Feb. 28, 1933. A. W. McCLEAN 1,899,706

GAME APPARATUS

Filed May 22, 1931 3 Sheets-Sheet 1

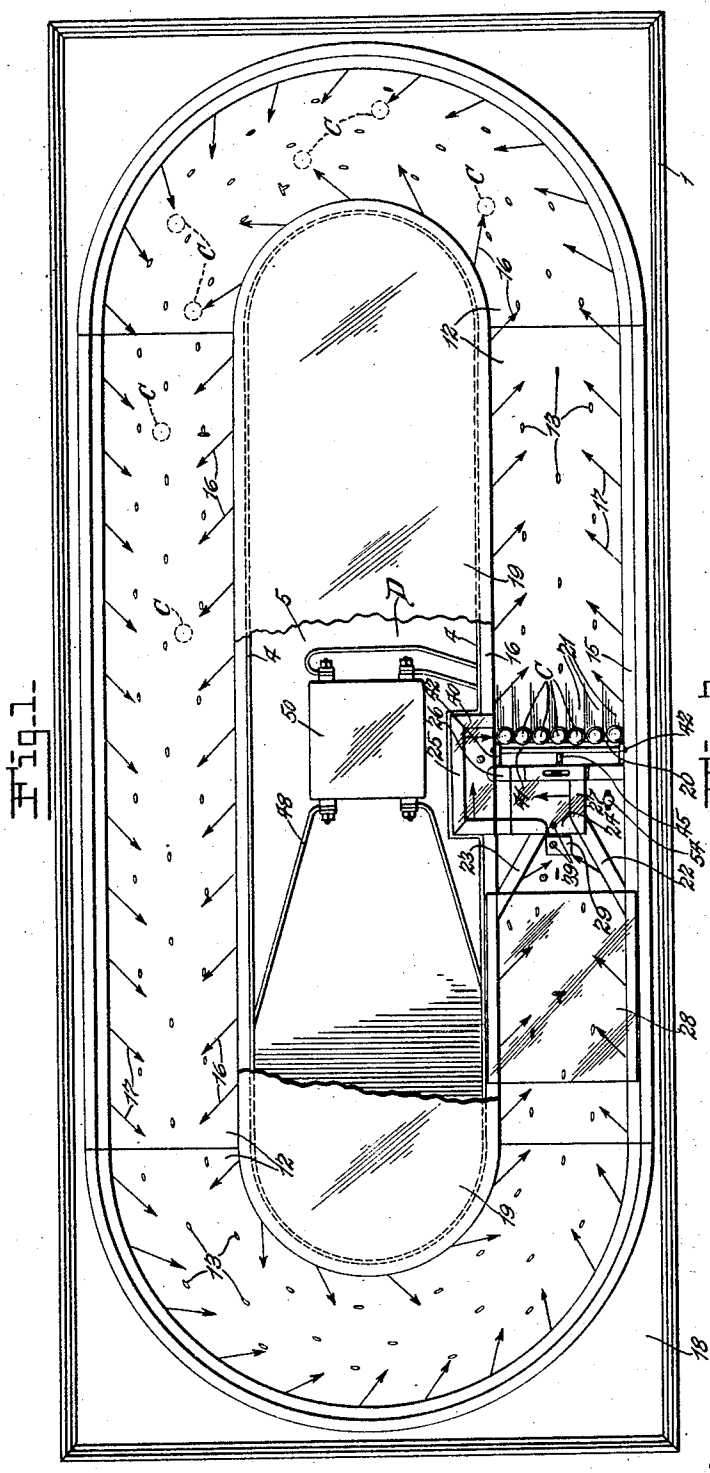


Fig. 1.

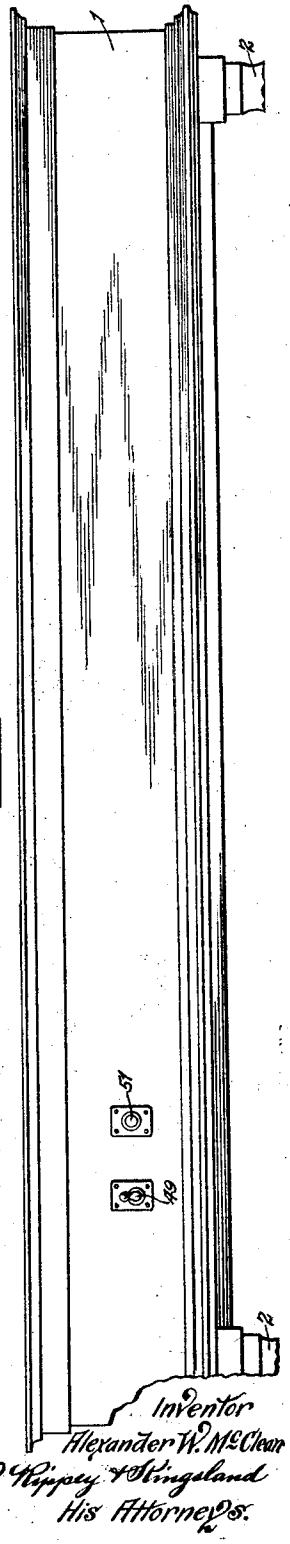


Fig. 2.

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GAME APPARATUS

Filed May 22, 1931 3 Sheets-Sheet 2

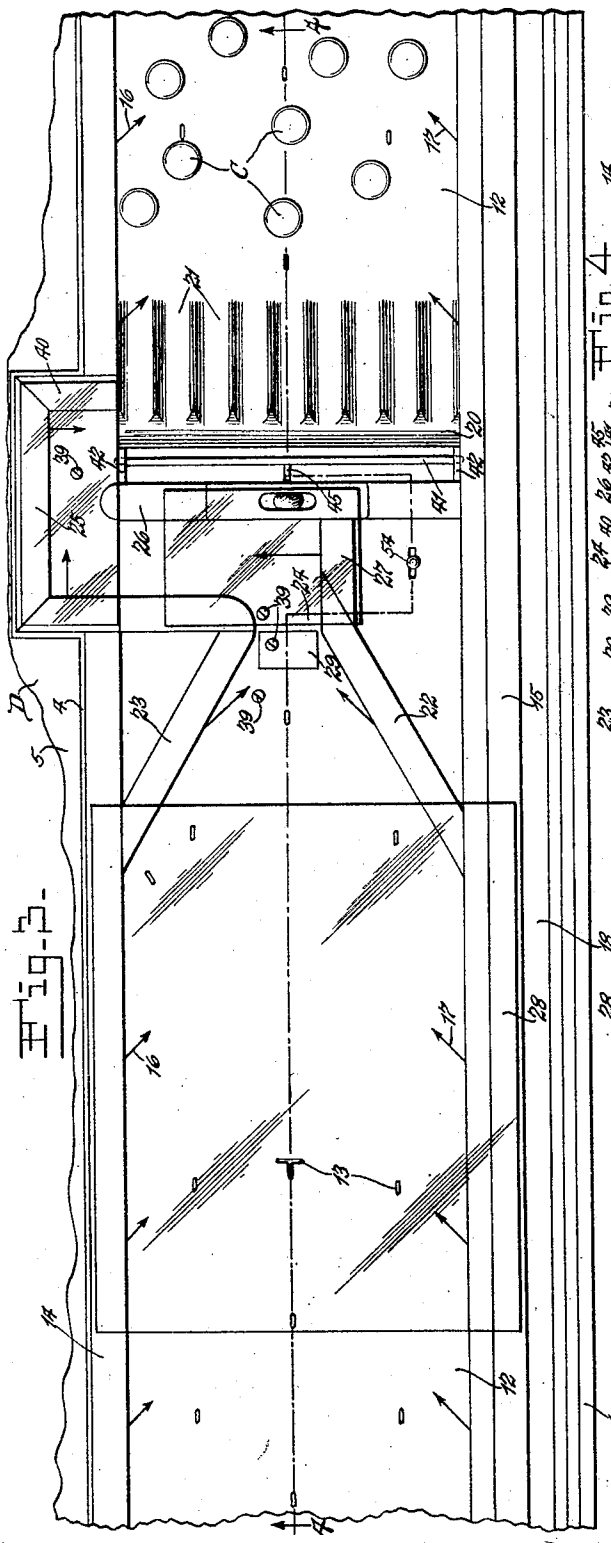


Fig. 3.

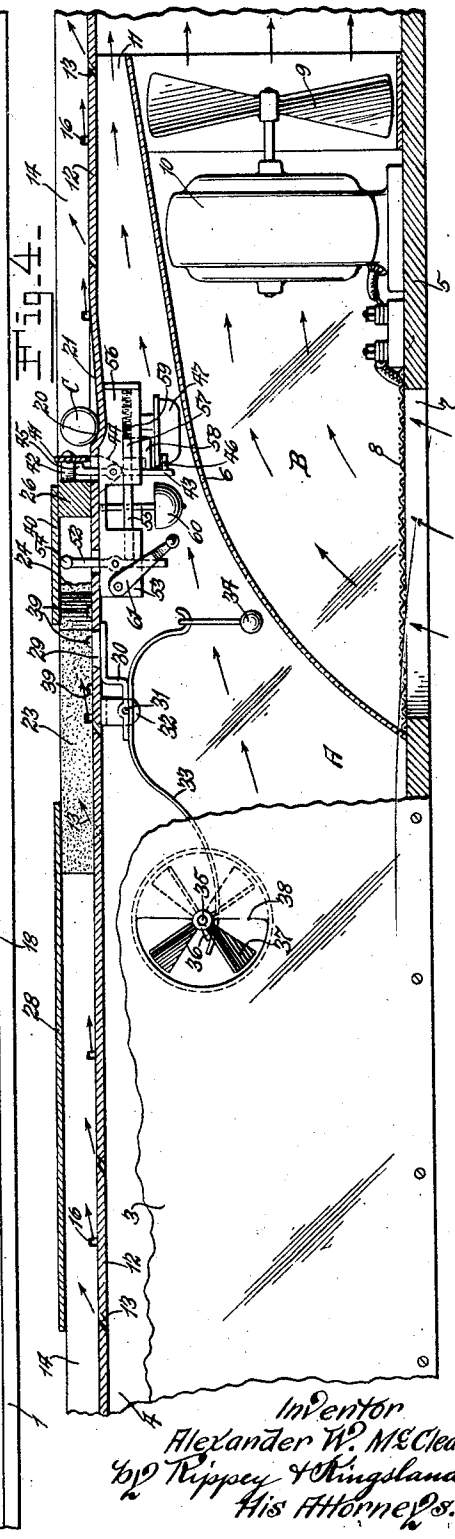


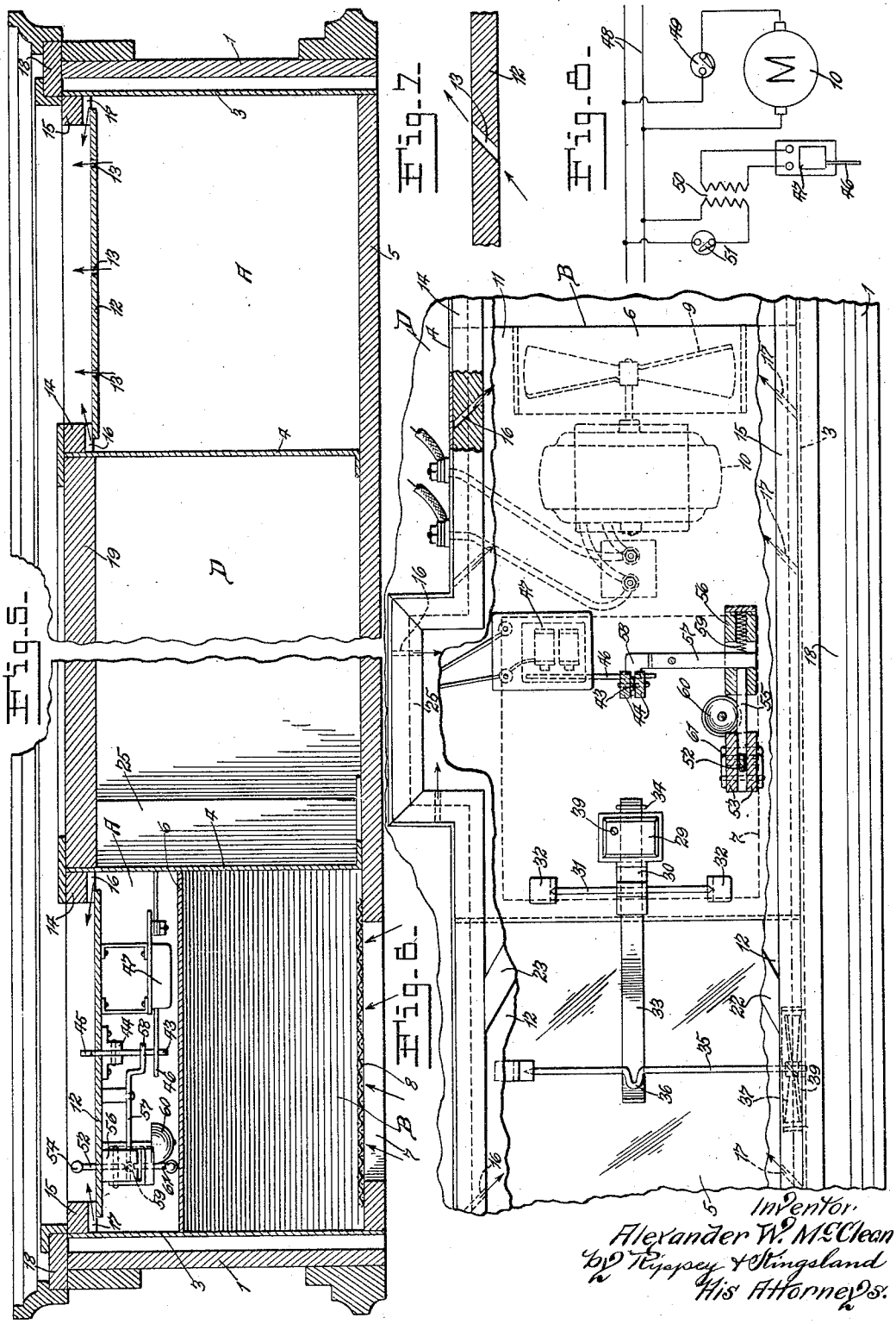
Fig. 4.

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GAME APPARATUS

Filed May 22, 1931 3 Sheets-Sheet 3



Patented Feb. 28, 1933 1,899,706

UNITED STATES PATENT OFFICE

ALEXANDER W. McCLEAN, OF WEBSTER GROVES, MISSOURI

GAME APPARATUS

Application filed May 22, 1931. Serial No. 539,162.

The invention relates to improvements in game apparatus, and consists in the novel construction hereinafter disclosed.

An object of the invention is to provide a game apparatus wherein a plurality of spheres or balls, which constitute the counters of the game, are propelled around an oval or circular track by air impulses delivered across the surface of the track, the air impulses affecting the several counters irregularly, thereby propelling the counters at undetermined and different velocities.

Another object of the invention is to equip an apparatus of the class described with means for imparting to the counters a starting impulse simultaneously, together with manual and electrical means for operating said starting apparatus.

Another object is to equip an apparatus of the class described with means for assembling the counters in sequence so that the counters will come to a point of rest in sequence to thereby determine the sequence of finish of the counters, to enable the game to be played upon the principle of a race.

Other detailed features of the construction will be apparent from the following description taken in connection with the accompanying drawings, in which—

Fig. 1 is a top plan view with a portion of the apparatus broken away.

Fig. 2 is a side elevation.

Fig. 3 is an enlarged plan view illustrating the counters dispersed.

Fig. 4 is a vertical section on the line 4—4 of Fig. 3.

Fig. 5 is an enlarged cross-section.

Fig. 6 is an enlarged plan view with portions broken away to more clearly illustrate the mechanism.

Fig. 7 is a detail of one of the air passages.

Fig. 8 is an electrical diagram illustrating the wiring for the electrical operating mechanism.

In the embodiment of the invention illustrated in the drawings, the apparatus is shown as incorporated in a frame 1 in the form of a table having legs 2. Within the frame there is a continuous conduit A formed from spaced vertical walls 3 and 4 supported by a bottom wall 5 of the frame. This conduit is so constructed as to provide an oblong passage of substantial cubic capacity. At one side of the frame there is provided an inlet conduit B formed from a curved wall 6 that extends across the conduit above described. This inlet conduit communicates with an opening 7 in the bottom wall 5 of the frame, said opening being covered by a screen 8, thereby providing an air intake.

Within this air inlet conduit is a fan 9 driven by a motor 10, the blades of the fan being set to cause a suction in the inlet conduit and to drive the air column forward of the fan into the air conduit first described. The wall 6 terminates at its inner extremity slightly below the top of the air conduit A to provide a passageway 11 for the air column that traverses the main conduit A of the apparatus. The conduit A has a top plate 12 in which there is a plurality of irregularly spaced openings 13 which project through the wall of the plate at an inclination substantially uniform in direction, whereby air jets are permitted egress from the conduit A in the direction indicated by the several arrows applied to the openings 13. These openings may vary in cross-section so that the amount or volume of the air emitted from the several openings 13 varies at different points in the surface of the plate. The plate 12 constitutes the runway for the spheres or balls C, which constitute the counters. At each side of the plate 12 and above the surface thereof are rails, the inner rail being indicated by 14 and the outer rail by 15.

Through the vertical side walls of the rails 14 and 15 are a plurality of passages 16 and 17, respectively, said passages communicating with the conduit A and having a direction of angularity that varies to some degree, but having an inclination in the general direction of the inclination of the passages 13. The angularity of the passages 16 and 17 is conveniently illustrated by the arrows, particularly in Fig. 1 of the drawings. The plate 12 and the rails 14 and 15 form a substantially oval channel which constitutes the raceway for the counters. The frame of the machine may be conveniently finished by a

top frame member 18 that encompasses the raceway and finishes the generally oblong contour of the apparatus table.

The central section D within the oval conduit A provides a convenient housing for a part of the electrical apparatus for operating the device, this central portion being covered by a removable wall 19.

The plate 12, preferably within the area at one side of the table, is provided with a transverse depression or groove 20 and a series of grooves 21 extending at right angles thereto. The groove 20 provides a point of rest for the transverse series of counters C, so that they may be brought into alinement, and the grooves 21 provide lanes for determining the initial direction of the counters at the start of their movement. The groove 20 also provides a means for accumulating the counters at the end of the travel thereof, said counters being assembled in the groove 20 in sequence after they have completed the course.

The counters are alined in the groove 20, as shown particularly in Fig. 1 of the drawings, and are given the initial impulse by mechanism hereinafter to be described. After they have been impelled into the raceway, the counters are advanced by means of the several jets of air that strike them at undetermined angles from the passages 13, 16 and 17. The counters take a tortuous path through the raceway at varying velocities, so that they traverse the raceway at various speeds. It should be understood that the counters are varicolored so that those playing the game may select a particular counter at the start of the race, and the counter that finishes first, if selected by the player, is the winner, the other counters finishing in sequence determining the points attained by the players who have selected the several counters before the initial impulse was imparted thereto.

In order that the sequence of finish of the race may be accurately determined, the raceway is provided at the end of the course with a selecting mechanism through which the counters are admitted in sequence. This construction for selecting the counters in sequence includes inwardly inclined rails 22 and 23 which form a throat 24 to a passageway formed from a U-shaped rail 25 formed as an extension of the rail 23 and a barrier 26. The throat 24 is of a cross dimension to admit the counters in sequence. When a counter passes through the throat 24, it is given a lateral impulse by an opening in a rail 27 that is formed as an extension of the rail 22. The direction of the jet is indicated by the arrow in Fig. 1 projecting from the member 27. When the counter reaches the cross member of the U-rail 25, it is given a forward impulse by an opening in the left arm of the U-rail, as indicated in Fig. 1 by the arrow projecting from said member. The cross member of the U-rail has a passage therein in alinement with the groove 20 so that, as the counter reaches the forward turn, it is directed into the groove 20.

As the counters can only pass through the throat 24 one at a time, they will be accumulated in the groove 20 in sequence from the outside of the raceway inwardly. In this way, after all of the counters have finished the course, they will be racked in the groove 20 in the order in which they finished the course.

The major portion of the raceway is open at the top but, in order to insure the movement of the counters through the throat 24, a glass panel 28 is mounted over the raceway in the rear of the rails 22 and 23. This closure of the raceway tends to confine the air currents and to insure the movement of the counters through the selecting mechanism.

In order to prevent the choking of the counters in the throat 24, an agitating plate 29 is mounted in the plate 12 adjacent to the inlet of the throat 24. The construction of this plate is best indicated in Figs. 3 and 4 of the drawings, from which it will be noted that the plate has inclined walls and is mounted on an angular arm 30 pivoted at 31 in brackets 32. A curved lever 33 is attached to the arm 30 and carries a weight 34 at its forward end. The rear end of the lever 33 is operated by a revolving rod 35 provided with a loop projection 36 that acts as a tappet for oscillating the lever 33 and thereby, through the connections described, vibrating the plate 29.

The rod 35 is supported for rotation transversely of the conduit A and the means for rotating the rod comprises a fan 37 set in an opening 38 through the side wall of the conduit A. The air currents in the conduit revolve the fan and cause the rod 35 to rotate which, in turn, oscillates the lever 33, developing a vibrating movement of the plate 29, preventing the counters from choking at the inlet of the throat 24.

In order to direct the movement of the counters into the throat 24, a series of projections in the form of screws 39 are arranged in the face of the plate 12 and in the plate 29. These projections, properly placed, guide the counters in sequence to the throat. A glass panel 40 is also placed over the U-shaped channel so that the final impulses to the counters will be properly directed to cause the passage of the counters rapidly through the channel and into the groove 20.

The starting mechanism for imparting the initial impulse to the counters comprises a plate 41 extending vertically from the face of the track and transversely thereof at a point rearward of but approximate to the groove 20. This plate 41 is pivoted for swinging movements in brackets 42 at the

side of the raceway. A vertically extending lever 43 is pivoted below the top plate 12 in brackets 44 connected to the under face of said plate 12. The upper arm of the lever 43 extends through a slot in the plate 12 and is provided with an angular extremity 45 that rests against the back face of the plate 41 below the pivot support therefor. The lower end of the lever 43 extends downwardly and is in contact with a vibratory plate 46 of an electric vibrator 47.

The vibrator 47 is of the usual construction. When the coils of the vibrator are energized, the vibratory motion is imparted to the plate 46. The vibration of the plate 46 imparts a rapid swinging motion to the lever 43 which increases in intensity until the plate 41 swings outwardly at its lower end by the percussive action of the upper end of the lever against the rear face of the plate. The plate 41, being alined in the rear of the counters when the counters are racked in the groove 20, moves the counters forwardly simultaneously through the lanes 21 with a sufficient impulse to advance the counters in the raceway to bring them within the zone of air currents from the several openings from the air conduit A and thereby advance the counters irregularly around the raceway.

The wiring diagram for the fan motor and the vibrator is shown in Fig. 8 of the drawing, from which it will be understood that the motor 10 which drives the fan is connected in parallel with the main leads 48 and is controlled by a switch 49. The vibrator 47 is actuated from a transformer 50, the primary of which is in parallel with the main leads 48 and is controlled by a switch 51. The vibrator is actuated by the secondary of the transformer with which it is electrically connected, as clearly shown in the diagram.

In addition to the electrical means for actuating the plate 41, a mechanical means for this purpose is provided. The mechanical means consists of a lever 52 which is pivoted below the plate 12 in a bracket 53. The lever 52 extends upwardly through a slot in the plate 12 and is provided with a finger-piece 54. The lower end of the lever 52 is in contact with a rod 55 that extends into a bracket 56. The rod 55 contacts with one end of a transverse lever 57, which lever 57 is pivoted intermediate of its length and has an angular extremity 58 that contacts with the lever 43. An expansion spring 59 is mounted in the bracket 56 and bears against the end of the lever 57, forcing the lever normally against the end of the rod 55. When the lever 52 is actuated, the rod 55 is moved to compress the spring 59 and, when the lever 52 is released, the spring will cause a vibratory movement of the lever 57, imparting a percussive action to the lever 43 which, in turn, actuates the plate 41.

A bell 60 is mounted below the plate 12, and a tapper lever 61 is pivoted adjacent to the bell and in operative relationship with the rod 55 so that, when the starting mechanism is operated either electrically or mechanically, a swinging motion will be imparted to the lever 61 and thereby operate the bell mechanism.

I am aware that the invention may be modified in numerous particulars without departing from the spirit and scope thereof, but what I claim and desire to secure by Letters Patent is:—

1. A game apparatus comprising a raceway having a bottom wall, a plurality of air jets for delivering currents of air across said raceway, and a plurality of irregularly spaced air jets for delivering currents of air through said bottom wall, said jets being adapted to propel counters around said raceway.

2. A game apparatus comprising a raceway, a plurality of air jets for delivering currents of air across said raceway and adapted to propel spherical counters around said raceway, and mechanical means for imparting an initial impulse to the counters simultaneously and for bringing them within the zone of the air currents.

3. A game apparatus comprising a raceway, a plurality of air jets for delivering currents of air across said raceway and adapted to propel spherical counters around said raceway, mechanical means for imparting an initial impulse to the counters simultaneously and for bringing them within the zone of the air currents, and means for bringing the counters to a point of rest in sequence after they have traversed the raceway.

4. A game apparatus comprising an air conduit, a channel forming a raceway located above said conduit, there being a plurality of passageways between the conduit and said channel for delivering air currents from the conduit to the surface of the raceway, means for generating a current of air in said conduit to form air currents through said passageways and across the surface of said raceway, a groove transversely of the raceway constituting a rack for spherical counters, means for simultaneously impelling the counters into the air currents, and electrical actuating means for said impelling means.

5. A game apparatus comprising an air conduit, a channel forming a raceway located above said conduit, there being a plurality of passageways between the conduit and said channel for delivering air currents from the conduit to the surface of the raceway, means for generating a current of air in said conduit to form air currents through said passageways and across the surface of said raceway, a groove transversely of the raceway constituting a rack for spherical counters, means for simultaneously impelling the counters in-

to the air currents, and mechanical actuating means for said impelling means.

6. A game apparatus comprising a continuous open channel formed from a bottom plate and side walls, a plurality of air conduits in the bottom wall and side walls having an angular adjustment to deliver air circumferentially in one direction across said channel, a transverse groove constituting a rack for a plurality of spheres, a mechanical device adapted to impart an initial movement to said spheres arranged transversely of the channel, and a selecting device comprising a restricted passage for permitting sequential entrance of the spheres into said rack.

7. A game apparatus comprising a continuous open channel formed from a bottom plate and side walls, a plurality of air conduits in the bottom wall and side walls having an angular adjustment to deliver air circumferentially in one direction across said channel, a transverse groove constituting a rack for a plurality of spheres, a mechanical device adapted to impart an initial movement to said spheres arranged transversely of the channel, a selecting device comprising a restricted passage for permitting sequential entrance of the spheres into said rack, and a vibrating plate at the throat of said passage and projecting through the bottom wall of the channel for preventing the spheres from choking in said restricted passage.

8. A game apparatus comprising a continuous open channel formed from a bottom plate and side walls, a plurality of air conduits in the bottom wall and side walls having an angular adjustment to deliver air circumferentially in one direction across said channel, a transverse groove constituting a rack for a plurality of spheres, a mechanical device adapted to impart an initial movement to said spheres arranged transversely of the channel, a selecting device comprising a restricted passage for permitting sequential entrance of the spheres into said rack, and means adjacent to the throat of said restricted passage for guiding the spheres in sequence into said restricted passage.

9. A game apparatus comprising a continuous air conduit, a blower in said conduit for developing a draft of air therein, a continuous channel constituting a raceway comprising a bottom plate and side walls, said bottom plate and side walls having passages communicating with said air conduit and adapted to direct currents of air across said raceway, a rack formed in said bottom plate for supporting a plurality of spheres transversely thereof, a swinging plate arranged parallel with said rack, an electric vibrator, connections between said vibrator and said plate whereby, when said vibrator is energized, said plate will be rocked to move the spheres out of the rack and into the raceway, and means for accumulating the spheres in sequence in said rack after they have been propelled around said raceway.

10. A game apparatus comprising a raceway having a bottom wall provided with a series of irregularly spaced openings therein and side walls arranged at each edge of said bottom wall and having a series of openings therein, and a conduit in communication with the openings in the bottom and side walls of the raceway whereby currents of air are delivered in a plane substantially parallel with the bottom wall and in a general direction vertically thereto.

ALEXANDER W. McCLEAN.