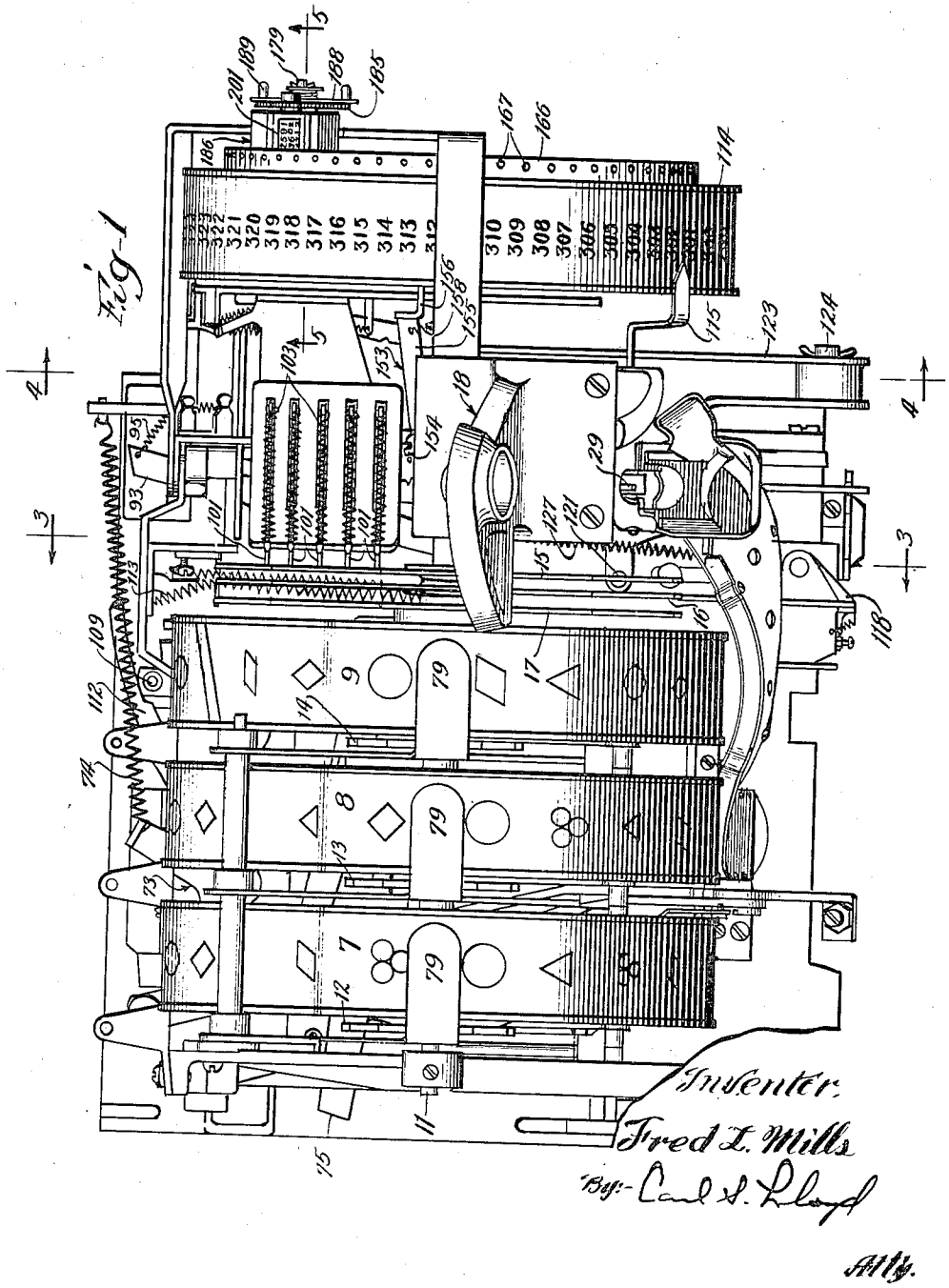
Oct. 13, 1936. F. L. MILLS 2,057,651

REGISTER DEVICE FOR GAME APPARATUS

Filed June 4, 1935 5 Sheets-Sheet 1.

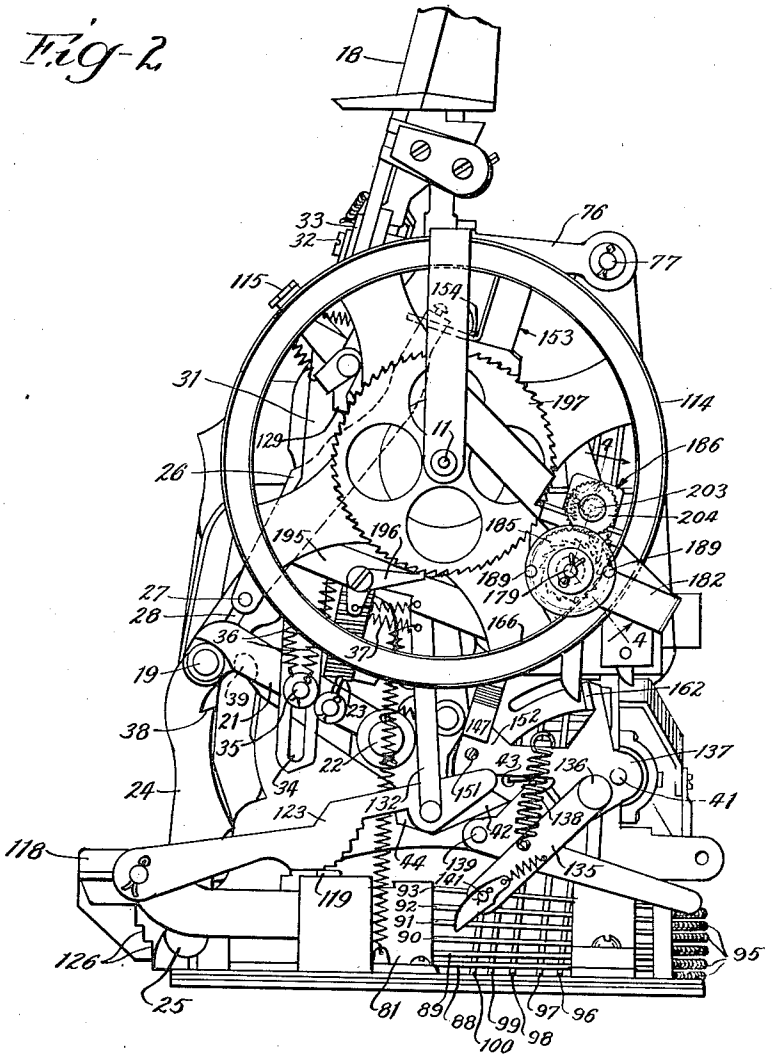


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REGISTER DEVICE FOR GAME APPARATUS

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Fig-2.



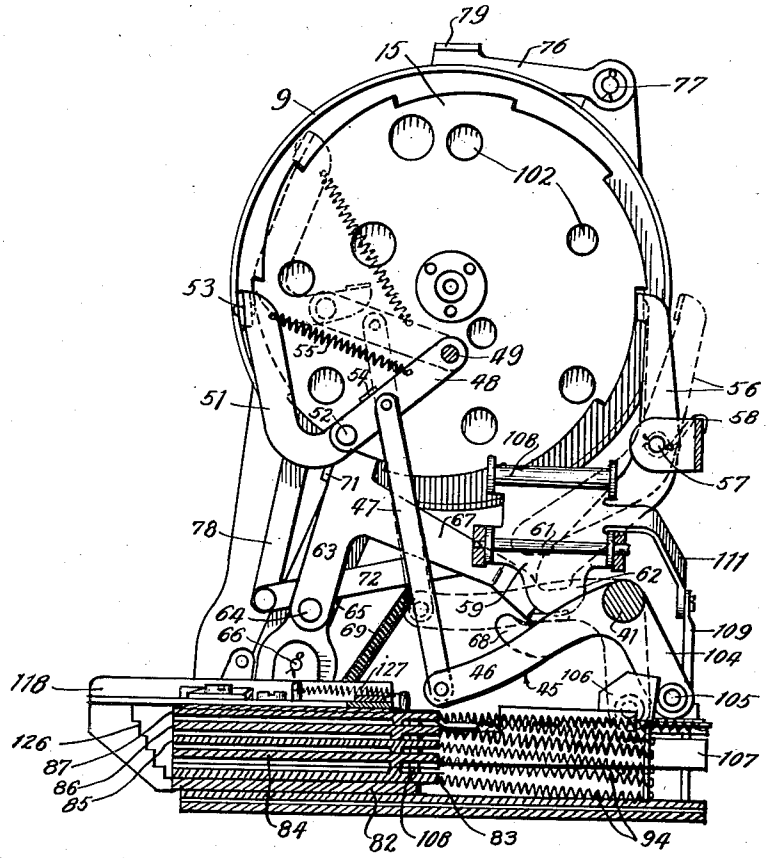
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REGISTER DEVICE FOR GAME APPARATUS

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Fig-3



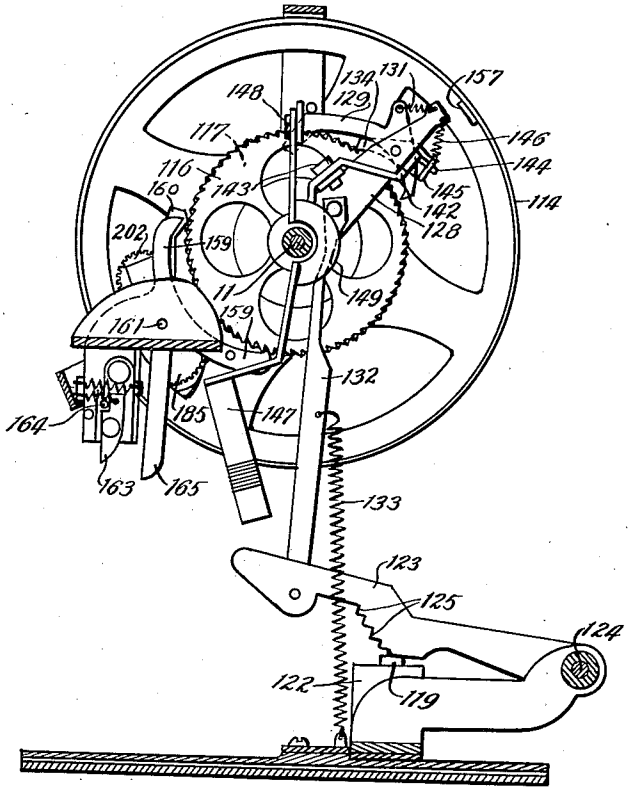
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REGISTER DEVICE FOR GAME APPARATUS

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Fig-4



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REGISTER DEVICE FOR GAME APPARATUS

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Fig-5

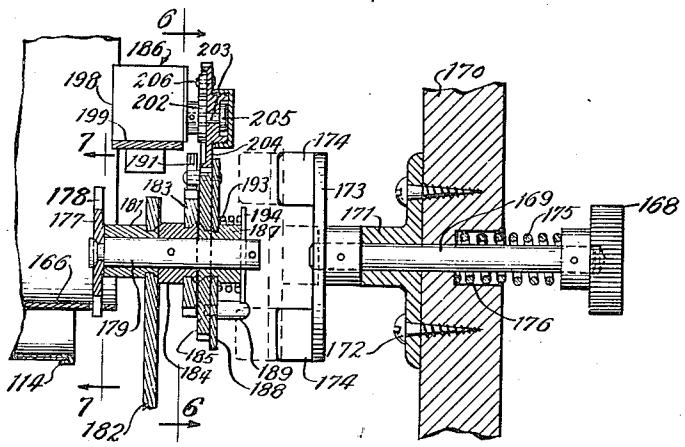


Fig-6

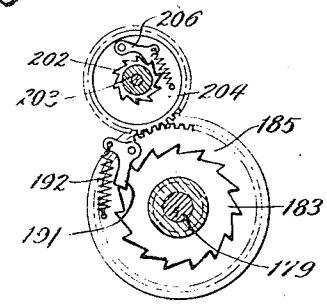
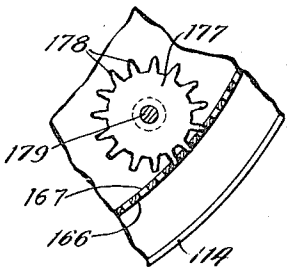


Fig-7



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UNITED STATES PATENT OFFICE

2,057,651

REGISTER DEVICE FOR GAME APPARATUS

Fred L. Mills, Oak Park, Ill., assignor to Mills Novelty Company, Chicago, Ill., a corporation of Illinois

Application June 4, 1935, Serial No. 24,897

9 Claims. (Cl. 194—1)

This invention relates to game apparatus and more particularly to apparatus of this type in which a free play mechanism is provided which operates under certain conditions to allow free play of the game operating mechanism which is normally coin-controlled.

In United States Patent No. 1,912,992 issued to me under date of June 6, 1933 I have shown and described a spinning reel type of coin-controlled game in which a free play mechanism is provided which operates to allow the operator a number of free plays which are determined according to the position of rest of the reels. In the embodiment of this mechanism shown in said patent the free plays are racked up on a movable control element consisting of a wheel which is displaced, through mechanism controlled by the reels, from a normal starting or zero position, the extent of displacement of the wheel from the starting position determining the number of free plays allowed. If desired, such free plays may be used to indicate a score attained by the operator in the play of the game. This may be accomplished by providing on the periphery of the free play control wheel a scale which is numbered to indicate either the free plays themselves or a score based on such plays, it being understood that a portion of this scale is exposed to the view of the operator.

In operating a game apparatus of the type just described, after a number of plays, the operator may have obtained a certain number of free plays to his credit as represented by the displacement of the control wheel from its starting position. If the operator then wishes to leave the machine, his free plays remaining unused, or the score he has made based upon such plays, are noted by the proprietor, who then resets the free play control wheel to the starting position for the next operator. In this resetting operation the free plays, or score represented by such plays, are cancelled and it is therefore desirable to provide means for giving the proprietor a permanent record of the net results of the operation of the free play mechanism.

The object of my invention is to provide a register which operates in conjunction with a free play mechanism of the type described to record the net results of the operation thereof over a given period by totalling all free plays which remain unused by successive operators of the apparatus.

With the foregoing and other objects in view, which will more fully appear as the description proceeds, the invention resides in the combination and arrangement of parts and in the features of construction hereinafter described and claimed, it being understood that various changes in the embodiment of the invention herein disclosed may be made within the scope of what is claimed and without departing from the spirit of the invention.

Referring to the drawings:

Fig. 1 is a top plan view of a coin-controlled game apparatus provided with mechanism for awarding free plays and having the improved register embodied therein;

Fig. 2 is a side elevation view of the apparatus showing the relation of the register to the free play mechanism;

Fig. 3 is a vertical section through the apparatus taken on line 3—3 of Fig. 1;

Fig. 4 is a vertical section showing a portion of the free play mechanism, the section being taken on line 4—4 of Fig. 1;

Fig. 5 is a detail section through the register device, the view being taken on line 5—5 of Fig. 1, a portion of the manually operated shaft which is carried in the casing of the machine being also shown in its operative relation to the register;

Fig. 6 is a detail section showing the gear drive connection for the register, the view being taken as indicated by line 6—6 of Fig. 5; and

Fig. 7 is a detail section through the register, the section being taken as indicated by line 7—7 of Fig. 5.

The coin-controlled game apparatus illustrated in the accompanying drawings is shown and described in detail in my Patent No. 1,912,992, to which I have hereinbefore referred. Since the present invention relates only to a novel form of register which is adapted for use with such a game apparatus to record the number of unused free plays, or a scoring equivalent thereof, I shall describe the game apparatus proper only in sufficient detail to illustrate the mode of operation of the register.

Referring particularly to Figs. 1 and 2 of the drawings, three legend-displaying reels 7, 8 and 9 are mounted for free rotation on a main reel shaft 11, the hub portions of the reels consisting of sleeves which are provided, respectively, with star wheels 12, 13 and 14. The opposite ends of said sleeves are provided, respectively, with ratchet discs 15, 16 and 17. Each reel, together with its corresponding star wheel and ratchet disc, is thus mounted for independent rotation on shaft 11. The peripheral face of each reel is provided with a legend-bearing strip which may be viewed through a transparent panel

mounted in the casing (not shown) which encloses the apparatus.

Reels 7, 8, and 9 are adapted to be spun by a manually operated coin-controlled mechanism which includes means for bringing the reels to rest so as to display various combinations of these legends. The mechanism for spinning the reels is best shown in Figs. 2 and 3. A coin of proper denomination is first inserted in a coin chute 18, after which an operating handle (not shown) mounted externally on the casing, is pulled downwardly, said handle engaging a laterally projecting lug 19, which is carried on the forward end of a lever 21, the latter being pivoted at 22 to the frame and normally held in raised position by a heavy coil spring 23 connected at one end to said lever and at the opposite end to the frame. A coin-controlled latch mechanism consisting of a vertically disposed lock bar 24, pivoted to the frame at 25, and a coin-trip lever 26, prevents lowering of the lever 21 through a full stroke unless a proper coin has first been inserted in coin chute 18. The lower end of lever 26 carries a pin 27 which moves in a slot 28 formed in the upper end of bar 24. The upper end of said lever 26 carries a forwardly projecting rod 29 (Fig. 1) which extends into the coin chute 18. When the actuating arm is pulled downwardly by the operator to lower lever 21, a coin inserted in coin chute 18 is pulled downwardly therein by a vertically disposed draw bar 31, which is pivotally connected at 32 (Fig. 2) to a spring held lever 3, said lever 33 having a part (not shown) which extends into the coin chute to engage the top edge of the coin. The lower end of draw bar 31 is provided with a slot 34 which receives a pin 35 carried by lever 21. Springs 36 urge bar 31 downwardly to hold it in yielding engagement with lever 21. Draw bar 31 pulls a coin which has been placed in coin chute 18 downwardly to a point opposite the end of rod 29 which is carried on the upper end of lock lever 26. The coin prevents lever 26 from being pivoted by a spring 37, in a counter-clockwise direction, viewing Fig. 2, and lever 26 being thus held serves to prevent movement of lock bar 24 in a clockwise direction, viewing Fig. 2. When no coin is present in the coin chute spring 37 pivots lever 26 in a counter-clockwise direction, and this turning of lever 26 results in a corresponding clockwise turning of bar 24 to bring a shoulder 38 formed thereon into the path of a lug 39 which projects inwardly from lever 21, this engagement preventing the downward movement of lever 21 through all except the very first portion of its stroke.

Assuming that a coin has been inserted and that lever 21 is free to move downwardly through a full stroke, the spinning of reels 7, 8 and 9 is effected through the turning of a main rock shaft 41, this being accomplished through engagement of a dog 42, with an arm 43 which is rigidly secured to rock shaft 41. The dog 42 is mounted for limited pivotal movement on a rearwardly extending arm 44 which forms an integral part of lever 21. This engagement of dog 42 with arm 43 turns main rock shaft 41 in a clockwise direction, viewing Fig. 2, against strong spring tension under which said shaft is placed and as soon as said dog 42 slips from arm 43, shaft 41 turns in a counter-clockwise direction with a quick snapping action.

Referring particularly to Fig. 3, a bell crank lever 45, rigid on shaft 41, is provided with a forwardly extending arm 46 which has pivotal connection with a link 47, the latter being pivoted at its upper end to a second link 48, which in turn is pivoted at 49 to the frame. A pawl arm 51 of bell crank form is pivoted at 52 on link 48 and is provided at one end with a pawl 53 adapted to engage the teeth of ratchet discs 15—17. The other end of pawl arm 51 carries a lug 54 which normally rests against link 48, a spring 55 providing yielding connection between these parts. When rock shaft 41 is actuated as hereinbefore explained, pawl arm 51 is raised to the position shown by the dotted lines in Fig. 3 to engage the teeth of the ratchet discs and spins the reels as soon as dog 42 clears arm 43, this spinning of the reels being effected by a quick snapping action.

Continuing the reference to Fig. 3, ratchet discs 15—17 are locked in their normal position of rest by a latch arm 56 which is pivoted to the frame at 57, the upper end of said arm being urged downwardly against said discs by a spring 58. The lower end of arm 56 rests on an apron 59 which is pivoted on a cross rod 61, said apron being provided with a downwardly projecting cam surface 62 which engages arm 45. When rock shaft 41 is turned to start rotation of the reels, latch arm 56 is moved to the position shown by the dotted lines in Fig. 3. When the rock shaft is returned to normal position latch arm 56 is brought back into engagement with the ratchet discs in a manner presently to be explained.

The mechanism for stopping the reels to present various combinations of legends is fully described in my prior Patent No. 1,912,992. I have herein shown in Figs. 1–3 sufficient details of this mechanism to give an understanding of the manner in which this function is accomplished. Associated with each reel is a stop arm 63 which is pivoted at 64 to a bell crank 65, the latter being mounted for pivotal movement on a cross-rod 66. Arm 63 is provided with a rearwardly extending bracket 67, the free end of which rests on a cam 68, the latter being rigidly secured to rock shaft 41. A coil spring 69, extending between bracket 67 and the frame, urges arm 63 toward the star wheel on the reel hub. It will be apparent that when rock shaft 41 is turned in a clockwise direction (viewing Fig. 3) during the wind-up or actuating stroke, cam 68 will engage bracket 67 to pivot arm 63 in a counter-clockwise direction to remove the upper end thereof from the star wheel on the reel hub. At the same time bell crank 65 has been moved downwardly with arm 63 by reason of the connection with the latter afforded by a lug 71 carried on the upper end of said bell crank. Arm 63 is releasably connected to bell crank 65 by a link 72, one end of which is pivotally connected to bracket 67, the forward end portion thereof being notched to engage a pin (not shown) carried by bell crank 65.

Arms 63 are held away from the position in which they engage the star wheels on the reel hubs during the spinning of the reels, and are progressively released to stop the reels, by a clock mechanism (not shown) which is fully described in my said prior Patent 1,912,992. Figs. 1 and 3 show a sufficient portion of this mechanism to give an understanding of the mode of operation thereof. When rock shaft 41 is turned to start the spinning of the reels, an arm (not shown) on said shaft engages a bell crank 73, pivoting the latter in a counter-clockwise direction viewing Fig. 1, against the tension of a coil spring

74 extending between crank 73 and the frame. This rotation of crank 73 winds up a clock mechanism (not shown) and moves a clock arm 75 forwardly to a position where forwardly projecting arms (not shown) on said clock arm extend below rearwardly projecting arms (not shown) which form a part of bell cranks 65, it being remembered that these bell crank arms have been raised during this operation by movement of stop arms 63 from engagement with the star wheels on the reel hubs. By reason of this engagement between the projections on clock arm 75, and the lower ends of bell cranks 65, stop arms 63 are held free from the star wheels to allow the wheels to spin. As clock arm 75 returns from its forward position under the action of spring 74, the lower ends of bell cranks 65 fall from the forwardly extending projections on clock arm 75, thereby allowing stop arms 63 to engage the star wheels 12—14 to bring the reels to rest. As will more fully appear from the description given in my prior Patent 1,912,992, the forwardly extending projections on clock arm 75, which engage the lower end portions of the bell cranks 65, differ in length. By reason of this construction the bell crank arms drop from the clock arm projections at different times so as to bring the reels to rest in different relative positions.

In the particular form of apparatus shown, manually operable means is provided for permitting the operator to bring reels 7—9 to rest in advance of the positions at which the reels would be automatically stopped by the falling of the lower ends of bell cranks 65 from the projections on clock arm 75. This mechanically operated stop means, which is duplicated for each reel, comprises: a lever 76, pivoted at 77 to the frame, and a link 78 connecting the free end of lever 76 with the forward end of link 72. The forward end of lever 76 carries a lateral projection 79 which is adapted to be engaged by a spring pressed button plunger (not shown) which is mounted in the top wall of the casing. By depressing said spring pressed button against projection 79 link 72 is moved clear of the stud (not shown) by which said link holds arm 63 in engagement with bell crank 65. Arm 63 is then free to move into obstructive engagement with the star wheel on the reel hub so that the reel may be stopped before it would normally be brought to rest by the falling of the lower end of bell crank 65 from the projection on clock arm 75. In this manner the operator may exercise skill in stopping the reels.

Mechanism is provided for allowing free plays to the operator in accordance with the positions of rest to which the reels are brought. The register which forms the subject matter of the present invention is associated with this free play mechanism, and in order to explain the operation of the register it will first be necessary to describe the free play portion of the apparatus. A detailed description of this free play mechanism is given in my prior Patent No. 1,912,992, and I shall therefore here describe this mechanism only in sufficient detail to give an understanding of its relation to the novel register device.

Referring particularly to Figs. 2 and 3, mounted in a box shaped housing 81 (Fig. 2) is a stack of horizontally disposed slides 82—87, the rear ends of which engage, respectively, the forward ends of a corresponding series of locking levers 88—93, said slides being urged rearwardly against said levers by coil springs 94. Locking levers 88—93 are pivoted intermediate their ends on a shaft (not shown) and are yieldingly held in locking engagement with the slides by coil springs 95. Slides 82—87 are selectively released by levers 88—93 in accordance with the positions of rest assumed by the reels. This is effected by a series of locking dogs 96—100, said dogs being pivoted intermediate their ends on the frame and having on their upper ends horizontally disposed fingers 101 (Fig. 1), the free ends of which normally rest against outer ratchet disc 15. As shown in Fig. 3, discs 15—17 are provided with perforations 102, into which fingers 101 are urged by springs 103 (Fig. 1) when the reels assume such positions as will bring the perforations into registration with said fingers. The lower ends of locking dogs 96—100 are notched (not shown) to permit of the selective releasing of levers 88—93, this arrangement being such that dog 96 releases the lowermost lever 88 when the positions of the reels are such as to permit the upper end of said dog to enter perforations in the two outer discs 15 and 16. When the upper end of said dog 96 enters perforations in all three discs 15, 16 and 17, it releases the two lower levers 88 and 89. The four remaining dogs 97—100 are each arranged to respectively release levers 90—93. It is evident, therefore, that retraction of slides 82—87 is thus controlled in accordance with the positions of rest of the reels, the construction being such that when one particular slide of the stack is retracted all of the slides positioned below that particular one will also be retracted.

Referring particularly to Fig. 3, slides 82—87 are returned to their advanced position, preparatory to spinning of the reels, by an arm 104 carried by rock shaft 41 and provided at its lower end with a lug 105 which engages a bracket 106 projecting upwardly from a horizontally disposed slide return bar 107. The forward end of bar 107 engages an upturned arm 108 carried by the lowermost slide 82. When rock shaft 41 is turned to spin the reels, bar 107 is shoved forwardly by arm 104 to return such of the slides as have been retracted in the previous play to their normally advanced position where they are locked by levers 88—93.

Continuing the reference to Fig. 3, locking dogs 96—100 are held in non-obstructing position relative to ratchet discs 15—17 by a rest 108 which is carried by apron 59. When rock shaft 41 is turned to start spinning of the reels arm 45 pivots apron 59 upwardly to move rest 108 against locking dogs 96—100, the latter being thus withdrawn from ratchet discs 15—17. Rest 108 is released by the clock mechanism (not shown) to permit the locking dogs to fall against ratchet discs 15—17. To accomplish this function a vertically disposed rod 109 is provided which is connected at its upper end to a laterally extending bracket 111 carried by apron 59. When said apron is raised rod 109 is likewise raised to rest at its lower end on a lever 112 (Fig. 1) said lever 112 engaging bell crank 73, being yieldingly held in engagement therewith by a coil spring 113. When rock shaft 41 is actuated bell crank 73 is pivoted in a counter-clockwise direction, viewing Fig. 1, thereby allowing lever 112 to be moved below rod 109, which during this interval has been raised so that its lower end will clear said lever. As bell crank 73 returns to normal position under the control of the clock mechanism (not shown) lever 112 is gradually moved

until it clears the lower end of rod 109 whereupon it falls under its own weight and moves rest 108 clear of locking dogs 96—100, the latter being then free to fall into the perforations in ratchet discs 15—17 to stop the reels.

Means is provided for allowing free play of the aforedescribed coin-controlled operating mechanism, said means being controlled by slides 82—87. Referring particularly to Figs. 1, 2 and 4, a wheel 114 is mounted for free rotation on reel shaft 11. This wheel is provided on its periphery with a series of numbers, shown in Fig. 1, spaced equally thereon to indicate the position of the wheel with respect to a zero position. These numbers in the embodiment shown are arranged to represent a baseball batting average although it will be apparent that they could be used to indicate a score for any form of game. A transparent panel is provided in the housing or casing (not shown) which encloses the apparatus so as to expose a portion of the periphery of wheel 114 and an index pointer 115 which indicates the score as represented by the displaced position of the wheel.

Mechanism is provided for displacing wheel 114 from a starting or zero position in accordance with the position assumed by slides 82—87. Referring particularly to Fig. 4, immediately adjacent the inner hub portion of wheel 114, and rigid on shaft 11, are a pair of oppositely toothed ratchet wheels 116 and 117, the latter being in close frictional engagement with the hub of wheel 114 so that normally the two ratchet wheels and wheel 114 turn together as a unit on shaft 11. Wheel 114 is positioned in accordance with the displaced positions assumed by slides 82—87 through a slide bar 118 (Fig. 3) which carries a lever 119, the latter being fulcrumed at 121 (Fig. 1) on said bar. Lever 119 moves with slide bar 118, the free end thereof resting on the upper edge of a bracket 122 (Fig. 4), the free end portion of said lever affording a support for a stepped arm 123 which is pivoted at 124 to a frame support. Arm 123 is provided with six steps 125 and similarly slide bar 118 is provided with six such steps 126, the steps on these members corresponding to the six control slides 82—87. A coil spring 127 (Fig. 3) extending between slide bar 118 and the frame urges said bar toward the right, viewing Fig. 3, to hold said bar against the forward end of the lowermost of the slides 82—87. It will thus be apparent that the stepped bar 123 will fall from the position shown in Fig. 4 an amount dependent upon the number of slides 82—87 which are retracted, this being for the reason that lever 119 which supports said step bar 123 moves with slide bar 118 and the latter in turn is retracted by coil spring 127 from the position shown in Fig. 3 an amount dependent upon the number of slides which have been retracted through operation of the reels.

Continuing the reference to Fig. 4, the advance of wheel 114 is controlled by the movements of arm 123, the means for this purpose comprising: an arm 128 mounted for free rotation on shaft 11; a pawl 129 carried on the outer end of arm 128 and normally held in engagement with ratchet wheel 116 by a spring 131; and a link 132 connected at its lower end to arm 123 and at its upper end to arm 128. It will be evident that the advance rotation imparted to wheel 114 by pawl 129 will depend upon the fall permitted of arm 123. In the embodiment shown these advances of wheel 114 for each of the six steps on bar 123 are, in order, 2, 4, 8, 12, 16 and 20, steps 125 being shaped to give these displacements of said wheel. For example, if the three lowermost slides 82—85 are retracted, arm 123 will fall a distance of three steps, thereby advancing wheel 114 eight spaces from the starting position. A coil spring 133 urges arm 123 against lever 119. A second pawl 134, positioned on the outer end of arm 128, engages ratchet wheel 117 to prevent overrun of wheel 114 when it is advanced by pawl 129.

Arm 128 is raised to return pawl 129 to its initial driving position on ratchet 116 by means of an arm 135 (Fig. 2) which is pivoted at 136 on a hub 137 which is rigid on main rock shaft 41. Arm 135 is held in yielding engagement with hub 137 by a coil spring 138 which urges said arm against a stop 139 carried by said hub 137. When rock shaft 41 is turned to spin the reels, arm 135 is raised to bring a pin 141 against the free end of arm 123, the latter being thus raised to return arm 128 and pawl 129 to their normal driving position on ratchet wheel 116. As rock shaft 41 returns to normal position, arm 135 is lowered and the stepped arm 123 is free to fall an amount determined by the position of lever 119.

Means is provided for removing pawl 134 from ratchet wheel 117 as arm 128 is returned to normal position. This is accomplished by a lever 142, pivoted at 143 on arm 128. This lever is provided at one end with a pin 144 which rests in an inwardly grooved cam surface formed in an arm 145 which projects laterally from pawl 134. A spring 146, extending between arm 145 and the end of arm 128 holds pawl 134 against ratchet wheel 117. Lever 142 is turned to raise pawl 134 by a vertically disposed arm 147, the upper end of which is pivoted to the frame at 148. A curved segment portion 149 of arm 147 engages one end of lever 142. Arm 147 is actuated in the initial turning of rock shaft 41, the lower end of said arm being shoved laterally by a pin 151 (Fig. 2), carried by an arm 152, which is rigid with hub 137 on rock shaft 41. As arm 152 is raised pin 151 strikes and displaces arm 147 laterally to pivot lever 142, thereby freeing pawl 134 from ratchet wheel 117, and allowing arm 128 to be raised into position for again actuating ratchet wheel 116.

As long as wheel 114 is displaced from its zero or starting position the machine may be operated without inserting a coin. This action is effected through a lever 153 (Figs. 1 and 2) which is of bell crank form, the forwardly extending arm 154 thereof (Fig. 2) being provided with a hook which engages the upper end of coin trip lever 26. The laterally extending arm 155 (Fig. 1) of said lever 153 carries a lug 156 which is engaged by a stop 157 (Fig. 4) carried by wheel 114, said stop being so located on the wheel that when the latter is returned to the zero position said stop 157 will strike lug 156, thereby pivoting lever 153 to free arm 154 from coin trip lever 26. It will be evident that when lever 26 is held by arm 154 the effect is the same as though a coin were present in coin chute 18. As soon as wheel 114 is advanced one or more spaces, stop 157 is released from the free end of lever 153, the latter being then pivoted by a spring 158 (Fig. 1) to hook arm 154 over coin trip lever 26. Coin trip lever 26 is thus rendered inoperative so long as wheel 114 is displaced from its starting position, the machine being thus capacitated for free operations.

Referring particularly to Fig. 4, means is provided for returning wheel 114 one step toward its starting position for each operation of the coin-

controlled operating mechanism. An escapement 159, pivoted at 161 to the frame, engages the teeth of ratchet wheel 116 and permits the latter, together with wheel 114, to move one step in a counter-clockwise direction (viewing Fig. 4) for each actuation of said escapement. Escapement 159 is rocked by an arm 162 (Fig. 2) rigidly connected through hub 137 to rock shaft 41. When shaft 41 is turned to spin the reels arm 162 is raised and brushes past a spring held pawl 163 carried on the lower end of escapement 159, the pivoted movement of said pawl on the escapement being limited by a stop 164. As rock shaft 41 returns to inoperative position arm 162 strikes pawl 163 on its downward stroke to actuate escapement 159. Wheel 114 is then returned toward zero position one space per play to bring stop 157 in step-by-step movement toward lever 156, the latter being actuated when the wheel reaches zero position to thereafter require the insertion of a coin to operate the machine. A pawl 160, pivoted at 161, engages ratchet wheel 117 to prevent advance of wheel 114 when arm 128 is being returned to its actuating position, it being remembered that during this return movement pawl 134 is raised to clear ratchet wheel 117. Pawl 160 is actuated from arm 162, thus operating in proper timed sequence with escapement 159.

In the operation of the coin-controlled operating mechanism and the free play control therefor which has just been described, the score which a player attains as represented by the number of free plays which have been racked up on wheel 114, is indicated by the number on wheel 114 which appears opposite pointer 115. A player who has finished a desired period of play will have attained a certain score which is thus indicated, and this score may be recognized by the proprietor of the machine as entitling the operator to a certain prize, or may be merely used to indicate a certain degree of skill attained in the operation of the apparatus. The proprietor will then reset wheel 114 back to zero position, thereby preventing further play until a coin is introduced into the coin chute by the succeeding player. In the embodiment shown this resetting of wheel 114 is accomplished manually, and the register which forms the subject matter of the present invention is operated by this resetting means and serves to provide a permanent record of the total amount of return movement which is thus imparted to wheel 114, thereby serving to keep a record of the net result of the operation of the apparatus as represented by the unused free plays, or a score based thereon.

The manually operable resetting means is shown in Figs. 2 and 5. Mounted for rotation with wheel 114 on reel shaft 11 is a wheel 166, the circumferential rim portion for which is provided with a series of spaced holes 167. Wheel 166 is rotated by turning a hand piece 168 (Fig. 5) the latter being mounted on a shaft 169 which is journalled in a bearing 171, the latter being secured by screws 172 to the inner face of the casing wall 170. The inner end of shaft 169 carries a clutch 173 having diagonally disposed laterally projecting cleats 174. Shaft 169 and clutch 173 are normally held in the disengaged position shown by the solid lines in Fig. 5 by a coil spring 175 which is retained on the shaft between hand piece 168 and a socket 176 formed in casing wall 170.

Referring particularly to Fig. 5, the perforated wheel 166 is turned in a clockwise direction, viewin Fig. 2, by hand piece 168 and toothed wheel 177, the teeth 178 of which (Fig. 7) are spaced to engage the holes 167 in wheel 166. Wheel 177 is rigid on a shaft 179, the latter being journalled by means of a bearing 181 in a frame piece 182. A ratchet wheel 183 is fixedly secured to shaft 179 through a collar 184, the latter being pinned to said shaft 179. Immediately adjacent ratchet wheel 183 on shaft 179 is a spur wheel 185 which drives a register indicated generally by the numeral 186. Spur wheel 185 is mounted for free rotation on shaft 179 through a hub 187. Fixedly secured to spur wheel 185 and arranged to turn with said wheel and hub 187 is a disc 188 which is provided with diagonally disposed pins 189, the latter being engaged by cleats 174 on clutch member 173 when the latter is pushed inwardly against the tension of spring 175. Spur wheel 185 carries a pawl 191 (Fig. 6) which is held by a spring 192 in engagement with the teeth of ratchet wheel 183. A coil spring 193 (Fig. 5), confined on hub 187 between disc 188 and a washer 194, holds said hub 187 in close contact with hub 184 on shaft 179.

The operation of the mechanism just described for resetting wheel 114 is briefly as follows: the operator pushes inwardly on hand piece 168 causing clutch member 173 to engage posts 189 carried by disc 188. On turning hand piece 168 in a clockwise direction, viewing Fig. 2, ratchet wheel 183 is turned by pawl 191, and shaft 179, together with toothed wheel 177, are likewise turned. The teeth 178 of wheel 177 engaging in the holes 167 of wheel 166 turn the latter, together with wheel 114, in a clockwise direction toward zero position.

Referring to Fig. 2, a pawl and ratchet connection is provided between wheel 114 and reel shaft 11 so that the resetting means returns said wheel to the starting position in regular step-by-step movements corresponding to the numbers carried on the periphery thereof. This connection comprises: an arm 195, extending between a pair of spokes of wheel 114, a pawl 196 pivoted on arm 195; and a ratchet wheel 197 rigid on reel shaft 11. When hand piece 168 is turned to reset wheel 114, as just described, pawl 196 rides over the teeth of ratchet wheel 197, the teeth of which correspond to the teeth on ratchet wheel 116 (Fig. 4) thus permitting step-by-step return of wheel 114 in accordance with the spacing of the numbers carried on the rim thereof. It will be noted that during this resetting wheel 114 turns on reel shaft 11 independently of ratchet wheels 116, 117 and 197, by reason of the friction connection between said wheel 114 and ratchet wheel 117.

The register forming the subject matter of the present invention, as hereinbefore stated, is designed to record the total of the unused free plays which in effect corresponds to the accumulated totals of the scores attained by successive operators of the apparatus. The details of this register are shown in Fig. 5 to which reference is now had. The register, indicated generally by the numeral 186, embodies a counter which is carried in a casing 198, the latter being supported on a frame piece 199. The internal structure of the counter is not shown inasmuch as any suitable form of counter which registers in numerical succession may be used. The reading on the counter is shown through a transparent panel 201 (Fig. 1) it being understood, however, that the complete register 186 is preferably enclosed within the casing of the machine so that the reading of the counter is not exposed to the operator. A ratchet wheel 202 (Fig. 5) is carried by the counter shaft 203. Mounted for free rotation on counter shaft 203 is a spur wheel 204, the latter being secured to shaft 203 by a washer 205 carried on the end of

said shaft. Spur wheel 204 meshes with spur wheel 185 which is carried on shaft 179. Said wheel 204 also carries a pawl 206 (Fig. 6) which engages the teeth of ratchet wheel 202. It will be apparent from Fig. 6 that counter shaft 203 will be turned to operate the counter whenever a clockwise turning movement (viewing Fig. 2) is imparted to shaft 179 as a result of manual turning of the latter through hand piece 168. Therefore, the register will be operated to indicate the return movement which is given wheel 114 by hand piece 168, it being understood, of course, that the ratio of spur wheels 185 and 204 is such as to effect a one notch or a one numeral turning of the counting discs in the register each time wheel 114 is returned one step toward the starting position. It will also be apparent that the register 186 is not operated by the automatic step-by-step backward turning which is imparted to wheel 114 upon each operation of the apparatus through escapement 159 (Fig. 4). As previously explained, upon each play which takes place after wheel 114 has been displaced from zero position, said wheel is set back towards zero position one step upon each operation through escapement 159, assuming, of course, that such operation does not effect such displacement of one of the slides 82—87 as will result in an advance of wheel 114 from its previous position. The register 186 is not affected by such return movement of wheel 114 because of the pawl and ratchet connection between ratchet wheel 183 and spur wheel 185. Such automatic resetting of wheel 114 upon each play merely results in ratchet wheel 183 turning in a counterclockwise direction, viewing Fig. 6, during which movement pawl 191 merely rides over the teeth thereof. Register 186 thus is operated to count up the unused free plays, or to measure a score corresponding thereto, solely through the manually operated resetting mechanism. The total reading on the register thus indicates the net results of the operation of the machine since it adds up or tallies the total net score or unused free plays as measured by the return movement given wheel 114 through the manually operated resetting mechanism.

The foregoing detailed description has been given for clearness of understanding only, and no unnecessary limitations should be understood therefrom, but the appended claims should be construed as broadly as permissible in view of the prior art.

What I regard as new and desire to secure by Letters Patent is:

1. In a game apparatus, the combination with a normally coin-controlled operating mechanism, and a free play device, including a control element adapted to be displaced by said operating mechanism from a normal starting position and advanced through a series of positions away from the starting position, and means controlled by said element for allowing free plays of said operating mechanism in accordance with the extent of displacement of said element from the starting position, of means for resetting said element from an advanced position back to the starting position, and a register operated by said resetting means for recording the total number of unused free plays as measured by the extent of return movement imparted to said element by successive operations of said resetting means.

2. In a game apparatus, the combination with a normally coin-controlled operating mechanism, and a free play device, including a rotatable control element adapted to be turned by said operating mechanism from a normal starting position and advanced through a series of positions away from the starting position, and means controlled by said element for allowing free plays of said operating mechanism in accordance with the extent of displacement of said element from the starting position, of manually operable means for resetting said element from an advanced position back to the starting position, and a register operated by said resetting means for recording the total number of unused free plays as measured by the extent of return movement imparted to said element by successive operations of said resetting means.

3. In a game apparatus, the combination of a normally coin-controlled operating mechanism, a movable member, means actuated by said operating mechanism for displacing said member from a normal starting position and advancing the same through a series of positions away from the starting position, means controlled by said movable member for capacitating said operating mechanism for effective action without the use of a coin therein when said member is away from the starting position, thus allowing the operator a number of free plays determined in accordance with the extent of displacement of said movable member from the starting position, means for resetting said movable member from an advanced position back to the starting position, and a register operated by said resetting means for recording the total number of unused free plays as measured by the amount of return movement imparted to said movable member by successive operations of said resetting means.

4. In a game apparatus, the combination of a normally coin-controlled operating mechanism, a movable member, means actuated by said operating mechanism for displacing said member by step movements from a normal starting position and advancing the same through a series of positions away from the starting position, means controlled by said movable member for capacitating said operating mechanism for effective action without the use of a coin therein when said member is away from the starting position, thus allowing the operator a number of free plays determined in accordance with the extent of displacement of said movable member from the starting position, means for resetting said movable member from an advanced position back to the starting position, means for controlling the resetting action to cause a step-by-step return corresponding in reverse order to the step-by-step advance of said member and a register operated by said resetting means for recording the total number of unused free plays as measured by the number of step return movements imparted to said movable member by successive operations of said resetting means.

5. In a game apparatus, the combination of a normally coin-controlled operating mechanism, a free play control element adapted to be displaced by the operating mechanism from a starting position and advanced through a series of positions away from the starting position, means controlled by said element for rendering the operating mechanism operable without the use of a coin when said element is away from the starting position, thus allowing the operator a number of free plays determined in accordance with the extent of displacement of said element from the starting position, means for resetting said element to the starting position, said resetting means including a manually rotatable shaft having driving

engagement with said control element, a register, and means on said shaft for operating said register to record the number of unused free plays as measured by the extent of return movement imparted to said control element.

6. In a game apparatus, the combination of a normally coin-controlled operating mechanism, a free play device, including a rotatable control element adapted to be turned by the operating mechanism from a normal starting position and advanced through a series of positions removed therefrom, means controlled by said element for allowing free operations of said operating mechanism in accordance with the extent of displacement of said element from the starting position, means for turning said element back to the starting position, and means operated by said last mentioned means for recording the total number of free operations corresponding to the extent of return movement imparted to said control element.

7. In a game apparatus, the combination of a normally coin-controlled operating mechanism, means for capacitating said operating mechanism for free operation, said means including a movable control element adapted to be displaced by the operating mechanism from a normal starting position, means controlled by said element for limiting the number of free operations in accordance with the extent of displacement thereof from the starting position, means for moving said element back to starting position, and a register operated by said last mentioned means for recording the total number of free operations corresponding to the extent of return movement imparted to said control element.

8. In a game apparatus, the combination of a normally coin-controlled operating mechanism, means for capacitating said mechanism for free operation, said means including a rotatable control element adapted to be turned by the operating mechanism from a normal starting position, means controlled by said element for limiting the number of free operations in accordance with the extent of displacement thereof from the starting position, means for turning said element back to the starting position, and a register operated by said last mentioned means for recording the number of free operations corresponding to the extent of return movement imparted to said control element.

9. In a game apparatus, the combination of normally coin-controlled operating mechanism, free play mechanism, including a control element adapted to be displaced by said operating mechanism from a normal starting position through a series of positions removed therefrom, means controlled by said element for allowing free plays of the operating mechanism in accordance with the extent of displacement of said element from the starting position, means including a manually rotatable shaft operatively connected with said element for returning the latter to the starting position, a register, and means on said shaft for operating said register to record the number of free plays allowed as measured by the extent of return movement imparted to said control element.

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