March 14, 1939. J. F. MEYER 2,150,515

GAME APPARATUS

Filed Oct. 22, 1938 2 Sheets-Sheet 1

Fig. 1.

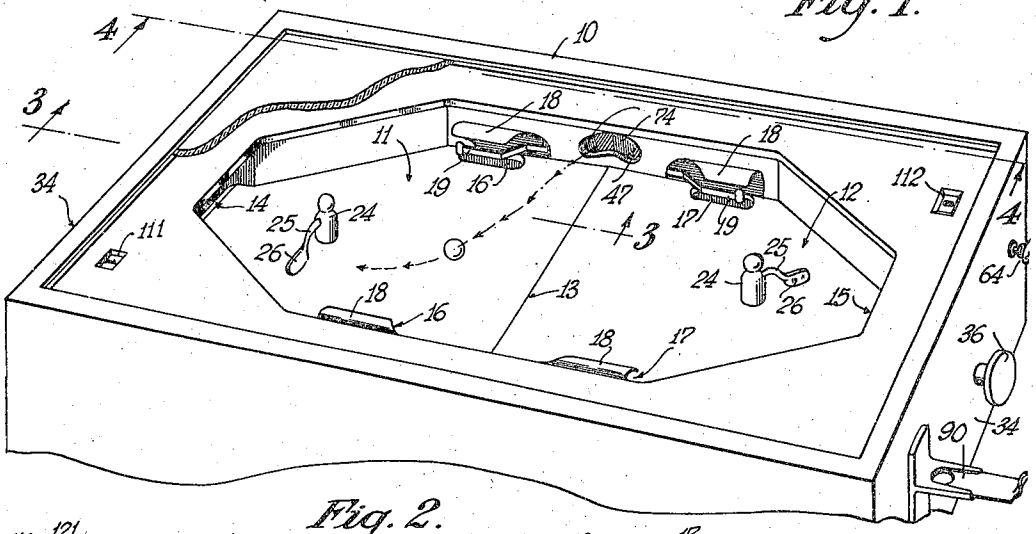
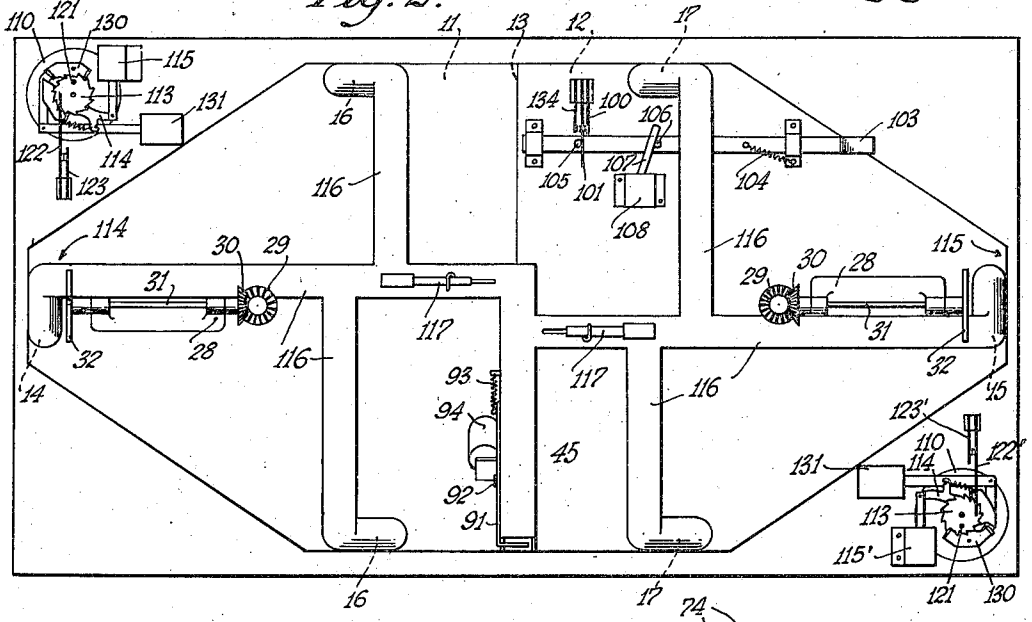


Fig. 2.



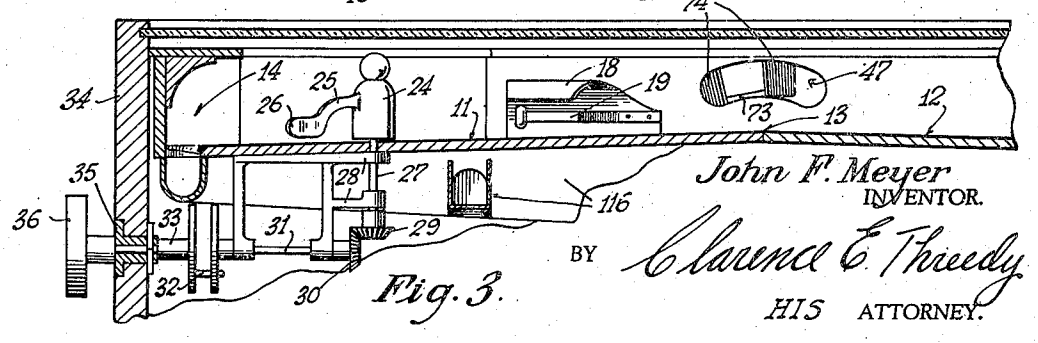


Fig. 3.

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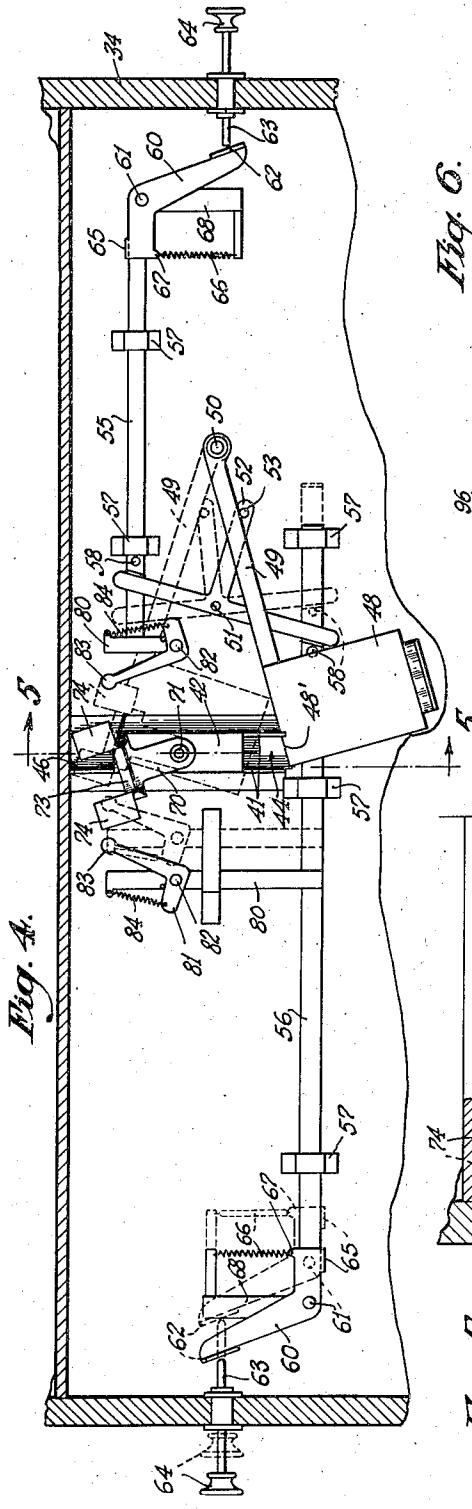

Fig. 4.

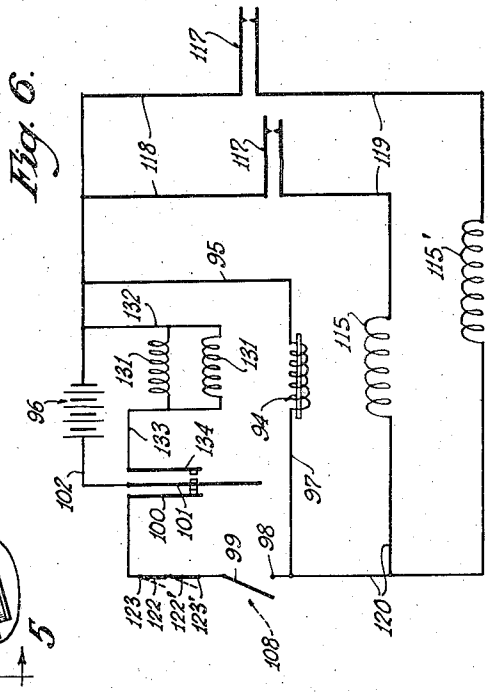

Fig. 6.

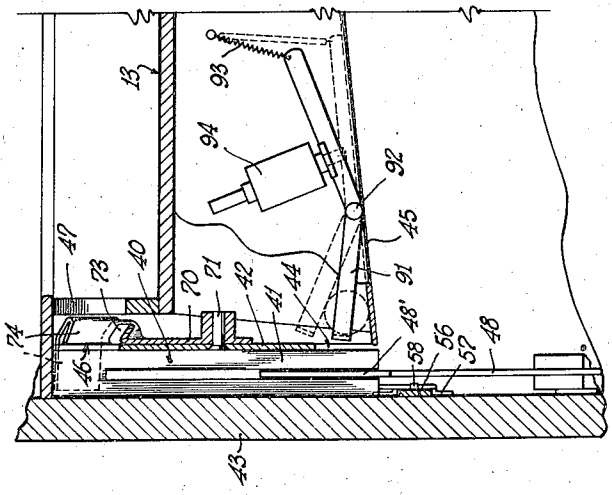

Fig. 5.

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UNITED STATES PATENT OFFICE

2,150,515

GAME APPARATUS

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Application October 22, 1938, Serial No. 236,450

11 Claims. (Cl. 273—85)

An important object of the present invention is the provision of amusement apparatus of the competitive type wherein at least two players may participate with an object of achieving a predetermined result or score, preferably in a predetermined period of time or number of plays.

Viewed from another aspect, the invention has as one of its important objects the provision of a game apparatus including a board with oppositely pitched sections, manually controlled ball projecting means for each section, means for elevating a ball and serving the same into either section, means providing one or more ball exits for each section, a runway system for returning the ball from either exit to the elevating means, and score counting mechanism actuated by the ball or other missile depending upon which exit it enters as a result of the competitive manipulation of the projecting means.

Another object is the provision of a game apparatus by means of which games in the nature of "ping-pong", tennis, and the like, may actually be played by two or more players.

Other objects and novel aspects of the invention reside in certain details of construction and operation of the apparatus hereinafter described including the arrangement of the playboard, the manually operable bats or projecting means, the ball serving mechanism, the score counting mechanism and controls therefor, and the various mechanisms and circuit arrangements provided for the control of the apparatus, all of which will become apparent as the specification proceeds in view of the annexed drawings, in which:

Fig. 1 is a perspective of the playboard;

Fig. 2 is a bottom plan view of the playboard;

Fig. 3 is a fragmentary vertical section through the center of the board, viewed in the direction of line 3—3 of Fig. 1;

Fig. 4 is an enlarged vertical section taken close to the cabinet wall, as viewed in the direction of line 4—4 of Fig. 1;

Fig. 5 is a fragmentary vertical section taken transversely through the board in the direction of line 5—5 thereof; and

Fig. 6 is a circuit diagram.

One embodiment of the invention is illustrated in Fig. 1 and includes a cabinet member 10 having a substantially horizontal playboard divided into oppositely pitched sections 11 and 12 each pitched downwardly from a center line 13. At the lower end of each of the sections are ball exit openings 14 and 15 respectively, and at the opposite sides of each section are other exit openings 16 and 17. If desired, the side exits 16 and 17 may be provided with rebound shields 18 and light-weight spring guard rails 19 each arranged so as to provide a mouth or entrance for movement of a ball into the corresponding exit openings 16 or 17.

Arranged in each of the oppositely pitched sections is a ball projecting device or bat (see also Fig. 3) including an upright post section 24 with a horizontally projecting arm 25 adapted to engage a ball or like missile for projection across the board or field.

The projecting devices are adapted to swivel quickly and easily about a vertical axis by manipulation of a manual control, the arrangement including an upright spindle 27 (Fig. 3) projecting from mounting brackets 28 beneath the several playboards 11 and 12 and supportably engaging the posts 24 at their upper ends. The lower end of each spindle 27 is provided with a bevel gear 29 meshing with another bevel gear 30 at the inner end of a shaft 31 connected through a pin coupling 32 to a stud shaft 33 journaled in one of the opposite end walls 34 of the cabinet, as at 35, and terminating at its end outwardly of the cabinet in a manual control knob 36.

Means for selectively serving the missile or ball to either court or section includes a novel dual control elevating device (Figs. 4 and 5) comprising a vertical well 40 including vertically slotted side wall portions 41 and a front plate 42 defining the well or enclosure cooperably with the side wall 43 of the cabinet. At its lower end, the face plate 42 is opened as at 44 to provide an entrance for the ball from the main transverse runway section 45 beneath the board.

The upper end of the face plate 42 is cut away as at 46 to provide an exit opening from the well opposite an arcuate opening 47 (Fig. 1) in a side wall of the playboard opposite the "net" or dividing line 13.

Means for moving the ball upwardly in the elevator includes a plate 48 arranged at one end of an arm 49 which is pivoted at its opposite end to a stud 50 on the side wall of the cabinet so that the plate portion 48 may oscillate in the slotted side walls 40 of the elevator well. A T-shaped rocker arm is pivotally mounted as at 51 with its lateral arm 52 fitted close alongside the arm 49 and provided with a pin 53 underlying the latter so that when the T arm is rocked in an anticlockwise direction, the elevating arm 49 will be raised and any ball resting at the opening 44 will be engaged by the upper edge portion 48' of the plate 48 and moved upwardly

by the latter opposite the exit opening 46 for movement through the arcuate window 47 onto one of the courts.

Selectively actuated control means for operating the elevator and effecting delivery of the ball into a desired court includes a pair of horizontally slidable arms 55 and 56 supported by cleats 57 on the same wall as the elevating arm 49 so as to be shiftable in the plane of movement of the latter. At the inner end of the arms 55 and 56 are pins 58 positioned to lie closely on opposite sides of the cross arm of the T rocker so that whichever arm, 55 or 56, is shifted inwardly will effect rocking of the T arm in an anticlockwise direction to lift the elevator arm.

At their respective outer ends, the elevator operating arms 55 and 56 are provided with overload means in the nature of pivoted dog legs 60 of substantially identical construction and each pivotally mounted as at 61 on an end of one of the elevator operating arms and each having a lateral plate projection 62 at the extremity of its longer arm and positioned opposite the inner end of a manually operated plunger 63 terminating in a handle 64 at one of the opposite ends 34 of the cabinet. The opposite arms of each of the dog legs are provided with a lateral offset 65 which overlies one edge of the corresponding operating arm 55 or 56 so as to limit the pivotal movement of the dog leg in its initial position by action of the corresponding spring 66. One end of the spring 66 is connected as at 67 to an ear on the leg opposite the offset 65, and at its opposite end to an arm on a bracket 68 formed with the several arms 55 or 56.

Normally, pushing the plungers 63 in will effect corresponding movement of the corresponding elevator operating arm 55 or 56, the resistance of the springs 56 being adequate to prevent pivotal movement of the dog legs. However, in the event that either of the arms is jammed for any reason, the springs 66 will yield and prevent injury to the mechanism.

Means for effecting movement of the elevated ball into a desired court or playing section 11 or 12 includes a yoke-shaped member 70 (Figs. 4 and 5) pivotally mounted as at 71 on the face plate 42 of the elevator well and having a downwardly tilted ball rest or floor portion 73 at its upper end opposite the delivery opening 47 and onto which the elevated ball gravitates through the upper discharge opening 46 in the well. The yoke member 70 is adapted to pivot in opposite directions, and the ball seat portion 73 thereof is flanked by a pair of vertical deflecting plates 74 each pitched toward the other and hence toward one or the other of the courts 11 or 12, so that when the yoke member is rocked into opposite positions, the ball will be deflected toward one or the other of the courts by the combined guidance of the inclined seat portion 73 and one of the flanking vanes or end flanges 74 of the yoke member.

Means for rocking the yoke member 70 into opposite positions cooperably with the actuation of the elevating means includes the provision on each of the elevator operating arms 55 and 56 of a lateral arm 80 arranged to extend into positions at opposite sides of the yoke member. Yoke-engaging bell cranks 81 are each pivotally attached as at 82 to one of the lateral arms 80, and each is provided at its upper end with a yoke-engaging nose 83 adapted to bear against the corresponding confronting portion of the yoke flange or guide 74. Each of the bell cranks is provided with spring means 84 normally urging the same toward the yoke, these springs providing yielding movement of the yoke-engaging bell cranks to prevent injury to the mechanism in the event of any kind of an overload or jamming.

The game apparatus may be arranged for coin control, in which case some form of coin-operated control means, such as the slide 90 (Fig. 1) may be arranged on one of the end walls 34, and in this case operation of the coin slide may release the game for a predetermined amount of time by means illustrated in Figs. 2, 5 and 6, and including a cut-off rocker 91 pivoted as at 92 for movement into blocking position across the main transverse runway 45 in front of the entrance opening 44 in the elevating well. Spring means 93 attached to the blocking arm normally urges the blocking portion thereof into blocking position relative to the opening 44, so that as a ball or balls pass down the runway 45, they will be prevented from entering the well. An electromagnet 94 is operatively connected with the blocking means 91 and is effective when energized to pivot the latter in a clockwise direction into the dotted-line position of Fig. 5 to permit any ball or balls to move toward the elevator.

In the circuit diagram of Fig. 6, the cut-off or ball releasing magnet 94 is connected by a conductor 95 to one side of a battery 96, and the other side of the release solenoid is connected by conductor 97 to one contact 98 of a suitable form of time switch having a movable contact member 99 which is connected to the normally closed coin slide switch contacts 100 and 101 having connection via conductor 102 with the return side of the battery.

When the coin slide 90 is pushed inwardly, an inner end portion thereof engages the end of a shift rod 103 arranged beneath the playing panel and which is urged in a normally outward position by spring means 104 so as to cause a pin 105 thereon to engage the movable contact 101 of the master coin slide switch to close the circuit via contact 100 through the normally open time switch to the ball release solenoid. A second pin 106 on the shift rod pivots an operating arm 107 on the time switch indicated in Fig. 2 at 108.

As the shift rod 103 is moved inwardly, the circuit through switch contact 101 is momentarily opened as the time switch is being set as aforesaid, and as soon as coin slide 90 is released, the shift rod 103 will be returned by spring 104 to reclose switch contact 101, the time switch now being set, so that solenoid 94 will be energized to move the ball cut-off arm 91 into ineffective position. The illustrative embodiment of the game is arranged for ping-pong and to this end only one ball is used, this ball being batted back and forth until it lodges in one of the exit openings for return via the runway system hereinafter to be described, into the main transverse runway 45.

Another master control element is the provision of automatic score counters, one for each of the courts 11 and 12, and arranged at corresponding sides of the cabinet in view of the respective players. Each of the score counting or indicating devices includes an indicia bearing disc 110 arranged in the cabinet to be viewed through a sight opening 111 or 112. Each of the discs 110 is arranged to be stepped around by a pawl and ratchet mechanism including a ratchet wheel 113 and a pawl 114, the latter each being actuated in steps by magnets 115 and 115' respectively. A series of runways 116 is arranged beneath the

board to guide balls from the several exit openings 14, 15, 16 and 17 into the main transverse runway 45, the juncture of each of these series of feeding runways 116 with the main runway 45 being provided with a roll-over switch 117.

Both of the roll-over switches 117 are connected by conductors 118 to one side of the battery 96, the opposite sides of these switches being respectively connected by conductors 119 to one side of each of the step-up or ratchet operating magnets 115 and 115', the opposite sides of the latter being in turn connected by conductors 120 to the time switch contact 98 and through the latter with the return side of the battery.

Each time a ball enters the main runway 45 from the feeding runways, it is obliged to pass over one of the switches 117 and it is pointed out that each of the latter switches may be said to be associated with one of the two playing courts, and the switch for one playing court is connected in the cotnrol circuit of the score indicator for the opposite court. For example, if the left-hand projector 25 in court 11 should project the ball into the out pocket 15 in the opposite court 12, score counter 111 for court 11 would be stepped up once.

The several score counters may be stepped a predetermined number of times from an initial reset position until the pins 121 on one of the ratchet discs 113 are moved against one of the members 122 or 122' of a pair of score control switches (Fig. 6 also), the movable and stationary contacts 122—123 of which are connected in series between the time switch contact 99 and the coin slide contact 100.

Thus, even though the time switch has not yet opened, should one of the players have achieved a predetermined score the master circuit would be broken by operation of one of the switch members 122 or 122' to cause the ball cut-off 91 to return to blocking position and further play would be prevented.

Each of the score counting devices is spring-urged according to usual practice and is provided with a releasable stopping pawl 130 operable by a corresponding reset magnet 131 to free the ratchet for restoration by its spring means to a normal condition. The reset magnets 131 are connected across the battery in parallel by means of a conductor 132 and conductor 133, which is in turn connected with a contact 134 on the coin slide switch in such manner that when the slide 90 is moved inwardly as aforesaid and the member 101 released momentarily by disengagement with the pin 105, switch contacts 101—134 will connect battery across the reset magnets to effect restoration of both of the score indicators.

One manner in which a game of ping-pong or the like may be played on the illustrative device includes the deposit of a coin in the slide 90 and movement of the latter inwardly to set the time switch 108 and momentarily close the switch contacts 101—134 to release the score counter ratchets for restoration to an initial position to clear a previous score. Upon normal closing of the switch contacts 100 and 101, the ball release solenoid 94 will pivot the cut-off arm 91 to release the ball from runway 45 into the elevator, whereupon one of the players may push his elevator control button 64 and elevate the ball through the common opening 47 into the court of the opposite player. For example, referring to Fig. 1, the player at the end of the cabinet corresponding to court 12 would push the button 64 and the ball would issue from opening 47 and be delivered into court 11 where it would roll toward the projector 25 and the player for court 11 would manipulate the handle 36 of his projector or bat in an effort to project the ball back into court 12, which effort, if successful, would require that the player of court 12 manipulate the handle 36 of his projector in an effort to return the ball to court 11. This play may be kept up until one of the players projects the ball into one of the several exit openings. For instance, it may be assumed that the player in court 12 finally projects the ball into the exit 14 in court 11, so that the ball would be returned via one of the feeding runways 116 back to the transverse runway 45.

If the time switch meanwhile has remained closed and if no player has reached the predetermined score, the cut-off arm 91 will still be in released position, and the ball will move directly back into the elevator well, so that the player whose turn to serve is next will manipulate his elevator control 64 and the ball will be served into the opposite court for a repetition of the preceding play. Each time the ball traverses the feeding runways it must pass over one of the two score switches 117, the score counter stepping up always for the player opposite the one who has caused the ball to move into the exit opening.

If either score counter ratchet 121 is stepped around the requisite number of times before the time switch opens, one of the switches 122—123 will be opened to effect restoration of the cut-off arm 91 to blocking position, and the game will then be over, further operation requiring the deposit of another coin.

In its broader aspects, the invention therefore provides an amusement apparatus including a plurality of manually operable projectors arranged for competitive operation, means common to the projectors for delivering a ball selectively to a desired one of the same, independent manual control means for the ball delivering means, together with control mechanism substantially as set forth, and it is to be understood that the specific embodiment set forth herein for purposes of illustration is intended to include all equivalent arrangements for attaining the objects of the invention as it is defined in the appended claims.

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

1. Amusement apparatus including means providing a ball playing court, independently operable ball projectors arranged for competitive projection of a ball back and forth in said court, selectively operable means for delivering a ball into said court and directing said ball toward a selected one of said projectors, means providing a ball exit from said court, and means arranged and constructed to effect guided movement of a ball from said exit back to said selectively operable delivering means.

2. Amusement apparatus including a playfield divided into opposite courts sloping away from a substantially central line, independently operable ball projectors in each of said courts and arranged for competitive manipulation to project a ball back and forth between the courts, means common to said courts for serving a ball into either of the same, selectively operable control mechanism cooperable with said last-mentioned serving means for serving a ball into a desired court, means providing ball exits for each of said courts, and runway means arranged to

direct a ball from any of said exits back to said serving means.

3. Amusement apparatus including a playfield divided into opposite courts sloping away from a substantially central line, independently operable ball projectors in each of said courts and arranged for competitive manipulation to project a ball back and forth between the courts, means common to said courts for serving a ball into either of the same, selectively operable control mechanism cooperable with said last-mentioned serving means for serving a ball into a desired court, means providing ball exits for each of said courts, runway means arranged to direct a ball from any of said exits back to said serving means, score counting means severally associated with each of said courts, and score control means for severally actuating said score counting means and including a member arranged in said runway means in such manner that when a ball enters an exit in a particular court, the score counter of the opposite court will be actuated.

4. In a game apparatus, means providing a ball playing court, a plurality of ball projectors arranged in competitive opposition in said court for individual operation by competitive players to project a ball back and forth across the court, ball exits arranged in said court in association with each of said projectors, means for selectively serving a ball to either of said projectors, runway means for guiding balls from said exits to said serving means, score counting means severally associated with each of said projectors, a cut-off device arranged for movement from a normal blocking position in said runway means to permit return movement of a ball to said serving means, and mechanism including a master control arranged to effect release of said cut-off device and hold the latter in released position, together with automatic control mechanism operatively associated with said score counting means for effecting release of said cut-off device to prevent movement of a ball to said serving means when a predetermined score has been achieved by either of said score counting means.

5. A game apparatus including ball playing courts tilted away from each other from a substantially central line, severally operable ball projectors arranged in said courts in opposition for competitive operation to project a ball back and forth from one court to the other, ball exits arranged in each of said courts, a main runway arranged beneath said courts and feeding runways leading from said exits into juncture with said main runway, a ball elevating device common to said courts and arranged and constructed for selective operation to elevate a ball from said main runway and serve said ball into one or the other of said courts.

6. A game apparatus including ball playing courts tilted away from each other from a substantially central line, severally operable ball projectors arranged in said courts in opposition for competitive operation to project a ball back and forth from one court to the other, ball exits arranged in each of said courts, a main runway arranged beneath said courts and feeding runways leading from said exits into juncture with said main runway, a ball elevating device common to said courts and arranged and constructed for selective operation to elevate a ball from said main runway and serve said ball into one or the other of said courts, a releasable cut-off device normally blocking return movement of a ball from said runways into said elevating device, electrical means for releasing said cut-off device, a master control arranged for cooperation with said electrical means to effect release of said cut-off device, an electrically operable score counter associated with each of said courts, and score switch means arranged for engagement and operation by a ball returned from either one of said courts into said main runway to actuate the score counter of the opposite court.

7. A game apparatus including ball playing courts tilted away from each other from a substantially central line, severally operable ball projectors arranged in said courts in opposition for competitive operation to project a ball back and forth from one court to the other, ball exits arranged in each of said courts, a main runway arranged beneath said courts and feeding runways leading from said exits into juncture with said main runway, a ball elevating device common to said courts and arranged and constructed for selective operation to elevate a ball from said main runway and serve said ball into one or the other of said courts, a releasable cut-off device normally blocking return movement of a ball from said runways into said elevating device, electrical means for releasing said cut-off device, a master control arranged for cooperation with said electrical means to effect release of said cut-off device, an electrically operable score counter associated with each of said courts, and score switch means arranged for engagement and operation by a ball returned from either one of said courts into said main runway to actuate the score counter of the opposite court, means coacting with said master control for maintaining said electrical means in energized condition for a predetermined period of time, and switch means severally coacting with said score counters for deenergizing said electrical operating means for the cut-off device to restore the latter to blocking condition when a predetermined score is achieved before the lapse of said predetermined period of time.

8. In a device of the class described, ball serving mechanism including means providing a ball discharge opening, and a member arranged for movement into positions to effect gravitating movement of a ball therefrom in various directions through said discharge opening, selectively operable mechanism for moving said member into various positions, and means for moving a ball onto said member and coacting with said selectively operable mechanism.

9. In a device of the class described, ball serving mechanism including a movable member providing a ball seat arranged for movement back and forth into opposite positions to effect gravitation of a ball therefrom in substantially opposite directions, selectively operable mechanism for moving said member back and forth, and means coacting with said selectively operable mechanism for moving a ball onto said member.

10. In a device of the class described, means providing a ball playing board, means providing a ball discharge opening adjacent said board, a member movable back and forth into opposite positions behind said discharge opening and constituting a ball seat, means on said ball seat for effecting gravitation therefrom of a ball thereon, guide means on said seat for effecting gravitating movement of a ball from said seat in opposite directions depending upon the position in which said member is moved, operating mechanism for moving said member back and forth, and means for moving a ball onto said ball seat.

11. In a device of the class described, means providing a ball playing board, means providing a ball discharge opening adjacent said board, a member movable back and forth into opposite positions behind said discharge opening and constituting a ball seat, means on said ball seat for effecting gravitation therefrom of a ball thereon, guide means on said seat for effecting gravitating movement of a ball from said seat in opposite directions depending upon the position in which said member is moved, operating mechanism for moving said member back and forth, and means coacting with said operating mechanism for moving a ball onto said ball seat.

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