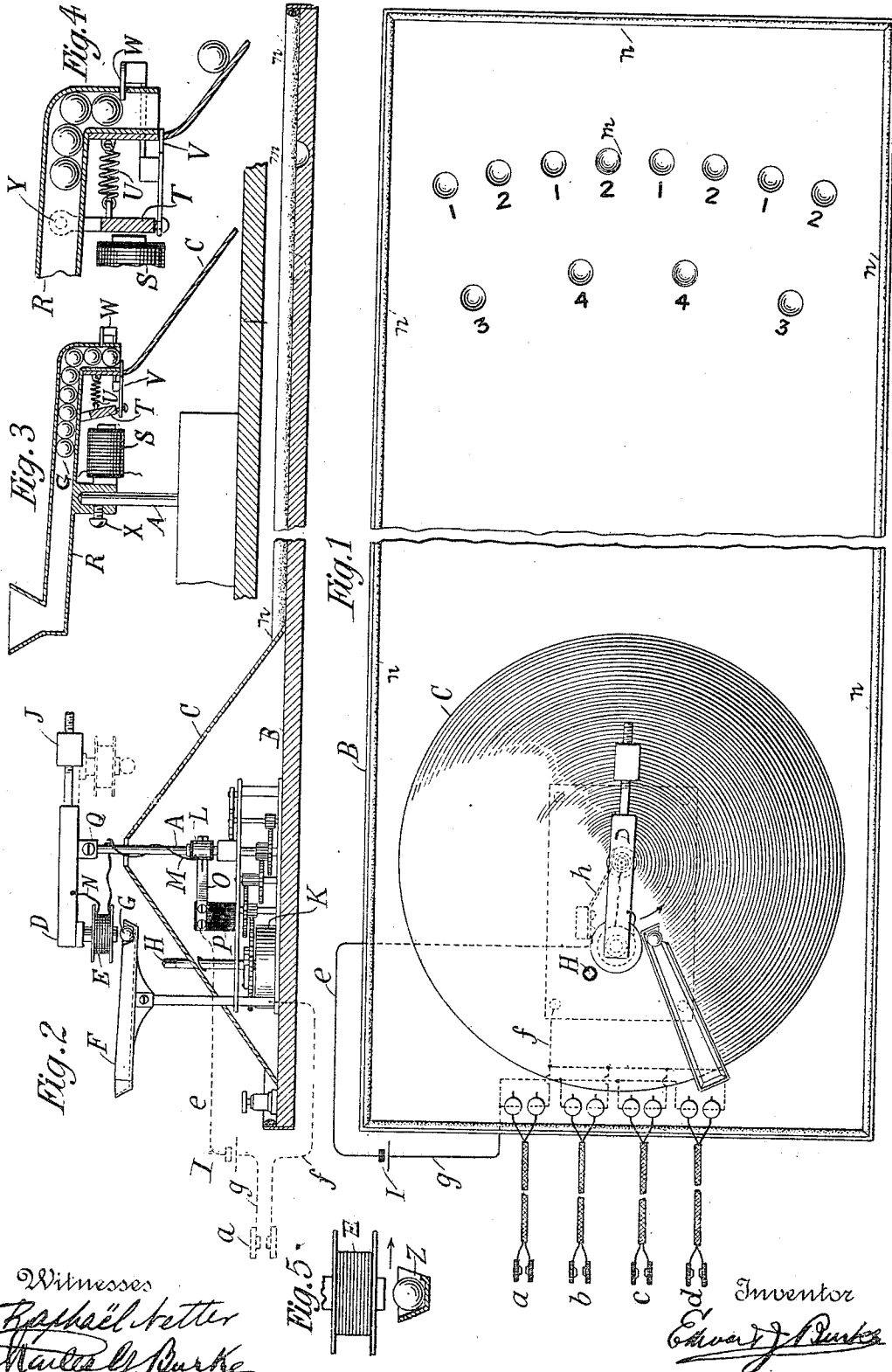


E. J. BURKE,
 GAME APPARATUS.
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Witnesses
Raphael better
Charles J. Burke

Inventor
Edward J. Burke

UNITED STATES PATENT OFFICE.

EDWARD J. BURKE, OF BROOKLYN, NEW YORK.

GAME APPARATUS.

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To all whom it may concern:

Be it known that I, EDWARD J. BURKE, a citizen of the United States, residing at 258 Stuyvesant avenue, in the borough of Brooklyn, county of Kings, and State of New York, have invented new and useful Improvements in Game Apparatus, of which the following is a specification.

These improvements more particularly relate to games in which balls or other suitable objects are set in motion and given force and direction to effect desired purposes.

In games such as billiards, pool and other kindred pastimes it is usual, as is well known, to impart motion and force to the balls by the power of the player, communicated directly from the arm and hand of the player or indirectly through means in the player's hands. In such cases the velocity and force of the balls depend upon the amount of power exercised upon them and the direction of motion upon the angle at which the power is applied.

In my improvements which form the subject matter of this specification and application for Letters Patent, the motion of the balls, their velocity and the direction of their course, result from gravity incidental to the balls being caused to roll down a declivity or slope. In some cases centrifugal force may be used to give motion and velocity to the balls or objects employed. A combination of gravity and centrifugal forces may also be utilized in these improvements.

In the several games to which my improvements may be adapted I employ a suitable base. This base may be a board, a table or other plane surface. In order to prevent the balls from rolling off of the base as also to be a means for developing the skill of the player by enabling him to change the initial direction of the motion given to the balls by their descent down the slope, a suitable guard or cushion of an elastic character is provided. That the balls shall acquire sufficient velocity and force in their descent and have the direction of motion desired by the player, means are provided for dropping them from a sufficient height and at desired positions on the declivity or slope. Centrifugal tendency is secured by rotating the balls before they

are dropped. The means for dropping the balls may be of various kinds. For instance the balls may be picked up by the players and allowed to drop down the declivity or slope at any desired point thereon. Preferably however I employ automatic means for this purpose. In practice I preferably use the power of electricity or a combination of magnetic and electric forces for automatically picking up and dropping the balls. A single pole magnet and coil such as is commonly used in telephone receivers answers most satisfactorily for this purpose. This magnet consists of a soft iron core mounted upon and placed in inductive relation with one pole of a permanent magnet, the said core being wound with a desired number of turns of insulated wire. It is well known that the magnetism induced by a permanent magnet in a soft iron core surrounded by a coil of insulated wire will be increased or diminished on the passage of an electric current through the windings of the coil. By this arrangement the magnetic effect of the permanent magnet is diminished by passing a current through the coil. This results in a great saving of the battery in that a current passes only for an instant of time and when it is desired to relieve a ball from the effect of the permanent magnet.

To facilitate picking up and dropping the balls, as well as to impart centrifugal tendency to them, the magnet and its coil are rotated around the top of the declivity or slope and the balls to be picked up, are placed in a suitable holder arranged in the pathway of the rotated magnet and in such relation thereto that only one ball at a time can be picked up by it. That the player may be enabled at will to cause a picked up ball to drop, a suitable circuit closer under the player's control is placed in the circuit of a battery with the coil of the magnet. The battery is so connected up as to its polarity that it temporarily annuls or diminishes the induced magnetism in the soft iron core of the magnet coil in a well known way whenever the circuit closer is closed by the player and thereby causing the ball to drop.

The pole of the magnet which attracts and carries the ball is arranged to overhang the upper part of the slope or declivity, so that when a player causes a ball to be released,

it will fall upon or strike the slope at or near its highest point. When a magnet is used as a picker-up it is obvious that the balls must be magnetizable. The picking up device may be rotated by hand, by an electric or spring motor or other suitable means.

The speed at which the balls are carried around the cone or declivity before being released or dropped may be varied as occasion requires. In practice it is found that when centrifugal force is combined with gravity a speed of from 9 to 15 revolutions per minute suffices to secure ample velocity and force for the released ball to accomplish the aim of the player. This speed also gives the player time to determine, to the extent of his skill, the location on the declivity upon which the ball should be dropped, in order to insure the best results.

The receptacles to receive the balls after they have been dropped and roll down the declivity, may be in the form of holes or wells in the base or pockets arranged in a well known way.

For the purpose of determining the extent of the success of the player, or in other words his score, the receptacles in the base may be given pre-determined score values. Such values may be shown by figures or letters associated with such holes. They may be also used as a reference to a book or record in which corresponding letters, figures, signs or a combination of two or more thereof, will be found with pre-arranged significations attached thereto.

It will be readily understood that the holders for the balls and the balls therein may be, as in the case wherein a magnet is used for picking up and dropping the balls, rotated around the top of the declivity or slope by suitable means and the balls caused to be made to drop down the slope or declivity at any desired part while being rotated. Under such an arrangement it is not necessary, as will be understood, that the balls should be of a magnetizable nature. That the release of a ball, from such rotated holder may be effected by mechanical, electrical or other operative means is equally apparent.

In the drawings herewith, corresponding parts are indicated by corresponding letters.

Figure 1 is a plan view of a complete organization of my improvements in game apparatus, and of the appliances used therein consisting of a base, a cone like declivity thereon, a rotatable magnet and coil, a motor for rotating the magnet and coil, a ball holder and ball therein, a battery, its connection with the magnet coil and circuit closers, and an elastic cushion around the base. Fig. 2 is a sectional view of the organization as shown in Fig. 1. Fig. 3 is an illustration of a rotatable ball holder and slide which may be used as a substitute for

the rotatable magnet and stationary cone like declivity shown in Figs. 1 and 2. Fig. 4 shows a similar arrangement to that shown in Fig. 3 together with an illustration of a ball in the act of rolling down an incline or slope, the slope being attached to or in permanent relation with the ball holder and carried around therewith. Fig. 5 illustrates a ball at the picking up point in the ball holder shown in Figs. 1 and 2, together with a magnet by which it is picked up.

The organization shown in Fig. 1 can be best understood by a reference to Fig. 2 which more particularly shows the several parts.

Referring to Fig. 2, B is the base or board showing receptacles *m*, and cushion *n*. C, is a cone like declivity or slope resting on base B. The motor K, with its gears are located under the declivity or slope C. Shaft A, of motor K, passes up through the center of cone or declivity C, and supports permanent magnet D, and coil E, to which it is rigidly affixed by screw Q. The ball holder F, with the ball G, therein is supported above the conical slope C, as shown, ball G, being in the line of rotation or pathway of the pole piece of pick-up magnet D.

The dotted figure shown under the adjustable balancing weight J of magnet D, indicates a ball that has been picked up and is being carried around the cone like declivity C, by magnet D, as it is rotated by motor K.

The course of the current from battery I, through the magnet coil E, and the circuit closer *a*, as shown by the dotted lines may be traced as follows. Starting from the negative pole of battery I, the current flows by line *e*, to brush contact O, to insulated revolving contact L, on shaft A, to connecting wire M, of magnet coil E, through the winding of coil E, out by wire N, to the body or frame of motor K, thence by line connection *f*, to one contact of the circuit closer *a*, and from the other contact of circuit closer *a*, back to the positive pole of battery I, by way of line *g*. Contact L, is insulated from shaft A, as shown. Brush contact O, is insulated from the frame of motor K, by insulating block P. The terminals of the circuit of battery I, and magnet D, for convenience, may be connected to binding posts in a well known way. Contact maker *a*, may be an ordinary push-button or other convenient form of circuit closer. The conical like declivity C, may be of metal, cardboard or any other suitable material and preferably presenting a smooth outer surface. The ball holder is preferably, when magnets are used for picking up the balls, of non-magnetizable substance.

Referring to Fig. 3 the ball holder R, containing the balls G, as shown, is rigidly attached to the revolving shaft A, and car-

ries the balls around with it. These balls may be of any suitable material. Magnet S, which is connected with the revolving shaft A, of the motor K, and the ball holder R, controls armature T, and releasing valve V, and ball check W. Retracting spring U, serves to hold armature T, in its normal position and to restore it thereto after each pull of magnet S. Ball holder R, may be arranged to revolve either around a cone like declivity as is shown in Fig. 2, or a slope of suitable width for the balls to run down when released from holder R, by the opening of valve V, may be permanently attached beneath the valve V, and rotated with the holder and balls as shown in Figs. 3 and 4. It will be noted that by means of ball check W, only one ball at a time is permitted to pass valve V, at each operation of magnet S.

In Fig. 4 the armature T, is represented attracted by magnet S, the valve V, to be drawn in or back permitting a ball to fall down on the slope or slide, and the ball check W, in position to prevent the other balls from running out of the holder R. The ball holders are normally inclined or tipped toward the point at which the balls are picked up or released, so that the balls in the holder will continue to press forward as ball after ball is picked up or released.

In Fig. 5 a ball is shown at the point of the ball holder where the balls are picked up by the inductively magnetized core of the magnet coil E, a gap Z, is shown in the side of the holder which facilitates the abstraction of the ball by the magnet therefrom.

Assuming that rules for a game have been pre-determined, the playing of a game will now be described. Any convenient number of persons may participate in a game. A flexible conducting cord and contact maker may be provided for each player or a single flexible cord and contact maker may be used and passed from one player to another.

If the board and appliances be such as shown in Figs. 1 and 2, twelve magnetizable balls will be placed in the ball holder. The motor being started, the player holding the contact maker in hand sees the magnet revolve, notes it picking a ball out of the ball holder, watches the ball being carried around the conical slope and when he judges that the ball has arrived at a point which is likely to direct a ball to produce a desired effect or result, presses the contact maker thereby causing the ball to drop from the magnet and course down the slide and roll along the surface of the base either to lodge in one of the holes in the base or to be re-directed or reflected by the cushion surface n until it does lodge in one of the said openings or until it comes to rest at some place on the base. If it lodges in one of the holes,

it scores for the player the number associated with such hole or whatever else the rules established for the game may provide for.

At each revolution of the magnet a ball will be picked up and dropped and the first to play will continue to make use of the contact maker until the last of the twelve balls has been picked up and dropped down the slide. The sum of the numbers associated with the holes, in which the player has succeeded in depositing balls, is his score for that round if so provided for in the rules. The twelve balls are then restored to the ball holder and player number 2 takes a turn.

When the organization which is shown in Fig. 3 is used the game is played in the same way as just described excepting that the balls being in a rotated holder with slide attached thereto, a player need only watch for the holder and slide to arrive at a favorable point for the release of the ball, the release being effected as in the former case by the player closing the contact maker.

It will be readily understood that the magnets used in my improvements may be operated from a distance also that an electro magnet may be substituted for the permanent magnet for picking up the balls. In such case the balls would be picked up or attracted by closing the circuit maker and subsequently dropped by opening the circuit maker. It also is apparent that one or more cones or declivities may be placed in or near the center of a base or board and that holes, pockets or receptacles for balls to rest in may be arranged around the said cone or cones.

The invention may be modified by those skilled in the art without departing from the spirit thereof. It may be embodied in many forms of devices without in any way avoiding the intent of the claims.

Having described the nature of my invention and the means for carrying the same into practical effect, I claim—

1. In a game apparatus the combination of a body having a plane surface, a body having an inclined surface located above the said plane surface, a mechanical means located at the top of the inclined surface under the control of the operator for temporarily holding and delivering balls, and a means for changing the direction of delivery of the holding means so as to direct the balls down the inclined surface and onto the plane surface along any desired line of the said plane surface.

2. In a game apparatus the combination of a body having a plane surface, a mechanical means under the control of the operator for temporarily holding and delivering a ball, a means for changing the direction of delivery of the balls from the holding means

and giving momentum to the said balls upon delivery thereof.

3. In a game apparatus the combination of a body having a plane surface, a body having an inclined surface located above the said plane surface, and a movable means under the control of the operator for directing the ball along any desired line of the said plane surface and means for releasing the said ball from the said movable means.

4. In a game apparatus the combination of a body having a plane surface, a rotating means for holding a ball, a means for releasing the said ball from the said rotating means, an inclined surface adapted to receive the said balls and to direct them to the said plane surface.

5. In a game apparatus the combination of a body having a conical surface, a body having a plane surface located below the said conical surface, mechanical means for moving the balls at the top of the said conical surface, means for releasing the balls at any desired time from said mechanical means.

6. In a game apparatus the combination of a body having a plane surface, a body having a conical surface located above the said plane surface, means for moving the balls around the top of the said conical surface, and means for releasing the balls at any point in their path of motion.

7. In a game apparatus the combination of a body having a plane surface, and having one or more receptacles therein, a resilient body substantially surrounding the said plane surface, a means for moving the balls above the said plane surface, a means for releasing the balls from the said moving means at any points in the paths of their motion.

8. In a game apparatus the combination of a body having a plane surface and a rotating means under the control of the operator for holding and delivering a ball located above the said plane surface, receptacles located in the said plane surface and adapted to receive the said ball.

9. In a game apparatus the combination of a body having a plane surface, a means for moving a ball above the said plane surface, a means under control of the operator for releasing the ball from the said movable means and a means for giving the ball momentum.

10. In a game apparatus the combination of a body having a plane surface, a body having an inclined surface located above the said plane surface, means for moving a ball above the top of the said inclined surface and means for releasing the said ball at any point in its path of motion.

11. In a game apparatus the combination of means for holding and rotating a ball, an electrically operated means for releasing

the said ball at any desired point in its rotation, a body having a plane surface adapted to receive the said ball.

12. In a game apparatus the combination of means for holding a ball, means for rotating the said ball holder and a releasing means for releasing the ball from the said holder at any desired point in its rotation, and a body adapted to receive the said ball.

13. In a game apparatus the combination of a revolving ball holder, a body having an inclined surface adapted to receive a ball from the said holder, means for releasing the said ball from the said holder at any desired point in the path of its rotation, and a body for receiving the said ball from the inclined surface.

14. In a game apparatus the combination of a revolving ball holder, an inclined surface adapted to receive a ball from said holder, an electric means for releasing the said balls from the said holder at any desired point in the path of its rotation, and a body for receiving the said ball from the inclined surface.

15. In a game apparatus the combination of a magnetizable ball, an electromagnet for holding and releasing of the said ball, means for delivering the said ball from the control of the said magnet, means for giving momentum to the said ball, and a body adapted to receive the said ball.

16. In a game apparatus the combination of a magnetizable ball, an electromagnet for controlling the said ball, a body for giving momentum to the said ball, and a plane surface adapted to receive the said ball.

17. In a game apparatus the combination of a magnetizable ball, an electromagnet for holding and releasing the ball, means for delivering the said ball from the control of the said magnet, an inclined surface adapted to receive the said ball and change its direction of motion, and a plane surface adapted to receive the said ball from the said inclined surface.

18. In a game apparatus the combination of a body having a plane surface, a body having an inclined surface located above the said plane surface, a magnetic means for holding the ball, and an electric means for releasing the said ball from the said magnetic means and permitting it to roll on the said inclined surface.

19. In a game apparatus the combination of a magnetic means for holding a ball, an electric means for causing the said magnetic means to release the ball, a body adapted to give direction of motion to the said ball when released, and a body adapted to receive the said ball.

20. In a game apparatus the combination of a revolvable magnetic means for holding a ball, an electric means for causing the magnetic means to release the ball, a means for

giving momentum to the said ball and a body adapted to receive the said ball.

21. In a game apparatus the combination of a permanent magnet for holding a magnetizable ball, a means for rotating the said permanent magnet about a point exterior to the said magnet, an electric means adapted to reduce the magnetism of the said magnet to release the ball, a conical surface adapted to receive the ball from the said magnet when released, a plane surface adapted to receive the ball from the said conical surface.

22. In a game apparatus the combination of a body having a plane surface, a body having a conical surface located above the said plane surface, means for holding a ball, means for revolving the said ball holder at the top of the said conical surface, an electric means for releasing the ball from the said holder at any desired point in the path of the said holder.

23. In a game apparatus the combination of a body having a plane surface, a body having an inclined surface located above the said plane surface, a magnetic means for holding a magnetizable ball above the said inclined surface, a means for releasing the said ball from the said holder and directing it onto the said inclined surface.

24. In a game apparatus the combination of a ball holder, a means for rotating the said ball holder, a ball feeder adapted to

feed the said balls, an electric means for releasing the said ball from the said holder and a body adapted to receive the said ball.

25. In a game apparatus the combination of a ball feeder, a ball holder adapted to remove a ball from the said feeder, a means for releasing the ball from the holder, a means for giving momentum to the said ball, and a body adapted to receive the said ball.

26. In a game apparatus the combination of a body having a plane surface, a movable means under the control of the operator for moving a ball over the said plane surface, means for releasing the ball from the said moving means, a means for giving the ball momentum and a resilient body adapted to re-direct the said ball.

27. In a game apparatus the combination of a ball feeder, a magnetic means for removing ball from the feeder, means for releasing the said ball from the control of the said magnetic means, means for giving the ball momentum and a body having a surface adapted to receive the said ball.

In testimony whereof, I have signed my name to this specification in the presence of two subscribing witnesses, this third day of January 1906.

EDWARD J. BURKE.

Witnesses:

CHARLES G. BURKE,
W. H. LAIRD.