

Sept. 9, 1952

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2,610,058

OSCILLATING BALL REPROJECTOR

Filed Sept. 3, 1948

2 SHEETS—SHEET 1

Fig. 1.

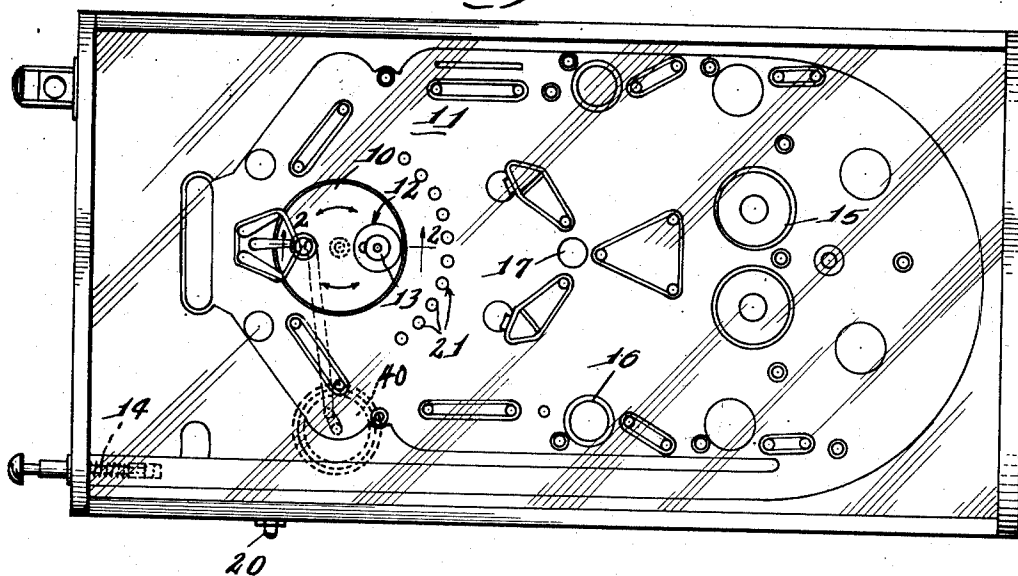


Fig. 2.

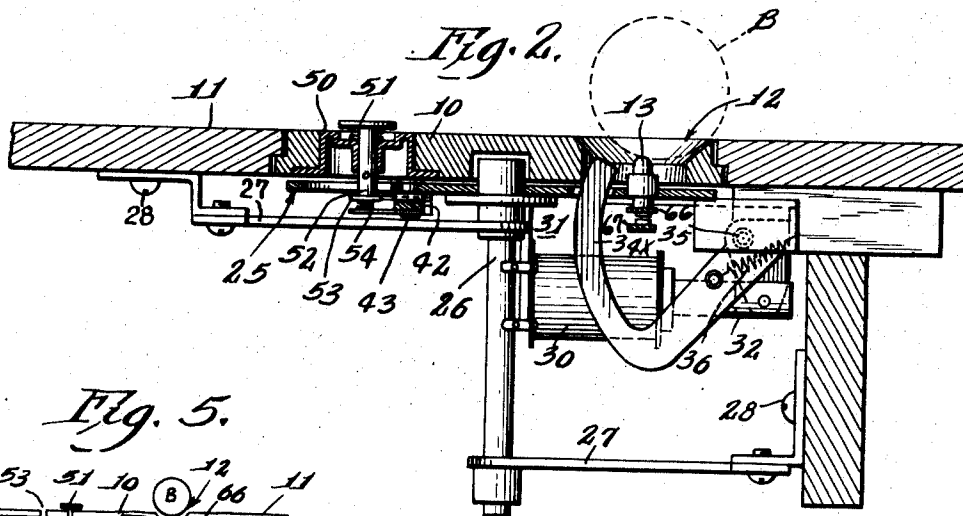
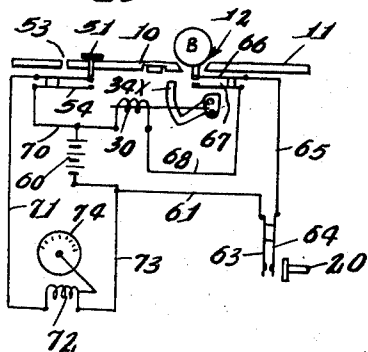


Fig. 5.



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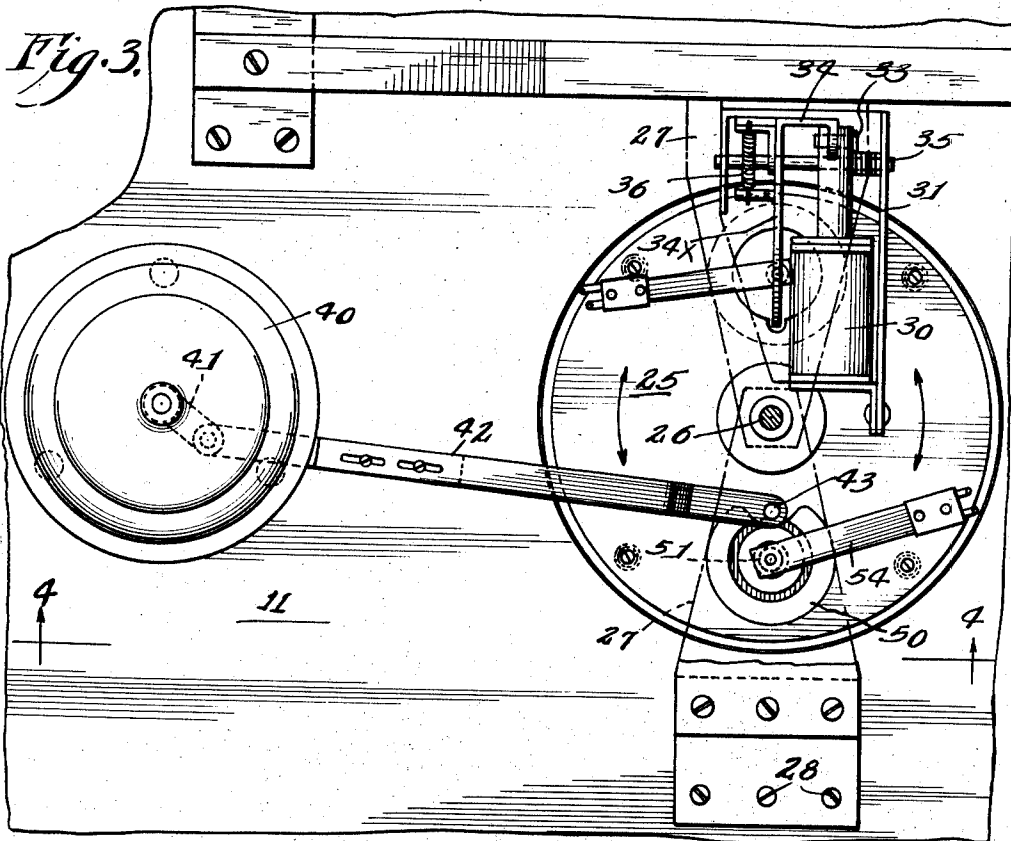
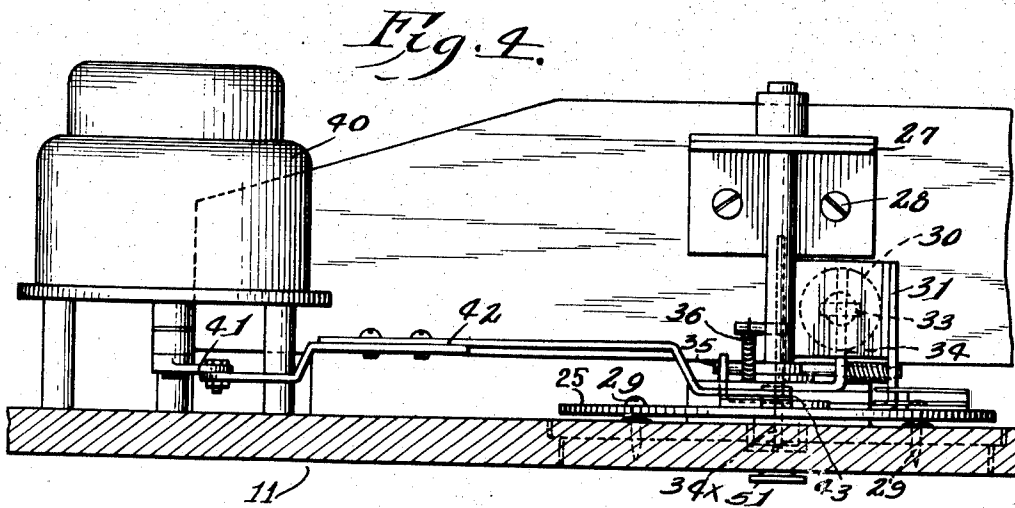
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2 SHEETS—SHEET 2



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UNITED STATES PATENT OFFICE

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OSCILLATING BALL REPROJECTOR

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3 Claims. (Cl. 273—121)

1

This invention pertains to mechanical ball rolling games and the like and has as its principal object the provision of novel ball reprojecting means with attractive action and skill-testing features.

More particularly stated, the invention provides an oscillating turret with ball reprojecting means therein, as well as certain scoring means, so contrived that a ball lodged in the reprojector may be propelled at the will of the player in a desired direction depending upon the position of angular displacement of the turret at the time the player causes projection of the ball therefrom.

Additional objects and aspects of novelty pertain to details of the construction and operation of the embodiment disclosed hereinafter in view of the annexed drawings in which:

Fig. 1 is a top plan view of a ball rolling playfield incorporating the novel turret reprojector;

Fig. 2 is a fragmentary vertical sectional detail of the turret and reprojecting mechanism taken in the direction of lines 2—2 of Fig. 1;

Fig. 3 is a bottom plan view of the device of Fig. 2;

Fig. 4 is a side elevation looking in the direction of lines 4—4 of Fig. 3, the playfield being shown in section;

Fig. 5 is a circuit diagram.

Referring to Fig. 1, which shows the top of a ball rolling game, the novel ball reprojector includes a disc 10 mounted for oscillation, as indicated by the arrows, the upper surface of this disc being flush with the surface of the ball-rolling field 11.

The disc 10, also called herein a turret is provided with a ball-receiving pocket 12 at the bottom of which is a ball-operated switch element 13.

In a preferred arrangement of the game, the turret is oscillated continually at a moderate speed while the game is in play, and the player, by actuating the ball shooter or plunger 14, projects a ball out upon the field 11 with the object of striking one or more of the various objectives and targets 15, 16, 17, etc. most of which are conventional or well-known varieties of ball-operated switch connected in a scoring circuit, it being the player's object to run up as high a score as possible, or to achieve some special score or hit some special target or bumper.

Should the ball lodge in the turret opening or pocket 12 and operate the switch element 13, a circuit would be conditioned to enable the player to reproject this ball by operating the special switch 20 at the side of the cabinet, which would result in the reprojecting of the ball by means to be described.

Before pushing the button 20 to reproject the ball from the turret, the player may follow the oscillatory motion of the turret and ball therein with respect to certain guide means such as

2

markers 21 on the playfield, whereby to aim for a certain target or path for the reprojected ball, there being a nice exercise of skill in judging the proper moment to fire or shoot the ball.

Referring to Fig. 2, the turret structure consists of a base plate 25 fixed on a spindle 26 carried in bracket means 27 secured to the inner game cabinet as at 28, it being noted that there are upper and lower bracket means as seen especially in Fig. 2.

As in Fig. 4, the turret member 10 is secured by means of screws 29 to the base plate for movement therewith, said member preferably being made of wood to match the ball field member 11.

An electromagnetic solenoid or coil 30 is carried by means of a bracket 31 (Fig. 2, also Figs. 3 and 4) secured to the base plate for movement therewith, and this device has a plunger 32 pivotally connected as at 33 to a reprojector arm 34 which in turn is pivotally supported on bracket means 31 by pin 35 therein.

The reprojector 34 includes an arcuate ball kicker extension 34X, the nose portion of which projects up into the ball pocket 12. A spring 36 normalizes the kicker or reprojector arm means 34—34X; however, when the solenoid is energized to attract plunger 32, the reprojector means 34 rocks clockwise to kick the ball B out of pocket 12, the spring 36 restoring the arm 34 to normally lowered condition, as shown in Fig. 2, when the solenoid 30 is deenergized.

Oscillation of the turret is effected by means of a motor 40 (Figs. 3 and 4) having a built-in speed reducer rotating a crank 41 connected by means of link 42 to a crank pin 43 on the turret base plate.

As in Fig. 2, an additional ball-scoring switch means is provided on the turret and includes a shell 50 seated therein and having a ball-actuated button plunger 51 with a lower end 52 bearing against leaf spring switch contact 53, such that when a ball rolls onto the button portion 51, contact spring 53 is pushed down against its companion contact spring 54 to close any desired scoring circuit.

One suitable circuit for the novel oscillating reprojector is shown in Fig. 5, wherein the kicker solenoid 30 is connected to power supply or battery 60 with an operating circuit completed via conductor 61, push-button switch contacts 63, 64 (normally open), conductor 65, ball pocket contacts 66, 67 (normally open), and conductor 68.

Assuming that a ball B is lodged in the pocket 12, its weight closes contacts 66 and 67, and the player may now close contacts 63, 64 by pushing button 20 to energize the solenoid 30 and cause the reprojector or kicker 34X to strike the ball and throw it out onto the playing field 11, it being borne in mind that the motor 40 is

3

continually running from power connections not shown, so that the player must exercise judgement and skill in aiming the shot.

Frequently, a ball will miss the pocket and roll over the button element 51 to close contacts 53 and 54 on the special scoring switch, thereby closing a circuit from battery 60, conductor 70, closed contacts 53—54, conductor 71, score step-up coil 72 and return conductor 73 to cause a score indication on any desired form of score indicator or control 74, of which several varieties are well-known in the art.

The novel turret reprojector affords a good test of skill as well as a fascinating novelty feature in ball rolling games. The oscillation of the turret may be uniform or may be scrambled by conventional scrambler devices, but in either form, the player has a variety of positions of the turret from which the ball may be reprojected, and if he deems that his timing is not suitable, he may refrain from pushing the button 20 and wait for the turret to approach the desired position a number of times before taking the shot.

I claim:

1. In a ball-rolling game device having an inclined playing surface, a disc fitted freely into an opening in said surface and means mounting the disc as aforesaid for oscillatory motion, an electric motor and a crank mechanism between the same and said disc for effecting a sustained oscillation of the disc, a motor circuit for energizing said motor, a depressed ball-receiving seat in said disc and situated eccentrically of the oscillatory axis thereof, an electromagnetic reprojector carried on the underside of said disc and having a kicker arm communicating into said seat for actuation to reproject a ball therefrom, a ball switch communicating into said seat, a player-controlled switch in said game device and mounted adjacent said playing surfaces, and a power circuit including said ball switch and said player switch in series with a power source and said electromagnetic reprojector for operation such that when a ball is lodged in said seat and closes said ball switch, the closing of said player switch at the option of the player will reproject said lodged ball onto said playing surface, said motor being energized by said motor circuit during playing of the game to make it difficult to lodge a ball in the seat and to afford a selective directional reprojected of the lodged ball under control of the said ball and player-controlled switches.

2. For a ball-rolling game device having a playing field and means for initially projecting a ball thereon, improvements comprising: a turret member mounted for oscillation with a ball-rolling surface flush with the surface of said playing field; a ball receptacle in said surface and off-center relative to the axis of oscillation of the turret; a ball-operated switch communi-

4

cating into said receptacle and adapted to be closed by a ball therein; a ball-reprojecting device communicating into said receptacle and movable with said turret; electromagnetic means movable with said turret for actuating said reprojecting device; a player-closed switch carried by said game device adjacent said field and connected in series with a power circuit connection, which is completed through said ball-operated switch, for selectively energizing said electromagnetic means at times when the ball-operated switch is closed by a ball in the receptacle, as aforesaid; and electric motor drive means connected with the turret member for oscillating the same at a determined rate continuously during operation of the game device.

3. In a ball-rolling game device including a ball-playing field, means for launching a ball for movement thereover, and ball targets on said field, reprojecting means including, namely: a substantially flush movable portion of said field which can be moved back and forth; motor means having driving connection with said movable field portion for moving the latter back and forth; a depressed ball cup on said movable field portion; an electrically-actuated ball-reprojector communicating with said cup and operable to reproject a ball therefrom; a first control switch means including an operating part extending into said cup and adapted to be actuated by a ball in the cup; a second and manually actuated switch means connected in a reprojecting circuit with said first switch means, said second switch means being located on said game device for operating access to the player; electrical means for actuating said reprojector and connected in said reprojected circuit; said first and second switch means being connected in series in said reprojected circuit to require joint operation thereof in order to energize said electrical means and actuate the ball reprojector, as aforesaid.

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REFERENCES CITED

The following references are of record in the file of this patent:

UNITED STATES PATENTS

Number	Name	Date
637,676	Shaw et al.	Nov. 21, 1899
1,894,469	Lynch	Jan. 17, 1933
1,975,374	Rockola	Oct. 2, 1934
2,024,851	Frohne	Dec. 17, 1935
2,042,786	Hooker	June 2, 1936
2,047,800	Rockola	July 14, 1936
2,062,204	Blackmore	Nov. 24, 1936
2,112,255	Swenson	Mar. 29, 1938
2,145,846	Cannon	Feb. 7, 1939
2,164,361	Swenson	July 4, 1939
2,226,885	Williams et al.	Dec. 31, 1940