

March 9, 1937.

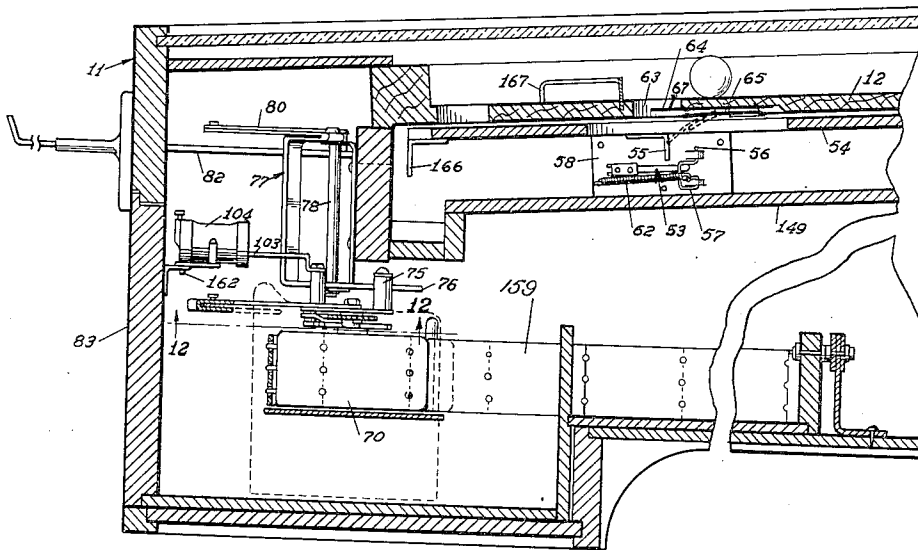
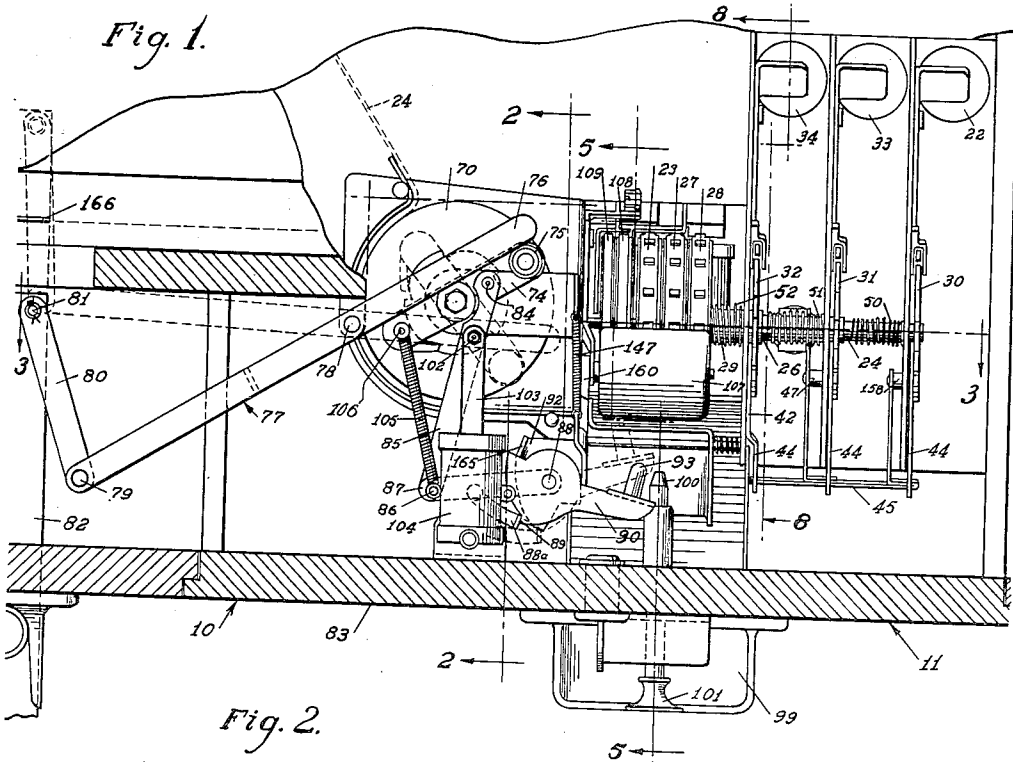
H. E. WILLIAMS

2,072,933

GAME APPARATUS

Filed March 16, 1936

4 Sheets-Sheet 1



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4 Sheets-Sheet 3

Fig. 9.

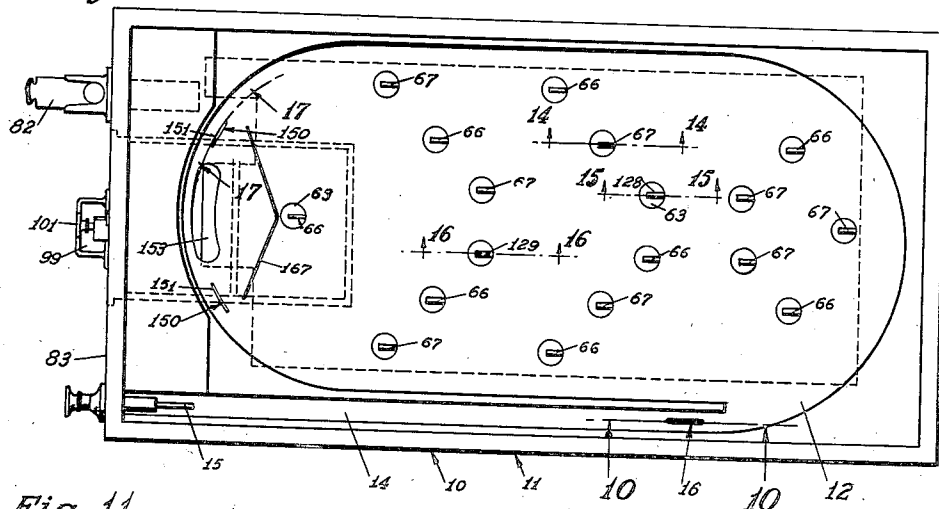


Fig. 11.

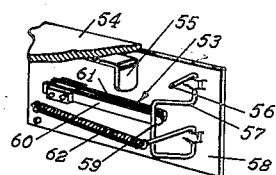


Fig. 10.

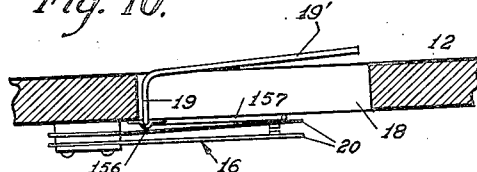


Fig. 13.

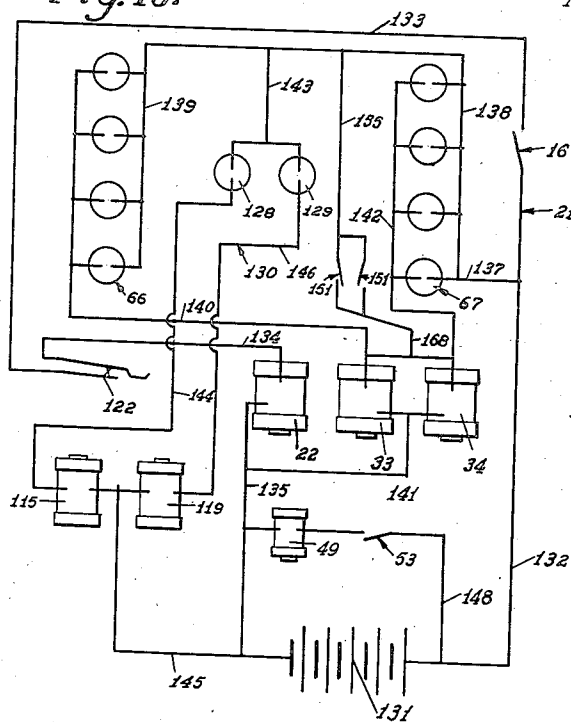
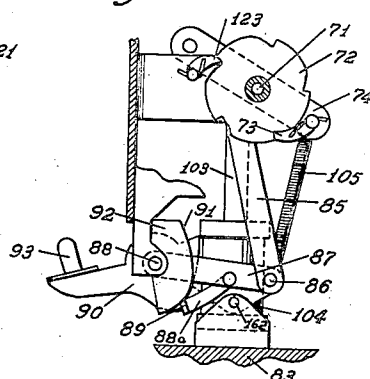


Fig. 12.



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4 Sheets-Sheet 4

Fig. 14.

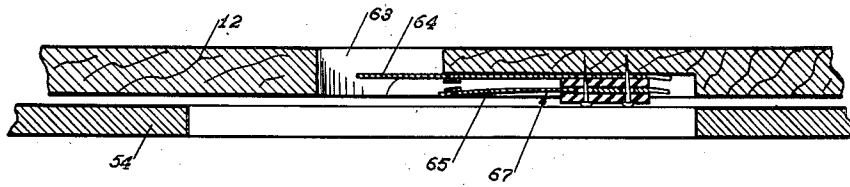


Fig. 15.

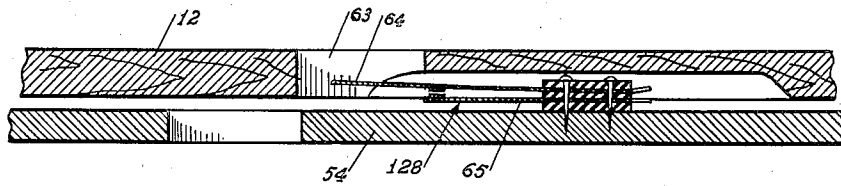


Fig. 16.

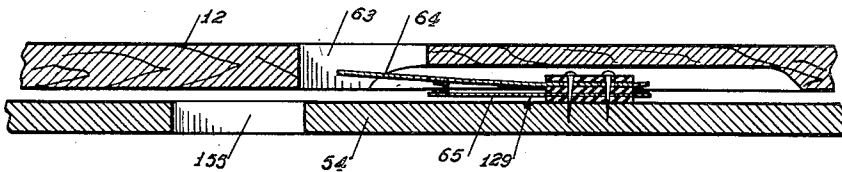
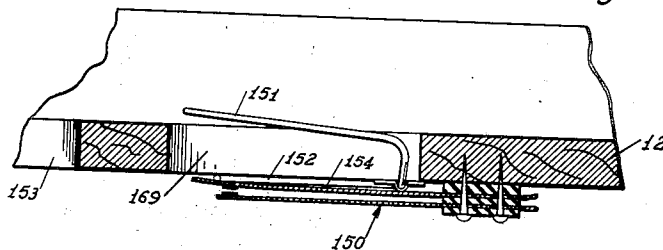


Fig. 17.



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UNITED STATES PATENT OFFICE

2,072,933

GAME APPARATUS

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cago, Ill., a corporation of Illinois

Application March 16, 1936, Serial No. 69,155

2 Claims. (Cl. 273—121)

This invention relates to game apparatus.

It is an object of this invention to provide an improved game apparatus which is relatively simple and inexpensive in construction and efficient in use.

Another object of the present invention is to provide certain improvements upon the game apparatus shown and described in applicant's co-pending application Ser. No. 69,154 filed March 16, 1936.

Other objects of the present invention are: to provide a novel device, actuated by a ball in the ball ramp or runway of a game apparatus of the pin and marble game type, for recording the number of balls which are propelled up the ramp onto the upper portion of the inclined playing board of the same; to provide a novel device including a plurality of score printing drums and operating units therefor, including ball-actuated switches, by means of which two or more players may play a competitive game upon a game apparatus of the pin and marble game type; and to provide a novel game apparatus of the pin and marble game type which is particularly adapted for use in playing a so-called "boxing game", that is, a game simulating the game of boxing.

Other objects will appear hereinafter.

The invention consists in the novel combination and arrangement of parts to be hereinafter described and claimed.

The invention will be best understood by reference to the accompanying drawings showing the preferred form of construction, and in which:

Fig. 1 is a top plan view, partly in section, showing a preferred form of certain parts of the present invention, including the score-recording devices;

Fig. 2 is a vertical sectional view on line 2—2 in Fig. 1;

Fig. 3 is a vertical sectional view on line 3—3 in Fig. 1, showing the arrangement of the several recording drums;

Fig. 4 is a sectional detail view on line 4—4 in Fig. 3;

Fig. 5 is a sectional view, on line 5—5 in Fig. 1, showing part of the printing, web-severing, and web-advancing mechanisms;

Fig. 6 is a perspective detail view of two of the recording drums which are embodied in the present invention and also showing the operating mechanisms therefor;

Fig. 7 is a detail view on line 7—7 in Fig. 6, partly in section and partly in top plan;

Fig. 8 is a sectional elevational view, of certain

parts of the drum-advancing and latching devices, and is taken on line 8—8 in Fig. 1;

Fig. 9 is a top plan view of the cabinet of a game apparatus of the so-called pin and marble game type having a preferred form of the present invention embodied therein;

Fig. 10 is a sectional view on line 10—10 in Fig. 9 showing an actuating switch for one of the recording drums;

Fig. 11 is a perspective detail view of the control switch for the drum-resetting device;

Fig. 12 is a bottom plan view showing certain parts of the control mechanism for the web-advancing, web-printing and web-severing devices, and is taken on line 12—12 in Fig. 1;

Fig. 13 is a schematic diagram of an electrical circuit embodied in the present invention;

Fig. 14 is a sectional view on line 14—14 in Fig. 9, showing one of the ball-actuated switches embodied in the present invention;

Fig. 15 is a sectional view, on line 15—15 in Fig. 9, showing another of the ball-actuated switches;

Fig. 16 is a sectional view, on line 16—16 in Fig. 9, showing still another of the ball-actuated switches; and

Fig. 17 is a sectional view, on line 17—17 in Fig. 9, showing still another one of the ball-actuated switches which are embodied in the present game apparatus.

A preferred form of the present invention is shown in the drawings, is therein generally indicated at 10, and includes a cabinet, generally indicated at 11 (Fig. 9). This cabinet 11 includes an inclined playing board 12 which is provided with ball exit openings 63 and 153 (Figs. 9, 14, 15, 16, and 17) and arranged in the cabinet 11, at one side of the inclined playing board 12, is a ball runway or ramp 14 along which balls may be propelled, one at a time, onto the upper portion of the inclined playing board 12, by means of a ball-propelling device or plunger 15. Arranged in the upper portion of the ball runway or ramp 14 is a switch 16 (Figs. 9 and 10) and this switch 16 includes a movable switch-operating element 19', and this switch-operating element 19' includes a portion 19 which projects or depends into an opening 18 which is formed in the ramp 14 (Fig. 10). This portion 19 is pivotally mounted on the under side of the play board 12, as at 156, and projecting laterally from the pivotal point 156 is an arm 157. The switch 16 also includes a pair of normally spaced contacts 20 which are adapted to be urged into engagement with each other by the laterally extending arm

157 of the member 19', when the latter is engaged by a played ball passing up the ramp 14.

The switch 16 is arranged in an electrical circuit 21 (Fig. 13) and likewise embodied in this circuit is an electromagnet 22 (Fig. 1), and this electromagnet 22 is adapted to operate or advance a printing or recording drum 23 (the latter appearing in Fig. 3), (in a manner to be described in detail hereinafter), relative to and past a web 24 (Fig. 2) of paper or the like so as to record upon the latter the number of balls which have been propelled up the ramp 14 onto the upper portion of the inclined playing board 12.

The printing or recording drum 23 is attached to a tubular sleeve 24 and this sleeve 24 is, in turn, rotatably mounted upon a horizontal shaft 25 which is arranged in the cabinet 11 (Fig. 3).

Arranged upon the shaft 25, adjacent the printing drum 23, is a second printing drum 27 (Fig. 3), and this drum 27 is attached to a sleeve 26 which is rotatably mounted upon the sleeve 24, the sleeve 26 telescopically receiving the sleeve 24. Arranged adjacent the drum 27 is a third printing drum 28 and this printing drum 28 is attached to a sleeve 29 which is, in turn, rotatably mounted upon the sleeve 26, the sleeve 29 telescopically receiving the sleeve 26, (Fig. 3).

Attached to the sleeve 24 is a ratchet 30 (Fig. 3). A similar ratchet 31 is attached to the sleeve 26, and another, and similar ratchet 32 is attached to the sleeve 29. Associated with the ratchet 31 is an electromagnet 33 and associated with the ratchet 32 is an electromagnet 34 (Figs. 1 and 8). The operating mechanism for these ratchets 30, 31 and 32, and the corresponding printing drums 23, 27 and 28, respectively, are similar and one of the same is shown in Fig. 8, it being considered unnecessary to show each of these operating mechanisms or units since they are identical.

One of these operating mechanisms or units for the ratchets 30, 31 and 32, and printing drums 23, 27 and 28, shown in Fig. 8, is therein generally indicated at 35, and this Fig. 8 illustrates the particular operating mechanism or unit which is associated with the ratchet 32, printing drum 28, and electromagnet 34. This operating mechanism or unit 35 comprises a member 36 which is pivotally mounted between its ends, as at 37, and this member 36 includes an end portion 38 which is attractable by the electromagnet 34. The member 36 is pivotally connected, as at 39, to a pawl 40 and this pawl 40 is engageable with the teeth of the ratchet 32. Likewise engageable with the ratchet 32 is an end portion 41 of a latch dog 42 which is pivotally mounted between its ends, as at 43, this latch dog 42 being urged into latching engagement with the ratchet 32 by a spring 46.

The latch dog 42 also includes an arm 44 and this arm 44 is adapted to be engaged by a member 45 which forms a trip for the latch dogs 42 which control the ratchets 30, 31 and 32. This member 45 is mounted in the cabinet 11 as at 47 and 158 (Figs. 1 and 4) and has an end portion 48 (Figs. 3 and 4) which is attractable by an electromagnet 49 which is arranged in the cabinet 11, this electromagnet 49 being arranged in the circuit 21 (Fig. 13).

Mounted on the sleeve 24 (Fig. 1) is a resetting coil spring 50 for the printing drum 23. A similar resetting coil spring 51, for the printing drum 27, is mounted on the sleeve 26, and a corresponding resetting coil spring 52, for the printing drum 28, is mounted on the sleeve 29.

The electromagnet 49, is energized, by the closing of a switch 53, (Fig. 11), presently to be described, and when energized it attracts the end portion 48 of the pivoted member 45, thereby pivoting the latter, at 47 and 158 (counterclockwise, Fig. 4), and thus moving the member 45 into engagement with the end portions 48 of the three latch dogs 42, thereby pivoting the latter, at 43, (clockwise, Fig. 8) out of latching engagement with the ratchets 30, 31 and 32, whereupon the tensioned resetting coil springs 50, 51 and 52, acting through the telescoping tubular sleeves 24, 26 and 29, will reset the printing drums 23, 27 and 28 back into their initial positions, after the game played upon the apparatus has been completed.

Slidably mounted in the cabinet 11, below the inclined playing board 12, is a ball-retaining member 54, and carried by and depending from this ball-retaining member 54 (Figs. 2 and 11) is an arm 55. This arm 55 is engageable with a laterally extending arm 56 (Fig. 11) of a switch-operating member 57 which is pivotally mounted in the cabinet 11 upon a support 58. This switch operating member 57 has a central portion 59 which is engageable with one of the contacts 60 of the switch 53, so as to force the same into engagement with the other contact 61 of the switch 53. The switch-operating member 57 is normally urged by a spring 62 (clockwise, Fig. 11) so as to force the central portion 59 thereof into engagement with the contact 60, the resiliency of the contact 60 being normally sufficient to prevent the same from being engaged with the contact 61 under the action of the spring 62.

The switch 53 is closed, by the operation of the ball-retaining member 54, so as to energize the electromagnet 49 and reset the printing drums 23, 27 and 28 back into their initial or normal positions, after the game played upon the apparatus has been completed, as will be described more fully hereinafter.

Projecting into each of the ball-receiving pockets 63 is a resilient contact 64 (Figs. 14, 15 and 16). Each of these contacts 64 is engageable with a corresponding contact 65, each pair of these contacts 64 and 65 forming a switch and these switches being arranged in the circuit 21 (Fig. 13), and identified for the purpose of convenience, as the switches 66, 67, 128, and 129, it being understood that these switches 66, 67, 128 and 129 are similar in construction but by reason of the fact that they actuate different devices, when closed, they are given separate reference numerals.

The switches 66 and associated ball-receiving pockets 63 constitute a group, while the switches 67 also associated with ball-receiving pockets 63 constitute another group (Fig. 13).

The web 159 is guided through a slot 68 which is formed in an upright support 69 (Fig. 5) which is arranged in the cabinet 11 (Fig. 5), and the web 159 is advanced, step by step, relative to and past the printing drums 23, 27, 28, 108, and 109 (the last two to be described hereinafter) by means of a web-advancing roller 70 which is rotatably mounted in the cabinet 11, upon a vertical shaft 71, for horizontal movement, (Fig. 3). Attached to the shaft 71 (Fig. 12) is a ratchet 72 and engageable with this ratchet 72 is a pawl 73 which is carried by a rocker arm 74, this rocker arm 74 being pivotally mounted, that is, "floating" on the shaft 71. Attached to the rocker arm 74 is a roller 75 and engageable with this roller 75 is an offset end portion 76 of a yoke shaped mem-

ber 77 which is pivotally mounted between its ends, as at 78, in the cabinet 11 (Fig. 3). Pivotally connected to this member 77, at one end thereof, as at 79, is a link 80 and the opposite end of this link 80 is pivotally connected, as at 81 (Fig. 1) to a coin slide 82 which is slidably mounted in an end wall 83 of the cabinet 11. Likewise engageable with the ratchet 72 to prevent retrograde movement of the same, is a latch dog 123.

Pivotally connected to the rocker arm 74, as at 84, (Fig. 1) is a link 85 and pivotally connected to this link 85, as at 86, is an arm 87 which is pivotally mounted, that is, floating on a shaft 88. Pivotally mounted on this arm 87, is a pawl 88a and this pawl 88a is engageable in a notched portion 89 of an operating member 90 which is loosely mounted on, that is, "floats" on the shaft 88. The member 90 normally engages a stop 165 which is formed as a part of a supporting member 92. The pawl 88a is adapted to ride a cam edge or surface 91 which is formed on the stationary member 92, (Fig. 1) for a reason to be explained hereinafter.

The operating member 90 has a laterally projecting arm 93 and this arm 93 of the member 90 is engageable with a pressure or impression-transmitting and web-severing device 94 (Fig. 5), which is pivotally mounted in the cabinet 11, as at 95, and which is normally urged into full line position (Fig. 5) by a resetting spring 147. This member 94 has a knife edge or cutting edge 96 which coacts with a stationary knife edge 160, which is fixed to the upright support 69 adjacent the slot 68, to form a shear. The member 94 also includes a resilient arm or portion 97, this resilient arm 97 being adapted to engage the free end portion of the web 159 so as to force the same into printing engagement with the printing drums 23, 27, 28, 108, and 109, and the knife edge 96 of the member 94 is adapted to engage the free end portion of the web 159, after the printing operation, to coact with the knife edge 160 so as to sever the said printed free end portion of the web from the body of the same, whereupon the said severed end portion of the web 159 will drop, by gravity, into the delivery chute 98, whence it will fall into the delivery outlet or tray 99 (Fig. 5) from which it may be withdrawn by the player.

Engageable with the pressure and web-severing member 94 is an end portion 100 of a main control member, in the form of a plunger 101, which is slidably mounted in the wall 83 of the cabinet 11. This plunger is normally urged to the left (Fig. 5) by a spring 161.

Attached to the arm 85, (Fig. 1) as at 102, is the slide rod or plunger 103 of a dash pot or retarding pump 104. This dash pot 104 is pivotally mounted in the cabinet 11 as at 162 (Figs. 2 and 12). Attached to one end of the rocker arm 74, as at 106, (Fig. 1) is a spring 105, the other end of this spring 105 being attached to the arm 87, at 86 (Fig. 1).

Associated with each of the printing drums 23, 27, and 28, that is, common to all of them, is an inking roll 107. Associated with each of the printing drum 108 and 109, that is, common to both of them, is an inking pad 163. This pad 163 is mounted upon a resilient arm 164 which in turn is mounted upon the upright support 69.

Fixed on the shaft 25 (Figs. 3 and 6) adjacent the printing drum 23, are the two printing drums 108 and 109. An arm 111 has a pin and slot connection 113 with the drum 108 (Fig. 6), and this arm 111 includes a portion 112 which "floats" on a horizontal shaft 113. This arm 111—112 also has a counterweighted end portion 114 which is

attractable by an electromagnet 115. Likewise floating on the shaft 113 is an arm 117 and this arm 117 has a counterweighted end portion 118 which is attractable by an electromagnet 119. The upper end portion 116 of this arm 117 (Fig. 5) is engageable with a laterally extending flange 120 which is provided on one lateral side of the drum 109 (Fig. 5).

Mounted in the cabinet 11, adjacent the printing drums 108 and 109, is a switch 122 (Fig. 6) and this switch 122 includes two resilient contacts 124 and 125 and one of these contacts, that is, the contact 124, has a lower end portion 126. Engageable with this lower end portion 126 of the contact 124 is a laterally extending arm 121 of the member 117, and the portion 112 of the arm 111 is also engageable with this lower end portion 126 of the contact 124, for a reason to be set forth hereinafter.

Each of the printing drums 108 and 109 is reset into its normal or initial position, after each operation thereof, by means of a resetting spring 127 (Fig. 5), each of these resetting springs 127 having one end portion attached to the shaft 25 and having its other end portion attached to the corresponding printing drum 108 and 109.

The electromagnets 115 and 119 are arranged in an auxiliary circuit 130 (Fig. 13), which is associated with the main circuit 21, and also arranged in this auxiliary circuit 130 are the ball-actuated switches 128 and 129 which are associated with certain of the ball-exit openings 63 in the inclined playing board 12 (Fig. 16).

The auxiliary circuit 130 and the main circuit 21 (Fig. 13) have a common source of current 131 which may be, for example, a battery of dry cells or the like arranged in the cabinet 11.

Disposed at the lower end of the inclined playing board 12 are two switches 150 (Fig. 9) each of these switches 150 including an operating member 151 (Fig. 17) which projects into an opening 169 which is formed in the inclined playing board 12. Each of these switch operating members includes a portion 152 which projects or depends below the corresponding opening 153 which is formed in the inclined playing board 12. Each of the switches 150 also includes a pair of normally separated contacts 154 which are adapted to be urged into engagement with each other by the depending arm 152 of the corresponding members 151 when the latter is engaged by a played ball passing thereover during its gravitation along the upper surface of the play board 12.

Operation

When a ball is propelled up the ramp 14, by means of the plunger 15, it will engage the switch-operating member 19' of switch 16 and thereby force the arm 157 of the latter downwardly into engagement with the upper one of the contacts 20, thereby forcing the contacts 20 together and thus closing the switch 16 (Fig. 10). When the switch 16 is thus closed current will flow through the circuit 21 (Fig. 13) as follows: From one side of the source of current 131, by way of the conductor 132 to the switch 16, through the latter, thence by way of the conductor 133 to the switch 122, through the latter, thence by way of the conductor 134 to one side of the electromagnet 22, through the latter, and thence by way of the conductors 135 and 145 back to the source of current 131 thereby energizing the electromagnet 22. When the electro-

magnet 22 is thus energized it will attract the end portion 28 of the movable element 36 of the corresponding drum-advancing unit 35, (shown in Fig. 8), whereupon the said member 36 will be pivoted, at 37, (clockwise, Fig. 8). This movement of the member 36 will act, through the pivotal connection 39, to pivot the pawl 40 into engagement with the ratchet 30, hereby advancing the ratchet 30, sleeve 24, and the printing drum 23, relative to the web 159, a circumferential distance between two of the teeth on the ratchet 30. In this manner the printing drum 23 is advanced, in a step by step movement, every time a ball is propelled up to the ramp 14 onto the upper portion of the inclined playing board 12, and after the game is completed the total number of balls, with one exception, thus propelled up the ramp 14 onto the inclined playing board 12 may be recorded upon the web 159, in a manner which will be described hereinafter. After this recording operation the member 36 is returned to its initial position (as in Fig. 8) by its tensioned resetting spring 136.

When a ball enters into one of the ball-receiving pockets or exit openings in the inclined playing board 12 with which there is associated one of the switches 66, the latter will be closed, whereupon current will flow through the circuit 21 (Fig. 13) as follows: From one side of the source of current 131, through the conductor 132, through the conductors 137, 138 and 139, through the particular switch 66 which has been closed, thence by way of the conductor 140 to one side of the electromagnet 33, through the latter, thence by way of the conductors 141, 135 and 145 back to the other side of the current source 131, thereby energizing the electromagnet 33. When the electromagnet 33 is thus energized it acts, through its operating unit 38—37—36—39—40 etc. (Fig. 8), (in the manner hereinbefore described in connection with the operation of advancing the printing drum 23), to advance the ratchet 31 and the printing drum 27, relative to the web 159, a circumferential distance equal to the distance between two teeth on the ratchet 31. In this manner the printing drum 27 is advanced, in a step by step movement, relative to the web 159, so as to record the scores made by balls entering the ball-receiving pockets in the inclined playing board with which the switches 66 are associated, and after the game has been completed the total of these scores made by balls closing the switches 66 may be printed upon the web 159, in a manner which will be described hereinafter.

Similarly, when a ball enters one of the ball-receiving pockets 13 in the inclined playing board 12, with which one of the switches 67 is associated, it will close the said switch 67, whereupon current will flow, in the circuit 21, as follows: From one side of the current source 131, through the conductors 132 and 137, into the conductor 138, across the particular switch 67 which has been closed, thence by way of the conductor 142 to one side of the electromagnet 34, through the latter, and thence by way of the conductors 141, 135, and 145 back to the other side of the current source 131, thereby energizing the electromagnet 34. When the electromagnet 34 is thus energized it will act, through the parts 38—37—39—40 (Fig. 8), to advance the ratchet 32 and the printing drum 28 a circumferential distance equal to the distance between two of the teeth on the ratchet 32, and after the game has been completed the total of the scores made by balls

closing the switches 67 may be recorded upon the web 159; in a manner which will be explained hereinafter.

It may be noted here that the provision of the two groups of switches 66 and 67, and the two printing drums 27 and 28, respectively, and the other parts associated therewith, permits the player to play a competitive game upon the game apparatus with which the present invention is associated, since the player may attempt to play the balls in such a manner that they will engage and close the switches 66, and advance the printing drum 27, and likewise avoid playing the balls in such a manner that they will engage the switches 67 and advance the printing drum 28, it being understood that, if desired, additional printing drums, groups of switches, and associated parts may be added, if desired, within the scope of the present invention, since the number of printing drums, and associated parts, is not necessarily limited to two.

When a ball enters into the particular ball-receiving pocket 63 with which the switch 128 is associated (Fig. 15) it will close the latter, whereupon current will flow as follows: From one side of the current source 131, by way of the conductors 132, 137, 138 and 143 to one side of the switch 128, thence across the latter, thence by way of the conductor 144 to one side of the electromagnet 115, through the latter, and thence by way of the conductor 145 back to the other side of the current source 131, thus energizing the electromagnet 115. When the electromagnet 115 is thus energized it will attract the end portion 114 of the member 111—112, thereby rocking the latter, upon the shaft 113, (clockwise, Fig. 6). This movement of the member 114—112—111 acts, through its pin and slot connection 110 with the printing drum 108, to advance the latter a predetermined circumferential distance (clockwise, Fig. 6). During this movement of the member 114—112—111, the portion 112 of the same engages the lower end portion 126 of the middle contact 124 of the switch 122, thereby pivoting the latter (counterclockwise, Fig. 6), and thus moving the contact 124 out of engagement with the contact 125 and opening the switch 122, and thus opening the circuit 131—132—16—122—134—22—135—145 to the electromagnet 22. When the said circuit to the electromagnet 22 is thus opened, by the opening of the switch 122, any additional balls which may be propelled up the inclined ramp 14 into engagement with the switch-operating member 19—19' will close the switch 16 but when the switch 16 is thus closed it will be ineffective to operate the electromagnet 22 and the printing drum 23, upon which the number of balls played up the ramp 14 is recorded, since the circuit 131—132—16—133—122—134—135—145, through the electromagnet 22, which operates the printing drum 23, is at this time open or broken at the switch 122.

When a ball enters into the particular one of the ball-receiving pockets in the inclined playing board 12 with which the switch 129 is associated it will close the latter, whereupon current will flow as follows: From one side of the current source 131, through the conductors 132, 137, 138 and 143, thence across the closed switch 129, thence by way of the conductor 146 to one side of the electromagnet 119, through the latter, and thence by way of the conductor 145 back to the other side of the current source 131, thereby energizing the electromagnet 119. When the electromagnet 119 is thus energized it will at-

tract the counterweighted lower end portion 118 of the member 117, thereby rocking the latter upon the shaft 113 (clockwise, Fig. 6). During this movement the upper end portion 116 of the member 117 will engage the flange 120 of the printing drum 109, thereby moving the latter a predetermined circumferential distance (counterclockwise, Figs. 5 and 6). During this movement the laterally extending arm 121 of the member 117 will engage the lower end portion 126 of the contact 124 and thereby open the switch 122, so that any additional balls played up the ramp 14, over the switch-operating member 19-19', will be ineffective to energize the electromagnet 22 and operate the printing drum 23 since at this time the aforesaid circuit which includes the electromagnet 22 is open or broken at the switch 122, and hence a competitive game, based upon the number of balls played, will be ended when a ball is projected into engagement with either of the switches 128-129. Accordingly, when the total scores of the game are printed upon the web 159, in a manner to be described presently, the number of balls played, as recorded upon one of the printing drums 108 and 109, will be recorded upon the web 159, together with the competitive scores made by the players, so that they may be readily seen by the player, and a permanent record of the same may thus be had.

In order to print upon the free end portion of the web 159, the players' scores, as indicated upon the printing drums 27 and 28, as well as to record the number of balls played, as indicated by the printing drum 23, together with the indicia borne by the printing drums 108 and 109, the main control member or plunger 101 is pushed in (left to right, Fig. 5), whereupon the inner end portion 109 of the plunger 101 will engage the pressure and web-severing member 94, thereby pivoting the latter, at 95 (counterclockwise, Fig. 5). When the member 94 is thus operated, the resilient arm 97 thereof engages the free end portion of the web and urges the same into printing engagement with the printing drums 23-27-28-108-109, thus recording the indicia of the same upon the free end portion of the web 159, whereupon the knife edge 96 of the member 94 will engage the thus printed free end portion of the web and coact with the knife edge 160 to sever the free end portion from the body of the web, whereupon the thus printed and severed free end portion of the web will drop by gravity into the delivery chute 98 and thence into the delivery outlet or tray 99, from which it may be removed by the player. The plunger 101 will return to initial position by the resetting spring 161, and the member 94 returned to its initial position (as in Fig. 5) by the resetting spring 147 (Fig. 5).

In the event that the player, or players, for any reason, fail to operate the main and non-coin-operated control device, for the printing and web-severing mechanisms, that is, the plunger 100-101, so as to perform the printing and web-severing operations, after the completion of a game, these operations will be performed when the coin slide 82 is operated prior to the next game played upon the apparatus, as will now be described.

When the coin slide 82 is pushed in (left to right, Figs. 1 and 2) it acts, through the link 39, to pivot the member 77 (clockwise, Fig. 1), thereby moving the end portion 75 of the member 77 into engagement with the roller 75, which is car-

ried by the rocker arm 74, thereby pivoting the rocker arm 74 (clockwise, Fig. 1) against the action of its resetting spring 105. This movement of the rocker arm 74 acts, through the member 85, to pivot the member 87 (clockwise, Fig. 1) and during this movement the pawl 88a which is carried by the member 87 engages in the notched portion 89 of the member 90 and pivots the latter (counterclockwise, from full to dotted line position, Fig. 1). During this operation the laterally extending arm 93 of the operating member 90 engages the member 94 and thereby pivots the latter, at 95, (counterclockwise, Fig. 5). During this movement of the member 94 the resilient arm 95 of the same engages the free end portion of the web 159 and presses the same into printing engagement with the drums 23-27-28-108-109, thereby recording upon the free end portion of the web the scores and other indicia borne by the said printing drums, whereupon the knife edge 96 of the member 94 engages the thus printed free end portion of the web 159 and acts with the knife edge 160 to sever the said free end portion of the web from the body of the same. The thus printed and severed free end portion of the web thereupon drops by gravity into the delivery chute 98, and then falls by gravity into the outlet tray 99, whence it may be removed by the player.

As the operating member 90 is pivoted (counterclockwise from full to dotted line position, Fig. 1) the pawl 88a rides onto and over the cam edge 91 of the member 92 and after the laterally extending arm 93 has been forced into engagement with the web-severing and printing member 94 the pawl 92 is pivoted by the lower end portion of the cam edge 91 (bottom end as seen in Figs. 1 and 12) (counterclockwise, Fig. 12) out of engagement with the notched portion 89 of the member 90, whereupon the tensioned resetting spring 147 will pivot the member 94 back into its initial position (as in Fig. 5). During this operation the member 94 engages or bears against the laterally extending arm 93 of the operating members 90 and thereby pivots or rocks the latter about the shaft 93 back into its initial position (clockwise from dotted to full line position, Fig. 1), and at the end of this movement the pawl 88a and the arm 87 are still in dotted line position Fig. 1, and are retarded in their return to initial position in a manner to be described presently.

It will thus be seen that in the foregoing manner the web-printing and severing member 94-96-97 is operated by the auxiliary and non-coin-operated control device 82-89-77-76-75-85-87-89-90, when the coin slide 82 is operated, even though the player for one reason or another may fail to operate the main control device (plunger 100-101) for the web-printing and severing member 94-96-97.

When the coin slide 82 is released, and is returned to its normal or initial position (by a resetting spring, not shown) the members 80 and 77 will likewise return to initial position, whereupon the tensioned resetting spring 105 acts upon the rocker arm 74 to return the latter to its normal or initial position (counterclockwise, from dotted to full line position, Fig. 1), and during this operation the pawl 73, which is carried by the rocker arm 74, engages the ratchet 72, and rotates the latter and the shaft 71, and also the web-advancing roll 79, a predetermined circumferential distance (counterclockwise, Fig. 1), thereby

advancing the relatively free end portion of the web 159 relative to and past the printing drums 23—27—28—108—109, and relative to and past the pressure and web-severing member 94—96—97.

When the coin slide 82 is pushed in (left to right, Fig. 2) its inner end engages the depending arm 166 of the slidable ball-retaining member 54, thereby moving the latter (left to right, Fig. 2) into ball-releasing position. During this movement of the ball-retaining member 54, the depending arm 55 thereof (Fig. 11) engages the laterally extending arm 56 of the switch-operating member 57 and pivots the latter (counterclockwise, Fig. 11), the depending arm 55 of the ball-retaining member 54 passing by the laterally extending arm 56 of the member 57, during this operation. Accordingly, when the ball-retaining member 54 is returned to its normal or initial position (by means of a resetting spring, not shown) the depending arm 55 thereof engages the laterally extending arm 56 of the switch-operating member 57 and thereby pivots the latter (clockwise, Fig. 11). During this movement of the switch-operating member 57 the central portion 59 thereof engages the contact 60 of the switch 53 and thereby forces the same into engagement with the contact 61, thus closing the switch 53, it being noted that the strength of the spring 62 is normally insufficient to force the resilient contact 60 of the switch 53 into engagement with the contact 61 of the same. After which the depending arm 55 passes or moves by the lateral arm 56 so that the member 57 is free to move back into initial position by action of the movable element 60 of the switch 53. When the switch 53 is thus closed, current will flow as follows (Fig. 13): From one side of the current source 131 through the conductor 140, through the thus closed switch 53, through the electromagnet 49, and thence by way of the conductors 135 and 145 back to the other side of the battery 131, thereby energizing the electromagnet 49. When the electromagnet 49 is thus energized it will attract the end portion 48 of the movable latch-releasing member 45, thereby pivoting the latter into engagement with the arms 44 of the latch dogs 42 (upwardly, Fig. 8). This movement of the latch-releasing member 45, pivots the latch dogs 42, at 43, (clockwise, Fig. 8), against the action of their resetting springs 46, thereby moving the arms 41 of the latch dogs 42 out of engagement with their respective ratchets 30, 31 and 32, whereupon the tensioned resetting springs 50, 51 and 52 will reset the ratchets 30, 31 and 32 and the printing drums 23, 27, and 28 back into their normal or initial positions.

When the ball-resetting member 54 is moved (left to right, Fig. 2) the balls disposed in the particular ball-receiving pockets in the inclined playing board 12 with which the switches 128 and 129 are associated will drop therefrom and off the switches 128 and 129, through the corresponding exit openings 155 in the ball-retaining members 54 (Fig. 16), onto the ball-return runway 149, in a manner which is well understood in the art, thereby opening the switches 128 and 129. When the switches 128 and 129 are thus opened circuit is broken to the electromagnets 115 and 119 and the counterweighted end portions 114 and 118 of the members 111 and 117, respectively, will thus be released from attraction by the electromagnets 115 and 119, whereupon the resetting springs 127 will return the printing drums 108 and 109 back into their normal or initial po-

sitions, and the printing drums 108 and 109, acting through the pin and slot connection 110 and the flange 120 (Fig. 5), respectively, will pivot the members 111 and 117, respectively, back into their normal or initial positions (as in Figs. 5 and 6).

When a ball fails to enter either of the pockets 63 associated with the switches 66, 67, 128 or 129, it will gravitate to the lower end of the board 12 (Fig. 9) and will be guided toward either of the switches 150 so as to roll over the member 151 of the latter and into the "out" pocket 153. When either of the switches 150 is actuated by a ball rolling over the member 151 thereof current will flow as follows: From the source of energy 131 by way of the conductors 132, 137, 138 and 155 into the particular switch 150 which has been actuated, thence through the latter and by way of the conductor 168 into both of the electromagnets 33 and 34. When the electromagnets 33 and 34 are thus simultaneously energized the corresponding printing drums 27 and 28 are simultaneously advanced one step by their respective mechanisms 35 in a manner which has already been described.

As an illustration of one type of competitive game which may be played upon the present game apparatus, it may be stated that such a game is a so-called "boxing" game, that is, a simulated boxing contest, and in this game, each ball propelled up the ramp 14 into engagement with the switch-operating member 17—19 (Fig. 10), (to advance the recording drum 23) represents a "round", and the balls which enter the particular ball-receiving pockets in the inclined playing board 12 with which the switches 66 are associated, (to advance the recording drum 27), represent the blows scored or made by the player and the balls which enter the ball-receiving pockets 63 with which the switches 67 are associated, (to advance the recording drum 28), represent the blows scored or made by his opponent; whereas a ball which enters the particular ball-receiving pocket with which the switch 128 is associated, (to advance the recording drum 108), represents a "knockout", and the ball which enters the particular pocket 63 with which the switch 129 is associated, (to advance the recording drum 109), represents a so-called "technical knockout"; the printing drum 23 being provided with suitable printing characters or indicia to represent the number of "rounds" played, that is, the number of balls propelled up the ramp 14, and the printing drums 27 and 28 are provided with suitable printing characters or indicia to represent the competitive scores made by the players. Similarly, the printing drums 108 and 109 are provided with suitable indicia to represent, respectively, a so-called "knockout" and a so-called "technical knockout". It will thus be seen that when the score ticket, that is, the free end portion of the web 159, is printed and severed from the body of the web 159 it will have printed thereon the competitive scores made by the players, as recorded thereon by the printing drums 27 and 28, the number of "rounds" played, that is, the number of balls propelled up the ramp 14, as recorded thereon by the printing drum 23, and also whether the game ended by a so-called "knockout", as recorded by the printing drum 108, or by a so-called "technical knockout" as recorded by the printing drum 109, or whether the game lasted the full number of rounds corresponding to the number of balls used in the game, it being understood that such a

game ends when one of the players plays a ball into the particular ball-receiving pocket with which the switch 128 is associated, or into the particular pocket with which the switch 129 is associated, since in either of these events the switch 122 is opened, in the manner hereinbefore described (by action of the members 111 and 117 (Fig. 6), and the circuit 131—132—16—133—122—134—22—135—145 through the electromagnet 22, which operates the printing drum 23, (which records the number of "rounds" played, that is, the number of balls propelled up the ramp 14) is opened, at the switch 122, and the game will thus be recorded as ending in that particular round. However, the unplayed balls, if there are any remaining to be played, may be propelled onto the board 12, for the purpose of recording further blows for either the player or his opponent as shown upon the printing drums 27 or 28.

If a ball should roll over the member 151 of either of the switches 150, both printing drums 27 and 28 will be advanced to record an additional blow, and this is to simulate what is known, in boxing bouts, as a "draw".

It is to be understood, of course, that the foregoing illustration of how the present game apparatus may be employed as a so-called "boxing" game is not limitative of the uses to which the present game apparatus may be put, since the same may readily be used for playing various other types of games or simulations of competitive sports, which may be played upon a pin and marble game.

While I have illustrated and described the preferred form of construction for carrying my in-

vention into effect, this is capable of variation and modification, without departing from the spirit of the invention. I, therefore, do not wish to be limited to the precise details of construction set forth, but desire to avail myself of such variations and modifications as come within the scope of the appended claims.

Having thus described my invention, what I claim as new and desire to protect by Letters Patent is:

1. In pin ball games having ball scoring pockets and means for projecting balls therein, together with score printing drums and means operable by pocketed balls to step said drums into printing position, control mechanism including a device arranged in the path of balls from said projecting means for operation by projected balls, stepping means operable by said device for stepping a printing drum once for each ball projected, and means including a device actuated by a projected ball entering a scoring pocket for preventing further operation of said stepping means so long as a ball remains in said pocket.

2. Control mechanism for game apparatus having ticket printing drums operable by stepping mechanism actuated by balls projected onto a score-pocket board, said mechanism including means operable by a projected ball for actuating a recording drum stepping mechanism to record the number of balls projected, and means including a device operated by a ball entering a score pocket for preventing further operation of said first means and said drum stepping mechanism.

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