July 23, 1957 S. S. HESTER 2,800,331

ROTATING WHEEL GAME DEVICE

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FIG. 2.

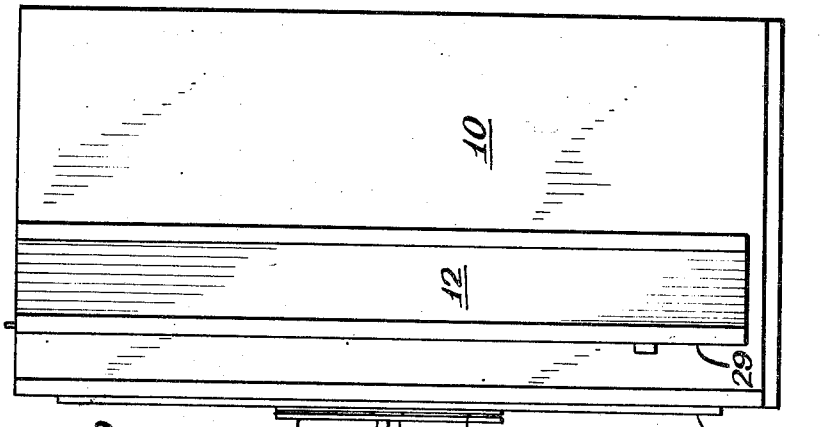

FIG. 1.

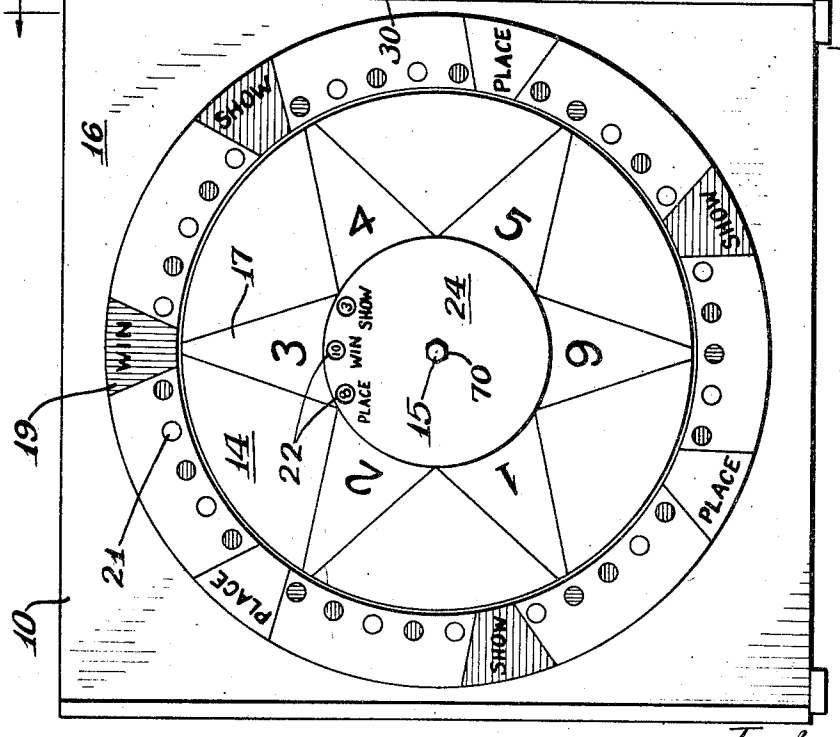

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FIG. 3.

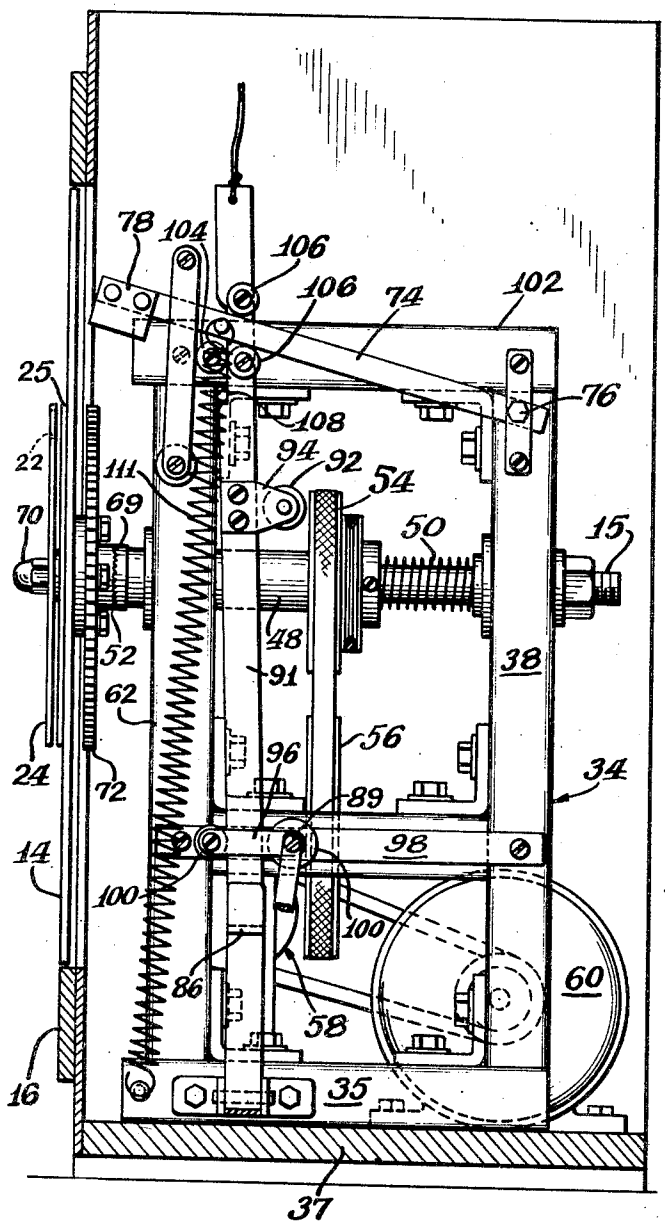
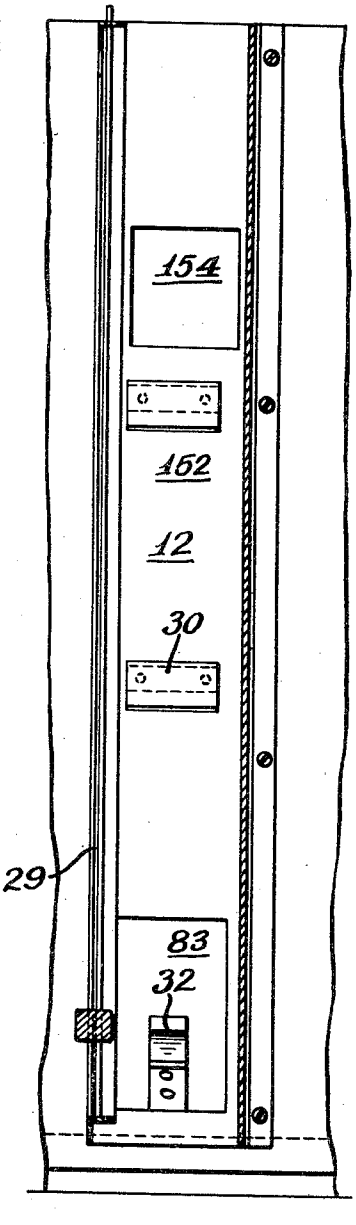


FIG. 4.



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ROTATING WHEEL GAME DEVICE

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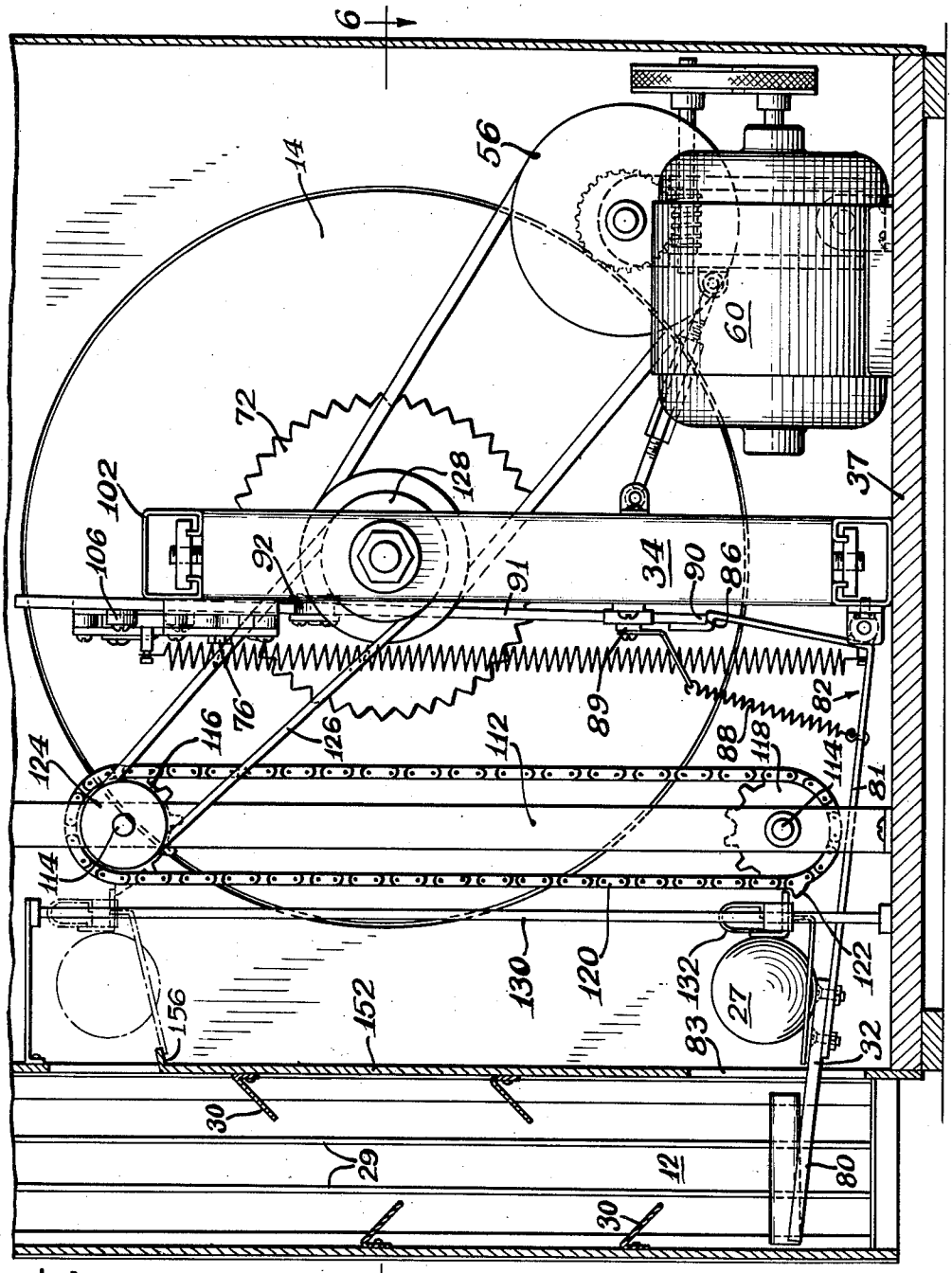

FIG. 5.

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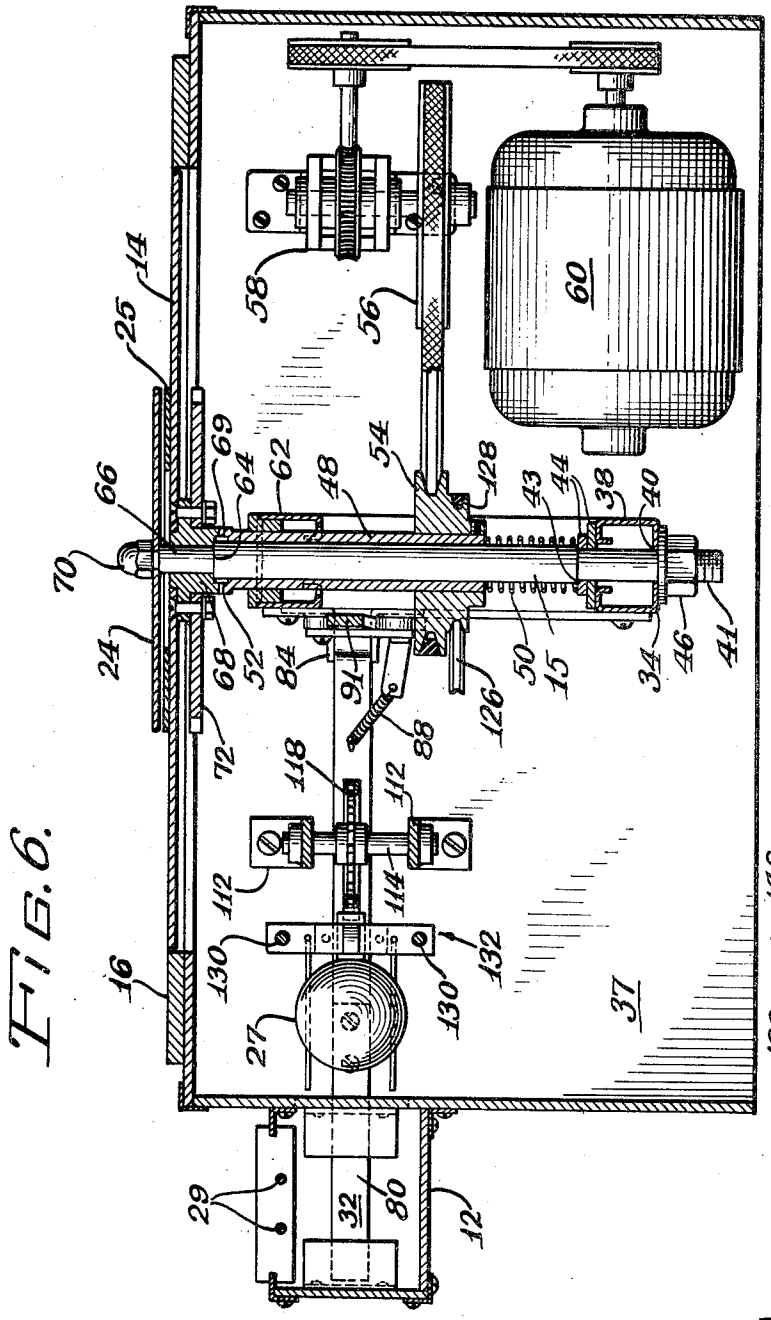

FIG. 6.

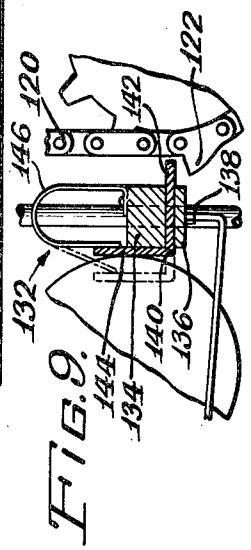

FIG. 9.

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FIG. 7.

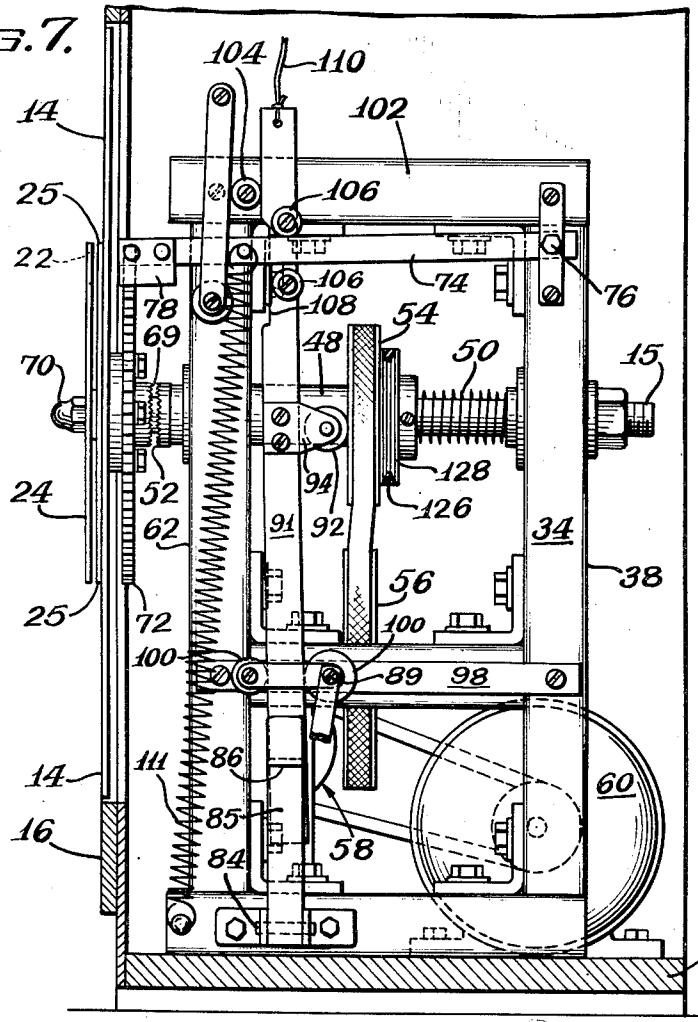
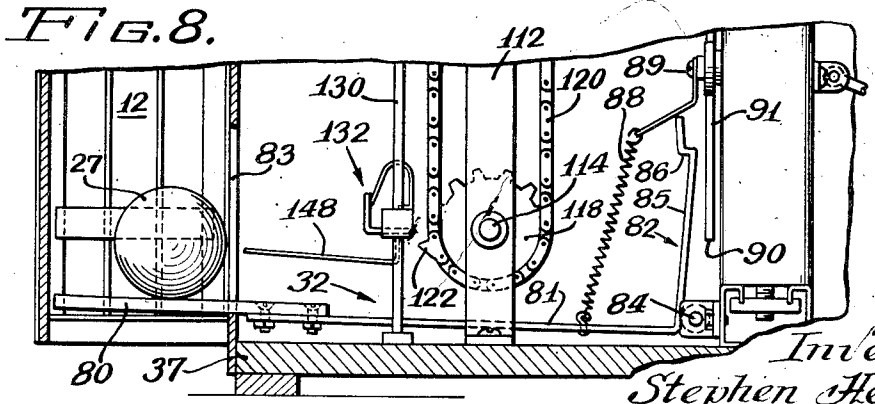


FIG. 8.



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United States Patent Office 2,800,331 Patented July 23, 1957

2,800,331

ROTATING WHEEL GAME DEVICE

Stephen S. Hester, Chicago, Ill.

Application July 29, 1954, Serial No. 446,561

4 Claims. (Cl. 273—141)

My invention relates to an amusement device which employs a rotating disk, the indiscriminate stopping of which determines the winner of the game. More particularly, it relates a novel scoring face wherein the participants of the game are left in greater uncertainty as to which of them shall win and as to the amount of their winnings.

The primary object of my invention may therefore be defined as providing a novel scoring face for a Merchandise Wheel type amusement device wherein more than one winning point is provided, wherein the changes of fortune of the winning points progress in a novel, attention-holding, and unusual fashion, and wherein the playing points are large and legible and the playing face simple so that the players may easily follow their changing fortunes as the wheel rotates.

A second object may be considered the mechanism for driving and operating the game which is simple and sure, which imparts a high element of uncertainty or randomness to the game and which further contributes to spectator interest. Other objects and advantages of my invention will be apparent from the following description and drawings of which:

Fig. 1 is a front elevation of a game device embodying my invention;

Fig. 2 is a side elevation of the right side of Fig. 1;

Fig. 3 is a section which may be regarded as being taken substantially along the line 3—3 of Fig. 1 looking in the direction of the arrows and showing the operating mechanism in elevation;

Fig. 4 is a section which may be regarded as being taken substantially along the line 4—4 of Fig. 1 looking in the direction of the arrows and showing the triggering mechanism in elevation;

Fig. 5 is a rear elevation of the machine shown with back removed to illustrate the rear view of the operating mechanism;

Fig. 6 is a section which may be regarded as being taken substantially along the line 6—6 of Fig. 5 looking in the direction of the arrows;

Fig. 7 is a view similar to Fig. 3 showing, however, the mechanism after triggering;

Fig. 8 is a view similar to the lower left-hand portion of Fig. 5 showing the mechanism in triggered position; and

Fig. 9 is an enlarged sectional view of the ball carrier illustrated in Fig. 8 in elevation.

Regarding Fig. 1, the machine embodying my invention incorporates a generally rectangular cabinet **10** having a chute **12** down one side thereof and a wheel **14** rotatably mounted on spindle **15** for rotation closely against the front face **16** of the cabinet, hereinafter referred to as the backboard. The wheel has a plurality of points **17**, here six, marked thereon and extending to the periphery thereof. These six points represent the number of players or the number of playing positions. Adjacent the periphery of the wheel, the backboard is marked annularly with one more point than the number of points on the wheel, the points on the backboard being evenly spaced around the wheel. These points may be identified as the primary points **19** and, if, for instance, it be desired

that the game be cast in the form of a horse race, they may be identified as Win, Place or Show points. As illustrated, there is one Win point and three each of the Place and Show points. Between each of the primary points are marked secondary points **21**.

The playing points **17** on the wheel may be each differently colored and the secondary points should likewise be colored to correspond with the color of the primary point which the playing point indicates squarely. Thus, as illustrated, assuming the Win point on which the playing point **3** has stopped to be colored red, the secondary points aligned with the other points, **4**, **5**, **6**, **1** and **2**, will also be colored red. I contemplate that nominal awards will be made to the players on the playing points other than point #3 for their alignment with the appropriately colored secondary points. The players on point **3**, of course, will receive a major award.

The advantage of my playing face is that the wheel may revolve very slowly and yet the winning anticipations of the players will shift widely. Thus, assuming the wheel is rotating from its illustrated position, the next major alignment subsequent to **3** with Win will be **2** with Place, thereafter **1** with Show, **6** with Place, **5** with Show, **4** with Place, and thereafter **3** will have migrated around to Show. As point **2** moves into alignment with the Place primary scoring point, that point having a characteristic color, the remaining points will be aligned with secondary scoring points bearing the same color. It will be appreciated that the eye must shift rapidly to keep up with the evolving scoring picture as the rotation of the wheel progresses, so enhancing the excitement of the game.

The wheel may have windows **22** therein indicating the odds to be paid upon the wheel stopping at any primary point. The windows may be situated in a forward stationary disk **24** with the numbers fixed therein or the numbers may be carried on an inside disk **25** fixed to the wheel **14** and rotating therewith so that as the wheel rotates the odds illustrated constantly change. The disk **25** may be moved with respect to wheel **14** to alter the alignment of the various odds with the several points.

In order to impart an indiscriminate element to the time of rotation of the wheel, I contemplate that a ball **27** be employed to trigger the stopping of the wheel. The chute **12** having a barred front **29** so that the ball may be seen by the contestants is employed as the path of drop. The chute may have baffles **30** extending alternately outward from the sides thereof to retard the fall of the ball and delay its reaching the trigger **32**.

Figs. 3, 4, 5, and 6 illustrate the mechanism by which the device is operated, these figures dealing with the parts as they are positioned when the wheel is still and the players are determining which of the playing points they wish to try.

The spindle **15** is supported by an upstanding generally rectangular frame **34** which is mounted on its bottom edge **35** to the base **37** of the cabinet **10**. The frame has a rear upright **38** which is bored **40** (Fig. 6) to receive the rear threaded end **41** of the spindle **15**. Forwardly of the hole **40** in the frame, the spindle has a shoulder **43**. The shoulder **43** abuts against a pair of washers **44** and the spindle is fixedly secured to the rear upright **38** of the frame by virtue of the engagement of the washers **44** on the front side of the upright and a nut **46** on the back side thereof.

The spindle **15** has a sleeve **48** slidably and rotatably mounted thereon which is biased forward by a compression spring **50** bearing against the rear end of the sleeve at one end and against the washers **44** at the other end. At its forward end, the sleeve has a forwardly facing toothed surface **52** which constitutes a clutching sur-

face for driving the wheel 14. A double V-belt pulley 54 is locked to the sleeve 48.

The pulley 54 is driven by a driving pulley 56 which in turn is mounted on the output end of a speed reducer 58 which is driven by a motor 60. To the front of the pulley 54, the sleeve 48 is journaled in the forward upright 62 of the frame to be also slidable front and back therein. The spindle 15 being situated inside sleeve 48, it is of course likewise supported in the forward upright 62.

The shaft 15 has also a forward shoulder 64 and a portion of reduced diameter 66 extending forwardly therefrom. The wheel 14 and the inside disk 25 are both secured to a hub 68 which is rotatable on the reduced portion 66 of the spindle 15. The rearward face of hub 68 is radially toothed at 69 to engage with the surface 52 of the sleeve 48. Forwardly still of the reduced portion 66 is a still further reduced portion threaded at its end on which the stationary disk 24 is secured by cap nut 70.

The hub also has secured thereto a ratchet wheel 72 having coarse teeth therein, the same in number as the total number of points on the playing wheel 14. An arm 74 is pivoted for vertical movement at its rear end 76 to the rear upright 38 of the frame and has a downwardly extending plate-like pawl 78 secured to the forward end thereof. The arm is adapted to be released to fall so that the pawl 78 engages one of the teeth of the ratchet wheel 72 and the ratchet wheel teeth are so positioned that the points of the playing wheel 14 will align exactly with the points 17 and 21 on the backboard 16.

As was described before, the mechanism is triggered to stop the wheel 14 to align with the points on the backboard 16 upon the falling ball 27 hitting the trigger 32. The trigger 32 consists of a plate 80 secured at its inner end (Figs. 5 and 8) to the horizontal arm 81 of a bell crank 82 which may be composed of relatively light strap metal. The bell crank is enclosed within the cabinet 10 and the plate 80 extends out of the cabinet through a relatively large opening 83 in the side wall thereof into the chute 12. The bell crank is pivoted at its apex 84 for movement in a vertical plane to the base of the frame 34. The vertical arm 85 of the bell crank has a shoulder 86 formed thereon by offsetting the end thereof. The trigger is urged upward by a spring 88 connected at one end to the horizontal arm 81 of the bell crank and at the other end to a point 89 on the forward upright 62 of the frame 34 upwardly of the bottom 35 thereof. Under the circumstance where the wheel 14 is rotating and the ball has not been dropped, the relation of the parts is illustrated in Fig. 5 with the plate 80 raised appreciably above the bottom of the chute 12 and the shoulder 86 of the bell crank 82 approaching closely the side of the forward upright 62 of the frame 34.

The base 90 of a long operating rod 91 is received in the offset 86 and is supported in an upper position thereby as is illustrated in Figs. 3 and 5. The operating rod is essentially a metal strip which has a roller 92 supported at a mid-point thereof by a pair of plates 94 which lies opposite pulley 54.

The operating rod 91 is loosely confined and guided for vertical movement by a strap 96 secured to and spaced out from a central horizontal frame brace 98 by round spacers 100. The rod is also confined at the upper part of the frame between arm 74 on one side and the top horizontal frame member 102 on the other; a stud 104 on the member 102 on its forward edge and the pulley 54 on its rearward edge. The operating rod has a pair of studs 106 thereon embracing the upper and lower edges of the arm 74 so as to move the arm with the vertical movement of the rod. The rod is narrowed near its upper end by a long notch 108 formed in the forward edge thereof having a sloping upper shoulder. When the rod is in its upper position, resting on the offset 86, the notch lies opposite the stud 104 and permits the rod to occupy a forward position. When the rod falls, the sloping shoulder, acting against stud 104, cams the rod to a rearward position. A rope 110 may be attached to the top of the rod for purposes of re-setting the rod once the ball has fallen, the trigger actuated, and the rod permitted to fall. A tension spring 111 is connected at one end to the base of the frame and at the other to arm 74. When the trigger is tripped the spring forcibly pulls down both the arm 74 and rod 91.

I also provide for an automatic ball return which may be best seen in Figs. 5, 6, 8, and 9. A pair of spaced standards 112 extend between the top and bottom of the cabinet 10. Axles 114 span the standards adjacent the top and bottom thereof which carry an upper 116 and lower 118 sprocket respectively. A continuous roller chain 120, one link of which is formed to provide an outstanding finger or projection 122, is mounted on the sprockets. The upper axle 114 carrying sprocket 116, has a pulley 124 mounted thereon outside the standards, and a belt 126 interconnects the pulley 124 with the second groove 128 of double pulley 54 to drive the chain 120 as shown in Fig. 5 in a clockwise direction.

A pair of vertical rails 130 are situated near the upwardly moving part of the chain 120 path. A ball carrier 132 is slidably mounted on the rails. The carrier is illustrated in greatest detail in Fig. 9. It consists of a block 134 vertically bored for the rails 130. A transverse slot is provided adjacent the bottom of the block by a plate 136 spaced from and secured to the bottom of the block by bolts 138. An L-shaped member 140 has one side thereof, a tongue 142, extending through the slot. The other side, a bumper 144, extends upward against the outside face of the block 134. A U-shaped spring member 146 is secured at one end to the top of the block and bears against the upper end of the bumper 144 to hold it normally away from the block and the end of the tongue approximately flush with the inside face of block 134. Two flexible tines 148 secured to the bottom of the block are bent to project away therefrom and at a slight upward angle. The tines are spaced apart sufficiently to hold ball 150 firmly and the incline is such as to roll the ball back against the bumper 144.

The ends of the tines approach closely the inside wall 152 of the chute 12 (Fig. 5). An aperture 154 is provided in the upper part of the wall 152 large enough to pass the ball 150 and an inwardly directed lip 156 underlies the aperture.

The operation of my device will be readily apparent from the foregoing description.

Assuming that play is to start, the operator of the machine lifts the operating bar 91 by means of the rope 110 which may be entrained over a pulley (not shown). The motor 60, of course, is operating and driving the pulley 54 and the pulley 54 is in turn driving the chain 120. The ball is at the bottom of the chute 12, but the ends of the tines 148 hold the ball away from the carrier 132 somewhat as shown in Fig. 8. The clutching surfaces 52 and 69 are separated, so the disk 14 is stationary.

When the bar 91 is raised, roller 92 is lifted above pulley 54 and the pulley thereupon is pushed by spring 50 toward the front of the machine as illustrated in Fig. 3. This forward movement of the pulley engages the clutching surfaces 52 and 69 and places the motor in driving engagement with the rotatable disk 14. In the course of the upward movement of the operating bar 91 the arm 74 is raised, so disengaging the pawl 78 from the ratchet wheel 72. This disengagement is effected before the clutching engagement of the surfaces 52 and 69.

The spring 88 which supports the trigger 32 is tensioned to be capable of supporting both the weight of the trigger 32 and the ball 27 in an upward position. The tension should, however, be light enough so that the trigger or plate 80 and arm 81 will be depressed under the impact of the falling ball. At the start of an operating cycle the shoulder 86 is resting against the lower end of the operating bar 90. The plate 80 is thus held at a relatively

low level and the ball as was mentioned before is held away from the fork **148** by the tine ends. When the operating bar **91** is raised, the spring **88** moves plate **80** and arm **81** upward to raise the ball to a level where it can roll onto the carrier **132**. At the same time the shoulder **86** seats under the lower end of the bar **91** so as to support the bar in its upper position.

The ball, rolling onto the tines **148** of the ball carrier rolls back against the bumper **144** and by virtue of the tilted tines bears against the bumper to move the tongue **142** outward on the far side of the ball carrier. The end of the tongue is thus positioned in the path of travel of the projection **122** on the chain. Upon the projection meeting the tongue the ball carrier is carried upward on the rails **130** until the ends of the tines **148** encounter the lip **156**. The carrier continues to move upward but the tines, having met the lip and being flexible, are bent downwardly, permitting the ball **27** to roll off the tines and into the chute **12** via aperture **154**. The ball then drops through the chute **12** and may be retarded in its fall by the baffles **30**.

At the conclusion of the fall the ball, of course, lands on plate **80**.

Thus during the operation portion of the cycle the front disk **12** is rotating slowly in bringing the processing points **17** on the wheel **14** into alignment with the winning marks **19** on the backboard **16**. The players will not see the upward travel of the ball inside the cabinet **10**. After an uncertain period of time which of course will be determined by the length of time the chain **120** must travel in order to bring the projection **122** into engagement with the tongue of ball carrier **132** the ball will suddenly roll out into the top of the chute through aperture **154**, fall down through the chute and land on the plate **80** at which point the wheel will stop dead with its points in alignment to indicate the winner of the game and the extent of his winnings.

When the ball has completed its fall through the chute and lands on plate **80** it was stated before that the tension of spring **88** is such that the plate **80** and arm **81** will yield under the impact thereof. Upon such occurrence the shoulder **86** is suddenly removed from its supporting position under the lower end of the operating rod **91**. The operating rod both under its own weight and the tension of spring **111**, falls to the position illustrated in Fig. 7. The roller **92** falls initially to a position opposite pulley **54** and thereafter is cammed to the rear against pulley **54** by the roller **104** acting against the upper shoulder of the recessed portion **108** of the rod **91**. The roller thus forces the pulley to the rear to separate the clutching surfaces of the driving wheel **14**. At the same time the two studs carry arm **74** down with them so that the pawl **78** falls into one of the notches of the ratchet wheel **72** to produce an exact alignment of the points on the wheel with the points on the backboard.

It will be appreciated from the foregoing description that my invention provides an amusement device wherein the prospective fortunes of the players fluctuates in an exceedingly interesting fashion, wherein a highly legible scoring face may be provided with relatively few points which still permits extensive play. The mechanism by which my game is operated is simple and inexpensive and at the same time functions surely in providing for a sequence of mechanical activities and, even more, which introduces in effective fashion the random element necessary for interesting play in a device of this kind. It will be further appreciated that the above description concerns only an embodiment of my invention and that variations in design and construction are possible both with respect to the playing face and the mechanism operating my device. I therefore desire that my invention be limited only as set forth in the following claims.

I claim:

1. A scoring face for an amusement device of the type which includes a rotating wheel, a backboard against which said wheel rotates, means for rotating said wheel and clutch means for disconnecting said rotating means, said wheel having a plurality of evenly spaced playing points about the periphery thereof and said backboard having evenly spaced primary scoring points about said wheel and secondary scoring points comprising groups of points equally spaced between the primary points about the periphery of the wheel between adjoining primary scoring points, said primary scoring points being one greater in number than the number of playing points on said wheel and said groups of secondary scoring points in each group between adjoining primary points being one less than the number of playing points on said wheel so that as said wheel rotates the said playing points are successively aligned with successive primary scoring points and the remainder of said playing points are aligned with said secondary scoring points, and means for stopping said wheel accurately in each of said aligning positions.

2. A game device of the type which includes a rotatable wheel and a backboard for said wheel wherein the consequences of the game are determined by the stopping of said wheel at random with particular points on said wheel aligned with particular points on said backboard, comprising a horizontally stationary axle on which said wheel is mounted for rotation, a motor, a member having pulley grooves thereon mounted on said axle to be rotatable and movable longitudinally thereon, a power train interconnecting said motor and said member, said member and said wheel having opposing clutching surfaces, spring means urging said member toward said wheel to effect engagement between said surfaces, camming means adapted to bear against said member for movement away from said wheel to effect disengagement of said clutching surfaces, and braking means to stop said wheel.

3. The combination as set forth in claim 2, wherein said braking means comprises a notched disk secured to said wheel and a pawl operatively connected to said camming means to seat in one of said notches to stop said wheel when said camming means is operated to disengage said clutching surfaces.

4. A game device comprising a wheel and a backboard against which said wheel is adapted to rotate, said wheel and said backboard being marked for various aligning positions, said wheel carrying a notched disk and a rearward facing clutching surface, a stationary axle mounting said wheel, a member rotatable and slidable on said axle and having a forward facing clutching surface adapted to engage with the clutching surface of said wheel, means for driving said member, resilient means urging said clutching surfaces into engagement, a pawl, camming means operatively connected to said pawl to effect disengagement of said clutching surfaces and to seat said pawl in one of said notches to stop said wheel in one of said aligned positions, a trigger maintaining said camming means out of engagement with said member, said trigger being adapted to be actuated by a falling member to release said camming means to move said member to disengage said clutching surfaces and to stop said wheel.

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