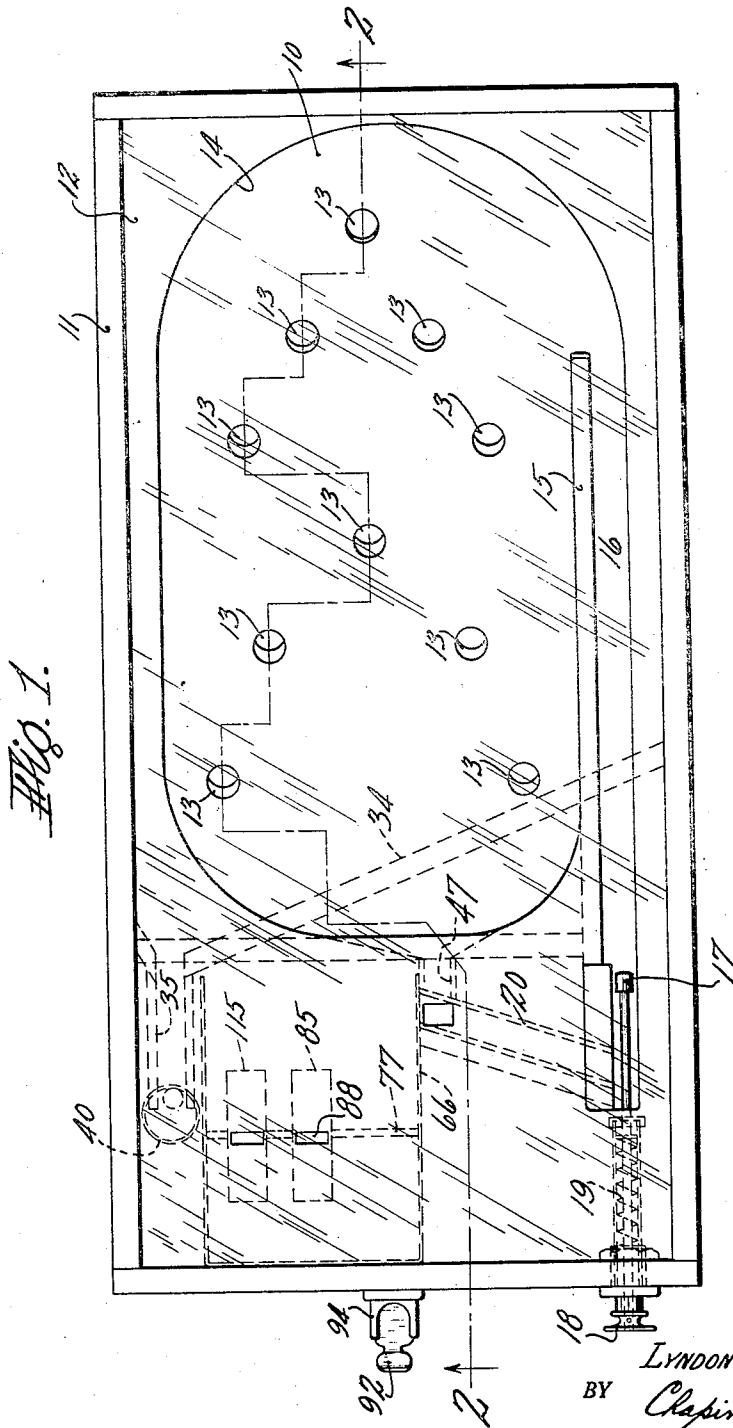
L. A. DURANT

2,054,616

GAME TOTALIZER

Filed May 18, 1933.

4 Sheets-Sheet 1



INVENTOR.

LYNDON A. DURANT

BY

Chapin & Neal
ATTORNEYS.

ATTORNEYS.

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L. A. DURANT

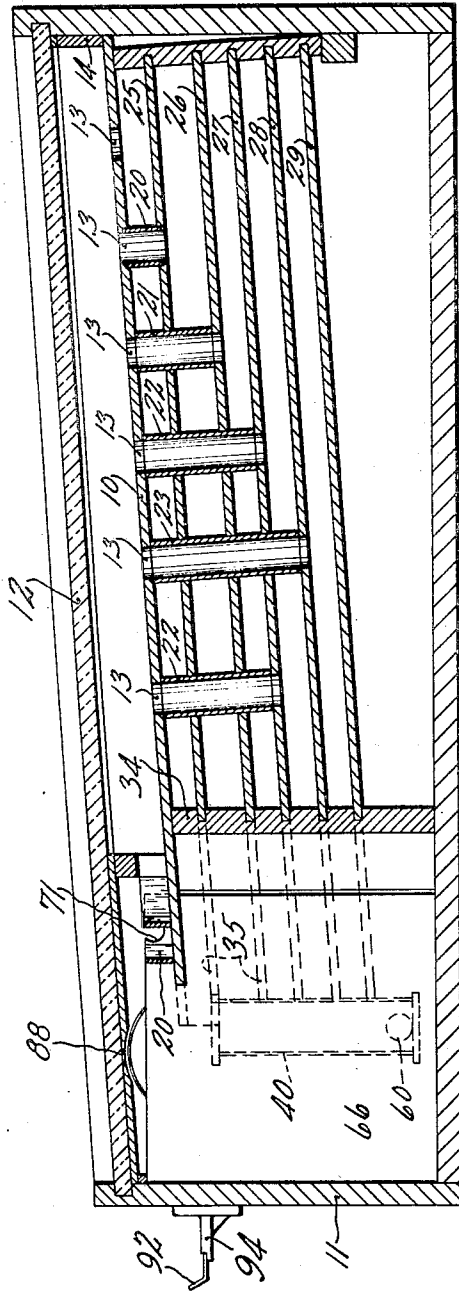
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Fig. 2.



INVENTOR.
LYNDON A. DURANT
BY *Chapin & Neal*
ATTORNEYS.

Sept. 15, 1936.

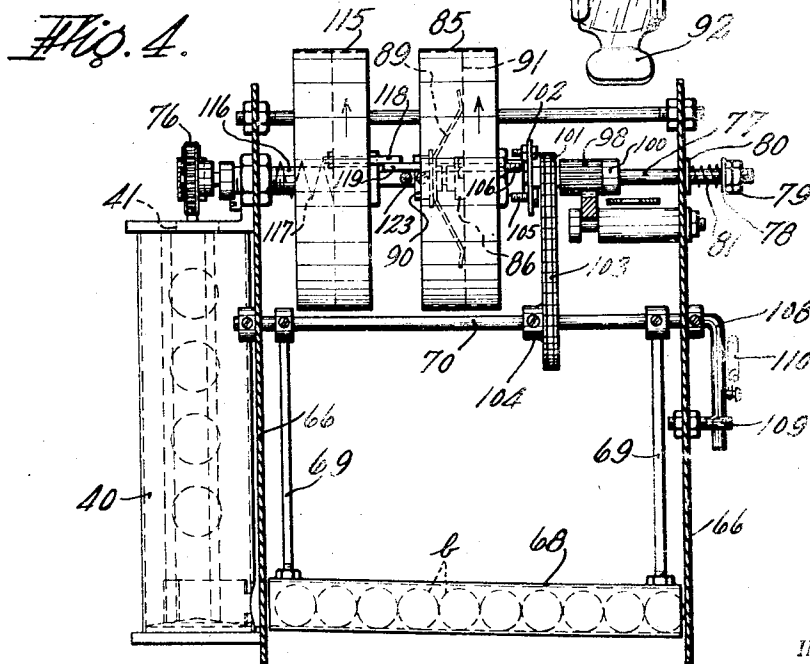
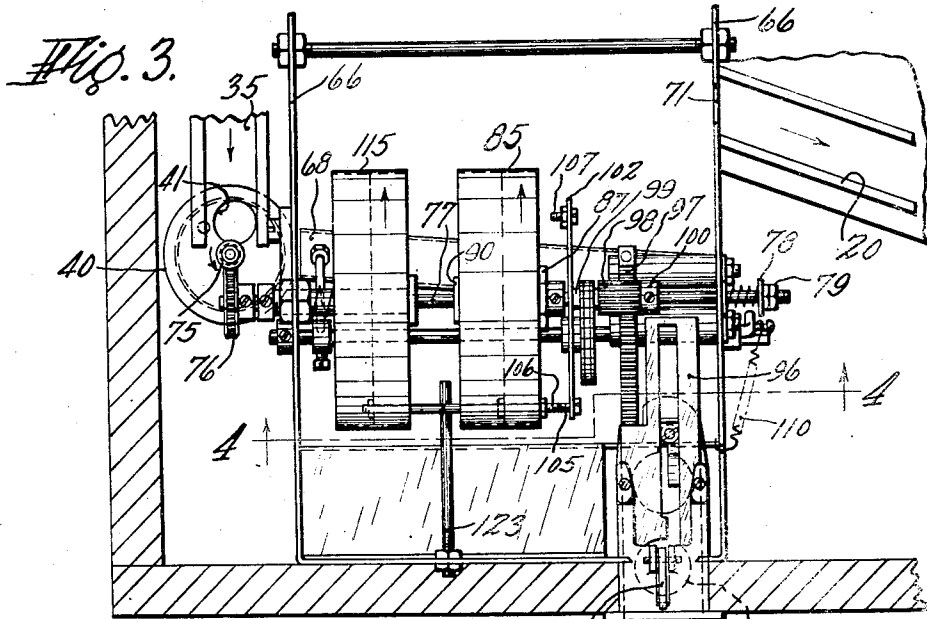
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INVENTOR.

LYNDON A. DURANT

BY

Chapin & Neal
ATTORNEYS.

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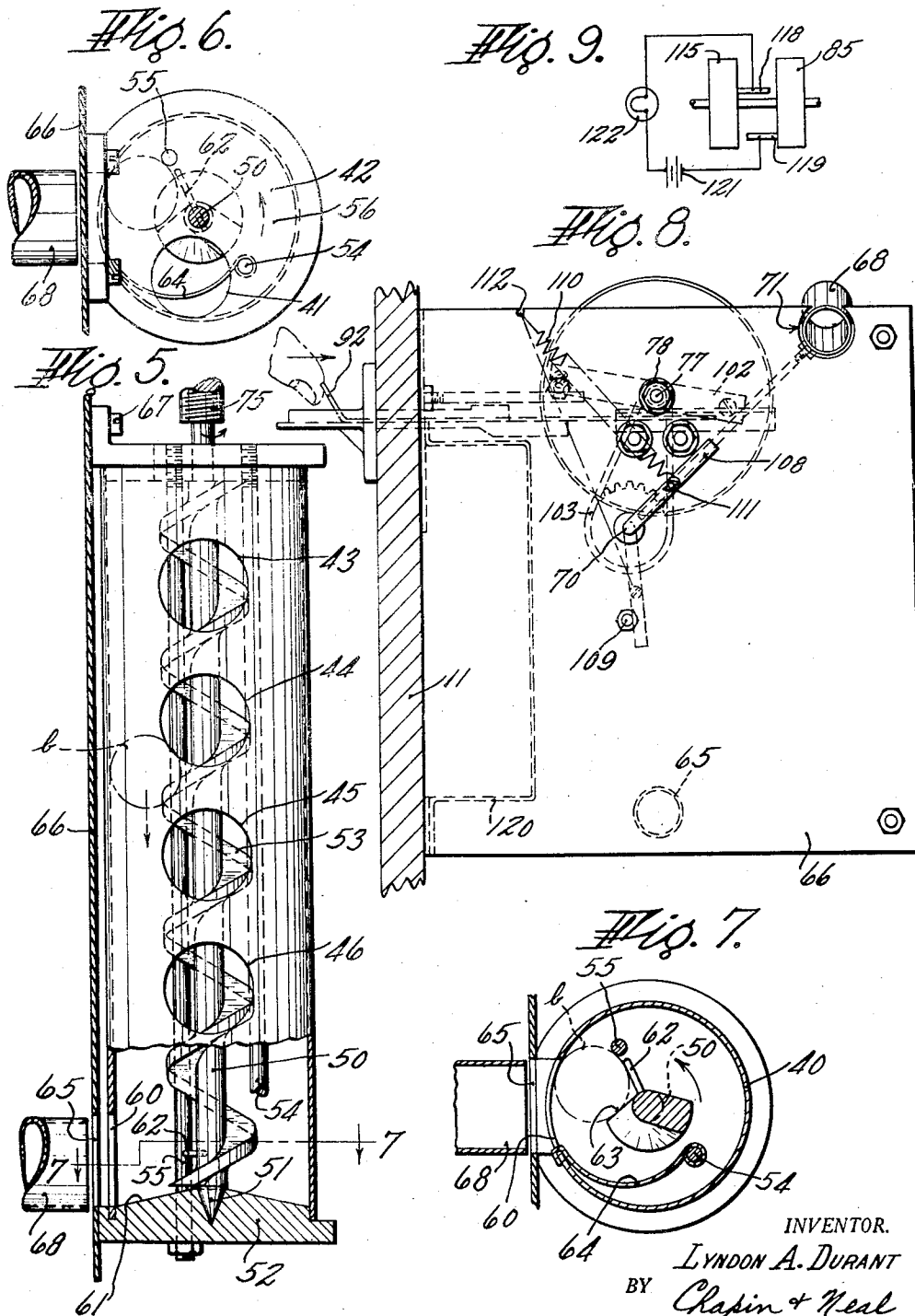
L. A. DURANT

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4 Sheets-Sheet 4



INVENTOR.
LYNDON A. DURANT
BY Chapin & Neal
ATTORNEYS.

UNITED STATES PATENT OFFICE

2,054,616

GAME TOTALIZER

Lyndon A. Durant, Springfield, Mass., assignor of
one-half to George H. Campbell, Agawam,
Mass.

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3 Claims. (Cl. 273—121)

This invention related to totalizers or score keeping devices for use with that type of game in which balls are rolled onto a playing board with the object of getting them into holes formed in the board and possessing different scoring values. Typically this sort of game is provided with a coin controlled mechanism releasing a predetermined number of balls for play, and the invention has particular utility in connection with such a mechanism. In its broader aspects, however, the invention is independent of the particular control mechanism, or of the particular type of game with which it is used.

For convenience in illustration, the invention has been shown as applied to an amusement device which is at the present time in common use. The game board of this device is contained within a glass topped cabinet so that it is visible but not directly accessible. A plurality of holes, possessing different scoring values, are formed in the board, and various hazards such as pins are located between the holes. At one side of the casing is a plunger controlled by the player to propel the balls one at a time onto the playing surface. Since the scoring is dependent upon the holes into which the successive balls fall it has been customary to retain the balls within the holes in full view until all of the balls have been played. After a player's round of balls has been exhausted he adds up the total of the points scored. The desirability of an automatic totalizer is plain, but all devices hitherto proposed for this purpose have been so complex, bulky, and uncertain in operation as to render them impracticable. In accordance with the present invention, a totalizing device is provided which is of great simplicity in construction and which has entire accuracy in operation. In its preferred form the device is coupled to the usual coin control ball release so that the device is reset to zero at the delivery of each fresh round of balls. An additional advantage is that the device is so constructed as to elevate the balls automatically into playing position. A further advantage of the device is that it provides an automatic high score record, which may be reset at the end of any desired period. Additional advantages will appear in the description of the preferred form of the device and in the claims set forth below.

Referring to the drawings,—

Fig. 1 is a top plan view of a game board to which the totalizer is applied;

Fig. 2 is a section on line 2—2 of Fig. 1;

Fig. 3 is a plan view of the totalizer;

Fig. 4 is an end elevation thereof;

Fig. 5 is a side elevation, partly in section, of the ball actuated portion of the totalizer;

Fig. 6 is a top plan view of the mechanism shown in Fig. 5;

Fig. 7 is a section on line 7—7 of Fig. 5;

Fig. 8 is a side elevation of the totalizer mechanism; and

Fig. 9 is a wiring diagram of a signal device associated with the high score recorder.

The game board 10 is located within a casing 11 having a glass top 12. Holes 13, into which it is the purpose of the game to have the balls drop, are spaced around the surface of the board 10, and the entire playing area is surrounded by a generally oval barrier or rail 14. A straight barrier 15 at one side defines a race-way 16 along which the balls b are initially projected. In the present case the balls are propelled down this race-way by a plunger 17 having an exposed handle 18 and a compression spring 19. When the plunger 17 is drawn back against the pressure of the spring a ball b drops in front of it from a chute 20. Release of the plunger will cause the ball in front of it to be projected down the raceway 16 with a speed dependent upon the amount the plunger is eased off before complete release.

As stated above, the holes 13 have different scoring values, in some cases two or more holes having the same value. To segregate the balls passing through the holes of these several values, a series of ball collecting levels 25, 26, 27, 28 and 29 are provided below the board surface. Balls reach the level 25 directly through those holes 13 having the highest scoring value. The levels 26, 27, 28 and 29 are reached through tubes 20, 21, 22 and 23 passing through intermediate levels as is clearly shown in Fig. 2. The board and the various levels are arranged on a slant, as also shown in Fig. 2, so that the balls have a tendency to roll towards the front of the device. Here they strike a barrier 34 extending diagonally across the device, so that they ultimately reach a series of tubes or conduits 35 corresponding to the different levels and leading to a vertical casing 40. This casing has a hole 41 in its upper head 42, to which the balls are delivered by the uppermost conduit 35; and a series of holes 43, 44, 45 and 46, to which balls are delivered by the lower conduits respectively. The arrangement is such that balls are delivered into the casing 40 at heights proportional to the scoring value of the holes 13 through which they pass. Balls not passing through any of the holes 13 are directed by the barrier 14 into a conduit 47 con-

necting with the chute 20 and in the arrangement shown are returned to be replayed.

Within the casing 40 is a shaft 50 having a pivotal bearing 51 in the lower head 52 of the casing, and passing through the upper head 42. Surrounding this shaft is a preferably integral helical rib 53 which in the case shown extends part way only to the inner walls of the casing. The shaft and rib may conveniently be formed in the same manner as a wood boring bit. Extending between the heads of the casing, and conveniently serving as tie rods to hold the heads and the casing assembled, are a pair of rods 54 and 55 located on opposite sides of the holes 41 etc., and preferably spaced apart by a substantial angle. These rods serve to confine the balls within a limited cylindrical sector of the casing. Since the balls cannot, because of the presence of these rods, roll around the inclined plane presented by the helical rib, their weight will cause them to descend by turning the shaft and rib in the direction of the arrow 56 in Fig. 6, the amount of rotation given to the shaft being directly proportional to the elevation at which the balls were introduced into the casing.

At the bottom of their descent through the casing the balls are directed outwardly through an aperture 60 by the inclined upper surface 61 of the lower casing head 52. A pin 62 on the lower portion of the shaft 50 serves to assist in sweeping the ball out of this aperture, overtravel of the ball beyond the aperture being prevented by a shoulder 63 formed on the rib 53, and by a strap 64 joining the rod 54 and the adjacent edge of the aperture. The aperture 60 is aligned with a hole 65 in the frame plate 66 which carries the totalizer, and to which the casing 40 is secured as by screws 67. From the hole 65 the balls pass into a tube 68 mounted on rods 69 extending from a shaft 70. The ends of the tube 68 are open, the balls being retained therein by the adjacent walls of the frame 66 except when the tube is opposite the hole 65 or a hole 71 located in the opposite frame wall at a greater height. As shown in Figs. 4 and 8 the tube 68 is formed on a slant, so that when it is aligned with the hole 65 as in Fig. 4 it will slant downwardly away from it, and when it is aligned with the hole 71 as in Fig. 8 it will slant downwardly toward that hole. The hole 71 is connected with the chute 20 previously mentioned.

At the upper end of the shaft 50 is formed a worm 75 which, as best shown in Fig. 3, is in mesh with a worm gear 76 on a cross shaft 77. This shaft extends between the walls of the frame 66 and at its end remote from the worm wheel has a collar 78 held in place by locknuts 79. A second collar 80 is pressed against the adjacent frame wall by a spring 81 compressed between the two collars, in order to exert an adjustable frictional resistance to the rotation of the shaft. The angular travel given to the balls by the spacing of rods 54 and 55 is useful, in addition to shifting the discharge point 90° from the admission point, in developing a certain momentum in the ball; which, when the ball strikes the rod 55, will develop a slight impact sufficient to overcome any static friction due to the collar 80.

Upon the shaft 77 is a drum 85, located between collars 86 and 87. The outside of this drum is graduated in figures indicating the total score, and is positioned opposite a window 88 in the main casing. The drum is loose on the shaft, being driven by a spring 89 secured to a collar

90 fixed on the shaft and resting against an interior wall 91 of the drum. There being no load on the drum the friction between the spring and the wall is sufficient to drive it, while the drum can be reset readily by rotating it without causing any corresponding movement of the shaft.

The coin controlled resetting apparatus comprises the usual coin slide 92 having a coin receiving hole 93, reciprocable in a guide 94. In the presence of a coin this slide is coupled by a dog 95 to a second slide 96 in the manner customary in devices of this character. In the present case the slide 96 bears a rack 97 engaging a pinion 98 fast on a sleeve 99 loosely mounted on the shaft 77 between collars 86 and 100. The sleeve 99 also carries a sprocket 101 and an arm 102. A chain 103 passes around the sprocket 101 and around a sprocket 104 mounted on the shaft 70, the ratio between the sprockets being such that a full inward stroke of the slide 96 will turn the shaft 70 an amount sufficient to raise the tube 68 from a position in alignment with hole 65 to a position in alignment with hole 71. Arm 102 carries at one end a resetting pin 105 adapted to make contact with a pin 106 on the drum 85. These pins are so set that with the slide 96 pushed way in, the drum will be turned to its zero reading. With the slide out the pins will be spaced sufficiently to avoid any interference during the totalizing action. The opposite end of arm 102 preferably carries a counterweight 107, here shown as in the form of a screw. The end of shaft 70 is preferably bent as at 108 so as to engage a stop pin 109 when the tube 68 is in its lowered position. A spring 110 is stretched between a pin 111 on the bent portion of the shaft and a notch 112 on the frame, the line of the spring passing slightly below shaft 70 in this position. The spring thus assists in holding the bent portion 108 against the stop 109, and yet when the shaft is turned to raise the tube 68 it will assist in raising the weight of the tube.

In case it is desired to employ a high score indicator a second drum 115 is loosely mounted on a stationary flanged sleeve 116 surrounding the shaft 77, a spring 117 exerting a slight frictional drag on it to prevent overrunning. A pin 119 projecting from the side of drum 85 is adapted to strike a pin 118 on the side of drum 115, so that the second drum will be advanced with the first but will not be reset to zero with it. Drum 115 will thus indicate the highest score which has been made on the apparatus since the time it was manually reset, this being conveniently done where the cover is removed for the purpose of extracting the accumulated coins in box 120. If desired the drum 115 may be insulated from the shaft so that pin 119 may form one of a pair of contact points of which pin 118 is the other. When the pins contact, as when a record score is made, a current may pass through these contacts from a battery 121 and through a lamp 122 located in a visible position to attract attention to the feat. The pin 119 also serves to position the drum 85 for zero reading, striking against a stop pin 123 for this purpose.

In operation a coin is inserted in hole 93 and the slide 92 pushed all the way in. This resets drum 85 to a zero reading and elevates tube 68 in which is the allotted supply of balls *b*. When the tube arrives in alignment with the hole 71 the balls run out into the passage 20 into position to be played by plunger 17 and the tube drops back to the position of Fig. 4 by gravity upon the re-

lease of slide 92. The balls are now propelled one at a time by the plunger, going out onto the board and either passing through one of the holes 13 or passing out through the opening 47. As the balls fall through the holes 13 they reach their proper levels and travel one at a time into the corresponding holes in the casing 40. It will be understood that the paths taken by the balls are such that those passing through holes having the greatest scoring value are delivered to the casing at the highest elevation. As the balls sink through the casing they will rotate the shaft 50, and hence the drum 85, an amount proportional to the distance from their entrance elevation to the bottom of the casing. The motion of shaft 50 and drum 85 is added to proportionally by every ball that passes through, so that the final reading of the drum after the last ball has been played will be the total score obtained.

It will be understood from the foregoing that many changes may be made from the specific details shown, without departing from the broader aspects of the invention as set forth in the following claims.

What I claim is:

1. A register comprising a cylindrical casing having several vertically separated points of entrance and a point of exit at a lower level, a member having a spirally inclined surface located within the casing and adapted to be revolved by objects selectively admitted through said points of entrance, amounts proportional to the heights of said points, means for preventing unrestricted circumferential travel of said objects in the casing, and means for registering the amount of rotation of said member.

2. A game totalizer device adapted for use with a playing board having ball receiving holes pos-

sessing different scoring values, comprising a cylindrical casing having a sequence of vertically separated openings through which balls are conducted to the interior of the casing from the holes in the playing board in accordance with the scoring value thereof and having an outlet at the bottom, a member having a spirally inclined surface within the casing, means for preventing unrestricted circumferential travel of the balls in the casing, a shaft, irreversible mechanism coupling the member to the shaft, a drum frictionally connected to the shaft, a resetting device having a one-way connection with the drum for resetting it, a ball carrier movable from a position in line with the outlet to a position where it discharges balls for re-use, and a single means for operating said resetting means and for shifting the ball carrier from said outlet into discharging position whereby balls discharged from the casing can be returned to playing position only with an accompanying resetting of the drum and upon the resetting of the drum all the balls are certainly left in position for re-use.

3. A game totalizer device adapted for use with a playing board having ball receiving holes possessing different scoring values, comprising means operated by the balls in amounts determined by the hole through which the ball passed, an indicating device registering the totality of said amounts of operation and operated by said means, means for resetting said indicating device to zero, and a maximum score indicator operable by said indicating device whenever said latter device is registering scores higher than those previously made, said maximum score indicator being unaffected by said resetting mechanism.

LYNDON A. DURANT.